



## **INSTITUTE OF CHEMICAL TECHNOLOGY**

(Deemed University under section 3 of UGC Act 1956 (Sept 12, 2008) and  
Elite Status and Centre of Excellence - Govt of Maharashtra,  
Assembly Resolution April 20, 2012)

Nathalal Parekh Marg, Matunga, Mumbai 400019, India

Ph: +91-22-33611111/2222, Fax: +91-22-33611020

website: [www.ictmumbai.edu.in](http://www.ictmumbai.edu.in), email: [registrar@ictmumbai.edu.in](mailto:registrar@ictmumbai.edu.in)

### **Professor Dr. G. D. Yadav**

*B. Chem. Eng., Ph.D.(Tech.), F.T.W.A.S., F.N.A., F.N.A.Sc. F.R.S.C.,  
Ch.E., F.I.Chem.E.(UK), F.M.A.Sc., F.I.I.Ch.E., F.I.C.S.*

Vice-Chancellor and R. T. Mody Distinguished Professor

Jagdish Chandra Bose National Fellow (DST-GOI)

Adjunct Professor, RMIT University, Australia

Adjunct Professor, University of Saskatchewan, Canada

# **NAAC**

## **SELF STUDY REPORT**

**(REVISED 2016-17)**

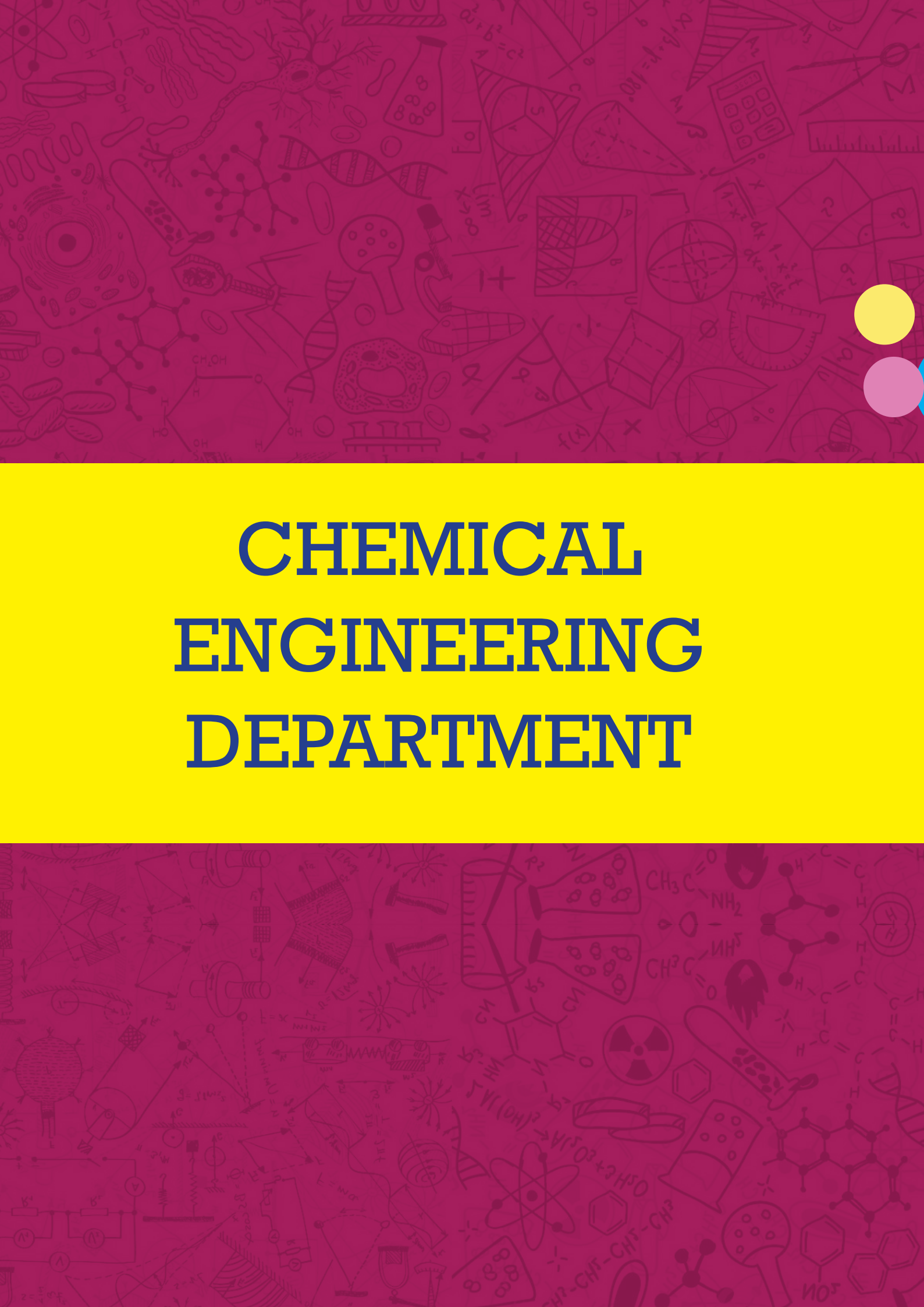


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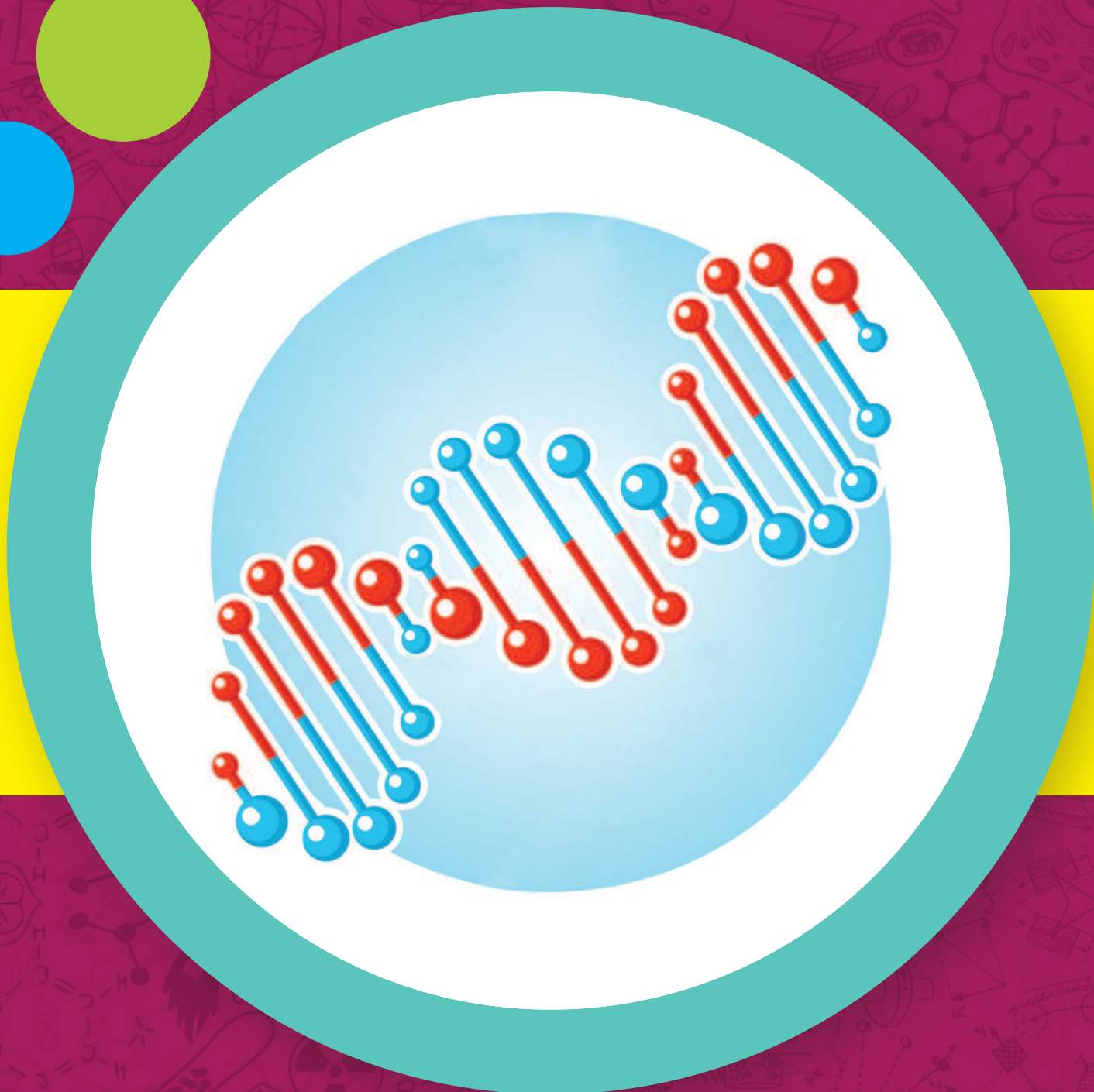
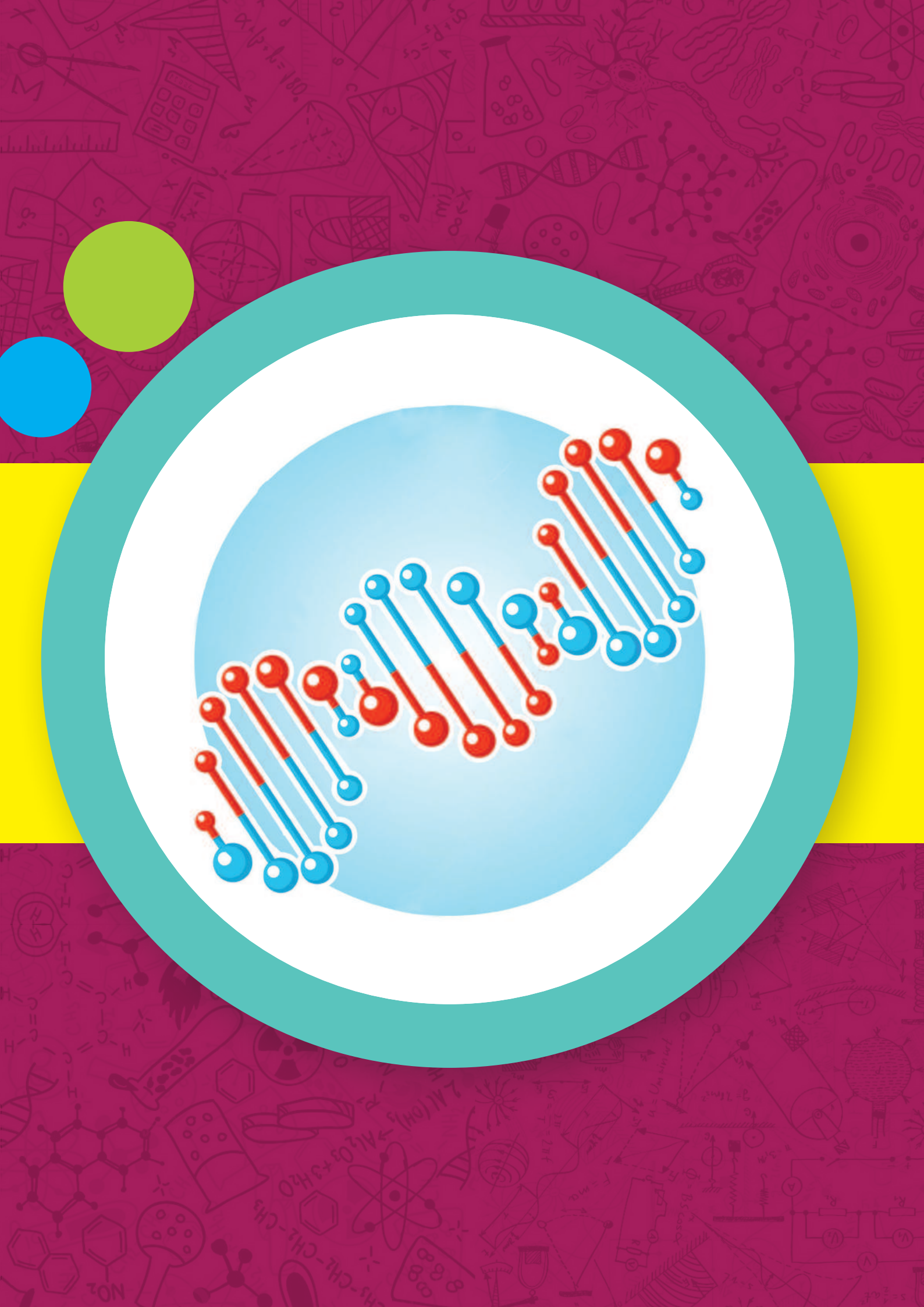
## **Revised Evaluative Report of The Departments (2016-2017)**

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The background of the entire page is a dense, repeating pattern of various scientific and engineering icons. These include chemical structures like DNA helices, molecular models, and chemical formulas such as  $CH_2OH$ ,  $CH^2C=O$ , and  $CH_2-CH=CH-CH_2$ . Engineering symbols like gears, a microscope, a calculator, a ruler, a compass, and various geometric shapes (triangles, circles, squares) are also present. Mathematical notations like  $E=mc^2$ ,  $\lim_{x \rightarrow \infty}$ , and  $\frac{d}{dx}$  are interspersed throughout. The pattern is rendered in a light purple color against a darker purple background.

# CHEMICAL ENGINEERING DEPARTMENT





## Chemical Engineering Department

The Department of Chemical Engineering of ICT is one of the leading Chemical Engineering Departments in the Country maintaining high standards in teaching, research and industrial liaisoning, rated by the international surveys conducted by Professor Jude Sommefield of Georgia Tech, USA since 1964 for every five year period as well as every year which included all IITs and IISc. Besides, it is among the top 12 departments in the world and in terms of productivity as measured by papers per faculty per dollar spent, it is number one in the world.

The Confederation of Indian Industries (CII) and AICTE survey has ranked Chemical Engineering Department as No. 1 in the country for best Industry linked Institute, consecutively for 3 years in a row 2014 to 2016.

The number of papers published in peer reviewed journals per faculty is also the highest in India. The FIST program of DST has also revealed that the Chemical Engineering Department is the Best Department in all engineering departments in India. This is again the record which has been held due to the research contributions of faculty in international journals of repute. The value and impact of our research is reflected in highest number of papers per faculty member, highest impact factor per paper, and highest number of citations for papers of Chemical Engineering Department. The faculty has been acting as consultants to industry and the earnings are the highest for any engineering department in India. During the last 5 years, more than 400 peer reviewed international papers have been published and more than 50 sponsored research projects have been successfully completed. The Department graduates 75 B. Chem. Engg., 45-50 Masters students and 25-30 Ph.D. students every year. At present Department has more than 200 Ph.D. students working on various research problems keeping in tune with present day needs. The support for these students come from University Grant Commission (**until 2018**) as the Department is recognized as the Centre of Advanced Studies in Chemical Engineering, Department of Atomic Energy, Department of Biotechnology, CSIR, Department of Science and Technology, and several industry sponsored projects.

### ***Major Thrust of Research Areas:***

- Development of Novel Reactors, Reactions and Separation Processes
- Computational Fluid Dynamics for Multiphase Systems
- Analysis of Multiphase Phenomena
- Novel Catalytic Materials and Processes,
- Green Technology
- Surfactant Science and Hydrotropy
- Development of Organic Chemical Processes
- Adsorptive and Chromatographic Separations
- Cavitation Phenomena, Sonochemistry
- Drying of industrial and food products

- Industrial Crystallization and Filtration
- Advanced Separation Techniques
- Energy Engineering
- Material Science
- Biotechnology
- Nanoscience and Nanotechnology
- Biochemical Characterization
- Technologies for society such as energy efficient cooking, food processing and preservation, water treatment, waste utilization

The Department of Chemical Engineering of ICT has a unique distinction in terms of awards received by the faculty members. Major Awards and Honors to the Faculty:

- Padma-vibhushan, Padma-bhushan, Padma-shree by Government of India
- Fellowships of TWAS, Royal Society (UK), INSA, NASI, INAE, IASc, MASc
- J. C. Bose Fellowship
- S. S. Bhatnagar Award
- Viswakarma medal
- VASVIK Awards
- INSA Medals for Young Scientists, Associates of Indian Academy of Sciences, INAE Young Engineer Award, Young Scientist award of NASI
- I. I. Ch. E. Awards for excellence in Basic and Applied Research
- Membership of Policy Making Bodies of Government (State & Central)
- Membership of the Editorial Boards of Reputed International Journals
- Directorship of Public Limited Companies

The “HOMEPAPER” or “DESIGN PROJECT” of the final year undergraduate students have been repeatedly rated as the best by IChE and Ambuja Cements and Sir P.C. Ray Foundation. The Ph.D. students have also bagged many awards at national and international conferences. Students have also received Outstanding Young Chemical Engineer (OYCE) of IChE several times. The prestigious N. R. Kamat Chemical Engineering Quiz Trophy have been won by Chemical Engineering Department many times in succession. The chemical engineering research students have also won several prestigious awards such as **Bill & Melinda Gates Foundation Award, Dell Social Innovation Award, Agilent young researcher and Mondialogo Award of UNESCO.**

The department has dedicated all the activities for the benefit of chemical industry and society. This is also reflected in the vision and mission of the Department.

## **Vision**

We will strive to be a vibrant department, with continuously evolving curricula and programmes that will charter the future of chemical, biological, materials and energy industries of the nation and be on par with the very best in the world through the participation and scholarship of our faculty, and students who will be torch bearers in education and research and have great impact in solving societal needs for the benefit of mankind at large.

## **Mission**

We will create an atmosphere conducive to generate new knowledge at every opportunity for our students at large. Our education will enable new chemical engineering solutions to meet the need of all segments of society with regard to material and energy, while protecting the environment and conserving the natural resources. Our endeavors will enhance the public welfare. Our activities will not be limited to class-rooms but will extend to a greater multi and cross disciplinary platform to conduct research, discovery, technology development, service to industry and entrepreneurship in consonance with India's aspiration to be a welfare state. We will team chemical engineer with professionals in other disciplines to arrive at better solutions. We will provide all students with a strong foundation in chemical engineering and applied sciences to encourage them to be our ambassadors at national and international level, in whatever professional activity they undertake to serve the society. Through our vision, we will serve the chemical engineering profession and society and strive to reach the summit as a team and stake-holders and as role models to the younger generation.

## **Department of Chemical Engineering in tune with the best**

The undergraduate program has an intake of 75 students. The course syllabus has been designed by keeping in mind the Chemical Engineering syllabi of various international institutions. It is regularly updated keeping in mind the changing needs of the times. Nearly 50% of our undergraduate students choose to pursue further education in the topmost universities worldwide, namely, MIT, Minnesota, Stanford, Caltech, Delaware, UC Santa Barbara, Purdue, etc. The remaining opts for jobs in the Chemical Industry. The students are well paid and picked up by the top most industry within the country as well as outside the country well before the course gets over. The course content is thus geared towards a combination of rigorous theory and practical applications. The course is intended to bring out Chemical Engineers that can serve the academia and industry in particular and society and the nation in general. The course syllabus contains a combination of theory courses as well as laboratory experimentation. This inculcates a habit of relating observations to fundamentals. In addition, the students spend six – eight weeks in industry during their vacations, so as to update themselves with real life industrial situations. In doing so, they get an opportunity to apply theory to real – life problems. The students are also made to do independent projects, seminars and home papers. This develops their independent thinking and creative ability. It



helps them analyze a given problem through various angles and synthesize innovative engineering solutions. Faculty members share their learning in industrial consultation in their classroom teaching. Undergraduate students are encouraged to carry out undergraduate summer research in ICT as well as other premier research institutes. Sometimes this work is also published in International peer reviewed journals. All these features make the Chemical Engineering course, most sought after in the country. The Chemical Engineering Department also caters to the 7 branches of Chemical Technology of the B. Tech. courses as well as Pharmacy in the relevant subjects.

Chemical Engineering Department also offers **Master of Chemical Engineering** course with intake of 30-40. This is a two year course with one year dedicated for research activity. Students work on real life problems faced by industry using modern research tools. Department also caters to other M. Tech courses such as **Green Technology, Bioprocess Technology, Perfume and Flavor Technology**. Looking at the importance of safety in chemical operations and frequent request from Industry, Department has also started since 2015, a Certificate course in **Chemical Safety Management**.

The programs conducted by the Department have excellent placement records. About 50% students pursue their career in Research and opt for M.S. and Ph.D. degree in leading US universities and other countries. Some of the students enroll for Management degree in IIMs and the rest of the students get placed in Chemical and allied Industries. The salary range for students placed in industries is 6 to 20 lakhs per annum.

The chemical engineering department of ICT has lion's share in the first generation entrepreneurs, since the inception of the Institute. Out of over 600 first generation entrepreneurs of ICT, almost 50% are from Chemical Engineering Department. However, these developments took place due to certain geographical advantages of Mumbai, such as being close to harbor or being an international trade center. **The entrepreneur development cell is being proposed to promote the spirit of techno-entrepreneurship in a bigger way.** This will catapult ICT into the world stage as Stanford of East.

Almost all the faculty members of the Department have Ph.D. Degree and guide Ph.D. students. The faculty members have world recognition in their chosen field of research. **Due to consistent interaction with Industries, the faculty members impart knowledge beyond syllabus to the students and prepare them for the needs for society.** Many of the faculty members have been awarded as Best Teacher at State and National level. Faculty members apart from teaching, research and industrial consultation, also help in government bodies in policy making and proposal evaluations. **Some of the faculty members also serve on editorial board of prestigious International journals.** The Department has vibrant environment and young faculty members are trained and supported by senior faculty to solve their problems. At present, the average age of the faculty members in the Department is 46. Due to the spectacular performance of the Department in last several decades, Department has

attracted many young scientists/researchers from reputed universities abroad to be part of faculty members on regular positions, faculty recharge programs, INSPIRE program and DAE scientist positions. Department also has several endowment positions which help to attract and retain young as well as experienced teachers and researchers. **Recently Dr. (Ms.) Mannepalli Lakshmi Kantam, Former Director of IICT, Hyderabad, has joined as Dr. B. P. Godrej Distinguished Professor and Dr. Pushpito K. Ghosh, Former Director of CSMCRI has joined as K. V. Mariwala – J. B. Joshi Distinguished Professor.** Apart from regular full time endowments, Department has several other endowments under which Scientists/ Professors from foreign/other universities visit us, deliver lectures, interact with faculty and students.

Collaborative Academic Programs have been initiated with national and international institutes/R&D laboratories and industries. Following is the list of major organizations:

#### **National:**

- ❖ National Chemical Laboratory, Pune, India
- ❖ Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. (Gokul Dairy)
- ❖ NMIMS- Nanoparticle synthesis and characterization
- ❖ COEP, Pune
- ❖ Bhabha Atomic Research Centre, India
- ❖ Dr. Babasaheb Ambedkar Technological University, Lonere
- ❖ Sardar Patel College of Engineering, Mumbai
- ❖ Shri Guru Gobind Singhji Institute of Engineering and Technology (SGGSIE&T), Nanded
- ❖ International Centre for Genetic Engineering and Biotechnology (ICGEB), New Delhi,
- ❖ CSIR-National Institute for Interdisciplinary Science and Technology, Trivandrum, India,
- ❖ Centre for Advanced Bioenergy Research, Indian Oil Corporation Limited, India, DBT New and Extension Proposals, Indo Australia Grand Challenge Project, Indo UK BBSRC RICEFUEL Project
- ❖ The Energy and Resources Institute (TERI), New Delhi, , Indo Australia Grand Challenge Project
- ❖ CSIR-Central Salt and Marine Chemical Research Institute (CSIR-CSMCRI), Bhavnagar, India, Indo UK BBSRC SuBBSea Project
- ❖ Tata Institute of Social Sciences, Mumbai (TISS),
- ❖ Chemical Engineering Department, VIT, Pune
- ❖ Chemical Engineering Department, Sinhgad Institute of Technology, Pune
- ❖ Chemical Engineering Department, AISSMS College of Engineering, Pune
- ❖ Chemical Engineering Department, VNIT, Nagpur
- ❖ National Institute of Research in Reproductive Health, Parel, Mumbai
- ❖ Foundation of Medical Research, Mumbai, India
- ❖ National Burns Centre, Airoli, Navi-Mumbai

### **International Collaboration:**

- ❖ Bradford University, UK, Co-crystallization under UKIRI
- ❖ Centre for Tropical Crops and Biocommodities, Queensland University of Technology, Brisbane, Australia, Prof. William Doherty, Dr. Philip Hobson, Indo Australia Grand Challenge Project.
- ❖ Centre for Energy, The University of Western Australia, Perth, Australia, Prof. Dongke Zhange, Indo Australia Grand Challenge Project.
- ❖ CSIRO Energy Transformed Flagship, North Ryde, New South Wales, Australia,
- ❖ Dr. Victoria Haritos, Indo Australia Grand Challenge Project.
- ❖ NSW Department of Primary Industries, New South Wales, Australia,
- ❖ Dr. Tony Vancov, Indo Australia Grand Challenge Project.
- ❖ Centre for Biomolecular Sciences, University Park, The University of Nottingham, UK, Prof. Nigel Minton, Indo UK BBSRC RICEFUEL Project.
- ❖ School of Biological Sciences, Queens University of Belfast, UK, Prof. Christine Maggs, Indo UK BBSRC SuBBSea Project.
- ❖ School of Biological and Biomedical Sciences, Durham University, Prof. John Bothwell, Indo UK BBSRC SuBBSea Project.
- ❖ Institute of Biological, Environmental and Rural Sciences, Aberystwyth University, Aberystwyth, Dr. David Bryant, Indo UK BBSRC SuBBSea Project.
- ❖ Centre for Synthetic and Systems Biology and School of Biological Sciences, The University of Edinburgh, Edinburgh, UK, Dr. Chris French, Indo UK BBSRC SuBBSea Project.
- ❖ Bangor University, Bangor, Gwynedd, UK, Dr. Katherine Steele, Dr. Lewis Le Vay, Indo UK BBSRC SuBBSea Project.
- ❖ The University of York Wentworth Way, York, UK, Dr. Neil Bruce, Dr. Simon Mc Queen Mason, Indo UK BBSRC RICEFUEL Project.
- ❖ Institute for Cell and Molecular Biosciences, Newcastle University, UK, Dr. Harry Gilbert, Indo UK BBSRC RICEFUEL Project.
- ❖ Department of Biological and Medical Sciences, Oxford Brookes University, UK, Dr. David A Fell, Indo UK BBSRC RICEFUEL Project.
- ❖ Department of Chemical Engineering, Centre for Process System Computations, Curtin University, Perth, Western Australia, Prof. Vishnu Pareekh, Dr. Ranjit Utikar, Indo Australia Grand Challenge Project, AISRF DBT Project.
- ❖ National University of Singapore, Singapore
- ❖ Norwegian University of Science and Technology, Norway
- ❖ Lappeenranta University of Technology, Finland
- ❖ Otto von Guericke University of Magdeburg, Germany
- ❖ King Mongkut's University of Technology (KMUTT) – Bangkok, Thailand
- ❖ University of West Hungary, Hungary
- ❖ University of Paderborn, Germany
- ❖ Professor Prodromos Daoutidis,

- ❖ University of Minnesota.
- ❖ University of New Castle
- ❖ University of Minho, Portugal

#### **Industries at International level:**

- ❖ The Coca Cola Company
- ❖ Bio-Rad laboratories USA
- ❖ Pepsico Inc, USA
- ❖ British Petroleum International
- ❖ Oxbow Ltd.
- ❖ Ecosphere Technologies

The Department is well-equipped with the state of art research facility. The list of major instrument added in last five years is provided below:

- ❖ Maliksons LAB-30` Laboratory Model Single Screw Extruder
- ❖ Microreactors
- ❖ Scanning electron microscope
- ❖ Particle size analyzers, Bettersizer
- ❖ Particle size analyzers, Malvern
- ❖ High performance computing
- ❖ Thermal Imager Testo 885-2
- ❖ Variable Wavelength Detector VWD-3100
- ❖ High Speed Refrigerated Centrifuge
- ❖ Micro Ultra Centrifuge
- ❖ Nitrogen Generator
- ❖ Fixed Bed Micro Reactor
- ❖ High Pressure Reactor
- ❖ Agilent Nano-LC
- ❖ Agilent Capillary Electrophoresis
- ❖ ICP-AES
- ❖ GC-MS
- ❖ HPLCs with different detectors

#### **Centres of Excellence in Department**

In the X<sup>th</sup> and XI<sup>th</sup> Five Year Plan, BARC and Department of Chemical Engineering, ICT had undertaken a joint research program encompassing several DAE research projects in the Chemical Engineering field. Through the Virtual Centre, called, DAE-ICT Centre for Knowledge Based Engineering, BARC scientists and ICT faculty have collaborated and very successfully completed several projects. In view of the success of the collaborative program through the Centre for Knowledge Based Engineering, BARC and IGCAR proposed to enlarge the scope of



collaboration by establishing the DAE-ICT Centre for Chemical Engineering Education and Research that will synergize the strengths of both these Organizations. The Centre strives to develop innovative technologies to tackle the problems of efficient nuclear fuel utilization in the second and third stages of nuclear power program.

Based on the spectacular and consistent performance of the Department of Chemical Engineering, UGC has awarded first ever Networking Resource Centre in Chemical Engineering, in October 2008, to undertake following activities:

1. Research, training and skills development of the faculty and research scholars through periodic discussion, workshop and summer/winter schools
2. Capacity building by adopting faculty and Departments for augmenting their research skills and to mentor them
3. Hosting and facilitating researcher from other institutes/universities for better collaboration
4. Augmentation of information resource facility of the Department to provide quality research information to other institutes/researchers
5. To enhance and build the state of the art in-house research infrastructure and other research facilities in the Department.

The rapidly changing face of research in chemical engineering offers new opportunities for integrating new research areas within its fold and several workshops, courses, demonstration experiments, regular experiments and seminars have been organized by the Centre. The objective of many of these activities is to acquaint the Chemical Engineering community especially from academic institutions with the emerging face of our discipline, and to meet the new challenges that it poses to contribute at the leading edge. The idea is also to train the academic fraternity so that the overall research and development in chemical engineering is promoted. The interactive workshops also aim at initiating a dialogue on how the new face of Chemical Engineering can be used to address problems, specific to us as a growing nation. The vacation periods, long weekends and week-long program are undertaken which are publicized on the homepage of the institute and also communicated to all chemical engineering Departments.

## IICChE Chemical Engineering Congress (ChemCon, 2013)







## Ozone Day Celebration, 2015



## World Forum for Crystallization, Filtration and Drying (2013, 2014)







### Activities under UGC-NRC centre





1. Year of establishment: 1934
2. Is the Department part of a School/Faculty of the university? Yes
3. Names of programmes offered:

| Sr. No. | Course                           | UG/PG | Degree Abbreviation |
|---------|----------------------------------|-------|---------------------|
| 1       | Bachelor of Chemical Engineering | UG    | B. Chem. Engg.      |
| 2       | Master of Chemical Engineering   | PG    | M. Chem. Engg.      |
| 3       | Ph.D. (Tech)                     |       |                     |
| 4       | Ph.D. (Sci)                      |       |                     |

4. Interdisciplinary programmes and departments involved:

| Sr. No. | Course                                     | Other depts. Involved         |
|---------|--------------------------------------------|-------------------------------|
| 1       | M.Tech. (Bioprocess Technology)            | Foods, DBT-ICT Centre         |
| 2       | M.Tech. (Green Technology)                 | Chemistry, Polymers, Oils     |
| 3       | M.Tech. (Perfumery and flavour Technology) | Dyes, Oils and Pharmaceutical |

5. Courses in collaboration with other universities, industries, foreign institutions, etc.

| Sr. No. | Course                                           | UG/PG                       |
|---------|--------------------------------------------------|-----------------------------|
| 1       | Post graduate Diploma in Chemical Technology     | PG/ PhD/ industry personnel |
| 2       | Certificate course on safety and risk management | PG                          |

6. Details of programmes discontinued, if any, with reasons: No
7. Examination System: Semester
8. Participation of the department in the courses offered by other departments:

| Sr. No. | Course                                 | UG/PG |
|---------|----------------------------------------|-------|
| 1       | B.Tech.                                | UG    |
| 2       | M.Tech. Bioprocess Technology          | PG    |
| 3       | M.Tech. Green Technology               | PG    |
| 4       | M.Tech. Perfume and flavour Technology | PG    |

9. Number of teaching posts sanctioned, filled and actual (Professors/Associate Professors/Asst. Professors/others)

|                      | Sanctioned | Filled | Actual<br>(including CAS & MPS) |
|----------------------|------------|--------|---------------------------------|
| Professor            | 05         | 02     | 08                              |
| Associate Professors | 06         | 02     | 02                              |
| Asst. Professors     | 06         | 02     | 02                              |
| Other                | -          | 08     | 09                              |

\*Other includes endowment positions, INSPIRE fellows and UGC FRPs



**1. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance.**

| Sr. No. | Name of the faculty member | Highest Qualification | Designation                                                                             | Area of Specialization                                                                                                                                                | Experience (years) | Research Under Guidance (Ph.D.) Last four years |
|---------|----------------------------|-----------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------------------------------|
| 1       | Prof. G. D. Yadav          | PhD                   | Professor                                                                               | Catalysis, process intensification                                                                                                                                    | 37                 | 17                                              |
| 2       | Prof. B. N. Thorat         | Ph. D.                | Professor and Head Department of Chemical Engineering                                   | Drying and Filtration                                                                                                                                                 | 28                 | 7                                               |
| 3       | Prof. Arvind M. Lali       | Ph. D.                | Professor of Chemical Engineering Head- DBT-ICT CEB                                     | Chemical Engineering                                                                                                                                                  | 30                 | 8                                               |
| 4       | Ashwin W. Patwardhan       | Ph. D.                | Professor                                                                               | Chemical Engineering, Transport Phenomena, Computational Fluid Dynamics                                                                                               | 19                 | 6                                               |
| 5       | Vishwanath Dalvi           | Ph.D                  | R. A. Mashelkar Assistant Professor                                                     | Chemical Engineering (specifically applied thermodynamics and statistical mechanics)                                                                                  | 7                  | 0                                               |
| 6       | Parag R. Gogate            | Ph. D.                | Associate Professor in Chemical Engineering at Institute of Chemical Technology, Mumbai | Sonochemistry, Hydrodynamic Cavitation, Process Intensification, Water and Wastewater Treatment, Enzymatic Reactions, Polymer Chemistry, Advanced Oxidation Processes | 15                 | 06                                              |
| 7       | Jyeshtharaj B. Joshi       | Ph.D                  | Honorary Distinguished Professor                                                        | Chemical Engineering (Fluid Mechanics, Multiphase Reactor Design, Computational Fluid Dynamics, Atomic Energy, Solar Energy, Bio-Energy)                              | 43                 | 06                                              |
| 8       | Prof. Sunil S. Bhagwat     | Ph.D.                 | Professor of Chemical                                                                   | Energy and exergy, Interfacial science and                                                                                                                            | 31                 | 4                                               |

|    |                            |                     |                                                 |                                                                                                                                                                                                                                                                                                                                                                         |    |    |
|----|----------------------------|---------------------|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|
|    |                            |                     | Engineering                                     | engineering, computer process simulations                                                                                                                                                                                                                                                                                                                               |    |    |
| 9  | Anand V. Patwardhan        | PhD                 | Professor of Chemical Engineering               | Chemical Engineering (Membrane Separation, Green Technology)                                                                                                                                                                                                                                                                                                            | 30 | 6  |
| 10 | Dr. C. S. Mathpati         | Ph.D                | Assistant Professor                             | Computational Fluid Dynamics, Multiphase Reactor Design, High temperature corrosion analysis                                                                                                                                                                                                                                                                            | 8  | 2  |
| 11 | Virendra K. Rathod         | Ph.D                | Professor                                       | Natural production extraction, advanced separation, process development, sonochemistry                                                                                                                                                                                                                                                                                  | 14 | 13 |
| 12 | P D Vaidya                 | PhD                 | RCF Associate Professor of Chemical Engineering | Separation, Reaction Engineering                                                                                                                                                                                                                                                                                                                                        | 10 | 05 |
| 13 | K V Marathe                | M.Tech.             | Associate professor in metallurgical engg       | Waste water treatment, membrane separation, photocatalytic ozonation, life cycle assessment, sustainability analysis                                                                                                                                                                                                                                                    | 31 | 04 |
| 14 | Dr. Ratnesh Jain           | PhD (Pharmaceutics) | UGC-Assistant Professsor                        | Biomaterials, Biologics and Biosimilar characterization, Biologics formulation, continuous process development for nanoparticles                                                                                                                                                                                                                                        | 05 | -- |
| 15 | Dr. Jyoti Sontakke-Gokhale | Ph.D                | UGC Assistant Professor                         | Bioprocess Technology, Food Biotechnology, Waste Management                                                                                                                                                                                                                                                                                                             | 3  | -- |
| 16 | Prof. A. B. Pandit         | Ph.D.               | UGC Research Scientist, "C" (Professor)         | Physical and Chemical Processing applications of Cavitation phenomena, Sonochemistry, Ballast Water Treatment, Mixing in Mechanically agitated contactors: Experimental and CFD Investigations, Modeling of Stoves, Use of non-conventional energy sources, Synthesis of Nanomaterials<br>Biotechnology: Protein modification, Cell disruption and Microbial fuel cell. | 30 | 14 |

|    |                        |               |                                                                                                  |                                                                                        |    |    |
|----|------------------------|---------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----|----|
| 17 | Pushpito Kumar Ghosh   | PhD Chemistry | Distinguished Professor                                                                          | Chemical Science (Innovation and Process Research)                                     | 40 | -- |
| 18 | Prof. M Lakshmi Kantam | PhD           | Dr. B P Godrej Distinguished Professor                                                           | Chemistry                                                                              | 35 | -- |
| 19 | Prof. V. G. Gaikar     | Ph.D ( Tech.) | Bharat Petroleum Distinguished Professor of Chemical Engineering & Vice-Chancellor, BATU, Lonere | Reactive Separations, Molecular simulations, Clean Technology, Biofuel, Product Design | 33 | 13 |

**11. List of senior Visiting Fellows, adjunct faculty, emeritus professors:**

| Sr. No. | Name                   | Designation        |
|---------|------------------------|--------------------|
| 1       | Professor M. M. Sharma | Emeritus professor |
| 2       | Dr. M. Sriram          | Visiting Faculty   |
| 3       | Mr. Yogesh Anvekar     | Visiting Faculty   |
| 4       | Ms. Anjali Mujumdar    | Visiting Faculty   |
| 5       | Mr. Goyal O.P.         | Visiting Faculty   |
| 6       | Dr. Ravi Mariwala      | Visiting Faculty   |
| 7       | Mr. Anirudha Shenvi    | Visiting Faculty   |
| 8       | Dr. Sachin Jadhav      | Research Associate |

**List of Endowments:**

| Sr. No. | Date       | Name of External Experts | Topic                                                                          | Endowment                                         |
|---------|------------|--------------------------|--------------------------------------------------------------------------------|---------------------------------------------------|
|         | 28.11.2013 | Professor D.H. Thompson  | Cyclodextrin Based Materials for Gene Delivery and Niemann-Pick C Type Therapy | Shri G.M. Abhyankar Memorial Distinguished Fellow |
|         | 28.11.2013 | Professor D.H. Thompson  | Cyclodextrin Based Materials for Gene Delivery and Niemann-Pick C Type Therapy | Shri G.M. Abhyankar Memorial Distinguished Fellow |
|         | 02.01.2014 | Professor Prashant Jain  | Elucidating Chemical Reactions on the Nanoscale                                | Golden Jubilee Visiting Fellowship                |

|    |            |                                            |                                                                                                          |                                                                                 |
|----|------------|--------------------------------------------|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
|    | 09.01.2014 | Professor R. Krishna<br>Univ. of Amsterdam | Molecular Traffic in<br>Nanoporous Materials                                                             | B S Joshi<br>Distinguished<br>Fellow                                            |
|    | 16.01.2014 | Dr. Ken Williams                           | The science and technique<br>behind Raman Spectrometer<br>and its application in Material<br>Sciences    | TEQIP                                                                           |
|    | 30.01.2014 | Dr. Uday Shenoy                            | Targeting and Network<br>Synthesis for Optimal Use of<br>Resources                                       | Shrimati<br>Kusumben and<br>Shri Mathradas<br>Kothari Visiting<br>Professorship |
| 7  | 4.02.2014  | Prof. Artur Cavaco-<br>Paulo,              | Micro/nanotechnology and<br>Biotech for pharma and<br>personal care                                      | Professor B.D.<br>Tilak Visiting<br>Fellowships                                 |
| 8  | 20.02.2014 | Dr. Allen P. Minton                        | How biochemistry in vitro can<br>differ from biochemistry in vivo                                        | K.J. Somaiya<br>Visiting<br>Professor<br>Fellowship                             |
| 9  | 13.03.2014 | Kiran Golwalkar                            | Safety Management and Project<br>Management in Chemical<br>Industry                                      | Prof. R.A.<br>Rajadhyaksha<br>Memorial<br>Lecture                               |
| 10 | 27.03.2014 | Kiran Golwalkar                            | Safety Management and Project<br>Management in Chemical<br>Industry                                      | TEQIP                                                                           |
| 11 | 07.04.2014 | Prof. Suresh Bhatia                        | Quantum molecular sieving of<br>light isotopes                                                           | Golden Jublee<br>Visiting<br>Fellowship                                         |
| 12 | 17.04.2014 | Prof. Dr. Asit Baran<br>Mandal             | How much we know about self-<br>aggregated / self assembled<br>systems? Utility of various<br>techniques | B.D. Tilak<br>Visiting Fellow                                                   |
| 13 | 21.04.2014 | Prof. Alfredo Ortiz                        | The importance of Ionic<br>Liquids for attaining sustainable<br>process intensification                  | Golden Jublee<br>Visiting<br>Fellowship                                         |
| 14 | 02.05.2014 | Dr. Jeff Kenvin                            | Textural Characterization and a<br>Unified Approach to Isotherm                                          | K.J. Somaiya<br>Visiting                                                        |



|    |                          |                            |                                                                                                                                                     |                                                                                            |
|----|--------------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
|    |                          |                            | Modeling & Thermodynamic Parameters                                                                                                                 | Professor                                                                                  |
| 15 | 29.05.2014               | Prof. S.P. Moulik          | Energetic of Micelle formation: Non agreement between the Enthalpy Measured by the direct method of Calorimetry & the indirect method of Van't Hoff | Dr. J.P. Kane Visiting Fellowship                                                          |
| 16 | 09.07.2104               | Dr. Garg                   | Simultaneous Production of US Grade Gasoline and Pure Aromatics from High Severity FCC Gasoline                                                     | Prof. R.A. Rajadhyaksha Memorial Lecture                                                   |
| 17 | 14.07.2014               | David Hodge                | Alkaline and Oxidative Chemical Pretreatments and Fractionations for the Production of Fuels, Chemicals, and Materials from Lignocellulose          | Golden Jubilee Visiting Fellowship                                                         |
| 18 | 16.07.2014<br>17.07.2014 | Ashutosh Sharma            | Self-organization on Small Scales: Fabrication beyond the Top-down and Bottom-up                                                                    | Shri V.V. Mariwala Visiting Professorship                                                  |
| 19 | 28.07.2014               | Dr. R. Vinu                | Energy and Resource Recovery via Catalytic Fast Pyrolysis of Biomass, Polymers and Algae                                                            | -                                                                                          |
| 20 | 16.09.2014               | Prof. M.M. Sharma          | Reminiscences of a career                                                                                                                           | -                                                                                          |
| 21 | 29.09.2014               | Professor Bala Subramaniam | Resource-Efficient Catalytic Technologies for Emerging Feedstocks                                                                                   | The Dow Professor M.M. Sharma Distinguished Visiting professorship in Chemical Engineering |
| 22 | 15.12.2014               | Dr. Nejat Rahmanian        | Seeded Granulation                                                                                                                                  | K.J. Somaiya Visiting Professorship                                                        |
| 23 | 21.01.2015               | Prof. P.Somasundaran       | Structure Property/Performance Relationships for Synergy and Antagonism New possibilities                                                           | Dr. Balwant S. Joshi Distinguished                                                         |

|         |            |                                                                                                                                                           |                                                                                                             |                                                               |
|---------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
|         |            |                                                                                                                                                           | of greener chemicals for sustainable and benign consumer products                                           | Visiting Professorship                                        |
| 24      | 10.2.2015  | Prof. Mohan Karmarkar                                                                                                                                     | Practical Reactor Design                                                                                    | -                                                             |
| 25      | 20.08.2015 | Dr. Surendra U. Kulkarni<br><br>E-301 Mantri Woodlands, Bannerghatta Road, Bangalore-560076                                                               | Water - Technologies for its security in future                                                             | Professor R.A. Rajadhyaksha Memorial Lecture                  |
| 26      | 28.08.2015 | Dr. Madhukar Rao                                                                                                                                          | Green Polymer Technology for Coatings Applications: An Innovation Story from Ideation to Commercialization” | Golden Jubilee Visiting Fellowship                            |
| 3<br>27 | 04.09.2015 | Mr. Ahmet Üzümcü<br><br>Director-General, Organisation for the Prohibition of Chemical Weapons (OPCW)                                                     | Ionic Liquids in Industry                                                                                   |                                                               |
| 28      | 21.09.2015 | Prof. Pradeep B. Deshpande<br><br>Professor Emeritus of Chemical Engineering, University of Louisville & President, Six Sigma and Advanced Controls, Inc. | Profound Implications of Minimum Variance Control”                                                          | Golden Jubilee Visiting Fellowships Fellow                    |
| 29      | 29.08.2016 | Prof. Bipin Vora<br>Consultant and R & D Advisor<br>UOP/Honeywell Fellow (Retired) AIChE                                                                  | “From Concept to Commercialization                                                                          | The Dow Prof. M.M Sharma Distinguished Visiting Professorship |

|    |            |                                                                                                                                                                                               |                                                                                                         |                                                              |
|----|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
|    |            | Fellow, 1324 Kallien Avenue, Naperville, IL 60540                                                                                                                                             |                                                                                                         | in Chemical Engineering                                      |
| 30 | 18.01.2016 | Prof. Doraiswami Ramkrishna<br><br>Harry Creighton Pepper Distinguished Professor<br>School of Chemical Engineering<br>Purdue University                                                      | Analysis of Bioprocesses. Dynamic Modeling is a Must                                                    | Professor B.D. Tilak Visiting Fellowships                    |
| 31 |            | Dr. Gautam G. Yadav<br><br>Energy Institute, City College of New York, New York                                                                                                               | Advanced Alkaline MnO <sub>2</sub> -Zn Batteries: Accessing the Second Electron Capacity                | Golden Jubilee Visiting Fellowship                           |
| 32 | 01.02.2016 | Prof. G.V. Reklaitis<br><br>School of Chemical Engineering<br><br>NSF ERC for Structured Organic Particulate Systems, Purdue University<br>Wet Lafayette IN                                   | Recent Advances in Continuous Pharmaceutical Manufacturing                                              | Professor B.D. Tilak Visiting Fellowships                    |
| 33 | 22.03.2016 | Prof. Rajagopalan Srinivasan<br><br>Indian Institute of Technology Gandhinagar<br>Vishwakarma Government Engineering College Complex, Chandkheda, Visat-Gandhinagar Highway, Ahmedabad, India | Cognitive Engineering for Process Safety: Quantifying the Building Blocks of Human Error                | Dr. G.P. Kane Visiting Professorship in Chemical Engineering |
| 34 | 10.11.2016 | Prof. Zhou Weibiao<br>Professor & Director, Food Science & Technology Programme, National University of Singapore                                                                             | Designing advanced control systems for modern bread-making process: from dough freezing to bread baking | Professor Arun Mujumdar Distinguished Visiting Professor     |

|    |            |                                                                                                                                                |                                                                                                                                                                                                      |                                                                                                                     |
|----|------------|------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| 35 | 24.11.2016 | Mr. S.Ganapathy, M.S.,<br>FIE Chartered Engineer<br>& Project Consultant                                                                       | Status of Chemical Industries in<br>India & Job Prospects                                                                                                                                            |                                                                                                                     |
| 36 | 14.12.2016 | Prof. Wilhelm Höflinger<br>Krems/Lower Austria,<br>Austria                                                                                     | 1) Fundamentals and<br>measurement of particles<br>Characterization of particle<br>systems<br>2) Particle size measurement<br>methods Optical imaging<br>methods                                     | Professor B.D.<br>Tilak Visiting<br>Fellowships                                                                     |
| 37 | 23.12.2016 | Prof. Vikramaditya G.<br>Yadav<br>Assistant Professor in<br>Department Of<br>Chemical & Biological<br>Engg. University of<br>British, Columbia | Building Brains: Marrying<br>Engineering & Medicine in the<br>Fight Against Alzheimer<br>Disease                                                                                                     | Shri G.M. (alias<br>Dada)<br>Abhyankar<br>Memorial<br>Distinguished<br><br>Fellowship in<br>Chemical<br>Engineering |
| 38 | 13.01.2017 | Prof. Daniel G. Nocera<br>Chemist & leading<br>Researcher in renewable<br>energy                                                               | Fuels to Food from Sunlight,<br>Air and Water                                                                                                                                                        | Shri V.V.<br>Mariwala<br>Visiting<br>Professorship in<br>Chemical Engg                                              |
| 39 | 21.01.2017 | Dr. Rajender S. Varma<br>United States<br>Environmental<br>Protection Agency                                                                   | Greener routes to Organics and<br>Nanomaterials: Sustainable<br>Applications of Magnetic<br>Nanocatalysts and Modified<br>Graphitic Carbon Nitrides in<br>Catalysis and Environmental<br>Remediation | Shri K.J.<br>Somaiya Visiting<br>Professorship in<br>Chemical Engg.                                                 |
| 40 | 25.01.2017 | Dr. Ajay Kumar Dalai<br>Professor of Chemical<br>Engineering University<br>of Saskatchewan,<br>S K Canada                                      | Novel Activated Carbon<br>Materials Development for<br>Various Industrial Applications                                                                                                               | Smt. Kusumben<br>and Shri<br>Mathradas<br>Kothari Visiting<br>Professorship<br><br>In Chemical<br>Engg.             |
| 41 | 01.02.2017 | Prof. Sivaram Arepalli<br>Department of Chemical                                                                                               | Status and Future of<br>Nanomaterials in Energy                                                                                                                                                      | Golden Jubilee<br>Visiting                                                                                          |



|    |            |                                                                                                                                     |                                                                                                                                                                                                          |                                                                                                                         |
|----|------------|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
|    |            | and Biomolecular Engineering, Rice University, Houston, TX                                                                          | Storage                                                                                                                                                                                                  | Fellowship                                                                                                              |
| 42 | 23.02.2017 | Mr. Dilip Kapasi, Lead Process Engineer Project Management, LNP Projects, United States                                             | Status of LNG, Regasification plants w r t India<br>* Deepwater gas exploration - topside/MEG<br>* Role of a chemical engineer in today's India<br>* ICT- our strongest Institution from a vantage point | Golden Jubilee Visiting Fellowship In Chemical Engg                                                                     |
| 43 | 18.04.2017 | Dr. Mugdha Gadgil Sr. Scientist National Chemical Laboratory, Pune                                                                  | Recombinant biopharmaceuticals: from choosing the best clones to managing product quality                                                                                                                | Professor R.A. Rajadhyaksha Memorial Lecture series Endowment in Chemical Engineering                                   |
| 44 | 18.07.2017 | Prof. Amol V. Janorkar Biomedical Materials Science, School of Dentistry University of Mississippi Medical Centre, Jackson, MS, USA | Multifunctional Biopolymer Coatings and Scaffolds for Tissue Engineering and Drug Delivery                                                                                                               | Golden Jubilee Visiting Fellowship                                                                                      |
| 45 | 02.08.2017 | Prof. Doraiswami Ramkrishna<br>H.C. Pfeffer Distinguished Professor,<br><br>Purdue University West Lafayette, USA                   | Modeling Transfer of Antibiotics Resistance among Bacterial Species                                                                                                                                      | Dr. Balwant S. Joshi Distinguished Visiting Professorship in Chemical Engineering/Chemical Technology/Applied Chemistry |
| 46 | 07.08.2017 | Professor Upal Ghosh Associate Editor, Environmental Toxicology and Chemistry, Department                                           | Remediation of Polluted Sediments by Controlling Bioavailability                                                                                                                                         | Golden Jubilee Visiting Fellowship                                                                                      |

|    |            |                                                                                                                                                                                                       |                                                             |  |
|----|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|--|
|    |            | of Chemical, Biochemical, and Environmental Engineering, University of Maryland Baltimore County Technology Research Center. Rm 257,5200 Westland Blvd Baltimore, MD 21227                            |                                                             |  |
| 23 | 14.08.2017 | Professor Rajesh Shende<br>Associate Professor of Chemical Engineering<br>Department of Chemical and Biological Engg<br>South Dakota School of Mines and Technology<br>Rapid City, South Dakota 57701 | Advanced Nanomaterials for Hydrogen and Biofuels Production |  |

We do not have temporary faculty. Subjects related to humanities, management and communication skills are taken by visiting faculty which contribute to 6-8% of total credits.

**13. Programme-wise Student Teacher Ratio:**

| Sr. No. | Course           | Student Teacher Ratio |
|---------|------------------|-----------------------|
| 1       | B Chem Engg (UG) | 10.12                 |
| 2       | M Chem Engg (PG) | 1.6                   |

**14. Number of academic support staff(technical)and administrative staff: sanctioned, filled and actual**

| Sr. No. | Position                  | Sanctioned | Filled |
|---------|---------------------------|------------|--------|
| 1       | Higher grade stenographer | 2          | --     |
| 2       | Lower grade stenographer  | 2          | 1      |
| 3       | Technical                 | 21         | 12     |

**15. Research thrust areas as recognized by major funding agencies:**

- 1) Green chemistry and engineering
- 2) Energy science and engineering
- 3) Reactor Design
- 4) Advanced Separation Techniques
- 5) Biotechnology & biomedicine
- 6) Nanotechnology and materials science
- 7) Process systems engineering
- 8) Environmental protection and Hazardous waste management
- 9) Product Engineering
- 10) Food Dehydration

16. Number of faculty with ongoing projects from a) national b) international funding agencies and c) Total grants received. Give the names of the funding agencies, project title and grants received project-wise.

| Sr. No. | Name of Faculty | Funding Agency                                             | National/ International | Grant (in lakhs) | Duration                           | Project title                                                                        |
|---------|-----------------|------------------------------------------------------------|-------------------------|------------------|------------------------------------|--------------------------------------------------------------------------------------|
| 1       | Thorat B. N.    | Rajiv Gandhi Commission for S&T, Government of Maharashtra | National                | 25.36 lakhs      |                                    | Ultrahealth: Water Fun Station                                                       |
|         |                 | Bill and Melinda Gates Foundation                          | International           | 63 Lakhs         | 1st Nov 2013 to 30th April, 2015   | Solar Grain Dryer                                                                    |
|         |                 | Bill and Melinda Gates Foundation                          | International           | 63 Lakhs         | 1st May 2013 to 30th October, 2015 | Solar Conduction Dryer                                                               |
|         |                 | Rajiv Gandhi Commission for S&T, Government of Maharashtra | National                | 88.48 Lakh       | 2 years                            | Jaggery Granulation                                                                  |
|         |                 | Rajiv Gandhi Commission for S&T, Government of Maharashtra | National                | 194 Lakh         | 2 years                            | Industrial Scale dehydration of agricultural and marine food products value addition |
|         |                 | Gujarat Stevia Growers and Marketing                       | National                | 15.00            | 12th October, 2012 to 11th October | Stevia Processing                                                                    |

|   |             |                                                          |               |               |                               |                                                                                                                                                                                      |
|---|-------------|----------------------------------------------------------|---------------|---------------|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   |             | Federation                                               |               |               | , 2013                        |                                                                                                                                                                                      |
|   |             | Gujarat Heavy Chemical Limited                           | National      | 10.00         | 2015                          | Eco-friendly detergent                                                                                                                                                               |
|   |             | Bill and Melinda Gates Foundation                        | International | 1 million USD | January 2016 to December 2016 | Casava Tech                                                                                                                                                                          |
|   |             | Bill and Melinda Gates Foundation                        | International | 1 million USD | January 2016 to December 2016 | Solar Conduction Dryer                                                                                                                                                               |
| 2 | Bhagwat S S | IGCAR                                                    | National      | 25 Lakhs      | 3 years                       | Alternative methods/solvents for dissolution: (a) Methane sulphonic acid derivatives for dissolutions & electro winning, (b) Sonochemical method for dissolution of ThO <sub>2</sub> |
|   |             | NTPC                                                     | National      | 71 Lakhs      | 4 years                       | Improvement of Turbine Cycle Heat Rate Through Multi-component Ammonia Liquor Absorption Engine (MALAE)                                                                              |
|   |             | BRNS                                                     | National      | 16 Lakhs      | 2 years                       | Development of foam formulation                                                                                                                                                      |
|   |             | Rajiv Gandhi Commission for Science & Technology (RGCST) | National      | 266.8 Lakhs   | 4 years                       | Cold storage for Post harvest preservation of fruits & vegetables using Solar & Biomethane Heat Based                                                                                |



|   |       |                                 |          |           |          |                                                                              |
|---|-------|---------------------------------|----------|-----------|----------|------------------------------------------------------------------------------|
|   |       |                                 |          |           |          | Refrigeration                                                                |
|   |       | British Petroleum International | National | 54 Lakhs  | 4 years  | Refrigeration utilizing waste heat as energy inputs                          |
|   |       | Aditya Birla Group              | National | 1 Lakhs   | 1 year   | Polymer Surface wettability                                                  |
|   |       | IPCA                            | National | --        | 6 Months | Vapor-Liquid equilibrium thermodynamics                                      |
|   |       | FDC                             | National |           |          | Interfacial properties of eye drop formulations                              |
|   |       | Tri-Diagonal Solutions (TDS)    | National | 8 Lakhs   |          | Foaming and aeration                                                         |
|   |       | Amines and plasticizers         | National | 2.53 lakh | 3 years  | Surface studies on lean amine solvents from gas treating units               |
|   |       |                                 |          |           |          |                                                                              |
|   |       | Marico                          | National | 27.9 lakh | 3 years  | Rice bran oil extraction                                                     |
|   |       | Marico                          | National | 0.86 lakh | 3 months | Properties of vegetable oils : application of neural networks                |
|   |       | Hindustan unilever limited      | National | 10 lakh   | 1 year   | Oil-water interfacial tension of polymerized oils in presence of surfactants |
|   |       | TEQIP                           | National | 5.5 lakh  | 3 months | Process intensification using surfactants                                    |
| 3 | Dalvi | Ministry of Food                |          | 25.00     | 3 years  | Development of a Continuous Rice                                             |

|   |             |                                      |          |              |                     |                                                                                                                               |
|---|-------------|--------------------------------------|----------|--------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------|
|   | V.H.        | Processing Industries                |          | Lakh         |                     | Cooker                                                                                                                        |
| 4 | Gaikar V.G. | DAE                                  | National | 84.4 Lakhs   | 5yrs                | Design of solvent and extractant by molecular modeling for heavy metals                                                       |
|   |             | DAE                                  | National | 48.4 Lakhs   | 3 yrs               | Experimental determination of H <sub>2</sub> -I <sub>2</sub> -HI-H <sub>2</sub> SO <sub>4</sub> vapor-liquid equilibria       |
|   |             | (IGCAR)                              | National | 24.725 Lakhs | 3 yrs               | Studies in Runaway reactions                                                                                                  |
|   |             | (IGCAR)                              | National | 24.725 Lakhs | 5 yrs               | Studies on steam pyrolysis of a CHON Amide as a waste solvent management method                                               |
|   |             | (DST-AMCOS)                          | National | 79.88 Lakhs  | 2008-2012           | Advanced materials as CO <sub>2</sub> removers: A computational study of CO <sub>2</sub> sorption Thermodynamics and kinetics |
|   |             | DST                                  | National | 52           | 3 yrs               | Photochemical Reduction of CO <sub>2</sub> using CdS particles on polymeric adsorbents                                        |
|   |             | Bharat Petroleum Corporation Limited | National | 50           | (2015-2017)<br>2yrs | Selection and Regeneration of potential ionic liquid for hydro processing feed stocks                                         |
|   |             | Bharat Petroleum                     | National | 50           | (2015-              | Development of additive for use in                                                                                            |

|   |             |                             |          |                |                        |                                                                                                                                                                                                              |
|---|-------------|-----------------------------|----------|----------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   |             | Corporation Limited         |          |                | 2017)<br>2yrs          | Delayed Coker Unit (DCU) to improve liquid yield                                                                                                                                                             |
|   |             | DST                         | National | 54.4           | (2014-2018)<br>4yrs    | Design of in situ photocatalytic systems for CO <sub>2</sub> conversion into useful organic materials using CdS Nanoparticles on the new polymeric CO <sub>2</sub> specific adsorbents and graphene supports |
|   |             | HUL                         | National | Rs. 45 lakhs   | Four years             | Thermodynamics of Solubility of Tea components                                                                                                                                                               |
|   |             | HUL                         | National | Rs. 10.5 lakhs | One year               | Solubility of Ca-Stearate in water                                                                                                                                                                           |
| 5 | Gogate P.R. | DST                         | National | 10.2 Lakhs     | 2010-2012              | Development of novel treatment strategies for treatment of water containing pesticides                                                                                                                       |
|   |             | UGC                         | National | 8.6 Lakhs      | 2011-2013              | Process Intensification of emulsification and atomization                                                                                                                                                    |
|   |             | Unilever, Bangalore         | National | 11.1 Lakhs     | July 2013 to July 2014 | Wastewater treatment                                                                                                                                                                                         |
|   |             | DST (WTI Scheme), New Delhi | National | 54.4           | 2016-2019              | Treatment of Wastewater containing pesticides and emerging contaminants using novel                                                                                                                          |

|   |          |                               |               |             |                         |                                                                                                     |
|---|----------|-------------------------------|---------------|-------------|-------------------------|-----------------------------------------------------------------------------------------------------|
|   |          |                               |               |             |                         | approach of combined hydrodynamic cavitation and oxidation processes                                |
|   |          | DST (MOFPI Scheme), New Delhi | National      | 41.4        | 2016-2019               | Intensified recovery of valuable products from whey using ultrasound                                |
|   |          | Mangalam Organics Ltd.        | National      | 15          | 2017-2020               | Improved processing of camphor, terpenes and resins                                                 |
| 6 | Jain R D | DAE-BRNS                      | National      | 16.95 Lakhs | Three years (2013-2016) | Polysaccharide Based Nanocarriers for Improved Therapy of Systemic Fungal Infections                |
|   |          | DST Nanomission               | National      | 282 Lakhs   | Three years (2014-2017) | Development and evaluation of siRNA loaded nanomedicine in computational and cellular Models        |
|   |          | DBT                           | National      | 32.5        | 5 year                  | Polymeric Nano carrier for siRNA Delivery                                                           |
|   |          | Hetero Drugs Ltd., India      | National      | 3.025       | 3 year                  | Characterization of Monoclonal Antibodies                                                           |
|   |          | DAE-ICT                       | National      | 65.32       | 3 year                  | Conjugation and radio labelling of various nano-platforms for image guided theranostic applications |
|   |          | Anya Biopharm,                | International | 20.34       |                         | Activity Reduction of Peptidase                                                                     |

|   |           |           |          |                 |           |                                                                                                                       |
|---|-----------|-----------|----------|-----------------|-----------|-----------------------------------------------------------------------------------------------------------------------|
|   |           | Taiwan    |          |                 |           | Enzymes by Various Metal Ion-Reducing Agent Combinations                                                              |
|   |           | DBT       | National | 51.642          | 3 year    | Green process for the production and purification of low molecular weight Chitosan Oligomer using solid acid catalyst |
| 7 | Jha N     | DST       | National | 35 lakh         | 5 yrs     | Development of electrocatalyst for fuel cell                                                                          |
| 8 | Joshi J B | BRNS      | National | 159.14 lacs     | 5 yrs     | Development of ACE                                                                                                    |
|   |           | DAE-BARC  | National | 221.00 lacs     | 5 yrs     | Passive Decay Heat Removal system of AHWR                                                                             |
|   |           | DAE-IGCAR | National | 150 lakh        | 5 yrs     | Fumeless Dissolution in Thermo siphon and Rotary Dissolver                                                            |
|   |           | DAE-BARC  | National | Rs. 50.00 lakhs | 2007-2012 | CFD simulation of reactive (combustion) submerged gaseous jet under steady and unsteady state conditions              |
|   |           | DAE-BARC  | National | Rs. 50.00 lakhs | 2007-2012 | Studies in Synthesis and Characterization of Carbon Nanotubes by Catalytic Chemical Vapor Deposition                  |
|   |           | DAE-BARC  | National |                 | 2010-2015 | Studies on High Strength Carbon                                                                                       |



|   |          |                          |          |                 |           |                                                                                                                                     |
|---|----------|--------------------------|----------|-----------------|-----------|-------------------------------------------------------------------------------------------------------------------------------------|
|   |          |                          |          |                 |           | Fiber Composites                                                                                                                    |
| 9 | Lali A M | Bio-Rad laboratories USA | National | Rs. 22.50 lakhs | 2008-2011 | BioRad-MUICT Initiative on Adsorptive and Chromatographic Separations for Biotech and Allied Industry                               |
|   |          | Pepsico Inc, USA         | National | Rs. 98.17 lakhs | 2008-2011 | Assisted Extraction, Isolation and Scalable Chromatographic Purification & Biotransformation of Active Components from Plants/Herbs |
|   |          | General Mills            | National | \$ 45000        | 2010-2011 | Value Added Products from Milling By-products                                                                                       |
|   |          | Chemtrols India Ltd      | National | 40.00 lakhs     | 2010-2012 | Development of process for production of Lactic acid and Poly-lactic Acid                                                           |
|   |          | DST, India               | National | 1210 Lakhs      | 2014-2016 | Green Enzymatic fat-splitting technology for production of fatty acids and acyl glycerol                                            |
|   |          | DBT, India               | National | 1800 Lakhs      | 2013-2018 | DBT-ICT Centre for energy biosciences: New and extension proposals                                                                  |
|   |          | DBT-BBSRC                | National | 806 Lakhs       | 2013-2016 | Engineering enzymes, bacteria                                                                                                       |

|  |  |                   |          |        |           |                                                                                                                                                                             |
|--|--|-------------------|----------|--------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  |                   |          |        |           | and bioconversion processes for advanced biofuels from waste grain straw                                                                                                    |
|  |  | DBT, India        | National | 39.84  | 2017-20   | Biphasic fermentation for triacyl glycerol (TAG) production from pretreated lignocellulosic biomass                                                                         |
|  |  | DBT-CEB/BIPP      | National | 50.00  | 2016-17   | Pilot scale translational facility for value added chemicals from biomass                                                                                                   |
|  |  | DST-KGDS          | National | 61.35  | 2015-18   | Performance and durability improvements in the solar thermal desalination system at Narippaiyur and utilization of reject sea water for algae cultivation to produce biogas |
|  |  | DBT-AISRF, India  | National | 113.74 | 2015-2017 | Integrated biorefinery for production of sorghum grain protein Phase II                                                                                                     |
|  |  | IGSTC, DST, India | National | 115.40 | 2014-17   | Design of selective nano-porous membrane bioreactor for efficient production of bio-butanol from lignocellulosic sugars                                                     |

|  |  |                                               |          |         |         |                                                                                                        |
|--|--|-----------------------------------------------|----------|---------|---------|--------------------------------------------------------------------------------------------------------|
|  |  | DST, India                                    | National | 847.53  | 2014-16 | Green Enzymatic fat splitting technology for production fatty acids and acyl glycerols                 |
|  |  | DSIR-PACE, DST, India                         | National | 85.00   | 2014-16 | Macro-algal Biorefinery for CO2 Sequestration and production of biofuel and valued added compounds     |
|  |  | DBT-BBSRC/Su BBSea<br>(Joint Indo-UK Scheme)  | National | 201.672 | 2014-17 | Transnational approaches to resolving biological bottlenecks in macroalgal biofuel production          |
|  |  | MNRE, India                                   | National | 515.61  | 2013-16 | Improved Production of Biogas and Bio-CNG from Lignocellulosic Biomass                                 |
|  |  | DBT, India                                    | National | 1833.00 | 2013-18 | Centre for Energy Biosciences: New and Extension Proposals                                             |
|  |  | DBT-BBSRC/Ric efuel<br>(Joint Indo-UK Scheme) | National | 152.00  | 2013-16 | Engineering enzymes, bacteria and bioconversion processes for advanced biofuels from waste grain straw |
|  |  | AISRF Indo-Australia Grand Challenge          | National | 700.30  | 2014-17 | Integrated technologies for economically sustainable bio-based energy                                  |

|    |             |                         |          |          |           |                                                                                                               |
|----|-------------|-------------------------|----------|----------|-----------|---------------------------------------------------------------------------------------------------------------|
|    |             | Program,<br>DST, India  |          |          |           |                                                                                                               |
|    |             | DBT, India              | National | 68.468   | 2013-16   | Development and characterization of alternative affinity adsorbent for purification of therapeutic antibodies |
|    |             | Godrej Agrovat Ltd.     | National | 100.00   | 2016-19   | Developed of improved animal feed ingredient from seed meals                                                  |
|    |             | Bacardi & Co. Ltd.      | National | 95.61    | 2015-16   | Tea alcohol project                                                                                           |
|    |             | Godrej AgrovatPvt. Ltd. | National | 115.00   | 2014-16   | Mass cultivation of algae for aqua feed                                                                       |
|    |             | WackerChemie AG         | National | 14.49    | 2014-15   | Generation of purified phytoene from yeast cell mass                                                          |
| 10 | Marathe K V | DST                     |          | 17 lakhs | 2011-2013 | Removal of flouride from concentrated stream obtained after membrane separation treatment of ground water     |
|    |             | PACE, Delhi             | National | 7.5      | 9 months  | Life cycle assessment of PET bottles                                                                          |
|    |             | Konark Ind Ltd          | National | 17.5     | 36 months | Treatment of textile industry waster water                                                                    |
| 11 | Mathpati    | DAE                     | National | 80 Lakhs |           | Thermal hydraulic studies related to                                                                          |

|    |            |                                         |               |              |                        |                                                                                                                                         |
|----|------------|-----------------------------------------|---------------|--------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
|    | C S        |                                         |               |              |                        | coolants for new generation reactors                                                                                                    |
|    |            | TEQIP, CoE-PI                           | National      | 16 Lakhs     | 1 year                 | Design aspects of two opposed jet microreactor: Experimental and computational fluid dynamics                                           |
|    |            | United Phosphorous Limited              | National      | Rs. 26 Lakhs | 2016-2020 (Four years) | CFD Simulation of Blood flow inside the Human Body                                                                                      |
|    |            | DAE-BRNS                                | National      | 25,00,000/-  | Three years            | Computational fluid dynamics and experimental study of fluidization of lithium titanate particles in fluidized and packed fluidized bed |
|    |            | Department of Atomic Energy (DAE)       | National      | 72,40,000/-  | Five years             | Thermal hydraulic studies related to coolants for new generation reactors                                                               |
| 12 | Nemade P R | RCF Ltd                                 | National      | Rs 12.26 L   | Jul 2012-Jun 2013      | Development of Quality Water-resistant Gypsum Plaster                                                                                   |
|    |            | BIRAC-Bill and Melinda Gates Foundation | International | Rs 25.00 L   | 1 year                 | Hygienic Water-Free Toilet                                                                                                              |
|    |            | SERB: Scheme for Young Scientists       | National      | Rs 22.40 L   | 3 years                | Development of Polymerizable Ionic Liquid Membranes for Gas Separations                                                                 |
| 13 | Pandit A B | Department of Atomic Energy under the   | National      | 88.9 Lakhs   | 2005 – 2011            | Characterization of cavitation phenomena and its applications in                                                                        |



|  |  |                                                   |          |             |             |                                                                                                      |
|--|--|---------------------------------------------------|----------|-------------|-------------|------------------------------------------------------------------------------------------------------|
|  |  | scheme of Knowledge based Engineering             |          |             |             | solid-liquid mass transfer operations                                                                |
|  |  | Jawaharlal Nehru Center for Science Society – UGC | National | 25 Lakhs    | 2009 – 2012 | Development of novel cavitation based treatment schemes for water disinfections                      |
|  |  | DST                                               | National | 9 Lakhs     | 2007 – 2010 | Advanced oxidation processes for the degradation of organic pollutants in aqueous environment        |
|  |  | (IGCAR)                                           | National | 23.82 Lakhs | 2008 – 2012 | Design of Sodium Cold-Trap                                                                           |
|  |  | (IGCAR)                                           | National | 23.8 Lakhs  | 2008 – 2012 | Preparation of Mono-Disperse MOX Sphere                                                              |
|  |  | (IGCAR)                                           | National | 24.8 Lakhs  | Pandit A B  | Role of Cavitation and its Prevention in Sodium Pump                                                 |
|  |  | (IGCAR)                                           | National | 21.5 Lakhs  | 2008 – 2012 | Scale up of MOX Precipitation                                                                        |
|  |  | (IGCAR)                                           | National | 38 Lakhs    | 2015-2018   | Characterization of the regeneration process for liquid sodium cold trap in secondary system of fast |
|  |  | BPCL                                              | National | 25 Lakhs    | 2011-2014   | Degradation of Industrial Wastewater                                                                 |
|  |  | Hindustan Unilever Ltd., Bangalore                | National | 75 Lakhs    | 2013-2018   | LDH Formation and Converging Diverging Cavitating                                                    |

|    |                |                                      |          |               |                     |                                                                                                                                          |
|----|----------------|--------------------------------------|----------|---------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------|
|    |                | ATUL LTD                             | National | Rs. 20 lacs   | 1 year (2016-2017)  | Kinetics of Synthesis of p-Hydroxy Benzaldehyde                                                                                          |
|    |                | Asian Paints                         | National | Rs. 3 lacs    | 1 year (2016-2017)  | Recovery of Water of Esterification                                                                                                      |
|    |                | Department of Science and Technology | National | Rs. 75 lacs   | 3 years (2017-2020) | Sustainable processes for the development of keratin hydrolyte for the use as fertilizer, animal feed and pet food                       |
| 14 | Patwardhan A V | DST-SERB-Green Technology            | National | 36            | 36                  | Synthesis of novel membranes and their applications in waste minimization and recovery of valuable chemicals from dilute aqueous streams |
|    |                | Department of Atomic Energy          | National | Rs 72.4 Lakhs |                     | "Transport of Actinides and Fission Products across Hollow Fibre Supported Liquid Membranes"                                             |
| 15 | Patwardhan A W | IGCAR                                | National | 24.2 Lakhs    | 2007 – 2011         | "Thermal Mixer Design"                                                                                                                   |
|    |                | IGCAR                                | National | Rs 24.9 Lakhs |                     | "Flow Distribution in Inlet Plenum of Steam Generators"                                                                                  |
|    |                | Unilever                             | National | 29.5          | 2013 – 2016         | Kinetics of polyphenol infusion                                                                                                          |
|    |                | DAE                                  | National | 58.0          | 2015 – 2018         | CFD Modeling of Assymmetric Rotating Disc                                                                                                |

|    |              |                                       |          |             |                                        |                                                                                                                                                   |
|----|--------------|---------------------------------------|----------|-------------|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
|    |              |                                       |          |             |                                        | Contactors                                                                                                                                        |
|    |              | IGCAR                                 | National | 43.75       | 2015 – 2018                            | Thermal Hydraulic Studies on Boiling in Long Vertical Tubes                                                                                       |
|    |              | Unilever                              | National | 30.2        | 2016 – 2019                            | Modelling of Kinetics of Tea Infusion                                                                                                             |
| 16 | Rathod V K   | IGCAR                                 | National | 24.57 Lakhs | 2008 - 2011                            | Removal of dissolved TBP from aqueous stream                                                                                                      |
|    |              | DST/FAST TRACK                        | National | 19.00 Lakh  | 2008 - 2011                            | Biodiesel from Waste Frying oil                                                                                                                   |
|    |              | Konark Industries                     | National | 18 Lakh     | 3 years                                | Extraction of curcumin                                                                                                                            |
|    |              | Harman Finochem limited, Aurangabad   | National | 3 Lakh      | 2 years                                | Optimisation and kinetic study of metformin hydrochloride.                                                                                        |
|    |              | Gujarat Alkalies and chemical limited | National | 14 Lakh     | 6 months                               | Separation technique using synthetic mixture of major and by-product formed in catechol-hydroquinone process at laboratory scale and pilot scale. |
| 17 | Sontakke S M | DST                                   | National | 35 lakh     | 5 years                                | Development of anodic material for dye sensitized solar cell                                                                                      |
| 18 | Vaidya P D   | University Grants Commission          | National | 7.47 Lakhs  | 1st February 2011 to 31st January 2014 | CO <sub>2</sub> capture using novel amines                                                                                                        |
|    |              | Carbon                                | National | 12.31Lak    | 1st                                    | Novel solvents for                                                                                                                                |

|    |           |                                                               |          |             |                                     |                                                                                                         |
|----|-----------|---------------------------------------------------------------|----------|-------------|-------------------------------------|---------------------------------------------------------------------------------------------------------|
|    |           | Clean Solutions Pvt. Ltd.                                     |          | hs          | October 2010 to 30th September 2011 | CO2 capture from flue gas                                                                               |
|    |           | DST                                                           | National | 29.82 Lakhs |                                     | Diesel Production by Karanja-oil hydrotreatment                                                         |
|    |           | Indian Oil                                                    | National | 80.5        | 16.04.15 to 15.04.17                | Aqueous-phase reforming of methanol and bio-oil to hydrogen                                             |
|    |           | Atul Limited                                                  | National | 11.5        | 2016 to 2017                        | PHBA production from p-cresol - A study on reaction kinetics                                            |
| 19 | Yadav G D | DAE                                                           | National | 95.00       |                                     | Self assembly of tethered nanoparticles :Macromolecule' for tailored nanomaterials                      |
|    |           | DST-Indo-Finnish Project                                      | National | 30.00       |                                     | Sustainable catalytic chemical synthesis with carbon dioxide as feedstock (University of Oulu, Finland) |
|    |           | Ministry of Chemicals and Fertilisers; Hindustan Insecticides | National | 167.00      |                                     | Alternatives to DDT: Synthesis of New Molecules , Toxicological Studies and Scale - Up                  |
|    |           | ONGC Energy Centre                                            | National | 12.00       |                                     | Some preliminary studies on HI synthesis                                                                |
|    |           | ONGC Energy                                                   | National | 860.00      |                                     | ICT-OEC novel process for production of                                                                 |

|  |         |                                                     |                                                                                              |         |                                          |                                                                                                                                |
|--|---------|-----------------------------------------------------|----------------------------------------------------------------------------------------------|---------|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
|  |         | Centre                                              |                                                                                              |         |                                          | hydrogen                                                                                                                       |
|  |         | DST- Indo-EU New Indigo Project                     | International                                                                                | € 50000 |                                          | Green Water Tech (with University of Cantabria, Santander, Spain & University of Oulu, Finland)                                |
|  |         | UK India Education and Research Initiative (UKIERI) | International                                                                                | 25.00   |                                          | Green processing technologies for poorly soluble drugs (with University of Bradford)                                           |
|  |         | Indo-US S & T Forum                                 | International                                                                                | 50.00   |                                          | Centre on PROTECT: Program for Research on Thin-Films and nanostructured Emerging Coating Technologies (with SUNY Buffalo, NY) |
|  |         | ONGC Energy Centre                                  | National                                                                                     | 200.00  |                                          | Molten salts for energy storage                                                                                                |
|  | 2015-on | Malladi Drugs & Pharmaceuticals, Chennai            | Dynamic Kinetic Resolution of D-Ephedrine to L-Ephedrine                                     | 2015-on | Malladi Drugs & Pharmaceuticals, Chennai |                                                                                                                                |
|  | 2015-16 | Malladi Drugs & Pharmaceuticals                     | Process intensification of existing catalytic process for synthesis of phenylpropylamine and | 2015-16 | Malladi Drugs & Pharmaceuticals          |                                                                                                                                |

|    |            |                                     |                                                                  |         |                                     |                                                                                                                                          |
|----|------------|-------------------------------------|------------------------------------------------------------------|---------|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
|    |            |                                     | development of novel catalyst for higher yield                   |         |                                     |                                                                                                                                          |
|    | 2015-16    | Resonance Specialities Ltd., Mumbai | Green process development for important lutidines and collidines | 2015-16 | Resonance Specialities Ltd., Mumbai |                                                                                                                                          |
| 20 | J.B. Joshi | DBT                                 | National                                                         | 34.00   | 1997-2001                           | Design of Fermenters for Shear Sensitive Proteins and Enzymes.                                                                           |
|    |            | LRI                                 | National                                                         | 3.00    | 1994-2001                           | Efficient scale-up of solar cookers                                                                                                      |
|    |            | Reliance Ind. Ltd.                  | National                                                         | 6.00    | 1998-2002                           | Development of new impellers designs for three phase stirred reactors                                                                    |
|    |            | Hindustan Polymides and fibres Ltd  | National                                                         | 5.00    | 2002-2005                           | Solar Energy based refrigeration systems                                                                                                 |
|    |            | United Phosphorus Ltd.              | National                                                         | 7.00    | 2002-                               | Miniaturization of liquid-liquid extraction Equipment                                                                                    |
|    |            | BRNS                                | National                                                         | 150.00  | 2002-2010                           | Development of jet reactors                                                                                                              |
|    |            | Department of Atomic Energy         | National                                                         | 150.00  | 2003-2010                           | Knowledge Based Engineering: Improvements in reactor design, heavy water production efficiency, nuclear waste management and development |



|    |                 |                             |          |         |           |                                                                                                                                                                             |
|----|-----------------|-----------------------------|----------|---------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                 |                             |          |         |           | of novel separation processes.                                                                                                                                              |
|    |                 | BRNS                        | National | 150.00  | 2007-2010 | Development of Annular Centrifugal Extractors                                                                                                                               |
|    |                 | Department of Atomic Energy | National | 7500.00 | 2008-2017 | Chemical Engineering Education and Research                                                                                                                                 |
|    |                 | Department of Biotechnology | National | 2400.00 | 2007-2012 | Energy Biosciences                                                                                                                                                          |
| 21 | Prof. A.M. Lali | DBT, India                  | National | 39.84   | 2017-20   | Biphasic fermentation for triacyl glycerol (TAG) production from pretreated lignocellulosic biomass                                                                         |
|    |                 | DBT-CEB/BIPP                | National | 50.00   | 2016-17   | Pilot scale translational facility for value added chemicals from biomass                                                                                                   |
|    |                 | DST-KGDS                    | National | 61.35   | 2015-18   | Performance and durability improvements in the solar thermal desalination system at Narippaiyur and utilization of reject sea water for algae cultivation to produce biogas |
|    |                 | DBT-AISRF, India            | National | 113.74  | 2015-2017 | Integrated biorefinery for production of sorghum grain protein Phase II                                                                                                     |

|  |  |                                                            |          |         |         |                                                                                                                         |
|--|--|------------------------------------------------------------|----------|---------|---------|-------------------------------------------------------------------------------------------------------------------------|
|  |  | IGSTC,<br>DST, India                                       | National | 115.40  | 2014-17 | Design of selective nano-porous membrane bioreactor for efficient production of bio-butanol from lignocellulosic sugars |
|  |  | DST, India                                                 | National | 847.53  | 2014-16 | Green Enzymatic fat splitting technology for production fatty acids and acyl glycerols                                  |
|  |  | DSIR-<br>PACE,<br>DST, India                               | National | 85.00   | 2014-16 | Macro-algal Biorefinery for CO2 Sequestration and production of biofuel and valued added compounds                      |
|  |  | DBT-<br>BBSRC/Su<br>BBSea<br>(Joint Indo-<br>UK<br>Scheme) | National | 201.672 | 2014-17 | Transnational approaches to resolving biological bottlenecks in macroalgal biofuel production                           |
|  |  | MNRE,<br>India                                             | National | 515.61  | 2013-16 | Improved Production of Biogas and Bio-CNG from Lignocellulosic Biomass                                                  |
|  |  | DBT, India                                                 | National | 1833.00 | 2013-18 | Centre for Energy Biosciences: New and Extension Proposals                                                              |
|  |  | DBT-<br>BBSRC/Ric<br>efuel                                 | National | 152.00  | 2013-16 | Engineering enzymes, bacteria and bioconversion                                                                         |

|    |                        |                                               |          |                                 |         |                                                                                                                                               |
|----|------------------------|-----------------------------------------------|----------|---------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------|
|    |                        | (Joint Indo-UK Scheme)                        |          |                                 |         | processes for advanced biofuels from waste grain straw                                                                                        |
|    |                        | AISRF                                         | National | 700.30                          | 2014-17 | Integrated technologies for economically sustainable bio-based energy                                                                         |
|    |                        | DBT, India                                    | National | 68.468                          | 2013-16 | Development and characterization of alternative affinity adsorbent for purification of therapeutic antibodies                                 |
| 22 | Pushpito Ghosh         | TEQIP INN                                     | National | Rs 300 lakhs                    | 2 years | Innovation Networking                                                                                                                         |
|    |                        | Department of Science & Technology, New Delhi | National | 1 lakh<br>Rs 30 lakhs (approx.) | 2016-19 | Quick survey of Marathwada Region facing acute water crisis with focus on study of usage pattern and prospect of wastewater recycle and reuse |
| 23 | Prof. M Lakshmi Kantam | Marvel Drugs Pvt. Ltd.,                       | National | 8                               | 1 year  | Development of Economical Processes for organic intermediates                                                                                 |
|    |                        | GACL, Vadodara                                | National | 30                              |         | Process development and standardization for an appropriate catalyst for the manufacturing process of Catechol and                             |

|  |  |  |  |  |  |                                                                                                                                                                                               |
|--|--|--|--|--|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  |  |  |  |  | Hydroquinone and standardization / optimization of separation technique using synthetic mixture of various components – products & by-products formed in the Catechol – Hydroquinone process. |
|--|--|--|--|--|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 17. Inter-institutional collaborative projects and associated grants received

### a) National collaboration      b) International collaboration

|                  | Activity                                                                                                        | Sponsoring agency                                                 | Funding |
|------------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|---------|
| <b>Yadav G D</b> |                                                                                                                 |                                                                   |         |
| 1                | Indo-US S and T Forum Centre : PROTECT along with DrTapan Rout of Tata Steel Jamshedpur                         | SUNY Buffalo, <b>USA</b><br><br>(Now with Texas A & M University) |         |
| 2                | Indo-Canadian I.C. IMPACTS with University of British Columbia, University of Alberta and University of Toronto | University of Alberta, <b>Canada</b>                              |         |
| 3                | Collaboration on Catalysis through student exchange                                                             | University of Waterloo, <b>Canada</b>                             |         |
| 4                | Indo-Finish Project on GreenCO2<br>Indo-EU New Indigo Greenwater                                                | University of Oulu, <b>Finland</b>                                |         |
| 5                | Joint Organizers, Indo-German Conference On Catalysis, Rostock (DST and German Govt.)                           | Leibnitz Institute of Catalysis (LIKAT), Rostock, <b>Germany</b>  |         |
| 6                | Indo-European INDIGO project GreenWater                                                                         | Universidad de Cantabria, <b>Spain</b>                            |         |

|                   |                                                                                                                              |                                                                                                                           |             |
|-------------------|------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-------------|
| 7                 | Student exchange, professor<br>Ramani Narayan                                                                                | Michigan State University                                                                                                 |             |
| <b>Thorat B N</b> |                                                                                                                              |                                                                                                                           |             |
| 1                 | Indo Brazil , No.INT/Brazil/P-01/2013 Engineering aspects of manufacturing of Granular Rebaudioside A from stevia.           | Universidade de Sao Paulo, Brazil                                                                                         | 28.77 lakhs |
|                   |                                                                                                                              |                                                                                                                           |             |
| <b>Gaikar V G</b> |                                                                                                                              |                                                                                                                           |             |
| 1                 | Innovation Networking of TEQIP Institutes in Maharashtra<br>( ICT, DBATU, VJTI, SPCE, SGGSET)                                | TEQIP, MHRD<br>(2014-16)                                                                                                  | 150 lakhs   |
| 2                 | Advanced materials as CO2 removers: A computational study of CO2 sorption Thermodynamics and kinetics                        | Indo-European Joint Project- Department of Science and Technology<br>(2009-12)                                            | 78 Lakhs    |
| 3                 | Bradford University                                                                                                          | Co-crystallization under UKIRI                                                                                            |             |
| <b>Pandit A B</b> |                                                                                                                              |                                                                                                                           |             |
| 1                 | Advanced oxidation processes for the degradation of organic pollutants in aqueous environment                                | Department of Science and Technology under India Australia Fund for Scientific and Techno-logical cooperation (2007-2010) | 09 Lakhs    |
| 2                 | Advanced oxidation processes for the degradation of organic pollutants in aqueous environment                                | Department of Science and Technology under India Australia Fund for Scientific and Techno-logical cooperation (2007-2010) | 09 Lakhs    |
|                   | Joshi J B                                                                                                                    |                                                                                                                           |             |
| 1                 | (a) Design and Optimization of Solar Thermal Technologies                                                                    | Indian Institute of Technology, Bombay                                                                                    |             |
| 2                 | (a) Application of Three Phase Fluidization for Froth Flotation<br>(b) Design of Solid-Liquid Fluidized Beds and Circulating | Indian Institute of Technology, Gandhinagar                                                                               |             |

|                 |                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                    |         |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|                 | Solid-Liquid Fluidized Beds<br>(c) Design of Multiphase Reactors: Biomethanation                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                    |         |
| 3               | (a) Thermal Hydraulics<br>(b) Hydrogen production by thermochemical methods<br>(c) Unit operations in nuclear energy                                                                                                                                                                                                                                                | Homi Bhabha National Institute, Mumbai                                                                                                                                                                                                             |         |
| 4               | (a) Fluid Catalytic Cracking: Contacting of Particle and Droplet at High Temperature<br>(b) Direct Numerical Simulation of Flow Past Spheres and of Solid-Liquid Fluidized Beds<br>(c) Characterisation of Turbulent Dispersion in Multiphase Systems<br>(d) Hydrodynamics and Mass Transfer Characteristics of Microfluidized Beds for Chromatographic Separations | University of New-Castle, Australia                                                                                                                                                                                                                |         |
| 5               | (a) Discrete Particle Modeling of Solid-Fluid Suspensions                                                                                                                                                                                                                                                                                                           | Louisiana State University, USA                                                                                                                                                                                                                    |         |
| <b>Lali A M</b> |                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                    |         |
| 1               | Transnational approaches to resolving biological bottlenecks in macroalgal biofuel production                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>CSIR-Central Salt and Marine Chemical Research Institute, Bhavnagar, Gujarat</li> </ul>                                                                                                                     | 201.672 |
| 2               | Engineering enzymes, bacteria and bioconversion processes for advanced biofuels from waste grain straw                                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>DBT-ICGEB Centre for Advanced Bioenergy Research, New Delhi</li> <li>School of Biotechnology, Jawaharlal Nehru University, New Delhi</li> <li>Department of Genetics, Madurai Kamaraj University</li> </ul> | 152.00  |



|                   |                                                                                                               |                                                                                                                                                                                                                                                                                                                                             |                                                             |
|-------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| 3                 | Integrated technologies for economically sustainable bio-based Energy                                         | <ul style="list-style-type: none"> <li>• DBT-ICGEB Centre for Advanced Bioenergy Research, New Delhi</li> <li>• DBT-IOC Centre for Advanced Bioenergy Research, Faridabad</li> <li>• The Energy and Resources Institute, New Delhi</li> <li>• National Institute of Interdisciplinary Science and Technology, Thiruvananthapuram</li> </ul> | 700.30                                                      |
| 4                 | Macroalgal Biorefinery for CO <sub>2</sub> Sequestration and production of biofuel and valued added compounds | <ul style="list-style-type: none"> <li>• CSIR-Central Salt and Marine Chemical Research Institute, Bhavnagar, Gujarat</li> <li>• Aquagri Processing Private Limited</li> </ul>                                                                                                                                                              | 85.00                                                       |
| <b>Gogate P R</b> |                                                                                                               |                                                                                                                                                                                                                                                                                                                                             |                                                             |
| 1                 | University of Minho(Prof. Artur Cavaco-Paulo)                                                                 | Intensification of enzymatic reaction using sonochemical reactors                                                                                                                                                                                                                                                                           | 5.29 Lacs                                                   |
| 2                 | Universidade de São Paulo, Brazil (Dr. Reinaldo Giudici)                                                      | Intensification of biodiesel synthesis from sustainable raw materials using cavitation reactors                                                                                                                                                                                                                                             | 21.5 Lacs                                                   |
| 3                 | NIT Warangal (Dr. Shirish Sonawane)                                                                           | Improved synthesis of materials and applications in wastewater treatment                                                                                                                                                                                                                                                                    | No funding, exchange of students under NIT-ICT MOU          |
| 4                 | AISSMS College of Engineering (Mr. Ashish Mohod)                                                              | Intensification of Chemical Processing Applications Using Cavitation Reactors                                                                                                                                                                                                                                                               | No funding, under UGC Networking Resource Centre activities |

**18. Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, AICTE, etc.; total grants received**

| Sr.No. | Projects | Total Grant  | Sanction    | Received grant |
|--------|----------|--------------|-------------|----------------|
| 1      | UGC-CAS  | 15,000,000   | 11,415,000  | 11,415,000     |
| 2      | DST-FIST | 7,25,00,000  | 3,73,00,000 | 3,73,00,000    |
| 3      | UGC-NRC  | 10,00,00,000 | 9,00,00,000 | 9,00,00,000    |

#### 19. Research facility / centre with

- **State recognition**
  - a) Innovation Networking of TEQIP Institutes in Maharashtra
- **National recognition**
  - a) UGC Networking Resource Centre in Chemical Engineering
  - b) DAE-ICT Centre for Chemical Engineering Education and Research
- **International recognition**

**Ranking of CHEMICAL ENGINEERING Department**  
**WORLD RANKING OF CHEMICAL ENGINEERING SCHOOLS (2007-11)**  
**(Prof. Jude Sommerfeld, USA, 22nd Jan. 2012)**

| Institute           | Pubs<br>2010 | Total<br>Pubs<br>06-10 | Rank     | 2011<br>Pubs | 07-11<br>Pubs | Rank     |
|---------------------|--------------|------------------------|----------|--------------|---------------|----------|
| <b>India</b>        |              |                        |          |              |               |          |
| <b>Mumbai (ICT)</b> | <b>185</b>   | <b>960</b>             | <b>1</b> | <b>198</b>   | <b>1025</b>   | <b>1</b> |
| Bombay (IIT)        | 72           | 368                    | 2        | 75           | 393           | 2        |
| Kanpur (IIT)        | 72           | 356                    | 3        | 80           | 378           | 3        |
| Kharagpur (IIT)     | 68           | 301                    | 4        | 59           | 305           | 4        |
| Madras (IIT)        | 60           | 263                    | 5        | 55           | 281           | 5        |
| Anna                | 39           | 257                    | 6        | 56           | 261           | 6        |
| Bangalore (IISc)    | 42           | 204                    | 7        | 51           | 225           | 7        |
| Roorkee (IIT)       | 30           | 188                    | 8        | 31           | 205           | 8        |
| Delhi (IIT)         | 43           | 169                    | 9        | 43           | 188           | 9        |
| Guwahati (IIT)      | 34           | 100                    | 12       | 46           | 138           | 10       |
| <b>USA</b>          |              |                        |          |              |               |          |
| Mass. Inst. Tech.   | 269          | 1470                   | 1        | 341          | 1624          | 1        |
| Minnesota           | 202          | 1014                   | 2        | 211          | 1067          | 2        |
| Georgia Tech        | 197          | 942                    | 4        | 234          | 1061          | 3        |
| Texas               | 175          | 985                    | 3        | 171          | 986           | 4        |
| Cal/Berkeley        | 146          | 812                    | 5        | 177          | 899           | 5        |

|                         |     |     |    |     |      |   |
|-------------------------|-----|-----|----|-----|------|---|
| Cal/Davis               | 160 | 808 | 6  | 165 | 874  | 6 |
| Delaware                | 123 | 647 | 10 | 191 | 784  | 7 |
| <b>CANADA</b>           |     |     |    |     |      |   |
| Alberta                 | 193 | 861 | 1  | 222 | 980  | 1 |
| <b>UK</b>               |     |     |    |     |      |   |
| Imperial College London | 178 | 875 | 1  | 222 | 1009 | 1 |

## **20. Special research laboratories sponsored by / created by industry or corporate bodies**

In 2009, DBT-ICT Centre for Energy Biosciences with Agilent Technologies has setup a state of art Mass Spectrometry Laboratory at ICT. The Agilent-Bruker Ion Trap, Agilent Triple Quadrupole and the Agilent Nano-spray Quadrupole TOF that constitute the holy trinity of hybrid mass spectrometers are available at the laboratory. Each of these instruments in conjunction with appropriate bioinformatics software, can be applied to assess ‘markers’ at concentrations as low as a few femtomoles. Of these, the Ion trap and Triple Quadrupole are functional at the screening and identification level, wherein complex broths can be effectively unravelled, while the high accuracy and mass range of the Quadrupole TOF allows, identification of low-abundance, novel extrolites. By applying a combination of these instruments, it is possible to perform high-throughput, large scale biomarker identification, screening and confirmation.

## 21. Publication

| Name       | Year      | Papers | Monographs | Chapters in books | Edited books | Books with ISBN | Number listed in International database | Citation index | SNIP (avg) | SJR      | Impact factor – range /average | h-index | patent |
|------------|-----------|--------|------------|-------------------|--------------|-----------------|-----------------------------------------|----------------|------------|----------|--------------------------------|---------|--------|
| Bhagwat SS | 2010-2011 | 4      |            |                   |              |                 | 5                                       | 456            | 0.7145     | 0.438    | 0.625-3.942                    | 3       | 3      |
|            | 2011-2012 | 7      |            |                   |              |                 | 6                                       | 264            | 0.63       | 0.4542   | 0.62-4.15                      | 7       | 7      |
|            | 2012-2013 | 11     |            |                   |              |                 | 5                                       | 407            | 0.711556   | 0.278125 | 0.628-2.493                    | 11      | 9      |
|            | 2013-2014 | 10     |            |                   |              |                 | 5                                       | 350            | 0.7255     | 0.346    | 0.628-1.685                    | 9       |        |
|            | 2014-2015 | 9      |            |                   |              |                 | 9                                       | 45             | 1.43       | 1.368    | 2.108-3.368                    | 5       |        |
|            |           |        |            |                   |              |                 |                                         |                |            |          |                                |         |        |
| Gaikar VG  | 2010-2011 | 6      |            |                   |              |                 | 11                                      | 1740           | 4.3        | 0.733    | 1.231-3.091                    | 23      |        |
|            | 2011-2012 | 9      |            |                   |              |                 | 19                                      | 1138           | 0.954571   | 0.940286 | 1.171-3.675                    | 21      | 8      |
|            | 2012-2013 | 15     |            |                   |              |                 | 18                                      | 1751           | 1.005      | 1.099    | 0.569-4.321                    | 5       | 7      |
|            | 2013-2014 | 10     |            |                   |              |                 | 12                                      | 2183           | 1.109889   | 0.660333 | 2.037-3.84                     | 26      | 11     |
|            | 2014-2015 | 12     |            |                   |              |                 | 12                                      | 257            |            |          | 2.037-3.84                     | 2       |        |
|            |           |        |            |                   |              |                 |                                         |                |            |          |                                |         |        |
| Gogate PR  | 2010-2011 | 15     |            | 06                |              |                 | 25                                      | 558            | 1.95       | 1.15     | 1.056-3.7199                   | 42      |        |
|            | 2011-2012 | 14     |            | 7                 |              |                 | 35                                      | 2389           | 1.678167   | 1.155333 | 2.732-4.231                    | 26      |        |
|            | 2012-2013 | 21     |            |                   |              |                 | 38                                      | 6404           | 1.550      | 1.206308 | 1.231-4.231                    | 45      |        |
|            | 2013-2014 | 10     |            |                   |              |                 | 50                                      | 5005           | 1.492952   | 1.01281  | 0.394-4.321                    | 40      |        |
|            | 2014-15   | 25     |            |                   |              |                 | 25                                      | 2445           |            |          | 0.394-4.321                    | 44      |        |

|             |             |    |  |   |  |  |    |      |        |          |                    |    |    |
|-------------|-------------|----|--|---|--|--|----|------|--------|----------|--------------------|----|----|
|             |             |    |  |   |  |  |    |      |        |          |                    |    |    |
| Lali AM     | 2010-2011   | 5  |  |   |  |  | 9  | 135  | 2.26   | 0.2436   | 0.<br>37-<br>4.194 | 5  | 6  |
|             | 2011-2012   | 2  |  |   |  |  | 13 | 421  | 1.2085 | 1.0945   | 3.565-<br>4.169    | 10 | 6  |
|             | 2012-2013   |    |  |   |  |  | 9  | 778  |        |          |                    | 5  | 36 |
|             | 2013-2014   | 10 |  |   |  |  | 5  | 266  | 1.455  | 1.664    | 3.84-<br>4.169     | 8  | 47 |
|             | 2014-15     | 56 |  |   |  |  | 56 | 180  |        |          | 3.84-<br>4.169     | 13 |    |
|             |             |    |  |   |  |  |    |      |        |          |                    |    |    |
|             |             |    |  |   |  |  |    |      |        |          |                    |    |    |
| Marathe KV  | 2010-2011   | 4  |  |   |  |  | 4  | 32   | 1.942  | 0.9025   | 0.63-<br>3.199     | 3  |    |
|             | 2011-2012   | 18 |  |   |  |  | 2  | 54   | 1.699  | 1.095    | 2.169-<br>4.31     | 2  |    |
|             | 2012-2013   | 1  |  |   |  |  | 2  | 147  | 0.08   | 0.071    | 1.171              | 0  |    |
|             | 2013-2014   | 10 |  |   |  |  | 7  | 94   | 0.48   | 0.398333 | 1.171-<br>3.152    | 5  |    |
|             | 2014-2015   | 24 |  |   |  |  | 24 | 59   |        |          | 1.171-<br>3.152    | 6  |    |
|             |             |    |  |   |  |  |    |      |        |          |                    |    |    |
| Mathpati CS | 2010-2011   |    |  |   |  |  | 4  | 92   | 2.323  | 0.85775  | 1.231-<br>2.587    | 7  |    |
|             | 2011-2012   | 11 |  |   |  |  | 5  | 56   | 1.667  | 0.0      | 0.72               | 5  |    |
|             | 2012-2013   |    |  |   |  |  | 2  | 206  |        |          |                    |    |    |
|             | 2013-2014   | 10 |  |   |  |  | 3  | 138  | 2.108  | 1.523    | 0.831-<br>2.739    | 7  |    |
|             | 2014 - 2015 | 5  |  |   |  |  | 5  | 3    | 1.58   | 1.09     | 0.898 –<br>2.108   | 1  |    |
|             |             |    |  |   |  |  |    |      |        |          |                    |    |    |
| Pandit AB   | 2010-2011   | 18 |  | 3 |  |  | 27 | 924  | 2.96   | 1.147    | 4.321-<br>4.494    | 45 |    |
|             | 2011-2012   | 25 |  | 4 |  |  | 29 | 1153 | 1.5842 | 1.177652 |                    | 31 | 15 |

|               |             |    |  |  |   |    |       |          |          |               |         |    |
|---------------|-------------|----|--|--|---|----|-------|----------|----------|---------------|---------|----|
|               | 2012-2013   | 20 |  |  |   | 31 | 9084  | 1.690833 | 1.208905 | 2.0-4.5       | 45      | 6  |
|               | 2013-2014   | 10 |  |  |   | 41 | 10840 | 1.48708  | 1.01972  | 1.173-4.321   | 56      | 15 |
|               | 2014 - 2015 | 44 |  |  |   | 44 | 9062  | 1.48708  | 1.01972  | 1.173-4.321   | 51      |    |
|               |             |    |  |  |   |    |       |          |          |               |         |    |
| Patwardhan AV | 2010-2011   | 12 |  |  | 1 |    |       | 1.36     | 0.94     | 0.789-4.529   | 2.0-2.3 |    |
|               | 2011-2012   | 4  |  |  |   |    | 253   | 1.5345   | 0.8935   |               | 9       |    |
|               | 2012-2013   | 3  |  |  |   |    | 339   | 0.461333 | 0.357    | 1.17-2.2      |         |    |
|               | 2013-2014   | 10 |  |  |   |    | 612   | 0.7026   | 0.7494   | 0.722-3.756   | 13      | 1  |
|               | 2014 - 2015 | 3  |  |  |   | 3  | 0     | 0.7026   | 0.7494   | 0.93 – 0.16   | 5       |    |
|               |             |    |  |  |   |    |       |          |          |               |         |    |
| Patwardhan AW | 2010-2011   | 5  |  |  |   | 12 | 125   | 1.28     | 1.02     | 0.952-2.337   | 20      |    |
|               | 2011-2012   | 7  |  |  |   | 12 | 457   | 1.123333 | 0.715    | 0.991-2.337   | 12      |    |
|               | 2012-2013   | 3  |  |  |   | 11 | 317   | 1.631333 | 0.991    | 0.925-2.348   | 32      |    |
|               | 2013-2014   | 10 |  |  |   | 11 | 784   | 0.73775  | 0.59625  | 0.991-2.384   | 16      |    |
|               | 2014-2015   | 9  |  |  |   | 9  | 4     | 0.73775  | 0.59625  | 0.889 – 2.752 | 21      |    |
|               |             |    |  |  |   |    |       |          |          |               |         |    |
| Rathod VK     | 2010-2011   | 08 |  |  | 1 | 7  | 142   | 2.01     | 1.01     | 1.714-4.321   | 6       | 1  |
|               | 2011-2012   | 6  |  |  |   | 11 | 108   | 1.5018   | 0.8986   | 0.2-2.36      | 5       |    |



|           |             |     |   |   |  |  |    |      |          |          |             |    |    |
|-----------|-------------|-----|---|---|--|--|----|------|----------|----------|-------------|----|----|
|           |             |     |   |   |  |  |    |      |          |          |             |    |    |
|           | 2012-2013   |     |   |   |  |  | 16 | 124  | 1.158    | 0.775    | 1.034-4.321 | 8  |    |
|           | 2013-2014   | 10  |   |   |  |  | 29 | 207  | 1.10664  | 0.72884  | 1.034-4.321 | 11 | 1  |
|           | 2014 - 2015 | 42  |   |   |  |  | 42 | 130  | 1.10664  | 0.72884  | 0.889-4.402 | 13 |    |
|           |             |     |   |   |  |  |    |      |          |          |             |    |    |
| Thorat BN | 2010-2011   | 27  |   | 2 |  |  | 22 | 141  | 4.2      | 0.206    | 0.511-3.091 | 7  | 2  |
|           | 2011-2012   | 13  |   | 3 |  |  | 15 | 221  | 0.5515   | 0.327455 | 0.628-2.328 | 9  | 2  |
|           | 2012-2013   | 9   |   |   |  |  | 12 | 184  | 0.522    | 0.522    | 2.084       | 2  | 4  |
|           | 2013-2014   | 11  |   |   |  |  | 8  | 438  | 0.3394   | 0.2798   | 0.5-3.091   | 11 | 4  |
|           | 2014-2015   | 64  |   |   |  |  | 64 | 176  |          |          | 0.5-3.091   | 13 |    |
|           |             |     |   |   |  |  |    |      |          |          |             |    |    |
| Vaidya PD | 2010-2011   | 7   |   |   |  |  | 6  | 122  | 1.06     | 0.627    | 1.104-5.330 | 5  |    |
|           | 2011-2012   | 7   |   |   |  |  | 9  | 434  | 0.871333 | 0.640667 | 1.104-3.22  | 10 |    |
|           | 2012-2013   | 9   |   |   |  |  | 10 | 397  | 0.928875 | 1.083429 | 1.23-4.32   | 5  |    |
|           | 2013-2014   | 10  |   |   |  |  | 8  | 415  | 0.6899   | 0.5167   | 1.104-4.321 | 17 | 1  |
|           | 2014-2015   | 61  |   |   |  |  | 61 | 376  |          |          | 1.104-4.321 | 18 |    |
|           |             |     |   |   |  |  |    |      |          |          |             |    |    |
| Yadav GD  | 2010-2011   | 48  | 3 |   |  |  | 16 | 763  | 1.689    | 2.589    | 2.618-5.787 | 7  | 56 |
|           | 2011-2012   | 18  | 3 |   |  |  | 34 | 1079 | 2.76     | 1.9652   | 2.618-5.787 | 11 | 58 |
|           | 2012-2013   | 261 |   |   |  |  | 42 | 615  | 1.421    | 1.137    | 0.592-6.921 | 11 |    |
|           | 2013-2014   | 295 | 3 |   |  |  | 42 | 1102 | 1.9898   | 1.592133 | 0.59-15.575 | 8  | 68 |

|           |           |     |  |   |  |  |     |      |          |          |              |    |   |
|-----------|-----------|-----|--|---|--|--|-----|------|----------|----------|--------------|----|---|
|           | 2014-2015 | 120 |  |   |  |  | 120 | 1142 |          |          | 0.59-15.575  | 41 |   |
|           |           |     |  |   |  |  |     |      |          |          |              |    |   |
| Dalvi VH  | 2010-2011 | 3   |  |   |  |  | -   | -    | -        | -        | -            | -  | - |
|           | 2012-2013 |     |  |   |  |  | -   | -    | -        | -        | -            | -  |   |
|           | 2013-2014 | 1   |  |   |  |  | 1   | 67   | 1.761    | 2.145    | 4.8-9.7      | 3  | 1 |
|           | 2014-2015 | 10  |  |   |  |  | 10  | 132  |          |          | 4.8-9.7      | 3  |   |
|           |           |     |  |   |  |  |     |      |          |          |              |    |   |
| Nemade PR | 2010-2011 | 3   |  |   |  |  |     | 44   |          |          |              |    |   |
|           | 2012-2013 |     |  |   |  |  |     | 37   |          |          |              |    |   |
|           | 2013-2014 | 4   |  |   |  |  | -   | 121  | 1.22     | 0.69     | 1.893-10.677 | 2  | 1 |
|           | 2014-2015 | 2   |  |   |  |  | 2   | 41   |          |          | 1.893-10.677 | 2  |   |
| Joshi JB  | 2010-2011 | 17  |  | 1 |  |  | 28  | 8104 | 1.06     | 0.584    | 0.875-4.321  | 52 |   |
|           | 2011-2012 | 21  |  |   |  |  | 22  | 5461 | 1.276875 | 0.832929 | 2.184-4.231  | 26 |   |
|           | 2012-2013 | 13  |  |   |  |  | 35  | 2690 | 1.155    | 0.760    | 0.653-4.321  | 8  | 1 |
|           | 2013-2014 | 10  |  |   |  |  | 34  | 1379 | 1.249455 | 0.874636 | 1.104-4.38   | 7  |   |
|           | 2014-2015 | 31  |  |   |  |  | 31  | 1491 |          |          | 1.104-4.38   | 47 |   |
| Jha N     | 2010-2011 |     |  |   |  |  |     |      |          |          |              |    |   |
|           | 2011-2012 | 11  |  |   |  |  | 152 | 92   | 0.7515   | 0.668    | 1.215-16.146 | 4  | 3 |
|           | 2012-2013 |     |  |   |  |  |     | 126  |          |          |              |    |   |
|           | 2013-2014 |     |  |   |  |  | 4   | 140  | 1.154909 | 0.596    | 0.759636     | 10 | 1 |
|           | 2014-2015 | 1   |  |   |  |  | 1   | 170  |          |          | 0.759636     | 10 |   |

|                |           |    |  |   |  |  |    |     |        |        |             |    |   |
|----------------|-----------|----|--|---|--|--|----|-----|--------|--------|-------------|----|---|
|                |           |    |  |   |  |  |    |     |        |        |             |    |   |
| Singh SK       | 2010-2011 |    |  |   |  |  |    |     |        |        |             |    |   |
|                | 2011-2012 | 9  |  | 1 |  |  |    |     | 0.637  | 0.562  | 1.125-2.2   |    |   |
|                | 2012-2013 |    |  |   |  |  |    |     |        |        |             |    |   |
| Sontakke SM    | 2010-2011 |    |  |   |  |  |    |     |        |        |             |    |   |
|                | 2011-2012 | 4  |  |   |  |  |    | 13  | 1.3205 | 1.0355 | 0.99-4.03   | 1  |   |
|                | 2012-2013 | 1  |  |   |  |  | 1  | 23  | 1.905  | 1.585  | 4.321       |    |   |
|                | 2013-2014 |    |  |   |  |  |    | 28  | -      | -      | -           | 3  |   |
|                | 2014-2015 | 0  |  |   |  |  |    | 22  | -      | -      | -           | 3  |   |
| Jain RD        | 2010-2011 |    |  |   |  |  |    | 52  |        |        |             |    |   |
|                | 2011-2012 |    |  |   |  |  |    | 91  |        |        |             |    |   |
|                | 2012-2013 |    |  |   |  |  |    | 98  |        |        |             |    |   |
|                | 2013-2014 | 10 |  |   |  |  |    | 187 | 1.56   | 2.96   | 3.13        | 7  | 1 |
|                | 2014-2015 | 6  |  |   |  |  | 6  | 153 |        |        | 3.13        | 10 |   |
| Pinjari DV     | 2013-2014 | 10 |  |   |  |  | 16 | 272 | 2.075  | 1.585  | 3.83-4.68   | 11 | 2 |
|                | 2014-15   | 15 |  |   |  |  | 15 | 310 | 1.947  | 1.432  | 1.632-4.494 | 13 |   |
| Jogwar SS      | 2013-2014 | 9  |  |   |  |  | 3  | 93  | 0.9392 | 0.9698 | 1.805-2.493 | 5  |   |
|                | 2014-15   | 3  |  |   |  |  | 3  | 56  | 1.625  | 1.038  | 2.587-2.784 | 6  |   |
| Ghosh PK       | 2014-15   | 16 |  |   |  |  | 16 | 548 | 1.885  | 2.251  | 3.845.056   | 24 | 7 |
| Laxmikantam M. | 2014-15   | 18 |  |   |  |  | 18 | 29  | 0.761  | 0.913  | 0.814-4.089 | 2  |   |

## 22. Details of patents and income generated:

| Sr. No. | Patent Registered | Patent Title                                                                                                  | Patent Number      | Year |
|---------|-------------------|---------------------------------------------------------------------------------------------------------------|--------------------|------|
| 1       | National          | Combustion synthesized zirconia as material and catalyst                                                      | 16/MUMU/2011       | 2011 |
| 2       | National          | Hydrogen production method by multi-step copper-chlorine thermochemical cycle                                 | 1973/MUM/2011      | 2011 |
| 3       | National          | Effect of operating parameters on the performance of electrochemical cell in copper- chlorine cycle           | 1974/MUM/2011      | 2011 |
| 4       | National          | Electrochemical cell used for the production of copper using Cu-Cl thermochemical cycle                       | 1975/MUM/2011      | 2011 |
| 5       | National          | Thrombolytic enzyme and its preparation process                                                               | 1551/MUM/2011      | 2011 |
| 6       | National          | Synthesis of Corrosion Inhibiting Nano Pigment Compraising Of Nano Container for Corrosion Inhibitive Coating | 1539/MUM/2012.     | 2011 |
| 7       | National          | Combustion synthesized zirconia as material and catalyst                                                      | 16/MUMU/2011       | 2011 |
| 8       | National          | Hydrogen production method by multi-step copper-chlorine thermochemical cycle                                 | 1973/MUM/2011      | 2011 |
| 9       | National          | Effect of operating parameters on the performance of electrochemical cell in copper- chlorine cycle           | 1974/MUM/2011      | 2011 |
| 10      | National          | Unsupported titania membrane and method for preparation thereof                                               | 1109/MUM/2012      | 2011 |
| 11      | National          | Thrombolytic enzyme and its preparation process                                                               | 1551/MUM/2011      | 2011 |
| 12      | National          | Combustion synthesized zirconia as material and catalyst                                                      | IND/0016/MUMU/2011 | 2011 |
| 13      | National          | Hydrogen production method by multi-step copper-chlorine thermochemical cycle                                 | IND/1973/MUM/2011  | 2011 |
| 14      | National          | Effect of operating parameters on the performance of electrochemical cell in copper- chlorine cycle           | IND/1974/MUM/2011  | 2011 |
| 15      | National          | Electrochemical cell used for the production of copper using Cu-Cl thermochemical cycle                       | IND/1975/MUM/2011  | 2011 |
| 16      | International     | Process for production of propanediol                                                                         | PCT/IN2010/000406  | 2011 |
| 17      | International     | Bimetallic manganese oxide octahedral molecular sieve catalysts (M1-M2-OMS-2) for hydrogenolysis              | PCT/IN2010/000406  | 2011 |
| 18      | International     | Process for the production of acrolein and reusable catalyst thereof.                                         | PCT/IN2010/000755  | 2011 |
| 19      | International     | Method for conversion of sucrose to value-added chemicals                                                     | PCT/IN2010/000834  | 2011 |

|    |               |                                                                                                                       |                                   |      |
|----|---------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------|------|
| 20 | International | Process for production of furfural from xylose by using heterogeneous catalyst                                        | PCT/IN2010/000835                 | 2011 |
| 21 | International | Production of 5-hydroxymethylfurfural.                                                                                | PCT/IN2011/000048                 | 2011 |
| 22 | International | Method for catalytic dehydration of glycerol                                                                          | PCT/IN2011/000061                 | 2011 |
| 23 | International | Catalyst composition (ICaT-3) comprising of chlorosulfonic acid treated anatase titania                               | PCT/IN2011/000091                 | 2011 |
| 24 | International | Catalyst composition (ICaT-2) comprising of rare earth metal                                                          | PCT/IN2011/000102                 | 2011 |
| 25 | International | Solar Conduction Dryer with controlled Radiation                                                                      | PCT/IN2012/000843<br>740/MUM/2011 | 2011 |
| 26 | National      | Unsupported titania membrane and method for preparation thereof                                                       | 1109/MUM/2012                     | 2012 |
| 27 | National      | Process for production of 2-oxazolidinones using efficient and reusable heterogeneous catalyst or biocatalyst         | 1112/MUM/2012                     | 2012 |
| 28 | National      | Process for production of [4-(alkyl/aryl)-oxy-1,3-dioxolane-2-one] using heterogeneous catalyst                       | 1111/MUM/2012                     | 2012 |
| 29 | National      | Combustion synthesis of nanocrystalline alkali and alkaline earth metal oxide or mixture thereof and its applications | 628/MUM/2012                      | 2012 |
| 30 | National      | Method for production of membrane                                                                                     | 627/MUM/2012                      | 2012 |
| 31 | National      | Electrochemical cell used for the production of copper using Cu-Cl thermochemical cycle                               | 1975/MUM/2011                     | 2012 |
| 32 | National      | Process for production of 2-oxazolidinones using efficient and reusable heterogeneous catalyst or biocatalyst         | 1112/MUM/2012                     | 2012 |
| 33 | National      | Process for production of [4-(alkyl/aryl)-oxy-1,3-dioxolane-2-one] using heterogeneous catalyst                       | 1111/MUM/2012                     | 2012 |
| 34 | National      | Combustion synthesis of nanocrystalline alkali and alkaline earth metal oxide or mixture thereof and its applications | 628/MUM/2012                      | 2012 |
| 35 | National      | Method for production of membrane                                                                                     | 627/MUM/2012                      | 2012 |
| 36 | National      | Unsupported titania membrane and method for preparation thereof                                                       | 1109/MUM/2012                     | 2012 |
| 37 | National      | Process for production of 2-oxazolidinones using efficient and reusable heterogeneous catalyst or biocatalyst         | 1112/MUM/2012                     | 2012 |
| 38 | National      | Process for production of [4-(alkyl/aryl)-oxy-1,3-dioxolane-2-one] using heterogeneous catalyst                       | 1111/MUM/2012                     | 2012 |

|    |               |                                                                                                                                              |                                                   |      |
|----|---------------|----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|------|
| 39 | National      | Combustion synthesis of nanocrystalline alkali and alkaline earth metal oxide or mixture thereof and its applications                        | 628/MUM/2012                                      | 2012 |
| 40 | National      | Method for production of membrane                                                                                                            | 627/MUM/2012                                      | 2012 |
| 41 | National      | Method for production of membrane                                                                                                            | IND/0627/MUM/2012                                 | 2012 |
| 42 | National      | Combustion synthesis of nanocrystalline alkali and alkaline earth metal oxide or mixture thereof and its applications                        | IND/0628/MUM/2012                                 | 2012 |
| 43 | National      | Unsupported titania membrane and method for preparation thereof                                                                              | IND/1109/MUM/2012                                 | 2012 |
| 44 | National      | Process for production of [4-(alkyl/aryl)-oxy-1,3-dioxolane-2-one] using heterogeneous catalyst                                              | IND/1111/MUM/2012                                 | 2012 |
| 45 | National      | Process for production of 2-oxazolidinones using efficient and reusable heterogeneous catalyst or biocatalyst                                | IND/1112/MUM/2012                                 | 2012 |
| 46 | National      | Process for preparing 2,5-diformylfuran from 5-hydroxymethylfurfural utilizing a calcined magnesium mesoporous heterogeneous ICaT-4 catalyst | PCT Int. Appl. (2012), WO 2012073251 A1 20120607  | 2012 |
| 47 | International | Process for converting fructose into 5-(hydroxymethyl)furfural using a mesoporous silica based catalyst impregnated with rare earth metals   | PCT Int. Appl. (2012), WO 2012038969 A1 20120329  | 2012 |
| 48 | International | Catalyst composition (ICaT-2) comprising of rare earth metal                                                                                 | PCT Int. Appl. (2012), WO 2012029071 A2 20120308. | 2012 |
| 49 | International | Process for the production of acrolein from glycerol and reusable catalyst having specific surface area                                      | PCT Int. Appl. (2012), WO 2012035540 A1 20120322. | 2012 |
| 50 | International | Catalyst composition comprising of transition metals supported on a acidified anatase titania                                                | PCT Int. Appl. (2012), WO 2012035542 A1 20120322  | 2012 |
| 51 | International | Method for converting sucrose to 5-(hydroxymethyl)furfural using a lanthanum containing porous silica catalyst                               | PCT Int. Appl. (2012), WO 2012038967 A1 20120329  | 2012 |
| 52 | International | Process for production of furfural from xylose using a heterogeneous mesoporous silica catalyst comprising rare earth metals                 | PCT Int. Appl. (2012), WO 2012038968 A1 20120329  | 2012 |
| 53 | International | An Absorption Refrigeration System and a Process for Refrigeration utilizing the same                                                        | W0/2010/038236                                    | 2013 |

|    |               |                                                                                                                                                  |                             |      |
|----|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------|
| 54 | National      | Improved Thermodynamic Cycle                                                                                                                     | IN2011/000169               | 2013 |
| 55 | National      | Ultrasound Assisted Process for Synthesis of Chalcone                                                                                            | 1504/Mum/2011               | 2013 |
| 56 | National      | Multistage Drying Process                                                                                                                        | 1301/MUM2013                | 2013 |
| 57 | International | Hydrogen production method by multi-step copper-chlorine thermochemical cycle                                                                    | US 8968697                  | 2014 |
| 58 | National      | Environmentally benign heterogeneous catalyst for Fenton process                                                                                 | 1120/MUM/2014               | 2014 |
| 59 | National      | Bimetallic heterogeneous catalyst for use in eco-friendly solvents                                                                               | 2511/MUM/2014               | 2014 |
| 60 | National      | Cavitation Induced Nanoemulsion                                                                                                                  | 215/MUM/2015                | 2015 |
| 61 | National      | System for enhanced anticorrosive protection by using n-Octyl phosphonic acid based functionalized Zinc phosphate, Indian Patent Application No. | 1834/MUM/2015               | 2015 |
| 62 | National      | Effective Check valve for water disinfection                                                                                                     | 4719/MUM/2015               | 2015 |
| 64 | National      | Haemostatic BioSponge                                                                                                                            | RGCST                       | 2015 |
| 65 | National      | Solar Dryer with control Radiation                                                                                                               | RGCST                       | 2015 |
| 66 | National      | Turmeric Processing                                                                                                                              | Bill Gates                  | 2015 |
| 67 | International | Solar Dryer with control Radiation                                                                                                               | Bill Gates                  | 2015 |
| 68 | National      | Suspended cultivation of macroalgae in photobioreactor                                                                                           | 13 <sup>th</sup> April 2016 | 2015 |
| 69 | National      | Solar Assisted Method for Preparation of Chalcone Compound                                                                                       | 25462/MUM/2016              | 2015 |
| 70 | National      | Microfluidic device for the development of in-vitro co-cultures of mammalian tissues                                                             |                             | 2015 |
| 71 | National      | Microfluidic mammalian co-culture device                                                                                                         |                             | 2015 |
| 72 | International | A process for integrated production of ethanol and seaweed sap from <i>Kappaphycus alvarezii</i>                                                 | U. S. 8,969,056             | 2016 |



|    |               |                                                                                                    |                                                                                                                                            |      |
|----|---------------|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|------|
| 73 | National      | Process for detoxification and improvement of seed meals, cakes and other products                 |                                                                                                                                            | 2016 |
| 74 | National      | Process for purification and refining of glycerol                                                  |                                                                                                                                            | 2016 |
| 75 | International | Method for production of fermentable sugars from biomass                                           | Philippines Patent Application no. 1-2011-502465/31st March 2016-09-30<br>Australian Patent Application no. AU2010252547/3rd December 2015 | 2016 |
| 76 | International | Enzymatic process for fat and oil hydrolysis                                                       | Singapore Patent Application No. 11201404463P/14th December 2015                                                                           | 2016 |
| 77 |               | Photosynthetic microorganisms mediated rapid wastewater treatment using continuous photobioreactor |                                                                                                                                            | 2016 |
| 78 |               | Continuous process for production of Vitamin B12                                                   |                                                                                                                                            | 2016 |
| 79 | International | Fractionation of Biomass                                                                           | Canadian Patent Application no. CA 2800996/ 4th May 2016<br>Japanese Patent Application no. 2013-513816/31st July 2015                     | 2016 |
| 80 |               | A novel glucose tolerant glucosidase enzyme (Mbgl)                                                 |                                                                                                                                            | 2016 |
| 81 |               | Enzymatic hydrolysis process for production of fermentable sugars                                  |                                                                                                                                            | 2016 |
| 82 |               | Process for production of pure glucose from cellulose                                              | 2782/MUM/22nd July 2015                                                                                                                    | 2015 |

|    |               |                                                                                                                                                 |                                                                                     |      |
|----|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| 83 |               | A catalytic liquefaction (CTL) method for production of bio-crude oil using ionic liquid catalyst and preparation thereof                       |                                                                                     | 2016 |
| 84 |               | Process for improved seaweed biomass conversion for fuel intermediates, agricultural nutrients and fresh water                                  | U. S. 9,452,993                                                                     | 2016 |
| 85 |               | Desalination unit for the production of potable water from subsoil brine                                                                        | U. S.                                                                               | 2016 |
| 86 |               | Method of recycling of by-products for the production of soda ash and ammonium sulphate                                                         | U. S.                                                                               | 2016 |
| 87 | International | Production of high purity salt with reduced levels of impurities,                                                                               | U. S. 9,090,478                                                                     | 2016 |
| 88 | International | Selective extraction of potassium chloride from schoenite end liquor employing tartaric acid as safe, benign and recyclable extractant          | U. S. 9,540,248                                                                     | 2015 |
| 89 | National      | Method of manufacturing concentrated silver nanopowder                                                                                          |                                                                                     | 2015 |
| 90 | National      | Indian Trademark entitled 'NANOTARG'                                                                                                            |                                                                                     | 2015 |
| 91 | National      | Methods for preparation of water-soluble and water-insoluble derivatives of saccharides and alkali, alkaline earth, transition and noble metals |                                                                                     | 2015 |
| 92 | National      | Kit for pyrogen detection and depyrogenation of water                                                                                           |                                                                                     | 2015 |
| 93 | National      | A structured catalyst for steam reforming of methane for production of syn gas                                                                  | Department of Fertilizers, Ministry of Chemicals & Fertilizers, Government of India | 2015 |

|     |               |                                                                                                                   |                   |      |
|-----|---------------|-------------------------------------------------------------------------------------------------------------------|-------------------|------|
| 94  | National      | Polymeric Nanoparticles of Curcumin for Improved Delivery                                                         |                   | 2015 |
| 95  |               | System for enhanced anticorrosive protection by using n-Octyl phosphonic acid based functionalized Zinc phosphate | 1834/MUM/2015     | 2015 |
| 96  | International | Manually operated continuous flow type drinking water disinfecter using concentrated solar radiation              | U. S. 9156713     | 2015 |
| 97  | International | Solar Conduction Dryer with Controlled Radiation                                                                  | PCT/IN2012/000843 | 2013 |
| 98  | International | CassavaTech and HaldiTech                                                                                         | PCT/IN2014/000689 | 2014 |
| 99  | National      | Solar Conduction Dryer                                                                                            | 740/MUM/2011      | 2013 |
| 100 | National      | System for enhanced anticorrosive protection by using n-Octyl phosphonic acid based functionalized Zinc phosphate | 4719/MUM/2015     | 2015 |

### Revenue Generated Through Licensed Patents and Technologies

(Professor A. M. Lali)

| Sr. No. | Year      | Title of the Project                                                      | Sanctioned Amt.                        | Funding Agency/ Industry |
|---------|-----------|---------------------------------------------------------------------------|----------------------------------------|--------------------------|
| 1       | 2014-2015 | Pilot Scale Translational Facility for Value Added Chemicals from Biomass | Rs.50.00 Lakhs                         | BIPP, BIRAC, India       |
| 2.      | 2015-2016 | Purification of Glycerin                                                  | Rs.100.00 Lakhs<br>Royalty for 10 yrs. | InNow LLC, USA           |
| 3.      | 2015-2016 | Development of improved animal feed ingredient from seed meals            | Rs.100.00 Lakhs<br>Royalty for 10 yrs. | Godrej Agrovvet, India   |
| 4.      | 2017-2018 | DBT-ICT 2G-Ethanol Technology                                             | Rs.162.50 Lakhs                        | HPCL, India              |

|    |           |                               |                 |                                           |
|----|-----------|-------------------------------|-----------------|-------------------------------------------|
| 5. | 2017-2018 | DBT-ICT 2G-Ethanol Technology | Rs.500.00 Lakhs | L & T, India                              |
| 6. | 2015-2018 | Soya Biorefinery              | Rs.50.00 Lakhs  | Kanoria Chemicals & Industries Ltd. India |

**23. Areas of consultancy and income generated:**

**Financial year 2017-18**

| <b>SR. NO</b> | <b>Name Of The Consultant</b> | <b>Name Of Company</b>                     | <b>Total Consultancy</b> |
|---------------|-------------------------------|--------------------------------------------|--------------------------|
| 1             | Prof. S.S Bhagawat            | M/s. Jayant Agro Organics                  | 200000.00                |
|               |                               | M/s. Galaxy Surfactants Ltd.               | 950400.00                |
|               |                               | M/s. Galaxy Surfactants Ltd.               | 150000.00                |
|               |                               | M/s. Marico Ltd.                           | 350000.00                |
|               |                               | M/s K.V.Fire                               | 300000.00                |
|               |                               | M/s.Balmer Lawrie                          | 300000.00                |
|               |                               | M/s. Aditya Birla Science & Tech. Co. Ltd. | 450000.00                |
|               |                               | M/s. Sumwin Solution Malaysia SDN BHD      | 300000.00                |
|               |                               |                                            |                          |
| 2             | Dr. Vishwanath H. Dalvi       | M/s.Sheney Enterprises Pvt.Ltd.            | 15000.00                 |
|               |                               |                                            |                          |
| 3             | Dr.P.R. Gogate                | M/s Privi Orhanics Ltd.                    | 300000.00                |
|               |                               | M/s. Y. Cube Tech. Pvt. Ltd.               | 45000.00                 |
|               |                               | M/s. Mangalam Organics Ltd.                | 225000.00                |
|               |                               | M/s. Navin Flurine International Ltd       | 120000.00                |
|               |                               | M/s. Autus International                   | 100000.00                |
|               |                               | M/s. Godavari Drugs Ltd.                   | 90000.00                 |
|               |                               | M/s. Zirconium Chemical Pvt. Ltd.          | 75000.00                 |
|               |                               | M/s. Asetic Life Sciecn Ltd.               | 180000.00                |
|               |                               | M/s. Innovassynth Technologies (India)Ltd. | 90000.00                 |
|               |                               | M/s. Chemco Innovative Chemie Pvt.Ltd.     | 90000.00                 |
|               |                               | M/s. Mangalam Organics Ltd.                | 225000.00                |
|               |                               | M/s.Chemference(DMCC)                      | 45000.00                 |
|               |                               | M/s. Green Galaxy Global Envirnmental      | \$9000                   |
|               |                               |                                            |                          |
| 4             | Dr. P.K. Ghosh                | M/s. Rubamin Ltd                           | 100000.00                |
|               |                               |                                            |                          |
| 5             | Prof. S.S. Jagwar             | M/s. Siemens Ltd                           | 140000.00                |
|               |                               |                                            |                          |
| 6             | Dr. Ratnesh Jain              | M/s.Wockhardt Ltd                          | 30000.00                 |
|               |                               | M/s. Galaxo Smitkline                      | 63600.00                 |
|               |                               | M/s. Anya Biopharma                        | 582720.00                |

|    |                      |                                                   |            |
|----|----------------------|---------------------------------------------------|------------|
|    |                      | M/s. Famy Care Ltd.                               | 60000.00   |
|    |                      | M/s. Advy Chemicals Pvt. Ltd.                     | 300000.00  |
|    |                      | M/s. Hetro Biopharma                              | 100000.00  |
|    |                      |                                                   |            |
| 7  | Prof Lakshami kantam | M/s. Marvel Drugs Pvt. Ltd                        | 200000.00  |
|    |                      |                                                   |            |
| 8  | Prof A.M. Lali       | M/s Godrej Agrovvet Ltd                           | 1000000.00 |
|    |                      |                                                   |            |
| 9  | Dr. C.S. Mathpati    | M/s. Jayant Agro -Organics Ltd.                   | 500000.00  |
|    |                      | M/s. UPL Ltd.                                     | 333333.00  |
|    |                      | M/s. Sun Pharma Technical Trading Academy         | 150000.00  |
|    |                      |                                                   |            |
| 10 | Prof K.V. Marathe    | M/s. PACE (India)                                 | 500000.00  |
|    |                      | M/s. PACE (India)                                 | 60000.00   |
|    |                      |                                                   |            |
| 11 | Dr. P.R. Nemade      | M/s. Mrib Chemicals                               | 150000.00  |
|    |                      |                                                   |            |
| 12 | Dr. D.V.Pinjari      | M/s. Department Of Revenue Intelligience          | 85000.00   |
|    |                      | M/s. Kirloskar Integrated Tech Pvt Ltd.           | 750000.00  |
|    |                      |                                                   |            |
| 13 | Prof. A.B. Pandit    | M/s. Khaitan And Co                               | 90000.00   |
|    |                      | M/s. GMM Pfadler                                  | 900000.00  |
|    |                      | M/s. B.P.C.L.                                     | 500000.00  |
|    |                      | M/s. Narendra Karnavat                            | 300000.00  |
|    |                      | M/s. SRF Ltd.                                     | 200000.00  |
|    |                      |                                                   |            |
| 14 | Prof. A.V.Patwardhan | M/s National Peroxide Ltd.                        | 500000.00  |
|    |                      | M/s. Siemens Ltd                                  | 84000.00   |
|    |                      | M/s. Bajaj Allianz General Insurance Company Ltd. | 150000.00  |
|    |                      |                                                   |            |
| 15 | Prof A.W.Patwardhan  | M/s. Siemens Ltd                                  | 84000.00   |
|    |                      | M/s. Nocil Ltd                                    | 1200000.00 |
|    |                      | M/s. GMM Pfadler Ltd                              | 900000.00  |
|    |                      | M/s. SRF Ltd.                                     | 200000.00  |
|    |                      |                                                   |            |
| 16 | Dr. V.K.Rathod       | M/s. Nautraplus India Ltd.                        | 150000.00  |
|    |                      | M/s. Harman Finochem Ltd.                         | 225000.00  |
|    |                      | M/s. Navin Fluorine Internatinal Ltd.             | 120000.00  |
|    |                      | M/s. Marvel Drugs Pvt.Ltd.                        | 200000.00  |
|    |                      | M/s. Crystal Surfactants & Chemical               | 90000.00   |

|    |                  |                                                   |            |
|----|------------------|---------------------------------------------------|------------|
|    |                  | M/s. Godrej Agrovate Ltd                          | 100000.00  |
|    |                  |                                                   |            |
| 17 | Dr. S.M.Sontakke | M/s. Narendra Karnavat                            | 300000.00  |
|    |                  |                                                   |            |
| 18 | Prof. B.N.Thorat | M/s. Marvel Drugs Pvt Ltd                         | 150000.00  |
|    |                  | M/s. Kansai Nerolac                               | 450000.00  |
|    |                  | M/s. Aquapharma Chemicals Pvt. Ltd.               | 250000.00  |
|    |                  |                                                   |            |
| 19 | Dr. P.D.Vaidya   | M/s. Aquapharma Chemicals Pvt. Ltd.               | 250000.00  |
|    |                  | M/s. Indian Oil Corporation Ltd                   | 600000.00  |
|    |                  | M/s. Indian Oil Corporation Ltd                   | 300000.00  |
|    |                  |                                                   |            |
|    |                  |                                                   |            |
| 20 | Prof. G.D. Yadav | M/s. ONGC Energy Centre (Alternative to Platinum) | 120000.00  |
|    |                  | M/s. ONGC Energy Centre(Closed loop)              | 160000.00  |
|    |                  | M/s. Malladi Drugs & Pharmaceutical Ltd.          | 1000000.00 |
|    |                  | M/s. Malladi Drugs & Pharmaceutical Ltd.          | 500000.00  |
|    |                  | M/s. Molten Salt                                  | 1000000.00 |
|    |                  |                                                   |            |

### Financial year 2016-17

| SR. | Name Of Consultant | Name Of Company                                 | Total       |
|-----|--------------------|-------------------------------------------------|-------------|
| NO  |                    |                                                 | Consultancy |
| 1   | DR. S.S. BHAGWAT   | M/S. UNICORN LABORATORIES LTD.                  | 450000.00   |
|     |                    | M/S MARICO,LTD.                                 | 350000      |
|     |                    | M/S BALMER LAWRIES & CO,LTD.                    | 225000      |
|     |                    | M/S GALAXY SURFACTANTS LTD.                     | 950400      |
|     |                    | M/S MARICO LTD.                                 | 350000      |
|     |                    |                                                 |             |
| 2   | DR. V.H. DALVI     | M/S. BHAVI PLAST PVT. LTD.                      | 75000       |
|     |                    | M/S. ADYA ENTERSIES                             | 150000      |
|     |                    |                                                 |             |
| 3   | DR. P. R. GOGATE   | M/S. EXCEL INDUSTRIES . LTD.                    | 175000      |
|     |                    | M/S. INNOVASSYNTH TECHNOLOGIES INDIA LTD.       | 90000       |
|     |                    | M/S. ANSHUL SPECIALTY MOLECULES LTD.            | 75000       |
|     |                    | M/S. GHARDA CHEMICAL LTD.                       | 90000       |
|     |                    | M/S. DEEPAK NITRITE LTD.                        | 90000       |
|     |                    | M/S. HIKAL LTD.                                 | 120000      |
|     |                    | M/S. DEEPAK NITRITE LTD.                        | 90000       |
|     |                    | M/S. ANEK PRAYOG PVT LTD.                       | 90000       |
|     |                    | M/S. Y CUBE TECHNOLOGIES PVT. LTD.              | 60000       |
|     |                    | M/S. RPG LIFE SCIENCES LTD.                     | 120000      |
|     |                    | M/S. HOSPIRA HEALTHCARE INDIA PVT LTD.          | 120000      |
|     |                    | M/S. Y CUBE TECHNOLOGIES PVT. LTD.              | 48000       |
|     |                    | M/S. DOMBIVLI COMMON EFFLUENT TREATMENT PLANT   | 150000      |
|     |                    | M/S. Y CUBE TECHNOLOGIES PVT. LTD.              | 45000       |
|     |                    | M/S. DEEPAK NITRITE LTD.                        | 30000       |
|     |                    | M/S. DEEPAK NITRITE LTD.                        | 120000      |
|     |                    | M/S. ESKAY DYESSTUFF ORGANIC CHEMICAL PVT. LTD. | 210000      |
|     |                    | M/S. MARGALAM ORGANICS LTD.                     | 225000      |
|     |                    |                                                 |             |
| 4   | DR.P.K.GHOSH       | M/S. RUBAMIN LIMITED.                           | 100000      |
|     |                    | M/S. RUBAMIN LIMITED.                           | 100000      |
|     |                    | M/S. ATUL LIMITED.                              | 100000      |
|     |                    | M/S. RUBAMIN LIMITED.                           | 100000      |
|     |                    |                                                 |             |
| 5   | PROF. V. G. GAIKAR | M/S. UNILEVER INDUSTRIES LTD.                   | 1200000     |
|     |                    |                                                 |             |
| 6   | PROF. S.S. JOGWAR  | M/S. LUBRIZOL INDIA PVT. LTD.                   | 150000      |



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|----|------------------------|-------------------------------------------|---------|
|    |                        | M/S. SIEMENS LTD.                         | 210000  |
| 7  | DR. RATNESH JAIN       | M/S. FMC INDIA PVT. LTD.                  | 72000   |
|    |                        | M/S. GLAXO SMITHKLINE PHARMACEUTICAL LTD. | 75000   |
|    |                        | M/S. GLAXO SMITHKLINE PHARMACEUTICAL LTD. | 63600   |
|    |                        | M/S. GLAXO SMITHKLINE PHARMACEUTICAL LTD. | 58800   |
| 8  | DR. LAXMI KANTAM       | M/S. ETERNIS FINE CHEMICAL LTD.           | 600000  |
|    |                        | M/S. AARTI DRUGS LTD.                     | 600000  |
|    |                        | M/S. ETERNIS FINE CHEMICAL LTD.           | 150000  |
|    |                        | M/S. ETERNIS FINE CHEMICAL LTD.           | 150000  |
|    |                        | M/S. ETERNIS FINE CHEMICAL LTD.           | 150000  |
| 9  | PROF. A. M. LALI       | M/S. GODREJ AGROVET LTD.                  | 1000000 |
| 10 | DR. C. S. MATHPATI     | M/S. BHAVI PLAST PVT. LTD.                | 75000   |
|    |                        | M/S. U.P.L. LTD.                          | 500000  |
| 11 | DR. P. R. NEMADE       | M/S. GALAXY SURFACTANTS LTD.              | 150000  |
| 12 | PROF. A. B. PANDIT     | M/S. SRF LTD.                             | 900000  |
|    |                        | M/S. ENCORE NATURAL POLYMERS PVT.LTD.     | 1800000 |
|    |                        | M/S. IDEAL CHEMI PLAST PVT. LTD.          | 102000  |
|    |                        | M/S. NARENDRA KARNAVAT                    | 500000  |
|    |                        | M/S. DR. AYKAN TEXTILES PVT. LTD.         | 75000   |
|    |                        | M/S. L & T TECH                           | 600000  |
| 13 | PROF. A. W. PATWARDHAN | M/S. PRAJ INDUSTRIES LTD.                 | 300000  |
|    |                        | M/S. NOCIL LTD.                           | 1200000 |
|    |                        | M/S. LUBRIZOL INDIA PVT. LTD.             | 225000  |
|    |                        | M/S. SIEMENS LTD.                         | 84000   |
| 14 | DR. DEEPAK PINJARI     | M/S. COCA COLA R & D                      | 35000   |
|    |                        | M/S. COCA-COLA LTD.                       | 300000  |
|    |                        | M/S. KARGWAL CONSTRUCTIONS PVT. LTD.      | 80000   |
|    |                        | M/S. AARTI DRUGS LTD.                     | 300000  |
|    |                        | M/S. NIRBHAY RASAYAN PVT. LTD.            | 150000  |
|    |                        | M/S. OMEGA COLOURS PVT. LTD.              | 150000  |
|    |                        | M/S. SHUBASHRI CHEMICALS PVT. LTD.        | 30000   |

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|    |                        | M/S. KARGWAL CONSTRUCTIONS PVT. LTD.           | 30000  |
|    |                        | M/S. SETCO AUTOMIC, VADODARA, GUJRAT           | 93000  |
|    |                        |                                                |        |
| 15 | PROF. A. V. PATWARDHAN | M/S. LUBRIZOL INDIA PVT. LTD.                  | 150000 |
|    |                        | M/S. NATIONAL PEROXIDE LTD.                    | 300000 |
|    |                        | M/S. SUDARSHAN CHEMICAL INDUSTRIES LTD.        | 45000  |
|    |                        | M/S. HINDUSTHAN CHEMICALS COMPANY, SURAT       | 30000  |
|    |                        | M/S. ATUL LTD.                                 | 250000 |
|    |                        | M/S. SEIMENS LTD.                              | 84000  |
|    |                        |                                                |        |
| 16 | DR. V. K. RATHOD       | M/S. INNOVATIVE ECO-CARE PVT. LTD.             | 252000 |
|    |                        | M/S. THREE M PAPER MANUFACTURING CO PVT.. LTD. | 250000 |
|    |                        | M/S. NICHEM SOLUTIONS                          | 51000  |
|    |                        | M/S. KONARK HERBALS AND HEALTH CARE            | 600000 |
|    |                        | M/S. ADITYA ENVIRONMENTAL SERVICES PVT. LTD.   | 225000 |
|    |                        | M/S. ARCH PHARMALABS LTD.                      | 150000 |
|    |                        | M/S. PRASOL CHEMICALS LTD.                     | 173913 |
|    |                        | M/S. NATROPLUS INDIA LTD.                      | 150000 |
|    |                        | M/S. VETPHARMA LTD.                            | 150000 |
|    |                        | M/S. NATROPLUS INDIA LTD.                      | 150000 |
|    |                        |                                                |        |
| 17 | DR. S. M. SONTAKKE     | M/S. NARENDRA KARNAVAT                         | 500000 |
|    |                        | M/S. GULBRANDSEN CHEMICALS PVT. LTD.           | 500000 |
|    |                        | M/S. DR. AYKAN TEXTILES PVT. LTD.              | 20000  |
|    |                        | M/S. PROLIFIC CHEMICALS PVT. LTD.              | 75000  |
|    |                        | M/S. NARENDRA KARNAVAT                         | 150000 |
|    |                        | M/S. MACRO BARS AND WIRES (I) PVT. LTD.        | 150000 |
|    |                        | M/S. BILLS GVS PHARMA LTD.                     | 150000 |
|    |                        |                                                |        |
| 18 | PROF. B. N. THORAT     | M/S. J. S. INDUSTRIES LTD.                     | 150000 |
|    |                        | M/S. RPG LIFE SCIENCES LTD.                    | 100000 |
|    |                        | M/S. PIDILITE INDUSTRIES LTD.                  | 200000 |
|    |                        | M/S. EXCEL INDUSTRIES LTD.                     | 225000 |
|    |                        | M/S. GULBRANDSEN CHEMICALS PVT. LTD.           | 500000 |
|    |                        | M/S. AQUAPHARMA CHEMICALS PVT. LTD.            | 250000 |
|    |                        | M/S. PULERA CHEMICALS INDIA PVT. LTD.          | 50000  |
|    |                        | M/S. SPECTROCHEM PVT. LTD.                     | 50000  |
|    |                        | M/S. KHANNA & KHANNA LTD.                      | 50000  |
|    |                        | M/S. MARVEL DRUGS PVT. LTD.                    | 150000 |
|    |                        |                                                |        |

|    |                   |                                     |         |
|----|-------------------|-------------------------------------|---------|
| 19 | DR. P. D. VAIDYA  | M/S. ATUL LTD.                      | 150000  |
|    |                   | M/S. INDIAN OIL CORPORATION LTD.    | 300000  |
|    |                   | M/S. EXCEL INDUSTRIES LTD.          | 225000  |
|    |                   | M/S. AQUAPHARMA CHEMICALS PVT. LTD. | 500000  |
|    |                   |                                     |         |
| 20 | PROF. G. D. YADAV | M/S. DELTA FINOCHEM PVT. LTD.       | 900000  |
|    |                   | M/S. RESONANCE SPECIALITIES LTD.    | 600000  |
|    |                   | M/S. HEUBACH COLOUR PVT. LTD.       | 1500000 |
|    |                   | M/S. ONGC ENERGY CENTRE             | 100000  |
|    |                   | M/S. ONGC ENERGY CENTRE             | 120000  |
|    |                   | M/S. ONGC ENERGY CENTRE             | 160000  |
|    |                   |                                     |         |

**Financial year 2015-16**

| SR. | NAME OF CONSULTANT | NAME OF THE COMPANY                  | TOTAL        |
|-----|--------------------|--------------------------------------|--------------|
|     |                    |                                      |              |
|     |                    |                                      |              |
| 6   | PROF. S.S.BHAGWAT  | M/S MARICO LIMITED                   | 2,88,000.00  |
|     |                    | M/S. GALAXY SURFACTANTS LTD.         | 2,88,000.00  |
|     |                    | M/S. Hindustan Unilever LTD.         | 10,000       |
|     |                    | M/S. Blmers Lawries co. LTD.         | 225000.00    |
|     |                    | M/S. GALAXY SURFACTANTS LTD.         | 8,64,000.00  |
|     |                    | M/s K.V.Fire Chemicle ( I ) pvt.ltd. | 3,00,000.00  |
|     |                    | M/S DCM Shriram                      | 3,00,000.00  |
|     |                    | M/s Jayant Agro-organics             | 9,00,000.00  |
|     |                    |                                      |              |
| 11  | DR. P. R. GOGATE   | M/S. ASTEC LIFESCIENCES LIMITED.     | 60000.00     |
|     |                    | M/S. LUPIN LIMITED.                  | 90000.00     |
|     |                    | M/S. HIKAL LIMITED.                  | 90000.00     |
|     |                    | M/S. DEEPAK NITRITE LIMITED.         | 60000.00     |
|     |                    | M/S. GLENMARK PHARMACEUTICALS LTD.   | 150000.00    |
|     |                    | M/S Seya Indistrial Ltd.             | 60,000.00    |
|     |                    | M/S Hikal Ltd.                       | 60,000.00    |
|     |                    | M/S Excel Indistrial Ltd.            | 1,75,000.00  |
|     |                    | M/S. DEEPAK NITRITE LIMITED.         | 60,000.00    |
|     |                    | M/S Indofial Indistrial Ltd.         | 90,000.00    |
|     |                    | M/S Workhardt Ltd.                   | 4,50,000.00  |
|     |                    | M/S Workhardt Ltd.                   | 2,00,000     |
|     |                    | M/S Hikal Ltd.                       | 90,000.00    |
|     |                    | M/S Workhardt Ltd.                   | 2,90,250.00  |
|     |                    | M/s Gharda Chemicals ltd             | 90,000.00    |
|     |                    | M/s Gharda Chemicals ltd             | 90,000.00    |
|     |                    | M/s Ecosphere Technology             | 10,71,680.00 |

|    |                     |                                           |              |
|----|---------------------|-------------------------------------------|--------------|
|    |                     | M/S. ASTEC LIFESCIENCES LIMITED.          | 90,000.00    |
|    |                     | M/S Workhardt Ltd.                        | 1,29,000.00  |
|    |                     | M/s Suprem Petrochem ltd                  | 90,000.00    |
|    |                     |                                           |              |
|    |                     |                                           |              |
| 12 | DR. PUSHPITO GHOSH  | M/S. RUBAMIN LIMITED.                     | 100000.00    |
|    |                     | M/S. ATUL LIMITED.                        | 100000.00    |
|    |                     | M/S. RUBAMIN LIMITED.                     | 1,00,000.00  |
|    |                     | M/S. RUBAMIN LIMITED.                     | 1,00,000.00  |
|    |                     | M/S. ATUL LIMITED.                        | 12,00,000.00 |
|    |                     |                                           |              |
| 13 | PROF.V.G.GAIKAR     | M/S. UNILEVER INDUSTRIES (P) LTD.         | 300000.00    |
|    |                     | M/S. UNILEVER INDUSTRIES (P) LTD.         | 12,00,000.00 |
|    |                     | M/s Bharat Oman Refineries                | 90,000.00    |
|    |                     |                                           |              |
| 14 | Mr. O.P. Goyal      | M/s Bharat Oman Refineries                | 90,000.00    |
|    |                     |                                           |              |
| 15 | DR. RATNESH JAIN    | M/S. INVIENTUS ENTERPRISES LTD.           | 100000.00    |
|    |                     | M/S. GALAXO SMITKLINE.                    | 21000.00     |
|    |                     | M/S. GALAXO SMITKLINE.                    | 33,300.00    |
|    |                     | M/S. INVIENTUS ENTERPRISES LTD.           | 44,300.00    |
|    |                     | M/S. GALAXO SMITKLINE.                    | 18,900.00    |
|    |                     |                                           |              |
|    |                     |                                           |              |
| 17 | Dr.Sujit Jogwar     | M/S DCM Shriram                           | 3,00,000.00  |
|    |                     | M/s Asian Paints Ltd                      | 1,66,667.00  |
|    |                     | M/s Bharat Oman Refineries                | 1,80,000.00  |
| 21 | PROF. A.M. LALI     | M/S. INDIA GLYCOLS LTD.                   | 3,00,000.00  |
|    |                     |                                           |              |
|    |                     |                                           |              |
| 24 | DR. C.S.MATHPATI    | M/S. UNITED PHOSPHORUS LTD.               | 500000.00    |
|    |                     | M/S. ADYA ENTERPRISES.                    | 87336.00     |
|    |                     | M/s Mass Transfer Products Industries     | 4,32,000.00  |
|    |                     | M/s Rhitan & CO                           | 50,000.00    |
|    |                     | M/s UPL Ltd                               | 5,00,000.00  |
|    |                     | M/s Dardi Salt Pvt ltd                    | 50,000.00    |
|    |                     | M/s Transfer Product Industries           | 38,668.00    |
|    |                     |                                           |              |
| 26 | Dr.P.R.Nemade       | M/s Aether Industries Ltd                 | 21,930.00    |
|    |                     | M/s Chemtron Science Laboratories Pvt Ltd | 51,000.00    |
| 27 | PROF.A.W.PATWARDHAN | M/S. TECH MAHINDRA LIMITED.               | 225000.00    |
|    |                     | M/S. NOCIL LIMITED.                       | 1200000.00   |
|    |                     | M/s Asian Paints                          | 1,66,667.00  |
|    |                     | M/s Bharat Oman Refineries                | 1,80,000.00  |

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|----|---------------------|-----------------------------------------|--------------|
|    |                     |                                         |              |
| 29 | Prof.A.B.Pandit     | M/s Encore Natural Polymer Pvt ltd      | 18,00,000.00 |
|    |                     | Asian Paints                            | 3,00,000     |
|    |                     | M/s Hindustan Unilever Ltd              | 90,000.00    |
|    |                     | M/s Atul Limited                        | 7,50,000.00  |
|    |                     |                                         |              |
| 30 | Dr.Dipak Pinjare    | M/s Directorate OF Revenue Intelligence | 51,000.00    |
|    |                     | M/s Swagat Polymers                     | 1,80,000.00  |
|    |                     | M/s Elkay Chemicle PVT.LTD              | 42,000.00    |
|    |                     | M/s Arvind Cootsyn (India) Ltd          | 30,000.00    |
|    |                     | M/s Computer Engineers                  | 30,000.00    |
|    |                     | M/s Zero D Industries                   | 30,000.00    |
|    |                     | M/s Divakar Techno Specalities          | 40,000.00    |
|    |                     | M/s Tata Chemicle Pvt ltd               | 40,000.00    |
|    |                     | M/s Simplex Infrastructure Ltd          | 30,000.00    |
|    |                     | M/s Jai Ambe Developers                 | 50,000.00    |
|    |                     | M/s P &P Product                        | 53,000.00    |
|    |                     | M/s Prathmik Shikshan Sanchalanalay     | 71,000.00    |
|    |                     | M/s The Education Depttment             | 40,500.00    |
|    |                     | M/s pyrocraft System LTD                | 50,000.00    |
|    |                     | M/S GITE Technology India Pvt.Ltd       | 50,000.00    |
|    |                     | M/s Muraspec Distrubution India Pvt.ltd | 2,00,417.00  |
|    |                     | M/s Shree Ganesh Entrprise              | 30,000.00    |
|    |                     |                                         |              |
| 31 | Prof. A.V.Patwardhn | M/s Asian Paints Ltd                    | 1,66,667.00  |
|    |                     | M/s Bhart Oman Refineries               | 2,70,000.00  |
|    |                     |                                         |              |
| 32 | DR. V. K. RATHOD    | M/S. AARTI DRUGS LTD.                   | 65000.00     |
|    |                     | M/S. AARTI DRUGS LTD.                   | 65000.00     |
|    |                     | M/S. DU ORGANICS PVT. LTD.              | 75000.00     |
|    |                     | M/S. CROP CARE FEDERATION OF INDIA      | 51000.00     |
|    |                     | M/s Jubilant Life Science ltd           | 75,000.00    |
|    |                     | M/s Dv Organics Pvt LTD                 | 75,000.00    |
|    |                     | M/s Megafine Pharma ltd                 | 2,00,000.00  |
|    |                     | M/s IG Petro chemicles                  | 2,00,000.00  |
|    |                     | M/s Godrej Agrovat Ltd                  | 95,000.00    |
|    |                     | M/s IPCA Labaratories ltd               | 3,00,000.00  |
|    |                     | M/s Additya Envitromentel Pvt LTD       | 3,00,000.00  |
|    |                     | M/S crop care fedration India           | 51,000.00    |
|    |                     | M/s Juubilant Ltd                       | 75,000.00    |
|    |                     | M/s Vinali Organics Ltd                 | 1,50,000.00  |
|    |                     |                                         |              |
| 36 | Dr.Sharad Sontakke  | M/s Maharashtra Pollution Board         | 3,00,000.00  |
|    |                     |                                         |              |

|    |                    |                                  |              |
|----|--------------------|----------------------------------|--------------|
| 41 | PROF. B. N. THORAT | M/S. GHCL LIMITED.               | 750000.00    |
|    |                    | M/S. JUBLIANT LIFE SCIENCES LTD. | 700000.00    |
|    |                    | M/S. HARMAN FINOCHEM LIMITED.    | 150000.00    |
|    |                    | M/S. PT. SOUTH PACIFIC VISCOSE   | 300000.00    |
|    |                    | M/s Azista Indu.Ltd              | 2,50,000.00  |
|    |                    | M/s Azista Indu.Ltd              | 56,250.00    |
|    |                    | M/s Azista Indu.Ltd              | 56,249.00    |
|    |                    |                                  |              |
| 44 | Prof .P.D.Vaidya   | M/s Asvik Pharama & Chemicle Ltd | 40,000.00    |
|    |                    | M/s Reliance Industries Ltd      | 4,50,000.00  |
|    |                    | M/s Indian Oil Corporation       | 12,00,000.00 |
|    |                    |                                  |              |
| 45 | PROF. G. D. YADAV  | M/S. ONGC ENERGY CENTRE.         | 80000.00     |
|    |                    | M/S. ONGC ENERGY CENTRE          | 60000.00     |
|    |                    | M/S. ONGC ENERGY CENTRE          | 3,00,000.00  |
|    |                    | M/S. ONGC ENERGY CENTRE          | 4,80,000.00  |
|    |                    | M/S. ONGC ENERGY CENTRE          | 1,80,000.00  |
|    |                    | M/s U.K. Aromatics &Chemicles    | 15,00,000.00 |

**24. Faculty selected nationally / internationally to visit other laboratories / institutions industries in India and abroad:**

| Sr. No. | Faculty         | Place of Visit   | Duration                 | Purpose                                                                                                 |
|---------|-----------------|------------------|--------------------------|---------------------------------------------------------------------------------------------------------|
|         | Dr. P.R. Gogate | USA              | May 2012 (2 weeks)       | Industrial consultancy with M/s Ecosphere Tech., Florida, USA                                           |
|         |                 | USA              | November 2012 (1 week)   | Invited lecture at AOT-18 conference in Jacksonville, Florida, USA                                      |
|         |                 | Northern Ireland | December 2012 (1 week)   | Invited lecture at DST-RSC workshop on Process Intensification                                          |
|         |                 | Hungary          | April-May 2013 (3 weeks) | Indo-Hungary Educational Exchange Program of UGC, India and HSB, Hungary                                |
|         |                 | USA              | November 2013 (1 Week)   | Invited lecture at AOT-19 conference in San Diego, USA and visit to Ecosphere Technologies Inc. Florida |
|         |                 | Belgium          | November 2013 (1         | Invited lecture at KU Leuven                                                                            |

|  |  |                                              |                         |                                                                                                                                                                                                                  |
|--|--|----------------------------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  |                                              | Week)                   | and Workshop on Industrial applications of ultrasound based reactors                                                                                                                                             |
|  |  | Japan                                        | March 2014 (1 week)     | 79 <sup>th</sup> Annual meeting of SCEJ for receiving the award and presenting invited lecture                                                                                                                   |
|  |  | Australia                                    | October 2014 (1 week)   | Invited lecture at CHEMECA, Perth, Australia                                                                                                                                                                     |
|  |  | Hungary, Spain                               | May-June 2015 (3 weeks) | Collaboration with University of West Hungary, Hungary and presenting two papers at EMChIE, Tarragona, Spain                                                                                                     |
|  |  | Malaysia                                     | July 2015               | Invited lecture at AOSS-2, Kuala Lumpur, Malaysia                                                                                                                                                                |
|  |  | AISSMS COE, Pune                             | January 2015            | Hydrodynamic Cavitation for Process Intensification: Opportunities and Limitations” Invited lecture at National Seminar on 'Intensification of Chemical Processing using Novel Reactors' organized by AISSMS COE |
|  |  | Hungary, Spain                               | May-June 2015 (3 weeks) | Collaboration with University of West Hungary, Hungary and presenting two papers at EMChIE, Tarragona, Spain                                                                                                     |
|  |  | Malaysia                                     | July 2015               | Invited lecture at AOSS-2, Kuala Lumpur, Malaysia                                                                                                                                                                |
|  |  | D J Sanghavi College of Engineering, Mumbai, | September 2015          | Hybrid methods based on Hydrodynamic cavitation for Wastewater treatment”, Invited lecture at Clean India seminar organized by D J Sanghavi College of Engineering                                               |
|  |  | Bogazici University, Istanbul, Turkey        | October 2015            | INSA-TUBA Exchange of Scientists Program at Bogazici University, Istanbul, Turkey                                                                                                                                |
|  |  | Malaysia                                     | December 2015           | Examiner for PhD thesis examination, University of Nottingham, Malaysia Campus                                                                                                                                   |



|   |                     |                                        |                                |                                                                                                            |
|---|---------------------|----------------------------------------|--------------------------------|------------------------------------------------------------------------------------------------------------|
|   |                     | KK Wagh College of Engineering, Nashik | February 2016                  | Invited lecture at Chemical Engineering Department, KK Wagh College of Engineering                         |
|   |                     | Bogazici University, Istanbul, Turkey  | June 2016                      | Keynote Lecture at ESS 15 held at Bogazici University, Istanbul                                            |
|   |                     | University of Minho, Portugal          | November 2016                  | Collaboration with University of Minho, Portugal and invited lecture at University of Porto, Portugal      |
|   |                     | AISSMS College of Engineering, Pune    | February 2017                  | Invited lecture at National workshop on Advances in Chemical Reactor Design, AISSMS College of Engineering |
|   |                     | Tarapur MIDC                           | June 2017                      | Invited lecture at Seminar on Solution based awareness on air and water quality for MIDC, Tarapur MIDC     |
| 2 | Prof. S. S. Bhagwat | Malaysia                               | 3 days                         | <b>The 7<sup>th</sup> Asian Conference on Colloid &amp; Interface Science, Kuala Lumpur 2017</b>           |
| 3 | P D Vaidya          | University of Liverpool                | 01.01.2016 to 01.06.2016       | India Fellowship Awardee 2015                                                                              |
| 4 | Prof. V.G. Gaikar   | Lonere                                 | November, 2012                 | Training Program, Research Methodology                                                                     |
|   |                     | UK                                     | November, 2012                 | Reading University, University of Edinborough                                                              |
|   |                     | France                                 | November, 2012                 | Paris Institute of Technology                                                                              |
|   |                     | Pune                                   | Dec 2012                       | Key note lecture Faculty Development Program at MIT Academy of Engineering                                 |
|   |                     | Mumbai                                 | December 2012                  | Invited Lecture, Chemference 2012, Departments of Chemical Engineering                                     |
|   |                     | Lonere                                 | 30 <sup>th</sup> November 2012 | Dr. Babasaheb Ambedkar Technological University                                                            |

|   |                   |                                              |                               |                                                                                                  |
|---|-------------------|----------------------------------------------|-------------------------------|--------------------------------------------------------------------------------------------------|
|   |                   | Pune,                                        | 2 <sup>nd</sup> December 2012 | Maharashtra Academy Engineering College,                                                         |
|   |                   | Germany                                      | February, 2013                | Max Palnale Institute, Leipzis University                                                        |
|   |                   | Raipur,                                      | April 5, 2013                 | Advances in Chemical engineering'                                                                |
|   |                   | UK                                           | November, 2013                | Bradford University                                                                              |
|   |                   | Kalpakkam                                    | March,2014                    | Indira Gandhi Center for Atomic Research                                                         |
|   |                   | New Delhi                                    | March 2014                    | Guru Gobind Singh Indraprastha University                                                        |
|   |                   |                                              | October 2014                  | SVNIT                                                                                            |
|   |                   | Amravati                                     | May 2014                      | Amravati University                                                                              |
|   |                   |                                              | April 2015                    | Dr. Babasaheb Ambedkar Technological University                                                  |
|   | Prof. A.B. Pandit | Santa Barbara, USA                           | January 13-May 2013           | Excahnge Visitor, Department of Chemical Engineering, University of California,                  |
|   |                   | University of California, Santa Barbara, USA | Jan. 2013-May. 2013           | Visiting Professor                                                                               |
| 6 | Prof. B.N. Thorat | Lyon, France                                 | August 24-27, 2014            | Economic evaluation of Solar Cabinet Dryer System: a case study on onion drying,                 |
|   |                   | Dona Paula, Goa                              | 6 <sup>th</sup> February 2011 | The role of drying in the preparation of food and feed with special reference to lactic cultures |
|   |                   | Ahmadabad, Gujarat                           | 13-15 March, 2013             | Granulation and flow characteristics of solids. Keynote speaker at Powder and Bulk Solids India  |
|   |                   | Bangkok, Thailand                            | IFET, 2012                    | Effect of various pretreatments and drying techniques on Thompson                                |

|   |                                             |                    |                     |                                                                                                       |
|---|---------------------------------------------|--------------------|---------------------|-------------------------------------------------------------------------------------------------------|
|   |                                             |                    |                     | seedless grapes                                                                                       |
|   |                                             | Graz, Austria      | 16-20 April, 2012   | Filtration of mycelium suspension from fermentation broth                                             |
|   |                                             | Las Vegas, USA     | 25 Jun- 28 Jun 2012 | Drying of Bitter Melon by Various Methods and its Evaluation                                          |
|   |                                             | Xiamen, China      | 11-15 November 2012 | Process development for dehydrated flavoured Chicken shreds from spent hen meat                       |
|   |                                             | Wiesbaden, Germany | 22 October, 2013    | Antisolvent crystallization and pressure filtration of Salicylic Acid: Influence of mixing conditions |
| 7 | Prof. M Lakshmi Kantam<br>Adjunct professor | RMIT University    | continuing          | Joint research work and lectures                                                                      |

## 25 Faculty serving in

a) National committees    b) International committees    c) Editorial Boards

### Professor G. D. Yadav

- Elected Chair, APCAT-7, 7th Asia Pacific Congress on Catalysis Societies, January 17-21, 2017
- Chemistry of Clean Energy Conversion, Storage, and Production, Nano Catalysis for Clean Energy and environmentally Friendly Chemical Production (#81) organized by Ajay Dalai, Nicolas Abatzoglou, Burtron Davis, Azhar Uddin, Jansuz Kozinski, G.D. Yadav and Ahmad Tavasoli, PACIFICHEM 2015: The International Chemical Congress of Pacific Basin Societies, Honolulu, Hawaii, Dec. 15-20, 2015
- Founder Chair- ACS India International Chemical Sciences Chapter
- Coordinator from ICT, Indo-Canadian Centre: IC-IMPACTS with University of British Columbia, University of Alberta and University of Toronto and 6 Indian institutes
- Editor-in-Chief, Catalysis in Green Chemistry and Engineering, Begell House, New York
- Co-Editor with M. Lakshi Kantam and B.M. Bhanage, ACS Sustainable Chemistry and

Engineering Special Issue on 'Catalysis for Sustainable Development, Peace and Prosperity

- Co-Editor with M. Lakshi Kantam and B.M. Bhanage, Catalysis Today (Elsevier) Special Issue on 'Catalysis for Sustainable Development, Peace and Prosperity
- Co-Editor, with B.M. Bhanage Clean Technology and Environmental Policy (Springer) Special Issue on 'Catalysis for Sustainable Development, Peace and Prosperity
- Associate Editor, European Journal of Biotechnology and Bioscience
- Member, Editorial Board, Green Chemistry (RSC, UK)
- Associate Editor, Current Catalysis, Bentham Science Publishers
- Distinguished Plenary Speaker, 42nd Convention of the South African Chemical Institute, Durban, November 29-December 4, 2015
- Distinguished Global Leader Seminar Speaker, Imperial College London (Leaders who have shaped the future of Chemical Engineering Profession, March 11, 2014
- Adjunct Professor, University of Saskatchewan, Faculty of Engineering, Department of Chemical and Biological Engineering, Canada (June 2013- onwards)

#### **Prof. Arvind M. Lali**

- Member, Task Force on Production of Methanol using Biomass/Municipal Solid Waste/source other than coal, NITI Aayog, New Delhi
- Member, Scientific Advisory Committee (SAC), Centre of Innovative and Applied Bioprocessing (CIAB), Mohali
- Research Council as a Scientific Expert/Member for Bharat Petroleum Corporation Ltd. (BPCL)
- Member, core group of scientists in the area of Bioenergy with Ministry of New and Renewable Energy, Government of India.
- Member, Department of Biotechnology, Ministry of S&T of India Task Force in Biofuels, Algal Biotechnology and Bioproducts and Bioprocesses
- Member, Apex Committees, Food and Nutritional Safety, DBT, India.
- Member, Task Force Committees on Biofuels, Bioprocesses and Bio-products, DBT, India.
- Member of the Scientific Advisory Committee (SAC) on Industrial Biotechnology.
- Member of the Scientific Advisory Committee (SAC) on DBT-International Centre For Genetic Engineering And Biotechnology (ICGEB), New Delhi
- Member of the Scientific Advisory Committee (SAC) on DBT-IOC | Centre for Advanced Bioenergy Research, Faridabad
- Member of the Scientific Advisory Committee (SAC) on DBT-PAN IIT
- Member, Research Council Committee, IMTECH, Chandigarh

#### **Prof. B.N. Thorat**

- |   |                                                                                |
|---|--------------------------------------------------------------------------------|
| 1 | Member. CAC Advisory Committee, Maharashtra Pollution Control Board, July 2017 |
|---|--------------------------------------------------------------------------------|

|                          |                                                                                                                                                               |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          | onward                                                                                                                                                        |
| 2                        | Member, DSIR industrial R&D recognition and fiscal committee                                                                                                  |
| 3                        | Member, State Environment Appraisal Committee (SEAC-I), Govt. of Maharashtra, February 2014-October 2016                                                      |
| 4                        | Member, Consent Committee, Maharashtra Pollution Control Board, 2006-2013.                                                                                    |
| 5                        | Chairman, 1 <sup>st</sup> to 11 <sup>th</sup> International Workshop on Crystallization Filtration and Drying, 2006-2017                                      |
| 6                        | Committee member, Planning Commission "Working Group on XII <sup>th</sup> five year plan for higher education", Government of India. 2012                     |
| 7                        | Founder President, "World Forum for Crystallization, Filtration and Drying", 2006. ( <a href="http://www.wcfd.org">http://www.wcfd.org</a> )                  |
| 8                        | Chairman, 16 <sup>th</sup> International Drying Symposium IDS2008, Hyderabad, India.                                                                          |
| 9                        | Chairman, International Workshop and Symposium on Industrial Drying, IWSID, 2004                                                                              |
| <b>Prof. A.B. Pandit</b> |                                                                                                                                                               |
| 1                        | Expert in Ph.D. (Tech.) fellowships selection in the area of Engineering and Technology for UGC and member PAC major Research Projects, UGC                   |
| 2                        | Member of Project Appraisal Committee (PAC) for the Department of Science and Technology scheme for the Engineering Committee                                 |
| 3                        | Member of Project Appraisal Committee (PAC) of the Department of Science and Technology scheme for Chemical Engineering specialization under the SERC Program |
| 4                        | Co-ordinator of DAE ICT Center for Chemical Engineering and Research                                                                                          |
| 5                        | President of Board of Governors, UDCT Alumni Association, ICT Mumbai                                                                                          |
| 6                        | Member of Project Appraisal Committee (PAC) for the Department of Science and Technology scheme for the Food Processing and Technology Committee              |
| 7                        | Member of Selection committee for Shanti Swarup Bhatnagar Award, Fellowship of INSA, IASc and INAE                                                            |
| 8                        | Member of Selection Committee for DST Inspire Faculty Fellow                                                                                                  |
| 9                        | Member of Selection Committee for INSA-NASI-IAS Summer Research Fellowship program                                                                            |
| 10                       | UGC Expert Member of Technical Evaluation at various University and Institute                                                                                 |
| <b>Dr. P.R. Gogate</b>   |                                                                                                                                                               |
| 1                        | Member, Executive committee, IChE Mumbai Regional Center                                                                                                      |
| 2                        | Member, Board of Governors, UDCT Alumni Association                                                                                                           |
| <b>Prof. J.B. Joshi</b>  |                                                                                                                                                               |
| 1                        | Chairman, Scientific advisory committee, IICT, Hyderabad                                                                                                      |
| 2                        | Chairman, FIST programme of DST, Govt of India                                                                                                                |
| 3                        | Member "Initiatives on Clean Coal Technologies"                                                                                                               |
| 4                        | Member : Indian National Academy of Engineering"                                                                                                              |
| 5                        | Chairman for the selection committee of director CSIR                                                                                                         |
| 6                        | Member "NRDC Awards Committee" New Delhi                                                                                                                      |
| 7                        | President Marathi Vidnyan Parishad                                                                                                                            |
| <b>Prof. P.K. Ghosh</b>  |                                                                                                                                                               |
| 1                        | Chairman, Water Technology Initiative, Department of Science & Technology, GoI                                                                                |
| 2                        | Member, Board of Directors, Barefoot College, Tilonia, Rajasthan                                                                                              |
| 3                        | Chairman, Project Evaluation Committee, Bilateral Programmes in Clean Tech Sector, DST-GITA                                                                   |
| 4                        | Member, NRDC Prize Award Committee                                                                                                                            |
| 5                        | Member, Advisory and Screening Committee of the Common Research &                                                                                             |

|                                                                             |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                             |  | Technology Development Hubs Programme of DSIR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 6                                                                           |  | Vice President, Materials Research Society of India (MRSI)                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 7                                                                           |  | Member, Asian Paints Technology Council                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 8                                                                           |  | Member, Expert Committee for Appraisal of programmes and projects undertaken by the Department of Biotechnology, GoI during the 12th Plan.                                                                                                                                                                                                                                                                                                                                                                                             |
| 9                                                                           |  | Co-Chairman, CSIR Mission Mode Project on Sustainable Development through Catalysis                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 10                                                                          |  | Member, TIFAC's Global Technology Watch Group (GTWG) for Water Sector                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Prof. M Lakshmi Kantam</b>                                               |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 1                                                                           |  | 2016- Member, Board of Governors, IIT-Hyderabad                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 2                                                                           |  | Member, DST –PAC ( Inorganic and Physical Chemistry)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 3                                                                           |  | Member, Selection Committee, Raja Ramanna Fellowship Scheme, DAE                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 4                                                                           |  | Member, Scientific Advisory Committee(SAC) on Hydrocarbons of MoP& NG                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Prof. B. N. Thorat</b>                                                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                                             |  | <b>International Advisory/Scientific Member on following societies:</b><br>- Nordic Baltic Drying conference, <b>2003, 2005, 2009, 2011, 2015, 2017.</b><br>- International Drying Symposium (IDS), <b>2002, 2004, 2006, 2008, 2010, 2012, 2014, 2016, 2018.</b><br>- Asia-Pacific Drying Conference, <b>2003, 2005, 2007, 2009, 2011, 2013, 2015, 2017.</b><br>- Russian Thermal Processing Society, EFCE, <b>2005.</b><br>- French Drying Society (AFSIA), <b>2005, 2007.</b><br>- Polish Drying Society, Lodz, Poland, <b>2009.</b> |
| <b>Prof. A.B. Pandit</b>                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 1                                                                           |  | Fellow, Sir J. C. Bose, Department of Science and Technology, Government of India                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 2                                                                           |  | Fellow, The World Academy of Sciences                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 3                                                                           |  | Fellow, Maharashtra Academy of Sciences                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 4                                                                           |  | Fellow, Indian National Academy of Engineering                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 5                                                                           |  | Fellow, Indian Academy of Sciences                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 6                                                                           |  | Fellow, Indian National Science Academy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 7                                                                           |  | Member of International advisory committee, Process Innovation and Process Intensification conference-September 2002, Scotland, UK                                                                                                                                                                                                                                                                                                                                                                                                     |
| 8                                                                           |  | Member of International organising committee, International Symposium on Mixing in Industrial Processes-2004, Morocco                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 9                                                                           |  | Member of International advisory committee, Meeting of the European Sonochemists Society (ESS-9)-2004 held at Badajoz, Spain                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                                                             |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Membership of Editorial Boards of Prestigious International Journals</b> |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Dr. P.R. Gogate</b>                                                      |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 1                                                                           |  | Member, Editorial Board, Advances in Environmental Research – An international journal, 2013-2016                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 2                                                                           |  | Member, Editorial board, Ultrasonics Sonochemistry (Elsevier), 2015-2018                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 3                                                                           |  | Member, Editorial Board, Desalination and Water Treatment (Taylor & Francis), 2016-2018                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 4                                                                           |  | Associate Editor, Chemical Engineering Processing, Process Intensification                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

|                               |  |                                                                                                                 |
|-------------------------------|--|-----------------------------------------------------------------------------------------------------------------|
|                               |  | (Elsevier), 2016-2019                                                                                           |
|                               |  |                                                                                                                 |
| <b>Prof. A.B. Pandit</b>      |  |                                                                                                                 |
| 1                             |  | Member of Editorial Board, Journal of Mustard Research Promotion Council                                        |
| 2                             |  | <i>Member of Editorial Board and Associate Editor, Ultrasonics Sonochemistry Journal, Elsevier, Netherlands</i> |
| 3                             |  | Member of Editorial Board, Industrial Engineering and Chemistry                                                 |
| 4                             |  | Member of Editorial Board, Chemical Engineering & Processing                                                    |
| 5                             |  | Member of Editorial Board, Journal of Science Assam                                                             |
| 6                             |  | Associate Editor of Canadian Journal of Chemical Engineering                                                    |
| <b>Prof. J.B. Joshi</b>       |  |                                                                                                                 |
| 1                             |  | Reviews in Chemical Engineering                                                                                 |
| <b>Prof. S.S. Bhagwat</b>     |  |                                                                                                                 |
| 1                             |  | Journal of surface science and technology                                                                       |
| <b>Prof. M Lakshmi Kantam</b> |  |                                                                                                                 |
| 1                             |  | Editorial Board Member, Journal of Chemical Sciences, Springer Publishers.                                      |
| 2                             |  | Editorial Board Member, Chemical Record (TCR), Wiley-VCH.                                                       |
|                               |  |                                                                                                                 |

**Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs).**

| Inward Date | Duration            | Month    | Activity                       | Faculty Name       | Objective                                                          | Deliverables            | Institute                                                                     |
|-------------|---------------------|----------|--------------------------------|--------------------|--------------------------------------------------------------------|-------------------------|-------------------------------------------------------------------------------|
| 17/8/2012   | 15-21 October, 2012 | October  | "Management Building Capacity" | Dr. V.H. Dalvi     | "Management Building Capacity"                                     | Time management skills  | Prin. L. N. Welingkar Institute Of Management, Development & research         |
| 17/8/2012   | 15-21 October, 2012 | October  | "Management Building Capacity" | Dr. P. R. Nemade   | "Management Building Capacity"                                     | Time management skills  | Prin. L. N. Welingkar Institute Of Management, Development & research         |
| 17/8/2012   | 7-15 December, 2012 | December | Subject Knowledge Enhancement  | Dr. C.S. Mathapati | Learn To Use Dynamic Simulation Software/ Process Simulation Using | Undergraduate Education | Prof. Sanjay Mahajani, Department of Chemical Engineering, IIT-Bombay, Mumbai |



|           |                               |          |                                         |                  |                                                                                                                                                                  |                                                                    |                                                                       |
|-----------|-------------------------------|----------|-----------------------------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------------------------------|
|           |                               |          |                                         |                  | Aspen.                                                                                                                                                           |                                                                    |                                                                       |
| 17/8/2012 | 7-15 December, 2012           | December | Subject Knowledge Enhancement           | Dr. V.H. Dalavi  | Learn to use Quantum Mechanical Calculation Software                                                                                                             | Ability to use Quantum Mechanical Calculation Software             | Dr. Raj Ganesh Pala, Department of Chemical Engineering, IIT, Kanpur) |
| 17/8/2012 | October-December 2012         | October  | Management capacity enhancement program | Dr.P. D. Vaidya  | Enhancement of teaching and research skills by working under the supervision of Professor V. A. Juvekar In IIT Bombay<br><b>Subject : Advanced Mass Transfer</b> | Improved teaching skills, research collaboration and publications. | IIT Bombay                                                            |
| 25/9/2012 | 15-21 October, 2012           | October  | "Management Building Capacity"          | Dr. P. D. Vaidya | "Management Building Capacity"                                                                                                                                   |                                                                    | Prin. L. N. Welingkar Institute Of Management, Development & research |
| 22/1/2013 | 24 Feb 2013<br>1 - 4 Feb 2013 | January  | Management Training                     | Dr. P.R. Gogate  | To attend Management Training at IIT Bombay                                                                                                                      |                                                                    | IIT Bombay, Powai                                                     |
| 22/1/2013 | 24 Feb 2013<br>1 - 4 Feb 2013 | January  | Management Training                     | Dr. V. H. Dalvi  | To attend Management Training at IIT Bombay                                                                                                                      |                                                                    | IIT Bombay, Powai                                                     |
| 22/1/2013 | 24 Feb 2013<br>1 - 4 Feb 2013 | January  | Management Training                     | Dr. P. D. Vaidya | To attend Management Training at IIT Bombay                                                                                                                      |                                                                    | IIT Bombay, Powai                                                     |
| 22/1/2013 | 24 Feb 2013<br>1 - 4 Feb 2013 | January  | Management Training                     | Dr. P. R. Nemade | To attend Management Training at IIT Bombay                                                                                                                      |                                                                    | IIT Bombay, Powai                                                     |
| 22/1/2013 | 24 Feb 2013<br>1 - 4 Feb 2013 | January  | Management Training                     | Dr. Ratnesh Jain | To attend Management Training at IIT Bombay                                                                                                                      |                                                                    | IIT Bombay, Powai                                                     |
| 21/2/2013 | 12-23 March 2013              | March    | Faculty Development                     | Dr. P. R. Nemade | Attend FDP on entrepreneurship and look to                                                                                                                       | White paper on ideas gained in the workshop                        | NITTTR, Bhopal, M.P.                                                  |

|           |                |      |                                                   |                                       |                                                                                                |                     |                                                                                               |
|-----------|----------------|------|---------------------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------|---------------------|-----------------------------------------------------------------------------------------------|
|           |                |      |                                                   |                                       | implement knowledge gained in the workshop to stimulate entrepreneurial spirit in the students |                     |                                                                                               |
| 3/7/2013  | 8-12 July 2013 | July | Faculty Enhancement Activities                    | Dr. V. H. Dalvi                       | Introduction to CFD in Engineering Domain using Computing Softwares, at VJTI, Mumbai.          |                     | VJTI, Mumbai.                                                                                 |
| 3/7/2013  | 8-12 July 2013 | July | Faculty Enhancement Activities                    | Dr. C. S. Mathapati                   | Introduction to CFD in Engineering Domain using Computing Softwares, at VJTI, Mumbai.          |                     | VJTI, Mumbai.                                                                                 |
| 4/7/2013  | 8 July, 2013   | July | Conference                                        | Dr. Neetu Jha                         | Paper Presentation In a Conference on Advanced Nanomaterials & Engineering Technologies        |                     | Sathyabama University, Jeppiaar Nagar, Rajiv Gandhi Road, Chennai - 600119, Tamil Nadu, India |
| 5/7/2013  | 6 July, 2013   | June | Enhancement for UG & research-Poster Presentation | Dr. P. R. Nemade                      | Poster Presentation arrangements for display of UG Research                                    |                     | ICT, Mumbai                                                                                   |
| 5/16/2013 | 3-7 June 2013  | June | Faculty Training(8th Summer School)               | Dr. P. R. Nemade & Dr. S. M. Sontakke | Up to date knowledge in the field of refining, petrochemical and production technologies       |                     | Petroleum Refining & Petrochemicals, IIPM                                                     |
| 13/6/2013 | 20 June, 2013  | June | Faculty Development                               | Dr. D. V. Pinjari                     | Attending UGC                                                                                  | Faculty Development | UGC Faculty Recharge                                                                          |

|            |                         |          |                                                                                  |                             |                                                                                                                                                                            |                                                                                                                                                           |                                                                             |
|------------|-------------------------|----------|----------------------------------------------------------------------------------|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
|            |                         |          | t                                                                                |                             | Meeting                                                                                                                                                                    |                                                                                                                                                           | Programme<br>Old CRS<br>Building,<br>J.N.U.<br>Campus,<br>New Delhi         |
| 6/24/2013  | 8-12 July<br>2013       | July     | Faculty<br>Enhanceme<br>nt Activities                                            | Dr. P. D.<br>vaidya         | Introduction<br>to CFD in<br>Engineering<br>Domain<br>using<br>Computing<br>Softwares,<br>at VJTI,<br>Mumbai.                                                              |                                                                                                                                                           | VJTI,<br>Mumbai.                                                            |
| 30/10/2013 | 11-15th<br>Nov. 2013    | October  | Faculty<br>Developmen<br>t Programme                                             | Dr.<br>Prakash<br>D. Vaidya | Participation<br>in Faculty<br>Developmen<br>t Program<br>on<br>Catalysis,<br>Chemistry<br>Research<br>Centre, BIT<br>& PPISR,<br>Bangalore                                | Catalysis<br>Industrial<br>Training<br>Certification<br>Program                                                                                           | Catalysis,<br>Chemistry<br>Research<br>Centre, BIT<br>& PPISR,<br>Bangalore |
| 1/17/2014  | 20-<br>24/1/2014        | January  | Engineering<br>Pedagogical<br>Trainig<br>Programme                               | Dr. Neetu<br>Jha            | Engineering<br>Pedagogical<br>Trainig<br>Programme                                                                                                                         |                                                                                                                                                           | Shruth &<br>Smith<br>Foundation                                             |
| 2/11/2014  | 21-22 Feb<br>2014       | February | Faculty<br>Developmen<br>t Program<br>on Virtual<br>Labs<br>Organised<br>by COEP | Dr. Sujit<br>S. Jogwar      | To learn<br>about the<br>virtual Lab<br>initiative<br>undertaken<br>at COEP<br>and<br>familiarize<br>with the<br>remote<br>Triggered<br>Advanced<br>Process<br>Control Lab | Use of virtual<br>lab for own<br>research,<br>potential use of<br>remote<br>advanced<br>process control<br>lab for<br>chemical<br>engineering<br>students | Department<br>of<br>Instrumentati<br>on & Control                           |
| 4/3/2014   | 11-12,<br>April<br>2014 | April    | Faculty<br>Developmen<br>t                                                       | Dr. C. S.<br>Mathpati       | Present<br>proposal for<br>funding to<br>DAE                                                                                                                               |                                                                                                                                                           | TPDM<br>Mangalore<br>University,<br>Karnataka                               |
| 4/3/2014   | 11-12,<br>April<br>2014 | April    | Faculty<br>Developmen<br>t                                                       | Dr. P. R.<br>Nemade         | Present<br>proposal for<br>funding to<br>DAE                                                                                                                               |                                                                                                                                                           | TPDM<br>Mangalore<br>University,<br>Karnataka                               |
| 6/6/2014   | 23-27<br>June, 2014     | June     | Managemen<br>t Capacity                                                          | Dr.<br>Vishwanat            | Gain<br>insights into                                                                                                                                                      | Plan for<br>improving                                                                                                                                     | IIT Kanpur                                                                  |

|           |                  |          |                   |                       |                                                                                                      |                                                                                           |     |
|-----------|------------------|----------|-------------------|-----------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----|
|           |                  |          | Enhancement       | h H. Dalvi            | teaching of physics and related fields. Invaluable for teaching and staying current as a researcher. | courses in physics and allied subjects e.g: Statistical Mechanics and Computer Simulation |     |
| 6/10/2014 | 28-29 March 2014 | February | Pedagogy Training | Dr. Vishwanath Dalvi  | To introduce teaching-learning modes to young faculty of ICT                                         | Better classroom management, lecture delivery & assessment                                | ICT |
| 6/10/2014 | 28-29 March 2014 | February | Pedagogy Training | Dr. Ashwin Patwardhan | To introduce teaching-learning modes to young faculty of ICT                                         | Better classroom management, lecture delivery & assessment                                | ICT |
| 6/10/2014 | 28-29 March 2014 | February | Pedagogy Training | Dr. Vijay Kumar       | To introduce teaching-learning modes to young faculty of ICT                                         | Better classroom management, lecture delivery & assessment                                | ICT |
| 6/10/2014 | 28-29 March 2014 | February | Pedagogy Training | Dr. Prakash Vaidya    | To introduce teaching-learning modes to young faculty of ICT                                         | Better classroom management, lecture delivery & assessment                                | ICT |
| 6/10/2014 | 28-29 March 2014 | February | Pedagogy Training | Dr. Sachin Mathpati   | To introduce teaching-learning modes to young faculty of ICT                                         | Better classroom management, lecture delivery & assessment                                | ICT |
| 6/10/2014 | 28-29 March 2014 | February | Pedagogy Training | Dr. V. K. Rathod      | To introduce teaching-learning modes to young faculty of ICT                                         | Better classroom management, lecture delivery & assessment                                | ICT |
| 6/10/2014 | 28-29 March 2014 | February | Pedagogy Training | Dr. P. R. Nemade      | To introduce teaching-learning                                                                       | Better classroom management,                                                              | ICT |

|          |                 |      |                                 |                  |                                                                                                                                                                                  |                                                                  |     |
|----------|-----------------|------|---------------------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|-----|
|          |                 |      |                                 |                  | modes to young faculty of ICT                                                                                                                                                    | lecture delivery & assessment                                    |     |
| 7/3/2014 | 03-08 July 2014 | July | Capacity Development of Faculty | Dr. Neetu Jha    | To help the faculty members understand and address the crucial issue of appropriate mentoring in a holistic manner & impart to them the techniques to cope up with daily stress. | Honing mentoring skills of ICT faculty, Stress management at ICT | ICT |
| 7/3/2014 | 03-08 July 2014 | July | Capacity Development of Faculty | Dr. Ratnesh Jain | To help the faculty members understand and address the crucial issue of appropriate mentoring in a holistic manner & impart to them the techniques to cope up with daily stress. | Honing mentoring skills of ICT faculty, Stress management at ICT | ICT |
| 7/3/2014 | 03-08 July 2014 | July | Capacity Development of Faculty | Dr. V. H. Dalvi  | To help the faculty members understand and address the crucial issue of appropriate mentoring in a holistic manner & impart to them the techniques to cope up with daily         | Honing mentoring skills of ICT faculty, Stress management at ICT | ICT |

|           |                 |          |                                 |                     |                                                                                                                                                                                  |                                                                  |                    |
|-----------|-----------------|----------|---------------------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|--------------------|
|           |                 |          |                                 |                     | stess.                                                                                                                                                                           |                                                                  |                    |
| 7/3/2014  | 03-08 July 2014 | July     | Capacity Development of Faculty | Dr. Sadhana Sathaye | To help the faculty members understand and address the crucial issue of appropriate mentoring in a holistic manner & impart to them the techniques to cope up with daily stress. | Honing mentoring skills of ICT faculty, Stress management at ICT | ICT                |
| 7/3/2014  | 03-08 July 2014 | July     | Capacity Development of Faculty | Dr. Parag Gogate    | To help the faculty members understand and address the crucial issue of appropriate mentoring in a holistic manner & impart to them the techniques to cope up with daily stress. | Honing mentoring skills of ICT faculty, Stress management at ICT | ICT                |
| 7/3/2014  | 03-08 July 2014 | July     | Capacity Development of Faculty | Dr. P. R. Nemade    | To help the faculty members understand and address the crucial issue of appropriate mentoring in a holistic manner & impart to them the techniques to cope up with daily stress. | Honing mentoring skills of ICT faculty, Stress management at ICT | ICT                |
| 12/5/2014 | 15-20, Decem    | December | Management capacity             | Dr. Prakash         | Training on management                                                                                                                                                           |                                                                  | Self and Institute |

|           |                             |              |                                                    |                             |                                                                                                     |                                                                                      |                                                         |
|-----------|-----------------------------|--------------|----------------------------------------------------|-----------------------------|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------|
|           | ber 2014                    |              | enhancemen<br>t program                            | Vaidya                      | Capacity<br>Enhanceme<br>nt for<br>Administrat<br>ors                                               |                                                                                      |                                                         |
| 12/5/2014 | 15-<br>20,Decem<br>ber 2014 | Decembe<br>r | Managemen<br>t capacity<br>enhancemen<br>t program | Dr. P. R.<br>Nemade         | Training on<br>management<br>Capacity<br>Enhanceme<br>nt for<br>Administrat<br>ors                  |                                                                                      | Self and<br>Institute                                   |
| #####     | 05-09<br>January,<br>2015   | January      | Pedagogy<br>Training                               | Dr.<br>Prakash<br>D. Vaidya | Pedagogy<br>Training                                                                                | Pedagogy for<br>effective use of<br>ICT in<br>Engineering<br>Education               | IIT Bombay                                              |
| 1/1/2015  | 5 days                      | Jan          | Pedagogy<br>Training                               | Dr. P. R.<br>Nemade         | To attend<br>workshop<br>on teaching<br>pedagogy at<br>IIT Bombay                                   | NA                                                                                   | IIT Bombay                                              |
| 1/1/2015  | 5th jan -<br>9th jan        | Jan          | Pedagogy<br>Training                               | Dr.S.M.So<br>ntakke         | To attend<br>workshop<br>on teaching<br>pedagogy at<br>ICT in Engg<br>Education                     | Training<br>program on<br>teaching skills                                            | IIT Bombay                                              |
| 3/30/2015 | 12-16Feb<br>2015            | February     | Subject<br>Knowledge<br>Enhanceme<br>nt            | Dr. V.H.<br>Dalvi           | To teach<br>applied<br>maths &<br>hence<br>computer<br>programmin<br>g better                       | Teaching<br>Applied<br>Mathematics to<br>post graduate<br>students in<br>engineering | IITBombay                                               |
| 6/5/2015  | 13-<br>15July201<br>5       | July         | Managemen<br>t capacity<br>enhancemen<br>t program | Prof.<br>V.G.Gaika<br>r     | Patent<br>drafting &<br>filing &IP<br>Managemen<br>t                                                |                                                                                      | Self and<br>Institute                                   |
| 6/2/2015  | 17-21<br>August<br>2015     | August       | Managemen<br>t capacity<br>enhancemen<br>t program | Prof. V.<br>G. Gaikar       | To get<br>trained in<br>financial<br>management                                                     |                                                                                      | To get<br>trained in<br>financial<br>management         |
| 6/25/2015 | 26-28June<br>2015           | June         | Workshop                                           | Dr. V. H.<br>Dalvi          | Workshop<br>on<br>Advanced<br>data<br>Analytics in<br>management<br>(ADAM-<br>2015) at<br>IIT-Delhi | Insight into<br>data analytics                                                       | Greater<br>sophistication<br>in ICT admin<br>activities |
| 6/6/2015  | 13-                         | July         | Managemen                                          | Prof.                       | Petent                                                                                              |                                                                                      | Self and                                                |



|            |                                  |          |                                              |                    |                                                                                                                                    |                                              |                                                           |
|------------|----------------------------------|----------|----------------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-----------------------------------------------------------|
|            | 15 July 2015                     |          | Management capacity enhancement program      | V.G. Gaikar        | drafting & filing & IP Management                                                                                                  |                                              | Institute                                                 |
| 6/2/2015   | 17-21 August 2015                | August   | Management capacity enhancement program      | Prof. V. G. Gaikar | To get trained in financial management                                                                                             |                                              | To get trained in financial management                    |
| 5/7/2015   | 13-15 May 2015                   | May      | FDP (workshop)                               | Dr. Sujit Jogwar   | Learning best practices to teach Applied Mathematics to Engineering students                                                       |                                              | Faculty members of engg. Coll. with post graduate courses |
| 12/29/2015 | 22nd Feb. 2016 to 27th Feb. 2016 | February | Workshop                                     | Prof. V. G. Gaikar | To network with Indian & German Institutes in the workshop at Guhawati - IIT                                                       | To Form Collaborative projects in N-E States |                                                           |
| 12/29/2015 | 11th and 12th Jan. 2016          | January  | Conference                                   | Prof. V. G. Gaikar | To attend "International Conference in Engineering Education " at COEP , Pune                                                      | To learn new Pedagogy                        |                                                           |
| 12/29/2015 | 8th and 9th Jan. 2016            | January  | Leadership Program RUSA Meeting at New Delhi | Prof. V. G. Gaikar | To undergo Leadership Development Program under RUSA                                                                               | Learning Leadership Skill                    |                                                           |
| 1/1/2016   | 13th Feb. 2016 to 16th Feb. 2016 | February | Symposium                                    | Dr. S. M. Sontakke | To attend Symposium " ChemE@IIS C Symposium (CIS) 2016" at Dept. of Chemical Engineering at Indian Institute of science, Bangalore |                                              |                                                           |

## 27. Student projects

- Percentage of students who have done in-house projects including inter-departmental projects :**(100%)**
- Percentage of students doing projects in collaboration with other universities/industry / institute: **(15-20 % students at PG level in research) and (100% for UG for in-plant training)**

**28. Awards / recognitions received at the national and international level by Faculty, Doctoral/post doctoral fellows and students**

| <b>Professor G. D. Yadav</b> |                                                                                                                                                                                                                                                                                                                                       |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2016                         | Padma Shri (January 26, 2016) by President of India; 28th March (For exceptional contributions to Science and Engineering )                                                                                                                                                                                                           |
| 2016                         | D. Sc. (Hon. Causa) – D.Y. Patil University Kolhapur, 13th April                                                                                                                                                                                                                                                                      |
| 2016                         | Loknete Sadashivrao Mandalik Jeevan Gaurav Puraskar, Kolhapur.                                                                                                                                                                                                                                                                        |
| 2015                         | Karveer Bhushan, Rotary Club of Karveer Kolhapur for contributions to profession and society                                                                                                                                                                                                                                          |
| 2014                         | Life Time Achievement Award and Gold Medal, Indian Chemical Council                                                                                                                                                                                                                                                                   |
| 2014                         | IPCL Award for Best M Tech Thesis (Student : Abhijit Talpade, Guide:Prof G.D. Yadav), Indian Society for Technical Education                                                                                                                                                                                                          |
| 2015                         | Chinese Academy of Sciences, Dalian, May 2015                                                                                                                                                                                                                                                                                         |
| 2014                         | L'Oreal Science Inside Out Symposium, L'Oreal Research and Innovation                                                                                                                                                                                                                                                                 |
| 2014                         | IPCL Award for Best M. Tech Thesis in Chemical Engineering by Indian Society for Technical Education to Mr Abhijit Talpade (Student) and G.D. Yadav (Guide), 2014                                                                                                                                                                     |
| 2015                         | Hindustan Platinum Award for the Best Poster Presentation: Akhil Nakhate and G.D. Yadav, at CATSYMP 2015, Catalysis Society of India, January 7-9, CSMCRI, Bhavnagar.                                                                                                                                                                 |
| 2014                         | Honoured with a Festschrift (special issue) by Industrial and Engineering Chemistry Research, ACS ( Vol. 53, Issue 49 (10 December 2014) for life time achievement: <a href="http://pubs.acs.org/toc/iecred/current#GanapatiDYadavFestschriftEditorial">http://pubs.acs.org/toc/iecred/current#GanapatiDYadavFestschriftEditorial</a> |

| <b>Sr. No.</b> | <b>Faculty</b>     | <b>Awards and Honors</b>                                                                                              | <b>Year</b> |
|----------------|--------------------|-----------------------------------------------------------------------------------------------------------------------|-------------|
| 1              | <b>B.N. Thorat</b> | Gunther Oertel Startup Innovation Award for Microbutor Innovation, Covestro,(Former Bayer Material Science, Germany). | 2017        |
|                |                    | Millennium Alliance Award by UKAID-FICCI, <b>10 lakh US Dollar</b> (solar conduction dryer scale-up in Nepal)         | 2016        |
|                |                    | Millennium Alliance Award by UKAID-FICCI, <b>10 lakh US Dollar</b> (Casaava Tech Scale-up in Kenya)                   | 2016        |
|                |                    | NOCIL AWARD for excellence in design of new equipment and process.                                                    | 2015        |
|                |                    | The VASVIK Award for the year 2012 in the field of Chemical Sciences and Technology.                                  | 2015        |
|                |                    | Grand Challenges India Award by BIRAC-USAID and Gates Foundation                                                      | 2014        |
|                |                    | BIRAC award , Design and development of electricity free baby incubator                                               | 2014        |
|                |                    | Bill and Melinda Gates Foundation Award of USD 100,000 (One Lakh US Dollar) for Innovative Cassava Dryer.             | 2013        |
|                |                    | Bill and Melinda Gates Foundation Award of USD 100,000 (One Lakh US Dollar) for Innovative Solar Grain Dryer.         | 2013        |

|    |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |      |
|----|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
|    |                           | Dell Social Innovation Award of USD 60,000 (Sixty thousand US Dollar) for developing “Solar Conduction Dryer”.                                                                                                                                                                                                                                                                                                                                                                          | 2013 |
|    |                           | Vocational Excellence Award, for his valuable contribution to Science and Society for making Solar Conduction Dryer for the Agricultural Sector, Rotary Club of Mumbai Cuffe Parade.                                                                                                                                                                                                                                                                                                    | 2013 |
|    |                           | Award for Excellence in Drying and Promotion of the Nordic Drying Conferences in Asia at 5th Nordic Drying Conference, Helsinki, Finland.                                                                                                                                                                                                                                                                                                                                               | 2011 |
| 2  | <b>Vishwanath Dalvi</b>   | Best Teacher Award of the Institute of Chemical Technology Mumbai                                                                                                                                                                                                                                                                                                                                                                                                                       | 2011 |
|    |                           | Best Teacher Award of the Institute of Chemical Technology, Mumbai                                                                                                                                                                                                                                                                                                                                                                                                                      | 2017 |
| 3  | <b>P.R. Gogate</b>        | -Outstanding Professor Award given by Indian Specialty Chemicals Manufacturing Association                                                                                                                                                                                                                                                                                                                                                                                              | 2015 |
|    |                           | - Maharashtra State national award for best research work done by teachers of Engineering Colleges, Indian Society for Technical Education, New Delhi                                                                                                                                                                                                                                                                                                                                   | 2016 |
| 4  | <b>Prof S. S. Bhagwat</b> | INSA best teacher award                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2016 |
| 5  | <b>Virendra K. Rathod</b> | Fellow of Maharashtra Academy of Sciences                                                                                                                                                                                                                                                                                                                                                                                                                                               | 2015 |
| 6  | <b>P D Vaidya</b>         | India Fellowship Award 2015, University of Liverpool, UK                                                                                                                                                                                                                                                                                                                                                                                                                                | 2016 |
| 7  | <b>Dr. Ratnesh Jain</b>   | DAE young scientist award                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 2012 |
| 8  | <b>Dr. Ratnesh Jain</b>   | Young Associate ship, Maharashtra Academy of Science                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2012 |
| 9  | <b>Prof. P.K. Ghosh</b>   | <ol style="list-style-type: none"> <li>1. Fellow, Indian Academy of Sciences</li> <li>2. Honorary Fellow, Indian Institute of Chemical Engineers</li> <li>3. Lifetime Achievement Award, Indian Chemical Council</li> <li>4. Indian Desalination Association's Lifetime Achievement Award (2015)</li> <li>5. MRSI Silver Jubilee Medal (2014)</li> <li>6. National Science Day Lecture, NCL Pune (28 Feb 2017)</li> </ol>                                                               |      |
| 10 | <b>Prof. A.M. Lali</b>    | <ul style="list-style-type: none"> <li>• Awarded “G.M.Marve” Prize for Most Research Oriented Group during 2016-17 by Institute of Chemical Technology, Mumbai</li> <li>• Science and Technology "Eminent Scientist" Award by KG Foundation, Coimbatore, 2016.</li> <li>• BIRAC Innovator Award 2016 by DBT &amp; Chairman BIRAC, 2016</li> <li>• UAA-ICT Distinguished Alumnus Awards in Academic, 2015.</li> <li>• Vasvik Award in Biological Sciences &amp; Technology by</li> </ul> |      |

|    |                               |                                                                                                                           |         |
|----|-------------------------------|---------------------------------------------------------------------------------------------------------------------------|---------|
|    |                               | VividhlaxiAudyogikSamshodhanVikas Kendra, Mumbai, 2013                                                                    |         |
| 11 | <b>Prof. A. B. Pandit</b>     | Sir J. C. Bose Fellow of the Department of Science and Technology, Government of India                                    | 2015    |
|    |                               | Vishwakarma Medal, INSA                                                                                                   | 2015    |
|    |                               | Fellow The World Academy of Sciences (TWAS)                                                                               | 2015    |
|    |                               | INSA, Best Teacher Award                                                                                                  | 2012    |
|    |                               |                                                                                                                           |         |
| 12 | <b>Prof. M Lakshmi Kantam</b> | Fellow of Maharashtra Akademy of Sciences,                                                                                | 2016    |
|    |                               | Eminent Scientist Award – Catalysis Society of India.                                                                     | 2015    |
|    |                               | Fellow of the Indian National Science Academy                                                                             | 2014    |
|    |                               | Fellow of The Royal Society of Chemistry, UK                                                                              | 2013    |
|    |                               | Chairperson, Subject Expert Committee, Women Scientists Scheme, Department of Science and Technology, Government of India | 2010-15 |
| 13 | <b>Prof. V. G. Gaikar</b>     | ChE-D.O.S.T. Dr. S.K. Sharma Medal and CHEMCON Distinguished Speaker Award                                                | 2013    |

**29. Seminars/ Conferences/Workshops organized and the source of funding (national international) with details of outstanding participants, if any.**

| Sr. No. | Name of Faculty | 11-12                              | 12-13 | 13-14  | 14-15 | 15-16 | 16-17 |
|---------|-----------------|------------------------------------|-------|--------|-------|-------|-------|
|         |                 | <b>Seminar/Conference/workshop</b> |       |        |       |       |       |
| 1       | Bhagwat S S     | 1/1/2                              | 2     | 4/7/0  | 2/2/3 | 0/2/1 | 0/1/2 |
| 2       | Gaikar V G      | 2/6/8                              |       | 1/14/0 | 4/3/5 |       |       |
| 3       | Gogate P R      | 0                                  | 5/0/2 | 3/4/0  | 2/0/1 |       |       |
| 4       | Jain R D        | 0                                  |       | 2/0/0  | 1/2/1 |       |       |
| 5       | Lali A M        | 2/1/1                              |       | 2/4/1  |       | 1/1/1 | 1/1/2 |
| 6       | Marathe K V     | 0/0/2                              |       | 2/0/0  |       |       |       |
| 7       | Mathpati C S    | 0                                  | 3/0/0 | 0/3/1  | 0/2/0 | 0/2/1 | 0/1/2 |

|    |                |       |       |       |       |       |       |
|----|----------------|-------|-------|-------|-------|-------|-------|
| 8  | Pandit A B     | 1     |       | 6/1/0 | 0/1/1 |       |       |
| 9  | Patwardhan A V | 0     |       | 1/0/0 | 1/0/3 |       |       |
| 10 | Patwardhan A W | 0/1/1 | 2/0/0 | 4/1/4 | 6/7/1 |       |       |
| 11 | Rathod V K     | 0     |       | 0/1/0 |       | 1/1/2 | 2/1/2 |
| 12 | Sontakke S M   | 0/0/3 |       | 0/0/2 |       |       |       |
| 13 | Thorat B N     | 6/7/2 | 6/3/3 | 8/1/1 | 4/4/3 | 1/1/1 | 1/1/1 |
| 14 | Vaidya P D     | 0/6/0 |       | 1/0/1 |       |       |       |
| 15 | Yadav G D      | 5/4/9 |       |       |       |       |       |
| 16 | Pinjari D V    |       |       | 3/1/0 | 6/0/0 |       |       |
| 17 | Jogwar S S     |       |       | 2/0/1 | 2/1/0 |       |       |
| 18 | Nemade P.R.    |       |       |       | 1/1/5 |       |       |
| 19 | Sontakke Jyoti |       |       |       | 0/0/2 |       |       |

### 30. Code of ethics for research followed by the departments

- (a) Plagiarism is avoided using web based tools
- (b) Honesty, team work is promoted
- (c) Avoid results manipulation

### 31. Student profile programme-wise:

| Name of the Programme<br>(refer to question no. 4) | Applications received | Selected |        | Pass percentage<br>Please update from exam/ Dr. Gogate |        |
|----------------------------------------------------|-----------------------|----------|--------|--------------------------------------------------------|--------|
|                                                    |                       | Male     | Female | Male                                                   | Female |
| <b>B Chem. Engg.</b>                               |                       |          |        |                                                        |        |
| 2011-12                                            | 584                   | 60       | 17     | 78.3%                                                  | 76.5%  |
| 2012-13                                            | 745                   | 60       | 18     | 100%                                                   | 100%   |
| 2013-14                                            | Admission through DTE | 61       | 17     | 98.3%                                                  | 100%   |
| 2014-15                                            | Admission through DTE | 56       | 24     | 98.2%                                                  | 100%   |
| 2015-16                                            | Admission through DTE | 61       | 19     | 98.4%                                                  | 100%   |
| 2016-17                                            | Admission through DTE | 62       | 19     | 98.2%                                                  | 100%   |
| <b>M.Chem. Engg.</b>                               |                       |          |        |                                                        |        |
| 2011-12                                            | 94                    | 26       | 4      | 100%                                                   | 100%   |
| 2012-13                                            | 180                   | 21       | 4      | 100%                                                   | 100%   |
| 2013-14                                            | 168                   | 28       | 5      | 100%                                                   | 100%   |
| 2014-15                                            | 290                   | 21       | 9      | 100%                                                   | 100%   |
| 2015-16                                            | 320                   | 21       | 9      | 100%                                                   | 100%   |
| 2016-17                                            | 380                   | 25       | 5      | 100%                                                   | 100%   |

### 32. Diversity of students:

| Name of the Programme<br>(refer to question no. 4) | % of students from the same university | % of students from other universities within the State | % of students from universities outside the State | % of students from other countries |
|----------------------------------------------------|----------------------------------------|--------------------------------------------------------|---------------------------------------------------|------------------------------------|
| B.Chem Engg                                        | 0                                      | 70%                                                    | 30%                                               | 0                                  |
| M. Chem. Engg                                      | 2 to 5%                                | 70%                                                    | 20%                                               | 0                                  |



**33. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise.**

| Sr. No. | Name                | Degree              | Year of Passing | Present Position                        |
|---------|---------------------|---------------------|-----------------|-----------------------------------------|
| 1       | Mr. Dhananjay Mali  | B.Chem.Engg.        | 2003            | IRS-2012                                |
| 2       | Mr. Arvind Ghuge    | M.Tech.(Food)       | 2005            | IRS-2013                                |
| 3       | Mr. Amit Shendarkar | B.Tech. and M.Tech. | 2002 and 2005   | Assistant Commissioner, Sales Tax -2012 |
| 4       | Mr. Amit Puri       | B.Tech.             | 2006            | Tahsildar-2013                          |
| 5       | Mr. Navneet Singh   | B.Tech.             | 2004            | IPS-2010                                |
| 6       | Mr. Navin Bhat      | B.Tech.             | 2005            | IPS-2011                                |
| 7       | Mr. Manoj Chaudhari | B.Tech.             | 2006            | Central Excise Inspector – 2012         |
| 8       | Mr. Kiran Kale      | B.Tech.             | 2005            | Assistant Commissioner, Sales Tax -2013 |

All the M Chem Engg students are GATE qualified.

No. of undergraduates students who opted to give and qualified GATE examination:

| Sr. No. | Year    | No. of Students |
|---------|---------|-----------------|
| 1       | 2011-12 | 3               |
| 2       | 2012-13 | 5               |
| 3       | 2013-14 | 3               |
| 4       | 2014-15 | 4               |
| 5       | 2015-16 | 25              |
| 6       | 2016-17 | 32              |

### 34. Student progression

| Student progression           | Percentage against enrolled |
|-------------------------------|-----------------------------|
| UG to PG                      | 50 %                        |
| PG to M.Phil.                 | NA                          |
| PG to Ph.D.                   | 70 %                        |
| Ph.D. to Post-Doctoral        | 10 %                        |
| Employed                      |                             |
| Campus selection              | 95 %                        |
| Other than campus recruitment | 3%                          |
| Entrepreneurs                 | 2%                          |

### 35. Diversity of staff

| Percentage of faculty who are graduates  |      |
|------------------------------------------|------|
| of the same university                   | 74%  |
| from other universities within the State | 21%  |
| from universities from other States      | 0.5% |
| from universities outside the country    | NIL  |

**36. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period: 2**

### 37. Present details of departmental infrastructural facilities with regard to

- a) Library : Institute level library with books and journal subscriptions
- b) Internet facilities for staff and students : Reliance NKN VSNL (15 MBPS, 1 GBPS, 2 MBPS (1:1))
- c) Total number of class rooms : 4
- d) Class rooms with ICT facility : 4
- e) Students' laboratories : 2 (UG level)
- f) Research laboratories

| Laboratory number | Name of the Laboratory         | Area in sq.m. | Working capacity (number of students) | Usage (UG/PG/Research) |
|-------------------|--------------------------------|---------------|---------------------------------------|------------------------|
| A117              | UG Main Lab                    | 346.89        | 250                                   | UG                     |
| A122              | UG Heat Lab                    | 61.92         | 250                                   | UG                     |
|                   | LDA Lab                        | 81.79         | 13                                    | PG                     |
| A107              | Chem. Engg. Com. Vision Lab.   | 51.66         | 20                                    | PG                     |
| A115              | HP Lab                         | 91.03         | 38                                    | PG                     |
|                   | Autoclave Lab                  |               | 15                                    | PG                     |
| A005(CEB-2)       | Basement Lab                   | 58.31         | 14                                    | PG                     |
| CEB1              | Basement/Instrument Lab.       | 82.50         | 4                                     |                        |
| CEB8              | Basement Lab I                 | 61.29         | 6                                     |                        |
| CEB7              | Basement Lab II                | 37.44         | 4                                     |                        |
| CEB4              | Basement Lab III               | 50.05         | 6                                     |                        |
| CEB3              | Basement Lab                   | 35.02         | 12                                    |                        |
|                   | Advanced Centre                | 248.14        | 48                                    |                        |
| CEB5              | Basement Lab I                 | 35.26         | 4                                     |                        |
| CEB6              | Lab II                         | 37.81         | 8                                     |                        |
| C-106             | Lab                            | 50.96         | 4                                     |                        |
|                   | Oils Lab 1 <sup>st</sup> floor | 122.91        | 5                                     |                        |
|                   | Oils Lab 2nd floor             | 33.34         | 21                                    |                        |
|                   | Lalvani BPT Lab                | 159.95        | 3                                     |                        |
|                   | Lalvani Centre                 | 232           | 44                                    |                        |

Common Instrumentation facility

| Instrumentation Lab |                    |       |
|---------------------|--------------------|-------|
| A 125               | Analytical Lab     | 75.58 |
|                     | Steam Lab          | 56.55 |
|                     | High Pressure      | 90.40 |
|                     | Yadav Sir's Lab I  | 65.47 |
|                     | Yadav Sir's Lab II | 76.92 |

All research students (516) spend 10% of their time in common instrumentation facility.

### 38.List of doctoral, post-doctoral students and Research Associates

- a) from the host institution/university
- b) from other institutions/universities

| Sr.No. | Name of the student | Degree        | Supervisor |
|--------|---------------------|---------------|------------|
| 1      | Vikas Patil         | PDF           | GDY        |
| 2      | Jyoti Sontakke      | PDF           | GDY        |
| 4      | Vikas Patil         | PDF           | GDY        |
| 5      | Sutar Parag         | PDF           | PDV        |
| 7      | Juilee Palkar       | Ph. D (Sci)   | AML        |
| 8      | Archana Krishnan    | Ph. D (Sci.)  | AML        |
| 9      | Manish Yadav        | Ph. D (Sci.)  | AML        |
| 10     | Mallikarjun Patil   | Ph. D (Sci.)  | AML        |
| 11     | Rajeshwar Valte     | Ph. D (Tech)  | AML        |
| 12     | Sachinkumar Birhade | Ph. D (Tech)  | AML        |
| 13     | Abha Sahu           | Ph. D. (Sci.) | ABP        |
| 14     | Bhagwat Patil       | Ph. D. (Sci.) | ABP        |
| 15     | Chaitali Vira       | Ph. D. (Sci.) | AML        |
| 16     | Jayant Rathod       | Ph. D. (Sci.) | AML        |
| 17     | Juliet Victoria     | Ph. D. (Sci.) | AML        |
| 18     | Lucy Nainan         | Ph. D. (Sci.) | AML        |
| 19     | Mrunal Warke        | Ph. D. (Sci.) | AML        |
| 20     | Padmini Iyer        | Ph. D. (Sci.) | AML        |
| 21     | Prathamesh Wadekar  | Ph. D. (Sci.) | AML        |
| 22     | Parikshit Sawdekar  | Ph. D. (Sci.) | AML        |
| 23     | RajeshVadgama       | Ph. D. (Sci.) | AML        |
| 24     | Rutuja Vaze         | Ph. D. (Sci.) | AML        |
| 25     | Ritu Maurya         | Ph. D. (Sci.) | AML        |
| 26     | Richa Tiwari        | Ph. D. (Sci.) | AML        |
| 27     | Swanand Gangal      | Ph. D. (Sci.) | AML        |
| 28     | Sneha Sawant        | Ph. D. (Sci.) | AML        |
| 29     | Sonal Sawant        | Ph. D. (Sci.) | AML        |
| 30     | Smita Patil         | Ph. D. (Sci.) | AML        |
| 31     | Sujata Gaikwad      | Ph. D. (Sci.) | AML        |
| 32     | Shalini Deb         | Ph. D. (Sci.) | AML        |
| 33     | Sachdeo Daware      | Ph. D. (Sci.) | AML        |
| 34     | Vijita V. Pillai    | Ph. D. (Sci.) | AML        |
| 35     | Bhupal Asodekar     | Ph. D. (Sci.) | AML        |

|    |                     |               |     |
|----|---------------------|---------------|-----|
| 36 | Monali Kavadia      | Ph. D. (Sci.) | AML |
| 37 | Suveera Bellary     | Ph. D. (Sci.) | AML |
| 38 | Anup Sonawane       | Ph. D. (Sci.) | AML |
| 39 | Poornima Rao        | Ph. D. (Sci.) | AML |
| 40 | Vikram Chaudhary    | Ph. D. (Sci.) | AML |
| 41 | Hiral Shukla        | Ph. D. (Sci.) | AML |
| 42 | Hitesh Pawar        | Ph. D. (Sci.) | AML |
| 43 | Daware Sachdeo      | Ph. D. (Sci.) | AML |
| 44 | Nitesh Kumar Sigh   | Ph. D. (Sci.) | AML |
| 45 | Dhopte Kiran        | Ph. D. (Sci.) | AWP |
| 46 | Yogesh Choughule    | Ph. D. (Sci.) | AVP |
| 47 | Machhindra Bhalerao | Ph. D. (Sci.) | AVP |
| 48 | Shweta Kumbhaj      | Ph. D. (Sci.) | AVP |
| 49 | Nagauvekar Nupur    | Ph. D. (Sci.) | BNT |
| 50 | Jeetendra Salunke   | Ph. D. (Sci.) | GDY |
| 51 | Bapu Gawade         | Ph. D. (Sci.) | GDY |
| 52 | Kalpesh Bhadra      | Ph. D. (Sci.) | GDY |
| 53 | Dhiraj Katole       | Ph. D. (Sci.) | GDY |
| 54 | Gunjan Deshmukh     | Ph. D. (Sci.) | GDY |
| 55 | Shivaji Bhanvase    | Ph. D. (Sci.) | GDY |
| 56 | Akhil Nakhate       | Ph. D. (Sci.) | GDY |
| 57 | Jayaram Molleti     | Ph. D. (Sci.) | GDY |
| 58 | Abhilash Sukhdeve   | Ph. D. (Sci.) | GDY |
| 59 | Kalidas Rasal       | Ph. D. (Sci.) | GDY |
| 60 | Anil Gawade         | Ph. D. (Sci.) | GDY |
| 61 | Pooja Tambe         | Ph. D. (Sci.) | GDY |
| 62 | Mohanapriya K.      | Ph. D. (Sci.) | NJ  |
| 63 | Yadav Abhimanyu     | Ph. D. (Sci.) | PDV |
| 64 | Jadhav Suhas        | Ph. D. (Sci.) | PDV |
| 65 | Patil Shailesh      | Ph. D. (Sci.) | PDV |
| 66 | Jadhav Suhas        | Ph. D. (Sci.) | PDV |
| 67 | Amrutlal Prajapat   | Ph. D. (Sci.) | PRG |
| 68 | Shobha Desai        | Ph. D. (Sci.) | SSB |
| 69 | Manisha Ahire       | Ph. D. (Sci.) | SSB |
| 70 | Vrushali Denge      | Ph. D. (Sci.) | SSB |
| 71 | Anik Goswami        | Ph. D. (Sci.) | SSB |
| 72 | Patil Rahul         | Ph. D. (Sci.) | SSB |

|     |                       |                |     |
|-----|-----------------------|----------------|-----|
| 73  | Deepak Chabukswar     | Ph. D. (Sci.)  | VGG |
| 74  | Kalpesh Khot          | Ph. D. (Sci.)  | VGG |
| 75  | Mahesh Kadam          | Ph. D. (Sci.)  | VGG |
| 76  | Mufeedah Muringakandy | Ph. D. (Sci.)  | VGG |
| 77  | Suwarna Hiware        | Ph. D. (Sci.)  | VGG |
| 78  | Tasneem dabir         | Ph. D. (Sci.)  | VGG |
| 79  | Yogeshwar Dubhashe    | Ph. D. (Sci.)  | VGG |
| 80  | Chandrakanth G.       | Ph. D. (Sci.)  | VKR |
| 81  | Sagar Gadalkar        | Ph. D. (Sci.)  | VKR |
| 82  | Sneha Bansode         | Ph. D. (Sci.)  | VKR |
| 83  | Govind Waghmare       | Ph. D. (Sci.)  | VKR |
| 84  | Sarita Gawas          | Ph. D. (Sci.)  | VKR |
| 85  | Anilkumar Gupt        | Ph. D. (Sci.)  | VKR |
| 86  | Shinde Yogesh         | Ph. D. (Tech.) | ABP |
| 87  | Rekha B. N.           | Ph. D. (Tech.) | ABP |
| 88  | Manchalwar Shirish    | Ph. D. (Tech.) | ABP |
| 89  | Shingade Sunil        | Ph. D. (Tech.) | ABP |
| 90  | Atul Bari             | Ph. D. (Tech.) | ABP |
| 91  | Mandar Badve          | Ph. D. (Tech.) | ABP |
| 92  | Karuna Nagula         | Ph. D. (Tech.) | ABP |
| 93  | Shankar Kausely       | Ph. D. (Tech.) | ABP |
| 94  | Sachin Jadhao         | Ph. D. (Tech.) | ABP |
| 95  | Suruchi Rao           | Ph. D. (Tech.) | AML |
| 96  | Sushitha Nair         | Ph. D. (Tech.) | AML |
| 97  | Narnaware Sharad      | Ph. D. (Tech.) | AML |
| 98  | Abhijit Rathi         | Ph. D. (Tech.) | AML |
| 99  | Anand Gupta           | Ph. D. (Tech.) | AML |
| 100 | Arjun Singh Bajwa     | Ph. D. (Tech.) | AML |
| 101 | Febin Pappachan       | Ph. D. (Tech.) | AML |
| 102 | Gaurangi Deore        | Ph. D. (Tech.) | AML |
| 103 | Gautam Degwekar       | Ph. D. (Tech.) | AML |
| 104 | Lalit Khot            | Ph. D. (Tech.) | AML |
| 105 | Mandrita Chatterjee   | Ph. D. (Tech.) | AML |
| 106 | Mukesh Pednekar       | Ph. D. (Tech.) | AML |
| 107 | Manoj Chavan          | Ph. D. (Tech.) | AML |
| 108 | Prashant Kumar        | Ph. D. (Tech.) | AML |
| 109 | Sandip Kadam          | Ph. D. (Tech.) | AML |

|     |                        |                |     |
|-----|------------------------|----------------|-----|
| 110 | Sunil Sunkara          | Ph. D. (Tech.) | AML |
| 111 | Sharad Narnaware       | Ph. D. (Tech.) | AML |
| 112 | Vinod Amritkar         | Ph. D. (Tech.) | AML |
| 113 | Agrawal Snehal         | Ph. D. (Tech.) | AML |
| 114 | Yogesh Mirage          | Ph. D. (Tech.) | AVP |
| 115 | Prasad V. Vernekar     | Ph. D. (Tech.) | AWP |
| 116 | Ajit Kulkarni          | Ph. D. (Tech.) | AWP |
| 117 | Ajay D. Sharma         | Ph. D. (Tech.) | AWP |
| 118 | Sharma Anita           | Ph. D. (Tech.) | AWP |
| 119 | Rajput shaileshrasingh | Ph. D. (Tech.) | BNT |
| 120 | Rahul Aware            | Ph. D. (Tech.) | BNT |
| 121 | Sushil Deulgaonkar     | Ph. D. (Tech.) | BNT |
| 122 | Vaibhav Tidke          | Ph. D. (Tech.) | BNT |
| 123 | Sawant Shekhar         | Ph. D. (Tech.) | CSM |
| 124 | Hrushikesh Khadamkar   | Ph. D. (Tech.) | CSM |
| 125 | Sona C.S.              | Ph. D. (Tech.) | CSM |
| 126 | Pakhare Achynt         | Ph. D. (Tech.) | CSM |
| 127 | Gajbhiye Bhavesh       | Ph. D. (Tech.) | CSM |
| 128 | Kulkarni Mandar        | Ph. D. (Tech.) | GDY |
| 129 | Prasad Mandade         | Ph. D. (Tech.) | GDY |
| 130 | Satish Kabra           | Ph. D. (Tech.) | GDY |
| 131 | Manish Tiwari          | Ph. D. (Tech.) | GDY |
| 132 | Saurabh Patankar       | Ph. D. (Tech.) | GDY |
| 133 | Manoj Kamble           | Ph. D. (Tech.) | GDY |
| 134 | Pravin Patil           | Ph. D. (Tech.) | GDY |
| 135 | Kalpesh Bhavsar        | Ph. D. (Tech.) | GDY |
| 136 | Shivani Vedula         | Ph. D. (Tech.) | GDY |
| 137 | Deepali Magadum        | Ph. D. (Tech.) | GDY |
| 138 | Karan Chavan           | Ph. D. (Tech.) | KVM |
| 139 | Amar Vibhandik         | Ph. D. (Tech.) | KVM |
| 140 | Karmore Ashvin         | Ph. D. (Tech.) | PDV |
| 141 | Dewodlkar Karan        | Ph. D. (Tech.) | PDV |
| 142 | Barge Aditi            | Ph. D. (Tech.) | PDV |
| 143 | Karmore Ashvin         | Ph. D. (Tech.) | PDV |
| 144 | Baviskar Chetan        | Ph. D. (Tech.) | PDV |
| 145 | Nimkarde Mahesh        | Ph. D. (Tech.) | PDV |
| 146 | Vemula Shrikant        | Ph. D. (Tech.) | PDV |

|     |                       |                |     |
|-----|-----------------------|----------------|-----|
| 147 | Bindwal Ankush        | Ph. D. (Tech.) | PDV |
| 148 | Maddekari Ganesh L.   | Ph. D. (Tech.) | PRG |
| 149 | Ramisetty Kiran kumar | Ph. D. (Tech.) | PRG |
| 150 | Patil Pankaj N.       | Ph. D. (Tech.) | PRG |
| 151 | Ramteke Lokesh P.     | Ph. D. (Tech.) | PRG |
| 152 | Subhedar Preeti       | Ph. D. (Tech.) | PRG |
| 153 | Rajashree Jawale      | Ph. D. (Tech.) | PRG |
| 154 | Zambre Rahul          | Ph. D. (Tech.) | PRN |
| 155 | Choudhari Sushil      | Ph. D. (Tech.) | PRN |
| 156 | Pofali Prasad         | Ph. D. (Tech.) | RDJ |
| 157 | Gargi Redkar          | Ph. D. (Tech.) | SBK |
| 158 | Sushita Koley         | Ph. D. (Tech.) | SBK |
| 159 | Sane Priyanka         | Ph. D. (Tech.) | SMS |
| 160 | Swapnil pakhale       | Ph. D. (Tech.) | SSB |
| 161 | Sudarshan kalsulkar   | Ph. D. (Tech.) | SSB |
| 162 | Jitendra tongaonkar   | Ph. D. (Tech.) | SSB |
| 163 | Vaibhav kedar         | Ph. D. (Tech.) | SSB |
| 164 | Kalpana Mahalle       | Ph. D. (Tech.) | SSB |
| 165 | Pallavi Parab         | Ph. D. (Tech.) | SSB |
| 166 | Kumudini Lokhande     | Ph. D. (Tech.) | SSB |
| 167 | Aditya Koli           | Ph. D. (Tech.) | VGG |
| 168 | Amogh Joshi           | Ph. D. (Tech.) | VGG |
| 169 | Jyotsna Arora         | Ph. D. (Tech.) | VGG |
| 170 | Khursheed Ansari      | Ph. D. (Tech.) | VGG |
| 171 | Meena Singh           | Ph. D. (Tech.) | VGG |
| 172 | Noopur Rathi          | Ph. D. (Tech.) | VGG |
| 173 | Parminder Kaur Heer   | Ph. D. (Tech.) | VGG |
| 174 | Pravin Bote           | Ph. D. (Tech.) | VGG |
| 175 | Vaishali Thaore       | Ph. D. (Tech.) | VGG |
| 176 | Vishal Sawant         | Ph. D. (Tech.) | VGG |
| 177 | Yogita Labrath        | Ph. D. (Tech.) | VGG |
| 178 | Sachin Jadhav         | Ph. D. (Tech.) | VKR |
| 179 | Mangesh Vetral        | Ph. D. (Tech.) | VKR |
| 180 | Sonali Niphadkar      | Ph. D. (Tech.) | VKR |
| 181 | Vrushali Kulkarni     | Ph. D. (Tech.) | VKR |
| 182 | Dhanashree Panadare   | Ph. D. (Tech.) | VKR |
| 183 | Priyanka Rao          | Ph. D. (Tech.) | VKR |



|     |                   |                |     |
|-----|-------------------|----------------|-----|
| 184 | Nishat Khan       | Ph. D. (Tech.) | VKR |
| 185 | Wasanik Parag     | Ph.D. (Tech.)  | NJ  |
| 186 | Baviskar Chetan   | Ph.D. (Tech.)  | PDV |
| 187 | Nimkarde Mahesh   | Ph.D. (Tech.)  | PDV |
| 188 | Pachpate Nilam    | Ph.D. (Tech.)  | PDV |
| 189 | Budhwani Neha     | Ph.D. (Tech.)  | PDV |
| 190 | Patil Bhumika     | Ph.D. (Tech.)  | RVJ |
| 191 | Prashant Kotian   | Ph.D. (Tech.)  | SSB |
| 192 | Vaishali Kulkarni | PhD Tech (BPT) | AVP |
| 193 | Dnyaneshwar Bhand | PhD Tech.(BPT) | AVP |
| 194 | Revati Chavan     | R A            | VKR |
| 195 | Prakash Parhad    | R. Scientist   | GDY |
| 196 | Ashwini Nirukhe   | R. Scientist   | GDY |
| 197 | Tushar Gaware     | R.A.           | BNT |
| 198 | Ganesh Bhare      | R.A.           | BNT |
| 199 | Shital Somani     | R.A.           | BNT |
| 200 | Ashwin Pawade     | R.A.           | BNT |
| 201 | Sandeep Shukla    | R.A.           | BNT |
| 202 | Manoj Gor         | R.A.           | BNT |
| 203 | Rajan Mishra      | R.A.           | BNT |
| 204 | Ashwini Gaikwad   | R.A.           | BNT |
| 205 | Amol Waghmode     | R.A.(JRF)      | ABP |
| 206 | Nivarutti Patil   | RA             | AWP |

**39. Number of post graduate students getting financial assistance from the university.**

All the students get financial assistance from various funding agencies such as UGC, CSIR, DAE, AICTE, industrial projects etc. As per Institute's norms, candidates can not be registered till fellowship support is provided.

**40. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology.**

Yes. The recently launched new program, certificate course in safety management was well thought based on the need of the chemical industry. The syllabus has been framed with help of industry experts besides academic experts. A seminar was also organized prior to finalize the syllabus and deliberate on the subject content.

**41. Does the department obtain feedback from**

- a. faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback?**

Syllabus is revised every five years and all the suggestions from alumni, teachers, industrialists, eminent professors and scientists are obtained to keep the syllabus in tune with present needs.

- b. Students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback?**

Every semester students provide their feedback and which is shared with HoD and staff members and necessary corrective actions are taken.

- c. alumni and employers on the programmes offered and how does the department utilize the feedback?**

The feedback is utilized in syllabus revision.

**42. List the distinguished alumni of the department**

1. Padmavibhushan Professor M. M. Sharma
2. Padmavibhushan Dr. R. A. Mashelkar
3. Mr. Mukesh Ambani (CMD, RIL)
4. Professor D. Ramkrishna (Distinguished Professor, Purdue University)
5. Padmashri Dr. Keki Ghada
6. Padmabhushan Prof. J.B. Joshi
7. Padmashri Prof. G.D. Yadav
8. Mr. Vijay Ratanparkhe (MD, BOSCH)
9. Mr. Kishor Mariwala (Marico Group)
10. Mr. Sunil Ramanand (Police Commissioner)

**43. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts.**

| Sr. No. | Date       | Name of External Experts | Topic                                                                          | Endowment                                         |
|---------|------------|--------------------------|--------------------------------------------------------------------------------|---------------------------------------------------|
|         | 28.11.2013 | Professor D.H. Thompson  | Cyclodextrin Based Materials for Gene Delivery and Niemann-Pick C Type Therapy | Shri G.M. Abhyankar Memorial Distinguished Fellow |
|         | 28.11.2013 | Professor D.H. Thompson  | Cyclodextrin Based Materials for Gene Delivery and Niemann-Pick                | Shri G.M. Abhyankar                               |

|    |            |                                         |                                                                                                                                                     |                                                                     |
|----|------------|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
|    |            |                                         | C Type Therapy                                                                                                                                      | Memorial Distinguished Fellow                                       |
|    | 02.01.2014 | Professor Prashant Jain                 | Elucidating Chemical Reactions on the Nanoscale                                                                                                     | Golden Jubilee Visiting Fellowship                                  |
|    | 09.01.2014 | Professor R. Krishna Univ. of Amsterdam | Molecular Traffic in Nanoporous Materials                                                                                                           | B S Joshi Distinguished Fellow                                      |
|    | 16.01.2014 | Dr. Ken Williams                        | The science and technique behind Raman Spectrometer and its application in Material Sciences                                                        | TEQIP                                                               |
|    | 30.01.2014 | Dr. Uday Shenoy                         | Targeting and Network Synthesis for Optimal Use of Resources                                                                                        | Shrimati Kusumben and Shri Mathradas Kothari Visiting Professorship |
| 7  | 4.02.2014  | Prof. Artur Cavaco-Paulo,               | Micro/nanotechnology and Biotech for pharma and personal care                                                                                       | Professor B.D. Tilak Visiting Fellowships                           |
| 8  | 20.02.2014 | Dr. Allen P. Minton                     | How biochemistry in vitro can differ from biochemistry in vivo                                                                                      | K.J. Somaiya Visiting Professor Fellowship                          |
| 9  | 13.03.2014 | Kiran Golwalkar                         | Safety Management and Project Management in Chemical Industry                                                                                       | Prof. R.A. Rajadhyaksha Memorial Lecture                            |
| 10 | 27.03.2014 | Kiran Golwalkar                         | Safety Management and Project Management in Chemical Industry                                                                                       | TEQIP                                                               |
| 11 | 07.04.2014 | Prof. Suresh Bhatia                     | Quantum molecular sieving of light isotopes                                                                                                         | Golden Jubilee Visiting Fellowship                                  |
| 12 | 17.04.2014 | Prof. Dr. Asit Baran Mandal             | How much we know about self-aggregated / self assembled systems? Utility of various techniques                                                      | B.D. Tilak Visiting Fellow                                          |
| 13 | 21.04.2014 | Prof. Alfredo Ortiz                     | The importance of Ionic Liquids for attaining sustainable process intensification                                                                   | Golden Jubilee Visiting Fellowship                                  |
| 14 | 02.05.2014 | Dr. Jeff Kenvin                         | Textural Characterization and a Unified Approach to Isotherm Modeling & Thermodynamic Parameters                                                    | K.J. Somaiya Visiting Professor                                     |
| 15 | 29.05.2014 | Prof. S.P. Moulik                       | Energetic of Micelle formation: Non agreement between the Enthalpy Measured by the direct method of Calorimetry & the indirect method of Van't Hoff | Dr. J.P. Kane Visiting Fellowship                                   |
| 16 | 09.07.2104 | Dr. Garg                                | Simultaneous Production of US Grade Gasoline and Pure Aromatics from High Severity FCC Gasoline                                                     | Prof. R.A. Rajadhyaksha Memorial Lecture                            |
| 17 | 14.07.2014 | David Hodge                             | Alkaline and Oxidative Chemical Pretreatments and Fractionations                                                                                    | Golden Jubilee Visiting                                             |

|         |                          |                                                                                                                                        |                                                                                                                                                             |                                                                                            |
|---------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
|         |                          |                                                                                                                                        | for the Production of Fuels, Chemicals, and Materials from Lignocellulose                                                                                   | Fellowship                                                                                 |
| 18      | 16.07.2014<br>17.07.2014 | Ashutosh Sharma                                                                                                                        | Self-organization on Small Scales: Fabrication beyond the Top-down and Bottom-up                                                                            | Shri V.V. Mariwala Visiting Professorship                                                  |
| 19      | 28.07.2014               | Dr. R. Vinu                                                                                                                            | Energy and Resource Recovery via Catalytic Fast Pyrolysis of Biomass, Polymers and Algae                                                                    | -                                                                                          |
| 20      | 16.09.2014               | Prof. M.M. Sharma                                                                                                                      | Reminiscences of a career                                                                                                                                   | -                                                                                          |
| 21      | 29.09.2014               | Bala Subramaniam                                                                                                                       | Resource-Efficient Catalytic Technologies for Emerging Feedstocks                                                                                           | The Dow Professor M.M. Sharma Distinguished Visiting professorship in Chemical Engineering |
| 22      | 15.12.2014               | Dr. Nejat Rahmanian                                                                                                                    | Seeded Granulation                                                                                                                                          | K.J. Somaiya Visiting Professorship                                                        |
| 23      | 21.01.2015               | Prof. P.Somasundaran                                                                                                                   | Structure Property/Performance Relationships for Synergy and Antagonism New possibilities of greener chemicals for sustainable and benign consumer products | Dr. Balwant S. Joshi Distinguished Visiting Professorship                                  |
| 24      | 10.2.2015                | Prof. Mohan Karmarkar                                                                                                                  | Practical Reactor Design                                                                                                                                    | -                                                                                          |
| 25      | 20.08.2015               | Dr. Surendra U. Kulkarni<br>E-301 Mantri Woodlands,<br>Bannerghatta<br>Road,Bangalore-560076                                           | Water - Technologies for its security in future                                                                                                             | Professor R.A. Rajadhyaksha Memorial Lecture                                               |
| 26      | 28.08.2015               | Dr. Madhukar Rao                                                                                                                       | Green Polymer Technology for Coatings Applications: An Innovation Story from Ideation to Commercialization”                                                 | Golden Jubilee Visiting Fellowship                                                         |
| 3<br>27 | 04.09.2015               | Mr. Ahmet Üzümcü<br>Director-General,<br>Organisation for the<br>Prohibition of Chemical<br>Weapons (OPCW)                             | Ionic Liquids in Industry                                                                                                                                   |                                                                                            |
| 28      | 21.09.2015               | Prof. Pradeep B. Deshpande<br>Professor Emeritus of<br>Chemical Engineering,<br>University of Louisville &<br>President, Six Sigma and | Profound Implications of Minimum Variance Control”                                                                                                          | Golden Jubilee Visiting Fellowships Fellow                                                 |

|    |            |                                                                                                                                                                                                                |                                                                                                                                                                  |                                                                                                         |
|----|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
|    |            | Advanced Controls, Inc.                                                                                                                                                                                        |                                                                                                                                                                  |                                                                                                         |
| 29 | 29.08.2016 | Prof. Bipin Vora<br>Consultant and R & D<br>Advisor UOP/Honeywell<br>Fellow (Retired) AIChE<br>Fellow, 1324 Kallien<br>Avenue, Naperville, IL<br>60540                                                         | “From Concept to<br>Commercialization                                                                                                                            | The Dow Prof.<br>M.M Sharma<br>Distinguished<br>Visiting<br>Professorship in<br>Chemical<br>Engineering |
| 30 | 18.01.2016 | Prof. Doraiswami<br>Ramkrishna<br>Harry Creighton Peffer<br>Distinguished Professor<br>School of Chemical<br>Engineering<br>Purdue University                                                                  | Analysis of Bioprocesses.<br>Dynamic Modeling is a Must                                                                                                          | Professor B.D.<br>Tilak Visiting<br>Fellowships                                                         |
| 31 |            | Dr. Gautam G. Yadav<br>Energy Institute, City<br>College of New York,<br>New York                                                                                                                              | Advanced Alkaline MnO <sub>2</sub> -Zn<br>Batteries: Accessing the Second<br>Electron Capacity                                                                   | Golden Jubilee<br>Visiting<br>Fellowship                                                                |
| 32 | 01.02.2016 | Prof. G.V. Reklaitis<br>School of Chemical<br>Engineering<br>NSF ERC for Structured<br>Organic Particulate<br>Systems, Purdue<br>University West Lafayette<br>IN                                               | Recent Advances in Continuous<br>Pharmaceutical Manufacturing                                                                                                    | Professor B.D.<br>Tilak Visiting<br>Fellowships                                                         |
| 33 | 22.03.2016 | Prof. Rajagopalan<br>Srinivasan<br>Indian Institute of<br>Technology Gandhinagar<br>Vishwakarma Government<br>Engineering College<br>Complex, Chandkheda,<br>Visat-Gandhinagar<br>Highway, Ahmedabad,<br>India | Cognitive Engineering for Process<br>Safety: Quantifying the Building<br>Blocks of Human Error                                                                   | Dr. G.P. Kane<br>Visiting<br>Professorship in<br>Chemical<br>Engineering                                |
| 34 | 10.11.2016 | Prof. Zhou Weibiao<br>Professor & Director,<br>Food Science &<br>Technology Programme,<br>National University of<br>Singapore                                                                                  | Designing advanced control<br>systems for modern bread-making<br>process: from dough freezing to<br>bread baking”                                                | Professor Arun<br>Mujumdar<br>Distinguished<br>Visiting Professor                                       |
| 35 | 24.11.2016 | Mr. S.Ganapathy, M.S.,<br>FIE Chartered Engineer &<br>Project Consultant                                                                                                                                       | Status of Chemical Industries in<br>India & Job Prospects                                                                                                        |                                                                                                         |
| 36 | 14.12.2016 | Prof. Wilhelm Höflinger<br>Krems/Lower Austria,<br>Austria                                                                                                                                                     | 1) Fundamentals and measurement<br>of particles<br>Characterization of particle<br>systems<br>2) Particle size measurement<br>methods Optical imaging<br>methods | Professor B.D.<br>Tilak Visiting<br>Fellowships                                                         |

|    |            |                                                                                                                                        |                                                                                                                                                                                                          |                                                                                            |
|----|------------|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| 37 | 23.12.2016 | Prof. Vikramaditya G. Yadav<br>Assistant Professor in Department Of Chemical & Biological Engg.<br>University of British, Columbia     | Building Brains: Marrying Engineering & Medicine in the Fight Against Alzheimer Disease                                                                                                                  | Shri G.M. (alias Dada) Abhyankar Memorial Distinguished Fellowship in Chemical Engineering |
| 38 | 13.01.2017 | Prof. Daniel G. Nocera<br>Chemist & leading Researcher in renewable energy                                                             | Fuels to Food from Sunlight, Air and Water                                                                                                                                                               | Shri V.V. Mariwala Visiting Professorship in Chemical Engg                                 |
| 39 | 21.01.2017 | Dr. Rajender S. Varma<br>United States Environmental Protection Agency                                                                 | Greener routes to Organics and Nanomaterials: Sustainable Applications of Magnetic Nanocatalysts and Modified Graphitic Carbon Nitrides in Catalysis and Environmental Remediation                       | Shri K.J. Somaiya Visiting Professorship in Chemical Engg.                                 |
| 40 | 25.01.2017 | Dr. Ajay Kumar Dalai<br>Professor of Chemical Engineering University of Saskatchewan, S K Canada                                       | Novel Activated Carbon Materials Development for Various Industrial Applications                                                                                                                         | Smt. Kusumben and Shri Mathradas Kothari Visiting Professorship In Chemical Engg.          |
| 41 | 01.02.2017 | Prof. Sivaram Arepalli<br>Department of Chemical and Biomolecular Engineering, Rice University, Houston, TX                            | Status and Future of Nanomaterials in Energy Storage                                                                                                                                                     | Golden Jubilee Visiting Fellowship                                                         |
| 42 | 23.02.2017 | Mr. Dilip Kapasi, Lead Process Engineer Project Management, LNP Projects, United States                                                | Status of LNG, Regasification plants w r t India<br>* Deepwater gas exploration - topside/MEG<br>* Role of a chemical engineer in today's India<br>* ICT- our strongest Institution from a vantage point | Golden Jubilee Visiting Fellowship In Chemical Engg                                        |
| 43 | 18.04.2017 | Dr. Mugdha Gadgil Sr.<br>Scientist National Chemical Laboratory, Pune                                                                  | Recombinant biopharmaceuticals: from choosing the best clones to managing product quality                                                                                                                | Professor R.A. Rajadhyaksha Memorial Lecture series Endowment in Chemical Engineering      |
| 44 | 18.07.2017 | Prof. Amol V. Janorkar<br>Biomedical Materials Science, School of Dentistry University of Mississippi Medical Centre, Jackson, MS, USA | Multifunctional Biopolymer Coatings and Scaffolds for Tissue Engineering and Drug Delivery                                                                                                               | Golden Jubilee Visiting Fellowship                                                         |
| 45 | 02.08.2017 | Prof. Doraiswami Ramkrishna<br>H.C. Pfeffer Distinguished                                                                              | Modeling Transfer of Antibiotics Resistance among Bacterial Species                                                                                                                                      | Dr. Balwant S. Joshi Distinguished                                                         |

|    |            |                                                                                                                                                                                                                                                                                                          |                                                                        |                                                                                                  |
|----|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
|    |            | Professor,<br>Purdue University West<br>Lafayette, USA                                                                                                                                                                                                                                                   |                                                                        | Visiting<br>Professorship in<br>Chemical<br>Engineering/Chemical<br>Technology/Applied Chemistry |
| 46 | 07.08.2017 | Professor Upal Ghosh<br>Associate Editor,<br>Environmental Toxicology<br>and Chemistry<br>,Department of Chemical,<br>Biochemical, and<br>Environmental<br>Engineering, University of<br>Maryland Baltimore<br>County Technology<br>Research Center. Rm<br>257,5200 Westland Blvd<br>Baltimore, MD 21227 | Remediation of Polluted<br>Sediments by Controlling<br>Bioavailability | Golden Jubilee<br>Visiting<br>Fellowship                                                         |
| 47 | 14.08.2017 | Professor Rajesh Shende<br>Associate Professor of<br>Chemical Engineering<br>Department of Chemical<br>and Biological Engg<br>South Dakota School of<br>Mines and Technology<br>Rapid City, South<br>Dakota 57701                                                                                        | Advanced Nanomaterials for<br>Hydrogen and Biofuels Production         | Golden Jubilee<br>Visiting<br>Fellowship                                                         |

**44. List the teaching methods adopted by the faculty for different programmes.**

- (a) Black board usage
- (b) Power point presentations
- (c) Student seminars
- (d) Quizzes
- (e) Animations/Videos

**45. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored?**

Department has also adopted NBA accreditation procedure for continuous monitoring of programme objectives and outcomes. The relevant information is always updated and reviewed for corrective actions.

**46. Highlight the participation of students and faculty in extension activities.**



- 1) Science Day celebration (in March, every year)
- 2) 5th International Workshop on crystallization filtration and drying, April 14-15, 2011
- 3) '17th International Ozone Day' on 16th September 2011 in ICT with collaboration with Maharashtra Pollution Control Board, Government of Maharashtra.
- 4) 6th International workshop on Crystallization, Filtration, Drying, Milling and Granulation (16th to 18th February 2012)
- 5) "Chemference 2012" organized by Department of Chemical Engineering of ICT in collaboration with IIT-Bombay, December 2012
- 6) OYCE 2013, Event of IChE Mumbai Regional Center organized in collaboration with ICT, Mumbai, April 2013
- 7) 7th International workshop on Crystallization, Filtration, Drying, Milling and Granulation (21st February to 23rd February 2013)
- 8) Indo-US Workshop "Biofuels and Bio-products", March 2013
- 9) IChE Chemical Engineering Congress, Chemcon 2013
- 10) 8th International workshop on Crystallization, Filtration, Drying, Milling and Granulation (27-28 February and 1<sup>st</sup> March, 2014)
- 11) Waste resource management of chemical and allied industries (7-8 November 2014)
- 12) 9th International workshop on Crystallization, Filtration, Drying, Milling and Granulation (26-28 February, 2015)
- 13) Annual International Ozone Day Celebration
- 14) 10th International workshop on Crystallization, Filtration, Drying, Milling and Granulation (February 2015)
- 15) 11th International workshop on Crystallization, Filtration, Drying, Milling and Granulation (March 2016)

**47. Give details of "beyond syllabus scholarly activities" of the department**

- a) Undergraduate summer research program
- b) Young Innovator's Choice Competition –Young Researcher's Conference (YICC-YRC) (Every year)
- c) Exergy - (Every year)
- d) Vortex – (Every year)
- e) Organization of Marathon (Every year)



**48. State whether the programme/ department is accredited/ graded by other agencies? If yes, give details.**

Both the programmes have been accredited by NBA up to 30-06-2022 and 30-06-2021 for UG and PG respectively. (UG: File no. 28-301-2010-NBA, letter dated 27-12-2016, PG: File no. 28-301/2010-NBA, letter dated 28-09-2016)

**49. Briefly highlight the contributions of the department in generating new knowledge, basic or applied.**

Department of chemical engineering is actively engaged in basic and applied research. The department is rated as the best chemical engineering department in India in terms of quantity and quality of research. The average number of publications in peer reviewed international journals is about 110 every year. Many of the faculty members are fellows of Indian National Academies related to Science and Engineering. A large amount of funding generated through research projects and new projects approved by industries and government agencies and industrial consultancy. Faculty members are actively engaged in consultation activity and are helping industries to improve the productivity as well as bring down the cost of production. The department has developed many novel processes, catalysts and products which are used in industry and atomic energy sector at commercial scale. The department has also taken up many activities related to rural development as well as activities of social relevance such as cleaning of Rankala lake in Kolhapur, use of solar energy in food product drying and preservation, technologies utilizing biomass, development of energy efficient cooking devices, solar thermal refrigeration systems, etc. The department is also engaged in research activities of basic science such understanding of turbulence phenomena, solvent ligand interaction using molecular modeling and quantum calculations, development of thermodynamic models, identification of reaction pathways and mechanism etc.

**50. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.**

**Strength**

Faculty take part in administrative affairs

Good interpersonal relationships

Dedicated staff who have put in many years of service at UICT

Decentralization of responsibility among faculty

Cloud based M/s System

Good analytical and computational facilities

Funding from various sources for buying sophisticated instruments

Easy accessibility and independent use of instruments and equipments

Competent, dedicated faculty

Diverse Areas of expertise of the faculty

Faculty have high degree of interaction with industry

Faculty Help UG/PG students in academic matters: e.g. jobs, fellowships abroad, PDF's

Faculty Help UG/PG in non-academic matters at personal level

Faculty members are experts in respective fields at national / international level

Faculty members are actively involved in research and act as consultants to industry

Faculty members have sponsored research projects from Govt. as well as private industry

Renovation of labs in progress

Student chain to maintain equipment's

Skilled personnel in workshop and CE lab

Clean and fresh environment

Well maintained gardens

Silent place to work

Good CE conference room

Good mix of students from various communities

Centralized security system

### **Weakness**

Insufficient Lab staff due to unfilled posts

Computers maintenance staff inefficient

Inadequate lab space

Lack of glass blowing facility

Few students are comfortable with one's guide but face difficulty while approaching others

Interaction between faculty members of different departments needs improvement

Computer maintenance service poor in response

Cleanliness and safety taken lightly by students

Poor ventilation in some laboratories

Canteen food quality can be improved

**51. Future plans of the department. The department wants to expand research activities in new areas and would like to establish and/or participate in centre of excellences in various thematic areas.**

The department wants to expand research activities in new areas and would like to establish and/or participate in centre of excellences in various thematic areas.

- (A) The department has plans to expand the facilities such as Porometer, LCMS, FESEM, XPS, 600 MHz NMR as well as replace old GCs', HPLCs', TOC, TGA, liquid nitrogen plant.
- (B) We intend to have 50 Ph.D. students each year as compared to the existing 25.
- (C) Department also has planning to start M. Chem. Engg. Degree course with Specialization in (a) Biochemical Engineering (b) Sustainability Engineering (c) Process modeling and simulation and (d) Energy engineering

New research areas/centre proposed in near future:

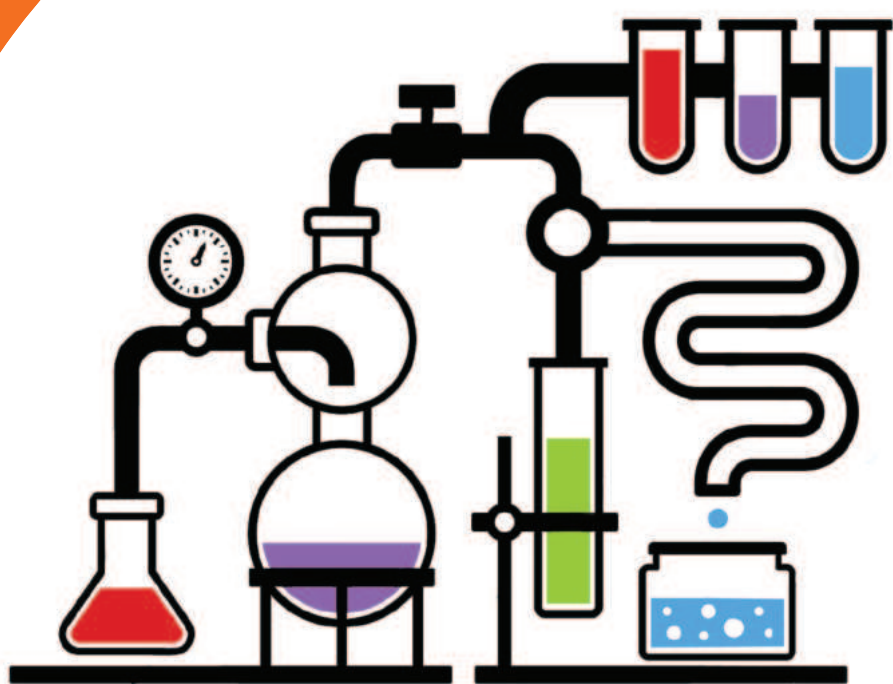
- (a) Process Instrumentation,
- (b) Industrial crystallization,
- (c) Particle Technology,
- (d) Centre for Natural Products
- (e) Advanced materials,
- (f) Energy engineering

The chemical engineering department of ICT has lion's share in the first generation entrepreneurs, since the inception of the Institute. Out of over 600 first generation entrepreneurs of ICT, almost 50% are from Chemical Engineering Department. However, these developments took place due to certain locational advantages of Mumbai, such as being close to harbour or being an international trade centre. The entrepreneur development cell is being proposed to promote the spirit of techno-entrepreneurship in a bigger way. This will catapult ICT into the world stage as Stanford of East.



# CHEMISTRY DEPARTMENT





## CHEMISTRY DEPARTMENT

The Department of Chemistry was established in 1951 with the vision of being “A nationally recognized chemistry resource centre, making noteworthy academic contributions within the Institute and also to local and national educational programmes, and undertaking contemporary and relevant research”. The Department has come a long way since its inception and the fact that its academic and research programmes are recognized nationally (DST FIST, UGC SAP, etc.) and internationally (RSC accreditation) are testimony to the quality of academic output.

The Department has a dedicated team of faculty members, support staff and students who have contributed in achieving high academic standards. At present, the teaching staff of the Department consists of three Professors, one Associate Professor and four Assistant Professors (including one UGC FRP faculty member) in addition to three temporary appointments through the various government funding schemes such as DST INSPIRE faculty award and Ramanujam fellowship. The eleven members of the support staff are all appointed through the regular positions sanctioned by the government. Additionally, there is one tutor who is appointed on an ad hoc basis to assist with the teaching.

The Department currently offers a two year M.Sc. Chemistry programme with an annual intake of twenty students per year. The students are selected on the basis of a written entrance test conducted by the Department. The programme consists of several core and elective courses focusing on different aspects of Chemistry and Chemical Engineering. The syllabus of the programme is regularly upgraded in order to incorporate the latest developments in the field of Chemistry based on the feedback of the students, alumni and external experts. The main objective of the M. Sc. programme is to make the students well versed in the fundamental concepts of the subject while introducing them to the latest developments in chemical research. One of the highlights of the programme is the six month research project that the students are expected to undertake during the final semester of the programme. The fact that this programme was accredited by the Royal Society of Chemistry is testimony to the academic quality of the programme, given the fact that the only other Institute to have this honour in India is IISER, Pune.

The Department also offers a Ph. D. (Science) programme, admissions to which are based on the Ph. D. entrance test conducted by the Department. At present, the Department has about seventy students registered for the Ph. D. programme. Most of the students are supported with

fellowships from various government schemes while some students are funded by the industry. The students are expected to complete a mandatory course work as a prerequisite criterion for registration. The Ph. D. students get an opportunity to work on emerging areas in the field of Chemistry and are encouraged to share their research with the wider scientific community through publications and oral / poster presentations.

In addition to the two programmes mentioned above, the Department regularly contributes to other programmes conducted by the Institute. It conducts numerous theory and practical courses for the first year undergraduate programmes (B. Tech., B. Pharm. and B. Chem. Enng.) as well as for the M. Tech. programmes.

The Department has three undergraduate laboratories and five research laboratories. Moreover, there are three central instrumentation rooms which are well equipped with numerous analytical instruments like GC, GCMS, UV-visible spectrometer, IR spectrometer, potentiostat, DSC – TGA, etc. available to the students for their research work. In addition, the Department has an advanced facility for material characterization funded by DST Nanomission. The Department also has a computational laboratory facility dedicated to the students. The Institute library is well equipped with most of the subject books and resources relevant to the students of the Department.

The main areas of research include organic synthesis, catalysis, green chemistry, nanoscience, interfacial chemistry, electrochemistry, mechanistic studies and computational chemistry, to name a few. At present, the academic activities are funded by various government programmes such as DST FIST and UGC SAP DRS Phase – II funding. In addition, the faculty members are encouraged to apply for projects and individual grants to generate resources for research. Some of the major agencies currently sponsoring individual research grants in the Department include DST (Nanomission, INSPIRE, etc.), DBT, DAE, SERB, etc. Furthermore, the faculty members of the Department carry out many collaborative projects with industry in order to generate ideas and methods that can be applied for the improvement of chemical technology.

The Department regularly organizes various conferences, workshops and seminars in order to boost scientific exchange of ideas. The Department recently conducted Chem Careers in collaboration with Royal Society of Chemistry. A Workshop on “Applications of Electrochemistry in Photo Voltaic Devices, Nanotechnology and Energy Research” was

arranged on 16<sup>th</sup> March 2015 in collaboration with Metrohm Inc. The Department regularly conducts workshops on laboratory safety for students as well as staff members of ICT with the aim of creating a general awareness about common laboratory safety issues. The Department invites experts from the academia and industry as speakers to deliver endowment lectures. Some of the endowment lectures organized annually by the Department are supported by B. D. Tilak endowment, G. D. Gokhale endowment, CMP endowment, Spinco Biotech endowment, Golden Jubilee Visiting fellowship, etc. The annual fest organized by the M Sc. and Ph. D. students of the Department – Rasaynam – is a much awaited intercollegiate event.

In future, the Department plans to expand the current research expertise by incorporating expertise from various contemporary areas of research such as nanoscience, bioorganic chemistry, materials chemistry, computational chemistry, theoretical chemistry and to develop research facilities to meet international standards with respect to analytical facilities, lab facilities, etc. It also intends to develop the M.Sc programme further in terms of increasing the intake of M. Sc. students and collaborating with reputed Universities in India and abroad to improve the academic standards. One of the important goals of the Department is to increase its outreach by continuing and increasing its contribution in worthy national academic programmes like Chemistry Olympiad, NIUS, teachers' training, KVPY, etc. The Department aims to excel in its contributions to the Institute and to the society by achieving and sustaining globally recognised standards of merit.



## REPORTS OF SEMINARS/WORDHOPS/SYMPOSIA ARRANGED BY DEPARTMENT OF CHEMISTRY

Academic year 2012-13

### **One day Indo-Japan conference on "Catalysis -A Green Chemistry Approach"**

The Department organized a one day Indo-Japan conference on "**Catalysis -A Green Chemistry Approach**" on 13<sup>th</sup> February 2013 at ICT. The conference was organised under the auspices of the UGC-SAP programme of the Department and also partly funded by the TEQIP-II programme of the Institute. Dr. Takehiko Sasaki from University of Tokyo, Japan and Masayuki Shirai of National Institute of Advanced Industrial Science and Technology, Japan and several eminent scientists from Industry and academic Institutes of India delivered lectures to about 120 participants. The talks were followed by a poster session in which young researchers of ICT and other Institutes presented their research work. The valuable comments by the participants enthused the researchers to make their research programme more meaningful and organized.



Indo-Japan conference on "Catalysis -A Green Chemistry Approach"



Poster session for Indo-Japan conference on "Catalysis -A Green Chemistry Approach"

### **Indo-German conference "Green Catalysis for Sustainable Development"**

The 2nd International Indo-German Symposium was organized with "Green Catalysis for Sustainable Development" as the focal point. Overall 20 scientists from Germany and 25 from India took part along with a sizeable representation by research students from all parts of the country. The event took place under the aegis of the Department of Science and Technology, India, and Federal Ministry of Education and Research, Germany. It was organized through joint efforts of the Institute of Chemical Technology, India, and Leibniz Institute for Catalysis, Rostock, Germany, on the 29-31 October 2012 at Holiday Inn, Mumbai.

Over 40 oral presentations including 6 plenary, 17 keynotes and 17 invited orals were presented during this symposium. There was a poster session which included 75 posters. The subjects covered included original contributions in the areas of catalysis, green chemistry and renewable resources. There were several other interesting lectures on various topics like photo-catalytic C-H activations, carbon nanotubes, nanomaterials, renewable chemicals for biopolymers, use of Cu in glycerol hydrogenolysis, Use of ionic liquids in catalysis and many more. Various reactions like acetoxylation of styrene, oxidative dehydrogenation of ethane, one-pot synthesis of propargylamines using gold nanoparticles, valorization of renewables by oxidation with gold

catalysts, ammoxidation of 2-methylpyrazine, hydrodecyclization of multi-ring naphthenes, carbon dioxide on electro-catalytic surfaces were also covered.

### **Workshop on Communication and Interview Skills by Mr. Sudhir Shah**

A full-day workshop on Communication and Interview skills by Mr. Sudhir Shah, Management consultant, Naipunyam, was organized for the benefit of our M.Sc (First and Second year) students on Saturday, 20<sup>th</sup> April 2013. The workshop was from 10.00 a.m. to 6.00 p.m. in the Venkataraman Auditorium. The students were requested to bring with them their biodata and possible expectations about their job.



Dr. Sudhir Shah in the Workshop on Communication and Interview Skills

Mr. Shah elaborated on the interview skills. He explained how to prepare good and effective curriculum vitae, and how to organize the various documents needed. Communication skills were elaborated in detail with demonstrations and interactive sessions. Five major components of communication skills – listening, understanding, reverting, language, and body language - were elaborated. Body language was given due emphasis in order to make the presentation effective and also to understand the person we converse with. Language skills were elaborated. Common mistakes done in spoken and written English were presented. Mr. Shah explained various aspects of personality and emphasized the importance of positive approach.

Some Assignments were given to the students to assess their personality. Some tests were also conducted for self-evaluation. The concept of brain mapping was introduced and its importance in

career was explained. There was one hour open house session, in which the students asked questions to the resource person and he answered them satisfactorily.

### **Laboratory Safety Workshops for laboratory staff and Ph.D. Students**

A crucial component of chemical education is to nurture the basic attitude and habits of prudent behavior in the laboratory. Safety is an inseparable part of all laboratory activities. With this consideration, the Department of Chemistry, under the auspices of TEQIP, conducted two 'Workshops on Laboratory Safety', on 19<sup>th</sup> March for Laboratory Staff and on 20-21 March 2013 for the Ph.D. Students of the Institute.

#### **(1) Laboratory safety Workshop for Laboratory Staff, 19<sup>th</sup> March 2013**

Around 45 participants from all the departments of ICT attended the workshop. Few participants from local colleges were also allowed to attend the workshop. It was conducted in Marathi and Hindi. Prof. B.M. Bhanage welcomed the participants. Vice Chancellor Prof. G. D. Yadav inaugurated the workshop and also addressed the participants. Prof. S.D. Samant, discussed General Safety norms and precautions which should be taken while working in the laboratory. Mr. Suresh Jadhav, an environmentalist gave a presentation on Case Studies in Laboratory Safety. Prof. Radha Jayaram, explained the use of Personal Protective Equipments. Dr. Sadhana Sathey talked about Toxicity of Chemicals and safe handling of Chemicals. Prof. B.M. Bhanage explained about Storage and transportation of chemicals. He also explained handling of gas cylinders. Dr. Jayashree Nagarkar explained about Fire and how to extinguish it. Mrs. Prerana Goswami talked about Electrical safety. Mr. Rupesh Gaikwad conducted the session on First aid Issues and transportation of casualties. Fire Fighting Demonstrations were arranged. A safety handbook in Marathi was given to the participants.





Laboratory safety workshop for laboratory staff

## **(2) Workshop for Ph.D. Students**

120 participants from almost all the departments attended the Workshop. The workshop was inaugurated by Prof. G.D.Yadav, Vice Chancellor, ICT. He discussed. Prof. V.V.Mahajani gave a presentation on Chemical safety. Biosafety was discussed by Prof. Deepti Deobagkar. Prof. Radha Jayaram explained the use of Personal Protective Equipment She also talked about Hazard Management. 'How to make my lab a safe workplace' was a topic discussed by Mr. Suresh Jadhav. Dr Vijay Bhujale discussed the 'Safe Practices in Laboratory during Research and Process Development Stage'. The lecture cum demonstration on 'First Aid Issues and Transportation of Casualties' was conducted by Mr. Rupesh Gaikwad. Prof. M..Keravala discussed the aspect of Safety with respect to electricity. Prof B.M.Bhanage explained the Safety Measures to be followed while carrying out the High Pressure Reactions. Prof. S.D. Samant highlighted the importance of storage and compatibility of Chemicals. Waste Management was covered by Dr. Mrs. J. M. Nagarkar. Dr. Vijaykumar talked about Toxicity of Chemicals. Fire Safety covered by Dr. Mrs. J.M. Nagarkar. At the end there was a firefighting demonstration arranged by Mr. Datta Kamble. An examination based on the course was conducted at the end. A book on 'Laboratory Safety' was given to the participants.



Laboratory safety workshop

### **NET/SET Orientation workshop**

In order to give orientation to NET/SET examinations to the Masters and doctoral students working in the Department a NET/SET workshop was organized on 9<sup>th</sup> and 10<sup>th</sup> May 2013. The lectures were given by the Ph.D. students who have cleared the NET examination. About 50 students participated in the workshop. The following students gave lectures -

Mr. Kirtikumar Badgajar, Mr. Druman Uteka, r Mr. Radhesham Shelkar, Mr. Subhash Yedge, Mr. Rajendra Mane, Mr. Anand Bhurage, Mr. Nanabhau Karanjule, Mr. Balaso Jadhav, Mr. Adil Khatri, Mr. Sandeep Gadge, and Mr. Nilesh Korgaonkar.

### **Workshop on “Green and Sustainable Technology” and SERB Task Force Meeting on Green Chemistry**

The 1-Day Workshop on “**Green and Sustainable Technology**” and **SERB Task Force Meeting on Green Chemistry** was held at Institute of Chemical Technology on 11<sup>th</sup> May 2013. This conference was a unique conference first of its kind based on the lateral thoughts to bring the interaction between industry and academics. Many personnel from reputed industries have presented their problems, existing hurdles and how technology is emerging in the present context with respect to emphasis on Green and Sustainable Technologies. The need and thrust for such high end processes, their importance and outcome in the present scenario of changing global

economic situation was well debated and discussed in the conference. This conference included the task force meeting which took place after the workshop.

The following DST Task Force Committee members and Invitees were present. Prof S. Chandrasekaran, IISc, Bangalore; Dr P.K. Ghosh, CSMCRI, Bhavnagar; Dr B. Gopalan, Orchid Pharma Ltd, Chennai; Dr R.V. Jasra, Reliance Industries Ltd, Hajira; Dr B.C. Ranu, IACS, Kolkata; Dr Sujit Roy; Dr R. Brakaspathy, DST; Prof. P. Selvam, IIT, Chennai; Dr. R. R. Bhattacharjee, PSG Institute of Advanced Studies, Coimbatore; Dr. Jyotirmayee Dash (IACS Kolkotta); Dr. Rajib Kumar Goswami (IACS Kolkotta); Dr. Joyram Guin (IACS Kolkotta); Dr. DebabrataMaiti (IIT Mumbai); Dr. C. V. Rode, National Chemical Laboratories, Pune; Dr. D. Srinivas NCL Pune Number of student participants were 50, Number of company participants were 43, and 25 academicians-ICT Faculty participated.

### **Chem Careers India 2012**

Royal Society of Chemistry (RSC) India; Department of Chemistry, Institute of Chemical Technology, and the British Council, Mumbai, organized an event - '**Chem Careers India**' on 20<sup>th</sup> October 2012 at ICT. The event was organized for the benefit of the undergraduate and post-graduate chemistry students of Mumbai and nearby areas. The objective of the programme was to give an exposure to the wide range of career opportunities available. Several lectures of eminent scientists/ entrepreneurs were arranged. This was followed by expert advice on soft skills. 25 industries put up their stalls in the programme. About 900 students participated in the programme. The event helped the chemistry graduates / students to realize the relevance of chemistry in various industrial sectors and also helped them to identify the various career options available in the subject of chemistry.

### **CONTECH 2012**

The concept test in Chemistry (CONTECH 2012) was conducted to test the basic understanding of Chemistry of undergraduate and postgraduate students was conducted by the Department in collaboration with the Association of Chemistry (ACT) on 1<sup>st</sup> December 2012. This test is conducted every year by the Department of Chemistry for last 5 years with very good response from students. This year 78 students appeared at this test. Mr.Shaaz Khatib, Mr.Partho Ghosh & Mr.Ashish Jayaraman secured first, second & third rank respectively. They were felicitated with prizes in the form of books and certificate at the Institute's Annual Day Function. Remaining participants who passed this test were also given a participation certificates.



### **RASAYANAM 2013**

The Department of Chemistry, ICT, organized its 1<sup>st</sup> Chemistry-based festival, “RASAYANAM 2013” on the 5<sup>th</sup> and 6<sup>th</sup> of January, 2013. M.Sc. (Chemistry) students took initiative to organize the function. Around 150-200 participants from various colleges across Mumbai participated in the inaugural edition of RASAYANAM. It included 6 different events spanning across 2 days. Separate quiz competitions for undergraduates and post graduates, a comic theme based poster competition, an exhibition of not-so-often-seen chemical reactions, a forensic science based mystery solving competition and a treasure hunt with chemical clues were the events that took place. A Power Point presentation competition was included too. Certificates and the prize cheques were handed out to the respective winners on the 2<sup>nd</sup> day of the festival without any delay.

### **Academic year 2013-14**

#### **CONTECH 2014**

The concept test in Chemistry (CONTECH 2014) was conducted by the Department in collaboration with the Association of Chemistry (ACT) on 18th January 2014, to test the basic understanding of Chemistry of undergraduate and postgraduate students. This test is conducted every year by the Department for last 6 years with very good response from the students; mainly UG students. Professor S.D. Samant coordinated this activity. About 100 students took the examination. Mr. Harshawardhan Shrivastava, Mr. Soham Shah & Mr. Omkar Bhatavdekar secured first, second & third rank respectively. They were felicitated with prizes in the form of books and certificate at the Institute's Annual Day Function. Remaining participants who passed this test were also given a participation certificates.

#### **NET/SET ORIENTATION WORKSHOP**

An orientation course for the CSIR/UGC – NET/SET exam was organized by the department on 25th and 26th February 2014. The workshop was funded by the TEQIP II. Dr. Kaustubh Joshi conducted this activity. It was open to the M.Sc. and Ph.D. students of the department of chemistry as well as other interested students from other departments. As many as 60 students registered, while few more last minute entries were accepted on the day of the workshop.

The basic theme behind the workshop was to create an opportunity for the CSIR-UGC aspiring students to interact with the Ph.D. students of the department who recently successfully cleared this exam. These students shared different tricks and trades of the exam which could prove useful to all the students while preparing for the upcoming competitive exam.

A series of lectures were conducted over two days spanning eight sessions, covering different topics in the area of chemistry known to be very important from the point of view of CSIR-UGC-NET examination. All the lectures were designed to be interactive in nature making the students to interact and get their queries right during the lectures.

Towards the end of the workshop, a one hour test on the lines of CSIR-UGC-NET exam format was conducted based on the topics covered during different sessions.

Mr. Abhishek Dubey, Mr. Samadhan Jagtap, Mr. Kirtikumar Badgujar, Mr. Gopal Dhangar, Mr. Nanabhau Karanjule, Mr. Vilas Jadhav, Mr. Sandeep Gadge, Mr. Nilesh Korgaonkar, Mr. Balaso Jadhav, Mr. Rajendra, Mr. Abhishek Tiwari, Mr. Subhash Yedage, Mr. Mahendra Patil, Mr. Ajay Ardhapure and Mr. Sachin Bhagade delivered lectures on various topics.

### **RASAYANAM 2014**

Rasayanam 2014 was held on 3rd March 2014. 161 individuals from across 19 institutes of Mumbai participated in the event. Dr. A.R. Kapdi was the convenor. Gaikar was the Chief Guest and inaugurated the event.

In the first session events like ‘What The Fun’, a refreshing out-of-the-box quiz competition exclusive to undergraduates and ‘The Pundits’ exclusively for postgraduates were organized. 32 teams of 2 students each participated in the ‘What The Fun’. 16 teams of 2 each had participated in ‘the Pundits’ event. This was a neck to neck competition and after around 2 hours of buzzers and questions and answers, the winners were declared.

After the Chem-Crossword solving elimination round, 6 teams made it to the finals. This event left everyone, including the finalists and the eliminated audience, happy, refreshed and with a little enhanced knowledge of Chemistry. This is what we call –‘Purpose Served’.

One of the main highlights of Rasayanam 2014 was ‘Rasayan Mela’. Stalls were setup for demonstrating rather interesting, colorful and full of knowledge Chemistry Experiments. This was indeed a crowd magnet, everyone from faculties to research scholars to participants to non-participants, wanted a glimpse of experiments being demonstrated.

In the second post-lunch session, a poster competition named, 'Chemdraw v2.0.1.4' was held for the 1st time in Rasayanam, which was a perfect blend of innovative art and chemistry put together. 11 teams of two each had participated in the event. Lastly 'ChemShodh – The Treasure Hunt' an all innovative treasure hunt where all the clues were Chemistry based was conducted. The response for the event was so huge that the event had to be done twice to accommodate as many participants possible. The uniqueness and the atmosphere generated by ChemShodh ended Rasayanam 2014 on a real high note, for both the organizers and especially the participants.

The whole event was conducted by the students of M.Sc. Chemistry, all 40 put together with the support of the Department of Chemistry.

### **CATSCHOL**

"Catschol-2014", a chemistry research conference for research students was also organized by the department of Chemistry on the 4th of March 2014. In this event, posters and oral presentations were presented by the students of the department. Prizes were given to 2 best posters and to the best oral presentation. Mr. Kirtikumar Badgujar and Mr. Mahesh Edake were awarded first and second prizes respectively, for their research presentations.

### **Laboratory Safety Workshops for Ph.D. Students**

The Department conducted a two-day Workshop on Laboratory Safety for the PhD students on 18th and 19th of March 2014, with the aim of creating a general awareness about common laboratory safety issues. The workshop focused on sensitizing the students towards potential hazards in a chemical / biochemical laboratory and providing them with the technical know-how to prevent and manage potentially dangerous situations. The workshop included lectures and interactive sessions by various experts from the academia and industry in addition to first aid and fire fighting demonstrations.

The workshop was organized under the auspices of Technical Education Quality Improvement Program – Phase II (TEQIP – II) and was also supported by the UDCT Alumni Association (UAA). Dr. J.M. Nagarkar was the convenor and Dr. Shaeddha Tiwari was the co-convenor of the workshop. As many as 124 students registered. The participants were provided with a manual on Laboratory Safety as a part of the registration kit, which was sponsored by UAA.

The inaugural session of the workshop was chaired by Professor B. M. Bhanage (Head, Department of Chemistry, ICT) and the workshop was inaugurated by Professor S. D. Samant (Department of Chemistry, ICT). Professor Samant gave an overview of the safety and related issues during his inaugural address and emphasized the importance of the various topics scheduled for discussion in the next two days.

The workshop began with a lecture on “Personal Protective Equipments” by Professor R. V. Jayaram (Department of Chemistry, ICT). This was followed by a lecture on “Laboratory Waste Management” by Dr. J. M. Nagarkar (Department of Chemistry, ICT). The two lectures were followed by an interactive session moderated by Dr. Anant Kapdi, wherein the participants shared their perspectives and experiences on laboratory safety issues. Dr. Purna Goswami (General Engineering Department, ICT) discussed the importance of “Electrical Safety”. Shri. Vijay Bhujle (Intertek Industries and Visiting Faculty member, ICT) then delivered a talk on “Development of Safe Manufacturing Processes”. This was followed by a video demonstration “Safe Practices in R & D laboratory to achieve them” and the students actively participated in the interaction session after the demonstration. The participants were given hands-on training in the important skills of fire fighting through a demonstration on the Futsal ground of ICT. The fire-fighting demonstrations were conducted by Shri Dattaji Kamble (ICT).



Fire fighting demonstration during Laboratory Safety Workshop

The second day of the workshop commenced with a demonstration session on “First-aid in Lab Accidents” by Dr. Manjeet Singh (CPR trainer, Medical Consultant – Fortis Hospital). The participants were introduced to critical life-saving techniques in case of emergencies. The topic of handling hazardous chemicals was discussed by Dr. Anant Kapdi (Department of Chemistry, ICT) in the lecture titled “Handling Dangerous Chemicals” which also included a number of video clips. Professor Vandana Patravale (Head, Department of Pharmaceutical Sciences and Technology, ICT) focused on the physiological effects of chemical exposure in the lecture titled “Toxicity”. A lecture on the fire hazards and fire-fighting aspects was given by Shri Santosh Hule (Manager, HES, NOCIL). In the afternoon session, Professor V. V. Mahajani talked about safety scenarios in research laboratories and the industries in his lecture “Gambling Life in Laboratory”. The next lecture on “Handling High Pressures” by Professor B. M. Bhanage was focused on the management of gas cylinders and laboratory systems using high pressure conditions.

The participants’ feedback was taken during the concluding session. The feedback from the participants was very positive and encouraging. The participants also came up with proactive suggestions for improving the laboratory safety issues in the institute. Thus, the workshop was successful in not only creating a general awareness about safety issues, but also brought forth many suggestions from the student community.

A written examination was conducted based on the contents discussed during the workshop. The participants were awarded a certificate of participation upon successful completion of the workshop (based on their attendance and performance in the written examination).

### **Teaching Learning Workshop**

A workshop on Teaching-Learning was organized on 28th and 29th March 2014 under the auspices of the TEQIP. The main objective of this workshop was to sensitize the participants with respect to the factors which affect the quality of science teaching-learning process. Professor S.D. Samant was the convenor.

The workshop was mainly for the ICT faculty and some teachers from colleges in Mumbai were also allowed to participate. 36 teachers participated. On 28th March the workshop was inaugurated by Professor G.D. Yadav, V.C., ICT. Professor V.G. Gaikar, TEQIP Co-ordinator, and Professor P.R. Vavia, Dean, Acad. Prog. addressed the participants. Professor Samant explained the idea of the workshop.

Professor Arvind Kumar (Formal Director, HBCSE), Professor H.C. Pradhan (Formal Director, HBCSE), Professor Vijay Singh (HBCSE), Dr. Chitra Natarajan (Dean, HBCSE), Professor Savita Ladage (HBCSE), Dr. Hemangi Bhagwat (K J Somaiya College of Science and Commerce), Dr. Vivek N. Patkar (Consultant), Mrs. Rita Doctor (ICT) and Mrs. Rekha Ramesh (Shah & Anchor College) gave lectures. The topics covered were History and philosophy of science -Implication for teaching, Research writing and publication process, Making science communication more effective, Measurement and evaluation in teaching, Socio-scientific issues: Role in teaching-learning, Relevance of science education to practicing teachers, Assessment: Design and Denouement, Learning in the laboratory, Communication beyond words, Teaching/Learning in digital era, Research writing and publication process Relation between teacher and taught-Psychological perspective, Aligning assessment to curriculum. At the end of workshop, a discussion was held regarding specific shortcomings in teaching and the ways to overcome them.

### **Academic year 2014-15**

#### **Laboratory Safety Workshop for Ph.D. Students**

The Department conducted a one day Workshop on Laboratory Safety on 4<sup>th</sup> September 2014, with the aim of creating a general awareness about common laboratory safety issues. The workshop included lectures and interactive sessions by various experts from the academia and industry. The workshop was organized by Centre of Excellence in process intensification & Department of Chemistry. Dr. J.M. Nagarkar (Department of chemistry) was the convener and Dr. C. S. Mathpati (Department of Chemical Engineering) as Co-convener. The participants were provided with a manual on Laboratory Safety as a part of the registration kit. The workshop was inaugurated by Professor S. S. Bhagwat, Head, Department of Chemical Engineering, ICT.

The workshop began with a lecture on “Personal Protective Equipments” by Professor R. V. Jayaram (Department of Chemistry, ICT), followed by a lecture on “Laboratory Waste Management” by Dr. J. M. Nagarkar (Department of Chemistry, ICT), Dr. Shraeddha Tiwari talked about safe storage of chemicals and Mrs. Purna Goswami (General Engineering Department, ICT) discussed the importance of “Electrical Safety”. Shri. Vijay Bhujle (Intertek Industries) then delivered a talk on “Development of Safe Manufacturing Processes”. The lecture on “Handling High Pressures” by Professor B. M. Bhanage was focused on the management of gas cylinders and laboratory systems using high pressure conditions. Shri Dattaji Kamble (ICT) also gave the information about various fire extinguishers. The participants’ feedback was taken during



the concluding session. The feedback from the participants was very positive and encouraging. The participants also came up with proactive suggestions for improving the laboratory safety issues in the Institute.

### **Workshop on “Applications of Electrochemistry in Photo Voltaic Devices, Nanotechnology and Energy Research”**

A Workshop on “Applications of Electrochemistry in Photo Voltaic Devices, Nanotechnology and Energy Research” was arranged on 16th March 2015 in collaboration with Metrohm Inc.

The workshop was planned with an objective of giving in-depth information about the latest techniques and applications in electrochemistry which will be beneficial for future endeavors.

The total participation was 76 in number which included M.Sc. Sem IV students from our Department and Ph.D students not only from our Department but also from other Departments of ICT. We also had a few participants from Ramnarain Ruia College. The workshop constituted of lectures and practical demonstration sessions. The pre-lunch session was based on the basic concepts of Electrochemistry and the post-lunch session was designed to emphasize various applications of Electrochemistry.

### **Rasaynam 2015**

The annual intercollegiate chemistry festival, Rasaynam, organized by the Department of Chemistry, was started in the year 2013 by the M.Sc. batch of 2011 – 2013 under the leadership of Mr. Nilesh Shahi. In the last two years, it has attracted around 200 students (both Undergraduates and Post-graduates) from all across Mumbai.

#### **Inaugural Ceremony**

“Rasayanam”, a fun-filled inter collegiate chemistry related event was held on 16<sup>th</sup> and 17<sup>th</sup> January 2015. Students from several local colleges participated in this programme. Events such as “The Mega Minds”-a chemistry quiz for post graduate students, “What is the Fun”- A chemistry and skill based quiz for under graduate students, “Chem Enigma”- an event based on crime scene investigation, “Chem Draw”- a poster presentation competition, “Chem Shodh”- a treasure hunt with chemistry based clues, “Rasayan mela”- with magic shows of chemistry experiments and exhibition experiments, and “Chem Housie”- A normal housie game with element symbol instead



of numbers, all were part of this programme and received over whelming response and appreciation.

The Inaugural ceremony started at 09:00 a.m. in the K.V. Auditorium. Dr. Shrikant Sakhalkar, ICT alumnus, was the Chief Guest for the occasion. The ceremony was blessed with the presence of the honorary Vice-Chancellor of the Institute, Prof. G.D. Yadav.

Dr. Kapdi, the convenor, welcomed the guests with a floral bouquet and addressed the audience with the introduction of Rasayanam. Our honorary Vice-Chancellor, Prof. Yadav spoke about the history of ICT and emphasized the importance of Chemistry in all walks of life. The Chief Guest for the occasion, Dr. Sakhalkar gave a small but inspiring talk about chemistry and strength of today's generation.

The ceremony ended with the Opening of Rasayanam by unveiling poster of Rasayanam by the dignitaries on the dais. Events conducted in the festival were The MegaMinds – A chemistry quiz for Post students, ChemEnigma – An event based on Crime Scene Investigation and forensic science, ChemDraw - a poster presentation competition, ChemShodh – a treasure hunt with chemistry-based -graduate students, What the Fun! - A chemistry and skill based quiz for the Undergraduate clues, Rasayan-Mela – magic shows of chemistry experiments and exhibition experiments, etc.

The closing ceremony of Rasayanam was held on 17th January, 2015 at 05:30 p.m. in the K.V.Auditorium. The Chief Guest for the occasion was Dr. Shrikant Sakhalkar, alumni of UDCT, who addressed the audience with a talk on 'A Pharma Perspective: 2020 and Beyond'. The talk gave an insight into the current status of pharmaceutical industries in India. The talk was followed by prize distribution in which the winners were awarded cash prizes, trophies and certificates. The participants were awarded with the participation certificates. The ceremony ended with the vote of thanks by the Chairperson of Rasayanam-2015, Ms. Neetha S. Bhat. Overall the participation for Rasayanam-2015 was about 400.

### **Academic year 2015-16**

## **Royal Society of Chemistry ChemCareers – 2015 held at ICT on August 28th, 2015**

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The Royal Society of Chemistry (RSC) has been organizing workshops, roadshows and symposia throughout India. ChemCareers is one such event which brings to notice the varied careers open to graduates in chemical sciences. This gives an opportunity to graduate and post graduate students to explore career options. They also get a chance meet

professionals from Indian chemical companies. Graduates, post-graduates and PhDs from all leading institutes in Mumbai and nearby cities have participated in the event. About 200 students and 20 companies have participated in the event. It comprised of a key note speech by Dr. Sanjeev Katti of Reliance Industries Limited followed by interactive sessions and panel discussion. The afternoon session housed a workshop on writing skills, network building for career advancement, personality improvement and guidelines for facing an interview.



## Rasayanam - 2016

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The annual intercollegiate event of the Department, Rasayanam, was held on January 15<sup>th</sup> and 16<sup>th</sup> 2016. The fair was a grand success with a spectacular participation of about 400 students from various colleges in and around the city of Mumbai. The event was a blend of lectures, quizzes, presentations and various other activities aimed at popularising the reach of chemistry in life society.

The inaugural address of Rasayanam was given by Dr. Surendra Kulkarni, Former Site Head and Research Director, SABIC, Bengaluru. The event ended with prize distribution by Dr. Vinod Parab, LobaChemie who was the chief guest for the valedictory function.

### Academic year 2016-17

## **Security Personnel Training Workshop**

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The Department of Chemistry conducted a workshop to train the security personnel of ICT under the auspices of TEQIP – II. The workshop was conducted on five weekends during July to August 2016. The concluding session of the workshop was held on 3<sup>rd</sup> September 2016. The workshop was intended for all the security staff members in ICT. The main focus of the workshop was training the ICT security personnel in various areas such as squad drill, preliminary self-defense skills, basic fire-fighting skills and leadership skills. In order to achieve this goal, the workshop consisted of lectures, interactive sessions and hands-on training sessions.

A total of 25 members from the security staff had registered for the workshop. Lt. Rakesh Barai (Associated NCC Officer, Guru Nanak Khalsa College of Arts, Science and Commerce) and his team of NCC cadets conducted a number of squad drill and self-defense sessions. Lt. Barai also conducted lectures as well as interactive sessions on personality development. Special mention must be made of Shri Vinod Mohite, who was in-charge of the self-defense training and Shri Sukhraj Singh Riad, who supervised the squad drill training. The fire-fighting sessions were conducted by Shri Sachin Khedekar (Chetana Foundation). Breakfast and lunch were provided to the participants.

At the end of the training, the participants were assessed through a written test. The participants were awarded with a certificate of participation based on their attendance record and satisfactory performance in the written examination at the concluding session. The concluding session was chaired by Hon' Vice-Chancellor Prof. G. D. Yadav, who commended the efforts of the security staff to enhance their skills while maintaining the security standards of the Institute and the resource persons for their contribution. Other dignitaries present at the concluding session included Prof. S. S. Lele (Registrar), Prof. B. M. Bhanage (Dean, ICD), Prof. P. R. Vavia (Dean, AP) and Prof. R. V. Jayaram (Head, Department of Chemistry). Participants' feedback was taken during the concluding session, both verbatim and in the written form.

The feedback from the participants was very positive and encouraging. The participants also came up with proactive suggestions for improving the laboratory safety issues in the institute.



## Laboratory Safety – Pitfalls And Remedies

Inculcating awareness about the common hazards faced by chemists in the research laboratory and developing a working environment to prevent them, has been the priority of the Institute. Due to overwhelming response of the first workshop on Laboratory Safety, the Department of Chemistry conducted a two-day workshop titled “Laboratory Safety – Pitfalls and Remedies” on the 27th and 28th February 2017 under the auspices of TEQIP – II. The workshop was intended for the research students of all the Departments in ICT. The main focus of the workshop was to sensitize the students about the potential sources of environment / health hazards and the methods for preventing or minimizing the impact of such hazards. In order to achieve this goal, the workshop consisted of lectures, interactive sessions and hands-on firefighting and first-aid demonstrations. About 120 students who registered for the workshop.

The workshop was inaugurated by Prof. A. B. Pandit (Dean, HRD), who emphasized the need for a safe and sustainable working environment in the research laboratory. Prof. Samant gave a brief overview of the issues related to safety in a laboratory. He then introduced the participants to various aspects of safe chemical storage. This was followed by a lecture on “Development of Safe

Manufacturing Processes” by Shri Vijay Bhujle (GVS Cibatech Pvt. Ltd.) wherein he discussed the various aspects of achieving safe environment in a R&D laboratory.

The next session, began with a discussion on “Toxicity” by Dr. Sadhana Sathye (Department of Pharmaceutical Sciences and Technology) which outlined the different parameters used for measuring toxicity and the long term impact. This was followed by a lecture on “Handling High Pressure Reactions” by Dr. Yogesh Wagh (USV Pvt. Ltd.) who shared his experiences and knowledge related to the hazards posed by high pressure setups in the laboratory. Shri Santosh Hule (NOCIL Ltd.) delivered a talk on “Fire Hazards” which discussed the firefighting basics in details. Shri Hule also utilized numerous case studies to drive the point home. The final session on the first day was the firefighting demonstration by Shri Hule and his associates. The hands-on training session was much appreciated by the participants of the workshop.

On the second day, the morning session began with a lecture on “Electrical Safety” by Dr. Prerna Goswami (Department of Electrical Engineering). Prof. R. V. Jayaram shared her expertise on personal protective equipment. Prof. J. M. Nagarkar spoke on various aspects of “Waste Management” in the laboratory. After the lunch break, the participants were trained in Biosafety aspects by Prof. S. K. Kale (DBT – ICT Centre for Energy Biosciences). Finally the participants were taught the basics of first-aid through demonstrations by Dr. Rupesh Gaikwad (Maharshi Dayanand College of Arts, Science and Commerce). These included the basic practices of bandaging, transportation of sick people and other common accidental situations in the laboratory.

The workshop concluded with a written test and the feedback form. Participants’ feedback was taken during the concluding session, both verbatim and in the written form. The valedictory session was chaired by Prof. Padma Devarajan (TEQIP Coordinator), who commended the efforts of the Department of Chemistry and requested the participants to incorporate the knowledge gained through the workshop in the routine lab practices. The feedback from the participants was very positive and encouraging.

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### **Laboratory Safety Workshop / Conference**

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- 1) Laboratory Safety Workshop for research students organized on 1<sup>st</sup> and 2<sup>nd</sup> Sept. 2016.
- 2) Laboratory Safety workshop for research students organized on 27<sup>th</sup> and 28<sup>th</sup> February 2017
- 3) **A one day seminar series on “Science of Synthesis”** organized by Dept. of Chemistry and Theime Publishers 9th Dec. 2016. (Speaker: Guido Hermann): This event was organized for



faculty members and research students of ICT. The objective of this event was to educate researchers about new methods of literature search.

- 4) **A one day seminar series on “Microwave Assisted Organic Synthesis”** organized by Dept. of Chemistry and Anton Paar on 16th Dec. 2016 (Speaker: Prof. Oliver Kappe): This event was organized for the research students of ICT, also researchers from various other universities were also participated in this seminar series. Prof. Oliver Kappe discussed the applications of microwaves as well as green chemistry approaches in organic synthesis.

1. **Year of establishment** : 1951
2. **Is the Department part of a School/Faculty of the university?** No
3. **Names of programmes offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., D.Sc., D.Litt., etc.)**
  - a) M. Sc. (Chemistry) – Four semester post-graduate course
  - b) Ph.D. (Chemistry)
4. **Interdisciplinary programmes and departments involved**

M. Tech. (Green Technology) – an interdisciplinary programme of ICT
5. **Courses in collaboration with other universities, industries, foreign institutions, etc.-**

NA
6. **Details of programmes discontinued, if any, with reasons:** NA
7. **Examination System: Semester**

Semester based evaluation pattern, with elective courses in the last two semesters of M.Sc. programme
8. **Participation of the Department in the courses offered by other departments**

**Teaching theory and laboratory courses to**

  - A Bachelors in Technology (All branches)
  - B Bachelors in Chemical Engineering
  - C Bachelors in Pharmacy
  - D M. Tech. (Green Technology)
  - E Research Methodology (Ph. D. Science)

**9. Number of teaching posts sanctioned, filled and actual (Professors/Associate Professors/Asst. Professors/others)**

|                      | Sanctioned | Filled | Actual<br>(including CAS and MPS)                         |
|----------------------|------------|--------|-----------------------------------------------------------|
| Professor            | 2          | 1      | 4                                                         |
| Associate Professors | 3          | 2      | 0                                                         |
| Assistant Professors | 5          | 4      | 4                                                         |
| Others               |            |        | UGC FRP – 01<br>DST INSPIRE – 02<br>Ramanujam Fellow - 01 |

**10. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance**

| Name                         | Qualification | Designation                                       | Specialization                                    | Experience<br>(in years) | Ph. D. Students<br>guided for the<br>last 5 years |
|------------------------------|---------------|---------------------------------------------------|---------------------------------------------------|--------------------------|---------------------------------------------------|
| Prof. Radha V. Jayaram       | Ph.D.         | Professor in Physical Chemistry                   | Catalysis, Green Chemistry, Interfacial Chemistry | 23                       | Completed: 09<br>Ongoing: 13                      |
| Prof. Bhalchandra M. Bhanage | Ph.D.         | Professor in Industrial and Engineering Chemistry | Catalytic Science and Technology, Green Chemistry | 12                       | Completed: 16<br>Ongoing: 23                      |
| Prof. Shrinivas D. Samant    | Ph.D.         | Professor in Organic Chemistry                    | Synthetic Organic Chemistry                       | 34                       | Completed: 05<br>Ongoing: 07                      |
| Dr. Jayshree M. Nagarkar     | Ph.D.         | Associate Professor in Physical Chemistry         | Physical Chemistry, Catalysis, Green Chemistry    | 18                       | Completed: 04<br>Ongoing: 08                      |
| Dr. Anant                    | Ph.D.         | UGC FRP                                           | Organic                                           | 5                        | Completed: 00                                     |



|                            |       |                                                         |                                        |   |                              |
|----------------------------|-------|---------------------------------------------------------|----------------------------------------|---|------------------------------|
| Kapdi                      |       | Assistant Professor in Chemistry                        | Chemistry, Organometallic Chemistry    |   | Ongoing: 11                  |
| Dr. Vijay Kumar            | Ph.D. | Assistant Professor in Organic Chemistry                | Homogenous and heterogeneous catalysis | 4 | Completed: 00<br>Ongoing: 04 |
| Dr. Shraeddha Tiwari       | Ph.D. | Assistant Professor in Inorganic and Physical Chemistry | Physical Organic Chemistry             | 3 | Completed: 00<br>Ongoing: 04 |
| Dr. Pavan More             | Ph.D. | Assistant Professor in Microanalysis                    | Environmental Catalysis                | 1 | Completed: 00<br>Ongoing: 00 |
| Dr. Kaustubh Joshi         | Ph.D. | Ramanujam Fellow                                        | Computational Chemistry                | 3 | Completed: 00<br>Ongoing: 02 |
| Dr. Dipanwita Das          | Ph.D. | DST INSPIRE Faculty                                     | Inorganic Chemistry                    | 3 | Completed: 00<br>Ongoing: 04 |
| Dr. Sanghamitra Chatterjee | Ph.D. | DST INSPIRE Faculty                                     | Electrochemistry                       | 2 | Completed: 00<br>Ongoing: 03 |
| Dr. Sudam Dawande          | Ph.D. | Assistant Professor in Organic Chemistry                | Organic Chemistry                      | 2 | Completed: 00<br>Ongoing: 01 |

#### 11. List of senior Visiting Fellows, adjunct faculty, emeritus professors

| Name                 | Affiliation                                                                              |
|----------------------|------------------------------------------------------------------------------------------|
| Dr. Veena Khilnani   | Department of Chemistry, K. J. Somaya College, Vidyavihar, Mumbai.                       |
| Dr. Tanuja Parulekar | Department of Chemistry, SIWS College, Wadala, Mumbai.                                   |
| Mr. Abhimanyu Yadav  | Department of Chemistry, G. N. Khalsa College, Matunga, Mumbai                           |
| Prof. N. D. Thakkar  | Retired Professor, Institute of Science, Mumbai                                          |
| Dr. Hemant Khanolkar | Department of Chemistry, Fr. Conceicao Rodrigues College of Engineering, Bandra, Mumbai. |

|                          |                                                                                             |
|--------------------------|---------------------------------------------------------------------------------------------|
| Dr. Indraneel Chatterjee | Technical Consultant                                                                        |
| Dr. Bipin Mehta          | Retired Professor, Department of Chemistry, University of Mumbai                            |
| Mrs. Gomathi Shridhar    | Department of Chemistry, V.K. Menon College, Mumbai                                         |
| Mrs. Elizabeth Joseph    | Department of Chemical Engineering, Thadomal Sahani College of Engineering, Bandra, Mumbai. |
| Dr. Lakshmy Ravishankar  | Department of Chemistry, V.G.Vaze College, Mulund, Mumbai.                                  |
| Dr. P. P. Tekale         | Department of Chemistry, G. N. Khalsa College, Matunga, Mumbai.                             |
| Professor V. V. Mahajani | Retired Professor, Department of Chemical Engineering, ICT, Mumbai                          |
| Dr. Sandeep Sharma       | BARC, Mumbai                                                                                |
| Dr. P. K. Pujari         | BARC, Mumbai                                                                                |
| Mrs. Mahalaxmi Nadar     | Department of Chemistry, SIES College, Sion, Mumbai.                                        |
| Dr. Chitra Kamath        | Department of Chemistry, K. J. Somaya College, Vidyavihar, Mumbai.                          |
| Dr. S. S. Mangaonkar     | Department of Chemistry, Mithibai College, Vileparle, Mumbai                                |
| Dr. P. A. Sathe          | Department of Chemistry, Ramnarain Ruia College, Maunga, Mumbai                             |
| Dr. D. Mandal            | Materials Science Section, BARC, Mumbai                                                     |
| Dr. Gail Carniero        | Associate Professor (Retd)., Sophia College, Mumbai                                         |

## 12. Percentage of classes taken by temporary faculty – programme-wise

information M. Sc. (Chemistry) – 12.5 %

## 13. Programme-wise Student Teacher Ratio

- a) M. Sc. (Chemistry) – 4:1
- b) Ph. D. (Chemistry) – 7:1

## 14. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual

|                      | Sanctioned | Filled | Actual |
|----------------------|------------|--------|--------|
| Laboratory Assistant | 04         | 04     | 04     |
| Laboratory           | 06         | 06     | 06     |

|                |    |    |    |
|----------------|----|----|----|
| Attendant      |    |    |    |
| Tutor (Ad hoc) | -- | -- | 01 |

**15. Research thrust areas as recognized by major funding agencies:**

Catalysis, interfacial chemistry, new methods in organic chemistry

**16. Number of faculty with ongoing projects from**

**a) national b) international funding agencies and c) Total grants received. Give the names of the funding agencies, project title and grants received project-wise.**

| Name of Funding agencies                                | Project Title                                                                                                 | Duration     | Amount Sanctioned (in Rs.) |
|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------|----------------------------|
| <b>Professor B. M. Bhanage</b>                          |                                                                                                               |              |                            |
| Science & Engineering Research Board (SERB)             | Studies in asymmetric catalysis for synthesis of enantiomerically pure amines and alcohols                    | 2012 to 2015 | 37,00,000                  |
| Department of Biotechnology (DBT)                       | Enzyme immobilization and its application in supercritical carbon dioxide for synthesis of valuable compounds | 2012 to 2015 | 24,00,000                  |
| Department of Science and Technology (DST-Nano Mission) | Study of catalytic activity of nanosize metals and metal oxides prepared by novel or conventional routes.     | 2012 to 2015 | 166,00,000                 |
| TEQIP-II INN Project                                    | Development of Green and Sustainable Methodology for the Synthesis of                                         | 2015 to 2017 | 5,20,000                   |

|                                             |                                                                                      |              |           |
|---------------------------------------------|--------------------------------------------------------------------------------------|--------------|-----------|
|                                             | Quinazolines and 1, 3, 5-Triazines.                                                  |              |           |
| CoE-Process<br>Intensification,<br>TEQIP-II | Microwave, Solar Energy, Ultrasound assisted synthesis of metal oxide nano-materials | 2015 to 2017 | 10,00,000 |

| Professor Radha Jayaram                                                            |                                                                                                                                                                                                         |              |             |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-------------|
| TEQIP                                                                              | Microwave assisted Bifunctional catalysis for Tandem Reactions                                                                                                                                          | 2014 to 2016 | 17,00,000   |
| Department of<br>Science and<br>Technology post-<br>doctoral<br>research programme | Water bound polymers for adhesive applications                                                                                                                                                          | 2015 to 2017 | 27, 83, 000 |
| IGCAR,<br>Kalpakkam, India                                                         | Synthesis of N,N-dialkyl-2-alkoxyacetamides extractants and N,N-dialkyl-2-alkoxyacetamides grafted resins for the separation of trivalent actinides from nitric acid medium and modeling of extractants | 2015 to 2017 | 27, 16, 800 |
| Dr. Anant Kapdi                                                                    |                                                                                                                                                                                                         |              |             |
| DST (Inspire<br>Faculty<br>programme)                                              | Application of Palladacyclic Complexes in Synthesis                                                                                                                                                     | 2012 to 2017 | 83,00,000   |
| Department of<br>BioTechnology                                                     | Synthesis and Cellular Evaluation of Novel Palladacyclic Complexes for Breast Cancer'                                                                                                                   | 2015 to 2018 | 25,00,000   |
| Alexander von<br>Humboldt<br>Foundation<br>(Germany)                               | Multi-functional Nucleosides and Nucleotides via Palladium-Mediated Reactions Using Novel Palladacyclic Complexes with Promising Anticancer Activities                                                  | 2015 to 2018 | 38,00,000   |
| Department of<br>Science and                                                       | Application of Palladacyclic Complexes in Synthesis                                                                                                                                                     | 2012-2017    | 35,00,000   |

|                                            |                                                                                                                            |              |           |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|--------------|-----------|
| Technology                                 |                                                                                                                            |              |           |
| Department of Biotechnology                | ‘Synthesis and Cellular Evaluation of Novel Palladacyclic Complexes for Breast Cancer’                                     | 2015-18      | 25,00,000 |
| Encore Pvt. Ltd.                           | Development of efficient processes for commercially useful drugs.                                                          | 2015-17      | 10,00,000 |
| <b>Dr. Vikay Kumar A.</b>                  |                                                                                                                            |              |           |
| Department of Science and Technology (DST) | Organic Synthesis using Recyclable Metal and Carbon Catalysts.                                                             | 2012 to 2017 | 35,00,000 |
| DST-SERB                                   | Immobilization of Chiral and Achiral Catalysts on benign Polymers coated Magnetic Nanoparticles for Organic Transformation | 2016 to 2019 | 28,64,000 |
| <b>Dr. Shraeddha Tiwari</b>                |                                                                                                                            |              |           |
| Department of Science and Technology (DST) | Investigating Reactivity and Selectivity of Organic Reactions in Liposomes as Model Protocells                             | 2013 to 2018 | 35,00,000 |
| Department of Science and Technology (DST) | Investigating Reactivity and Selectivity of Organic Reactions in Liposomes as Model Microreactors                          | 2014 to 2017 | 16,98,000 |
| DST-SERB                                   | Investigating reactivity and selectivity of organic reactions in liposomes as microreactor assemblies                      | 2014 – 2017  | 16,98,000 |
| DST-INSPIRE                                | Investigating reactivity and selectivity of organic reactions in liposomes as model protocells                             | 2013 – 2018  | 3500,000  |
| <b>Dr. Kaustubh Joshi</b>                  |                                                                                                                            |              |           |
| Department of                              | Efficient QM/MM approach for                                                                                               | 2013 to 2018 | 33,00,000 |

|                                            |                                                                                                                                     |              |           |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------|
| Science and Technology (DST)               | Protein/Ligand Binding Free Energies: finding inhibitors for novel cathepsin K, an Osteoporosis target                              |              |           |
| DST/SERB                                   | Efficient QM/MM approach for Protein/Ligand Binding Free Energies: finding inhibitors for novel cathepsin K, an osteoporosis target | 2015 to 2017 | 25,00,000 |
| DST/SERB                                   | Efficient QM/MM approach for Protein/Ligand Binding Free Energies                                                                   | 2015 to 2019 | 33,00,000 |
| Department of Science and Technology (DST) | Efficient QM/MM approach for Protein/Ligand Binding Free Energies: finding inhibitors for novel cathepsin K, an Osteoporosis target | 2013 to 2016 | 25,00,000 |

| Dr. Dipanwita Das                          |                                                                                                                                                                                        |              |           |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------|
| Department of Science and Technology (DST) | Transition metal mediated catalytic two and four electron reduction of O <sub>2</sub> : synthesis, structure-reactivity correlation and mechanistic insights by trapping intermediates | 2013 to 2018 | 35,00,000 |
| DST-SERB                                   | Development of Promising Photochromic Metal Organic Frameworks with Functionalized Photo-switchable Groups                                                                             | 2015 to 2018 | 22,21,000 |

| Dr. Sanghamitra Chatterjee                 |                                                                                                                                                                                                                      |              |           |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------|
| Department of Science and Technology (DST) | Nanomaterial Based Electrochemical Sensors for Biomedical Applications                                                                                                                                               | 2014 to 2019 | 35,00,000 |
| Dr. Pavan More                             |                                                                                                                                                                                                                      |              |           |
| SERB (DST)                                 | Total oxidation of diesel engine exhaust and volatile organic compounds by using Cs and Mg doped Mn <sub>x</sub> Ce <sub>1-x</sub> O <sub>2-y</sub> and Cu <sub>x</sub> Ce <sub>1-x</sub> O <sub>2-y</sub> catalysts | 2015 to 2017 | 45,59,000 |
| SERB (DST)                                 | Complete oxidation of diesel engine exhaust and volatile organic compounds by using                                                                                                                                  | 2015 to 2018 | 56,32,567 |

non-noble metal catalysts

**Dr. Sudam Dawande**

|          |                                                                                                                                                                               |              |           |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------|
| DST-SERB | Design, Synthesis of O-Thioester Substituted N-sulphonyl-1,2,3-triazoles and Their applications in the Intramolecular Cyclization to Synthesize Benzo Fused Thioheterocycles. | 2016 to 2019 | 20,30,000 |
| DST-SERB | Ruthenium(II) catalysis in the C-6 Functionalization of Indoles: C-C and C-O Bond Formation                                                                                   | 2017 to 2021 | 39,00,000 |

- Number of ongoing projects from national funding agencies - 30
- Number of ongoing projects from international funding agencies -01
- Number of faculty with ongoing projects from national funding agencies –10
- Number of faculty with ongoing projects from international funding agencies – 01
- Total grants received – Rs.10,29,22,367

**17. Inter-institutional collaborative projects and associated grants received**

- National collaboration -07**
- International collaboration -02**

**18. Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, AICTE, etc.; total grants received.**

- DST – FIST : Rs. 1,60,00,000 sanctioned
- UGC SAP: Rs. 1,50,00,000 sanctioned

**19. Research facility / centre with**

- **State recognition** - NA
- **National recognition:** The teaching and research programmes of the department are continually supported by funding from programmes like DST – FIST and UGC SAP (DRS I and DRS II)
- **International recognition:**  
Royal Society of Chemistry Accreditation for M. Sc. (Chemistry) programme

**20. Special research laboratories sponsored by / created by industry or corporate bodies:**

NA

**21. Publications: (in the last five years)**



- \* Number of papers published in peer reviewed journals (national / international)-362
- \* Monographs – Nil
- \* Chapters in Books – 20
- \* Edited Books – 03
- \* Books with ISBN with details of publishers - Nil
- \* Number listed in International Database (For *e.g.* Web of Science, Scopus, Humanities International Complete, Dare Database – International Social Sciences Directory, EBSCO host, etc.) – 362
- \* Citation Index – range / average: 699 to 5009
- \* SNIP – NIL
- \* SJR – NIL
- \* Impact Factor – range / average: Range – 0.3 to 38.6
- \* h-index: 126

| Title of patent                                                                                                                                                                                                         | Contributors                                                             | Details                                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Palladium-Catalyzed Carbonylative and Carboxylative CH Functionalization Reactions: Importance and Role of Regioselectivity in "Strategies for Palladium-Catalyzed Non-Directed and Directed C-H Bond Functionalization | P.Gautam,B.M. Bhanage:Anant KapdiDebabrata Maiti                         | Paperback ISBN: 9780128052549, Imprint:Elsevier, 2017                                                                             |
| Synthesis and catalytic applications of magnetic nanoparticles Encyclopedia of Nanoscience and Nanotechnology                                                                                                           | A.B. Patil, B. M. Bhanage*                                               | 25-Volume set)",American Scientific Publishers, 2016                                                                              |
| Selection of Reaction Media S.T. Gadge, B.M. Bhanage* Chapter 6, pages 221-262, in Industrial Catalytic Processes for Fine and Specialty Chemicals                                                                      | ISBN: 978-0-12-801457-8, Vivek Ranade and Sunil Joshi, by Elsevier Press | DOI: <a href="http://dx.doi.org/10.1016/B978-0-12-801457-8.00006-9">http://dx.doi.org/10.1016/B978-0-12-801457-8.00006-9</a> 2016 |
| An improved method for the synthesis of azobenzene from nitrobenzene and sodium hydroxide.                                                                                                                              | Sitaram H. Gund, Jayashree M. Nagarkar                                   | Indian Patent Appl.,1421/MUM/2014, 2014.                                                                                          |
| Solar energy assisted synthesis of zinc oxide nanoflowers. 2015 India DST Nano-Mission                                                                                                                                  | M.A. Bhosale, J.P. Ahire, S.A. Revankar, B.M. Bhanage                    | Indian Patent Application:1624/MUM/2015                                                                                           |

|                                                                                                                                                                                   |                                                                                                                                                  |                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| A greener and efficient biocatalytic methodology for the synthesis of benzoate esters/compounds in supercritical carbon dioxide 2015 India DBT                                    | K.C. Badgujar, B.M. Bhanage                                                                                                                      | Indian Patent Application:3199/MUM/2015        |
| An efficient and greener enzyme catalyzed methodology for the synthesis of 2-propenoic acid, 3- phenyl-alkyl ester compounds in supercritical carbon dioxide media 2015 India DBT | K.C. Badgujar , B.M. Bhanage                                                                                                                     | Indian Patent Application: 3172/MUM/2014       |
| Method of making a bionanomaterial and its application. 2016 India DST Nano-mission                                                                                               | M.S. Bhalerao, A.V. Patwardhan, M.A. Bhosale, B.M. Bhanage,                                                                                      | Indian Patent Application: 201621011953        |
| Method for the synthesis of palladium nanoparticles using solar energy                                                                                                            | A.B. Patil, K.M. Deshmukh, A.B. Pandit, B.M. Bhanage                                                                                             | Indian patent: 1842/MUM/2011                   |
| Improved process for the electrochemical synthesis of Palladium nanoparticles in ionic liquid as an electrolyte                                                                   | K. M. Deshmukh, Z. S. Qureshi, K. D. Bhatte, J. M. Nagarkar, K. A. Venkatesan, K. Nagarajan, T. G. Srinivasan, P. R. Vasudeva Rao, B. M. Bhanage | Indian patent: 1978/MUM/2011                   |
| An Improved Process for the sulfonation of aromatic compounds using sulfuric acid under sonication                                                                                | Z. S. Qureshi, K. M. Deshmukh, N. S. Nandurkar, B. M. Bhanage                                                                                    | Indian Patent No. IN 247765, (2011)            |
| An improved method for benimidazole synthesis from 2-haloaniline, dihalomethane and sodium azide in presence of copper complex catalyst                                           | S.R. Lanke, B.M. Bhanage                                                                                                                         | Indian Patent Appl., 2450/MUM/2013, 2013       |
| Solar energy assisted synthesis of zinc oxide nanoflowers                                                                                                                         | M.A. Bhosale, J.P. Ahire, S.A. Revankar, B.M. Bhanage                                                                                            | Indian Patent Application: 1624/MUM/2015, 2015 |

|                                                                                                                                                               |                                        |                                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------------------------------------------------|
| Novel amino acid-zinc hydroxide hybrid nanomaterial and process of preparation thereof                                                                        | M.A. Bhosale, J.P. Ahire, B.M. Bhanage | Indian Patent Application: 1623/MUM/2015, 2015 |
| An Efficient Enzyme Catalyzed Methodology for Synthesis of Levulinate Esters Using Lipase and Supercritical Carbon Dioxide as a Green Biocatalyst and Solvent | K.C. Badgujar, B.M.Bhanage             | Indian Patent Application: 3244/MUM/2014, 2014 |
| Tetrazolinohydrazino pyrazolin-5-one, useful antibacterial molecule                                                                                           | Tiwari S., Pednekar, S., Kapdi, A. R.  | Patent filed PCT. IND 2012                     |
| An improved method for the synthesis of azobenzene from nitrobenzene and sodium hydroxide                                                                     | Sitaram H. Gund, Jayashree M. Nagarkar | Indian Patent Appl.,1421/MUM/2014, 2014        |
| A simple, green oxidation of sulfide to sulfoxide compounds                                                                                                   | Ravindra Wagh, J. M. Nagarkar          | Indian 2708/MUM/2015                           |

#### **Income generated from patents: --**

#### **23. Areas of consultancy and income generated**

The Department offers industrial consultancy in the areas of catalysis and organic synthesis.

The income generated in the last five years – Rs. **25,55,493/**

#### **24. Faculty selected nationally / internationally to visit other laboratories / institutions /industries in India and abroad**

- Dr. Anant Kapdi selected for Alexander von Humboldt Return Fellowship (25<sup>th</sup> May 2013 to 25<sup>th</sup> July 2013) – Catalysis Research Centre, Technische Universitat Munchen, Germany
- Dr. Anant Kapdi - DAAD Fellowship for Scientists (2<sup>nd</sup> June 2014 to 15<sup>th</sup> July 2013) –Catalysis Research Centre, Technische Universitat Munchen, Germany

#### **25. Faculty serving in**

- a) National committees b) International committees c) Editorial Boards d) any other (please specify)**

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Prof. B. M. Bhanage</b> | <p>Hon. Secretary , Catalysis Society of India (Mumbai Chapter)</p> <p>Member, Scientific Advisory Board, Indian Patent Office</p> <p>Resource Person, Maharashtra Public Service Commission</p> <p>Examiner and Resource Person to Indian Chemistry Olympiad since 2004</p> <p>Resource Person: Maharashtra State Bureau of Textbook Production and Curriculum</p> <p>Member, Editorial Advisory Board for The Open Acoustics Journal since 2007</p> <p>Member, Editorial Advisory Board for The Open Catalysis Journal, since 2008</p> <p>Member, Editorial Board, Catalysis Science &amp; Technology (Royal Society of Chemistry Journal)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Prof. S. D. Samant</b>  | <p>President, Chemistry Teachers' Association of India ( 2013-16)\</p> <p>Member, Academic Audit Committee, Department of Chemistry, Goa University</p> <p>Member, Governing Council, Atomic Energy Education Society (AEES)</p> <p>Member, Paper Setting Committee, NEST</p> <p>Member, Internal Quality Assurance Cell, Ruia College</p> <p>Member, Syllabus committee, M. Sc. (Chemistry) programme, Centre for Excellence in Basic Science, University of Mumbai-DAE</p> <p>Member, Review committee, Chemistry Division, BARC (20<sup>th</sup> March 2015)</p> <p>UGC Nominee, UGC-SAP-DRS-II, Department of Chemistry, Goa University, Goa and School of Chemical Sciences, North Maharashtra University, Jalgaon</p> <p>Member, Syllabus Committee, M. Sc., Part-I (Organic Chemistry), University of Mumbai</p> <p>Member, Governing Council, Atomic Energy Education Society</p> <p>Member, National Steering Committee, Science and Mathematics Olympiad</p> <p>Member, Board of Studies, Chemical Sciences, NMIMS University</p> <p>Member, Moderation Board, Indian National Chemistry Olympiad Examination, 2011 (INChO-2011) on Undergraduate Science</p> <p>Resource Person, Orientation-cum-Selection camp for International Chemistry Olympiad, HBCSE, May 2011</p> |

Member, Panel of Juries, Best Chemistry Teachers Award of Tata Chemicals

**Prof. R. V. Jayaram**

Fellow - Maharashtra Academy of Science

Office bearer – Catalysis Society of India, Mumbai chapter

Member – Precious Metals Committee, BIS, Government of India

Faculty member – NIUS programme, HBCSE, Mumbai

Member, Board of Examiners, Indian National Chemistry Olympiad (INChO)

Scientific committee member – 48<sup>th</sup> International Chemistry Olympiad, Tbilisi, Georgia

**26. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs).**

**Organization by Department:**

- ❖ Teaching Learning Workshop, 2014

**27. Student projects**

- || **Percentage of students who have done in-house projects including inter-departmental projects** – 100 %
- || **Percentage of students doing projects in collaboration with other universities / industry / institute** – As per the programme guidelines, all M. Sc. students do in – house projects. Approximately 5 – 10 % of PhD students carry out collaborative research with other institutes

**28. Awards / recognitions received at the national and international level by**

- **Faculty**

**Prof. B. M. Bhanage**

Fellow of the Royal Society of Chemistry, UK (FRSC)

Prof. M.M. Sharma Science and Technology Award (Rs 1 lakh and Citation) for contributions in research by Marathi Vidyan Parishad

Selected on Advisory Board on the RSC Journal “Catalysis Science and Technology

Awarded Bronze Medal for the contribution in the field of Chemical Sciences by Chemical Research Society of India (CRSI) on 5th Feb 2012 in RSC-CRSI symposium Trivandrum Kerala

ISCMA Outstanding Professor Award by Indian Speciality Chemical Manufacturers Association for excellence in academic field for the year 2012.

Fellow Award' of the "Biotech Research Society" for his research contribution in "Enzyme Technology". (2017)

Best teacher award by Indian speciality Chemical Manufacturers Association

**Prof. R V Jayaram**

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Best Woman Teacher Award (2015) – Association of Chemistry Teachers, India

Resource person, Orientation-cum-Selection Camp for selecting Indian team for International Chemistry Olympiad

Team Leader – 43<sup>rd</sup> International Chemistry Olympiad

**Prof. S. D. Samant**

President, Association of Chemistry Teachers (2013 – 2016)

**Dr. J. M. Nagarkar**

Fellow of Maharashtra Academy of Sciences (F.MASc.)

Received “Expert Featured Research Article Honorarium” of \$ 500 for an article entitled “Properties of vegetal oil based creams in skin care” the article was published in Cosmetics and Toiletries

**Dr. Anant Kapdi**

Biography selected in Marquis Who’s Who in the World, 2014

DAAD Fellowship for Scientists (2nd June 2014 to 15th July 2014) - with Professor Moniek Tromp in Catalysis Research Centre, Technische Universitat Munchen, Germany.

**Dr. Vijay Kumar**

Biography selected in Marquis Who’s Who in the World, 2015

Israeli Science Foundation (ISF) Postdoctoral Fellowship at BenGurion University of Negev.2011.

Sri Gopala Kishan Vepachedu Memorial Best Senior Research Fellow Award for outstanding publications at IICT, Hyderabad, 2011

- **Doctoral / post doctoral fellows**

| Name                     | Year    | Award                                                                                                                                                                                                                                     |
|--------------------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vijesh Vyas              | 2016-17 | Awarded Newton Bhabha Fellowship under DST INSPIRE                                                                                                                                                                                        |
| Jyoti Dutta              | 2016-17 | Awarded 1st prize in poster presentation during the national symposium 'Recent Developments in Synthesis and Catalysis', organized by Department of Chemistry, Dibrugarh University on 10th and 11th March 2017 in Dibrugarh, Assam       |
| Rutesh Savalia           | 2016-17 | Awarded Prime Minister's Fellowship for Doctoral Research from Science & Engineering Research Board, Department of Science and Technology, Government of India and Confederation of Indian Industry on 27th September 2016                |
| Sitaram Gund             | 2016-17 | Awarded 1st prize for poster presentation in the National conference on New Vistas in Chemical Research organized by department of chemistry, The IIS university, Jaipur on 18th January – 19th January 2017 in Jaipur, India             |
| Ravishankar Kadam        | 2016-17 | 1st Prize in Poster cum Oral presentation in national conference on "new frontiers in chemistry –from fundamentals to applications organised by Birla Institute of Technology and Science Pilani on 28th to 29th January, Goa Campus, Goa |
| Nisha Kadam              | 2016-17 | 1st Prize in Oral presentation in Green chemistry and sustainable environment organized by B. S. Abdurrahman university on 2-3 August 2016, Vendalur, Chennai                                                                             |
| Ravishankar G. Kadam     | 2015-16 | Secured first prize in poster presentation at <b>Indo-German Convention of Landau Alumni (IGCLA2015)</b> 21st and 23rd August 2015, Kasturba Medical College, Manipal University                                                          |
| Prashant Sahebrao Mandal | 2015-16 | Awarded 1st Prize for Poster Presentation in "CSIR-IICT – A Tributary Symposium On 100 Years Of Chemical Bonding By Gilbert N. Lewis", organized by CSIR Hyderabad India 3rd and 4th Aug 2016                                             |
| Deepak Kurhe             | 2014-15 | First prize in Oral presentation in Advancement in Material Science (AMS 2014) at Coimbatore                                                                                                                                              |
| Jeevan Bhojane           | 2014-15 | First prize in Oral presentation in CONCHEM 2014, Ruparel College                                                                                                                                                                         |
| Manohar A. Bhosale       | 2014-15 | First prize in Oral presentation in National conference on "Nanoscience- A Science of 21 <sup>st</sup> Century" (NSTFC- 2014)" at                                                                                                         |



|                         |         |                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                         |         | Mahatma Phule College, Panvel, Mumbai                                                                                                                                                                                                                                                                                                                    |
| Kishor Dhake            | 2013-14 | Best Thesis Award by ICT in Third Convocation                                                                                                                                                                                                                                                                                                            |
| Ganesh More             | 2013-14 | Second prize in poster presentation in association by ICT RSC Research Poster Competition – 2014.                                                                                                                                                                                                                                                        |
| Sujit Chavan            | 2013-14 | First prize “National Symposium on Current Trends in Chemical and Nano Sciences”-2014 (CTCNS- 2014) organised by SHIVAJI UNIVERSITY, KOLHAPUR                                                                                                                                                                                                            |
| Aniruddha B Patil       | 2013-14 | ICC Young Scientist Award in Organic Chemistry-2013 by Indian Council Of Chemist, Bangalore                                                                                                                                                                                                                                                              |
| Kirtiikumar C. Badgujar | 2013-14 | First prize in Oral presentation in CATSCHOL-2014 which was conducted in association with the CATALYSIS SOCIETY OF INDIA & the Royal Society of Chemistry at ICT, Mumbai                                                                                                                                                                                 |
| Mahesh Edake            | 2013-14 | Awarded Canadian Commonwealth fellowship for postdoctoral research at Montreal, Canada in the year 2014                                                                                                                                                                                                                                                  |
| Satish Lanke            | 2012-13 | 1st Prize in Poster Competition in 50th Annual convection of Chemists by Indian Chemical Society Kolkatta at University of Punjab, Chandigarh, 2013                                                                                                                                                                                                      |
| Rahul Watile            | 2012-13 | Awarded Guest fellowship (Swedish Academic Exchange Service) 2012 for Doctoral research at Uppasala University, Sweden.                                                                                                                                                                                                                                  |
| Aniruddha Patil         | 2012-13 | Awarded Bayer fellowship (Germany) 2012 for Doctoral research at Chem Cat centre RWTH Achen University, Germany.                                                                                                                                                                                                                                         |
| Mahesh Edake            | 2012-13 | Awarded Canadian commonwealth fellowship for doctoral research at Montreal, Canada in the year 2012.<br><br>Awarded with a special grant from Ecole de Polytechnique, Montreal, Canada to carry out research on biodiesel production.<br><br>Awarded with travel grant from Department of Biotechnology, Govt. of India for attended conference at Italy |

|                  |         |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Anand Burange    | 2012-13 | Won first prize for quiz competition based on catalysis at 21st National Symposium on Catalysis for Sustainable Development (CATSYMP-21) at IICT, Hyderabad.                                                                                                                                                                                                                                                     |
| Rupesh Gaikwad   | 2012-13 | Awarded "Bombay Technologist Best Post Graduate Student Award" for the year 2012-13 at Institute of Chemical Technology (Formerly UDCT), Mumbai, India.                                                                                                                                                                                                                                                          |
| Datta Bagal      | 2012-13 | Awarded DAAD Fellowship for collaborative research work with Prof. Oliver Reiser at Regensburg University: June 2012<br>Awarded "International Quality Network- Medicinal Chemistry fellowship" at Regensburg University, Germany: September 2013                                                                                                                                                                |
| Rahul Watile     | 2012-13 | Awarded Guest Scholarship (Swedish Institute fellowship) for collaborative research work with Prof. Joseph S. M. Samec, at Department of Biochemistry and Organic Chemistry, Uppsala                                                                                                                                                                                                                             |
| Satish Lanke     | 2012-13 | Awarded Young Scientist Award, 2012 in 31st annual conference of Indian Council of Chemist held at Saurashtra University, Gujarat.                                                                                                                                                                                                                                                                               |
| Kishore Dhake    | 2011-12 | Common Wealth Fellowship for collaborative work with University of Saskatchewan, Toronto, Canada                                                                                                                                                                                                                                                                                                                 |
| Dattatraya Bagal | 2011-12 | Awarded DAAD fellowship (German Academic Exchange Service) 2012 for Doctoral research at Regensburg University, Germany<br><br>'Indian Chemical Society's Young Scientist Award 2011 at "48th Annual Convention of Chemists and Celebration of the International Year of Chemistry', University of Allahabad<br><br>Selected for participating in "FOURTH SCIENCE CONCLAVE- An Interaction with Nobel Laureates" |
| Mayur Khedkar    | 2011-12 | RSC-PTG Award –2011, during his poster presentation at "15 <sup>th</sup> Indian Society of Chemists & Biologists International Conference", Saurashtra University, Rajkot, India                                                                                                                                                                                                                                 |
| Rupesh           | 2011-12 | Elected as a "Member of International Youth Nuclear Congress,                                                                                                                                                                                                                                                                                                                                                    |

|                 |         |                                                                                                                                                                                                                           |
|-----------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Gaikwad         |         | Grant Committee” for the conference held at Charlotte, North America                                                                                                                                                      |
| Kedar Kumthekar | 2011-12 | Received “Expert Featured Research Article Honorarium” for article entitled “Properties of vegetal oil based creams in skin care” published in Cosmetics and Toiletries October 2011 Issue 702, 704-706, 708              |
| Sandeep Agawane | 2011-12 | Prof. P. Sengupta Memorial Young Scientist award in oral presentation, Organic Chemistry Section in National Conference “48th Convention of Chemists 2011” organized by Indian Chemical Society at University of Allahbad |
| Kailas Sanap    | 2011-12 | Dr B N Mankad Award (Young Scientist Award) at 48 <sup>th</sup> Annual Convention of Chemist in December 2011 at Allahabad university organised by ICS                                                                    |

• **Students**

| Name                                                                                         | Year    | Award                                                                            |
|----------------------------------------------------------------------------------------------|---------|----------------------------------------------------------------------------------|
| Vikrant Yelve, Vidhi Shah, Pritam Kamble, Amruta Karbelkar, Neelam Tiwari & Shilpa Mehendale | 2011-12 | Late Prof. A. P. Rao Inter collegiate Rolling Trophy from Ramnarain Ruia College |
| Shailesh Kannoja, Bhaskar Gautam                                                             | 2011-12 | 1 <sup>st</sup> prize in YICC for Ion-Exchange                                   |
| Vaibhav Sable, Prerna Lokhande and Sayli Hazare                                              | 2011-12 | 2 <sup>nd</sup> prize in YICC for Indofil                                        |
| Vijesh Vyas, Neelam Tiwari                                                                   | 2011-12 | 3 <sup>rd</sup> prize in YICC for Jaydev chemical Industries                     |

**29. Seminars/ Conferences / Workshops organized and the source of funding (national/ international) with details of outstanding participants, if any**

| Title                                     | Date                                                | Source of Funding |
|-------------------------------------------|-----------------------------------------------------|-------------------|
| Security Personnel Training Workshop      | 3 <sup>rd</sup> September 2016                      | TEQIP II          |
| Laboratory Safety – Pitfalls and Remedies | 27 <sup>th</sup> and 28 <sup>th</sup> February 2017 | TEQIP II          |
| Laboratory Safety Workshop                | 1 <sup>st</sup> and 2 <sup>nd</sup> September       | TEQIP II          |

|                                                                                                             |                                                      |                                                                                                         |
|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| Chem Careers 2015                                                                                           | 2016                                                 |                                                                                                         |
| Laboratory Safety Workshop for Ph.D. Students                                                               | August 2015<br>4 <sup>th</sup> September, 2014       | Royal Society of Chemistry<br>Centre of Excellence in Process Intensification & Department of Chemistry |
| Workshop on “Applications of Electrochemistry in Photo Voltaic Devices, Nanotechnology and Energy Research” | 16 <sup>th</sup> March, 2015                         | Metrohm Inc.                                                                                            |
| CONTECH 2014                                                                                                | 18 <sup>th</sup> January, 2014                       | Association of Chemistry Teachers (ACT)                                                                 |
| NET/SET Orientation Workshop                                                                                | 25 <sup>th</sup> and 26 <sup>th</sup> February, 2014 | TEQIP II                                                                                                |
| CATSCHOL                                                                                                    | 4 <sup>th</sup> March, 2014                          | Catalysis Society of India and ICT                                                                      |
| Laboratory Safety Workshops For Ph.D. Students                                                              | 18 <sup>th</sup> and 19 <sup>th</sup> March, 2014    | Technical Education Quality Improvement Program – Phase II (TEQIP – II)                                 |
| Teaching Learning Workshop                                                                                  | 28 <sup>th</sup> and 29 <sup>th</sup> March, 2014    | TEQIP – II                                                                                              |
| One day Indo-Japan conference on "Catalysis -A Green Chemistry Approach"                                    | 13 <sup>th</sup> February, 2013                      | TEQIP-II                                                                                                |
| Indo-German conference "Green Catalysis for Sustainable Development"                                        | 29 <sup>th</sup> to 31 <sup>st</sup> October, 2012   | Department of Science and Technology, India, and Federal Ministry of Education and Research, Germany.   |
| Laboratory Safety Workshops for laboratory staff and Ph.D. Students                                         | 20-21 March, 2013                                    | TEQIP                                                                                                   |
| Laboratory safety Workshop for Laboratory Staff                                                             | 19 <sup>th</sup> March, 2013                         | TEQIP                                                                                                   |
| NET/SET Orientation workshop                                                                                | 9 <sup>th</sup> and 10 <sup>th</sup> May, 2013       | TEQIP                                                                                                   |
| Workshop on “Green and Sustainable Technology” and SERB Task Force Meeting on Green Chemistry               | 11 <sup>th</sup> May, 2013                           | ICT                                                                                                     |
| Chem Careers India 2012                                                                                     | 20 <sup>th</sup> October, 2012                       | British Council, Mumbai                                                                                 |
| CONTECH 2012                                                                                                | 1 <sup>st</sup> December, 2012                       | Association of Chemistry Teachers (ACT)                                                                 |

**30. Code of ethics for research followed by the departments**

The Institute has a set Code of Conduct for research and the Department follows the same.

**31. Student profile programme-wise:**

| Name of the Programme<br>(refer to question no. 4) | Applications received | Selected |        | Pass percentage |        |
|----------------------------------------------------|-----------------------|----------|--------|-----------------|--------|
|                                                    |                       | Male     | Female | Male            | Female |
| M. Sc. (Chemistry)<br>(last five years)            | 1257+                 | 75       | 64     | 95%             | 92%    |
| Ph.D.<br>(last five years)                         | 1139+                 | 146      | 45     | NA              | NA     |

**32. Diversity of students**

| Name of the Programme<br>(refer to question no. 4) | % of Students from the Same University | % of students from other universities within the State | % of students from universities outside the State | % of students from other countries |
|----------------------------------------------------|----------------------------------------|--------------------------------------------------------|---------------------------------------------------|------------------------------------|
| M. Sc. (Chemistry)                                 | NA                                     | 95%                                                    | 5%                                                | 0 %                                |
| Ph. D. (Chemistry)                                 |                                        |                                                        |                                                   |                                    |
| Ongoing                                            | 5%                                     | 94.5%                                                  | <1%                                               | 0%                                 |

**33. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise.**

|                                                   |    |
|---------------------------------------------------|----|
| Number of students who passed NET JRF examination | 04 |
| Number of students who passed NET LS examination  | 07 |
| Number of students who passed GATE examination    | 05 |

**34. Student progression**

| Student progression | Percentage against enrolled |
|---------------------|-----------------------------|
| UG to PG            | NA                          |
| PG to M.Phil.       | NA                          |
| PG to Ph.D.         | 20%                         |

|                               |           |
|-------------------------------|-----------|
| Ph.D. to Post-Doctoral        | 5 to 10 % |
| Employed                      |           |
| Campus selection              | 20%       |
| Other than campus recruitment | 80%       |
| Entrepreneurs                 | 0%        |

### 35. Diversity of staff

| Percentage of faculty who are graduates  |     |
|------------------------------------------|-----|
| of the same university                   | 0 % |
| from other universities within the State | 50% |
| from universities from other States      | 42% |
| from universities outside the country    | 8%  |

36. **Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period:** None

### 37. Present details of departmental infrastructural facilities with regard to

- a) **Library** – students / faculty members of the Department can avail the facilities of the Institute library which is well-equipped with numerous volumes of textbooks, reference books, journals , digital journals in the subject of chemistry and allied sciences
- b) **Internet facilities for staff and students** –  
The institute has wi-fi facility on the campus and the students as well as staff can access the same. Additionally, the Department has well- equipped computational facility for the students
- c) **Total number of class rooms** – Classrooms are common for all the courses in the Institute
- d) **Class rooms with ICT facility** – All classrooms are equipped with adequate multimedia facilities and biometric attendance monitoring system
- e) **Students' laboratories** – Three laboratories for undergraduate / M. Sc. Students

- f) **Research laboratories** – The Department has five research laboratories and three instrumentation laboratories (for common instrumentation facilities)

**38. List of doctoral, post-doctoral students and Research Associates**

- a) **from the host institution/university** – NA  
b) **from other institutions/universities** – 05

**39. Number of post graduate students getting financial assistance from the university.** At present, the Institute (a deemed university) does not provide any financial assistance to the students enrolled for the M. Sc. Course of the Department.

**40. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology.**

Yes. The Departmental committee made several deliberations. Experts from within the Institute and from other reputed Institutes were consulted. A syllabus committee comprising of faculty members of the Department and external experts was constituted to frame the syllabus.

**41. Does the department obtain feedback from**

- a. **faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback?**

Yes. The feedback from the faculty members is taken by the Head of the Department and discussed in the Department meetings. Suitable changes are made in the teaching and evaluation accordingly.

- b. **Students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback?**

Yes, the Head of the Department takes feedback from the MSc students at the end of each semester. Besides this, some of the faculty members also obtain feedback from the students for their individual courses.

The Institute has devised a centralised online feedback system for all the courses

- c. **Alumni and employers on the programmes offered and how does the department utilize the feedback?**



Not formally. However, the Head of the Department and the faculty members have constant interaction with the alumni and their feedback is taken into account.

**42. List the distinguished alumni of the Department**

Dr. K. N. Venkatesh  
Dr. Shashank Potnis  
Dr. R. A. Desai Dr.  
V. B. Randive Dr. V.  
S. Nadkarni Dr. Lalit  
Salgaonkar Dr. Satish  
Pai  
  
Dr. Rajesh Salkar

**43. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts.**

The Department undertakes various activities as part of student enrichment programmes which include:

- ❖ Endowment lectures (annually) Spinco  
Biotech Ramanathan lectures G. D.  
Gokhale Endowment lectures Golden  
Jubilee Endowment lectures CMP  
Endowment lectures  
B. D. Tilak Visiting Fellowship Dai-ichi  
Karkaria Visiting Fellowship Dharamsi  
Morarji Visiting Fellowship
- ❖ Laboratory Safety Workshop

**44. List the teaching methods adopted by the faculty for different programmes.**

- Use of multimedia
- Self learning through assignments and seminars
- Innovative teaching methods such as POGIL – Process Oriented Guided Inquiry Learning

**45. How does the Department ensure that programme objectives are constantly met and learning outcomes are monitored?**

- 1) We have a system of continuous assessment under which a series of tests, assignments, and quizzes are arranged throughout the semester to monitor the progress of our students and teaching. There is also one formal mid-semester examination. The weightage of continuous assessment in the total marks is 20%, while that of the mid-semester exam is 30% and the end semester exam is 50%.
- 2) We ensure advice from external experts by appointing them as visiting faculty
- 3) We regularly organize endowment lectures and lectures by experts
- 4) Students are encouraged to participate in co-curricular activities within and outside the institute
- 5) Activities like Rasaynam and CONTECH are organized to boost student involvement

**46. Highlight the participation of students and faculty in extension activities.**

- 1) Students of M. Sc. programme actively participate in VORTEX – a technical festival organized by ICT. They also take part in other inter-collegiate events and competitions.
- 2) Organising Safety workshop for laboratory staff
- 3) Chemistry Olympiad
- 4) NIUS
- 5) Marathi Vigyan Peeth
- 6) Summer research programme of INSA
- 7) Resource persons for Refresher courses, lectures / lecture series delivered at other educational institutes

**47. Give details of “beyond syllabus scholarly activities” of the department.**

The faculty members of the Department are actively involved in various research activities like guiding Ph.D. students, industrial consultancy, executing sponsored projects and writing books and research papers. In addition, they contribute to the activities of other Departments / Universities as members of Ph. D. thesis evaluation and syllabus review committees. Most of the faculty members of the Department have delivered invited lectures in conferences / seminars / workshops. They are regular resource persons for refresher courses conducted for college teachers.

**48. State whether the programme/ department is accredited/ graded by other agencies? If yes, give details.**

Yes. The M. Sc. programme of the Department has been accredited by the Royal Society of Chemistry in 2014.

**49. Briefly highlight the contributions of the Department in generating new knowledge, basic or applied.**

The basic and applied knowledge generated through research activities is regularly published as journal articles, reviews and books. Some of the research outcome has also been patented. In addition, the members of the Department carry out industrial consultancy where they apply the knowledge to solve the real world problems faced by the industry.

**50. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.**

**STRENGTHS:**

- ❖ Substantial academic contribution by the Department towards conducting theory as well as practical courses for the under-graduate Programmes of all the three branches, viz., B. Chem. Engg., B. Tech., and B. Pharm. Sci.
- ❖ High diversity among the present faculty members regard to research interests and area of expertise.
- ❖ Numerous analytical facilities for common use such as Infrared and UV Vis spectrophotometers, Gas chromatographs, High Performance Liquid Chromatograph unit, Zetameter, Viscometer, ovens and furnaces
- ❖ UGC SAP and DST FIST sponsored research funding for the next five years
- ❖ RSC accredited MSc programme of the Department has been highly appreciated by experts and the students
- ❖ The faculty members are actively engaged in several extra-mural academic activities, like the Indian National Chemistry Olympiad, National Initiative for Undergraduate Research, INSA summer research projects. They are also committee/board members of several academic bodies.

**WEAKNESSES:**

- ❖ The space available for under-graduate classes is not adequate, though the Department somehow manages the problem presently.
- ❖ Few faculty positions are vacant for a long time.
- ❖ The Department functions from three different locations of the Institute. This makes communication, supervision, interaction, and control difficult.
- ❖ The laboratories are not fully modernized and a thorough revamping is essential.
- ❖ Secretarial assistance is not available. As a result, the faculty members spend lot of time on administrative and documentation work.

#### **OPPORTUNITIES:**

- ❖ The Department gets a good number of applications for Ph.D. admission. Thus, there is no dearth of research manpower and new research areas can be initiated and sustained.
- ❖ The vacant faculty positions can be filled with scientists/adjunct faculty on suitable terms and conditions.
- ❖ A network can be made of the research students who had passed out of the Department who are placed in various research/academic organizations. This will help in conducting research of academic, industrial and social relevance.
- ❖ The Department has the opportunity to identify promising under-graduate students and hence can carry out minor, exploratory research projects through them. This can be a co-curricular activity which will also help the under-graduate students in getting a good placement or scholarship.
- ❖ The Department can increase the intake of M. Sc. programme. In future, integrated programmes can be initiated.

#### **CHALLENGES:**

- ❖ Permanent faculty positions are vacant for a very long time. If these positions are not filled soon, the quantity and quality of the output of the Department is bound to go down.
- ❖ The quality of the Ph.D. applicants is not high.
- ❖ The increase in the in-take of the under-graduate classes has gone beyond threshold.

## **51. Future plans of the Department.**

### **Research Plan:**

- ❖ To expand the current research expertise by incorporating expertise from various contemporary areas of research such as nanoscience, bioorganic chemistry, materials chemistry, computational chemistry, theoretical chemistry
- ❖ To develop research facilities to meet international standards with respect to analytical facilities, lab facilities, etc.
- ❖ To enrol quality students for PhD and train them rigorously through course work and research
- ❖ To undertake research problems of industrial relevance
- ❖ To introduce, develop and nurture the culture of commercialization of research and documenting the work as patents

### **Academic Plan:**

- ❖ Develop the M.Sc programme further in terms of quality and make it on par with the international standards.
- ❖ Increase the intake of M. Sc. students
- ❖ Provide the students excellent laboratory, computational, research and instrumental facilities
- ❖ Make online resources available to the students
- ❖ Collaborate with reputed Universities and institutions to improve the academic standards
- ❖ Provide opportunities to the students to work in reputed institutes as interns

### **Outreach Plan:**

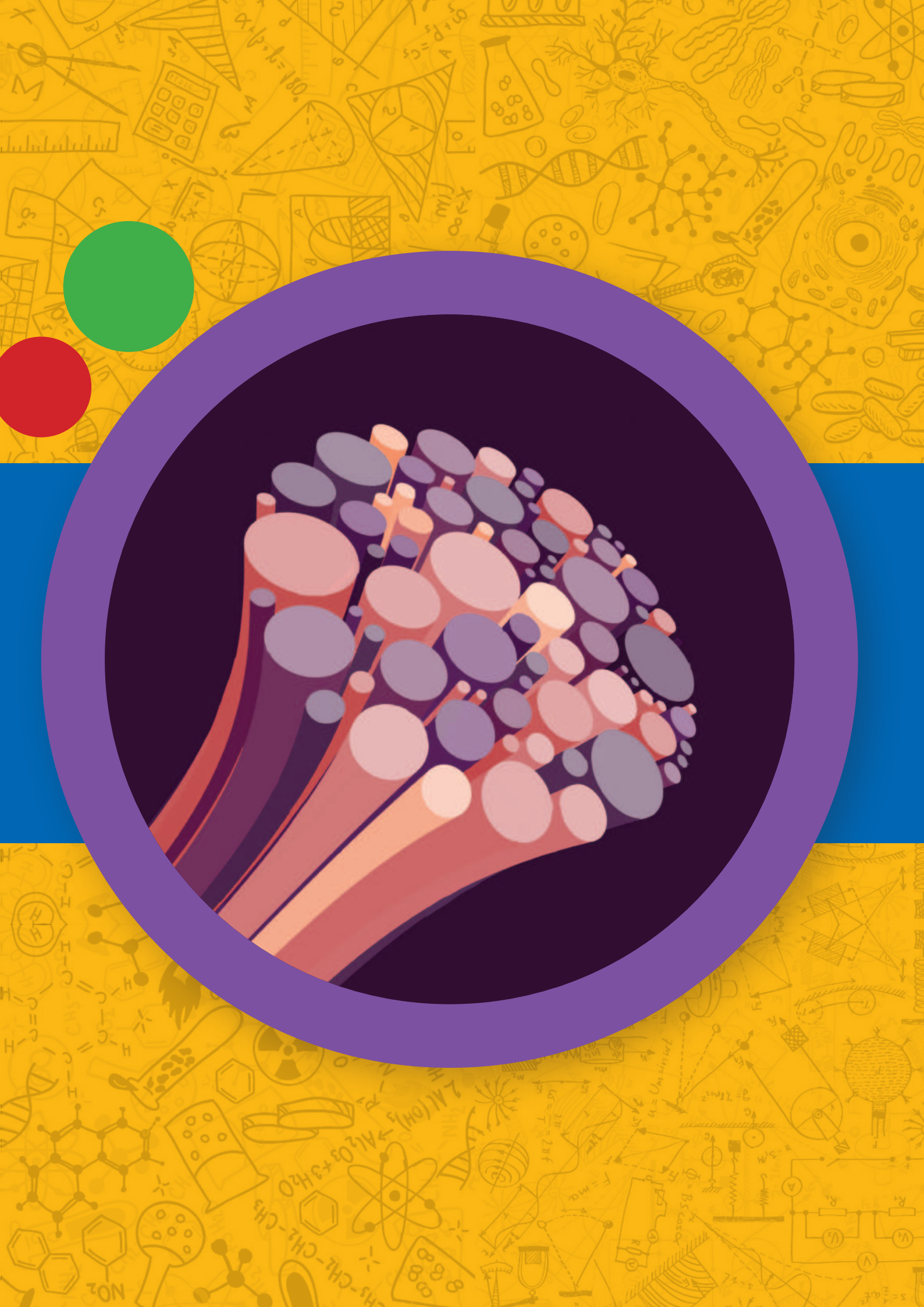
- ❖ Involve, individually and collectively, in worthy national academic programmes like Chemistry Olympiad, NIUS, teachers' training, KVPY, etc.
- ❖ Contribute to reputed academic professional bodies and NGOs like, Indian Chemical Society, Association of Chemistry Teachers, RSC, Marathi Vidnyan Parishad, etc.
- ❖ Develop chemistry education related programmes



The background of the slide is a dense, repeating pattern of various scientific and technical icons in a golden-yellow color. These icons include mathematical formulas like  $E=mc^2$ ,  $f(x)$ , and  $\lim_{x \rightarrow \infty}$ ; chemical structures such as DNA helices, molecular models, and chemical formulas like  $CH_3C(=O)NH_2$  and  $CH_2=CH-C(=O)NH_2$ ; biological diagrams of cells and microorganisms; and engineering symbols like gears, a lightbulb, a calculator, and a ruler. In the top right corner, there are two solid-colored circles, one purple and one blue.

# FIBRES & TEXTILE PROCESSING TECHNOLOGY DEPARTMENT







## **Fibres and Textile Processing Technology Department**

Department of Fibres and Textile Processing Technology (FTPT), formerly known as Textile Chemistry section has the unique distinction of being one of the two disciplines (other being Chemical Engineering), with which this institution- ICT (formerly UDCT) started in the year 1933. The Department conducts B.Tech. course with an intake capacity of 34, which is highest among all the B.Tech. courses of ICT. The department also offers post graduate courses in M. Tech. with an intake capacity of 18, M.Sc. in Textile Chemistry with intake capacity of 20 and Ph.D. (Tech.) and Ph.D. (Textile Chemistry). The dept has admitted 18, 18 and 20 students in the last three years (2012-13 to 2014-15) with the total no of post graduate students being 56. The post graduate courses attract a large number of students and so far more than 2275 graduates and 525 post graduates have passed out from this Department. About 30% of the under graduate and post graduate student go abroad for higher studies. Some of the institutes where the students gets admissions are NCSU, Texas, Colorado, Cornell, Carnegie Mellon University, eorgia Institute of Technology in the USA , Hariot-watt University in UK and Martin-Luther University, Istitutomarangonim Friedrich-Alexander, Italy. We achieve 100% campus placement for UG and 80% for PG students. The companies that visit for campus interview are Welspun, Pidilite, Huntsmann, Archroma, Anthemcell, Arvind, Raymonds, Global Nonwovens, Garware Wall ropes, Sarex , Nimkartek and many others. Salaries offered are in the range of 4 lakhs per annum.

The dept has very good testing facility to carry out research work. Major characterization equipments includes XRD, Leica Microscope, DSCT, TGA,FTIR, Nano particle size analyzer, Contact Angle measuring system, Tensiometer, Zeta Potential meter, HPLC, UPF meter, Computer Colour Matching system, Tensile strength tester, BOD and COD analyser, Laminar flow, Atomic Absorption Spectrophotometer, Resistivity meter, Static Charge Analyzer, LOI tester, MFI measurement machine, Twin Screw Extruder and many other small testing and analytical instruments. Recently we have acquired Electro spinning system and Lab coating machine. The dept also has pilot scale melt spinning machine.

There are total seven faculty members all holding Doctorate degree. The dept faculty is engaged in high quality fundamental as well as applied research and they have got over 700 publications in Indian and International journals. The number of publication over the last three years (2012-15) is 111. There are 11 permanent and 5 temporary non-teaching staff members in the dept, out of which 07 are permanent and 04 are temporary. Department has 13 laboratories occupying 18,831 sq. ft. floor area.

The faculty of the Department has good interaction with the industry. A number of industries have been benefited by the technical advice given by the faculty. There have been a number of industrial and governmental research projects in which problems of mutual interest are investigated and the students as well as the Department have been benefitting by this interaction. The department is recognized as Centre of Advanced studies in “Physicochemical aspects of Textile, Fibres, Polymers and Dyes” presently in Phase VII, since 1962. Dept faculty has govt. projects from UGC, DST, AICTE and TEQIP in the last three years amounting to .Rs. 380.24 lakhs in the last three years. They also have project work from the industry like HUL of value Rs 26.7 lakhs Dept faculty is also involved in consultancy worth Rs. Rs 19.20 lakhs .

It gives us immense pleasure to put on record that in the month of August 2013, all the Textile department faculty were invited to Ethiopia by Textile Ministry of Ethiopia to do the GAP analysis of Ethiopian Textile Industry and Universities and submit a proposal to make them internationally competitive. The project is being successfully implemented. So far 7 M Tech, 1 M Sc and 1 Ph D fellow from ETIDI has been admitted in ICT. The dept faculty along with industry expert has conducted 5 Refresher courses, 1 Technical Awareness seminar and 1 International Conference in Ethiopia. The total amount under this MoU is Rs. 1319.11 lakhs.

Dept organizes national and international conference every three years under the banner of “Texsummit”. Students of the dept also organize technical event every year called “TEXUEST” where paper presentation, quizzes and other events are held in the dept in which students from all over India participate and competes. Annual get together for alumni is also planned under the banner of “Texpression” which is a cultural event. After the globalization of the markets with border less trade, textile manufacturing activities are shifted to country like India which is fast developing economy. Today Textile being one of the fundamental needs of human being, it is a mother industry, next to only agriculture sector, involving over 60 million people. The business is fast growing and will soon touch around US\$ 100 Billion. However, in the border less trade many multinational brands are competing and the critical area of chemical processing of textile fabrics and garments requires tremendous amount of consolidation in terms of well trained manpower which can keep pace with latest technological operations and demand of stringent quality parameters in shortest delivery time giving competitive edge to the manufacturers. There is a huge shortage of Textile Processing graduates in the core textile industry as well as in multinational and reputed Indian manufacturers of dyes, chemical and auxiliaries. Thus the scope for graduates and postgraduates of this department is enormous and such a demand with every passing day will only be rising given that consumption of apparels and technical textiles in India and abroad is increasing at galloping rate.

### **Events Organized (2013-16)**

#### **Endowment Lectures-**

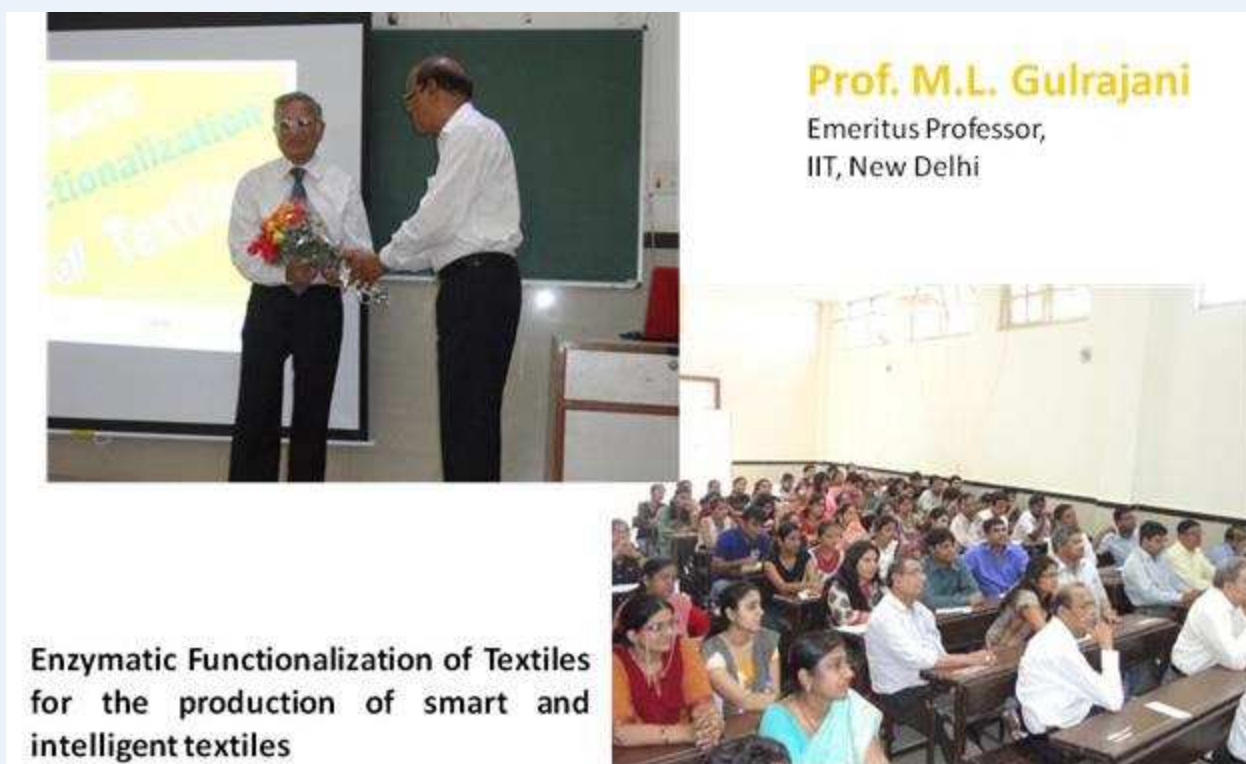
*Dr. Dileep wakankar (India Head Corporate Product safety Clariant Chemicals, India) delivered a lecture on topic of “Chemical Management – Global and Indian situation” (M. V. Nimkar Endowment Lecture) on 8/03/2013*



*Dr. Sanjeev Kamat (Pidilite Industries Ltd., Chief Marketing) delivered a lecture on topic of “Innovations in Textiles”, (G. M Nabar Endowment Lecture) on 8/03/2013*



*Prof. M.L. Gulrajani (Emeritus Professor, IIT, New Delhi) delivered a lecture on “Enzymatic Functionalization of Textiles for the production of smart and intelligent textiles” (M.V. Nimkar Endowment Lecture)*



*Mr. Arvind Shikarkhane (Textile Processing Consultant) delivered a lecture on “Energy Conservation & Effluent Control in Textile Processing” (M.V. Nimkar Endowment Lecture) on 21st march 2014*





*Mr. Prabhatkumar K. Trivedi (General Manager, Archroma India Pvt. Ltd.) delivered a lecture on “Key Concerns for Continuous Dyeing & Features for Finishing” Class of 1966 Visiting Fellowship on 24th March 2014*



### **Guest Lectures**

*Dr Prasad Potluri delivered a lecture on “Medical Devices to Aerospace Materials: Research Opportunities for Fibre Science and Textile Technology”, under TEQIP-II on 12th July 2013*



*Dr. Siva Rama Kumar Pariti (Head STS Division, Dystar India Pvt. Ltd.) delivered a lecture on topic of “Ecological Considerations of Colorants for Textile Applications”, under TEQIP-II on 02/09/2013*



*Dr. Imtiyaz Ahmed Ansari Delivered a lecture on “Surface modification using dendritically functionalised polymers”, under TEQIP-II on 4th January 2014*



*Prof. Sandra Downes, University of Manchester, U.K Delivered a lecture on “Developing novel biomaterials using nanotechnology” under TEQIP-II on 20th January 2014*



*Ms. Amruta Datar, Counselor for Mumbai, Campus France delivered a lecture on “Higher education opportunities in France”, under TEQIP-II on 24th January 2014*





*WRA Staff delivered a Workshop on “Awareness of Sport Textile”, under TEQIP-II from 27/01/2014 to 28/01/2014*



*Prof. (Dr.) Rishi Jamdagni Director, the Technological Institute of Textile & Sciences, Bhiwani, Haryana delivered a lecture on “Textile - A road map to 2025 and globalisation”, under TEQIP-II on 30th January 2014*



*Mr. Vedprakash Shukla (Director, Skyfresh Solutions) delivered a lecture on topic of “Handling Industrial Problems – 3M’s”, under TEQIP-II on 28/02/2014, 1/03/2014, 28/03/2014 & 4/04/2014*



*Mr. Zak Reese (Measurement Technology NW USA delivered a lecture on “Biophysical Instruments”, under TEQIP-II on 15th april 2014*







*Mr. Man Mohan Kohli delivered a lecture on “Career and Education Opportunities abroad”, under TEQIP-II Wednesday, October 21th, 2015*



*Dr. S K Bhullar (Department of Mechanical Engineering, Bursa Technical University) delivered a lecture on “Smart Nano/Micro fibrous Structure-Biomedical applications”, under TEQIP-II on 13<sup>th</sup> January 2015.*





*Dr. Anil Netravali, Jean and Douglas McLean delivered a lecture on “Green Materials & Processes: From Advanced Composites to Nano-filters & From Wound Healing to Hair Styling”, under TEQIP II on 11th January 2016*



*Dr. Juan Hinestroza delivered a lecture on “Teaching cotton new tricks by manipulation of Nanoscale phenomena”,*



***Ethiopian Textile Industry Development Institute (TIDI), with the sole purpose of developing Ethiopian Textile industry on 25th Feb 2013***





*Visit of faculty members to Ethiopia on 10th & 11th October 2014 for **Annual Awareness in Ethiopia***



## Refresher Course II **TEXTILE FIBRES**

***CHEMISTRY, PRODUCTION TECHNOLOGY, STRUCTURE PROPERTY RELATIONSHIPS & APPLICATION***

*29th December 2014 to 2nd January 2015*



***TECHNICAL SEMINAR -I on Dyeing of Cotton – “Problem & Remedies” held at KOMBOLCHA, ETHIOPIA on 2nd and 3rd March 2015***



Refresher Course III

***Textile Dyes & Auxiliaries from Dyers perspectives***

*16th to 20th March 2015*





Refresher IV & V –

*Pretreatment of Textiles (April 2015) and Colouration of Textiles (May 2015)*



*Global Textile Congress in association with Thailand Convention & Exhibition Bureau (TCEB), on 13th, 14th & 15th February, 2015 at Bangkok, Thailand.*



*1st Semi-annual Steering Committee Meeting*

*20th August to 23th August 2015*



*Organized **Texsummit in INDIA 2012** “9th India International Textile Machinery Exhibition” on 5th Dec. 2012 at Bombay convention and exhibition centre, Goregaon, Mumbai*



*Organized three day workshop under TEQIP-II from 7-9 January 2015 at Dept of Fibres and Textile Processing Tech., ICT on “**Process Intensification in Dyeing**” for the students of Sophiya College, Mumbai*



Programmes conducted under Academic Support for Weak students- TEQIP by **Lipika Nair, Texassist, Mumbai**



| Sr No | Date       | Venue                                   | Module Particular       | Target Student             | Number of Student | Benefits for Student               |
|-------|------------|-----------------------------------------|-------------------------|----------------------------|-------------------|------------------------------------|
| 1     | 03-03-2013 | K.V. Auditorium, ICT                    | Presentation Skill      | B.Tech.                    | 20                | Improvement in presentation skill. |
| 2     | 17-03-2013 | K.V. Auditorium, ICT                    | Presentation Skill      | B.Tech.                    | 20                | Improvement in presentation skill. |
| 3     | 26-03-2013 | Physical Testing lab, Textile Dept, ICT | How to Handle Interview | PG and B.Tech.             | 20                | It helps student to face interview |
| 4     | 09-04-2013 | Physical Testing lab, Textile Dept, ICT | How to Handle Interview | PG and B.Tech.             | 20                | It helps student to face interview |
| 5     | 16-04-2013 | Physical Testing lab, Textile Dept, ICT | Building Self Esteem    | Weak students from B.Tech. | 20                | Confidence Building                |

***Finishing School Programme Under TEQIP Programme Phase II August 31 – September 1, 2013 by Mr. Francis D'Souza, Kamshaft Innovation Pvt. Ltd. On the topic “Communication Skills”. The lecture was attended by UG & PG Students of Textile Department.***



Texpression & Texquest 2013  
**Inter-college Technical Paper Presentation Competition**





**Cultural Festival of Textile Department**



**Texpression & Texquest 2014**



1. Name of the Department – **Department of Fibres and Textile Processing Technology**
2. Year of establishment - **1933**
3. Is the Department part of a School/Faculty of the university- **Yes**

4. Names of programmes offered - **B.Tech.(Fibres & Textile Processing Technology), M.Tech.(Fibres & Textile Processing Technology), M.Sc. (Textile Chemistry), Ph. D. (Tech.) & Ph. D. (Sci.) (Textile Chemistry), Ph. D. (Tech.) (Green Technology), Ph. D. (Sci.) (Biotechnology)**
5. Interdisciplinary programmes and departments involved-  
B.Tech : Chemistry, Physics, Mathematics, Chemical Engineering, General Engineering  
M.Tech: Physics
6. Courses in collaboration with other universities, industries, foreign institutions, etc.  
**National Universities/ Industries- NA**
7. Details of programmes discontinued, if any, with reasons - **NA**
8. Examination System: **Semester Based Credit System**
9. Participation of the department in the courses offered by other departments - **Yes**
10. Number of teaching posts sanctioned, filled and actual (Professors/Associate Professors/Asst. Professors/others).

|                                                | Sanctioned | Filled | Actual (including CAS & MPS) |
|------------------------------------------------|------------|--------|------------------------------|
| Professor                                      | 3          | 2      | 3                            |
| Associate Professors<br>Reader                 | 2          | 1      | 2                            |
| Asst. Professors<br>Lecturer                   | 2          | 2      | 0                            |
| Others<br>Adjunct professor/<br>INSPIRE Fellow | --         | 2      | 2                            |

11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance

| Name                   | Qualification  | Designation          | Specialization                                                                                                                                                                                       | No. of Years of Experience | No. of Ph.D/M.Phil Students guided for Last 4 years |
|------------------------|----------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------------------------------------------|
| Prof. R. V. Adivarekar | Ph.D.<br>Tech. | Prof. & Head of Dept | Textile colouration, Green Processing of Textiles, Medical Textiles, Enzyme manufacturing and application, Natural dyes for textiles and cosmetics, Textile composites, Novel Processing Techniques. | 18 Years                   | 07                                                  |

|                           |                                                                |                                                |                                                                                                                                                                                                           |           |    |
|---------------------------|----------------------------------------------------------------|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----|
| Prof.Dr. M. D. Teli       | Ph.D. (Tech.                                                   | Professor of Textile Chemistry & Member of BOM | Technical Textiles<br>Modification of Polymers<br>Nano composites<br>Superabsorbent Natural and Functional Dyes Specialty<br>Finishes Electro kinetic Properties Coating Plasma modification              | 38 Years  | 03 |
| Prof. S. R. Shukla        | B.Sc. (Hon.),<br>B.Sc. (Tech.),<br>Ph. D. (Tech.),<br>F.M.A.S. | Professor of Technology of Dyeing and Printing | Textile wet Processing, Effluent Treatment, Heavy Metal Removal, Polymer recycling, and Biotechnology.                                                                                                    | 38 Years  | 13 |
| Prof. (Dr.) Usha S. Sayed | PhD (tech)                                                     | Associate Professor                            | Technical textiles, Speciality chemicals, Garment Processing                                                                                                                                              | 29 Years  | 01 |
| Dr.R.D.Kale               | Ph.D. Tech                                                     | Associate Professor                            | Processing of Synthetic fibres at room temperature, Synthesis and application of nano particles in Effluent treatment, Modification of Synthetic Fibres, Use of PEMs for modification of Textile Polymers | 14 Years  | -  |
| Dr. Asfiya Q. Contractor  | Ph.D. Tech.                                                    | Adjunct Professor                              | Analytical Electrochemistry in Textiles, Electroless metal plating on textiles to produce EMI Shielding fabrics and decorative metal printing.                                                            | 2.5 Years | -  |
| Dr.Sandeep P More         | Ph.D.                                                          | DST-INSPIRE Faculty                            | Organic Chemistry                                                                                                                                                                                         | 2 Years   | -  |

**12.** List of senior Visiting Fellows, adjunct faculty, emeritus professors

| Sr. No. | Visiting Faculty | Designation | Company | Class                                                                          |
|---------|------------------|-------------|---------|--------------------------------------------------------------------------------|
| 1       | Mrs Swati Raut   | -           | -       | S. Y. B. Tech. (Sem III)<br>TXT1101, Technology of Yarn and Fabric Manufacture |

|   |                       |                        |                         |                                                                                                                                                                                                           |
|---|-----------------------|------------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | Dr. Ashok Athalye     | G.M. Technical service | Atul Ltd.               | M. Tech. (Sem II)<br>TXT2201, Advanced Textile Chemistry                                                                                                                                                  |
| 3 | Mrs.Lipika S. Nair    | Textile Consultant     | -                       | M. Tech. (Sem I)<br>TXT2205, Continuous Processing of Textile<br>M. Tech. (Sem II)<br>TXT2301, Evaluation of Textiles, Dyes & Auxiliaries<br>M.Sc. (Sem III)<br>TXT2213, Continuous Processing of Textile |
| 4 | Dr.Nilesh Kanoongo    | Director               | UTCPL                   | M.Tech. (Sem II)<br>TXT2801, Energy and Water Conservation in Processing Industries<br>M.Sc. (Sem II)<br>TXT2303, Computer Applications in Color Evaluation                                               |
| 5 | Mrs. Armiti Shukla    | Lecturer               | SNDT Women University   | Final Y. B. Tech. (Sem VIII)<br>TXT1402, Merchandising and Designing of Textiles                                                                                                                          |
| 6 | Mr. Sanjay Sahoo      |                        |                         | T. Y. B. Tech. (Sem VIII) TXT1901, Textile Process House Management                                                                                                                                       |
| 7 | Ms.Vibhuti Khedekar   | Lecturer               | SNDT Women University   | T. Y. B. Tech. (Sem VI)<br>TXT1401, Technology of Garment Manufacturing                                                                                                                                   |
| 8 | Mrs. Madhura Nerurkar | Director               | Calantha Biotech        | M.Tech (Sem II)<br>TXT2601, Biotechnology in Textiles                                                                                                                                                     |
| 9 | Dr. Ashok Sable       | Director               | Kusmo Chemicals Pvt Ltd | M.Sc. (Sem III)<br>TXT2304, Evaluation of Processed Textiles<br>T. Y. B. Tech. (Sem VIII) TXT1302, Testing of Dyes, Chemicals and Auxillaries                                                             |

13. Percentage of classes taken by temporary faculty – programme-wise information: 11%

14. Programme-wise Student Teacher Ratio -

- B.Tech – 120/7 – 17: 1
- M.Tech – 20/7 – 3:1
- M.Sc. – 10/7 – 2:1

15. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual

|                                           | Sanctioned | Filled | Actual |
|-------------------------------------------|------------|--------|--------|
| <b>Academic support staff (technical)</b> | 14         | 13     | 14     |
| <b>Administrative staff</b>               | 01         | 01     | 01     |

16. Research thrust areas as recognized by major funding agencies  
**Research Interests –**

- **Fibre Manufacture and Modification:** Melt blending of PP and other polymers for improved dyeability, weight reduction of PET, grafting of fibres for improved performances.
- **Wet Processing of Textiles:** Pre-treatment of greige fabric followed by dyeing and finishing, combined processes, thickener modification, specialty finishes, zero discharge processes.
- **Biotechnology:** Production of enzymes and their applications, microbial colorants.
- **Green composites:** Application of natural fibres and use of natural matrix for making green composites
- **Nanotechnology:** Synthesis and characterization of various nanomaterials and their application for functional properties.
- **Functional Textiles and Technical Textiles:** Antibacterial fabrics, mosquito repellent textile, fragrant clothings, conductive textiles using electroless coatings, hydrophilic synthetic fabrics etc.
- **Novel Technologies:** Use of plasma for surface modification of textile, micro-encapsulation of finishing agents and dyes, LBL technique, coating of fabric for functional properties.
- **Synthesis and application of novel surfactants on textiles**
- **Formulation of nano emulsions and Nano-Silicones for process intensification**
- **Effluent Treatment:** Removal of heavy metals from effluent by use of agricultural waste products, decolorization of effluent by use of chemical and biological methods and nano particles (use of microbes and their enzymes).
- **Recycling:** Recycling of process chemicals like sodium hydroxide, reuse of waste cotton to make hygienic textile, recycling of synthetic fibres and plastic bottles
- **Smart Textiles and organic electronics:** Singlet fission in dimeric organic molecules, synthesis of heterocyclic molecules for organic electronic applications, textile sensors, fabrication of electronic devices on textile surface, molecular machines on textile surface.

17. Number of faculty with ongoing projects from a) National b) International funding agencies and c) Total grants received. Give the names of the funding agencies, project title and grants received project-wise.

a) National funding agency-28

b) International funding agency- 01



c) Total Grant received- **Rs. 5,09,78,926 + US \$19, 98,665**

| <b>Sr. No.</b> | <b>Faculty</b>                  | <b>Project Title</b>                                                                                                         | <b>Funding Agency</b>   | <b>Amount</b> | <b>Duration</b>   |
|----------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------|-------------------------|---------------|-------------------|
| 1              | Prof. R. V. Adivarekar          | Yellowing of fabrics                                                                                                         | HUL                     | 8,50,000      | 2 Years (2011-13) |
| 2              | Prof. R. V. Adivarekar          | Development of processes for manufacture of colour changing fabric/paper prototypes                                          | HUL                     | 75,000        | 4 Months (2012)   |
| 3              | Prof. R. V. Adivarekar          | Deposition of 'Actives' on Fabric Surface by Laundry Processes: Quantification, Understanding and Ways to Improve Deposition | HUL                     | 6,00,000      | 1 Year (2012-13)  |
| 4              | Prof. R. V. Adivarekar          | Dyeing of fibres                                                                                                             | HUL                     | 7,41,576      | 1 Year (2012-13)  |
| 5              | Prof. R. V. Adivarekar          | -                                                                                                                            | FIST, DST               | 1,50,00,000   | 4 Years (2013-18) |
| 6              | Prof. R. V. Adivarekar          | Modification of Synthetic Fibres and their Colouration                                                                       | MODROBS, AICTE.         | 5,00,000      | Years (2010-15)   |
| 7              | Prof. R.V. Adivarekar           | Marble printing on Textiles                                                                                                  | TEQIP-II                | 5,80,000      | 3 Months (2016)   |
| 8              | Prof. R. V. Adivarekar          | Development of technologies for consumer demonstrations                                                                      | HUL                     | 9,00,000      | 4 Years (2012-15) |
| 9              | Prof. R. V. Adivarekar          | Product development through wet processing                                                                                   | Welspun India Ltd.      | 10,42,500     | 1 Year (2014-15)  |
| 10             | Prof. R. V. Adivarekar          | Twining Partnership Program                                                                                                  | ETIDI, Ethiopia         | US\$19,98,665 | (2015-18)         |
| 11             | Prof. M.D. Teli                 | Studies in printing with Reactive dye                                                                                        | Minish Dye Chem         | 15,000        | 1 Year (2012-13)  |
| 12             | Prof. M.D. Teli                 | Studies in Thickeners                                                                                                        | Satguru Agro Industries | 60,000        | 1 Month (2016)    |
| 13             | Prof. M.D. Teli                 | Studies in textile finishing                                                                                                 | Birla Cellulose         | 2,00,000      | 1 month (2016)    |
| 14             | Prof. M. D. Teli                | Studies in Natural Dyeing                                                                                                    | Adiv Nature pure        | 1,00,000      | 1 Year (2012-13)  |
| 15             | Prof. M. D. Teli                | Effect of cosmetics and photo-radiation on Indian Hair                                                                       | L'Oreal                 | 7,00,000      | 1 Year (2012-13)  |
| 16             | Prof. M. D. Teli, Dr. R.D. Kale | Development of Mosquito-repellent textiles                                                                                   | TEQIP-II                | 13,14,000     | 2 Years (2013-15) |
| 17             | Prof. S. R. Shukla              | Waste water treatment of textile processing industry in the GOTS revision process                                            | GOTS, India             | 36,000        | 1 Month (2013)    |
| 18             | Prof. S. R. Shukla              | -                                                                                                                            | UGC-CAS-VII             | 97,00,000     |                   |



|    |                       |                                                                                              |                                          |           |                   |
|----|-----------------------|----------------------------------------------------------------------------------------------|------------------------------------------|-----------|-------------------|
| 19 | Prof. S. R. Shukla    | Pollution load Assessment for existing and proposed product mix manufacture.                 | Navin Fluorine International Ltd., Dewas | 3,00,000  | 3 Months (2013)   |
| 20 | Prof. S. R. Shukla    | Decolorization & Recycling of Coloured waste water of textile Processing & Dyestuff Industry | UGC (UGC-Major)                          | 9,30,000  | 3 Years (2012-15) |
| 21 | Dr. Usha Sayed        | Application of Pharmaceutical Drugs in Textile processing                                    | TEQIP-II                                 | 3,60,000  | 3 Months (2016)   |
| 22 | Dr. R.D. Kale         | Consultancy services for Up Gradation, Expansion And Accreditation of Dadar Laboratory       | MCGM                                     | 19,10,120 | (2014)            |
| 23 | Dr. R.D. Kale         | Dyeing of Polyester and its blend using nano emulsion                                        | TEQIP-II                                 | 16,40,000 | 2 Years (2013-15) |
| 24 | Dr. R.D. Kale         | Polymeric dispersant for pigments                                                            | UIC Research fund                        | 35,000    | 1 Year (2012-13)  |
| 25 | Dr. R.D. Kale         | Dyeing of Polyester using crude disperse dyes                                                | Reliance Industries Ltd., Ahmedabad      | 5,00,000  | 2017              |
| 26 | Dr. Asfiya Contractor | Metal plating on textile fabrics for wearable electronics                                    | DST SERB                                 | 22,25,500 | 2017-20           |
| 27 | Dr. Sandeep More      | Covalently coupled Pentacene Dimers: Novel Materials for Organic Photovoltaics               | DST INSPIRE                              | 35,00,000 | 2015-20           |
| 28 | Dr. Sandeep More      | Biodegradable Flame Retardants                                                               | TEQIP INN                                | 6,20,000  | 2016-17           |
| 29 | Dr. Sandeep More      | Phenanthroline-ly Coupled Dimers for Organic electronics                                     | DST SERB                                 | 37,58,480 | 2017 - 20         |
| 30 | Dr. Sandeep More      | Singlet Fission via Extended Aromaticity                                                     | DST SERB                                 | 27,85,750 | 2017 - 20         |

**18. Inter-institutional collaborative projects and associated grants received**

a) National collaboration- 0                      b) International collaboration- 0

**19. Departmental projects funded by**

| Sr No | Agency                                 | No of Projects | Amount in Lakhs | Status    |
|-------|----------------------------------------|----------------|-----------------|-----------|
| 1     | UGC-CAS Phase VII                      | 01             | 97.5            | Completed |
| 2     | FIST, DST                              | 01             | 150             | On going  |
| 3     | MODROBS                                | 01             | 5               | Completed |
| 4     | TEQIP Phase II                         | 01             | 80.55           | Completed |
| 5     | Ethiopian Textile Industry Development | 01             | 129.82          | On going  |

|  |                                                                  |  |  |  |
|--|------------------------------------------------------------------|--|--|--|
|  | Institute (ETIDI) of The Federal Democratic Republic of Ethiopia |  |  |  |
|--|------------------------------------------------------------------|--|--|--|

**Total grants received- 462.87 Lakhs**

**20. Research facility / centre with**

- Centre of Advanced studies in “Physicochemical aspects of Textile, Fibres, Polymers and Dyes” presently in Phase VII, since 1962.

**21. Special research laboratories sponsored by / created by industry or corporate bodies : NA**

**22. Publications: Total – 238**

- Number of papers published in peer reviewed journals – 238
- Monographs – NA
- Chapters in Books- 11
- Citation Index – range / average –389.86
- Impact Factor – range /average – 1.44
- h-index –11 (average h-index)

**23. Details of patents and income generated**

**Total numbers of Patents are 07**

- Demonstrating efficacy of cleansing products, Application no. 2158/MUM/2012, RavindraVitthalAdivarekar (from ICT), Nitin SiddheshwarDeshpande, Vamsi Krishna Manthena, VibhavRamraoSanzgiri (all from HUL).
- Preparation of Nano Titanium oxide using dispersing agents. Application no. 473/MUM/2013 R.V. Adivarekar, Neha Khurana.
- Improved mosquito repellent fabric and its composition. Application no. 4200/MUM/2014, M.D.Teli, Pravin Chavan.
- Mosquito repellent dye and its process of dyeing. Application no. 1622/MUM/2015, M.D.Teli, Pravin Chavan.
- Biodegradable Foam Composition and Process thereof (product & process). Application no.281/MUM/2015, Kale Ravindra, Katre Gaurav, Jagtap Priyanka, GarjeAmbadas
- A process for the preparation of mosquito repellent fabric using herbal formulation and composition thereof. Application no. 2201/MUM/2015, Kale Ravindra, Gotmare V D, Bhatt Latika.
- A composition for bleaching textile using natural stabilizing agent and process thereof. Application no. 201721011837, R.V. Adivarekar, S. Maiti & S. Pandey.

**24. Areas of consultancy and income generated**

| Sr. No. | Faculty                | Project Title                                                                       | Funding Agency | Amount   | Duration          |
|---------|------------------------|-------------------------------------------------------------------------------------|----------------|----------|-------------------|
| 1       | Prof. R. V. Adivarekar | Yellowing of fabrics                                                                | HUL            | 8,50,000 | 2 Years (2011-13) |
| 2       | Prof. R. V. Adivarekar | Development of processes for manufacture of colour changing fabric/paper prototypes | HUL            | 75,000   | 4 Months (2012)   |

|    |                        |                                                                                                                              |                                          |           |                   |
|----|------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------|-------------------|
| 3  | Prof. R. V. Adivarekar | Deposition of 'Actives' on Fabric Surface by Laundry Processes: Quantification, Understanding and Ways to Improve Deposition | HUL                                      | 6,00,000  | 1 Year (2012-13)  |
| 4  | Prof. R. V. Adivarekar | Dyeing of fibres                                                                                                             | HUL                                      | 7,41,576  | 1 Year (2012-13)  |
| 5  | Prof. R. V. Adivarekar | Development of technologies for consumer demonstrations                                                                      | HUL                                      | 9,00,000  | 4 Years (2012-15) |
| 6  | Prof. R. V. Adivarekar | Product development through wet processing                                                                                   | Welspun India Ltd.                       | 10,42,500 | 1 Year (2014-15)  |
| 7  | Prof. M.D. Teli        | Studies in printing with Reactive dye                                                                                        | Minish Dye Chem                          | 15,000    | 1 Year (2012-13)  |
| 8  | Prof. M.D. Teli        | Studies in Thickeners                                                                                                        | Satguru Agro Industries                  | 60,000    | 1 Month (2016)    |
| 9  | Prof. M.D. Teli        | Studies in textile finishing                                                                                                 | Birla Cellulose                          | 2,00,000  | 1 month (2016)    |
| 10 | Prof. M. D. Teli       | Studies in Natural Dyeing                                                                                                    | Adiv Nature pure                         | 1,00,000  | 1 Year (2012-13)  |
| 11 | Prof. M. D. Teli       | Effect of cosmetics and photo-radiation on Indian Hair                                                                       | L'Oreal                                  | 7,00,000  | 1 Year (2012-13)  |
| 12 | Prof. S. R. Shukla     | Waste water treatment of textile processing industry in the GOTS revision process                                            | GOTS, India                              | 36,000    | 1 Month (2013)    |
| 13 | Prof. S. R. Shukla     | -                                                                                                                            | UGC-CAS-VII                              | 97,00,000 |                   |
| 14 | Prof. S. R. Shukla     | Pollution load Assessment for existing and proposed product mix manufacture.                                                 | Navin Fluorine International Ltd., Dewas | 3,00,000  | 3 Months (2013)   |
| 15 | Dr. R.D. Kale          | Consultancy services for Up Gradation, Expansion And Accreditation of Dadar Laboratory                                       | MCGM                                     | 19,10,120 | (2014)            |
| 16 | Dr. R.D. Kale          | Dyeing of Polyester using crude disperse dyes                                                                                | Reliance Industries Ltd., Ahmedabad      | 5,00,000  | 2017              |

**25. Faculty selected nationally / internationally to visit other laboratories / institutions**

/ industries in India and abroad

**26. Faculty serving in**

- a) National committees b) International committees c) Editorial Boards d) any other (please specify)

**Professional activities –**

| Sr. No. | Faculty Member        | Affiliation to Professional Bodies                                                                                                                    | Membership                 |
|---------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| 1       | Prof. R.V. Adivarekar | Textile Association (India)                                                                                                                           | Life Member                |
|         |                       | Editor of Journal of Textile Association                                                                                                              | Member                     |
|         |                       | Wool Research Association, Thane                                                                                                                      | Member                     |
|         |                       | BTRA, Mumbai                                                                                                                                          | Member                     |
|         |                       | ‘Core Group’ to function as a Sub-committee of the Council for COE in Sprottech at WRA                                                                | Member                     |
|         |                       | Expert in Department Research Committee at Textile Manufacturers Department, VeermataJijabaiTechnological Institute                                   | Member                     |
|         |                       | RRC, Dept. of Physics                                                                                                                                 | Member                     |
|         |                       | Board of studies and faculties of The Maharaja Sayajirao University of Baroda in Textile chemistry                                                    | Member                     |
|         |                       | Selection committee, College of Home Science, Nirmala Niketan                                                                                         | Member                     |
|         |                       | Indian Fibre Society                                                                                                                                  | Life Member                |
|         |                       | Sophia Polytechnic                                                                                                                                    | Visiting faculty           |
|         |                       | Assess issues related to environmental pollution from textile mills identified as discharging effluent into river Ganga main stem and its tributaries | Member of expert committee |
| 2       | Prof. S. R. Shukla    | Colour Group of India                                                                                                                                 | Life Member                |
|         |                       | Marathi VigyanParishad.                                                                                                                               | Life Member                |
|         |                       | Alumni Association, UDCT                                                                                                                              | Life Member                |
|         |                       | Textile Association (India)                                                                                                                           | Life Member                |
|         |                       | Indian Fibre Society                                                                                                                                  | Life Member                |
|         |                       | Association of Chemical Technologists, India.                                                                                                         | Patron Member              |
|         |                       | Career Advancement Scheme for Scientists, CIRCOT.                                                                                                     | Member                     |
|         |                       | Indian Journal of Fibres and Textile Research                                                                                                         | Member                     |

|   |                 |                                                                                                                                                  |                                      |
|---|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| 3 | Prof. M.D. Teli | Task Force on Seri biotechnology, DBT, New Delhi                                                                                                 | Member                               |
|   |                 | Journal of the Textile Association.                                                                                                              | Honorary chairman<br>Editorial board |
|   |                 | Research Advisory Committee, Central Silk Board, Bangalore.                                                                                      | Member                               |
|   |                 | Research Advisory Committee of ATIRA                                                                                                             | Member                               |
|   |                 | Research Advisory Committee of BTRA                                                                                                              | Member                               |
|   |                 | of Textile Association (India) and Recipient of Honorary Fellowship and Service Memento of Textile Association India                             | Patron<br>Member                     |
|   |                 | Association of Chemical Technologists, India.                                                                                                    | Patron<br>Member                     |
|   |                 | Colour Group of India.                                                                                                                           | Life Member                          |
|   |                 | Colourage.                                                                                                                                       | Member of<br>Editorial Board         |
|   |                 | Society of Dyers and Colourists, SDCMumbai Region.                                                                                               | Past-Chairman                        |
|   |                 | TIFAC-DST Mission Reach Programme, Domain Expert                                                                                                 | Member                               |
|   |                 | Policy & Role of Govt. in Textile Industry (Working Group), Ministry of Textiles                                                                 | Member                               |
|   |                 | Siyaram Silk Mills Ltd., Board of Directors                                                                                                      | Member                               |
|   |                 | Academic Council, University of Mumbai.                                                                                                          | Member                               |
|   |                 | SASMIRA (Mumbai)                                                                                                                                 | Member                               |
|   |                 | All India Artisans and craft workers welfare associations                                                                                        | Served as<br>Member                  |
|   |                 | Indian Textile Machinery Manufacturers Association, Mumbai.                                                                                      | Chairman<br>Jury                     |
|   |                 | Editorial Board, Rossera                                                                                                                         | Member                               |
|   |                 | Editorial Board, Textile Value Chain                                                                                                             | Member                               |
|   |                 | Board of Studies in Textiles and Clothing, SNDT University                                                                                       | Member                               |
|   |                 | Academic Council, S.V.T College                                                                                                                  | Member                               |
|   |                 | Academic Council, SNDT College,                                                                                                                  | Member                               |
|   |                 | Ph.D. Thesis at IIT, Deakin University and RMIT Australia, MS University and Vishweshwarya University Belgaum, Bengalaru, Kolkata university etc | Referee                              |
|   |                 | Papers and program committee, Global Textile Congress 2015                                                                                       | Chairman                             |

|   |                |                                                                                                              |                         |
|---|----------------|--------------------------------------------------------------------------------------------------------------|-------------------------|
|   |                | Research Monitoring Committee of TIFAC - DST for Technical Textiles at DKTE Textile Institute, Ichalkaranji. | Chairman                |
|   |                | Research Monitoring Committee of TIFAC - DST for Technical Textiles at Kumarguru College, Coimbatore.        | Chairman                |
| 4 | Dr. R.D. Kale  | Society of Dyers and Colorist                                                                                | Member                  |
|   |                | Indian Fibre Society                                                                                         | Life Member             |
|   |                | Cultural Activity Cell of the Institute                                                                      | Member                  |
|   |                | MIS system of the Institute                                                                                  | Member                  |
|   |                | Admission Committee of the Institute                                                                         | Member                  |
|   |                | “Shri G.M. Abhyankar Students’ Travel Assistance” of the Institute                                           | Member                  |
|   |                | Dept of Health Sciences, Maharashtra State                                                                   | Expert on the committee |
| 5 | Dr. Usha Sayed | UDCT Alumni Association                                                                                      | Member                  |
|   |                | AATCC                                                                                                        | Member                  |
|   |                | Academic Council University of Mumbai                                                                        | Member                  |
|   |                | Faculty of Science, University of Mumbai.                                                                    | Member                  |
|   |                | Editorial Advisory Board of International Journal of Advanced Science and Engineering                        | Member                  |
|   |                | Journal of polymer and Environment                                                                           | Referee                 |
|   |                | Nirmala Niketan college for M. Sc. (Home Science) & SNTD                                                     | Referee                 |
|   |                | Adhoc Committee of Textile Technology (MU)                                                                   | Chairperson             |
|   |                | National committees<br>• Fibers society of America                                                           | Member                  |
|   |                | • Alumni Association                                                                                         | Member                  |
|   |                | • The Committee for Women’s Welfare, Mumbai University.                                                      | Member                  |
|   |                | • Board of studies Baroda university textile department.                                                     | Member                  |
|   |                | • AATCC                                                                                                      | Member                  |
|   |                | • Natural Fibre society, Culcutta                                                                            | Member                  |
|   |                | b) International committees<br>• Fibers society of America                                                   | Member                  |

27. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs).



| Sr. No. | Faculty name                       | Areas of training / development                                                                                                       | Trainer Organization and Venue                                | Date from-to                   | No. days |
|---------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|--------------------------------|----------|
| 1       | Dr Ravindra D Kale                 | Staff Development Programme on Nano Technology & Applications                                                                         | NTTTR, Bhopal in Pune                                         | 11th to 15th March 2013        | 05       |
| 2       | Dr Ravindra D Kale                 | Workshop on Green Chemistry and Sustainable Technology on National Technology Day Celebrations                                        | ICT, Mumbai                                                   | 11th May 2013                  | 01       |
| 3       | Dr Ravindra D Kale                 | Workshop on “ Modern Trends in Polymer Science and Technology-2013” held under TEQIP-II                                               | ICT, Mumbai                                                   | 3rd April 2013                 | 01       |
| 4       | Prof. (Dr.) M. D. Teli             | Continuing Education & Quality Improvement Programme on “ Institution Building through Appreciate Mindset” held under TEQIP-II        | IIT, Mumbai                                                   | January24 to 4th February 2013 | 06       |
| 5       | Prof. (Dr.) Ravindra V. Adivarekar | Continuing Education & Quality Improvement Programme on “ Institution Building through Appreciate Mindset” held under TEQIP-II        | IIT, Mumbai                                                   | January24 to 4th February 2013 | 06       |
| 6       | Dr Ravindra D Kale                 | Continuing Education & Quality Improvement Programme on “ Institution Building through Appreciate Mindset” held under TEQIP-II        | IIT, Mumbai                                                   | January24 to 4th February 2013 | 06       |
| 7       | Dr Ravindra D Kale                 | Continuing Professional Development Programme on “Formulation of Research & Development Initiatives for Scientists and Technologists” | Engineering Staff College of India, Hyderabad, Andhra Pradesh | September 07 to 10, 2015       | 04       |

## 28. Student projects

- percentage of students who have done in-house projects including inter-departmental projects  
**M.Tech - 100%**  
**B.Tech - 100%**
- percentage of students doing projects in collaboration with other universities industry/institute  
**M.Tech – 20%**

**B. tech – 0%****29. Awards / recognitions received at the national and international level by**

| <b>Faculty Member</b> | <b>Major Awards</b>                                                         |
|-----------------------|-----------------------------------------------------------------------------|
| Prof. M. D. Teli      | Hon. Fellow of Textile Association of India                                 |
| Prof. M. D. Teli      | Fellow of the Maharashtra Academy of Sciences                               |
| Prof. M. D. Teli      | Academic excellence award given by Textile Association of India in May 2011 |
| Prof. M. D. Teli      | Shikshan Ratan Purskar                                                      |
| Prof. S.R. Shukla     | Fellow of the Maharashtra Academy of Sciences                               |
| Prof. S.R. Shukla     | Shikshan Ratan Purskar                                                      |
| Dr. S. P. More        | DST-INSPIRE Faculty Award                                                   |

**30. Seminars/ Conferences/Workshops organized and the source of funding (National/International) with details of outstanding participants, if any.**

| <b>Sr. No.</b> | <b>Title</b>                                                                                                                                                                                                                                                                                                                  |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1              | Organized TexSummit in INDIA 2012 9th India International Textile Machinery Exhibition on 5th Dec. 2012 at Bombay convention and exhibition centre, Goregaon, Mumbai                                                                                                                                                          |
| 2              | TECHNICAL SEMINAR -1 on Dyeing of Cotton – “Problem & Remedies” held at KOMBOLCHA, ETHIOPIA on 2nd and 3rd March 2015                                                                                                                                                                                                         |
| 3              | Global Textile Congress in association with Thailand Convention & Exhibition Bureau (TCEB), on 13th, 14th & 15th February, 2015 at Bangkok, Thailand.                                                                                                                                                                         |
| 4              | Organized three day workshop from 7-9 January 2015 at Dept of Fibres and Textile Processing Tech., ICT on “Process Intensification in Dyeing” for the students of Sophiya College, Mumbai.                                                                                                                                    |
| 5              | Technical seminar III (Addis Ababa, Ethiopia) 25th February 2016 to 27th February 2016                                                                                                                                                                                                                                        |
| 6              | A one day national seminar on: ‘SPORTECH-An Ocean of Opportunities’ was conducted by the Department of Fibers and Textile Processing Technology, under TEQIP programme phase II in K.V. Auditorium, ICT on Tuesday, March 15th, 2016 from 8.30 a.m. to 5.30 p.m, in collaboration with Wool Research Association(WRA), Thane. |
| 7              | Technical seminar IV (Washington Hotel Addis Ababa, Ethiopia) 22nd June 2016 to                                                                                                                                                                                                                                               |

|    |                                                                                                                                                                                                  |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | 25th June 2016                                                                                                                                                                                   |
| 8  | Technical seminar on Process Optimization in Textile Processing, 22-25 June, 2016                                                                                                                |
| 9  | Awareness seminar II (Pyramid Hotel, Dberezit, Ethiopia Topic- Dawn of Ethiopian Textile Industries on Global Horizon 15th August 2016 to 18th August 2016                                       |
| 10 | Organized four day workshop from 14-17 September 2016 At Dept of Fibres and Textile Processing Tech., ICT on “Value addition to Textile products” for the 22 handloom weavers from Assam, Mumbai |
| 11 | Organized TexSummit-2016 International Conference on “Frontiers in Fibres, Textile & Apparel Processing” Monday, December 05, 2016, Venue: Bombay Exhibition Centre, Goregaon, Mumbai.           |

**31. Code of ethics for research followed by the departments**

- Institute guidelines are followed.

**32. Student profile programme-wise:**

| Name of the Programme (refer to question no. 4)                                                                                           | Applications received | Selected |        | Pass percentage |        |
|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----------|--------|-----------------|--------|
|                                                                                                                                           |                       | Male     | Female | Male            | Female |
| M.Tech.                                                                                                                                   | 90                    | 67       | 23     | 100             | 100    |
| M. Sc                                                                                                                                     | 30*                   | 27       | 24     | 100             | 100    |
| B. Tech (13-15)                                                                                                                           | 161                   | 99       | 62     |                 |        |
| Note : * some applications are directly forwarded from chemistry department, so the applications received are included in that department |                       |          |        |                 |        |

**33. Diversity of students :**

| Name of the Programme (refer to question no. 4) | % of students from the same university | % of students from other universities within the State | % of students from universities outside the State | % of students from other countries |
|-------------------------------------------------|----------------------------------------|--------------------------------------------------------|---------------------------------------------------|------------------------------------|
| M. Tech                                         | 55%                                    | 20%                                                    | 15%                                               | 10%                                |
| M. Sc.                                          | 0%                                     | 69%                                                    | 30%                                               | 1%                                 |
| Ph.D Tech                                       | 83%                                    | 10%                                                    | 5%                                                | 2%                                 |
| Ph.D (Sci)                                      | 80%                                    | 10%                                                    | 10%                                               | -                                  |

34. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise.  
**GATE Qualified Student:**

| Year    | Total No. of M.Tech students | No. of GATE qualified M.Tech students |
|---------|------------------------------|---------------------------------------|
| 2016-17 | 15                           | 3                                     |
| 2015-16 | 16                           | 4                                     |
| 2014-15 | 20                           | 9                                     |
| 2013-14 | 18                           | 9                                     |
| 2012-13 | 15                           | 6                                     |
| 2011-12 | 15                           | 9                                     |

35. Student progression

| Student Progression   |                               |    | 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 |
|-----------------------|-------------------------------|----|---------|---------|---------|---------|---------|
| UG to PG              |                               |    | 32%     | 43.33%  | 54.54%  | 48.57   | 35%     |
| PG to Ph.D            |                               |    | 62.5%   | 33.33%  | 38.88%  | 05.26%  | 05.88%  |
| Ph.D to Post-Doctoral |                               |    | -       | -       | -       | -       | -       |
| Employed              | Campus Selection              | UG | 64%     | 46.66%  | 24.24%  | 42.85%  | 30%     |
|                       |                               | PG | 31.25%  | 61.11%  | 61.11%  | 52.63%  | 11.76%  |
|                       | Other than campus recruitment | UG | -       | -       | -       | -       | -       |
|                       |                               | PG | -       | -       | -       | -       | 23.52%  |

### 36. Diversity of staff

| Percentage of faculty who are graduates of the   |   |
|--------------------------------------------------|---|
| Same university                                  | 5 |
| From other universities within the State from    | 1 |
| Universities from other States from universities | - |
| outside the country                              | 1 |

### 37. Present details of departmental infrastructural facilities with regard to

#### a) Library

#### **M. M. SHARMA LIBRARY**

##### **Library data related to Textile Section**

- No of Book volumes of Textile only: **2080**
- Total no of Journal Bound volume of Textile only: **5000**

##### **List of Textile journals**

- Indian Journal of Fibre and Textile Research
- Textile Research Journal
- International Dyer
- Journal of the Textile Institute
- Textile Progress
- Coloration Technology
- Journal of Textile Association
- Colourage
- Man-made Textiles in India
- MANTRA

#### b) Internet facilities for staff and students

- We have well equipped Information Processing Centre which is accessible to all students.
- High speed Internet is also available in the Lab for 24 hours

#### c) **Total number of class rooms : 02**

| Sr. No. | Room Number | Laboratory Name               |
|---------|-------------|-------------------------------|
| 1       | A-263       | Textile Research Laboratory 1 |
| 2       | A-262       | Textile Research Laboratory 2 |
| 3       | A-265       | Textile Research Laboratory 3 |
| 4       | A-264       | Textile Research Laboratory 4 |
| 5       | A-269       | Textile Research Laboratory 5 |

|    |       |                                       |
|----|-------|---------------------------------------|
| 6  | A-145 | Textile Research Laboratory 6         |
| 7  | A-149 | Textile Research Laboratory 7         |
| 8  | A-151 | Textile Research Laboratory 8         |
| 9  | A-140 | Dye House                             |
| 10 | A-271 | Physical Testing Laboratory           |
| 11 | A-267 | Advanced Textile Testing Laboratory 1 |
| 12 | A-268 | Advanced Textile Testing Laboratory 2 |
| 13 | A-142 | Advanced Textile Testing Laboratory 3 |
| 14 | NA    | Advanced Textile Testing Laboratory 4 |
| 15 | A-143 | Textile Chemical Analysis Laboratory  |
| 16 | A-141 | Experimental dyeing Laboratory        |
| 17 | NA    | Textile Chemical Store                |
| 18 | NA    | Textile Lecture Room T 1              |
| 19 | NA    | Textile Lecture Room T 2              |
| 20 | NA    | Textile Composite Laboratory          |
| 21 | NA    | Textile Engineering Laboratory        |

d) Class rooms with ICT facility – IPC & e-Library

e) Students' laboratories – 08

- Laboratories– 02
- Dye House – 01
- Physical Testing lab – 01
- Advanced Testing lab – 04

f) Research laboratories - 16

- Dye House – 01
- Textile Research Laboratory– 08
- Physical Testing lab – 01
- Advanced Testing lab – 04
- Textile Composite Laboratory– 01
- Textile Engineering Laboratory– 01

**38.** List of doctoral, post-doctoral students and Research Associates

a) from the host institution/university

**Postgraduate students' Ph.D. (Tech)**

| Sr. No. | Research Scholar | Previous Institution | Project                                                                               | Supervisor                  |
|---------|------------------|----------------------|---------------------------------------------------------------------------------------|-----------------------------|
| 1.      | Katode Sanjay    | UICT, Mumbai         | Sustainable Approach towards Garment Processing                                       | Prof. (Dr.) R.V. Adivarekar |
| 2.      | Kherdekar Girish | TITS, Bhiwani        | Natural Eco-Friendly Alternatives to the Existing Scouring & Dyeing of Wool & Woolens | Prof. (Dr.) R.V. Adivarekar |



|     |                        |                        |                                                                                             |                             |
|-----|------------------------|------------------------|---------------------------------------------------------------------------------------------|-----------------------------|
| 3.  | Udakhe Jayant          | IIT, New Delhi         | Synthesis & Application of Far Infrared Reflecting Dyes                                     | Prof. (Dr.) R.V. Adivarekar |
| 4.  | Harane Rachana         | ICT, Mumbai.           | Selective Treatment and Recycling of Textile Effluent                                       | Prof. (Dr.) R.V. Adivarekar |
| 5.  | Madiwale Pallavi       | ICT, Mumbai.           | Studies in Medical Textiles                                                                 | Prof. (Dr.) R.V. Adivarekar |
| 6.  | Singh Girendra Pal     | ICT, Mumbai.           | Studies in Natural Fibre Composite                                                          | Prof. (Dr.) R.V. Adivarekar |
| 7.  | Biranje Santosh        | ICT, Mumbai.           | Extraction of Biopolymers and their Modification for Application in Medical Textile         | Prof. (Dr.) R.V. Adivarekar |
| 8.  | Maiti Saptarshi        | ICT, Mumbai.           | Studies in graphite for textiles                                                            | Prof. (Dr.) R.V. Adivarekar |
| 9.  | Mahajan Geetal         | ICT, Mumbai.           | Fermentation Technology in Textile Wet processing                                           | Prof. (Dr.) R.V. Adivarekar |
| 10. | Desai Pawan            | VJTI                   | Studies in Synthetic Polymers for Sports Textiles Application.                              | Prof. (Dr.) M. D. Teli      |
| 11. | Valia Sanket           | ICT                    | Functionalization of Fibres for Speciality Applications                                     | Prof. (Dr.) M. D. Teli      |
| 12. | Mallick Aranya         | UDCT, Mumbai           | Modification of polymers for enhancement of functional properties                           | Prof. (Dr.) M. D. Teli      |
| 13. | Shukla Armaity         | SNDT university        | Naturally colored functional Nonwovens                                                      | Prof. (Dr.) M. D. Teli      |
| 14. | Ambre Pragnya          | Dr. B.M.N college SNDT | Combined Dyeing and finishing of natural dyes.                                              | Prof. (Dr.) M. D. Teli      |
| 15. | Chavan Pravin          | ICT, Mumbai.           | Functional modifications for specialty applications in textiles                             | Prof. (Dr.) M. D. Teli      |
| 16. | Annaldewar Bhag yashri | ICT, Mumbai.           | Studies in Speciality finishes                                                              | Prof. (Dr.) M. D. Teli      |
| 17. | Mifta Jalaludin        | ETIDI, Ethiopia        | Studies in Fibrous polymers                                                                 | Prof. (Dr.) M. D. Teli      |
| 18. | Nadiger Vinay G.       | VJTI, Mumbai           | Studies on Nano-composite Polypropylene Fibres for UV Protective Sports Textile Application | Prof. (Dr.) S. R. Shukla    |
| 19. | Vyas Shweta K.         | D.K.T.E, Ichalkaranji  | Process intensification in textile colouration                                              | Prof. (Dr.) S. R. Shukla    |
| 20. | Parmar Neha D.         | ICT, Mumbai.           | Microbial decolourisation of dyeing effluent                                                | Prof. (Dr.) S. R. Shukla    |
| 21. | Jadhav Abhishek        | ICT, Mumbai.           | Studies in multifunctional auxiliaries                                                      | Prof. (Dr.) S. R. Shukla    |
| 22. | Arputhraj A.           | SSM College            | Nanotechnology in textile applications                                                      | Prof. (Dr.) S. R. Shukla    |

|     |                    |              |                                                                    |                          |
|-----|--------------------|--------------|--------------------------------------------------------------------|--------------------------|
| 23. | Kore Umesh         | ICT, Mumbai. | Theoretical aspects of reactive dyeing for process intensification | Prof. (Dr.) S. R. Shukla |
| 24. | PalaskarShital     | ICT, Mumbai. | Studies on effect of plasma treatment on different textile fabrics | Dr. R. D. Kale           |
| 25. | Thitahme Prasad    | ICT, Mumbai. | Application of Activated Carbon in Effluent Treatment              | Prof. (Dr.) S. R. Shukla |
| 26. | Gangawane Prashant | ICT, Mumbai. | Finishing of Textiles                                              | Dr. Usha Sayed           |
| 27. | Kane Prerana       | ICT, Mumbai. | Studies in Non-Conventional Method for Effluent Treatment          | Dr. R. D. Kale           |

#### Postgraduate students' Ph.D. (Science)

| Sr. No. | Research scholar      | Previous Institution                    | Project                                                                                                              | Supervisor               |
|---------|-----------------------|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------|--------------------------|
| 1.      | Singh Saurabhkumar A. | Khalsa College, Mumbai                  | Adsorptive separation of strategic and heavy metal ions and process characterization.                                | Prof. (Dr.) S. R. Shukla |
| 2.      | PatilNamata N.        | SNDT, Mumbai                            | Studies on colour removal from waste water                                                                           | Prof. (Dr.) S. R. Shukla |
| 3.      | Musale Rakesh M       | SSVPS College, Dhule                    | Studies in depolymerization of waste poly(ethylene terephthalate) and utilization of the products obtained therefrom | Prof. (Dr.) S. R. Shukla |
| 4.      | NautiyalAkanksha      | Lady Irwin College, University of Delhi | Process Intensification in Textile Effluent Treatment using Novel Concepts                                           | Prof. (Dr.) S. R. Shukla |

#### Postgraduate students' Ph.D. (Textile Chemistry)

| Sr. No. | Research Scholar | Previous Institution | Project                                                | Supervisor                  |
|---------|------------------|----------------------|--------------------------------------------------------|-----------------------------|
| 1.      | Pallavi Badhe    | ICT, Mumbai          | Protease production and application in textiles        | Prof. (Dr.) R.V. Adivarekar |
| 2.      | Pawar Ashitosh   | ICT, Mumbai.         | Synthesis of Colourants Form Natural Sources           | Prof. (Dr.) R.V. Adivarekar |
| 3.      | Patil Ashwini    | ICT, Mumbai.         | High Performance Auxillaries for Textile Substrates    | Prof. (Dr.) R.V. Adivarekar |
| 4.      | Sutar Trupti     | ICT, Mumbai.         | Studies in Blood Clotting Materials                    | Prof. (Dr.) R.V. Adivarekar |
| 5.      | Shinde Suvidha   | ICT, Mumbai.         | Application of Fluorescent Dyes on Textile and Leather | Prof. (Dr.) R.V. Adivarekar |

|     |                     |                                             | Substrates                                                      |                             |
|-----|---------------------|---------------------------------------------|-----------------------------------------------------------------|-----------------------------|
| 6.  | Ramagude Supriya    | ICT, Mumbai                                 | Not yet decided                                                 | Prof. (Dr.) R.V. Adivarekar |
| 7.  | Pawar Sushant       | ICT, Mumbai.                                | Novel Techniques of coloration                                  | Prof. (Dr.) R.V. Adivarekar |
| 8.  | Patankar Kaustubh   | Mumbai University, Kalina                   | Ecofriendly Flame Retardents                                    | Prof. (Dr.) R.V. Adivarekar |
| 9.  | Jadhav Akshay       | ICT, Mumbai.                                | Processing of non conventional fibres and their value additions | Prof. (Dr.) M. D. Teli      |
| 10. | Latika Bhatt        | CCS Haryana Agriculture University, Haryana | Application of essential Oils on Textiles                       | Dr. R. D. Kale              |
| 11. | Vikrant Gorade      | ICT, Mumbai.                                | Application of Micro/Nano Cellulose in Textiles                 | Dr. R. D. Kale              |
| 12. | Jadhav Nilesh       | ICT, Mumbai.                                | Use of Natural Polymers in Green Composites                     | Dr. R. D. Kale              |
| 13. | Potdar Tejasvi Ajit | ICT, Mumbai.                                | Effluent treatment by naturally occurring materials             | Dr. R. D. Kale              |
| 14. | Ravikant Sharma     | ICT, Mumbai.                                | Synthesis and Application of Speciality Chemicals               | Dr. Usha Sayed              |
| 15. | Parte Sneha         | ICT, Mumbai.                                | Studies in non-woven                                            | Dr. Usha Sayed              |

### Degrees Awarded

| Sr. No. | Name             | Course                | Title                                                                    | Guide                       |
|---------|------------------|-----------------------|--------------------------------------------------------------------------|-----------------------------|
| 1.      | Meena Chetram    | PhD (Tech)            | Ecofriendly Colouration of Textiles                                      | Prof. (Dr.) R.V. Adivarekar |
| 2.      | Tayade Priti     | Integrated PhD (Tech) | Extraction, Standardization and Application of Natural Dyes              | Prof. (Dr.) R.V. Adivarekar |
| 3.      | Joshi Manasi     | Ph.D. (Sci.).         | Production and Application of Marine Pectinase in Textile Processing     | Prof. (Dr.) R.V. Adivarekar |
| 4.      | Neha Khurana     | Integrated PhD (Tech) | Studies in Technical Textile                                             | Prof. (Dr.) R.V. Adivarekar |
| 5.      | Madhura Nerurkar | Ph.D. (Sci.)          | Screening of Marine Microorganisms for the Production of Textile Enzymes | Prof. (Dr.) R.V. Adivarekar |
| 6.      | K. H. Prabhu     | PhD (Tech)            | Herbal Colourants For Eco-                                               | Prof. (Dr.) M. D. Teli      |

|     |                    |              |                                                                                                               |                          |
|-----|--------------------|--------------|---------------------------------------------------------------------------------------------------------------|--------------------------|
|     |                    |              | Friendly Textile Processing                                                                                   |                          |
| 7.  | Javed sheikh       | PhD (Tech)   | Performance enhancement by polymer modification                                                               | Prof. (Dr.) M. D. Teli   |
| 8.  | R D Kale           | PhD (Tech)   | Studies In Structure-Property Relationship For Improved Performance Of Synthetic Fibres                       | Prof. (Dr.) M. D. Teli   |
| 9.  | Kapadi Parag       | Ph.D. (Sci.) | Polymers from renewable resources                                                                             | Prof. (Dr.) S. R. Shukla |
| 10. | Gondhelekar Sachin | Ph.D. (Sci.) | Removal of heavy metals from waste water using bioasorbents                                                   | Prof. (Dr.) S. R. Shukla |
| 11. | Borse Bhushan N.   | Ph.D. (Sci.) | Production of lipase from microorganism and their application in polyester hydrolysis and in organic reaction | Prof. (Dr.) S. R. Shukla |
| 12. | Parab Yogesh S.    | Ph.D. (Sci.) | Chemical recycling of polymeric waste materials                                                               | Prof. (Dr.) S. R. Shukla |
| 13. | Shukla Pushkar M.  | Ph.D. (Sci.) | Studies on biosorption of metal cations using cheap adsorbents.                                               | Prof. (Dr.) S. R. Shukla |
| 14. | Shah Rikhil V.     | Ph.D. (Sci.) | Synthetic reactions and applications of chemically recycled products from polyester waste                     | Prof. (Dr.) S. R. Shukla |
| 15. | Borude Vasant S.   | Ph.D. (Sci.) | Application of ionic liquid in organic synthesis and polymer degradation                                      | Prof. (Dr.) S. R. Shukla |
| 16. | Prashant Gangawane | Ph.D. (Tech) | Advance applications in Textile processing.                                                                   | Dr. Usha Sayed           |

b) from other institutions/universities -

| No. | Research Scholar | Previous Institution   | Project                                        | Supervisor             |
|-----|------------------|------------------------|------------------------------------------------|------------------------|
| 1.  | Ambre Pragnya    | Dr. B.M.N college SNDT | Combined Dyeing and finishing of natural dyes. | Prof. (Dr.) M. D. Teli |
| 2.  | Shukla Armaity   | SNDT university        | Naturally colored functional Nonwovens         | Prof. (Dr.) M. D. Teli |

39. Number of post graduate students getting financial assistance from the university - **No**
40. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology.- **No**
41. Does the department obtain feedback from
- Faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback – **Yes**
    - The faculty is member of syllabus revision committee and feedback is utilised for syllabus revision as well as day to day monitoring of teaching and learning programme as and when opportunity exists.**
  - Students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback– **Yes**
    - This feedback is collected at Institute level and Higher authorities selectively act on the same.**
  - Alumni and employers on the programmes offered and how does the department utilize the feedback– **Yes**
    - Alumni and employers are members of the Syllabus committee and their opinion is asked and utilised for syllabus revision.**
42. List the distinguished alumni of the department (maximum 10)

| Sr. No. | Name                                                                 | Business                                         |
|---------|----------------------------------------------------------------------|--------------------------------------------------|
| 1       | Prof. B.D. Tilak –Honoured with Padma Bhushan by President of India. | Research Scientist, Educationist & Administrator |
| 2       | Dr. V.M. Nimkar                                                      | Founder, Texanlab/ Nimkartek                     |
| 3       | Prof. V.A.Shenai                                                     | Renowned Teacher & Author of many Textile Books  |
| 4       | Prof. M.L. Gulrajani, former Head, IIT(D), Textile Dept.             | Education and Research                           |
| 5       | Prof. R.B.Chavan                                                     | IIT, Delhi                                       |
| 6       | Dr.G.V.G.Rao                                                         | President, Atul Ltd.                             |
| 7       | Mr. L.N.Gandhi                                                       | Founder, LN Chemicals                            |
| 8       | Mr. A.K.Prasad                                                       | Head, Clariant, Paper & Leather Chemicals        |
| 9       | Mr. Edward Menezes                                                   | Director, Rossari Biotech                        |
| 10      | Dr Naresh Saraf                                                      | Director, Sarex Overseas                         |
| 11      | Dr. Ashok Sabale                                                     | Kusmo Chemicals (Young Entrepreneur)             |
| 12      | Dr. Ramesh Kabra                                                     | Sorbe Biotech India Pvt. Ltd.                    |
| 13      | Mr Chaitanya Joshi                                                   | C Tech corporation, Mumbai                       |

43. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts.

**Special lectures-**

| Sr. No. | Name of speaker                         | Topic                                                                                                   | Date                                               |
|---------|-----------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| 1       | Mr. Deepak Alat                         | Practical Problems in Finishing of Textiles                                                             | 27 <sup>th</sup> august 2012                       |
| 2       | Mrs. Lipika Nair                        | Testing of Textiles and Its Importance                                                                  | 27 <sup>th</sup> September 2012                    |
| 3       | Dr. Amit Bhattacharya                   | Antimicrobial on Textiles                                                                               | 11 <sup>th</sup> October 2012                      |
| 4       | Dr. Somil Mehta                         | Auxiliaries in textile Processing                                                                       | 11 <sup>th</sup> October 2012                      |
| 5       | Dr. Kapil Joshi                         | New development in Nanoscale IR, Thermal and Mechanical Spectroscopy with an AFM                        | 22 <sup>nd</sup> November 2012                     |
| 6       | Dr. Kartick Samanta                     | Plasma Application in Textile                                                                           | 28 <sup>th</sup> December 2012                     |
| 7       | Dr. Prasad Potluri                      | Medical Devices to Aerospace Materials: Research Opportunities for Fibre Science and Textile Technology | 12 <sup>th</sup> July 2013                         |
| 8       | Dr. Siva Rama Kumar Pariti              | Ecological Considerations of Colorants for Textile Applications                                         | 2 <sup>nd</sup> September 2013                     |
| 9       | Dr. Imtiyaz Ansari                      | Surface modification using Dendritically functionalised polymers                                        | 4 <sup>th</sup> January 2014                       |
| 10      | Mr. Amogh Lokhande                      | Effective Literature Survey                                                                             | 15 <sup>th</sup> January 2014                      |
| 11      | Prof. Sandra Downes                     | Developing novel biomaterials using nanotechnology                                                      | 20 <sup>th</sup> January 2014                      |
| 12      | Mr. Prashant Shah & Mrs. Purnima Parkhi | Elemental & Molecular Spectroscopy in Textile Industry                                                  | 22 <sup>nd</sup> January 2014                      |
| 13      | Ms. Amruta Datar                        | Higher education opportunities in France                                                                | 24 <sup>th</sup> January 2014                      |
| 14      | WRA Staff                               | Workshop on “Awareness of Sport Textile”                                                                | 27 <sup>th</sup> and 28 <sup>th</sup> January 2014 |
| 15      | Prof. Rishi Jamdagni                    | Textile - A road map to 2025 and globalization                                                          | 30 <sup>th</sup> January 2014                      |



|    |                                             |                                                                                                                                |                                                                                         |
|----|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 16 | Mr. Vedprakash Shukla                       | Handling Industrial Problems – 3M's                                                                                            | 28 <sup>th</sup> Feb, 1 <sup>st</sup> &28 <sup>th</sup> March and 4 <sup>th</sup> April |
| 17 | Mr. Zak Reese                               | Biophysical Instruments                                                                                                        | 15 <sup>th</sup> April 2014                                                             |
| 18 | Dr. S. K. Bhullar                           | Smart Nano/Micro fibrous Structure-Biomedical applications                                                                     | 13 <sup>th</sup> January 2015                                                           |
| 19 | Dr. B. A. Gowri Shankar                     | Isolation and characterization of toxins acting on voltage-dependent sodium channels from several snake and cone snail venoms. | 12 <sup>th</sup> June 2015                                                              |
| 20 | Dr. A. V. Joshi                             | A short course in chromatographic techniques                                                                                   | 15 <sup>th</sup> June 2015 to 19 <sup>th</sup> June 2015                                |
| 21 | Mr. Man Mohan Kohli                         | Career and Education Opportunities abroad                                                                                      | 21 <sup>th</sup> October 2015                                                           |
| 22 | Dr. Anil Netravali, Jean and Douglas McLean | Green Materials & Processes: From Advanced Composites to Nano-filters & From Wound Healing to Hair Styling                     | 11 <sup>th</sup> January 2016                                                           |
| 23 | Dr. Juan Hinestroza                         | Teaching cotton new tricks by manipulation of Nanoscale phenomena                                                              | 18 <sup>th</sup> January 2016                                                           |
| 24 | Mr. Milind Amerkar,                         | Listening Skills                                                                                                               | 8 <sup>th</sup> September 2016                                                          |
| 25 | Mr. Lalit Khurana                           | Importance of Soft Skills                                                                                                      | 8 <sup>th</sup> September 2016                                                          |

### Workshops–

| Sr. No. | Title                                                                                                                                                                                                                                                                                                                         |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | Organized TexSummit in INDIA 2012 9th India International Textile Machinery Exhibition on 5th Dec. 2012 at Bombay convention and exhibition centre, Goregaon, Mumbai                                                                                                                                                          |
| 2       | TECHNICAL SEMINAR -1 on Dyeing of Cotton – “Problem & Remedies” held at KOMBOLCHA, ETHIOPIA on 2nd and 3rd March 2015                                                                                                                                                                                                         |
| 3       | Global Textile Congress in association with Thailand Convention & Exhibition Bureau (TCEB), on 13th, 14th & 15th February, 2015 at Bangkok, Thailand.                                                                                                                                                                         |
| 4       | Organized three day workshop from 7-9 January 2015 at Dept of Fibres and Textile Processing Tech., ICT on “Process Intensification in Dyeing” for the students of Sophiya College, Mumbai.                                                                                                                                    |
| 5       | Technical seminar III (Addis Ababa, Ethiopia) 25th February 2016 to 27th February 2016                                                                                                                                                                                                                                        |
| 6       | A one day national seminar on: ‘SPORTECH-An Ocean of Opportunities’ was conducted by the Department of Fibers and Textile Processing Technology, under TEQIP programme phase II in K.V. Auditorium, ICT on Tuesday, March 15th, 2016 from 8.30 a.m. to 5.30 p.m, in collaboration with Wool Research Association(WRA), Thane. |

|    |                                                                                                                                                                                                  |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7  | Technical seminar IV (Washington Hotel Addis Ababa, Ethiopia) 22nd June 2016 to 25th June 2016                                                                                                   |
| 8  | Technical seminar on Process Optimization in Textile Processing, 22-25 June, 2016                                                                                                                |
| 9  | Awareness seminar II (Pyramid Hotel, Dberezit, Ethiopia Topic- Dawn of Ethiopian Textile Industries on Global Horizon 15th August 2016 to 18th August 2016                                       |
| 10 | Organized four day workshop from 14-17 September 2016 At Dept of Fibres and Textile Processing Tech., ICT on “Value addition to Textile products” for the 22 handloom weavers from Assam, Mumbai |
| 11 | Organized TexSummit-2016 International Conference on “Frontiers in Fibres, Textile & Apparel Processing” Monday, December 05, 2016, Venue: Bombay Exhibition Centre, Goregaon, Mumbai.           |

**44.** List the teaching methods adopted by the faculty for different programmes.

The interactive teaching methodology implemented ensures direct information transfer from course teacher to students. Student projects and seminar presentations, various modes of continuous assessment such as MCQ tests, Quiz, group discussion, case studies, industrial visits etc helps students to develop interpersonal skills, subject knowledge, team work, problem solving approach.

**45.** How does the department ensure that programme objectives are constantly met and learning outcomes are monitored?

The impact of delivery of course and course content is assessed in two ways:

- (1) examination/evaluation conducted by course teacher
- (2) Students' feedback about teacher and course

Teachers' Evaluation: The weightage of different modes of assessments is done as under.

|            | In-Semester evaluation |                   | End-Semester-Exam | Components of continuous mode                                                                     |
|------------|------------------------|-------------------|-------------------|---------------------------------------------------------------------------------------------------|
|            | Continuous mode        | Mid Semester-Exam |                   |                                                                                                   |
| Theory     | 30%                    | 30%               | 40%               | Quizzes, class tests (open or closed book), group assignments, viva-voce assignments, discussions |
| Practicals | 50%                    | -                 | 50%               | Attendance, viva -voce, journal, assignments, project, experiments, tests                         |

This two way communication helps to improve students as well as teachers and modify the course content (if necessary) which help in attaining POs.

**46.** Highlight the participation of students and faculty in extension activities.

Delivered a lecture **Conferences/Seminars/Winter/Summer Schools Attended-**

**Prof. (Dr.) R. V. Adivarekar**

1. Delivered a lecture at Unilever R&D, Unilever Industries Private Limited, Bangalore on 29<sup>th</sup> July 2011 on the topic, “Natural Colourants”.
2. Paper presented on “Dyeing of Silk with natural dye from *Serratia marscecens subsp marscecens*”, at International Conference on International Congress on environmental Research [ICER-2011], held on 15<sup>th</sup> -17<sup>th</sup> December 2011 at Sardar Vallabhbhai Institute of National Technology, Surat, Gujarat. at Raymond Ltd., Vapi on 15<sup>th</sup> March 2012 on the topic, “Latest Developments covering chemistry of reactive Dyes and wool dyeing”.
3. Presented poster on use of lipase in detergents at New horizons in Biotechnology organized by BRSI, on 11<sup>th</sup> -14<sup>th</sup> November 2012, at Trivandrum
4. Poster presented on “Dyeing of Natural Fibres with a Red Pigment produced by *Streptomyces coelicolor*” at International Conference on Advances in Biological Sciences, 15<sup>th</sup> -17<sup>th</sup> March 2012 at Kairali Heritage, Kannur, Kerala.
5. Poster presented on “Utilization of *Citrus limetta*[sweetlime] peels as a substrate for pectinase production by marine *Bacillus subtilis* at International Conference on Advances in Biological Sciences, 15<sup>th</sup> -17<sup>th</sup> March 2012 at Kairali Heritage, Kannur, Kerala.
6. Paper presented on, “A frugal way of reusing wastewater in textile pretreatment process”, 7<sup>th</sup> International Congress of Environmental Research, 2014, at Bangalore, India.
7. Poster presented on,” Protease from *Bacillus Subtilis*-An efficient bio scouring tool”, at Third Global Sustainable Biotech Congrass 2014, 1-5 Dec 2014, at Jalgoan, India.
8. Paper presented on, “Preparation and characterization of Microcrystalline cellulose from Renewable source” at Fourth international conference on Natural polymers, Biopolymers, Biomaterials, their composites, nano composites, blends, IPNs, Ployelectrolytes, and gels: micro to nanoscales, 2015 at Kottayam, Kerala, India.
9. Presented paper on, “Multifunctional finishing of textile” at Global textile congress, 2015, at Bangkok, Thailand.
10. Presented paper on, “Dendrimer pre-treatment for salt-less reactive dyeing of cotton at acidic pH”, at Fourth International conference on Cotton, Textile and Apparel Value Chain in Africa (CTA-2015), 1-2 May 2015, at Ethiopia.
11. Organized Refresher course I on, “The Principles and Practical aspects of setting up pilot processing plant for demonstration, training, and R & D purpose in, university, skill, centres and institutions in Ethiopia” at ETIDI, Addis Ababa under Twining Partnership between ETIDI and ICT on 1<sup>st</sup> December 2014.
12. Organized Refresher course II on, “Textile Fibres” in Ethiopia at ETIDI, Addis Ababa under Twining Partnership between ETIDI and ICT on 29<sup>th</sup> December 2014.
13. Organized Seminar on, “Dyeing of Cotton: Problems and Remedies” at Kombalchain Ethiopia at ETIDI, Addis Ababa under Twining Partnership between ETIDI and ICT on 3<sup>rd</sup> and 4<sup>th</sup> March 2015.
14. Organized Refresher Course III on, “Chemistry of Dyes and Auxiliaries- *from Dyers perspective*” held at ETIDI, Addis Ababa under Twining Partnership between ETIDI and ICT from March 16, 2015 to March 20, 2015.
15. Organized Refresher Course IV on, “Chemical Aspects of Pre-treatment of Textiles” held at ETIDI, Addis Ababa under Twining Partnership between ETIDI and ICT from April 14, 2015 to April 17, 2015.
16. Guest Lecture under the TEQIP Phase-II by Dr. S.K.Bhullar on the topic, “Smart Nano/Micro fibrous Structure-Biomedical Applications”, 13<sup>th</sup> January 2015

17. Guest Lecture under the TEQIP Phase-II by Dr. B. A. Gowri Shankar) on the topic, "Isolation and characterization of toxins acting on voltage-dependent sodium channels from several snake and cone snail venoms." held on 12<sup>th</sup> June 2015.
18. Guest Lecture Series under the TEQIP Phase-II by Dr. A. V. Joshi (Industry Expert and Visiting Faculty to ICT) on the topic, "A short course in chromatographic techniques", held from 15<sup>th</sup> June 2015 to 19<sup>th</sup> June 2015.
19. Texquest 2015, Annual National Level Intercollegiate Technical Competition
20. Texpression 2015, Annual Cultural Event of the Department
21. Paper presented on, "Reuse of crude scouring and bleaching wastewater for desizing a grey cotton woven fabric", at International Conference on Advances in Functional, Smart and Innovative Textiles (AFSIT-2015), 10-12 dec 2015, at PSG Institute of Advanced Studies, PSG Coimbatore.
22. Paper presented on, "Optimization of low temperature bleaching of cotton using statistical modelling", at International Conference on Advances in Functional, Smart and Innovative Textiles (AFSIT-2015), 10-12 dec 2015, at PSG Institute of Advanced Studies, PSG Coimbatore
23. Paper presented on, "Colourants from the microbial sources for: A Study from the perspective of Universal Human Values", at 1st International Conference on Universal Human Values, 11-12 June, 2016, at Bahai Academy, Panchgani.
24. Paper presented on, "A study of the impact of polyester dyeing with natural dye using eco friendly technique", at 1st International Conference on Universal Human Values, 11-12 June, 2016, at Bahai Academy, Panchgani.
25. Paper presented on, "Application of Acid Dye on Cotton through Cationisation Process by PAMAM Dendrimer treatmentconference on Macromolecules: Synthesis, Morphology, Processing, Structure, Properties and Applications", at International conference on Macromolecules: Synthesis, Morphology, Processing, Structure, Properties and Applications" (ICM-2016), 13<sup>th</sup> to 15<sup>th</sup> May 2016, at Kerala.
26. Paper presented on, "Characterization of fibre extracted from Saccharum Munja Grass", at Rangostav-2016, 19-20 Jan-2016, at ICT, Mumbai.
27. Paper presented on, "Revamping: Traditional vs Conventional pretreatment processes", at Fibre Society Technical Conference and Fall meeting 2016 , Cornell University, USA, 10 - 12th October, 2016, at Cornell University, U.S.A.
28. Paper presented on, "Chemical modification of ancient natural dye for textile bulk dyeing", at International Conference on Contemporary Issues in Science, Engineering and Management ICCI-SEM-2K17, 18-19 feb 2017, at GIFT, Odisha.
29. Paper presented on, "Eco-friendly polyester dyeing with *croton oblongifolius*", at International Conference on Contemporary Issues in Science, Engineering and Management ICCI-SEM-2K17, 18-19 feb 2017, at GIFT, Odisha.
30. Paper presented on, "Preparation and characterization of Chitosan/PVA polymeric film for its potential application as wound dressing material", at International Conference on Contemporary Issues in Science, Engineering and Management ICCI-SEM-2K17, 18-19 feb 2017, at GIFT, Odisha.
31. Paper presented on, "Preparation and Characterization of Microcrystalline Cellulose (MCC)from Renewable SourceEnzyme-Assisted Isolation of Micro Fibrillated Cellulose (MFC)From Saccharum Munja Fibre And Its Characterization", at International Conference on Contemporary Issues in Science, Engineering and Management ICCI-SEM-2K17, 18-19 feb 2017, at GIFT, Odisha.

#### **Prof. (Dr.) M. D. Teli**

1. Presented Paper on "Application of Waste grains for useful applications in Textile M.D.Teli and Javed Sheikh" in 24<sup>th</sup> National Convention of Textile Engineers on "Textile and Apparel

industry: Contemporary issues to address in coming years” at Bangalore on 19-20 August 2011.

2. Presented Paper on “Modification of bamboo rayon to render it cationic dyeable and antibacterial M.D.Teli and Javed Sheikh” in International conference on “Textiles: A decade ahead” Organized by NISTI and IIT Delhi” at PHD House, New Delhi on 9-10 Sept 2011.
3. Presented Paper on “R & D in Chemical Processing of Cotton M.D.Teli” World Cotton Research Conference-5 organized by ISCI, ICAR and ICAC” at Mumbai on 7-11 Nov. 2011.
4. Presented Paper on “Extraction of chitosan from shrimp shells and application in simultaneous pigment dyeing and antibacterial finishing of denim M.D.Teli and Javed Sheikh” in ATNT 2011” KCT, Coimbatore on 15-17<sup>th</sup> dec 2011.
5. Chaired a session at 53<sup>rd</sup> Joint Technological Conference of BTRA, SITRA, NITRA, ATIRA. at BTRA, Mumbai 17-18 Feb 2012
6. Delivered Key note address at “Italian Textile Machinery Workshop” organized in Mumbai Mumbai 2012.
7. Delivered lecture as Chief Guest SDC Seminar held in Thane March 2012.
8. Presented lecture on,” Some of our Experience in R&D of King Cotton”, at International Conference on Natural Fibres (Theme: Jute & Allied Fibres), 1-3 August 2014, at Kolkata.
9. Poster presented on,” Recycling of Terry Towel (Cellulosic) waste into Carboxy Methyl Cellulose (CMC) for textile printing”, at International Conference on Natural Fibres (Theme: Jute & Allied Fibres), 1-3 August 2014, at Kolkata.
10. Oral presentation on,” Extraction and characterization of Aselmoschusmanihot lignocellulosic fiber”, at International Conference on Natural Fibres (Theme: Jute & Allied Fibres), 1-3 August 2014, at Kolkata.
11. Poster presentation on,” Low temperature dyeing of silk using atmospheric plasma treatment”, at International Conference on Natural Fibres (Theme: Jute & Allied Fibres), 1-3 August 2014, at Kolkata.
12. Poster presentation on,” Acid Dyeing of silk using atmospheric plasma treatment”, at International Conference on Natural Fibres (Theme: Jute & Allied Fibres), 1-3 August 2014, at Kolkata.
13. Invited lecture on,” “Innovative product developments from natural fibres”, at Workshop on Design and Technology Intervention in Natural Fibre Product Innovation, 22<sup>nd</sup> – 23<sup>rd</sup> July 2014, at National Institute of Design, PG campus Gandhinagar.
14. Paper presentation on,” Sustainability based upcycling and value addition of textile apparels,Multidisciplinary Innovation for sustainability and growth (MISG 2014), 27-28 August 2014, at Kuala Lumpur.
15. Paper presented on,” In-situ Synthesis and Application of Cerium Oxide Nanoparticles on Cotton Fabric for UV protection and antibacterial properties”, at International Symposium on Fiber Science and Technology (ISF2014), 29 Sept – 1 Oct 2014, at Tokyo Fashion Town, Tokyo.
16. Paper presented on, “Polypropylene/ Poly-TrimethyleneTerapthalatepolyblend fibres – Structure, Processing and Dyeability”, at ICR Symposium on Polymer Crystals 2014 (ICRSPC 2014), 2 OCT 2014, at Mielparque, Kyoto.
17. Paper presented on,” Polyurethane Based Nanocomposite Coatings For Enhanced Gas Barrier Property”, at Kyoto International Symposium on Neo Fiber Technology 2014, at Kyoto Institute of Technology, Kyoto.
18. Paper presented on, ”Effect of Compatibilizer on Structure of PP/PTT Polyblend fibers”, at Kyoto International Symposium on Neo Fiber Technology 2014, 3 OCT 2014, at Kyoto Institute of Technology, Kyoto.
19. Paper presented on, “Grafting of butyl acrylates on to banana fibres for improved oil



- absorption”, at The 89<sup>th</sup> Textile Institute World Conference – Textile Innovations from Fibre to Fashion, 2-6 Nov 2014, at Wuhan, China.
20. Paper presented on,”Building sustainable value chain in Textiles Processing”, at 12<sup>th</sup> International & 70<sup>th</sup> All India Textile Conference Cotton, Textile & Apparel Value & Supply Chain: Global Opportunities & Challenges! 17<sup>th</sup> -18<sup>th</sup> January 2015, at Nagpur.
  21. Paper presented on,” Application of Atmospheric Plasma Technology”, at 12<sup>th</sup> International & 70<sup>th</sup> All India Textile Conference Cotton, Textile & Apparel Value & Supply Chain: Global Opportunities & Challenges! 17<sup>th</sup> -18<sup>th</sup> January 2015, at Nagpur.
  22. Paper presented on,” Organic Cotton: For profit, planet & people”, at 12<sup>th</sup> International & 70<sup>th</sup> All India Textile Conference Cotton, Textile & Apparel Value & Supply Chain: Global Opportunities & Challenges! 17<sup>th</sup> -18<sup>th</sup> January 2015, at Nagpur.
  23. Paper presented on,” Sustainability in textile and role of innovation”, at Global Textile Congress-2015, 13-15 Feb 2015, at Bangkok.
  24. Paper presented on,” Insitu synthesis of cerium nanoparticles on cotton fabric by hydrothermal method”, at Global Textile Congress-2015, 13-15 Feb 2015, at Bangkok.
  25. Paper presented on, “Development of multifunctional cotton”, at Global Textile Congress-2015, 13-15 Feb 2015, at Bangkok.
  26. Paper presented on, “Application of low cost sustainable fibrous materials for combating water pollution”, at Global Textile Congress-2015, 13-15 Feb 2015, at Bangkok.
  27. Paper presented on, “Development of compound shades on natural fibres using marigold and sappanwood”, at Global Textile Congress-2015, 13-15 Feb 2015, at Bangkok.
  28. Paper presented on, “Nanoclays for enhancing properties of polypropylene of polyblend fibres”, at Global Textile Congress-2015, 13-15 Feb 2015, at Bangkok.
  29. Paper presented on, “Low temperature dyeing of silk using atmospheric plasma”, at Global Textile Congress-2015, 13-15 Feb 2015, at Bangkok.
  30. Paper presented on, “Dyeing of Banana fibre with natural dyes”, at Global Textile Congress-2015, 13-15 Feb 2015, at Bangkok.
  31. Paper presented on, “Upcycling of textiles”, at Global Textile Congress-2015, 13-15 Feb 2015, at Bangkok.
  32. Paper presented on, “Production of absorbent material by modifying unconventional polysaccharides”, at Global Textile Congress-2015, 13-15 Feb 2015, at Bangkok.
  33. Paper presented on, “Printing of lables using natural dyes”, at Global Textile Congress-2015, 13-15 Feb 2015, at Bangkok.
  34. Paper presented on,” Application of gelatin based microcapsules containing mosquito repellents oils on cellulose biopolymer”, at Fourth International conference on natural polymers and biomaterials, 10-12 April 2015, at Kottayam.
  35. Paper presented on,”Extraction and characterization of novel lignocellulosic fibre”, at Fourth International conference on natural polymers and biomaterials, 10-12 April 2015, at Kottayam.
  36. Paper presented on,” Optimization of Plasma modification for low temperature dyeing of silk fabric”, at Fourth International conference on natural polymers and biomaterials, 10-12 April 2015, at Kottayam.
  37. Paper presented on, “Global cotton textile and apparel business and Africa’s position”, at Fourth International conference on Cotton, Textile and Apparel Value Chain in Africa (CTA-2015), 1-2 May 2015, at Bahir Dar University, Ethiopia.
  38. Paper presented on, “Encapsulation of Aroma and its application on cotton to impart mosquito repellency”, at Fourth International conference on Cotton, Textile and Apparel Value Chain in Africa (CTA-2015), 1-2 May 2015, at Bahir Dar University, Ethiopia.
  39. Paper presented on, “Sustainability in Textile wet processing and some of our research Experiences”, at Fourth International conference on Cotton, Textile and Apparel Value Chain in Africa (CTA-2015), 1-2 May 2015, at Bahir Dar University, Ethiopia



40. Paper presented on, "Multifunctionalised silk using streculia foetida fruit shell waste", at 2<sup>nd</sup> international conference on Advances in Functional Smart & Innovative Textiles AFSIT-2015, 10-12 dec 2015, at PSG Institute of Advanced Studies, PSG Coimbatore.
41. Paper presented on, "Functional modification of coir fibre for enhanced oil.", at 13<sup>th</sup> Asian Textile Conference, 3-6 Nov 2015, at Geelong Australia.
42. Paper presented on, "Development of hygienic cotton using cotton peels", at International conference on Redefining Textiles: Cutting Edge technology of the future, 8-10 april 2016, at NIT Jalandhar
43. Paper presented on, "The Impact of Upcycled and Low Cost Textile Apparels to Meet the Needs of Poor Aspirants", at 1st International Conference on Universal Human Values, 11-12 June, 2016, at Bahai Academy, Panchgani.
44. Paper presented on, "Utilization of Unconventional Fibres to Combat Oil Spill and Help Rural Economy", at 1st International Conference on Universal Human Values, 11-12 June, 2016, at Bahai Academy, Panchgani.
45. Paper presented on, "Value Based Biopolymeric Absorbents for Low Cost Sanitary Napkins", at 1st International Conference on Universal Human Values, 11-12 June, 2016, at Bahai Academy, Panchgani.
46. Paper presented on, "Application of Enzymes to Textile Wet Processing for Sustainability", at 1st International Conference on Universal Human Values, 11-12 June, 2016, at Bahai Academy, Panchgani.
47. Paper presented on, "Pomegranate Rind - A Sustainable Avenue for Employment Generation in Arid or Drought Prone Regions of India", at 1st International Conference on Universal Human Values, 11-12 June, 2016, at Bahai Academy, Panchgani.
48. Paper presented on, "Sustainability", at World textile Conference-2, 11-12 June, 2016, at Mumbai.

**Prof. (Dr.) S. R. Shukla**

1. Presented Paper at IIT Roorkee 2011 titled with "Adsorption of heavy metal ions with peanut husk carbon".
2. Paper presented at Thadomal Shahni College of engineering in Chemergence 2011 on "Adsorption of heavy metal ions with peanut husk carbon".
3. Presented Poster at "AFFINITY" MIT, Pune 2011 titled with "Green chemistry: a global solution".
4. Attended 2nd International Conference on recycling and reuse of materials and products, Kottayam, Kerala in 2011.
5. Presented Paper at IIT Roorkee 2012 titled with "Energy saving in Cooling tower".
6. Presented Paper at "AZEOTROPY", IIT Mumbai, Mumbai 2012 on topic "Dye decolorization by laccase produced from coriolus versicolor in combination with UV/H2O2 technique."
7. Presented Paper at IIT Mumbai 2012 titled with "Dye decolorisation by using laccase enzyme produced from fungi".
8. Presented Paper at a National Conference on "Energy management and Alternate sources of Energy 2012" at ThadomalShahni college of engineering, Mumbai.
9. Presented paper at IIT ROORKEE on Dye decolorisation by laccase produced from corgholus versicolour in combination with UV/H2O2 technique.
10. Presented Paper at "AZEOTROPY", IIT Mumbai, Mumbai 2012 on topic "Dye decolorization by laccase produced from coriolus versicolor in combination with UV/H2O2 technique."

11. Presented paper at “COGNIZANCE” IIT Roorkee, Roorkee 2012 on research topic “Colour removal from textile effluent using biological method.”
12. Presented Paper at “AZEOTROPY”, IIT Mumbai, Mumbai 2012 on topic “Dye decolorization by laccase produced from coriolus versicolor in combination with UV/H<sub>2</sub>O<sub>2</sub> technique.”
13. Presented paper at “COGNIZANCE” IIT Roorkee, Roorkee 2012 on research topic “Colour removal from textile effluent using biological method.”
14. Attended the 12th Orientation Programme in Catalysis Research From 19th Nov. to 6th Dec. 2011 at National Centre for Catalysis Research Indian Institute of Technology Madras, Chennai.
15. Attended PLAST INDIA 2012 at Pragati Maidan, New Delhi.
16. Attended 2nd International Conference on recycling and reuse of materials and products, Kottayam, Kerala in 2011.
17. Presented Poster at DAE-BRNS Biennial Symposium on Emerging Trends in Separation Science and Technology (SESTEC-2012) , SVKM Mithibai College, Mumbai on “Biosorption of Uranium (VI) solution from aqueous medium by Citrus limetta peels.”
18. Presented Poster at DAE-BRNS Biennial Symposium on Emerging Trends in Separation Science and Technology (SESTEC-2012) , SVKM Mithibai College, Mumbai on “Efficient removal of heavy metals by chemically modified coir fibres”.
19. Paper presented on,” Lean manufacturing practices in garment manufacturing units: An appraisal”, at Global Textile Congress-2015, 13-15 Feb 2015, at Bangkok.
20. Paper presented on,” Comparative evaluation of the various methods of degumming of eri silk”, at Global Textile Congress-2015, 13-15 Feb 2015, at Bangkok.
21. Paper presented on,” Weight reduction of polyester fabric using ionic liquid as additive to NaOH”, at Global Textile Congress-2015, 13-15 Feb 2015, at Bangkok.
22. Paper presented on,” Energy conservation in textile wet processing using ultrasound technique”, at Global Textile Congress-2015, 13-15 Feb 2015, at Bangkok.
23. Paper presented on,” Energy conservation in textile wet processing using ultrasound technique”, at Cotton, Textile and Apparel Value Chain in Africa (CTA 2015), May 2015, at Bahir Dar, Ethiopia.

#### **Dr. R. D. Kale**

1. Paper presented on “Synthesis of Titanium dioxide Nanoparticles and application on Nylon fabric by layer by layer Technique for Antimicrobial Property” at VASTRA’11, held on 18<sup>th</sup> February 2011, at V.J.T.I., Matunga, Mumbai.
2. Paper presented on “Synthesis and application of ZnO Nanoparticles on Nylon fabric by LbL Technique for Antimicrobial Property” at Golden Jubilee Young Researcher’s Symposium on Emerging Trends in Textile/ Fibre Research & applications , held on 11<sup>th</sup> & 12<sup>th</sup> March 2011, at IIT, Delhi.
3. Paper presented on, “Mosquito Repellent Textiles”, at DST FIST review meeting, 27<sup>th</sup> September 2014, at ICT, Mumbai.
4. Paper presented on, “Decolourization of textile effluents using nanoparticles”, at DST FIST review meeting, 27<sup>th</sup> September 2014, at ICT, Mumbai.
5. Paper presented on, “Past, Present and Future of Technology- status in Finishing”, at Annual conference of ETIDI, Ethiopia, 10 to 11 October 2014, at ETIDI, Addis Ababa Ethiopia.
6. Paper presented on, “Decolourization of C. I. Reactive Black 5 by PVP Stabilized Iron nanoparticles”, at International conference Advances in Chemical Engineering & Technology ICACE TKMCE '14, 6-18 October 2014, at Department of Chemical Engineering,

ThangalKunjuMusaliar College of Engineering, Kollam, Kerala.

7. Paper presented on, “Decolourization of C. I. Reactive Blue 21 by PVP stabilized Nickel nanoparticles”, at International Conference on "Effects of Emissions & Effluent on Environment"-2014, 30th June and 1st July 2014, at AU College of Engineering (A), Visakhapatnam, Andhra Pradesh.
8. Paper presented on, “Dyeing of Polyester-Wool Blend using Nanoemulsion Technique”; at Indo-Czech International Conference (ICIC2014) on Advancements in Specialty Textiles and their Applications in Material Engineering and Medical Sciences, 29th & 30th April 2014, at AU College of Engineering (A), Visakhapatnam, Andhra Pradesh.
9. Paper presented on,” Dyeing of Polyester-Wool Blend using Nanoemulsion Technique”, at Indo-Czech International Conference (ICIC2014) on Advancements in Specialty Textiles and their Applications in Material Engineering and Medical Sciences, 29th & 30th April 2014, at Kumaraguru College of Technology, Coimbatore.
10. Paper presented on,” Decolourization of Effluent using nano particles”, AATCC’s 2014 International Conference, April 1-3 2014, at Crowne Plaza Resort in Asheville, North Carolina USA.
11. Paper presented on, “Textile Fibres”, at Refresher course for ETIDI staff in Ethiopia, 29 Dec 2014 to 2 Jan 2015, at ETIDI, Adis Ababa in Ethiopia.
12. Presentation on, “Advances in Textile Characterization”, at CIRCOT, 16 to 20 March 2015, at Mumbai, India.
13. Presentation on ,“Technotex-2015”, at 4<sup>th</sup> International Exhibition and Conference on Technical Textiles “Technotex-2015” formal, 9 to 11 April 2015, at Bombay Exhibition Centre, Goregaon, Mumbai, India.
14. Paper presentation on,” Opportunities and Challenges in an Integrated World”, at Global Textile conference on “Global Textiles:”Opportunities and Challenges in an Integrated World”, 13 to 15 Feb 2015, at Bangkok, Thailand.
15. Paper presentation on,” Sustainable Innovations in Colouration organized by Society of Dyers and Colourist”, at National Conference 2014 on the theme of "Sustainable Innovations in Colouration" organized by Society of Dyers and Colourist, 6th June 2014, at Textile Committed, Worli, Mumbai.
16. Presentation on, “Design & Degree Show (DDS 2014)", at Design & Degree Show (DDS 2014), 27- 29 June 2014, Industrial Design Centre, IIT, Mumbai.

#### **Dr. U. Sayed**

1. Presented poster on Antisoiling finish of polyester fibre at Fibre society, AATCC & national textile conference joint synporium, 11-14 oct 2011 held at Francis Marino, hotel charleston S.C. USA
2. Presented poster on Biomimicking of enzymes for textile processing at Fibre society, AATCC & national textile conference joint synporium, 11-14 oct 2011 held at Francis Marino, hotel charleston S.C. USA
3. Paper presented on, “Application of variously produced nanoparticles of, Cu, Ag and Chitosan on Textile substrates to produce functional Textiles”, at UTIB R & D brokerage Event, Turkey, 3-4 April 2014, at Turkey.
4. Paper presented on, “Water soluble chitosan and its derivatives, nano chitosan on textile substrates to obtain medical, smart and functional textiles”, at UTIB R & D brokerage Event, Turkey, 3-4 April 2014, at Turkey.
5. Paper presented on, “Application and production of nano-ZnO on synthetics to produce functional textiles”, at UTIB R & D brokerage Event, Turkey, 3-4 April 2014, at Turkey.
6. Paper presented on, “Application of dyes sensitized solar cells (DSSC) on textiles”, at UTIB R & D brokerage Event, Turkey, 3-4 April 2014, at Turkey.

7. Paper presented on, “Design and synthesis of novel antimicrobial textiles based on 2-Azaanthraquinone moiety”, at UTIB R & D brokerage Event, Turkey, 3-4 April 2014, at Turkey.
8. Paper presented on, “Phosphorus containing grapheme derivatives as a flame retardant for textile fibres”, at UTIB R & D brokerage Event, Turkey, 3-4 April 2014, at Turkey.
9. Paper presented on, “Best use of waste tetracycline hydrochloride for textile Colouration”, at UTIB R & D brokerage Event, Turkey, 3-4 April 2014, at Turkey.

47. Give details of “beyond syllabus scholarly activities” of the department.

#### Guest Lectures-

| Sr. No. | Name of speaker            | Topic                                                                                                   | Date                            |
|---------|----------------------------|---------------------------------------------------------------------------------------------------------|---------------------------------|
| 1       | Mr. Deepak Alat            | Practical Problems in Finishing of Textiles                                                             | 27 <sup>th</sup> august 2012    |
| 2       | Mrs. Lipika Nair           | Testing of Textiles and Its Importance                                                                  | 27 <sup>th</sup> September 2012 |
| 3       | Dr. Amit Bhattacharya      | Antimicrobial on Textiles                                                                               | 11 <sup>th</sup> October 2012   |
| 4       | Dr. Somil Mehta            | Auxiliaries in textile Processing                                                                       | 11 <sup>th</sup> October 2012   |
| 5       | Dr. Kapil Joshi            | New development in Nanoscale IR, Thermal and Mechanical Spectroscopy with an AFM                        | 22 <sup>nd</sup> November 2012  |
| 6       | Dr. Kartick Samanta        | Plasma Application in Textile                                                                           | 28 <sup>th</sup> December 2012  |
| 7       | Dr. Prasad Potluri         | Medical Devices to Aerospace Materials: Research Opportunities for Fibre Science and Textile Technology | 12 <sup>th</sup> July 2013      |
| 8       | Dr. Siva Rama Kumar Pariti | Ecological Considerations of Colorants for Textile Applications                                         | 2 <sup>nd</sup> September 2013  |
| 9       | Dr. Imtiyaz Ansari         | Surface modification using Dendritically functionalised polymers                                        | 4 <sup>th</sup> January 2014    |
| 10      | Mr. Amogh Lokhande         | Effective Literature Survey                                                                             | 15 <sup>th</sup> January 2014   |

|    |                                             |                                                                                                                                |                                                                                          |
|----|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| 11 | Prof. Sandra Downes                         | Developing novel biomaterials using nanotechnology                                                                             | 20 <sup>th</sup> January 2014                                                            |
| 12 | Mr. Prashant Shah & Mrs. Purnima Parkhi     | Elemental & Molecular Spectroscopy in Textile Industry                                                                         | 22 <sup>nd</sup> January 2014                                                            |
| 13 | Ms. Amruta Datar                            | Higher education opportunities in France                                                                                       | 24 <sup>th</sup> January 2014                                                            |
| 14 | WRA Staff                                   | Workshop on “Awareness of Sport Textile”                                                                                       | 27 <sup>th</sup> and 28 <sup>th</sup> January 2014                                       |
| 15 | Prof. Rishi Jamdagni                        | Textile - A road map to 2025 and globalisation                                                                                 | 30 <sup>th</sup> January 2014                                                            |
| 16 | Mr. Vedprakash Shukla                       | Handling Industrial Problems – 3M’s                                                                                            | 28 <sup>th</sup> Feb, 1 <sup>st</sup> & 28 <sup>th</sup> March and 4 <sup>th</sup> April |
| 17 | Mr. Zak Reese                               | Biophysical Instruments                                                                                                        | 15 <sup>th</sup> April 2014                                                              |
| 18 | Dr. S. K. Bhullar                           | Smart Nano/Micro fibrous Structure- Biomedical applications                                                                    | 13 <sup>th</sup> January 2015                                                            |
| 19 | Dr. B. A. Gowri Shankar                     | Isolation and characterization of toxins acting on voltage-dependent sodium channels from several snake and cone snail venoms. | 12 <sup>th</sup> June 2015                                                               |
| 20 | Dr. A. V. Joshi                             | A short course in chromatographic techniques                                                                                   | 15 <sup>th</sup> June 2015 to 19 <sup>th</sup> June 2015                                 |
| 21 | Mr. Man Mohan Kohli                         | Career and Education Opportunities abroad                                                                                      | 21 <sup>th</sup> October 2015                                                            |
| 22 | Dr. Anil Netravali, Jean and Douglas McLean | Green Materials & Processes: From Advanced Composites to Nano-filters & From Wound Healing to Hair Styling                     | 11 <sup>th</sup> January 2016                                                            |
| 23 | Dr. Juan Hinestroza                         | Teaching cotton new tricks by manipulation of Nanoscale phenomena                                                              | 18 <sup>th</sup> January 2016                                                            |
| 24 | Mr. Milind Amerkar,                         | Listening Skills                                                                                                               | 8 <sup>th</sup> September 2016                                                           |
| 25 | Mr. Lalit Khurana                           | Importance of Soft Skills                                                                                                      | 8 <sup>th</sup> September 2016                                                           |

### Workshops-

| Sr. No. | Title |
|---------|-------|
|---------|-------|

|     |                                                                                                                                                                                                                                                                                                                               |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.  | Organized TexSummit in INDIA 2012 9th India International Textile Machinery Exhibition on 5th Dec. 2012 at Bombay convention and exhibition centre, Goregaon, Mumbai                                                                                                                                                          |
| 2.  | TECHNICAL SEMINAR -1 on Dyeing of Cotton – “Problem & Remedies” held at KOMBOLCHA, ETHIOPIA on 2nd and 3rd March 2015                                                                                                                                                                                                         |
| 3.  | Global Textile Congress in association with Thailand Convention & Exhibition Bureau (TCEB), on 13th, 14th & 15th February, 2015 at Bangkok, Thailand.                                                                                                                                                                         |
| 4.  | Organized three day workshop from 7-9 January 2015 at Dept of Fibres and Textile Processing Tech., ICT on “Process Intensification in Dyeing” for the students of Sophiya College, Mumbai.                                                                                                                                    |
| 5.  | Technical seminar III (Addis Ababa, Ethiopia) 25th February 2016 to 27th February 2016                                                                                                                                                                                                                                        |
| 6.  | A one day national seminar on: ‘SPORTECH-An Ocean of Opportunities’ was conducted by the Department of Fibers and Textile Processing Technology, under TEQIP programme phase II in K.V. Auditorium, ICT on Tuesday, March 15th, 2016 from 8.30 a.m. to 5.30 p.m, in collaboration with Wool Research Association(WRA), Thane. |
| 7.  | Technical seminar IV (Washing ton Hotel Addis Ababa, Ethiopia) 22nd June 2016 to 25th June 2016                                                                                                                                                                                                                               |
| 8.  | Technical seminar on Process Optimization in Textile Processing, 22-25 June, 2016                                                                                                                                                                                                                                             |
| 9.  | Awareness seminar II (Pyramid Hotel, Dberezit, Ethiopia Topic- Dawn of Ethiopian Textile Industries on Global Horizon 15th August 2016 to 18th August 2016                                                                                                                                                                    |
| 10. | Organized four day workshop from 14-17 September 2016 At Dept of Fibres and Textile Processing Tech., ICT on “Value addition to Textile products” for the 22 handloom weavers from Assam, Mumbai                                                                                                                              |
| 11. | Organized TexSummit-2016 International Conference on “Frontiers in Fibres, Textile & Apparel Processing” Monday, December 05, 2016, Venue: Bombay Exhibition Centre, Goregaon,Mumbai.                                                                                                                                         |

- Industrial Visits

| Company name                         | Sector             | Incorporation status | Discipline | Date From  | Date to    | Number of students |
|--------------------------------------|--------------------|----------------------|------------|------------|------------|--------------------|
| CIRCOT                               | Textile Research   | Govt. Body           | Textile    | 04-08-2012 | 04-08-2012 | 30                 |
| Venus Industries                     | Textile Processing | Private              | Textile    | 13-02-2014 | 13-02-2014 | 30                 |
| Oswal F.M. Hammerle Textiles Limited | Textile Processing | Private              | Textile    | 11-02-2014 | 11-02-2014 | 30                 |
| Owens Corning Taloja                 | Technical Textile  | Private              | Textile    | 04-03-2014 | 04-03-2014 | 50                 |
| Nahar Industries, HP                 | Textile Processing | Private              | Textile    | 09-04-2014 | 10-04-2014 | 35                 |
| Intertek India Pvt. Ltd, Mumbai      | Textile Laboatroty | Private              | Textile    | 26-02-2014 | 26-02-2014 | 35                 |



|                                                                                                                                   |                                                                 |         |         |            |            |    |
|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|---------|---------|------------|------------|----|
| Century RayonsLtd.,Mumbai                                                                                                         | Textile Processing                                              | Private | Textile | 1/31/2015  | 1/31/2015  | 25 |
| DKTE Centre of Excellence in Nonwovens, Plot no. 1, 2, 3, Laxmi Ichalkaranji, Industrial Estate, Ichalkaranji, Maharashtra 416115 | Nonwoven manufacturing – Centre of Excellence unit              | Private | Textile | 14/07/2016 | 15/07/2016 | 25 |
| Arvind Mills, Ahmedabad BSL Suitings, Chittorgarh, Bhilwara, Rajasthan                                                            | Yarn spinning, Weaving, Fabric process house, Denim dyeing unit | Private | Textile | 30/09/2016 | 05/10/2016 | 30 |
| Vapi, Welspun and Raymonds                                                                                                        | Textile Processing                                              | Private | Textile | 24/09/2017 | 26/09/2017 | 45 |

- Summer Projects
- After Signing of MOU with Ethiopian Govt. on 24<sup>th</sup> July 2014 following students have been enrolled for various programmes at ICT;

| Sr. No. | Name of Student                 | Course Pursuing            |
|---------|---------------------------------|----------------------------|
| 1.      | Solomon Alebachew Tebeje        | M. Tech in FTPT            |
| 2.      | Tesfaye Tolessa Adere           | M. Tech in FTPT            |
| 3.      | Markos Wodato Wodaje            | M. Tech in FTPT            |
| 4.      | Oliyad Ebba Gurmu               | M. Tech in FTPT            |
| 5.      | Alemayehu Leta Senbeta          | M. Tech in FTPT            |
| 6.      | Mr. Misgana Taye Hassen Tsegaye | M. Tech in FTPT            |
| 7.      | Mr. Yesuf Seyd Ahmed            | M. Tech in FTPT            |
| 8.      | Mr. Tambizot Getachew Alemayehu | M. Tech in FTPT            |
| 9.      | Mr. Temesgen Zerabruk           | M. Tech in FTPT            |
| 10.     | Mr. Agmas Azemeraw Bimirew      | M. Tech in FTPT            |
| 11.     | Ms. Biruktawit Worku Menigisitu | M. Tech in FTPT            |
| 12.     | Theodros Zekarias               | M. Sc in Textile Chemistry |
| 13.     | Mifta Jalaludin                 | Ph. D. Tech                |

- **Visiting Lectures at Ethiopia**

| Sr. No. | Title                                                                                                                                                                                             | Place    | Month and Year                       |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------------------------------------|
| .1      | Annual Awareness in Ethiopia                                                                                                                                                                      | Ethiopia | 10-11 <sup>th</sup><br>October 2014  |
| 2       | Refresher course I on, “The Principles and Practical aspects of setting up pilot processing plant for demonstration, training, and R & D purpose in, university, skill, centers and institutions” | Ethiopia | 1 <sup>st</sup> December<br>2014     |
| 3       | Refresher course II on, “Textile Fibres”                                                                                                                                                          | Ethiopia | 29 <sup>th</sup><br>December<br>2014 |
| 4       | Seminar on, “Dyeing of Cotton “Problems and Remedies”                                                                                                                                             | Ethiopia | 3-4 March<br>2015                    |

|   |                                                                                                 |          |                   |
|---|-------------------------------------------------------------------------------------------------|----------|-------------------|
| 5 | Refresher Course III on, “Chemistry of Dyes and Auxiliaries- from Dyers perspective”            | Ethiopia | 16-20 March 2015  |
| 6 | Refresher Course IV on, “Chemical Aspects of Pre-treatment of Textiles”                         | Ethiopia | 14-17 April 2015. |
| 7 | Dendrimer pre-treatment for salt-less reactive dyeing of cotton at acidic pH<br>R.V. Adivarekar | Ethiopia | 1-2 May 2015      |

**48.** State whether the programme/ department is accredited/ graded by other agencies? If yes, give details-**Yes**

- **Letter of AICTE approval for the relevant Postgraduate department**

**संस्थेच्या नावाच्या अक्षरांमध्ये बदल झाल्याने**  
**संस्थेच्या नावाच्या अक्षरांमध्ये बदल झाल्याने**  
**संस्थेच्या नावाच्या अक्षरांमध्ये बदल झाल्याने**

संस्थेच्या नावाच्या अक्षरांमध्ये बदल झाल्याने  
संस्थेच्या नावाच्या अक्षरांमध्ये बदल झाल्याने

Dr. (PAn) Chakrabarti, New Delhi  
Director, Quality Assurance

Phone No. 011-26072607  
Date: 11/07/2017

To

The President, PCCO,  
Institute of Chemical Technology (PCCO),  
University of Mumbai,  
Kasturba Medical College, Mumbai  
Mumbai-400 022

Subject: Accredited Status of Programmes, awarded by you to the Institute.

Dear Sir,

With reference to your letter dated 14/06/2017 regarding the following programmes and the Expert Committee report, I am enclosing the report of the visit team, which is being submitted to the various Sectoral Councils for their consideration. The visit team has recommended that the programmes held in 15/07/2017 should be the recommended status of the Board. I am pleased to communicate the Accredited Status of the following programmes to the Institute from now on.

| Sl. No. | Name of the Programmes              | Accredited Status |          |
|---------|-------------------------------------|-------------------|----------|
|         |                                     | Accredited Status | Duration |
| 1.      | Chemical Engineering                | Accredited        | 3 years  |
| 2.      | Process Technology                  | Accredited        | 3 years  |
| 3.      | Polymer Technology                  | Accredited        | 3 years  |
| 4.      | Food Engineering Technology         | Accredited        | 3 years  |
| 5.      | Org. Chemicals & Surface Technology | Accredited        | 3 years  |
| 6.      | Polymer Engg. & Tech                | Accredited        | 3 years  |
| 7.      | Surface Coating Technology          | Accredited        | 3 years  |
| 8.      | Pharm. Chemistry & Tech             | Accredited        | 3 years  |
| 9.      | M. Tech. Process Processing         | Accredited        | 3 years  |
| 10.     | B. Pharmacy                         | Accredited        | 3 years  |
| 11.     | M. Tech. Process Technology         | Accredited        | 3 years  |
| 12.     | M. Tech. Process Technology         | Accredited        | 3 years  |
| 13.     | M. Tech. Process Technology         | Accredited        | 3 years  |
| 14.     | M. Tech. Process Technology         | Accredited        | 3 years  |
| 15.     | M. Tech. Process Technology         | Accredited        | 3 years  |
| 16.     | M. Tech. Process Technology         | Accredited        | 3 years  |
| 17.     | M. Tech. Process Technology         | Accredited        | 3 years  |
| 18.     | M. Tech. Process Technology         | Accredited        | 3 years  |
| 19.     | M. Tech. Process Technology         | Accredited        | 3 years  |
| 20.     | M. Tech. Process Technology         | Accredited        | 3 years  |
| 21.     | M. Tech. Process Technology         | Accredited        | 3 years  |

Note: Number of programmes Accredited with the Institute - Twenty One;

Yours faithfully,

The Accredited status awarded to the above programmes by the Institution does not imply recognition to the College / Institution as a whole. The name of the programme, curriculum, and its period of validity as well as the faculty team, award of effectivity, should be subject to change, and changes in award of effectivity status of the above programmes is subject to review by the NBA. The award will be changed if major criteria are not fulfilled or weaknesses are not rectified. To comply with the standards, the name of personnel involved as per the profile on the AICTE website will have to be accredited programme of your institution. If the accreditation should also appear in the website and information website of your institution indicating the date of publication of the name.

The institution must ensure that the above details of your college are correct in the memorandum. If the programme would result in the accreditation of time, the award, any changes that would affect the status, name of major changes in accreditation or changes in the accreditation conditions, etc., the same shall be communicated to the designated, with an approval to explanatory note. A complaint will be reported to the chairman of the expert committee who visited your institution and the distributed of the accreditation awarded for each programme against the accreditation parameters are used for further necessary action at your end to overcome the shortcomings observed in each programme. If you are not satisfied with the decision of the board, you may forward your appeal application to the board within thirty days of receipt of the accreditation.

Let me also take this opportunity to congratulate all those who have been promoted to the quality enhancement of programmes that secured accreditation by NBA.

With best wishes

Yours Truly,

(Tabassum Naqvi)

C.C.:

1. **The Vice-Chancellor,  
University of Mumbai  
Mumbai (MS)**
2. **The Director,  
Directorate of Technical Education,  
Govt. of Maharashtra,  
3, Mahapalika Marg,  
Mumbai - 400 001 (MS)**
3. **The Regional Officer,  
All India Council for Technical Education  
Western Regional Office,  
2<sup>nd</sup> Floor, Industrial Assurance Building,  
V.N. Road, Opp. Churchgate Rly Station,  
Churchgate, Mumbai - 400 020 (MS)**
4. **Accreditation File**
5. **Guard File.**

(Tabassum Naqvi)

## • Letter of NBA approval for the Under Graduate & Postgraduate department

## NATIONAL BOARD OF ACCREDITATION

NBCC Place, East Tower, 4th Floor, Bhisham Pitamah Marg  
Pragati Vihar, New Delhi-110 003  
Tel: +91 11 2436 0620, 2436 0654 Telefax: +91 11 2436 0682



File No. 28-301-2010-NBA

Date: 21/10/2015

To,

The Vice Chancellor  
Institute of Chemical Technology  
Nathalal Parekh Marg,  
Matunga, Mumbai – 400 019  
Maharashtra

Subject: Decision on appeal against non accreditation of PG programmes of Institute of Chemical Technology, Nathalal Parekh Marg, Matunga, Mumbai – 400 019, Maharashtra.

Sir,

This has reference to Appeal dated 03-06-2014 filed by you against the decision of NBA granting non-Accreditation to the PG Engineering programs of your Institute communicated vide NBA's letter of even number dated 07-12-2013.

2. The Appeal was considered by the Appellate Committee of NBA in its meeting held on 18-07-2014. The recommendation of the Appellate Committee was considered by the Sub-Committee of General Council of NBA at its meeting held on 06-08-2014. Based on the decision taken by the Sub-Committee for re-visit to your Institute, an Expert Team conducted on-site evaluation of the programmes during 28<sup>th</sup> to 30<sup>th</sup> August, 2015. The Report submitted by the Expert Team was considered by the concerned Committees constituted for the purpose in NBA. The competent authority in NBA has approved the accreditation status to the following programmes as given in the table below:

| Sl. No. | Name of the Progr (PG)                         | Basis of Evaluation | Accreditation Status | Period of validity w.e.f. 01.07.2015 | Remarks                                                                                                                                                       |
|---------|------------------------------------------------|---------------------|----------------------|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1)     | (2)                                            | (3)                 | (4)                  | (5)                                  | (6)                                                                                                                                                           |
| 1.      | Dyestuff Technology                            | 2004 Format         | Accredited           | 5 years                              | Accreditation status granted is valid for the period indicated in col.5 or till the program has the approval of the competent authority, whichever is earlier |
| 2.      | Fibers and Textiles Processing Technology      |                     | Accredited           | 5 years                              |                                                                                                                                                               |
| 3.      | Polymer Engg. and Technology                   |                     | Accredited           | 5 years                              |                                                                                                                                                               |
| 4.      | Surface Coating Technology                     |                     | Accredited           | 5 years                              |                                                                                                                                                               |
| 5.      | Perfumery and Flavour Technology               |                     | Accredited           | 5 years                              |                                                                                                                                                               |
| 6.      | Oil, Oleo Chemicals and Surfactants Technology |                     | Accredited           | 3 years                              |                                                                                                                                                               |

3. It may be noted that only students who graduate during the validity period of accreditation, will be deemed to have graduated with an NBA accredited degree.

Contd/...



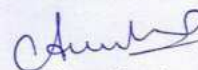
4. The accreditation status awarded to the programs as indicated in the above table does not imply that the accreditation has been granted to Institute of Chemical Technology, Nathalal Parekh Marg, Matunga, Mumbai – 400 019, Maharashtra as a whole. As such, the Institute should nowhere along with its name including on its letter head etc. write that it is accredited by NBA because it is program accreditation and not Institution accreditation. If such an instance comes to NBA's notice, this will be viewed seriously. Complete name of the program(s) accredited, level of programs and the period of validity of accreditation, as well as the date from which the accreditation is effective, should be mentioned unambiguously whenever and wherever it is required to indicate the status of accreditation by NBA.

5. The accreditation status of the above programs is subject to change on periodic review, if needed by the NBA. It is desired that the relevant information in respect of accredited programs as indicated in the table in paragraph 2, appears on the website and information bulletin of your Institute.

6. The accreditation status awarded to the programs as indicated in table in paragraph 2 above is subject to maintenance of the current standards during the period of accreditation. If there are any changes in the status (major changes of faculty strength, organizational structure etc.), the same are required to be communicated to the NBA, with an appropriate explanatory note.

7. Copies of Report of Chairman of the Visiting Team and Evaluators' Reports in respect of the above programmes are also enclosed.

Yours faithfully,



(Dr. Anil Kumar Nassa)  
Member Secretary

- Encls: 1. Copy of Report of Chairman of the Visiting Team.  
2. Copies of Expert Reports of the Visiting Team.

**Copy to:**

1. The Secretary  
Higher & Technical Education & Employment Department  
Govt. of Maharashtra, Mantralaya,  
Mumbai 400 032
2. The Director  
Directorate of Technical Education  
Govt. of Maharashtra 3, Mahapalika Marg,  
Mumbai 400 001
3. Accreditation file
4. Master Accreditation file of the State

**49.** Briefly highlight the contributions of the department in generating new knowledge, basic or applied.

During the assessment period (2011-2015) the faculty of the department have published 335 number of papers in national and international journals. These papers highlight the new knowledge generated in various frontier areas in apparel textile and technical textile field. The work reported in these papers covers Modification of fibrous polymers for improved performance, Nano composite fibres, Superabsorbent polymers, oil absorbent polymers, natural plant and bacterial based dyes and functional Dyes, functional finishes with specialty applications such as flame retardant, water repellent, anti bacterial, mosquito repellent, aroma finish, self cleaning etc. all these work has very good potential in application in sport textiles, protective textiles, home furnishing, medical textiles in addition to general apparels. The work on polyester recycling, removal of heavy metals from effluents, exploration of different sources of enzymes for application in textiles, recycling of garments, synthesis of specialty chemicals for textiles and ecofriendly processing with sustainability as driving factor has also been reported and presently these areas are very actively researched in the department.

**50.** Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.

**Strengths:**

- One of the oldest (a sort of heritage status) and reputed institution dedicated to Textile processes and technologies with a remarkable rate of growth
- Teaching (both UG and PG) and research programmes exist in a large variety of frontier as well as unique areas.
- Well qualified, senior and experienced faculty.
- Excellent B.Tech programmes.
- Academically, administratively and financially autonomous status of the institute.
- Academic programmes focused on employability of students.
- Recognition of excellence of research by various funding agencies which have provided special funds for various activities, including FIST programmes of DST for 6 out of 8 departments.
- Ratio of UG to PG students is nearly unity and no. of PhD students is very large.
- A large no. of high monetary value sponsored research projects.
- A large no. of high monetary value consultancy projects.
- Rs. 23 crore TEQIP programme is rated excellent Numerous donations for Awards, Chair Professorships, dedicated Buildings etc by alumni and industries.
- Healthy corpus fund.
- Financially sound, the Institute earns several times more than the state funding for salaries.
- Excellent rewards and awards for achievements by the faculty.
- Excellent record of research publications in reputed journals.
- Active and influential alumni; a large no. of alumni have started industries.
- Extensive computerization of information and activities of the institute.
- Excellent interaction with industries.

- A project as a part of course in Final Year B. Tech is a good idea. Projects are of high quality and are industry oriented.

### **Weaknesses:**

- Cramped campus
- Poor campus and student hostel maintenance
- Limited internet, not available in hostels
- Credit system has not been adopted
- Library is not attractive or inviting and is stocked with a lot of old books. Needs modernization
- No specific contact hours for PG students. Hours may be inadequate in comparison with other institutions in the country as high no. of student: faculty ratio exists.
- Too many Masters' programmes for a given no. of faculty, considering the limited number of faculty.
- Safety concerns in labs and projects need to be addressed to.

### **Opportunities and Challenges:**

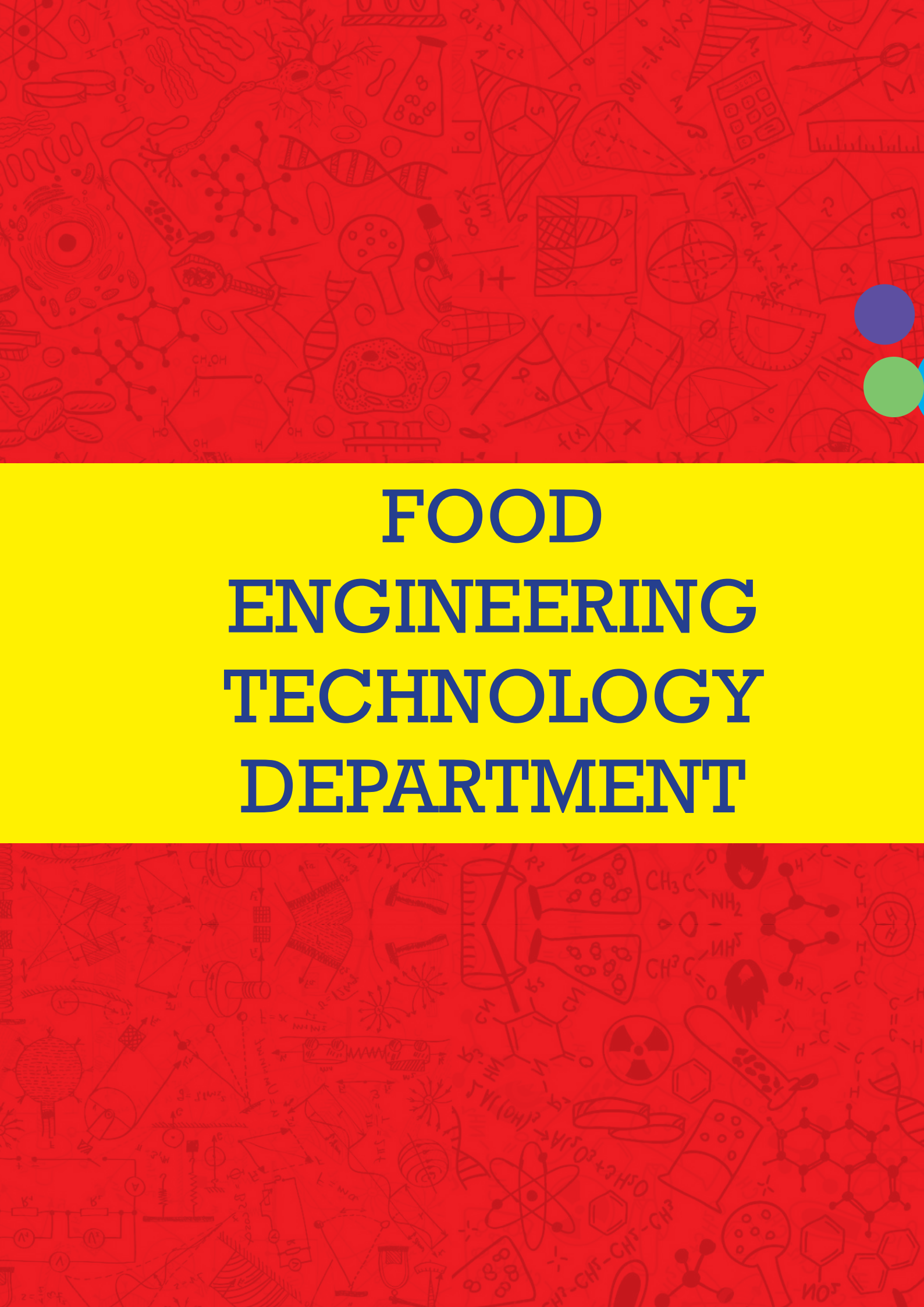
The textile business has not been restricted only to the field of textile fabrics and apparels and in the modern world increasing amount of textile and composites are being used in frontier technical textile areas such as geo textile, sport textile, medical textile, home furnishing, protective textile, automotive textile etc. Hence the India's contribution to these about 1000Bn US\$ global business is targeted to be about 100Bn US\$ from the present 50Bn US\$ export. Additionally at the domestic front the target of another 200Bn US\$ indicates that these sector has tremendous opportunities to grow. Looking at India's fast growing economy an increasing amount of investment (domestic and Foreign) in infrastructure, automobiles, reality sectors, medical fields etc, there will be further boost in the growth of the conventional as well as technical textile field. The young and educated population of India is going to play an important role in consumption of these materials. In other words external environment, government policy support, great demand on domestic sector for conventional and technical textiles, encouraging business atmosphere and good raw material based are some of the opportunities for Indian textile to grow and thus the demand for the human resources trained in Fibre and Textile Processing Technology will accordingly increase.

Some of the challenges however are less attention and investment made in innovation and research and development, limited availability of the fellowships for those who want to pursue higher studies in the field of textiles, as well as restricted funding for infrastructure and laboratory developments. There is also demand for increase in the faculty which is long overdue. Many of the faulty post are also vacant for number of years. Thus if we continue to work under such challenges and constrain without addressing them there is a possibility that the foreign universities will attract the best of the talent from the student community and that will in fact hurt badly the contribution of the institute. As far as textile sector is concerned shortage of labour and utilities such as power and water, low incentives for up gradation as well as environment protection and application of new technology, higher money cost, poor infrastructure and congested ports etc are the challenges.

### **51. Future plans of the department.**

- Increase in the number of research scholars mainly M-Tech and M.Sc. Textile Chemistry and similarly Ph.D Tech and Ph.D Textile Chemistry, Ph.DSci and Biotechnology.
- We shall continue to add new equipments to further equip our laboratories required for research and pilot plant studies. This will help us in advanced characterization required for new area of research as depicted below.
- New areas of research such as Nanotechnology, Biotechnology, Functional finishes, digital printing, electrospinning, wet spinning, coating, composites etc. will be given further boost to establish the foundation of this kind of work more firmly.
- More linkage with the universities within and abroad will be established so also with the industry. This is expected to reflect in better exposure to the students and also implementation of innovative research activities by cross cultivation.
- Dept plans to establish three centres of excellence which would be of great value to the textile industry where our department can contribute in a great way; namely
  - ✓ Centre for fabric care.
  - ✓ Centre for processing of unconventional Natural fibres
  - ✓ Centre for Fibre reinforced composites
  - ✓ Centre for Sustainable Textile processing
  - ✓ Centre for Smart Textile processing



The background of the entire page is a dense, repeating pattern of white line-art icons on a red background. These icons represent various fields of science and engineering, including biology (cells, DNA, mushrooms), chemistry (molecules, flasks, radiation symbol), physics (gears, circuits, atoms), and mathematics (geometric shapes, formulas like  $E=mc^2$ ,  $\lim_{x \rightarrow 0} \frac{1}{x}$ , and  $\frac{d}{dx} x^2 = 2x$ ). In the top right corner, there are two solid colored circles, one blue and one green, partially overlapping.

# FOOD ENGINEERING TECHNOLOGY DEPARTMENT





## **FOOD ENGINEERING AND TECHNOLOGY DEPARTMENT**

This department earlier known as Foods & Drugs started in 1943 with the institution of two-year post B.Sc. course leading to B.Sc. (Tech) degree in Chemistry of Foods and Drugs. Later in 1949 this course was revised to a full-fledged degree course in the discipline of Food Technology. Thus, U.I.C.T. is the pioneer institute in the whole country to offer specialized education in Food Technology. In 1965, this course was changed to three-year (post B.Sc.) that has now become four-year post H.Sc. (XIIth std.) B.Tech. course in line with the national pattern. Master's programme in Fermentation Technology was introduced in 1966 and till date U.I.C.T. is the only institute in the country offering this specialization. To keep up with the present times, the course in fermentation technology has been restructured as food biotechnology which is supported by Department of Biotechnology (DBT), Govt. of India.

There are eight faculty members and several distinguished persons from industry and other institutes are invited as visiting fellows for giving quality input to the education and training imparted to the students. Professor D.V.Tamhane and Professor P.J.Dubash Endowments provide opportunities to research students in a variety of activities. The major research interests include Carbohydrate Chemistry & Technology with focus on Indian Traditional Foods; Fermentation Technology with focus on Enzymes, Plant Cell Culture, Nutraceuticals & GM Foods and Food Microbiology related to Quality, Safety and Application of New Technology.

The department is supported by UGC as a Centre for Advanced Studies (CAS-I) and continued support by way of Ph.D. fellowships under the SAP program. In addition to this the department is also supported time to time by AICTE, DST, CSIR, ICMR to name some. The faculty members are well connected to national and multi-national establishments and involved in research and consultancy. Support from TEQIP too facilitated many students and faculty in attending conferences and showcasing their work. ICT has been active in instituting several merit-cum-means scholarship for the needy and meritorious undergraduate students.

The department has successfully established the collaborations with universities worldwide through joint collaborative programs with faculty colleagues in the FETD under commonwealth programmes to work at Rutgers, State University of New Jersey (USA), Washington State University, Pullman (USA), Saskatchewan University (Canada), University of Aalto (Finland), Queens University, Belfast and many more. Our interaction with the industry has been on an increase with mutual support and benefit to all concerned. The faculty in the department are closely associated with Food Safety and Standards Authority of India (FSSAI) and involved in various scientific committees and policy making.

FETD also takes pride in playing leading role in co-curricular as well extension activities at ICT and also through professional body, Association of Food Scientists and Technologists (India) [AFST (I)].

### **VISION**

Establishing a centre of excellence to provide demand driven, value-based and quality technical education to make India a developed country through socio-economic transformation.

## MISSION

- To improve food, especially Indian traditional foods, in terms of nutrition, safety and functionality employing fundamental and applied sciences.
- To produce trained personnel of highest standards for the benefit of the industry and society, in the field of food engineering & technology and food biotechnology.
- To provide leadership in areas of education, research, innovations and solutions in food and biotech sciences, technology and engineering to direct overall activity towards economic growth of India.

**1. Year of establishment:** 1943

**2. Is the department part of a School/Faculty of the university?** No

**3. Names of programmes offered (UG, PG, M. Phil, integrated masters; integrated Ph.D., D.Sc., D.Litt., etc.):** UG, PG and Ph.D

- B. Tech. (Food Engineering & Technology);
- M. Tech (Food Engineering & Technology, Food Biotechnology, Bioprocess Technology);
- PhD (Tech) (Food Engineering & Technology, Food Biotechnology, Bioprocess Technology)
- PhD (Sci) (Biotechnology, Biochemistry and Food Science)

**4. Interdisciplinary programmes and departments involved**

| Sr. No | Subject code | Interdisciplinary courses              | Year            | Department involved |
|--------|--------------|----------------------------------------|-----------------|---------------------|
| 1      | CHT1121      | Inorganic Chemistry                    | 1 <sup>st</sup> | CH                  |
| 2      | CHT1131      | Organic Chemistry-I                    | 1 <sup>st</sup> | CH                  |
| 3      | MAT1101      | Applied Mathematics-I                  | 1 <sup>st</sup> | MA                  |
| 4      | PYT1101      | Applied Physics-I                      | 1 <sup>st</sup> | PY                  |
| 5      | GEP 1101     | Engineering Graphics-I                 | 1 <sup>st</sup> | CE                  |
| 6      | PYP 1102     | Physics Laboratory                     | 1 <sup>st</sup> | PY                  |
| 7      | CHP 1122     | Inorganic Chemistry Laboratory         | 1 <sup>st</sup> | CH                  |
| 8      | CHP 1132     | Organic Chemistry Laboratory           | 1 <sup>st</sup> | CH                  |
| 9      | CHT1231      | Organic Chemistry-II                   | 1 <sup>st</sup> | CH                  |
| 10     | CHT1211      | Analytical Chemistry                   | 1 <sup>st</sup> | CH                  |
| 11     | CET1501      | Material & Energy Balance Calculations | 1 <sup>st</sup> | CE                  |
| 12     | MAT1102      | Applied Mathematics-II                 | 1 <sup>st</sup> | MA                  |
| 13     | PYT1103      | Applied Physics-II                     | 1 <sup>st</sup> | PY                  |
| 14     | MAP1201      | Engineering Applications of Computers  | 1 <sup>st</sup> | MA                  |
| 15     | CHP1232      | Organic Chemistry Laboratory           | 1 <sup>st</sup> | CH                  |
| 16     | CHP1222      | Analytical Chemistry Laboratory        | 1 <sup>st</sup> | CH                  |

|    |          |                                            |                 |    |
|----|----------|--------------------------------------------|-----------------|----|
| 17 | HUP 1101 | Communication Skills                       | 1 <sup>st</sup> | HU |
| 18 |          | Engg. Mechanics & Strength of Materials    | 2nd             |    |
| 19 |          | Electrical and Electronics Engineering*    | 2nd             |    |
| 20 |          | Physical Chemistry                         | 2nd             | CH |
| 21 |          | Electrical and Electronics Engineering Lab | 2nd             |    |
| 22 |          | Physical Chemistry Laboratory              | 2nd             | CH |
| 23 |          | Transport Phenomena                        | 2nd             | CE |

5. **Courses in collaboration with other universities, industries, foreign institutions, etc.-** Nil
6. **Details of programmes discontinued, if any, with reasons:** Not Applicable
7. **Examination System:** Semester based Credit System
8. **Participation of the department in the courses offered by other departments:** Chemical Engineering, Oils, Pharmaceuticals & Dyes Department
9. **Number of teaching posts sanctioned, filled and actual (Professors/Associate Professors/ Asst. professors/others)**

|                      | Sanctioned | Filled | Actual<br>(including CAS & MPS) |
|----------------------|------------|--------|---------------------------------|
| Professor            | 2          | 1      | 3                               |
| Associate Professors | 3          | 2      | 1                               |
| Asst. Professors     | 3          | 3      | 2                               |
| Others               | -          | -      | 1 (UGC FRP)                     |

10. **Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance.**

| Name                    | Qualification | Designation         | Specialization             | Experience Years | PhD students guided last 4 year |
|-------------------------|---------------|---------------------|----------------------------|------------------|---------------------------------|
| Prof. S. S. Lele        | Ph.D. (Tech.) | Professor           | Biochemical Engineering    | 37               | 7                               |
| Prof. R. S. Singhal     | Ph.D. (Tech.) | Professor           | Food Technology            | 27               | 15                              |
| Prof. U.S. Annapure     | Ph.D. (Tech.) | Professor           | Food Chemistry             | 15               | 5                               |
| Dr. Laxmi Ananthanaraya | Ph.D. (Tech.) | Associate Professor | Biochemistry and Nutrition | 32               | 3                               |
| Dr. S. S. Arya          | Ph.D. (Tech.) | Assistant Professor | Food Technology            | 9                | 0                               |

|                         |               |                     |                 |   |   |
|-------------------------|---------------|---------------------|-----------------|---|---|
| Dr. S. Chakraborty      | PhD           | Assistant Professor | Food Technology | 2 | 0 |
| Dr. Jyoti Sagar Gokhale | Ph.D. (Tech.) | UGC-FRP Asst Prof   | Biotechnology   | 3 | 0 |

#### 11. List of senior Visiting Fellows, adjunct faculty, emeritus professors

- **Adjunct Professor**

- Prof. K. Nirajan (University of Reading, UK)
- Dr. Mukund Karwe (Rutgers University, USA)

- **Visiting Fellows**

- Dr. Joseph I Lewis
- Dr. Shyam Sablani (WSU, USA)
- Prof. Jayant R. Bandekar, BARC, Trombay, Mumbai
- Dr. Shobha Rao
- Dr. R. Ganaga Prasad.
- Dr. Shita Swami
- Dr. A. J. Varma
- Dr. Debashish Mitra

#### 12. Percentage of classes taken by temporary\* faculty programme-wise

| Sr. no. | Degree  | Course name                   | % of classes taken by temporary faculty |
|---------|---------|-------------------------------|-----------------------------------------|
| 1       | B. Tech | Food Engineering & Technology | 0                                       |
| 2       | M. Tech | Food Engineering & Technology | 0                                       |
| 3       | M. Tech | Food Biotechnology            | 0                                       |

\*No temporary faculty available.

#### 13. Programme-wise Student Teacher ratio

| Sr. no. | Degree  | Course name                   | Student to teacher ratio |
|---------|---------|-------------------------------|--------------------------|
| 1       | B. Tech | Food Engineering & Technology | 9.7:1                    |
| 2       | M. Tech | Food Engineering & Technology | 2.8:1                    |
| 3       | M. Tech | Food Biotechnology            | 2.8:1                    |

#### 14. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual

|                      | Sanctioned | Filled |
|----------------------|------------|--------|
| Administrative Staff | -          | 0      |
| Support staff        | 8          | 7      |

## 15. Research thrust areas as recognized by major funding agencies

- **Carbohydrate Chemistry & Technology**
  - Cereal science & technology
  - Starches, Gums and Hydrocolloids
  - Dietary Fibre
  - Extrusion Processing
- **Fermentation Technology & Food Biotechnology**
  - Fermented Foods
  - Fermentative Production of Biomolecules
  - Enzymes: Production and Applications
  - Nutraceuticals and Natural Pigments
  - Plant Tissue Culture
- **Commodity Technologies**
  - Food Product/Process Development
  - Chemistry & Technology of Indian Traditional Foods
  - Fruits and Vegetable Processing
  - Health Drinks/Beverages

## 16. Number of faculty with ongoing projects from a) national b) international funding agencies and c) Total grants received. Give the names of the funding agencies, project title and grants received project-wise

| Funding agency                           | PI                                            | Grant Received In Lakh | Title                                                                                                                                                                          | Duration |
|------------------------------------------|-----------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| DST-SERB                                 | Dr. Snehasis Chakraborty                      | 48.00                  | Pulse light Treatment of beverages from underutilized tropical fruit; value addition, process optimization and shelf life extension                                            | 2017-20  |
| Godrej & Boyce Mfg Co Ltd, India Indo-US | Prof. US Annapure<br>Dr. Snehasis Chakraborty | 6.00                   | Parametric study and data analysis in the process of developing cooking aids                                                                                                   | 2017     |
| DST                                      | Prof. SS Lele                                 | 51.71                  | Developing a Mushroom germplasm bank for western coast of India with special emphasis on Maharashtra and Goa to commercialize their nutraceutical and Pharmaceutical potential | 2016-19  |
| RGSTC                                    | Prof. SS Lele                                 | 67.27                  | Exotic fruit wines : Micro-brewery Demo Plan                                                                                                                                   | 2014-17  |

|                                  |                                                |         |                                                                                                                         |           |
|----------------------------------|------------------------------------------------|---------|-------------------------------------------------------------------------------------------------------------------------|-----------|
| DST Govt. of India               | Prof. SS Lele                                  | 129. 89 | Holistic approach for Commercial processing of Fruits and vegetables grown In Western Maharashtra                       | 2013-16   |
| UGC Govt. of India               | Dr. SS Arya                                    | 1.85    | Studies in development of low glycemic index bhakri                                                                     | 2012-14   |
| DST/SERB-MOFPI, Govt. of India   | Prof. US Annapure<br>Co PI: Dr. R. R. Deshmukh | 22.14   | Studies in physico-chemical Properties of plasma Processed rice grains                                                  | 2013-14   |
| DBT Govt. of India               | Prof. SS Lele                                  | 9.89    | DBTJRF Regional Meet                                                                                                    | 2013      |
| Centre of Excellence Under TEQIP | Prof. RS Singhal                               | 27.00   | Process intensification for extraction of turmeric and pepper oleoresin by enzyme-assisted supercritical carbon dioxide | 2013-14   |
| UGC Govt. of India               | Prof. RS Singhal                               | 7.00    | UGC-BSR one time grant for augmenting research facilities                                                               | 2013-14   |
| UGC F. NO. 42-1038/2013          | Dr Shalini S Arya                              | 1.85    | Studies in development of low glycemic index <i>bhakri</i>                                                              | 2013-2015 |
| Centre of Excellence Under TEQIP | Prof. RS Singhal                               | 27.00   | Process intensification for extraction of turmeric and pepper oleoresin by enzyme-assisted supercritical carbon dioxide | 2013-14   |
| UGC Govt. of India               | Prof. RS Singhal                               | 7.00    | UGC-BSR one time grant for augmenting research facilities                                                               | 2013      |

#### 17. Inter-institutional collaborative projects and associated grants received

- **National**  
Nil
- **International**

| Topic of investigation                                                    | Institute/Organization involved                                      | Grant received (Lakh) |
|---------------------------------------------------------------------------|----------------------------------------------------------------------|-----------------------|
| Taste response study of amaranth-quinoa snacks by Indian population (RSS) | Rutgers Centre for Global advancement and International affairs, USA | \$8000                |
| Studies on legume allergens (LA)                                          | Paul Ehrlich Institute, Langden, Germany                             | €6550                 |



|                                                                           |                                 |                                                        |
|---------------------------------------------------------------------------|---------------------------------|--------------------------------------------------------|
| Studies on biotechnological aspects of legume allergens (LA)              | Paul Ehrlich Institute, Germany | DAAD fellowship (EUR 6000)                             |
| Characterization of <i>Saccharomyces boulardii</i> aldehyde dehydrogenase | Queen's University Belfast, UK  | Commonwealth Scholarship to Suprama Datta (13,000 GBP) |

**18. Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, AICTE, etc.; total grants received.**

| Funding agency                   | PI                                           | Grant Received In Lakh | Title                                                                                                                                                                          | Duration  |
|----------------------------------|----------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| DST Govt. of India               | Prof. SS Lele                                | 129. 89                | Holistic approach for Commercial processing of Fruits and vegetables grown In Western Maharashtra                                                                              | 2013-16   |
| DBT Govt. of India               | Prof. SS Lele                                | 9.89                   | DBTJRF Regional Meet                                                                                                                                                           | 2013      |
| DST                              | Prof. SS Lele                                | 51.71                  | Developing a Mushroom germplasm bank for western coast of India with special emphasis on Maharashtra and Goa to commercialize their nutraceutical and Pharmaceutical potential | 2016-2019 |
| RGSTC                            | Prof. SS Lele                                | 67.27                  | Exotic fruit wines : Micro-brewery Demo Plan                                                                                                                                   | 204-2017  |
| UGC Govt. of India               | Dr. SS Arya                                  | 1.85                   | Studies in development of low glycemic index bhakri                                                                                                                            | 2012-14   |
| DST/SERB-MOFPI, Govt. of India   | Dr. US Annapure<br>Co PI: Dr. R. R. Deshmukh | 22.14                  | Studies in physico-chemical Properties of plasma Processed rice grains                                                                                                         | 2013-14   |
| Centre of Excellence Under TEQIP | Prof. RS Singhal                             | 27.00                  | Process intensification for extraction of turmeric and pepper oleoresin by enzyme-assisted supercritical carbon dioxide                                                        | 2013-14   |
| UGC Govt. of India               | Prof. RS Singhal                             | 7.00                   | UGC-BSR one time grant for augmenting research facilities                                                                                                                      | 2013-14   |
| DST-SERB                         | Dr. Snehasis Chakraborty                     | 48.00                  | Pulse light Treatment of beverages from underutilized tropical fruit; value addition, process optimization and shelf life extension                                            | 2017-20   |

|                                        |                   |       |                                                                                                                                     |         |
|----------------------------------------|-------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------|---------|
| UGC F. NO.<br>42-1038/2013             | Dr Shalini S Arya | 1.85  | Studies in development of low<br>glycemic index <i>bhakri</i>                                                                       | 2013-15 |
| Centre of<br>Excellence<br>Under TEQIP | Prof. RS Singhal  | 27.00 | Process intensification<br>for extraction of turmeric<br>and pepper oleoresin<br>by enzyme-assisted<br>supercritical carbon dioxide | 2013-14 |
| UGC Govt. of<br>India                  | Prof. RS Singhal  | 7.00  | UGC-BSR one time grant for<br>augmenting research facilities                                                                        | 2013    |

#### 19. Research facility/centre with

- State
- National
- International recognition

The department has a research facility for the use by the faculty and potential students under the supervisors recognized by the institute and other universities.

#### 20. Special research laboratories sponsored by /created by industry or corporate bodies: One

#### 21. Publications:

- Number of papers published in peer reviewed journals (national/international):216
- Monographs: A
- Chapters in Books:10
- Edited Books:
- Books with ISBN with details of publishers:
- Number listed in international database (For e.g. Web of Science, Scopus, humanities international complete, Dare Database-international Social Sciences Directory, EBSCO host, etc.):
- Citation index – range/average:55-8220/1584
- Snip:
- SJR :
- Impact Factor – range / average: 0.38-9/2.17
- h-index: 2-43

#### 22. Details of patents and income generated: Two, Income: NA

#### 23. Areas of consultancy and income generated: Food Processing 5.7 Lakh per annum

#### 24. Faculty selected nationally/internationally to visit other laboratories / institutions industries in India and abroad:

##### Professor S. S. Lele

- Delivered a lecture on “Bio-processing in food industry for value addition” at V G Vaze Collage, Mumbai on 25th October 2017

- Deliver a lecture on convective hot air tray drying of fruit and vegetable : process optimization at MCCA, Pune on 5th October 2017
- Delivered a talk on “Anandache Vidyan” at Kings George on August 20, 2014.
- Delivered a talk on “Rasayanashastra- Kalache Ani udyache” at Ruia College on August 27, 2014.
- Delivered a talk on Motivation and science in day to day life for students, teachers and staff at Digambar Patkar School on January 30, 2015.
- Attended SAP-UGC (Food Science& Technology) expert committee meeting on June 22, 2015 at Department of Food Science and Technology, Guru Nanak Dev University, Amritsar.
- Visited 2 schools, 1 college and addressed 2 womens groups from Sahyadri Educational Trust, Sawarde, Chiplun, Ratnagiri on June 27-28,2015.
- Delivered lectures, conducted sessions on career counseling, positive thinking, nutrition and health etc. Total number of beneficiaries – 1800 students, 80 teachers and 70 women.

#### **Professor R. S. Singhal**

- Extraction of forskolin from Coleus forskohlin some new approaches, a lecture delivered at Bioprocessing India 2014, organized by DBT-ICT Centre, ICT and IIT Bombay, December 17, 2014.
- Making agriculture pro-nutrition, a lecture delivered at a seminar on ‘Protein nutrition and novel protein ingredients in the 21st century – tackling the ‘protein problem’, organized by at Chancellors Hotel, Chancellors Way, Moseley Road, Fallow field, Manchester M146ZT, UK, and funded by Department of Science and Technology, new Delhi and Royal Society, UK, January 20- 22, 2015.
- Production of glycine betaine and trehaloses by Actin poly sporahalophile (MTCC263) using acid whey: process details and cell disruption, Jayaranjan Kar and Rekha S. Singhal, a lecture delivered at DAE-BRNS Life Sciences Symposium (LSS-2015) on ‘Advances in Microbiology of Food, Agriculture, Health and Environment’ at Nabhikiya Urja Bhacvan, Anushakti nagar, Mumbai – 400 085, February 3,2015.
- Local products for international markets–some issues, a lecture delivered at a conference organized by All India Association of Industries, Ministry of External affairs, Government of India and World Trade Centre on ‘ASEAN-India Cooperation in Food Security, Agriculture Technology & Food Engineering Run-up Event, Mumbai for Delhi Dialogue VII2015, World Trade Centre, Mumbai, February 12, 2015.
- Conducted a technical session for personnel from commercial (sales) and creation and application in the form of four lectures on i) general introduction to food additives, ii) emulsifiers, iii) acidulants and iv) preservatives, at Keva Flavours Pvt Ltd, LBSM arg, Mulund (W), Mumbai – 400 80, March 4, 2015.
- Food safety from ‘Farm to-Fork’–an overview, a lecture delivered at a program organized by Indian medical association-Mumbai west branch on the occasion of World Health organization Day on the theme ‘How Safeis Your Food’, IMA Building, Mumbai–400049, April 7, 2015.

- Conducted lectures on i) Mycotoxins in food, ii) Toxicants that develop during food processing, and iii) Environmental contaminants in food-PCDD and PCDF, during a UGC sponsored Refresher Course on 'Food Safety and Public Health', University of Allahabad, April 10-11, 2015.
- Building world class research institutions, a lecture delivered at a Leadership Seminar, Vivekananda Auditorium, Ramakrishna Mission, Khar (West), Mumbai – 400052, April 18, 2015.

#### **Professor Uday S. Annapure**

- "Cold Plasma Processing for Food and Agriculture" an invited talk at National Conference on "Food and Agriculture Biotechnology" organised by Department of Biotechnology at Sinhgad College of Engineering, Vadgaon, Pune during 14th and 15th September, 2017.
- "Soy Based Extruded Products" an invited talk delivered at USSEC conference on "Soy: Avenues and Opportunities" organized by American Soybean Association and US Soybean Export Council, at Ahmedabad, Gujarat on February 28, 2017.
- "Cold Plasma Processing" an invited talk at the World Food Day seminar organised by Department of Food Processing Technology, A.D. Patel Institute of Technology, New Vallabh Vidya Nagar, Anand - 388 121, Gujarat.
- "Soy Based Extruded Products" an invited talk delivered at conference on "Soy Nutrition and Soy Opportunities – Creating Linkages" organised by USSEC in collaboration with the Association of Food Scientists and Technologists, Soy Food Promotion and Welfare Association and Soy Processors Association of India at Hotel Taj Santacruz, Mumbai on the Dec 28, 2016.
- "Non-Thermal Process - Emerging Technologies for Food Processing" an invited talk delivered under TEQIP at Department of Technology, Shivaji University, Kolhapur on September 14, 2016.
- "Applications of Cold Plasma in Food Processing" an invited talk delivered in the workshop on "Plasma Processing of Materials" organised by Department of Physics on Wednesday, 21st September, 2016 at ICT, Mumbai
- "Cold Plasma : An Emerging Trend in Food Processing" an invited talk in TEQIP II sponsored National Conference on Technologies in Sustainable Food Systems (TSFS -2016) organised by Sant Longowal Institute of Engineering and Technology, Longowal, Distt. Sangrur, Punjab during October 7-8, 2016
- "Food Science and Technology: An Insight, an invited talk at CKT College, Panvel, January 10, 2015
- "Recent Trends in Food Processing and Technology" an invited talk at state level seminar on 'Recent Trends in Dairy and Food Processing at Vivekanand Arts, Sardar Dalipsingh Commerce and Science College, Aurangabad on February 16, 2016
- "Non-thermal Processes : Emerging Technologies for Food Processing" an invited talk at Farmer Empowerment through Agro-processing & Sustainable Technologies during XXIV

Indian Convention of Food Scientists & Technologists at VNMKV, Parbhani during December 18-19, 2015

- Non-Thermal Process - Emerging Technologies for Food and Nutrition Security at Innovative Thought Forum, Brainstorming on Food Processing, Food Security and Food Nutrition held on November 25, 2015 at Maple Room, Indian Habitat Centre, Lodhi Road, New Delhi.
- "Enzymatic pre-treatment for extrusion processing" an invited talk at Bioprocessing India 2014 Jointly organized by Institute of Chemical Technology (ICT), Mumbai and Indian Institute of Technology (IIT), Mumbai during December 17-20, 2014 at ICT, Mumbai.
- "Low temperature plasma processing for improved cooking qualities of basmati rice" an invited talk at XXIII Indian Convention of Food Scientists and Technologists (ICFOT) on 13th-14th December, 2014, at NIFTEM Campus, Kundli, Haryana
- "Milk Processing and Milk Products" an invited lecture at Keva Flavours Pvt. Ltd. LBS Marg, Mumbai.
- "Non-Thermal Food Processing" an invited talk at Sharadchandra College of Food Technology, Sawarde
- "New Technological trends in processed foods". An invited talk delivered at AGRIVISION-2014, the Conference organized by "Marathwada Association of Small Scale Industries and Agriculture (MASSIA)" held at Conference Hall, Garware Stadium, Aurangabad on January 4, 2014.
- Plasma Processing Technology. An invited talk delivered at DST-PURSE Scheme Sponsored seminar on 'Recent Trends in Processed Foods and Nutraceuticals (RTPFN-2013) organised by Department of Food Science and Technology, Shivaji University, Kolhapur on October 5, 2013
- Lutein production in micro-algae using plant growth promoting hormone and media optimization. An invited talk delivered at UGC-SAP seminar at School of Life Sciences, North Maharashtra University, Jalgaon on February 2, 2013.
- New Product Approval System: A Walk Through. An invited talk delivered at the workshop on "Food Safety and Standards Act 2006" organised by Department of Food Science and Technology, Pondicherry University, Pondicherry during January 28, 2013 – February 2, 2013.
- Plasma Technology: Applications in Food Processing. An invited talk delivered at the National Conference on the theme "Emerging Technologies for Sustainable Developments", organised by the Department of Technology, Shivaji University, Kolhapur during 27-28 December 2012.
- Safety Assessment of Proprietary Food Products. A lecture delivered at workshop on "Scientific Approach to Product Approval" organised by Association of Food Scientists and Technologists (India), Mumbai Chapter at Lalit, Andheri (E), Mumbai on September 7, 2012.
- Microbial Production of Polyunsaturated Fatty Acids and separation by Supercritical Fluid Extraction. An invited lecture delivered at Department of Biochemistry, Shivaji University, Kolhapur on July 31, 2012.

**Dr. Snehasis Chakraborty**

- Chakraborty S. (2016) ‘Safety aspects of Synthetic, Nature Identical and Natural flavoring Substances’ at IIT Kharagpur in Food Safety and Quality Management (FSQM)-CII Professional Course. Delivered on 21st January 2016.
- Chakraborty S. (2016) High Pressure Pasteurization of Fruit Products: Integrating the Kinetics into Process Optimization’ at SLIET, Longowal, India during the national conference on the theme, “Technologies in Sustainable Food Systems (TSFS-2016), 7-8 October 2016.

**25. Faculty serving in National committees b) International committees c) Editorial Boards d) any other (please specify)**

**Professor S. S. Lele**

- Member, National Expert committee on Star College, DBT, (2014-17)
- Member of ‘Promoting Industrial Cluster Development Program’ in State of Maharashtra, March 2014 to 2015
- Member, Examination Board, K J Somaiya College of Engineering, Somaiya Vidyavihar, Mumbai, March 2014-15
- Mentor, C-CAMP, DBT initiative for Entrepreneurs in Biotech, Bangalore, Feb 2013- Aug. 2015
- Member, DBT- JRF program, Syllabus committee and policy for BET exam 2014, held at Pune, Jan. 2014.
- Convenor, DBT supported-First DBT-JRF Fellows- Supervisors Regional Meet, ICT, Nov. 21-22, 2013
- Member, Brain Storming session on Bio-processing of Agri-residues organized by Department of Biotechnology, Ministry of Science and Technology, Government of India , at Bioprocessing Unit Mohali Punjab, August 29, 2013
- Member, National Policy Meeting for DBT-JRF program, June 20, 2013 Pune.
- Member, FSSAI Expert committee on Food Additives (2013-15)
- Member, DBT – Star college scheme (2014-17)
- Member, FSSAI Expert committee for curriculum development, 2011
- Member FDA various Committees, (2010-12)

**Professor R. S. Singhal**

- Member, Editorial Board, Carbohydrate Polymers.
- Member, Editorial Board, International Journal of Food Science and Nutrition.
- Member, Editorial Board, Plant Foods for Human Nutrition.
- Member, Selection committee for promotions, BARC, Mumbai.



- Member, Expert group in the area of secondary agriculture, Department of Biotechnology, Government of India.
- Member, Selection committee, appointment of Assistant Professors and Associate Professors, Shivaji University, Kolhapur.
- Expert, UGC-DSA Programme, University of Mysore.
- Life Member, Association of Food Scientists and Technologists (India).
- Life Member, Association of Carbohydrate Chemists and Technologists, India.
- Member, Advisory Board, Trends in Carbohydrate Research, published by ACCT (I).
- Member, BIPP, BIG, SBIRI, SPARSH and BIRAP, Department of Biotechnology, Government of India
- Referee, Several journals in food science and technology, and bioprocess technology
- Examiner, Ph.D. thesis at some universities in India

#### **Dr. U. S. Annapure**

- Vice President of AFST (I), Mumbai Chapter for 2015-16 and 2016-17.
- President of AFST (I), Mumbai Chapter for the years 2013-14 and 2014-15.
- Vice President of AFST (I), Mumbai Chapter for 2011-12 and 2012-13.
- Member, Research Advisory Committee, Indian Institute of Food Processing Technology, Thanjavur, Tamil Nadu.
- Member, Local Management Committee for International Training Centre on Food Safety and Applied Nutrition (ITC-FSAN), Food Safety and Standards Authority of India, New Delhi.
- Member, Scientific Committee, Bureau of Indian Standards, New Delhi.
- Life Member, Association of Food Scientists and Technologists, India [(AFST (I)].
- Life Member, Association of Carbohydrate Chemists and Technologists of India (ACCTI).
- Life Member, Biotech Research Society of India (BRSI).
- Member, International Society of Food Engineering (ISFE), USA.
- Life Member, UDCT Alumni Association.

#### **Dr. Laxmi Anantanarayan**

- Member, Board of Studies, Food and Nutrition at SNDT Women's University, Juhu, Mumbai, 2012-2015.
- Life Member, Association of Food Scientists and Technologists (India).
- Life Member, UDCT Alumni Association
- Member, examination of projects, SIES GST, PPT Dept., Nerul, Navi Mumbai

**Dr. Shalini Arya**

- Local Executive Committee Member, Association of Food Scientists and Technologists (I), Mumbai Chapter
- Life Member, Biotechnology Research Society of India (BRSI), India.
- Life Member, Association of Carbohydrate Chemists and Technologists of India.
- Member, Society of Chemical Industry (SCI), London.
- Member, International Society of Food Engineering (ISFE), Pullman, USA.
- Member, CFT-PBN Alumni Association (CPAA), Mumbai

**Dr. J. S. Gokhale**

- Life Member, UDCT Alumni Association
- Member, AFST(I)
- Life Member, BRSI

**Dr. Shehasis Chakraborti**

- Served as expert reviewer in National Science Centre (Narodowe Centrum Nauki - NCN), Poland
- Member, AFST(I)

**26. Faculty recharging strategies (UGC, aSc, refresher / orientation programs, workshops, training programs and similar programs).**

- Prof. RS Singhal, Prof S.S. Lele, Dr. US Annapure and Dr. L Ananthanarayanan conducted refresher courses and incited lectures.
- They are also involved in workshop, training programs.
- Dr. Jyoti Sagar Gokhale is UGC-FRP Asst Prof in the department.
- Dr. Jyoti Sagar Gokhale attended orientation program at university of Mumbai during the 6th February to 4th March 2017.
- Dr. Shalini Arya participated Refresher Course in Biosciences during the August 27 - September 15, 2012, Organized by Ramnarayan Jhunjhunwala College, UGC, Academic Staff College, Mumbai University, Mumbai.
- Dr. Shalini Arya participated Faculty Development programme on Management Capacity Building during the October 15- 22 October, 2012, Organized by Welingkar Institute of Management Development and Research, Matunga, Mumbai
- Dr. Shalini Arya participated Food Biotechnology: Training in the area of Classical

Biotechnology (Fermentation) and Genomics for new and improved food products during the 30<sup>th</sup> November - 4<sup>th</sup> December, 2013, CAS-TWAS Centre of Excellence for Biotechnology, Institute of Microbiology, Chinese Academy of Sciences, No.1 West Beichen Road, Chaoyang District, Beijing, 100101, China.

- Dr. Shalini Arya participated in the workshop entitled “Quality Initiatives in Technical and Higher Educational Institutions during 11-13 February, 2014, Organized by Engineering Staff college of India, Hyderabad, India.
- Dr. Shalini Arya participated in Hands on training for teachers of biological sciences with project on Gene cloning and expression of green fluorescent protein (GFP) during March 10-March 15, 2014, organized by GN Khalsa College, Matunga, Mumbai.
- Dr. Shalini Arya participated in Honing Mentoring Skills --A holistic approach during May 5 to May 9, 2014, organized by TEQIP and The Department of Pharmaceutical Sciences and Technology(DPST), ICT, Mumba.
- Dr. Shalini Arya participated in International 2014 Food Biotechnology training programme for Developing countries during 15<sup>th</sup> November -19<sup>th</sup> November, 2014, organized by CAS-TWAS Centre of Excellence for Biotechnology, Luzhou, China.
- Dr. Shalini Arya participated in MHRD-TEQIP workshop titled “Pedagogy for Effective use of ICT for Engineering Education under TEQIP (KIT) Initiative of Ministry, during 5-9<sup>th</sup> January, 2015, organized by Centre for Distance Engineering Education Programme, IIT Bombay, India.
- Dr. Shalini Arya participated in Management Capacity Enhancement Programme under TEQIP, during 8-13, June, 2015, organized by Indian Institute of Management, Udaipur, India.
- Dr. Snehasis Chacrabarti attended 7th Summer Workshop on ‘Bioprocess Engineering Lectures and Laboratory’ held at IIT Madras from 27th June to 1st July 2016. (one week)

## 27. Student projects

- % of students who have done in-house projects including inter-departmental projects: 90
- % of students doing projects in collaboration with other universities industry / institute: 10

## 28. Awards / recognitions received at the national and international level by faculty, students, doctoral or postdoctoral fellows

| Year    | Category      | No. of award/recognition received by |         |                                |
|---------|---------------|--------------------------------------|---------|--------------------------------|
|         |               | Students                             | Faculty | Doctoral/Post doctoral Fellows |
| 2012-13 | National      | -                                    | -       | -                              |
| 2012-13 | International | -                                    | -       | -                              |
| 2013-14 | National      | -                                    | -       | -                              |

|         |               |   |   |   |
|---------|---------------|---|---|---|
| 2013-14 | International | - | 1 | - |
| 2014-15 | National      | 2 | - | 1 |
| 2014-15 | International | - | 1 | - |
| 2015-16 | National      | 1 | 2 | - |
| 2015-16 | International | 1 | - | - |
| 2016-17 | National      | - | 1 | - |
| 2016-17 | International | - | 3 | - |

**29. Seminars/Conferences/Workshops organized and the source of funding (national/international) with details of outstanding participants, if any.**

| Seminars/Conferences/Workshops                                                                                                                                            | Year | Source of funding                                                                                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------------------------------------------------------------------------------------------------------------------|
| Seminar on 'Innovative food ideas in local and ethnic food industry' and Launching of the first edition of the DuPont NutriScholars Awards (DNA) at ICT Mumbai.           | 2017 | DuPont Nutrition & Health, India                                                                                   |
| FSSAI's FoSTaC Food Safety Supervisor Training                                                                                                                            | 2017 | Confederation of Indian Industries and Assocom Institute of Bakery Technology and Management (AIBTM), New Delhi.   |
| Workshop on "Analytical and Preparative Instrumentation for the Food Industry"                                                                                            | 2017 | Anton Paar India Pvt. Ltd. Mumbai                                                                                  |
| Hands on Training For Analysis Of Food Bioactives                                                                                                                         | 2017 | TEQIP II and ICT Mumbai                                                                                            |
| A seminar on 'Palm Oil'                                                                                                                                                   | 2017 | Malaysia, in collaboration of Association of Food Scientists and Technologists (India), Mumbai Chapter on          |
| A seminar on 'Nutraceuticals: Science to Business'                                                                                                                        | 2017 | Association of Food Scientists and Technologists (India), Mumbai Chapter                                           |
| National Seminar on "Opportunities & Challenges of Foreign Direct Investment (FDI) in Food Retail India"                                                                  | 2016 | All India Food Processors' Association (AIFPA) and Ministry of Food Processing Industries (MoFPI), Govt. of India. |
| Inauguration of Keva flavours Library at ICT and Technical seminar on 'Flavours and its application by Mr. Irshad Shaikh, Senior Manager-Technical, Keva Flavours, Mumbai | 2016 | Keva Flavours Ltd. Mumbai                                                                                          |
| A workshop on "Entrepreneurship Development                                                                                                                               | 2016 | TEQIP, ICT Mumbai and AFST (I) Mumbai Chapter.                                                                     |
| A National Seminar on "Opportunities                                                                                                                                      | 2016 | All India Food Processors'                                                                                         |

|                                                                                                              |      |                                                                                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| & Challenges of Foreign Direct Investment (FDI) in Food Retail India”                                        | .    | Association (AIFPA) with the support of Ministry of Food Processing Industries (MoFPI) and in collaboration with Association of Food Scientists and Technologists India (AFSTI), Mumbai Chapter. |
| Workshop on Codex Alimentarius: Principles and Procedures                                                    | 2014 | Food Safety & Standards Authority of India, Govt. of India.                                                                                                                                      |
| Nutrition Week Activity 2013                                                                                 | 2013 | Protein Foods & Nutrition Development Association of India                                                                                                                                       |
| Traditional Foods                                                                                            | 2013 | TEQIP and Association of Food Scientists and Technologists, India                                                                                                                                |
| World Food Day Celebration Seminar                                                                           | 2013 | Association of Food Scientists and                                                                                                                                                               |
| Two day seminar on ‘Innovation in Food Science and Technology to Fuel the Growth of the Indian Food Industry | 2012 | Association of Food Scientists and Technologists, India                                                                                                                                          |

### 30. Code of ethics for research followed by the departments:

As per the research committee

### 31. Student profile programme-wise: (Acad Office)

| Program name | Branch                                                                   | Application received  | Selected |        | Pass percentage |        |
|--------------|--------------------------------------------------------------------------|-----------------------|----------|--------|-----------------|--------|
|              |                                                                          |                       | Male     | Female | Male            | Female |
| B.Tech       | Food Engineering & Technology                                            | Admission through DTE | 13       | 03     | 100%            | 100%   |
| M.Tech       | Food Engineering & Technology                                            | 112                   | 02       | 08     | 4               | 3      |
| M.Tech       | Food Biotechnology                                                       | 83                    | 01       | 09     | 6               | 7      |
| M.Tech       | Bioprocess Technology                                                    | 194                   | 15       | 15     | 16              | 7      |
| M.Tech       | Perfumery & Flavors                                                      | 43                    | 02       | 07     | -               | -      |
| Ph.D (Tech)  | Food Engineering & Technology, Food Biotechnology, Bioprocess Technology | 93                    |          |        |                 |        |
| Ph.D         | Biotechnology, Biochemistry,                                             | 94                    |          |        |                 |        |

### 32. Diversity of students (Acad Office)

| Program Name | Branch | % of students from same | % of students from other | % of students from | % of students from foreign |
|--------------|--------|-------------------------|--------------------------|--------------------|----------------------------|
|--------------|--------|-------------------------|--------------------------|--------------------|----------------------------|

|             |                                                                          | university | university within the state | university outside the state | university |
|-------------|--------------------------------------------------------------------------|------------|-----------------------------|------------------------------|------------|
| B.Tech      | Food Engineering & Technology                                            | 0          | 0                           | 0                            | 0          |
| M.Tech      | Food Engineering & Technology                                            | 0          | 20                          | 80                           | 0          |
| M.Tech      | Food Biotechnology                                                       | 0          | 50                          | 50                           | 0          |
| Ph.D (Tech) | Food Engineering & Technology, Food Biotechnology, Bioprocess Technology | 10         | 80                          | 15-20                        | 0          |
| Ph.D        | Biotechnology, Biochemistry,                                             | 0          | 85                          | 15                           | 0          |

**33. How many students have cleared civil Services and defence Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise.**

All master students are GATE qualified

All PhD students are GATE/ NET qualified.

**34. Student progression**

| Student progression                   | Percentage against enrolled |
|---------------------------------------|-----------------------------|
| B. Tech to M. Tech/MS                 | 30                          |
| M. Tech to PhD                        | 10                          |
| PhD to post-doctoral                  | 20                          |
| Employed through Campus selection     | 80                          |
| Employed through off Campus selection | 18                          |
| Entrepreneurs                         | 2                           |

**35. Diversity of staff**

| Percentage of faculty who are graduates  |    |
|------------------------------------------|----|
| From the same university                 | 40 |
| From other universities within the State | 40 |
| From universities from other States      | 20 |
| From universities outside the country    | 0  |

**36. Number of faculty who were awarded M. Phil., Ph.D., D.Sc. and D. Lit. during the assessment period: Nil**

**37. Present details of departmental infrastructural facilities with regard to**



| No | Name of the Infrastructural                | Quantity / Details                             |
|----|--------------------------------------------|------------------------------------------------|
| A  | Library                                    | Updated                                        |
| B  | Internet facilities for staff and students | Internet Provider: Reliance, Tata and NIC.     |
|    |                                            | Available Bandwidth: 12 Mbps Broadband         |
| C  | Total number of classrooms                 | 4 (16 ft x 20 ft with audio-visual facilities) |
| D  | Class rooms with ICT facility              | 4 (16 ft x 20 ft with audio-visual facilities) |
| E  | Students' laboratories                     | 3 (each of 20 desks)                           |
| F  | Research laboratories                      | 7 (state-of-art facilities)                    |

**38. List of doctoral, post-doctoral students and research associates Ph.D. (Tech.) [Food Engineering and Technology (FET)/ Food Biotechnology (FBT) / Bioprocess Technology (BPT)]**

| Sr. No | Research Scholar          | Previous Institute | Date of Registration | Project Title                                                                                                     | Guide |
|--------|---------------------------|--------------------|----------------------|-------------------------------------------------------------------------------------------------------------------|-------|
| 1.     | Deepak Sunil Kadam (UGC ) | ICT, Mumbai        | 31.07.2014           | Studies in Utilisation of <i>Nigella sativa</i> and <i>Lepidium sativum</i> oil seed cake (FBT)                   | SSL   |
| 2.     | Desai Mihir Mukund,       | UICT, NMU          | 19.10.2015           | Studies in indigenous oils and De-Oiled Meal (FET)                                                                | SSL   |
| 3.     | Pulkit Purohit            | IICPT, Tamil Nadu  | Feb 2014             | Characterisation of Jamun and karawand fruits available in western maharashtra region and their utilisation (FET) | SSL   |
| 4.     | Chetan Arekar             | Karunya university | April 2012           | Studies in tropical fruit wines (FBT)                                                                             | SSL   |
| 5.     | Sandeep A. Chaudhary      | ICT, Mumbai        | 11.07.2012           | Fermentative production, downstream and application of microbial cutinase                                         | RSS   |
| 6.     | Joshi Chetan              | ICT, Mumbai        | 4.7.11               | Fermentative production and downstream processing of zeaxanthin                                                   | RSS   |

|     |                             |                   |            |                                                                                                                            |     |
|-----|-----------------------------|-------------------|------------|----------------------------------------------------------------------------------------------------------------------------|-----|
| 7.  | Bedade Dattatraya Kashinath | ICT, Mumbai       | 25.07.2014 | Fermentative production downstream processing and applications of acrylamidase                                             | RSS |
| 8.  | Nupur Shantaram Nagavekar   | ICT, Mumbai       | 25.07.2014 | Extraction Technologies for novel food constituents                                                                        | RSS |
| 9.  | Umesh K.V.                  | ICT, Mumbai       | 25.07.2014 | Enhancing Bioavailability of nutraceuticals                                                                                | RSS |
| 10. | Bawane Amruta Manikrao,     | SLIET, Punjab     | 21.04.2014 | Studies on stability of added constituents during extrusion processing                                                     | RSS |
| 11. | Shah Nirali Nitin           | ICT, Mumbai       | 25.07.2014 | Biopolymer modification for novel food applications                                                                        | RSS |
| 12. | Bajaj Seema Radheshyamji    | ICT, Mumbai       | 12.03.2015 | Processing and Storage Stability of Added Vitamins in Food                                                                 | RSS |
| 13. | Muley Abhijeet Bhimrao      | UICT-NMU, Jalgaon | 18.03.2015 | Modification of proteins for enhanced functionality                                                                        | RSS |
| 14. | Deshaware Shweta            | Amity, Noida      | 05.07.2013 | Study on Genetic Polymorphism of TAS2R38 Bitter Taste Receptor Gene in an Indian Population and Approaches for Debittering | RSS |
| 15. | Mulchandani Ketan           | ICT, Mumbai       | 09.03.2015 | Studies on production and downstream processing of deoxynojirimycin.                                                       | RSS |
| 16. | Aratrika Ray                |                   | 25.06.2017 | Aerosol development from polysaccharides-Tentative                                                                         | RSS |
| 17. | JadhavManisha* (UGC SAP)    | SLIET, Punjab     | Sept2010   | Developmentof extruded food productsbasedon sorghum(FET)                                                                   | USA |

|     |                                           |                                                      |                  |                                                                                                  |     |
|-----|-------------------------------------------|------------------------------------------------------|------------------|--------------------------------------------------------------------------------------------------|-----|
| 18. | Rathod Rahul<br>(UGC SAP)                 | ICT, Mumbai                                          | July 2011        | Development of<br>extruded<br>food product (FET)                                                 | USA |
| 19. | T. Rohit (UGC BSR)                        | MAU, Parbhani                                        | December<br>2012 | Studies on effect of<br>cold plasma<br>processing on<br>properties of rice<br>varieties (FET)    | USA |
| 20. | Pathan Fayaz Latif                        | MPKV, Rahuri                                         | May 2014         | Studies on effect of<br>plasma processing on<br>physicochemical<br>properties of legumes<br>(FS) | USA |
| 21. | Bhushette Pravin<br>Rajkumar (UGC<br>BSR) | UICT, NMU,<br>Jalgaon                                | October<br>2013  | Study on new exudate<br>gums (FET)                                                               | USA |
| 22. | Singhu Bhupender<br>(UGC BSR)             | Shri Ramaswami<br>Memorial<br>University,<br>Chennai | October<br>2013  | Enhanced production<br>of glutathione (FBT)                                                      | USA |
| 23. | Chaudhari Bhushan<br>Balu (UGC BSR)       | UICT, NMU,<br>Jalgaon                                | April 2015       | Study on new seed<br>gums                                                                        | USA |
| 24. | Sachin Ramdas<br>Adsare (UGC BSR)         | UICT, NMU,<br>Jalgaon                                | April 2015       | Studies in coconut<br>processing and<br>valorization of its by<br>products                       | USA |
| 25. | Sowmya R. S.                              | Karunya<br>University                                | December<br>2016 | Hydroponics                                                                                      | USA |
| 26. | Shital Giri                               | LIT, Nagpur                                          | 17th Aug<br>2010 | Studies in<br>development of low<br>glycemic index foods                                         | LA  |
| 27. | Bincy Bhaskar                             | D.Y. Patil                                           | 10th Oct<br>2011 | Studies in bioactive<br>peptides from<br>selected legumes<br>commonly consumed<br>in India       | LA  |
| 28. | Rupesh Tupe                               | ICT, Matunga                                         | 13th Oct<br>2012 | Studies in Functional<br>Foods<br>(topic approval done<br>but title needs to be<br>refined)      | LA  |

|     |                                      |                                                       |                 |                                                                                                                                     |     |
|-----|--------------------------------------|-------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------|-----|
| 29. | Baburaj Regubalan                    | Anna University                                       | 31st Sept 2013  | Studies in microbial characterization, nutritional improvement and preservation of idli batter                                      | LA  |
| 30. | Karuna Sorde                         | UDCT, Jalgaon                                         | 15th Oct 2013   | Studies in fermentative production of microbial Transglutaminase                                                                    | LA  |
| 31. | Anu Ahlawat                          | Guru gobind singh Indraprastha University, New Delhi  | 3 Sep., 2016    | Studies in development of milk based beverages                                                                                      | LA  |
| 32. | Ashish Gautam Waghmare               | ICT, Mumbai                                           | 30th July, 2013 | Bioprocessing and applications of valuable products from Micro-algae optimization and shelf life extension                          | SSA |
| 33. | Sonal Praksh Patil                   | UDCT, Jalgaon                                         | 30th July, 2013 | Studies on Production and Characterization of Gluten Free Flatbread                                                                 | SSA |
| 34. | Sonali Babruwahan Gaikwad            | Vasantrya Naik Marathwada Krishi Vidyapeeth, Parbhani | 30th July, 2013 | Chemistry and Technology of Cereal-Legume Based Indian Traditional Foods 2018                                                       | SSA |
| 35. | Sachin Kalidas Sonawane              | ICT, Mumbai                                           | 30th July, 2013 | Studies on Fruit Seed Based Peptides and their Application in Food Preservation                                                     | SSA |
| 36. | Prasanna Prakash Bhalerao (DST-SERB) | UICT, NMU, Jalgaon                                    | 19th July, 2017 | Pulse light Treatment of beverages from underutilized tropical fruit; value addition, process optimization and shelf life extension | SC  |

#### Ph.D. Science [Biotechnology (BT)/ Biochemistry (BC)/ Food Science (FS)]

| Sr. No. | Research scholar and sponsor | Previous Institute | Project Title | Date of Registration | Guide |
|---------|------------------------------|--------------------|---------------|----------------------|-------|
|---------|------------------------------|--------------------|---------------|----------------------|-------|

|     |                          |                                                       |                                                                                                                    |                             |     |
|-----|--------------------------|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-----------------------------|-----|
| 1.  | Mugdha Dabir             | North Maharashtra University                          | Studies in characterization and deactivation of fruit based enzymes                                                | 9 <sup>th</sup> Dec 2011    | LA  |
| 2.  | Chandras Vaswasrao       | Ramnarayan Ruia College, Mumbai                       | Biochemical characterization of selected indigenous fruit varieties during ripening and extended shelf life        | 6 <sup>th</sup> Dec 2012    | LA  |
| 3.  | Dhanshree Amare          | K.J. Somaiya College, Mumbai                          | Development of Biochemical methods for detection of adulteration in legume based traditional food products         | 7 <sup>th</sup> Dec 2012    | LA  |
| 4.  | Anuradha Deorukhkar      | S.I.E.S (Sion)                                        | Characterisation and biochemical studies of isoflavones occurring in commonly consumed Indian legumes              | 19 <sup>th</sup> Dec 2012   | LA  |
| 5.  | Pratipanna Dash          | Sophia College, Mumbai                                | Studies on enzymatic protein hydrolysis and characterization of protein hydrolysates                               | 21 <sup>st</sup> Oct 2013   | LA  |
| 6.  | Gayatri Bakshi           | G.N.Khalsa College (Matunga)                          | Studies in pectinase enzymes and associated inhibitors in selected fruits                                          | 23 <sup>rd</sup> Sep 2013   | LA  |
| 7.  | Santosh Pradhan          | Mumbai University (Kalina Campus)                     | Detection and mitigation of Aflatoxin in selected food commodities and food products                               | 16 <sup>th</sup> Apr 2015   | LA  |
| 8.  | Amruta Karangutkar       | G.N. Khalsa College, Mumbai                           | Studies on extraction, characterization, stabilization of natural pigments                                         | 1 <sup>st</sup> May 2015    | LA  |
| 9.  | Riddhi Sota              | Lokmanya Tilak Municipal Medical college, Mumbai      | Studies in PPO enzyme in food sources (tentative)                                                                  | 20 <sup>th</sup> April 2015 | LA  |
| 10. | Akshata Raosaheb Salve   | Guru Nanak Khalsa College, Mumbai                     | Development of a Peanut based functional foods.                                                                    | 7 <sup>th</sup> March, 2014 |     |
| 11. | Prajakta Sadawarte       | Dr. Balasaheb Sawant Konkan krishi vidyapeeth, Dapoli | In process                                                                                                         |                             | SSA |
| 12. | Prajakta Ankush Insulkar | Birla College, Kalyan                                 | Studies on the production of expolysaccharide from halotolerant bacteria and its biotechnological application (BT) | March 2014                  | SSL |
| 13. | Anamika Amit Banerji     | SNDT University, Mumbai                               | Indian flat breads Physico chemical and nutritional aspects (FS)                                                   | April 2014                  | SSL |
| 14. | Harshali                 | St. Xavier's                                          | Studies on Ficus benghalensis                                                                                      | Sept 2010                   | SSL |

|     |                                 |                                                   |                                                                                                             |                 |     |
|-----|---------------------------------|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-----------------|-----|
|     | Bandekar                        | College, Mumbai                                   | using biotechnological approach (BT)                                                                        |                 |     |
| 15. | Supriya Raut                    | G.N. Khalsa College, Mumbai                       | Studies in carbonate degrading & precipitation microorganisms in materials(BT)                              | Aug 2009        | SSL |
| 16. | Dhiraj Gohil                    | Institute of Science, Mumbai                      | Fermentation of dietary fibers <i>in vitro</i> with human colonic bacteria (BT)                             | Sept 2010       | SSL |
| 17. | Mangesh Inarkar                 | Department of Biotechnology, University of Mumbai | Studies on utilization of agricultural waste.(BT)                                                           | Aug 2009        | SSL |
| 18. | Majeed Jamkhani                 | SASTRA University, Tamil Nadu                     | Study on Isolation and Characterization of Allergens of Large Varieties of Tomatoes in Indian Population    | July 2013       | SSL |
| 19. | Misra Rachana*                  | University of Allahabad                           | Study on plant gums (BT)                                                                                    |                 | USA |
| 20. | Digole Shraddha* (UGC SAP)      | Institute of Science, Mumbai                      | Fermentative production and downstream processing of mycophenolic acid using biotechnological approach (BT) | Sept 2010       | USA |
| 21. | Datta Suprama* (CSIR)           | Birla College, Mumbai                             | Characterization and profiling of <i>Saccharomyces boulardii</i> (BT)                                       | July 2013       | USA |
| 22. | Bagul Vaishali *(UGC SAP)       | KTHM College, Nashik                              | Studies in fermentative production and downstream processing of docosahexanoic acid (BT)                    | August 2013     | USA |
| 23. | Rahman Momin Bilal M. (UGC SAP) | Institute of Science, Mumbai                      | Fermentative production and downstream processing of arginase (BT)                                          | July 2013       | USA |
| 24. | Vaidya Aniruddha (UGC SAP)      | Dept. of Microbiology, University of Pune         | Development of phage-based biosensor (BT)                                                                   | December 2012   | USA |
| 25. | Ghanate Aarti * (UGC SAP)       | Shivaji University, Kolhapur                      | Studies in traditional foods: process and technology development (BT)                                       | December 2012   | USA |
| 26. | Bhagwat Ashlesha * (UGC SAP)    | K.J. Somaiya College, Mumbai                      | Studies in probiotics (BT)                                                                                  | December 2012   | USA |
| 27. | Suman Kumari                    | Lady Irwin College, Delhi                         | Community based studies on human milk composition of Indian breastfeeding mothers                           | September, 2016 | USA |
| 28. | Anusha Mishra                   | Punjab Agricultural University, Ludhiana          | Development of low glycemic index food                                                                      | October 2017    | USA |



|     |                                      |                                                         |                                                                                                  |                  |     |
|-----|--------------------------------------|---------------------------------------------------------|--------------------------------------------------------------------------------------------------|------------------|-----|
| 29. | Janve Madhura<br>Pramod              | Khalsa College,<br>Mumbai                               | Chelates of Iron with Amino<br>Acids and Sugars for<br>Improved Bioavailability and<br>Stability | July 2015        | RSS |
| 30. | Marathe<br>Sandesh<br>Jagdish        | Pune University                                         | Biotransformation of<br>biomolecules                                                             | April 2015       | RSS |
| 31. | Manvi Jayant<br>Vernekar             | Ruia College of Arts<br>Science and<br>Commerce, Mumbai | Gene-diet-disease interaction<br>of polyunsaturated fatty acid<br>metabolism                     | December<br>2012 | RSS |
| 32. | Jayashree<br>Harihara<br>Subramanian | Mumbai University                                       | Fermentative Production and<br>Downstream Processing of<br>Fucoxanthin                           | August 2010      | RSS |

SSL: Prof. S.S. Lele; RSS: Prof. R.S. Singhal; USA: Prof. U.S. Annapure; LA: Dr. Laxmiananthanarayan; SSA: Dr. S.S. Arya

**39. Number of post graduate students getting financial assistance from the university: Nil**

**40. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology. NA**

**41. Does the department obtain feedback from**

- Faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback?  
**Yes.** The feedbacks are discussed in board meeting and necessary steps are taken.
- Students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback?  
**Yes.** They are discussed in faculty meeting for further action or improvement.
- Alumni and employers on the programmes offered and how does the department utilize the Feedback? No.

**42. List the distinguished alumni of the department**

- Prof. Rakesh Banzai
- Prof. C.J.K. Henry
- Prof. P.R. Kulkarni
- Prof. D.V. Rege
- Prof. S.S. Lele
- Dr. Deepa Bhajekar
- Mr. L.R. Chadha

**43. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts.**

| Sr. No. | Date | Fellowship | Distinguished Speaker/ | Title of Lecture |
|---------|------|------------|------------------------|------------------|
|---------|------|------------|------------------------|------------------|

|     |                    |                                                    | Affiliation                                                                                        |                                                                                                                                                                   |
|-----|--------------------|----------------------------------------------------|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.  | October 30, 2017   | -----                                              | Dr. Sergio Neves and Dr. Thierry Marcel<br>Roquette Pvt. Ltd.                                      | How to transfer natural raw materials into sustainable nutrition and health speciality solution                                                                   |
| 2.  | August 28, 2017    | -----                                              | Reena Chaudhary,<br>DuPont Nutrition & Health,<br>Mumbai ,India,                                   | Innovative food ideas in local and ethnic food industry'                                                                                                          |
| 3.  | February 27, 2017  |                                                    | Mr. Ashish Yadav<br>Anton Paar, India                                                              | Analytical and Preparative Instrumentation for the Food Industry                                                                                                  |
| 4.  | December 7, 2016   | -----                                              | Mr. Irshad Shaikh, Senior Manager-Technical, Keva Flavours, Mumbai                                 | 'Flavours and its application in food industry'                                                                                                                   |
| 5.  | December 9, 2016   | -----                                              | Dr. Dilip N. Kulkarni,<br>President-Agri Food Division<br>Jain Irrigation Systems Limited, Jalgaon | How the Supply-Chain-System, Integration of Backward & Forward Linkages and farmers benefitted?                                                                   |
| 6.  | January 1, 2015    | -                                                  | Prof. K. Niranjana,<br>University of Reading, UK                                                   | How to publish successfully in<br>An era of changing publishing paradigm                                                                                          |
| 7.  | January 17, 2015   | Golden Jubilee Visiting Fellowship                 | Dr. Alankar Vaidya,<br>Scientist, Scion, New Zealand                                               | An efficient process for the conversion of <i>Radiata pine</i> to sugars suitable for biofuel production                                                          |
| 8.  | January 30, 2015   | Professor B.D. Tilak Visiting Fellowship Endowment | Dr. Amaraendra N. Pathak, Dean Research, Amity University Rajasthan, Jaipur, India                 | i) Modern technology management and its strategy for chemical and allied industries<br>ii) Troubleshooting during antibiotics production in fermentation industry |
| 9.  | November 7, 2014   | -                                                  | Prof. Adinpunya Mitra,<br>IIT Kharagpur                                                            | Discovering metabolic Route to phenolic fragrance Formation in <i>Hemidesmus indicus</i> (Anantmul) roots                                                         |
| 10. | October 8, 2014    | -                                                  | Dr. S. P. Kochchar                                                                                 | Frying oils and TOM for Quality snack production                                                                                                                  |
| 11. | August 12, 2014    | -                                                  | Prof. Mukund V. Karwe                                                                              | High pressure processing of foods: opportunities and challenges                                                                                                   |
| 12. | July 19, 2014      | -                                                  | Prof. S. N. Upadhyaya                                                                              | Biomass as feedstock for Chemical processes                                                                                                                       |
| 13. | July 18, 2014      | -                                                  | Mr. Anil Chittar                                                                                   | Food process equipment, Design and challenges                                                                                                                     |
| 14. | September 16, 2013 | Organized under TEQIP Prof. Stephen Knabel         | Prof. of Food Science, Department of Food Science, Pennsylvania State University, USA.             | Bacterial Growth Curves and Their Implications for Food Safety                                                                                                    |

|     |                    |                                        |                                                                                                                                                      |                                                                                                  |
|-----|--------------------|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 15. | September 07, 2013 | Guest lecture jointly with PFNDIAI     | Mr.U. Purnachand, Solae                                                                                                                              | Advantages of Soya in Sports & other Physical Activities                                         |
| 16. | August 31, 2013    |                                        | Dr. S. K. Samant, Vice President, R & D, Cadbury India Ltd.                                                                                          | Recent advances in chocolate manufacturing                                                       |
| 17. | August 16, 2013    | Marico Industries Visiting Fellowship  | Professor Jayant R. Bandekar, Professor Homi Bhabha National Institute(Deemed University), Head, Radiation Biology & Health Sciences Division (BARC) | Microbiological aspects of radiation processing of food                                          |
| 18. | July 22, 2013      | Golden Jubilee Visiting Fellowship     | Dr. Shyam Sablani, Associate Professor of Food Engineering Biological Systems Engineering                                                            | Smart Packaging Technologies                                                                     |
| 19. | June 15, 2012      | Prof. A. Sreenivasan Endowment Lecture | Mr. Balaji Shetty, Oxyrich                                                                                                                           | Package Drinking Water Safety Issues and Growth                                                  |
| 20. | February 22, 2012  | Prof. A. Sreenivasan Endowment Lecture | Dr.Kalpagam Polasa, Head, Food & Drug Toxicology Research Centre, National Institute of Nutrition (ICMR), Hyderabad                                  | Innovations in Food Safety Challenges and Opportunities Including Nanotechnological Applications |
| 21. | February 17, 2012  | Lupin Visiting Fellowship Lecture      | Dr. Girish B. Mahajan, Senior Group Leader, Anti-infective Screening & Prokaryote Isolation, Department of Natural Products, Piramal Healthcare      | Microbes :A source for New Antibiotics for Bad Bugs                                              |
| 22. | February 9, 2012   | Prof. B. D.Tilak Fellowship Lecture    | Dr. Rajendra Kokane Professor and Head, Livestock Product Technology, Veterinary College, Mumbai                                                     | Protecting the Safety of Milk                                                                    |
| 23. | January 24, 2012   | Marico Industries Endowment Lecture    | Ms. Chinmayee Deulgaonkar, Manager, Business Build, DET Norske Varitas (DNV), Mumbai                                                                 | Hazard Analysis in Food Industry                                                                 |

#### 44. List the teaching methods adopted by the faculty for different programmes

- Audio-visual presentation for theory and practical classes
- Mini projects (Individual and group based projects) in individual subjects
- Research oriented final year projects and Research paper publication in conference/seminars/journals
- Invited guest lectures are regularly arranged
- Remedial classes for slow learners
- Industrial visits are arranged

- Out-of-syllabus study
- Assignments
- MCQ tests
- Quiz
- Student projects and presentations
- Group discussion
- Case studies
- Experimental laboratory work

**45. How does the department ensure that program objectives are constantly met and learning outcomes are monitored?**

They are performed under the guidance of faculty through continuous evaluation tests, periodic class tests, quiz, critical assessment of research papers, seminars beyond the domain, seminars, workshops and two examinations.

**46. Highlight the participation of students and faculty in extension activities.**

- National and international conferences
- Symposium
- Seminars
- Guest lectures
- Workshops
- Refresher course

**47. Give details of “beyond syllabus scholarly activities” of the department.**

Organizing co-curricular events and personnel training on various aspects such as:

- Bio-Processing of Agri-Residues
- Microbiological aspects of radiation processing of food
- Nutrition Week Activity 2013
- Bacterial Growth Curves and Their Implications for Food Safety
- *Listeria monocytogenes*: A Unique Foodborne Pathogen
- Seminar on Traditional Foods
- Technical session on ‘Traditional Food: Challenges and Opportunities’
- World Food Day
- DBT-JRF Regional Meet
- Classroom coaching program for GATE and other entrance Exams

**48. State whether the programme/ department is accredited/ graded by other agencies?**

NBA

**49. Briefly highlight the contributions of the department in generating new knowledge, basic or applied.**

Since the inception of the faculty members of FETD made significant contributions for the advancement of knowledge in disciplines such as of food engineering & technology and food biotechnology through research, innovation as well as lectures. The faculty members

wrote books and chapters in the books on trust areas of food biotechnology, food engineering and technology. The renowned faculties of FETD are in the habit of publishing more than 30 research papers per year in international recognized journals. Every year the faculty members are invited speakers on international seminars or workshops and there are international visitors in the department. The former students of the department are well placed and some of them occupy the chair of professors and head at various Indian Universities.

**50. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.**

**Strength**

- Highly qualified and experienced faculty
- Cooperation and understanding within the department
- An interdisciplinary culture involving both students and faculty
- Collaborative teaching and research
- Active support from alumni and industries for research and academics

**Weaknesses**

- More demanding infrastructure
- Less number of faculty with respect to students
- Lack of trained technical staff

**Opportunities**

- Industrial involvement for development of infrastructure
- Enrolment of students across the country
- Involvement of alumni for strengthening the academic activities
- Scholarly activities

**Challenges**

- To provide state-of-art research facility to students
- To make the department one of most sought in India
- Frequent up gradation of curriculum
- Competitive funds for research

**51. Future plans of the department.**

The main constraints which limit the realization of true potential are limited space and infrastructure, limited funding and limited opportunities for networking. If these can be tackled through generation of funding, it would definitely raise the bar.

Newer techniques of food processing and preservation as well as robust analytical methods for quality assurance is the need of the hour and which requires skilled faculty and students. The main requirement would be opportunities to showcase the work and interact with faculty from various universities. This can happen if at least attending one conference abroad in a year is facilitated for

all faculty. This can truly open up more collaborations, bring laurels to ICT, and instil a sense of pride, enthusiasm and well-being amongst the faculty and also the students.

**Hence the plan of the department for next five years will be targeted to**

- Get more faculty and space and also the funds for equipment and instruments
- Plan certificate and diploma courses of short term duration- some regular and some on demand Conduct industry projects more efficiently
- Begin new areas such as Agricultural Management, Food Policy Research, Food Psychology, Sports Nutrition, Maternal and Child Nutrition, and Food Regulations.

**IMPROVING TEACHING AND RESEARCH IN THE DEPARTMENT BY**

- Number of M. Tech students per year per faculty be restricted to 5 to enable full and proper attention to each one of them
- Number of Ph.Ds to be restricted to maximum of 20, 15 and 10 for Professors, Associate Professors and Assistant Professors, respectively.
- Younger faculty may be encouraged to supervise Ph.D students as a co-guide for first 2-3 students before taking over as full-fledged supervisors
- More laboratory space to create new labs with better infrastructure including animal house, a lab structure to carry out human trials on nutraceuticals
- Web-based learning- Endowment lectures
- Lectures on Skype from Adjunct Professors or even Visiting Faculty- if stationed abroad
- Improve networking through organizing more conferences and workshop, as well as collaborations from scientists all over the world
- Have mentors from industry, if possible, for all levels of study
- Have better and probably centralized facilities for in-plant training and placements
- Centralized analytical facilities with qualified personnel to train the students and look after the students

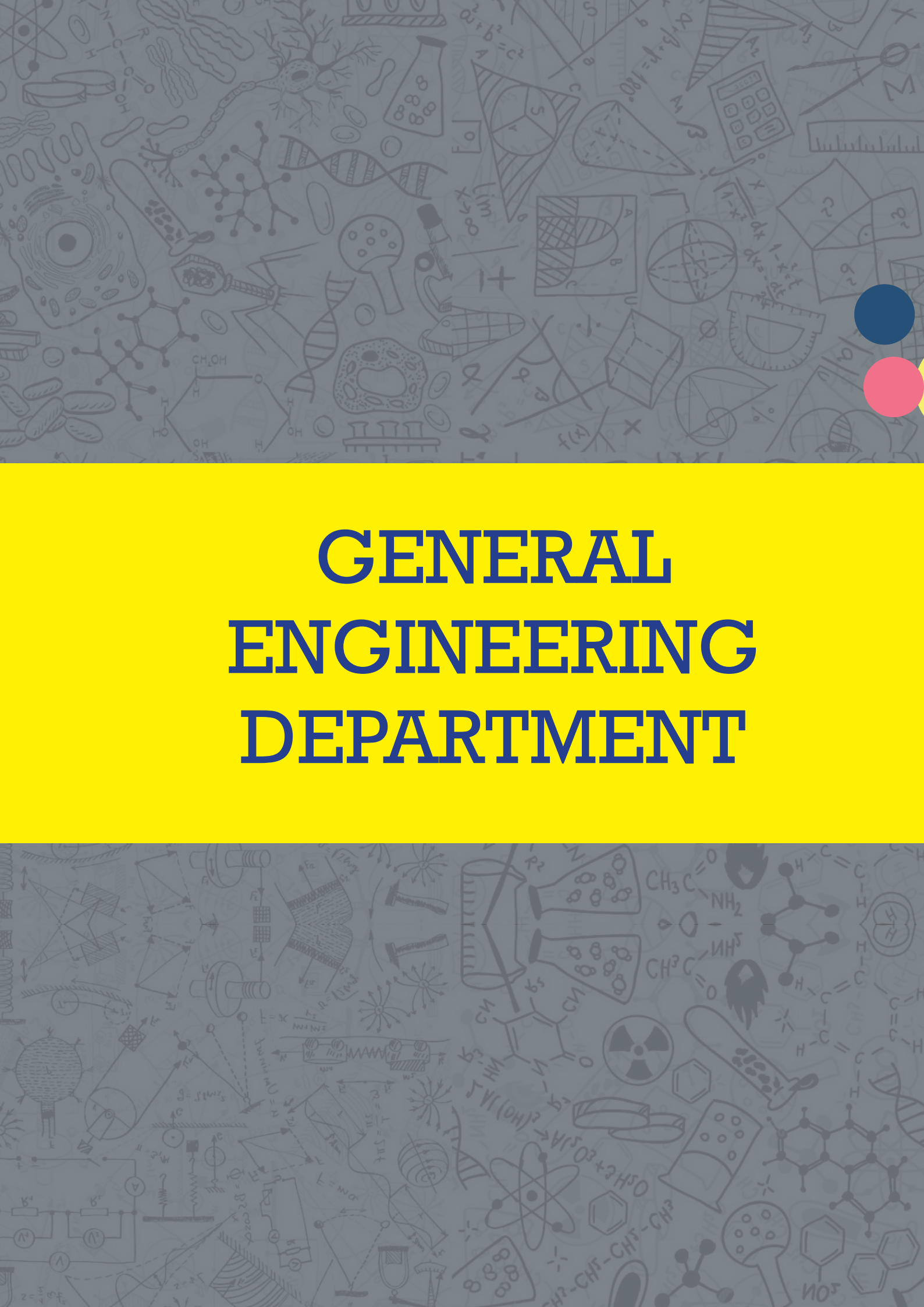
**BY PROMOTING RESEARCH IN THE FOLLOWING AREAS:**

| Broad Area of Research                                 | Broad Overview                                                                                                                                                                                                                                                                                                                                   | Involved Faculty                                |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| Cold Plasma Technology for Food Processing             | The applicability of this non-thermal technology will be evaluated for different food product with respect to its functionality, quality attributes and shelf life estimation.                                                                                                                                                                   | Prof U. S. Annapure                             |
| Extrusion processing – process and product development | Development of Novel product through extrusion technology will be one of the thrust areas. It will be accomplished by ingredient selection, formulation, optimization of product and process parameters like barrel temperature, feed moisture content, die rpm, feed rate etc.                                                                  | Prof U. S. Annapure<br>Dr. Laxmi Ananthanarayan |
| Frying - Chemistry and Technology                      | The changes in product characteristic during frying will evaluated in view of different ready-to-eat product. The process (frying temperature and time) will be optimized thereafter considering both product and frying medium. Finally the shelf life of the product will be evaluated at a particular storage condition (RH and Temperature). | Prof U. S. Annapure<br>Prof. R. S. Singhal      |
| Nutraceuticals –                                       | Extraction of different nutraceuticals from suitable agro-food industry                                                                                                                                                                                                                                                                          | Prof U. S. Annapure                             |

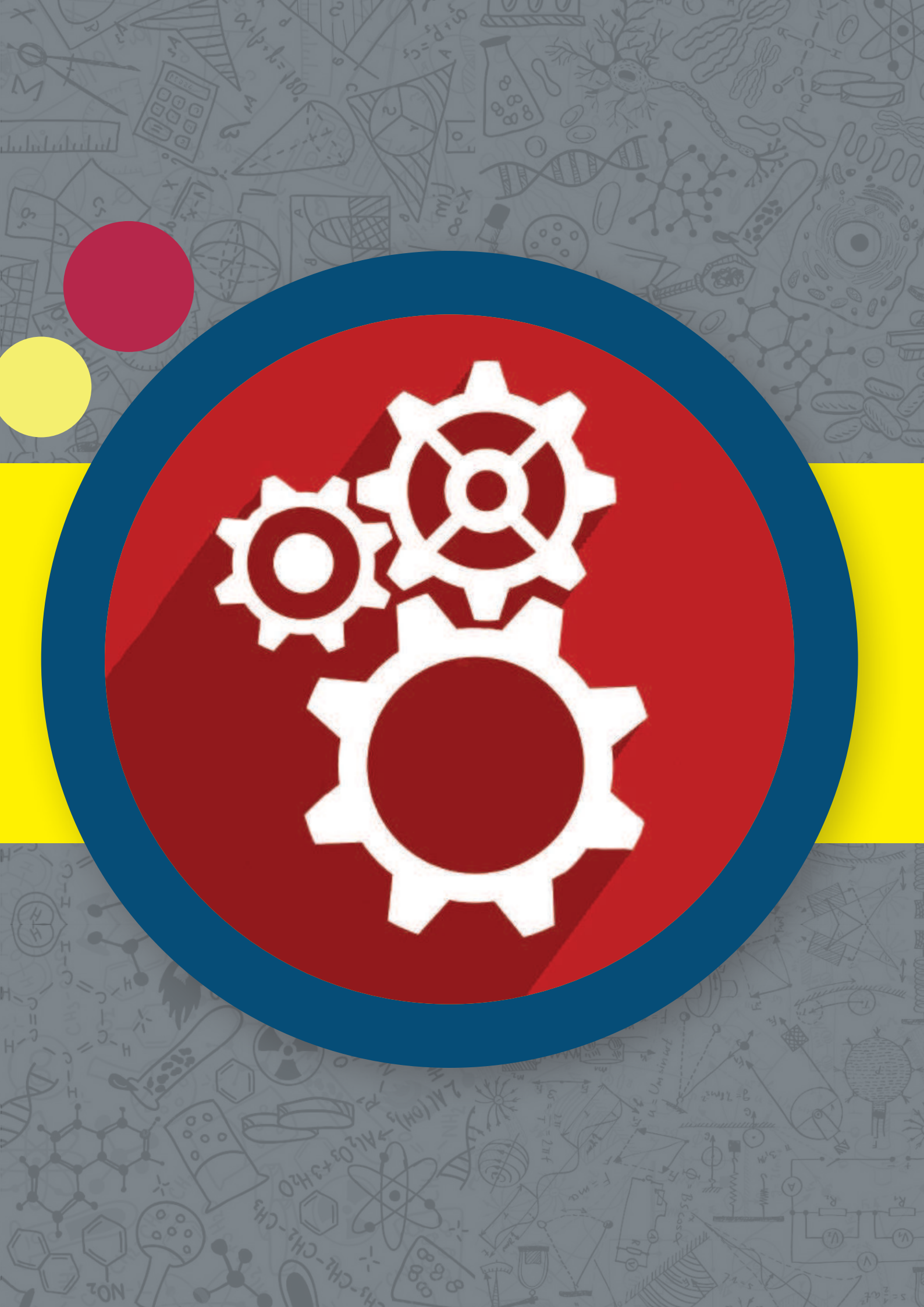


|                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                          |
|---------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Chemistry, Technology and Product Development                             | component in view of enrichment of a particular food product. Initially the extraction condition will be optimized for a maximum yield with highest purity and stability. Further, the characterization will be done for the extracted nutraceuticals. Changes in product quality will be evaluated immediately after adding the nutraceutical (at optimized quantity) and even during storage.                                                                                                 | Dr. Jyoti Sontakke-Gokhale                                                                                               |
| Carbohydrates - Chemistry and technology                                  | Extraction of different carbohydrates from suitable minor grains, tubers and plant gums. Those are applicable in view of enrichment of a particular food product or a stand-alone entity. Initially the separation and purification steps will be optimized for a maximum yield with highest stability. Further, the characterization will be done for those components followed by their application in particular food matrices. Changes in product quality will be evaluated during storage. | Prof. U. S. Annapure                                                                                                     |
| Traditional foods - Product and technology development                    | This project will be aimed primarily exploring the technical and scientific approaches in making the particular traditional food. Standardizing each process steps for the product will be one of the major objectives so that scale up will be easier. Finally the shelf-life evaluation of the product will be one of the major targets.                                                                                                                                                      | Prof U. S. Annapure<br>Prof. R. S. Singhal<br>Dr. Laxmi<br>Ananthanarayan<br>Dr. S. S.Arya                               |
| Fermentative production and downstream processing of enzymes-biomolecules | This project will explore the application of enzymes in different food formulations. It will not be restricted to extraction of enzyme through different fermentation process. Optimization of the fermentative extraction process will be one of the key objectives. Characterization of the enzyme and its stability kinetics will be studied further. Application of that particular enzyme in the food preparation steps will be optimized for a maximum yield and quality attributes.      | Prof U. S. Annapure<br>Prof. R. S. Singhal<br>Dr. Laxmi<br>Ananthanarayan<br>Dr. S. S.Arya<br>Dr. Jyoti Sontakke-Gokhale |

[illegible]

The background of the entire slide is a dense, light gray collage of various scientific and engineering sketches. These include biological structures like cells and DNA, mathematical formulas such as  $E=mc^2$  and  $f(x)$ , chemical structures like CH3C(=O)NH2 and CH2=CH2, and mechanical diagrams of gears and circuits. In the top right corner, there are two solid colored circles, one dark blue and one pink.

# GENERAL ENGINEERING DEPARTMENT





## **General Engineering Department**

General Engineering Department of the Institute was established in the year 1954 and is involved in teaching undergraduate as well as postgraduate students of the institute. The Department is running a full time master's course M. E. in Plastics Engineering from 1972. Students having basic qualification in Mechanical, Production, Plastic/ polymer, Electrical and chemical engineering and technology are eligible for admission to this course. The course deals with processing of plastics, composites, design of molds, design of processing tools/ machinery, CAD, CAM and CAE and testing, development of new materials for industrial as well as domestic applications. Apart from laboratories such as workshop, electrical and electronics, applied mechanics and strength of materials, the department has provision for special facilities of processing of plastic and polymer composites, testing of plastics, and computer aided design and drawing laboratories. These laboratories cater to the needs of the under graduate and post graduate students of the Department and institute. The Department has plastic processing equipment such as micro-processor controlled injection molding machine with molds of standard mechanical test pieces, blow molding machine, rotational molding machine, and single screw extruder. Department have licensed CAD software such as Mold flow, Pro-engineer and Solid Works with high end computer facilities. It also has testing machines such as impact tester, MFI tester, hardness tester etc. GATE qualified candidates of M. E. in Plastics Engineering receive AICTE fellowships and TEQIP program fellowships. Doctoral students of Plastics/ Mechanical/ Production/ Electrical/ Civil/ Engineering will get 1 UGC SAP fellowship per year. Candidates can register for Ph. D. in Plastics/ Mechanical/ Production/ Electrical/ Civil/ Engineering either full time or as a external candidates (Only for teachers/ employees from Government organizations).

Department is having specialized teaching faculty from mechanical, plastics, production, civil, electrical and electronics branches. Most of the faculty are guides for the masters and doctoral programs of the institute in the area of their specialization. Students can take up research in multidisciplinary areas. Department is also responsible for Civil and Electrical maintenance and repairs of institute buildings, laboratories, faculty quarters and hostels. Department is actively involved in the development of the new buildings and infrastructural facilities. The department has recently setup cement composites laboratory for doing work on different cement composites using Industrial wastes, construction chemicals, fibers etc.

1. **Year of establishment:** 1950
2. **Is the Department part of a School/Faculty of the university?** Yes
3. **Names of programmes offered (UG, PG, M.Phil., Ph.D., integrated masters; integrated Ph.D., D.Sc., D.litt., etc.)**  
M.E (Plastic Engineering) Post Graduate Course, Ph.D (Tech) in Mechanical, Civil, Polymer, Electrical and Electronics Engineering.
4. **Interdisciplinary programmes and departments involved:** Polymer and Surface Engineering Department.
5. **Courses in collaboration with other universities, industries, foreign institutions, etc.** NIL
6. **Details of programmes discontinued, if any, with reasons:** NIL
7. **Examination System:** Semester system
8. **Participation of the department in the courses offered by other departments:**  
**Undergraduate Courses B.Chem. engg and B.tech (all Branches)**
  - a) Structural Mechanics to SY Chem Engg
  - b) Engineering Mechanics and Strength of Materials to SYB Tech (all Branches)
  - c) Engineering Graphics-I for B.chem.Engg and B.Tech (allBranches)
  - d) Electrical Engineering and Electronics: B.chem. Engg and B.Tech (all Branches)
  - e) Process Equipment Design and Drawing 2
  - f) Engineering Graphics 2 for B.chem.Engg
  - g) Energy Engineering for B.chem.Engg.
  - h) Advanced Strength of Materials ( Elective) for B.chem.Engg
    - (i) Design & Fabrication of Molds I
    - (ii) Design & Fabrication of Molds II
    - (iii) Design of Molds (Drawing)
9. **Number of teaching posts sanctioned, filled and actual (Professors/ Associate Professors /Asst. professors/ others)**

|                      | Sanctioned | Filled | Actual (including CAS & MPS) |
|----------------------|------------|--------|------------------------------|
| Professor            | 1          | ----   | 2                            |
| Associate Professors | 4          | 3      | 3                            |
| Asst. Professors     | 4          | 1      | 1                            |
| Others               | ----       | ---    | ---                          |

10. **Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance**



| Name                  | Qualification                                      | Designation                                   | Specialization        | No. of Years of Experience | No. of Ph.D./M. Phil.students guided for the last 4 years |
|-----------------------|----------------------------------------------------|-----------------------------------------------|-----------------------|----------------------------|-----------------------------------------------------------|
| Dr A.C Rao            | B.E.(Mech.), M.E (Mech), PhD (Plastic Engg) (Tech) | Associate professor in Mechanical Engineering | Plastic Engineering   | 24 (Retired)               | 1-PhD, 5-M.E (Plastic)                                    |
| Prof S.P. Deshmukh    | B.E (Prod), M.E (Prod), PhD (Tech) Plastic Engg    | Workshop Superintendent/ Professor            | Plastic Engineering   | 19                         | 1-PhD, 5- M.E                                             |
| Dr D.D Sarode         | B.E (Civil), M.E, PhD (Civil)                      | Associate Professor in Civil Engg             | Civil/Structural Engg | 19                         | 1-PhD, 4-M.E                                              |
| Prof. V.R. Gaval      | B.E.(Prod), M.E.(Plastic), Ph.D (Tech) Plastic     | Professor in General Engg.                    | Plastic Engg.         | 23                         | Four M.E.                                                 |
| Dr. R.S.N. Sahai      | B.E.(Mech), M.E.(Plastic), Ph.D (Tech) Plastic     | Associate Professor in Mechanical Engg.       | Plastic Engg.         | 18                         | Four M.E.                                                 |
| Dr. M.A. K. Kerawalla | B.E.(Electrical) M.E.(Electrical)                  | Associate Professor in Electrical Engg.       | Electrical Engg.      | 28                         | -                                                         |
| Ms. Prerna Goswami    | B.E.(Electrical) M.E.(Electrical)                  | Assistant Professor in General Engg.          | Electrical Engg.      | 18                         | -                                                         |

#### 11. List of senior visiting fellows, adjunct faculty, emeritus professors

Dr. D. D. Kale for teaching Polymer Chemistry, Dr M.B.Parmar, Dr Asit Samui

#### 12. Percentage of classes taken by temporary faculty– programme-wise information: 20%

#### 13. Programme-wise Student teacher ratio : 2:1 for M.E(Plastic Engg)

#### 14. Number of academic support staff (technical) and administrative staff : sanctioned, filled and actual: Sanctioned: 36 ( 35 Technical and 1 administrative), Filled: 25

#### 15. Research thrust areas as recognized by major funding agencies: Polymer processing and composites.

**16. Number of faculty with ongoing projects from a) national b) international funding agencies and c) total grants received. Give the names of the funding agencies, project title and grants received project-wise.** Two faculties

- 1) Cycle time reduction in roto molding funding agency is UGC from 2011-2014 & Total amount is 10 lacks, PI/Co-PI – No.
- 2) Development of water resistant plaster from gypsum. Total Grant sanctioned: 21.26 lakhs funding agency RCF Ltd.
- 3) Mitigation of water problems in AUSA Town, Later: Waste water Management. Total amount sanctioned : 1,98,47,000

**17. Inter-institutional collaborative projects and associated grants received: NIL**

- a) National collaboration      b) International collaboration

**18. Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, AICTE, etc.; total grants received:** one project funded by DST.R

**19. Research facility/centre with : NIL**

- a) State recognition
- b) National recognition
- c) International recognition

**20. Special research laboratories sponsored by /created by industry or corporate bodies: NIL**

**21. Publications:**

|                                                                               | Dr. S. P. Deshmukh | Dr. A. C. Rao | Dr. D. D. Sarode | Dr. V. R. Gaval | Dr. R. S. N. Sahai | P. Goswami |
|-------------------------------------------------------------------------------|--------------------|---------------|------------------|-----------------|--------------------|------------|
| Number of papers published in Peer reviewed journals (national/international) | 27                 | 6             | 9                | 6               | 8                  | 18         |
| Chapters in Books:                                                            | 2                  | 0             | 5                | 0               | 0                  | 0          |
| Citation Index                                                                | 45                 | 20            | 94               | 12              | -                  | -          |
| Impact Factor                                                                 | 0.5-3.5            | 0.5-2         | 0.5-4            | 0.5-1.5         | 0.5-1.5            | 0.8        |
| h Index                                                                       | 4                  | 4             | 4                | 2               | 0                  | 0          |

**22. Details of patents and income generated:** “A Water Resistant Phosphogypsum Composition”  
12<sup>th</sup> December 2014.

**23. Areas of consultancy and income generated**

- a) Hindustan Unilever Ltd.2013- Expert opinion on Patentability of Indian patent (Rs.100000)
- b) Hindustan Unilever Ltd.2014- Expert opinion on Patentability of Indian patent (Rs.100000)

**24. Faculty selected nationally / internationally to visit other laboratories / institutions industries in India and abroad : NIL**

**25. Faculty serving in a) National committees b) International committees c) Editorial Boards d) Any other (please specify) : NIL**

**26. Faculty recharging strategies (UGC, ASC, refresher/orientation programs, workshops, training programs and similar programs).**

1. One week Faculty Development Program under TEQIP at Welingkar Education October 15-22, 2012
2. Two week ISTE WORKSHOP on Engineering Thermodynamics by IIT Bombay under National Mission through ICT(MHRD), 11<sup>th</sup> to 21<sup>st</sup> December,2012
3. One week Faculty Development Program under TEQIP at VJTI, Mumbai 18<sup>th</sup> to 22<sup>nd</sup> February2013
4. One week workshop and training course under TEQIP at ICT, Mumbai organized by UGC and NRC, 10-14 June,2013
5. One week short term course by National Institute of Technical Teachers Training and Research (NITTR), Pune, recognized by AICTE, 16-20 June,2014
6. One week workshop under TEQIP at ICT, Mumbai , 5-10 July,2014
7. One week training program at ICAR-CIRCOT, Mumbai sponsored under TEQIP, 5-9 October,2015 (R.S.N.Sahai)
8. Attended 1-week workshop on 'Honing Mentoring Skills-A Holistic way' at ICT Mumbai, (July 3-8 2014).
9. Dr. D.D. Sarode attended continuing education program and Quality Improvement program under TEQIP at IIT Bombay on "Institution Building through Appreciative Mindset" from 24th Jan 2013 to 4th Feb 2013
10. Dr. D.D. Sarode, Dr. V.R. Gaval and Dr. RSN Sahai attended under TEQIP one week training program on Management Capacity Building at Welingkar Institute of Management and Research.
11. Dr. D.D. Sarode attended a 8 days faculty development program under TEQIP on "Management Capacity Building" 15<sup>th</sup> to 22<sup>nd</sup> Oct.2012 at Welingkar Institute of Management and Research, Mumbai 19

12. Dr. D.D. Sarode attended a AICTE approved Short term training program Application of Finite Element Method in Civil Engineering” 16<sup>th</sup> to 20<sup>th</sup> April 2012, at VJTI, Mumbai 400019
13. Dr. D.D. Sarode attended a TEQIP sponsored one week training program “Performance Based Design of Structures” 22<sup>nd</sup> to 26<sup>th</sup> March 12 at VJTI, Mumbai
14. Dr. D.D. Sarode attended Damage Assessment and Repairs Methodology for RCC Structures AICTE approved short training program 9<sup>th</sup> to 13<sup>th</sup> Jan 2012 at VJTI, Mumbai 19
15. Dr. S.P. Deshmukh attended ISTE Workshop on Heat Transfer, conducted by IIT Bombay from 29<sup>th</sup> Nov. to 10<sup>th</sup> December 2011.
16. Dr. S.P. Deshmukh attended 6<sup>th</sup> International Workshop on Crystalization, filtration, Drying, Milling and Granulation, organized by WFCFD & ICT during 16 to 18 Feb. 2012.
17. Dr. S.P. Deshmukh attended ISTE Workshop on Introduction to Research Methodologies, conducted by IIT Bombay from 25<sup>th</sup> June 2012 to 4<sup>th</sup> July 2012
18. Dr. S.P. Deshmukh attended MHRD’s National Mission for Teachers, Management Capacity Enhancement programme at IIM Indore between 16<sup>th</sup> to 25<sup>th</sup> Jan. 2013.
19. Dr. S.P. Deshmukh attended Workshop on ‘Outcome Based Accreditation Process and Parameters’ Delhi Technological University, Delhi 42, held on 21<sup>st</sup>– 22<sup>nd</sup> Sep. 2012.
20. Dr. S.P. Deshmukh attended a Workshop on MHRD Govt. Of India program on Survey of Higher Education in India, at Marathwada Mitra Mandal’s Commerce College, Deccan Gymkhana Pune, 10<sup>th</sup> Oct.2012
21. Dr. S.P. Deshmukh attended a 10 days training program under TEQIP at IIM Indore on “Management Capacity Building
22. One week Faculty development program on Managing Change at Welingkar Institute of Management, Mumbai from (3-7) November2008.
23. One week Short term course on state estimation of non linear dynamical systems conducted by IIT, Madras at VJTI, Mumbai from 6/1/2014 to 10/1/2014
24. One week Workshop on smart grid cybersecurity, conducted by ISGF CDAC&NDLS, VJTI, at Mumbai from 13/1/2014 to 17/1/2014
25. Short term course on Research Methodology, conducted by TEQIP, VJTI at Mumbai from 3/2/2014 to 7/2/2014.
26. 1 week workshop on ‘Honing Mentoring Skills-A Holisticway’ at ICT Mumbai from July 3-8,2014

27. V.R. Gaval attended International Conference on Advances in Mechanical Sciences held at Malnad College of Engineering, Hassan, Karnataka between 3rd March to 5th March 2017.
28. V.R. Gaval Technical session chair and invited speaker at 4th international conference organized by International society for Engineers and Researchers on 16th August 2015 at Bangkok.
29. V.R. Gaval presented paper titled “effect of particle size and concentration of flyash on properties of polytrimethyleneterephthalate” at International conference on chemical, Metallurgy and Materials science engineering held on 10-11 August 2015 at Pattaya, Thailand.
30. V.R. Gaval attended 3 day workshop on “Quality initiatives in Technical and Higher Educational Institutions at Engineering staff college of India from 7-9 October 2015, Hyderabad.
31. V.R. Gaval attended two days public training programme titled “Patent specification, drafting and international patent filing procedure” conducted by Rajiv Gandhi national institute of Intellectual property Management, Nagpur On 22nd -23rd September 2016.
32. V.R. Gaval attended one week workshop on “Polymer and polymer nano-composites processing” at R.V. College of Engineering, Bengaluru between 27th June to 2nd July 2016 under TEQIP 2
33. Perna Goswami attended one week workshop on ‘Honing Mentoring skills- A holistic approach’ from July 3-8, 2014 at ICT, Mumbai (organized under TEQIP)
34. Perna Goswami attended one week Workshop on ‘Renewable Energy and Ancillary Services’ from December 9-13, 2016, organized by COE (CNDS), VJTI, QIP and Continuing Education Program (QICEP), IIT Delhi (under TEQIP)
35. Perna Goswami one week Faculty Development Program under AICTE sponsored QIP on ‘High Voltage and Partial Discharge’ from 14-19 December 2016 at VJTI, Mumbai
36. Perna Goswami one week FDP under AICTE (QIP) on
37. ‘Wave Theory and applications’ from 2-7 January, 2017 at VJTI Mumbai
38. Perna Goswami one week TEQIP II sponsored workshop on SMART GRIDS: RENEWABLE INTEGRATION & MICROGRIDS organized in collaboration with CODTE, IIT Kanpur from 25 February, 2017 to 1 March 2017 at VJTI Mumbai.
39. Perna Goswami attended 2 days workshop on Faculty and staff development for Improved Competency and Management Capacity Enhancement on 21 and 22 March 2017.

40. Prerna Goswami participated and Presented a research paper on ‘Assessment of Wave Energy along Western Coast of India’ at ‘XIII Triennial Conference on Sustainable Development in India: Role of Science and Technology’ organized by Indian Women Scientists Association (IWSA) from 2-4 Dec, 2016.
41. Prerna Goswami given Invited lecture on ‘Electrical Safety’ in Laboratory safety workshops for Ph.D. students and Non Teaching Staff organized under TEQIP by Department of Chemistry at ICT, Mumbai in year 2014
42. D.D. Sarode attended a short term course on Sustainability in Constructions : Materials and Management, 30th May 2016 to 1st June 2016 at Indian Institute of Technology, Guwahati, Aasam.
43. M.A.K. Kerawala attended one week workshop on ‘Honing Mentoring skills- A holistic approach’ from July 3-8, 2014 at ICT, Mumbai (organized under TEQIP)
44. M.A.K. Kerawala attended one week Workshop on ‘Renewable Energy and Ancillary Services’ from December 9-13, 2016, organized by COE (CNDS), VJTI, QIP and Continuing Education Program (QICEP), IIT Delhi (under TEQIP)
45. M.A.K. Kerawala attended one week Faculty Development Program under AICTE sponsored QIP on ‘High Voltage and Partial Discharge’ from 14-19 December 2016 at VJTI, Mumbai
46. M.A.K. Kerawala attended one week FDP under AICTE (QIP) on ‘Wave Theory and applications’ from 2-7 January, 2017 at VJTI Mumbai
47. R.S.N. Sahai attended International Conference on Advances in Mechanical Sciences held at Malnad College of Engineering , Hassan, Karnataka between 3rd March to 5th March 2017.
48. R.S.N. Sahai presented paper titled “Studies on Mechanical Properties of Mica Filled PPO Composite with Coupling Agent “ at International conference on Polymer Processing and Characterization on 9-11 December 2016 at Kottayam, Kerala.
49. R.S.N. Sahai attended one week short term course on “ Understanding Learner Dynamics” at UGCHRD Centre University of Mumbai from 7th to 12 November, 2016.
50. R.S.N. Sahai attended one week course on “Wave Theory and Applications” at V.J.T.I Mumbai from 2nd to 7th January, 2017.
51. R.S.N. Sahai attended three days workshop on “Outcome based Assesment & Accreditation Preparation of NBA -SAR” at Shimla from 24th to 26th March 2017.

## **27. Student projects**



- Percentage of students who have done in-house projects including inter-departmental projects: 40%
- Percentage of students doing projects in collaboration with other universities/industry/institute: 60% In Collaboration with Industry

**28. Awards /recognitions received at the national and international level by**

- Faculty- 4
- Doctoral/postdoctoral fellows- 2
- Students- Nil

**29. Seminars/ Conferences/Workshops organized and the source of funding (national /international) with details of outstanding participants, if any : NIL**

**30. Code of ethics for research followed by the departments :**

The Institute has a set Code of Conduct for research and the Department follows the same.

**31. Student profile programme-wise:**

| Name of the Programme<br>Refer to Question no. 4 | Applications<br>Received | Selected |        | Pass Percentage |        |
|--------------------------------------------------|--------------------------|----------|--------|-----------------|--------|
|                                                  |                          | Male     | Female | Male            | Female |
| M.E (Plastic Engineering)                        | 10 (2012-13)             | 4        | 1      | 100%            | 100%   |
| M.E (Plastic Engineering)                        | 23 (2013-14)             | 6        | 1      | 100%            | 100%   |
| M.E (Plastic Engineering)                        | 15 (2014-15)             | 9        | 1      | 100%            | 100%   |
| M.E (Plastic Engineering)                        | 13 (2015-16)             | 4        | -----  |                 |        |
| M.E (Plastic Engineering)                        | 12(2016-17)              | 2        | 0      |                 |        |

**33. How many students have cleared Civil Services and Defense Services examinations, net, Set, Gate and other competitive examinations? Give details category-wise: NA**

**34. Student progression:**

| Student progression    | Percentage against enrolled |
|------------------------|-----------------------------|
| UG to PG               | -----                       |
| PG to M.Phil.          | -----                       |
| PG to Ph.D.            | 20%                         |
| Ph.D. to Post-Doctoral | Nil                         |

**Employed**

|                               |     |
|-------------------------------|-----|
| Campus selection              | 20% |
| Other than campus recruitment | 80% |
| Entrepreneurs                 | 5%  |

**35. Diversity of staff**

Percentage of faculty who are graduates

- of the same university 70%
- from other universities within the State Nil
- from universities out side the country Nil
- from universities other state 30%

**36. Number of faculty who were awarded M.PHIL., PH.D.,D.SC. and D.litt. during the assessment period. 3 faculties were awarded Ph.D(tech) Degree in last 4 years****37. Present details of departmental infrastructural facilities with regard to**

- a. Library: Central library in the Campus
- b. Internet facilities for staff and students :Yes
- c. Total number of classrooms :three Class room
- d. Classrooms with ICT facility: nil
- e. Students' laboratories: 3
- f. Research laboratories: 3

**38. List of Doctoral Students:**

| Year 2009-10 |                   |                                                                                                             |                  |
|--------------|-------------------|-------------------------------------------------------------------------------------------------------------|------------------|
| 1            | Sandesh S Ramteke | Studies on Polytetrafluoro- ethylene as an additive for lubricating materials for various applications      | Dr.A.C. Rao      |
| Year 2011-12 |                   |                                                                                                             |                  |
| 2            | V. N. Palaskar    | Standeration of geometrical configurations of hybrid(PV/T) solar system                                     | Dr.S.P. Deshmukh |
| 3            | Dipak Kokate      | Sustainability through integration of solar water Pumps and micro irrigation systems in Agriculture Sector. | Dr.S.P. Deshmukh |

|                     |                                |                                                                                                                                                             |                  |
|---------------------|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
|                     | Asha S Dahake                  | Value Addition for industrial waste                                                                                                                         | Dr.D.D. Sarode   |
| <b>Year 2012-13</b> |                                |                                                                                                                                                             |                  |
| 4                   | Ashok kumar<br>Bharimalla      | Production of Nanocellulose by Chemo-Mechanical Process and its application in                                                                              | Dr.S.P. Deshmukh |
| 5                   | PD'souza                       | Use of micro channel heat sink in refrigerator to enhance the heat transfer rate to enhance cop                                                             | Dr.S.P. Deshmukh |
| 6                   | M. P. Deshmukh                 | Development of fibre reinforced composite                                                                                                                   | Dr.D.D. Sarode   |
| <b>Year 2013-14</b> |                                |                                                                                                                                                             |                  |
| 7                   | Vikramshinha S<br>Korpale      | Optimization of Solar Assisted Dryer for Thermal Power Regeneration                                                                                         | Dr.S.P. Deshmukh |
| 8                   | Khalid Usmani                  | Investigation on Phase Change Due to Heat Transfer in Micro-channel/capillaries                                                                             | Dr.S.P. Deshmukh |
| 9                   | Navnath Kavhale                | Design and Analysis of Solar Chimney Power Plant                                                                                                            | Dr.S.P. Deshmukh |
| <b>Year 2014-15</b> |                                |                                                                                                                                                             |                  |
| 10                  | S. Raji Rajaraman              | Recycling of waste                                                                                                                                          | Dr.D.D. Sarode   |
| <b>Year 2015-16</b> |                                |                                                                                                                                                             |                  |
| 11                  | Prassanti Kulkarni             | To Optimize the Performance of a Traditional Solar Cell Using Embedded PV Converter                                                                         | Dr.S.P. Deshmukh |
| 12                  | Vishnu G Arude                 | Design & Development of Single Locking Cotton Feeder for Double Roller Gin For Enhancing Ginning Efficiency                                                 | Dr.S.P. Deshmukh |
| 13                  | Deepankar Biswas               | Design & Optimization of Concentrated Solar Thermal Collectors                                                                                              | Dr.S.P. Deshmukh |
| 14                  | Rohan S Oak                    | Optimization of Water Demand by use of Biochar for Agriculture Production                                                                                   | Dr.D.D. Sarode   |
| 15                  | Phirke Avinash<br>Nilkanth     | Industrial Wastes for Development of cement composite materials for low cost housing                                                                        | Dr.D.D. Sarode   |
| <b>Year 2016-17</b> |                                |                                                                                                                                                             |                  |
| 16                  | Prakash V. Shirsat             | Development of Efficient Treatment System for reuse of Municipal Wastewater                                                                                 | Dr.S.P. Deshmukh |
| 17                  | Mr. Mahammadayub A<br>Gulbarga | Design & Development of processes for Making natural Fibre-Polypropylene Bio-degradable pallets, upscaling manufacturing and veritable process Optimization | Dr.S.P. Deshmukh |
| 18                  | Rupesh K Behra                 | A Holistic Relation between key Performance Indicators and their Influencing Factors for Sustainability in Manufacturing for Small and Medium               | Dr.S.P. Deshmukh |

|    |                         |                                                                                                                                                       |                  |
|----|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
|    |                         | Scale Enterprises in Indian Scenario                                                                                                                  |                  |
| 19 | Jitendra S Thombre      | Experimental and Numerical Analysis of Heat distribution for Solidification of Polypropelene inside the barrel of Vertical Injection Moulding machine | Dr.S.P. Deshmukh |
| 20 | Pragya Jain             | Cost effective Inverter with Improved Efficiency and Increased Stability by Cascading DC-DC Converter with Multilevel Inverter                        | Dr.S.P. Deshmukh |
| 21 | Sagar Mukundrao Gawande | Development of eco-friendly sustainable model for waste management in small towns                                                                     | Dr.D.D. Sarode   |

**39. Number of post graduate students getting financial assistance from the university: 1**

**40. Was any need assessment exercise undertaken before the development of new programme(s)? if so, highlight the methodology : NA**

**41. Does the department obtain feedback from**

- i. Students and faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback?**

Teaching and infrastructure. This feedback helps in deciding the curriculum of the programmes as well as improving teaching learning and evaluation methods.

- ii. Alumni and employers on the programmes offered and how does the department utilize the feedback?**

Feedback is utilized for teaching-learning evaluation for designing syllabus for the programme.

**42. List the distinguished alumni of the department**

|                      |                                                                          |
|----------------------|--------------------------------------------------------------------------|
| Dr M.B.Parmar        | Managing Director, Polyblend colour Concentrate                          |
| Satej.M. Nabar       | Senior Manager, BASF                                                     |
| Manoj Patil          | Head, Supplier readiness Management Volksagen, India Pvt. Ltd. Pune      |
| Dr Jitendra Kapadia  | Buisness Development Manager, BASF                                       |
| Sunil Khokhrle       | Senior Manager, TCS, Pune                                                |
| Rajendra Nimbargi    | Senior Manager (Operations) Helvoet, Rubber and Plastic Technology, Pune |
| Ravindra kumar Gupta | Vice President R&D, Camlin India ltd                                     |
| Dr.A.C. Rao          | Associate Professor, ICT, Mumbai                                         |

**43. Give details of student enrichment programmes (special lectures/workshops/seminar) involving external experts.**

- 1) Dr.M.B.Parmar, Polyblend master batches on "Masterbatch" 12th Dec 2012 at 3.30pm for M.E. (Plastic Engg) students.
- 2) Dr.Suguna Naik, Pidilite Industries, Andheri, on "Polymer Based Construction Chemicals" Lecture was organized for M.E.(Plastic Engg) and SYB Tech students under TEQIP on 6<sup>th</sup> Oct 2012 from 1.30 pm to 3.30pm in KV Auditorium.
- 3) Dr. Mangesh Joshi, Director, Sanrachana Structural Strengthening Pvt. Ltd "Glass and Carbon Fibre Polymer Composites" Lecture was organized for M.E.(Plastic Engg) and SYB Tech students was organized under TEQIP on 6<sup>th</sup> Oct 2012 from 11am to 12.30pm in KV Auditorium
- 4) Prof. Dr.G.M.Sabnis, Emiritus Professor, University of Howard, USA on "Sustainable Energy efficient homes Reality is now!" for faculty and students of ICT under TEQIP on 20<sup>th</sup> Feb 2013 at 2 pm
- 5) Prof. Ravi Kumar Gupta, ITW Ltd on "Plastic Product Design" on Monday 18<sup>th</sup> Feb. 2013, 9 am to 10.30 am under TEQIP for M.E. (Plastic Engg) students.
- 6) Mr.V.Karunakara Raju, Head-Manufacturing & supply management, Siemens Ltd. on "Plastic Products for switch gear applications" 2nd March 2013 at 11.00 am for M.E. (Plastic Engg) students.
- 7) Dr.Mahesh Dhekane, Manager-Technology, Clariant Ltd (India) on "Masterbatch" Lecture was organized for M.E. (Plastic Engg) students under TEQIP by on 6th April 2013.
- 8) Mr.Gopal Kabra, Manager-Business Development, Helvoet Rubber & Plastics, Pune on "Techno-commercial evolution of injection molded components" Lecture was organized for M.E. (Plastic Engg) students on 6th April 2013. (find exact date)
- 9) Dr.M.B.Parmar, Managing Director, Polyblend Masterbatches on "Additives for Plastic industry" 22<sup>nd</sup> Nov. 2013 at 3.30 pm to 5.30 pm for M.E. (Plastic Engg) students.
- 10) Dr.M.B.Parmar, Polyblend masterbatches on "Recycling of Plastic waste" 29<sup>th</sup> Nov. 2013 at 3.30 pm for M.E. (Plastic Engg) students.
- 11) Dr. Sachin Waigonkar, Department of Mechanical Engg., BITS, Pilani, K.K.Birla Goa Campus on "Rotational Moulding of LLDPE using Nano scale reinforcement". Lecture was organized for ME (Plastic Engg.) students on 7<sup>th</sup> March 2014 at 11.00 am.
- 12) Dr.M.B.Parmar, Managing Director, Polyblend Master batches on "Master batches for Plastic industry" 13<sup>th</sup> August. 2014 at 3.30 pm to 5.30 pm for M.E. (Plastic Engg) students.
- 13) Dr.M.B.Parmar, Managing Director, Polyblend Masterbatches on "Recycling of Plastics" 21<sup>st</sup> August 2014 at 3.30 pm to 5.30 pm for M.E. (Plastic Engg) students.

- 14) Dr.M.B.Parmar, Managing Director, Polyblend Masterbatches on "Additives in Plastic Packaging industry" 3<sup>rd</sup> Sept.2014 at 3.30pm to 5.30pm for M.E.(Plastic Engg)students.
- 15) 3<sup>rd</sup> January2015, Manoj Patil, Head, Supplier readiness Management Volksagen, India Pvt. Ltd. "Plastics in Automotive Industry"
- 16) 29<sup>th</sup> November 2014, Shri.R.C.Nimbergi, Senior Manager (Operations) Helvoet, Rubber and Plastic Technology, Pune. "Plastics in Automotive Industry.

**44. List the teaching methods adopted by the faculty for different programmes.**

Blackboard Teaching, Audio-visual aids, Participatory (Discussion), Demonstration.

**45. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored?**

We take feedback from the employer and Alumni

**46. Highlight the participation of students and faculty in extension activities.**

Apart from teaching all the faculties of our department are involved in various committees at Institute level.

**47. Give details of "beyond syllabus scholarly activities" of the department.**

Arranging industrial visits throughout the year. Interaction of students with alumni and guest speakers.

- (A) Industrial Visit of Postgraduate students and Ph.D. students organized to Jalgaon from 3<sup>rd</sup> Jan to 5<sup>th</sup> Jan 2013. Dr. D.D.Sarode, Head, General Engineering Department organized the visit and accompanied the students. Students visited following industries
- (B) Jain Agro Industries– Seen Jain Plastic Park, Jain hills–Solar Energy, Tissue culture and R&D laboratory, Demonstration farms to see the plastic articles, polar pumps in operation and in use. Also seen the training centre– Gurukul and the Gandhi Tirth.
- (C) Heera Agro Industries Jalgaon A company of alumnus of our department to see the various plastic products used in drip irrigation systems.
- (D) Heera Roto Polymers Jalgaon to see the manufacturing of tanks of various capacities by Rotational moulding.
- (E) Industrial Visit for Postgraduate students and Ph.D. students organized to Helvoet Rubber & Plastic Technologies, Loni, Pune on 15<sup>th</sup> Feb 2014. Dr.V.R.Gaval, General Engineering Department organized the visit and Dr.V.R.Gaval, DrS.P.Deshmukh, Dr.R.S.N.Sahai accompanied the students.

**48. State whether the program/department is accredited/graded by other agencies? If yes, give details:** Not accredited



**49. Briefly highlight the contributions of the department in generating new knowledge, basic or applied.**

Interaction with experts during seminar/conferences, Knowledge through refresher and orientation courses.

**50. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.**

**Strengths:**

- 1) Faculty members from different engineering discipline background.
- 2) Availability of workshop facility for research setup and fabrication work.
- 3) Skilled assistance with industrial experience.

**Weakness:**

- 1) Limited laboratory facilities for doing research
- 2) Difficult to get full time research students, continuity of students
- 3) Department is having additional load of new construction and maintenance of institute premises.

**Opportunities:**

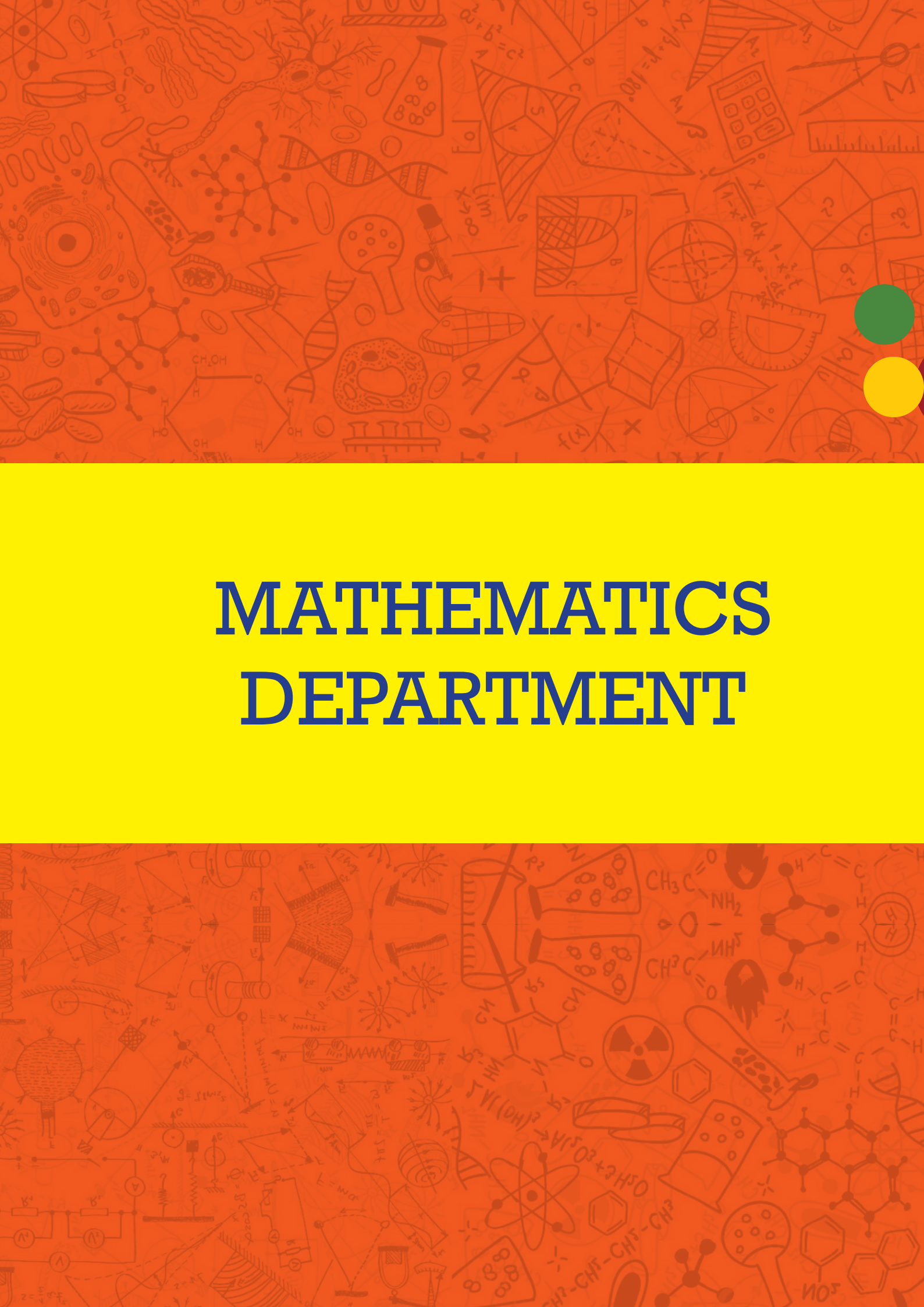
- 1) Possible to do research in interdisciplinary area.
- 2) Development of Material science and technology is great opportunity as most of the faculty are doing research in materials.
- 3) Can collaborate with most of the faculty members of other department.

**Challenges:**

- 1) Catering the increasing number of students for common courses
- 2) Vacancies in faculty positions for longtime.
- 3) Parallel course of MTech in Polymer Engg in the same institute.

**51. Future plans of the department.:** Planning to start a postgraduate course in Material Technology

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# MATHEMATICS DEPARTMENT





## MATHEMATICS DEPARTMENT

The Department of Mathematics, ICT Mumbai was established in the year 1966. Since its inception, the department strives to be an internationally leading mathematics department that will offer innovative educational and research programmes in mathematical sciences and their applications in science and technology. In pursuit of its vision, the department wishes to (i) offer courses and programs that will ensure that the students get practical knowledge in mathematics which will be relevant to the society (ii) provide a modern educational environment for instruction and research (iii) create an environment for learner to engage in solving real-world problems (iv) contribute to the understanding of complex mathematical structures and their applications.

Since the beginning, the department has been catering to the instruction in basic courses in Applied Mathematics for all the technology, chemical engineering and B. Pharm. students. However, the Department started a post graduate course in M.Sc. (Engineering Mathematics) in academic year 2011-

12. This program is supported by UGC under its innovative scheme and is an inter-disciplinary program giving emphasis in practical applications of mathematics in several engineering branches. This course is unique in nature in India. In brief, the course content is a blend of pure mathematics, optimization, computational fluid dynamics, applied statistics, mathematical finance, bioinformatics, mathematical modelling and computer programming. The students undergo continuous assessment through regular quizzes, mid and end semester exams. The faculty members give emphasis on regular assignments. Students are encouraged to give seminars on topics other than the curriculum. The M.Sc. students get an opportunity to undertake an industrial and academic visit once in a year. The trip is supported by the institute funding. The department of Mathematics also organizes remedial classes for weak students from graduate and post graduate courses. Mathematicians are invited from India and abroad to deliver colloquium talks to motivate the students. The department has well equipped computer lab with 50 all in one PCs. The students have access to different software such as MATLAB, MATHEMATICA and SPSS. In addition to this, students also use free software like R, Sage, etc. The department has its own library for its M.Sc. students, faculty members and also provides modern and high level computational facilities.

At present, the department has four faculty members. All the faculty members have doctorates from reputed institutes from India and abroad. They are working in diverse research areas and have good number of publications in peer reviewed international journals. The department faculty has co-authored several books. Faculties of the department are invited as resource person in various national, international workshops and conferences. In addition to this the faculty members were invited to be resource persons for CSIR UGC net exam preparation. The broad research areas include Computational and theoretical fluid dynamics, Applied Statistics, Mathematical Biology, Optimization Techniques etc. The department is headed by Dr. A. K. Sahu. Since the post graduate program is interdisciplinary in nature experts from leading institutes like IIT, are invited to conduct the lectures. At present the department has three research scholars.

The department regularly organizes workshops and training programmes for students and teachers. Many of these programmes have been organized in collaboration with other institutes in India.

The department had successfully completed a project entitled “Numerical studies of thermal stratification in molten sodium pool” from IGCAR worth Rs. 25 lakhs with Dr. A. K. Sahu being the principal investigator. The research outcomes of this project have been published in conferences and journals of international repute. One student working on this project obtained a Ph.D. degree.

Recently the department has submitted a proposal to the Government of Maharashtra for starting a centre for mathematical sciences. If it is sanctioned, the faculty strength of the department will increase and the thrust will be given to research in several inter disciplinary areas. Also, the department will be in a better position to start new programs which will be very much useful to students as well as society.

**1. Year of establishment:**1966

**2. Is the Department part of a school/Faculty of the university?** NO

**3. Names of programmes offered (UG, PG, M.Phil., Ph.D., integrated Masters; Integrated Ph.D., D.Sc., D.Litt., etc.)**

M.Sc. in Engineering Mathematics (interdisciplinary program) Ph.D in Mathematics

**4. Interdisciplinary programmes and departments involved**

M.Sc. in Engineering Mathematics

**5. Courses in collaboration with other universities, industries, foreign institutions, etc. :**  
Nil

**6. Details of programmes discontinued, if any, with reasons**  
Nil

**7. Examination system:**  
Semester

**8. Participation of the department in the courses offered by other departments:**

First Year B. Tech (all branches) and First Year  
B.Chem Applied Mathematics – I, Applied  
Mathematics – II Second Year B. Chem  
Applied Mathematics – III, Applied Mathematics - IV  
First Year B. Pharm  
Applied Mathematics-I  
First Year B. Tech  
Engineering Application of Computer  
M. Pharm  
Biostatistics



**9. Number of teaching posts sanctioned, filled and actual (Professors/Associate professors/asst. professors/others)**

|                                 | Sanctioned | Filled | Actual (including CAS & MPS) |
|---------------------------------|------------|--------|------------------------------|
| Professor                       | 1          | 0      |                              |
| Associate Professors            | 3          | 1      |                              |
| Asst. Professors                | 1          | 1      |                              |
| Others (UGC Innovative Program) | 2          | 1      |                              |

**10. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance**

| Name                      | Qualification | Designation                | Specialization                                 | No. of Years of Experience | No. of Ph.D./ M.Phil. Students guided for the last 4 Years |
|---------------------------|---------------|----------------------------|------------------------------------------------|----------------------------|------------------------------------------------------------|
| Dr. A. K. Sahu            | M.Sc., Ph.D   | Associate Professor        | Numerical Methods, Fluid Dynamics              | 19 Years                   | 2                                                          |
| Dr. Ajit Kumar            | M.Sc., Ph.D   | Senior Assistant Professor | Differential geometry, Optimization techniques | 15 Years                   | 2                                                          |
| Dr. Amiya Ranjan Bhowmick | M.Sc., Ph.D   | Assistant Professor        | Statistics and Applied Mathematics             | 2.5 Yrs                    | NIL                                                        |
| Dr. V. Divya (UGC FRP)    | M.Sc., Ph.D   | Assistant Professor        | Fluid Dynamics and Non Linear Dynamics         | 1 Year                     | NIL                                                        |

**11. List of senior Visiting Fellows, adjunct faculty, emeritus professors**

- Prof. Akhlaque Ahmad
- Dr. Mangala Gurjar
- Dr. Gollakota V. V. Hemasundar
- Mr. Madan Mohan Agarwal
- Dr. Kalpana Phal
- Dr. Chaitanya Senapathi
- Mr. Nikhil P Mamaniya & Mrs. Smita D. Bole

**12. Percentage of classes taken by temporary faculty – programme-wise information**

|                                 |       |
|---------------------------------|-------|
| M.Sc in Engineering Mathematics | : 40% |
| B. Chem:                        | 50%   |
| B. Tech:                        | 66%   |
| B.Pharm:                        | 100%  |

**13. Programme-wise student teacher ratio**

|                                  |       |
|----------------------------------|-------|
| M.Sc in Engineering Mathematics: | 6:1   |
| B. Chem:                         | 80:2  |
| B. Tech:                         | 140:2 |
| B. Pharm:                        | 30:1  |

**14. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual**

Sanctioned: 1

Filled: 1

Actual: 2 (1 Temporary)

**15. Research thrust areas as recognized by major funding agencies**

Computational Fluid Dynamics, Optimization Techniques, Mathematical Biology, Non Linear Dynamics, Ecological and Environmental Model, Statistical Modeling, Data Analysis

**16. Number of faculty with ongoing projects from a) national b) international funding agencies and c) total grants received. Give the names of the funding agencies, project title and grants received project-wise.**

None

**17. Inter-institutional collaborative projects and associated grants received**

a) National collaboration

Indira Gandhi Centre for Atomic Research

Project Title: Numerical Simulation of Thermal Stratification in Molten Sodium Pool (Completed)

b) International collaboration: No

**18. Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, AICTE, etc.; total grants received.**

None

## 19. Research facility / centre with

- State recognition: None
- National recognition None
- International recognition None

## 20. Special research laboratories sponsored by / created by industry or corporate bodies : None

## 21. Publications:

- Number of papers published in peer reviewed journals (national / international) 13
- Monographs : 0
- Chapters in Books : 7
- Edited Books - No
- Books with ISBN with details of publishers -
  - A Basic Course in Real Analysis with S. Kumaresan, Chapman and Hall/CRC , 2014, ISBN No. 9781482216371
  - Calculus using Sage, jointly with Sang-Gu Lee, SKKU, Robert Beezer, published by Kyungmoon Books, 2014, ISBN 978-89-6105-458-4
  - Online book on “Linear Algebra with Sage”, Ajit Kumar, Sang-Gu Lee and others, ISBN-978-89-24-03105-8, by Kyobobook.
  - A Foundation Course in Mathematics, Ajit Kumar, S. Kumaresan and Bhaba Kumar Sarma, ISBN No. 978-81-8487-610-9, Narosa Publishing House, New Delhi.

Number listed in International Database (For e.g. Web of Science, Scopus, Humanities International Complete, Dare Database - International Social Sciences Directory, EBSCO host, etc.) -

- Citation Index – range / average -87
- SNIP - No
- SJR - No
- Impact Factor – range / average – 4.38
- h-index – 3.5

**22. Details of patents and income generated :** None

**23. Areas of consultancy and income generated :** None

**24. Faculty selected nationally/internationally to visit other laboratories / institutions/industries in india and abroad**

Dr. Ajit Kumar

Dr.Amiya Ranjan Bhowmick

**25. Faculty serving in**

a) National committees b) International committees c) Editorial Boards d) any other  
(please specify) Member of national core committee of MTTS Programme

**26. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs).**

Faculty of the Mathematics Department are provided with all necessary help for attending national, international level Workshops and Training Programs. They are also involved in conducting national level programmes in engineering and applied mathematics.

**27. Student projects**

a. percentage of students who have done in-house projects including inter-departmental projects: 100%

b. percentage of students doing projects in collaboration with other universities

1. industry / institute: 0%

**28. Awards / recognitions received at the national and international level by**

c. Faculty: None

d. Doctoral / post doctoral fellows

e. Students

**29. Seminars/Conferences/Workshops organized and the source of funding (national/**

**international) with details of outstanding participants, if any. (2016-2017)**

1. Workshop on Statistical Methods and R Programming 2016 jointly organized with the Agricultural and Ecological Research Unit, Indian Statistical Institute, Kolkata (February 10-15th 2016). The workshop is funded by ISI Kolkata, ICT Mumbai, UGC, TEQIP-II.
2. SPSS Training program for M.Sc. and PhD students during May 11-12<sup>th</sup> 2016. The workshop was supported by TEQIP-II.
3. TEQIP supported workshop on “Statistical Analysis using using R” for Masters and Ph.D. students during August 13-14, 2016.
4. TEQIP supported workshop on “Statistical Analysis using using R” for Masters and UG students during Sept. 16-17, 2016.
5. Industry-Academic Interaction Programme (14th May 2016) (Funded by TEQIP-II.)
6. National Seminar on Computational and Mathematical Biology (10th - 11th September 2016) (Funded by TEQIP-II)
7. Workshop on Computational Mathematics with Sage (September 23-24, 2016) (Funded by TEQIP-II)
8. Pedagogical Training using ICT Tools (October 8-9, 2016) (Funded by TEQIP-II)
9. Workshop on Machine Learning Using R, September 30- October 01, 2016. (Funded by TEQIP-II)

**(2015-2016)**

1. National workshop on “Pedagogical Training for Mathematics Teacher (PTMT)”, November 02—07, 2015, Funded by NBHM, coordinator: Ajit Kumar.

**30. Code of ethics for research followed by the departments**

As per the ICT, Mumbai.

**31. Student profile programme-wise:**

| Name of the Programme<br>(refer to question no. 4) | Applications received | Selected |        | Pass percentage |        |
|----------------------------------------------------|-----------------------|----------|--------|-----------------|--------|
|                                                    |                       | Male     | Female | Male            | Female |
| M.Sc. in Engineering Mathematics (2017)            | 42                    | 08       | 11     |                 |        |
| Ph.D. in Mathematics                               | 05(In process)        |          |        |                 |        |

**32. Diversity of students:**

| Name of the Programme (refer to question no. 4) | % of students from the same university | % of students from other universities within the State | % of students From universities outside the State | % of students from other countries |
|-------------------------------------------------|----------------------------------------|--------------------------------------------------------|---------------------------------------------------|------------------------------------|
| M.Sc. in Engineering Mathematics                | 0                                      | 100%                                                   | 0%                                                | 0%                                 |

**33. how many students have cleared civil services and Defense services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise**

Department has recently started M. Sc. Course in Engineering Mathematics. There are no Students directly enrolled in the mathematics department except the research students undergoing their Ph. D. Degree in science. Uptil now no such students have attempted the above mention competitive examination.

**34. Student progression**

| Student progression             | Percentage against enrolled |
|---------------------------------|-----------------------------|
| UG to PG                        | Nil                         |
| PG to M.Phil.                   | 0%                          |
| PG to Ph.D.                     | 0%                          |
| Ph.D. to Post-Doctoral          | 0%                          |
| Employed                        | 100%                        |
| • Campus selection              | 0%                          |
| • Other than campus recruitment | 90%                         |
| Entrepreneurs                   | 0%                          |



### 35. Diversity of staff

| Percentage of faculty who are graduates  |     |
|------------------------------------------|-----|
| of the same university                   | 0%  |
| from other universities within the State | 0%  |
| from universities from other States      | 25% |
| from universities outside the country    | 0%  |

**36. number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period: 1**

**37. present details of departmental infrastructural facilities with regard to**

- a) Library : Very good
- b) Internet facilities for staff and students : Available for staffs and students
- c) Total number of class rooms : 1
- d) Class rooms with ICT facility : NA
- e) Students' laboratories : 1
- f) Research laboratories : --

**38. List of doctoral, post-doctoral students and research associates**

- e) from other institutions/universities - 0

**39. Number of post graduate students getting financial assistance from the university : 1**

**40. Was any need assessment exercise undertaken before the development of new programme(s)? if so, highlight the methodology**

Recently the syllabus of various UG and PG programmes of the institute were revised for which a proper procedure of defining the content of the mathematical courses in this programme was decided taking inputs from the faculty of the parent department and feedback from the alumni.

**41. Does the department obtain feedback from**

- a. faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback?  
Yes. There is a feedback mechanism in place by which students record their feedback highlighting the requirements in improvement of the pedagogy techniques of the teachers and the relevance of the syllabus content for their final degrees. This helps in changing the teaching strategies by the individual faculty and helps in changes in syllabus or curriculum.

- b. students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback?

Managed by the institute administration and the results are uploaded on the intranet. The faculties can see the results and incorporate the necessary changes suggested through the results of the feedback.

- c. alumni and employers on the programmes offered and how does the department utilize the feedback?

The department gets in touch with the alumni for feedback.

**42. List the distinguished alumni of the department - Nil**

**43. Give details of student enrichment programmes (special lectures/workshops/seminar) involving external experts.**

MTTS Programme

PTMT Programme

Industrial Visits by the students

Workshop on SAGE and Python

**44. List the teaching methods adopted by the faculty for different programmes.**

Chalk and Board

Visual presentation

**45. how does the department ensure that programme objectives are constantly met and learning outcomes are monitored?**

Through regular internal evaluations by exams and seminar presentations.

**46. highlight the participation of students and faculty in extension activities.**

Resource person for various academic programs, for example: UGC Refresher course  
National Workshops

Industrial visits

Workshop on CSIR-NET examination

**47. Give details of “beyond syllabus scholarly activities” of the department.**

Seminar presentations by M.Sc. students

Workshop on SAGE and different computer languages

Colloquium talks by eminent mathematicians including Padmashree Prof. M. S. Raghunathan.

**48. State whether the programme/ department is accredited/ graded by other agencies? if yes, give details. - No**

**49. Briefly highlight the contributions of the department in generating new knowledge, basic or applied.**

Conducting educational workshops and lecture series

Initiating interdisciplinary research activities with other departments and other institutes/ universities

**50. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.**

Focused academic staffs

Strong research activities

Organizing educational workshops

Interactions with other mathematicians

Interdisciplinary research activities

Need to strengthen the department in number

Need to attract more PhD students

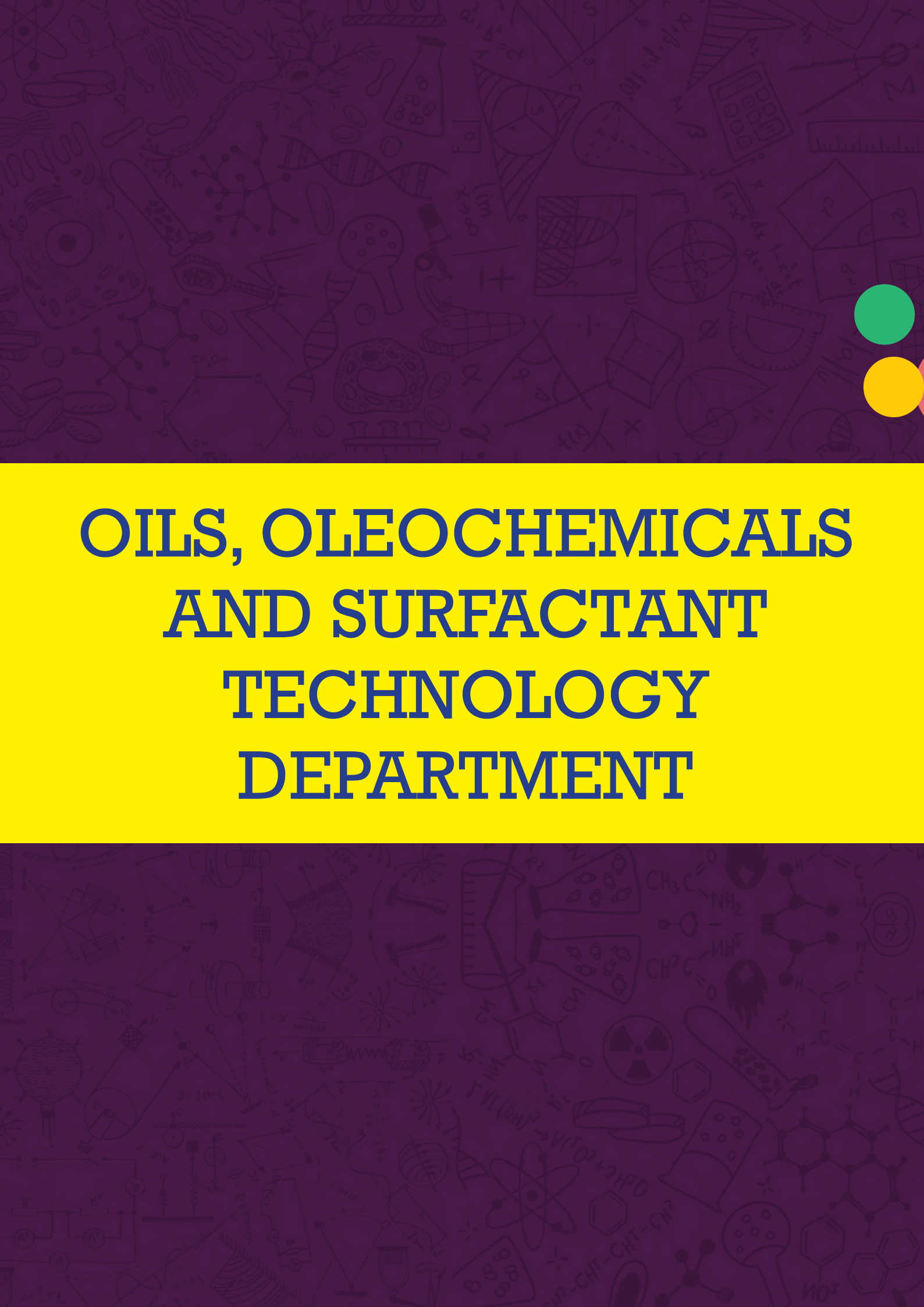
Strengthen the M.Sc program and develop new curricula

Popularize the M.Sc. program in India and abroad

**51. Future plans of the department.**

The Department of Mathematics, Institute of Chemical Technology, Mumbai aims to be an internationally leading center for mathematical sciences that will offer innovative educational and research programmes in mathematics and its applications in science and technology.

- a) Offer courses and programmes that will ensure that the students get practical knowledge in mathematics which will be relevant to the society
- b) Provide a modern educational environment for instruction and research
- c) Create an environment for learner to engage in solving real-world problems
- d) Contribute to the understanding of complex mathematical structures and their applications.

The background of the slide is a dark purple field filled with a dense, repeating pattern of white line-art icons. These icons represent various scientific and technical concepts, including chemical structures (molecules, DNA helix, cell organelles), mathematical symbols (pi, infinity, plus, minus, multiplication, division, percentages, and equations like E=mc^2), geometric shapes (cubes, spheres, triangles), and laboratory equipment (flasks, beakers, test tubes, a microscope, and a calculator).In the top right corner, there are two solid-colored circles, one green and one yellow, stacked vertically.

# OILS, OLEOCHEMICALS AND SURFACTANT TECHNOLOGY DEPARTMENT





## Oils, Oleochemicals and Surfactant Technology Department

This Department was started as Division of Oils, Fats and Waxes after WW-II i.e. in 1943 offering a 2-year course B.Sc. (Tech.) [Technology of Oils, Fats and Waxes] after B.Sc. (Chemistry). Professor J.G.Kane, whose work on non-traditional tree-borne oilseeds and oils was exceptional, was the founder Head. In 1998, this Division was renamed as Division of Oils, Oleochemicals and Surfactants. The undergraduate course was changed to a 4-year course, namely B. Chem. Tech. [Technology of Oils, Oleochemicals and Surfactants]. The Department also offers a Post Graduate and Doctoral Program. This Department offers 2 Ph.D. fellowships per year under NON-SAP status by UGC. It also participates in M. Tech. in Perfumery and Flavour Technology, Green Technology and Bio-Process Technology. The Department has done pioneering work in the field of Chemistry, Technology and Engineering of Edible/Non-edible Oils and Waxes, Tailor Made Fats and Nutraceuticals, Oleochemicals, Surfactants and Detergents, Biofuels, Lubricants and Greases, and Essential Oils, Perfumery Chemicals and Cosmetics. From the time of its inception, faculty members have maintained a close interaction with industry and have been associated with the development of the oil industry. Several short and long term projects instituted by sponsoring bodies for process/product development at this Department have been supervised by faculty as part of their routine research activity. Alumni of this Department have reached very senior and responsible positions in the Indian oil and surfactant industry.

The lipids are a class of biochemical compounds, many of which occur naturally in plants and animals. The lipids constitute a very large class of compounds, many of which play essential roles in organisms. Among the most important lipids are fats and oils, waxes, steroids, terpenes, fat-soluble vitamins, prostaglandins, phosphoglycerides, sphingolipids, and glycolipids. Phospholipids, for example, occur in all living organisms, where they are a major component of the membranes of most cells. The main use of fats commercially is in the production of soaps and other cleaning products. Oleochemicals are chemicals derived from biological oils or fats. The hydrolysis or alcoholysis of oils or fats form the basis of the oleochemical industry. The formation of basic oleochemical substances like fatty acids, fatty acid methyl esters (FAME), fatty alcohols, fatty amines and glycerols are by various chemical and enzymatic reactions. Intermediate chemical substances produced from these basic oleochemical substances include alcohol ethoxylates, alcohol sulfates, alcohol ether sulfates, quarterner ammonium substances, monoacylglycerols (MAG), diacylglycerols (DAG), structured triacylglycerols (TAG) and sugar esters. The importance of these chemicals is thus evident.

- 1) **Year of Establishment:** 1943
- 2) **Is the department part of a school/faculty of the university?** YES
- 3) **Names of programmes offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., D.sc., D.Litt., etc.) :**
  - a) B. Tech (Oils, Oleochemicals & Surfactant Technology)
  - b) M. Tech (Oils, Oleochemicals & Surfactant Technology)
  - c) Ph.D. (Oils, Oleochemicals & Surfactant Technology)
- 4) **Interdisciplinary programmes and departments involved?**
  - a) M. Tech. Green Technology                      A) Ph.D. in Green Technology
  - b) M. Tech. Perfumery & Flavours Tech.        B) Ph.D. in Chemistry

c) M. Tech . Bioprocess Technology C) Ph.D. in Bioprocess Technology

5) **Courses in collaboration with other universities, industries, foreign institutions, etc.**  
Yes (Godrej industries) : Godrej Research Lab

6) **Details of programmes discontinued, if any, with reasons:** NA

7) **Examination system: annual/semester/trimester/choice Based credit system**

Semester based evaluation pattern with CBCS

8) **Participation of the department in the courses offered by other departments:**

a) M. Tech. Green Technology b) M. Tech. Perfumery & Flavours Tech.

c) M. Tech. Bioprocess Technology

9) **Number of teaching posts sanctioned, filled and actual (Professors/Associate Professors/asst. professors/others)**

|                      | Sanctioned                  | Filled | Actual (including CAS & MPS) |
|----------------------|-----------------------------|--------|------------------------------|
| Professor            | 2                           | 01     | 01                           |
| Associate Professors | 1                           | 00     | 02 (CAS)                     |
| Asst. Professors     | 2 + 01*(J.G.Kane Endowment) | 03     | Assistant professor: 03      |

10) **Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance :**

| Sr. No                                                              | Name               |                                    | Highest Qualification | Date of joining present position | Date of joining institute | Specializations                          |
|---------------------------------------------------------------------|--------------------|------------------------------------|-----------------------|----------------------------------|---------------------------|------------------------------------------|
| <b>Department of Oils, Oleochemicals and Surfactants Technology</b> |                    |                                    |                       |                                  |                           |                                          |
| 1.                                                                  | Prof.R.D. Kulkarni | Professor & Head                   | Ph.D.(Tech)           | 04-11-2016                       | 04-11-2016                | Oleochemicals and Surfactants Technology |
| 2.                                                                  | Prof. P. R. Vavia  | Professor & Head (upto 03-11-2016) | Ph.D. (Tech)          | 01-12-1993                       | 07-01-1988                | Pharmaceutical Technology                |
| 3.                                                                  | Dr. J. T. Waghmare | Associate Professor                | Ph.D. (Tech)          | 03-04-2016                       | 03-04-2003                | Oleochemicals and Surfactants Technology |
| 4.                                                                  | Dr. Amit P. Pratap | Associate Professor                | Ph.D. (Tech)          | 29-12-2015                       | 29-12-2003                | Oleochemicals and Surfactants Technology |
| 5.                                                                  | Dr. C. S. Madankar | Assistant Professor                | Ph. D. (Tech)         | 31-03-2015                       | 31-03-2015                | Oleochemicals and Surfactants Technology |
| 6.                                                                  | Dr. Parag Nemade   | UGC Asst. Prof.                    | Ph.D. (Tech)          | 01-08-2013                       | 01-Jan-11                 | Chemical Engineering                     |
| 7.                                                                  | Dr. D. V. Pinjari  | DST INSPIRE Faculty Fellow         | Ph.D. (Tech)          | 03-04-2013                       | 03-04-2013                | Chemical Engineering                     |

**11) List of senior Visiting fellows, adjunct faculty, emeritus professors :**

| Sr. No. | Name                     |
|---------|--------------------------|
| 1       | Dr. A. T. Mirajkar       |
| 2       | Dr. A. V. Joshi          |
| 3       | Dr. Adinath Mahadeo Ware |
| 4       | Dr. B. P. Khedkar        |
| 5       | Dr. D. K. Deshpande      |
| 6       | Dr. Kishor Ambawade      |
| 7       | Dr. Sanjog Surve         |
| 8       | Dr. Sitaram Dixit        |
| 9       | Dr. Smita Jadhav         |
| 10      | Dr. Sushil Dubal         |
| 11      | Mr. M. H. Navlur         |
| 12      | Mr. Mangesh L. Mokashi   |
| 13      | Mr. Vinay Kumar T. Singh |
| 14      | Mr. Vinay Kumar T. Singh |
| 15      | Mrs. Poonam Dhake        |
| 16      | Prof. P. R. Kulkarni     |

**12) Percentage of classes taken by temporary faculty – programme-wise information: 15-20%**

**13) Programme-wise student teacher ratio: 4:1**

**14) Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual:**

| Sr. No. | Post                       | Sanctioned | Filled |
|---------|----------------------------|------------|--------|
| 1       | Junior Lab Analyst         | 1          | 1      |
| 2       | Senior Technical Assistant | 1          | 1      |
| 3       | Lab Assistant              | 2          | 2      |
| 4.      | Lab Attendance             | 3          | 3      |

**15) Research thrust areas as recognized by major funding agencies:**

- a. High Performance Surfactants, Personal Care Products & Cosmetics
- b. Lubricants & Functional Fluids
- c. Surfactant Mediated Nanopigments
- d. Nutraceuticals
- e. UV Cure Polymers
- f. Oleochemicals and its Derivatives
- g. Oil Based Polymers
- h. Essential Oils, Perfumes & Fragrances
- i. Biofuels and Platform Chemicals
- j. Blending Technology and Tailor Made Fats
- k. Biotechnology

- 16) Number of faculty with ongoing projects from a) national b) international funding agencies. give the names of the funding agencies, project title and grants received project-wise. :

| Name of the Investigator | Title of the project and duration                                                                                                          | Amount Sanctioned (INR) | Funding Agency                                            |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------------------------------------------------|
| Dr.Amit Pratap           | Pilot Study and Evaluation of Production of Green Surfactants from Non-edible/Edible Oils and Treated Oil Seed Meals Duration: 2016-19     | 2,78,45000              | Rajeev Gandhi Science and Technology Commission           |
| Dr. D. V. Pinjari        | Development of nanocontainer for anticorrosive applications(2013-2018)                                                                     | 83,00,000               | DST INSPIRE Scheme                                        |
|                          | Development of Nanocontainers for Anticorrosive Applications and 5 Years Duration: 2013-2018                                               | 35,00,000               | Department of Science and Technology, Government of India |
|                          | Development of Polymer Surfactants and 4 Years Duration: 2015 – 2019                                                                       | 20,00,000               | Swagat Polymers, Aurangabad (India)                       |
|                          | Reverse Engineering of value added natural resins and 1 Year Duration: 2016 – 2017                                                         | 11,45,000               | Muraspec Distributors Pvt. Ltd. Mumbai (India)            |
|                          | Purification Techniques for raw Emerald and Blue Sapphire and 1 Year Duration: 2016 – 2017                                                 | 2,50,000                | Jai Ambe Developers Mumbai (India)                        |
|                          | Development of Value Added Products from Plastic Pyrolysis Waste and 4 Year Duration: 2017 – 2021                                          | 27,60,000               | Pyrocrat Systems LLP, Mumbai (India)                      |
| Prof. R. D. Kulkarni     | Processing of Vegetable Oil Refinery and Oleochemical Waste Streams for regeneration of Value Added Nutraceuticals and Specialty Chemicals | 21,18,528               | DST-WMT, New Delhi                                        |
|                          | Functional Coatings: Manufacture of Self-healing Coating                                                                                   | 30,00,000               | RUSA, Govt. of Maharashtra                                |

|                          |                                                                                                                                |             |                                                                                                 |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------------|
| Dr. P.R<br>Nemade        | Pre-Treatment of Biomethanated Distillery Waste by Catalytic Wet Air Oxidation (CWAO) to Enhance Further Biomethanation        | 21,00,000   | Rajeev Gandhi Science and Technology Commission                                                 |
|                          | Development of biosensor for detection of pesticides                                                                           | 1,50,000    | TEQIP Innovation Networking                                                                     |
|                          | Development of inexpensive gas chromatograph                                                                                   | 1,50,000    | TEQIP Innovation Networking                                                                     |
|                          | Hygienic Water-free Toilet                                                                                                     | 25,00,000   | BIRAC-Bill and Melinda Gates Foundation, Grand Challenges India: Re-                            |
|                          | Development of Polymerizable Ionic Liquids for Gas Separations                                                                 | 23,00,000   | SERB: Scheme for Young Scientists                                                               |
|                          | Arsenic Stabilization in Copper Smelter                                                                                        | 9,77,000    | Sterlite Industries India Ltd.                                                                  |
|                          | Development of quality water resistant Gypsum plaster                                                                          | 21,26,000   | RCF Ltd.                                                                                        |
|                          | Development of catalyst for conversion of methane to olefins                                                                   | 1,00,38,000 | GAIL India Ltd.                                                                                 |
|                          | Hygienic Water free Toilets                                                                                                    | 21,45,000   | BIRAC-Bill and Melinda Gates Foundation, Grand Challenges India: Re-invent The Toilet Challenge |
| <b>Project Completed</b> |                                                                                                                                |             |                                                                                                 |
| Prof. R. D. Kulkarni     | Development of Nanohybrid Self-healing Coatings using ultrasound assisted encapsulation approach for anticorrosion performance | 30,42,000   | DRDO, NEW Delhi (Co-I, Collaborative Project with NIT, Warangal),                               |

**17) Inter-institutional Collaborative Projects and Associated Grants received –**

a) National collaboration b) International collaboration

1. Palm Oil Research Council Malaysia
2. Palm Oil Research Board , Malaysia
3. Oil Technologist Association of India (OTAI) –(WZ).

**18) Departmental Projects Funded by: DST; UGC, DBT , AICTE, ICT Golden Jubilee Endowment Fund, TEQIP-II.**

**19) Research facility / center with**

State recognition  
AICTE-MODROBS Applied  
DST –FIST: Applied

**20) Special research laboratories sponsored by / created by industry or corporate bodies:**

Godrej Research Lab

**21) Publications: (2012-17)**

- **Number of papers published in peer Aunnexture-1 reviewed journals (national / international):** 144
- **Monographs:** NIL
- **Chapters in Books:** 05
- **Edited Books:** NIL
- **Books with ISBN with details of publishers**

| Authors              | Title                                                                                                                                                                                                                               | Editor/ Publisher / Place/ Year/ ISBN/ISSN                                                                                                                                       |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dr. Jyotsna Waghmare | Skin barrier: Chemistry of skin delivery systems formulating strategies in cosmetic science                                                                                                                                         | Ed: Johann Wiecher, Allured books, USA, 2008, ISBN 10: 1-932633-44-8 ISSN-13: 978-1-932633-44-3<br>Allured books, USA, 2009, ISBN: -10: 1-932633-529, ISBN-13: 978-1-932633-52-8 |
| Prof. R. D. Kulkarni | SA Kapole, BA Bhanvase, RD Kulkarni, SH Sonawane, Synthesis of 2K Polyurethane Coating Containing Combination of Nano Bentonite Clay, Nano CaCO <sub>3</sub> , and Polyester Polyol and Its Performance Evaluation on ABS Substrate | “Chemical and Bioprocess Engineering: Trends and Developments” Apple Academic Press, ISBN 9781771880770, pp. 343-355. CRC Press: Taylor & Francis Group, April 1, 2015           |
| Dr. P. R. Nemade     | Utilization of Industrial Wastes as Building Materials, R. S. Zambare, A. Dahake, D. D. Sarode, P. R. Nemade, N. V. Mukadam                                                                                                         | Int. J. Global. Tech. Initiatives 2(1) 2013 F12-17                                                                                                                               |



|                  |                                                                                                                                                                                                                                              |                                                                                        |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| Dr. D.V. Pinjari | D. V. Pinjari, P.R. Gogate, A.B. Pandit, Synthesis of Nanomaterials using Hydrodynamic Cavitation, Chapter in “Cavitation: A Novel Energy Efficient Technique for the Generation of Nanomaterials”                                           | M. Sivakumar & M. Ashokkumar, Pan Stanford, Singapore, 2013 (ISBN-13: 978-9814411547). |
|                  | V. K. Saharan, D. V. Pinjari, P.R. Gogate, A.B. Pandit, Process Intensification using oxidation technologies at ambient conditions for wastewater treatment and recovery, Chapter in “Industrial Wastewater Treatment, Recycling and Reuse”. | Vivek Ranade & Vinay Bhandari, Elsevier, UK, 2013 (In press).                          |

**Number listed in International Database (For e.g. Web of Science, Scopus, Humanities International Complete, Dare Database - International Social Sciences Directory, EBSCO host, etc.) -144**

- **Citation index – range / average:** 2099
- **SNIP:-**
- **SJR:-**
- **Impact factor – range / average:** 0.3- 5.385
- **H-index:** 4-22

**22) Details of patents and income generated: NIL**

**23) Areas of consultancy and income generated: Rs. 225 lakhs**

| Name of the Investigator | Title of the project and duration                                 | Amount sanctioned (INR) | Funding Agency                        |
|--------------------------|-------------------------------------------------------------------|-------------------------|---------------------------------------|
| Dr. Joystna Waghmare     | Study of lather of detergent formulation for laundry applications | 13,00,000               | Hindustan Unilever Ltd                |
|                          | Duration: 2014-16                                                 |                         |                                       |
| Dr. A.P. Pratap          | Biofuel and Natural Wax Related Products<br>Duration: 2017-21     | 31,39,000               | M/s Bio Sols India Pvt. Ltd., Mumbai. |
|                          | Synthesis and applications of newer novel surfactants             | 23,54,000               | M/s Ansika Polysurf Ltd. New Delhi    |

|                      |                                                                                   |           |                                               |
|----------------------|-----------------------------------------------------------------------------------|-----------|-----------------------------------------------|
|                      |                                                                                   |           |                                               |
|                      | Duration: 2017-20                                                                 |           |                                               |
| Dr. P. R. Nemade     | Development of ethylene reactor (ongoing)                                         | 50,000    | Chemtron Pvt. ltd                             |
|                      | Development of dehydration of alcohol (on going)                                  | 1,00,000  | Mr. B. Chem Pvt. ltd                          |
|                      | High density Surfactant Formulation (ongoing)                                     | 1,00,000  | Standard Surfactants                          |
| Dr. D. V. Pinjari    | Development of Polymer (Silicon) Surfactants and 2 Years<br>Duration: 2015 – 2017 | 5,00,000  | Elkay Chemicals Pvt. Ltd., Pune (India)       |
|                      | Techno-feasibility of Various Dairy Products and 1 Year<br>Duration: 2016 – 2017  | 14,10,000 | Coca Cola, Shanghai/Atlanta                   |
| Prof. R. D. Kulkarni | High performance Nitrogen Derivatives                                             | 4,00,000  | Godrej Industries, Mumbai (MS)                |
|                      | MDS of Powder based additive for Oil and Gas Drilling Chemicals                   | 2,50,000  | Gumpro Drilling Fluids Pvt. Ltd., Raigad (MS) |
|                      | SUMWIN Global                                                                     | 11,00,000 | SUMWIN Global Malaysia.                       |

## Completed Projects

|                      |                                                                                                                                                                                                                               |             |                                                                       |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------------------------------------------------------|
| Dr. Jyotsna Waghmare | Stabilization of omega-3 fatty acids in oil based products (Stabilization of omega-3 fatty acids in edible blends/ vanaspati/ margarine/ shortening or butter like products using natural anti-oxidants)<br>Duration: 2012-15 | 15,00,000/- | Department of Food and Public Distribution, Govt. of India, New Delhi |
|                      | Essential oils from Champa<br>Duration: 2014-15                                                                                                                                                                               | 2,50,000/-  | Pitambari Products Pvt Ltd., Navi Mumbai                              |
|                      | Alternative Fuels<br>Duration: 2013-16 (Completed)                                                                                                                                                                            | 12,00,000/- | Department of Science and Technology ( DST)                           |
| Dr. A. P. Pratap     | Value Addition to Biodiesel via Bio lubricants                                                                                                                                                                                | 40,33,000/- | Department of Science and Technology (DST), New                       |

|                      |                                                                                                                                                                             |             |                                                                                                 |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------------|
|                      |                                                                                                                                                                             |             | Delhi                                                                                           |
| Dr. P. R. Nemade     | Development of biosensor for detection of pesticides                                                                                                                        | 1,50,000    | TEQIP Innovation Networking                                                                     |
|                      | Duration: March 2017                                                                                                                                                        |             |                                                                                                 |
|                      | Development of inexpensive gas chromatograph                                                                                                                                | 1,50,000    | TEQIP Innovation Networking                                                                     |
|                      | Duration: March 2017                                                                                                                                                        |             |                                                                                                 |
|                      | Hygienic Water-free Toilet                                                                                                                                                  | 25,00,000   | BIRAC-Bill and Melinda Gates Foundation, Grand Challenges India: Re-invent The Toilet Challenge |
|                      | March 2017                                                                                                                                                                  |             |                                                                                                 |
|                      |                                                                                                                                                                             |             |                                                                                                 |
|                      | Development of Polymerizable Ionic Liquids for Gas Separations                                                                                                              | 23,00,000   | SERB: Scheme for Young Scientists                                                               |
|                      | Arsenic Stabilization in Copper Smelter Sludges                                                                                                                             | 9,77,000    | Sterlite Industries India Ltd.                                                                  |
|                      | Development of Quality Water Resistant Gypsum Plaster                                                                                                                       | 21,26,000   | Rashtriya Chemicals and Fertilizers Ltd.                                                        |
|                      | Development of catalyst for conversion of methane to olefins                                                                                                                | 1,00,38,000 | GAIL (India) Ltd.                                                                               |
| Dr. D. V. Pinjari    | Micro Hydro Electricity Production: Electricity Generation for Lighting and Irrigation using the natural flow of irrigation Canal and its Performance Evaluation and 1 Year | 7,00,000    | TEQIP Grant (A World bank Project Initiative)                                                   |
|                      | Duration: 2016 – 2017                                                                                                                                                       |             |                                                                                                 |
| Prof. R. D. Kulkarni | Development of Nanohybrid Self-healing Coatings using ultrasound assisted encapsulation approach for anticorrosion performance                                              | 30,42,000   | DRDO, NEW Delhi (Co-I, Collaborative Project with NIT, Warangal),                               |
|                      | 2014 (Completed)                                                                                                                                                            |             |                                                                                                 |

**24) Faculty selected nationally / internationally to visit other laboratories/institutions/industries in india and abroad:**

- 1) Dr. P.R.Nemade,
- 2) Dr. D.V. Pinjari

**25) Faculty serving in**

a) National committees b) International committees c) Editorial Boards d) any other (please specify)

| Sr.No | Faculty Member       | Affiliation to Professional Bodies                                                   |
|-------|----------------------|--------------------------------------------------------------------------------------|
| 1     | Prof. R. D. Kulkarni | Oil Technologists' Association of India                                              |
|       |                      | Indian Society for Technical Education (LM)                                          |
|       |                      | Asian Polymer Association                                                            |
| 2     | Prof. P. R. Vavia    | Life member, Indian Pharmaceutical                                                   |
|       |                      | Member, Association of Pharmacy Teachers of                                          |
|       |                      | Member, Pharmaceutical Society of Great Britan                                       |
|       |                      | Inspector appointed by Pharmacy Council of India for inspection of Institutions      |
|       |                      | Member, Editorial board of Indian Journal of Pharmaceutical Sciences                 |
|       |                      | Expert Member, DSIR for inspection of Industrial R & D Facility                      |
|       |                      | Member, International Advisory board Asia Oceanic Cyclodextrin League                |
|       |                      | Member, Italian Cyclodextrin League                                                  |
| 3     | Dr. Amit P. Pratap   | Oil Technologists' Association of India                                              |
|       |                      | Alumni Association of UDCT                                                           |
|       |                      | Indian Society for Surface Science and Technology (ISSST)                            |
|       |                      | Indian Association Nuclear Chemists' and Scientists                                  |
|       |                      | Chromatographic Society of India                                                     |
| 4     | Dr. Jyotsna Waghmare | Oil Technologists' Association of India                                              |
|       |                      | Association of Food Scientists and Technologists                                     |
|       |                      | Indian Society for Surface Science and Technology (ISSST)                            |
| 5     | Dr. D. V. Pinjari    | Fulbright Alumni Advisory committee at Fulbright – Georgia Tech Alumni chapter (USA) |
|       |                      | UDCT Alumni Association                                                              |
| 6     | Dr. P. R. Nemade     | DAE Young Scientist Award, 2013 (by BRNS, Dept. of Atomic Energy)                    |
|       |                      | Chevening-Rolls Royce Science, Innovation and Leadership Fellowship                  |

**26) Faculty recharging strategies (UGC, ASC, refresher / orientation programs, workshops, training programs and similar programs).**

- a) Teaching Learning Workshop – Convenor – Prof. S. D. Samant , March 2014
- b) Resource Generation Workshop organized by HBCSE in September 2013
- c) Capacity Building Training Workshop through TEQIP Workshop on NBA accreditation, VJTI, Mumbai

**27) Student projects**

- **Percentage of students who have done in-house projects including inter- departmental projects:** B. Tech: 100 % , M. Tech: 50%
- **Percentage of students doing projects in collaboration with other universities/industry/ Institute:** M. Tech: 50%

**28) Awards / recognitions received at the national and international level by**

- **Faculty**

| Name of Faculty      | Major Awards                                                                                                                                                                                                                                                        |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Prof. R. D. Kulkarni | Received ‘Best Teacher Award’ from NMU, Jalgaon                                                                                                                                                                                                                     |
|                      | Member- Executive Council and Member-Court, Jawaharlal Nehru University, New Delhi (March 2016 to Feb 2019)                                                                                                                                                         |
| Prof. P. R. Vavia    | Best Teacher’s Award, University Institute of Chemical Technology at undergraduate level, 2010.                                                                                                                                                                     |
|                      | Best Teacher’s Award, Institute of Chemical Technology at undergraduate level, 2012.                                                                                                                                                                                |
|                      | Best Teacher’s Award, Institute of Chemical Technology at undergraduate level, 2014                                                                                                                                                                                 |
|                      | Prof. P. R. Vavia awarded VASVIK Award in the category of Biological Sciences & Technology, for developing the Novel Drug Delivery Systems, Synthesis and application of novel polymers and excipients and targeted drug delivery in cancer treatment, January 2015 |
| Dr. C.S. Madankar    | S.R. Bhatnagar Memorial Research award, 2013 by the Oil Technologist Association of India for the research work carried out in the field of lubricants, petrochemicals and allied products.                                                                         |
| Dr. P. R. Nemade     | DAE-Young Scientist Research Award                                                                                                                                                                                                                                  |
|                      | BIRAC and Bill and Melinda Gates Foundation’s Re-Invent The Toilet Challenge                                                                                                                                                                                        |

|                    |                                                                                                                                                                                                                                                                                                                     |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dr. Amit P. Pratap | Dr. Amit P. Pratap “RBGV Swaika Memorial Award” during the 68th Annual Convention of Oil Technologists” Association of India and International Conference on Emerging Trends in Oleochemicals and Lipids Expo-2013 national August 8-10, 2013 at CSIR-Indian Institute of Chemical Technology, Hyderabad            |
|                    | Prof. R K Khanna Memorial Award” for the best research paper entitled “Effect of Glycerol and Soybean Oil as a Carbon Source on the Production of Mannosylerythritol Lipids by Pseudozyma antarctica (ATCC 32657)” published in Journal of Lipid Science and Technology (JLST), Vol. 43 No. 1, Jan-Mar 2011, 16-19. |
|                    | Praharaj Manoj Memorial Award” for securing First Rank from all the branches of M. Sc. (Tech), Semester I and Semester II examinations held in May 2000.                                                                                                                                                            |
|                    | National Open Merit Scholarship” for the academic year 1996 – 97 and 97 – 98 for securing Second Rank in the Merit List at B. Sc. (Chemistry) examination held in April 1996.                                                                                                                                       |
|                    | Selected as „Junior Research Fellow“ under the scheme entitled Processing and Utilization of Gamma Irradiated Oilseeds“ sponsored by Board of research in Nuclear Sciences (BRNS), Mumbai                                                                                                                           |
| Dr. D. V. Pinjari  | Fulbright OLF Award 2015 by OIE and CIES (State Departments, US Federal Government, Washington, USA)                                                                                                                                                                                                                |
|                    | Young Engineers Award 2014-2015 by The Institution of Engineers (India)                                                                                                                                                                                                                                             |
|                    | Wipro Earthian Award 2013 by Wipro foundation, Bangalore (India)                                                                                                                                                                                                                                                    |
|                    | Young Associate, Maharashtra Academy of Science (2013)                                                                                                                                                                                                                                                              |
|                    | M. P. Chary Memorial Award 2013 for research and technological contribution (below 35 years). The M P Chary Memorial Award was constituted by Indian Institute of Chemical Engineers (IChE), India                                                                                                                  |
|                    | Dr. K. H. Gharda Best PhD Thesis Award 2013<br>Ambuja Cement Best Thesis award                                                                                                                                                                                                                                      |
|                    | Department of Science and Technology Inspire Faculty Award 2013-2018                                                                                                                                                                                                                                                |
|                    | University Grant Commission, Government of India D S Kothari Postdoctoral                                                                                                                                                                                                                                           |

- **Doctoral /Post Fellows:** 04
- **Students: B. Tech:** 09
- **M. Tech:** 02



**29) Seminars/ Conferences/Workshops organized and the source of funding (National / International) with details of outstanding participants, if any. )**

| Sr..No. | Title                                                                                                                               | Date                           | Venue                                           | Funding Source                                                                     |
|---------|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-------------------------------------------------|------------------------------------------------------------------------------------|
| 1       | ISDC-2011<br>International exhibition<br>On Soaps, Detergents<br>and Cosmetics                                                      | 10th to 13th<br>December-2011  | Nehru Centre<br>Worli,Mumbai-400 018            | Sponsored<br>Funding And<br>Registration Fee                                       |
| 2       | 67th Annual<br>Convention of The<br>Oil Technologists'<br>Association of India<br>and International<br>Conference and Expo-<br>2012 | 23rd and 24th<br>November-2012 | ITC Maratha, Sahar<br>Road, Mumbai – 400<br>099 | Sponsored<br>Funding And<br>Registration Fee                                       |
| 3       | 3 Days Workshop<br>“Latest Trends In<br>Instrumental Analysis<br>Of Oils, Oleo-<br>Chemicals, Surfactants<br>And Allied Products”   | 24th-26th<br>October-2013      | Institute of chemical<br>Technology, Mumbai     | Sponsored Funding<br>And Registration<br>Fee                                       |
| 4       | One day conference<br>on Current regulatory<br>requirements of<br>cosmetics                                                         | 7th March 2014                 | Courtyard Marriot,<br>Andheri, Mumbai.          | Sponsored Funding<br>And Registration<br>Fee                                       |
| 5       | One day seminar<br>on “Transformative<br>Technologies and<br>Market Innovations in<br>HPC industry”                                 | 13th-14th<br>January 2016      | Nehru centre, Worli,<br>Mumbai-400018           | Sponsored Funding<br>And Registration<br>Fee                                       |
| 6       | One day workshop<br>on “Risks Mitigation<br>in the Personal Care<br>Industry”                                                       | 15th January<br>2016           | Nehru centre, Worli,<br>Mumbai-400018           | Sponsored Funding<br>And Registration<br>Fee                                       |
| 7       | Innovative trends in<br>Oleochemicals,<br>Surfactants and personal<br>care products                                                 | 06 <sup>th</sup> March 2017    | Institute of chemical<br>Technology, Mumbai     | Dept. of Oils,<br>Olechemicals, and<br>surfactant<br>technology<br>Matunga Mumbai  |
| 8       | Certificate Refresher<br>course on<br>Oleochemicals; Basic<br>Chemistry, Derivatives<br>& Applications                              | 16&17 March<br>2017            | Institute of chemical<br>Technology, Mumbai     | Dept. of Oils,<br>Olechemicals, and<br>surfactant<br>technology Mumbai<br>and OTAI |

|   |                                                                                          |                      |       |      |
|---|------------------------------------------------------------------------------------------|----------------------|-------|------|
| 9 | International Conference in India Across food value chain challenges and future road map | 30 & 31 October 2017 | Delhi | OTAI |
|---|------------------------------------------------------------------------------------------|----------------------|-------|------|

**30) Code of ethics for research followed by the departments**

The Institute has a set Code of Conduct for research and the Department follows the same.

**31) Student profile Programme-wise**

| Name of the Programme<br>(Refer to Question No.4) | Centralized Admission | Selected (2016-17) |        | Pass Percentage |        |
|---------------------------------------------------|-----------------------|--------------------|--------|-----------------|--------|
|                                                   |                       | Male               | Female | Male            | Female |
| B. Tech.<br>(16 Seats)                            | 14                    | 12                 | 02     | 100             | 100    |
| M. Tech.<br>(Full time 2 years 18 seats)          | 15                    | 07                 | 08     | 100             | 100    |
| Ph.D.<br>(Tech. & Sci.)                           | 27                    | 16                 | 11     | 100             | 100    |

**32) Diversity of Students:**

| Name of the Programme<br>(refer to question no. 4) | % of students from the same university | % of students from other universities within the State | % of students from universities outside the State | % of students from other countries |
|----------------------------------------------------|----------------------------------------|--------------------------------------------------------|---------------------------------------------------|------------------------------------|
| Bachelor of Technology (16)                        | 100                                    | 0                                                      | 0                                                 | 0                                  |
| M. Tech. (Full-time 2-years) (18)                  | 30                                     | 65                                                     | 5                                                 |                                    |
| Ph.D. (Tech.) in Technology                        | 50                                     | 50                                                     | 0                                                 | 0                                  |

**33) How many students have cleared civil services and defense services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise.**

| Name of Examination                                         | Number of Students Cleared |
|-------------------------------------------------------------|----------------------------|
| Number of students who passed GATE examination              | 19                         |
| Number of students who passed CSIR                          | 2                          |
| Number of students who passed other competitive examination | 4                          |

**34) Student Progression:**

| Student progression           | Percentage against enrolled |
|-------------------------------|-----------------------------|
| UG to PG                      |                             |
|                               | 25                          |
| PG to M.Phil.                 |                             |
|                               | -                           |
| PG to Ph.D.                   | 5-10%                       |
| Ph.D. to Post-Doctoral        | -                           |
| Employed                      | -                           |
| Campus selection              | 60%                         |
| Other than campus recruitment | 20%                         |
| Entrepreneurs                 | -                           |

**35) Diversity of Staff**

| Percentage of faculty Who Are graduates  |      |
|------------------------------------------|------|
| of the same university                   | 50   |
| from other universities within the State | 16.5 |
| from universities from other States      | 16.5 |
| from universities outside the country    | 16.5 |

**36) Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period: NIL**

**37) Present details of departmental infrastructural facilities with regard to**

- a) Library : Yes
- b) Internet facilities for staff and students: Yes
- c) Total number of class rooms (in Oils Department):2
- d) Class rooms with ICT facility: - Yes
- e) Students' laboratories (BE): 2
- f) Research laboratories: 4

**38) list of doctoral, post-doctoral students and research associates**

- a) From the host institution/university: 07
- b) from other institutions/universities: 21

**39) Number of post graduate students getting financial assistance from the university:**  
TEQIP-II

**40) Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology.**

Yes. The Departmental committee made several deliberations. Experts from within the Institute and from other reputed Institutes were consulted. A syllabus committee comprising of faculty members of the Department and external experts was constituted to frame the syllabus.

**41) Does the department obtain feedback from**

**i) Faculty on curriculum as well as teaching-learning-evaluation? if yes, how does the department utilize the feedback?**

Yes. The feedback from the faculty members is taken by the Head of the Department and discussed in the Department meetings. Suitable changes are made in the teaching and evaluation accordingly.

**ii) Students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback?**

Yes, the Head of the Department takes feedback from the MSc students at the end of each semester. Besides this, some of the faculty members also obtain feedback from the students for their individual courses.

**iii) Alumni and employers on the programmes offered and how does the department utilize the feedback?**

Yes, The Head of the Department and the faculty members have constant interaction with the alumni and their feedback is taken into account.

**42) List the distinguished alumni of the department (maximum 10).**

| Sr.No. | Alumni                | Designation                                                   |
|--------|-----------------------|---------------------------------------------------------------|
| 1      | Dr. Rajeev Churi      | Managing Director, Sarbi Group of Companies                   |
| 2      | Mr. P. D. Kamat       | Managing Director, Fine Organics                              |
| 3      | Mr. K. G. Satoskar    | Managing Director, Arofine Chemicals Ltd.                     |
| 4      | Dr. Suresh Ramamurthi | Vice President, New Business Development, ITC, Bangalore      |
| 5      | Dr. B. R. Gaikwad     | President – Special Projects, VVF Ltd., Mumbai                |
| 6      | K. N. Kapadia         | CEO, Desmet Ballestra, Bangalore                              |
| 7      | Dr. A. T. Mirajkar    | Vice President, Unitop Chemicals Pvt. Ltd., Mumbai            |
| 8      | Mr. Nitin Nabar       | Chief Operating Officer (COO), Godrej Industries Ltd., Mumbai |
| 9      | Dr. S. Y. Mhaskar     | Head-Technology, Marico Ltd.                                  |
| 10     | Dr. Prasad Nabar      | Vice President, Fine Organics Ltd., Mumbai                    |

**43) Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts**

- **endowment lectures (annually)**  
Spinco Biotech Ramanathan lectures  
G. D. Gokhale Endowment lectures  
Golden Jubilee Endowment lectures  
CMP Endowment lectures  
B. D. Tilak Visiting Fellowship  
Dai-ichi Karkaria Visiting Fellowship

- **Laboratory Safety Workshop**

**44) List the teaching methods adopted by the faculty for different programmes.**

- Use of multimedia
- Self learning through assignments and seminars
- Innovative teaching methods such as POGIL – Process Oriented Guided Inquiry Learning

**45) How does the department ensure that programme objectives are constantly met and learning outcomes are monitored?**

1. We have a system of continuous assessment under which a series of tests, assignments, quizzes are arranged throughout the semester to monitor the progress of our students and teaching. There is also one formal mid-semester examination. The weightage of continuous assessment in the total marks is 20%, while that of the mid-semester exam is 30% and the end semester exam is 50%.
2. We ensure advice from external experts by appointing them as visiting faculty.
3. We regularly organize endowment lectures and lectures by experts
4. Students are encouraged to participate in co-curricular activities within and outside the institute
5. Activities like Rasaynam and CONTECH are organized to boost student involvement

**46) Highlight the participation of students and faculty in extension activities:**

- a) Students of oil technology actively participate in VORTEX – a technical festival organized by ICT. They also take part in other inter-college events and competitions.
- b) Some of the events such as are also arranged with the collaborative efforts of students and staff members of this department

**47) Give details of “beyond syllabus scholarly activities” of the department**

The faculty members of the Department are actively involved in various research activities like guiding Ph.D. students, industrial consultancy, executing sponsored projects and writing books and research papers. In addition, they contribute to the activities of other Departments/ Universities as members of Ph.D. thesis evaluation and syllabus review committees. Most of the faculty members of the Department have delivered invited lectures in conferences/seminars/ workshops. They are regular resource persons for refresher courses conducted for college teachers.

**48) State whether the programme / department is accredited/ graded by other agencies? if yes, give details.**

Yes. NBA Accreditation has been received.

File No. 28-301-2010-NBA dated 21/10/2015

NBA-2016 for B. Tech.

**49) Briefly highlight the contributions of the department in generating new knowledge basic Or applied.**

The basic and applied knowledge generated through research activities is regularly published as journal articles, reviews and books. Some of the research outcome has also been patented. In addition, the members of the Department carry out industrial consultancy where they apply the knowledge to solve the real world problems faced by the industry.

**50) Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department Strengths:**

- Substantial academic contribution by the Department towards conducting theory as well as practical courses for the under-graduate Programmes of all the three branches, viz., B. Chem. Engg., B. Tech., and B. Pharm. Sci.
- High diversity among the present faculty members regard to research interests and area of expertise.
- Numerous analytical facilities for common use such as Infrared and UV Vis spectrophotometers, Gas chromatographs, High Performance Liquid Chromatograph unit, Viscometer, ovens and

**Weaknesses:**

- Few faculty positions are vacant for a long time.
- The laboratories are not fully modernized and a thorough revamping is essential.
- Secretarial assistance is not available. As a result, the faculty members spend lot of time on administrative and documentation work.

**Opportunities:**

- The Department gets a good number of applications for Ph.D. admission. Thus, there is no dearth of research manpower and new research areas can be initiated and sustained.
- The vacant faculty positions can be filled with scientists/adjunct faculty on suitable terms and conditions.
- A network can be made of the research students who had passed out of the Department who are placed in various research/academic organizations. This will help in conducting research of academic, industrial and social relevance.
- The Department has the opportunity to identify promising under-graduate students and hence can carry out minor, exploratory research projects through them. This can be a co-curricular activity which will also help the under-graduate students in getting a good placement or scholarship.
- The Department can increase the intake of each. Programme. In future, integrated programmes can be initiated.
- UGC SAP and DST FIST sponsored research funding for the next five years.



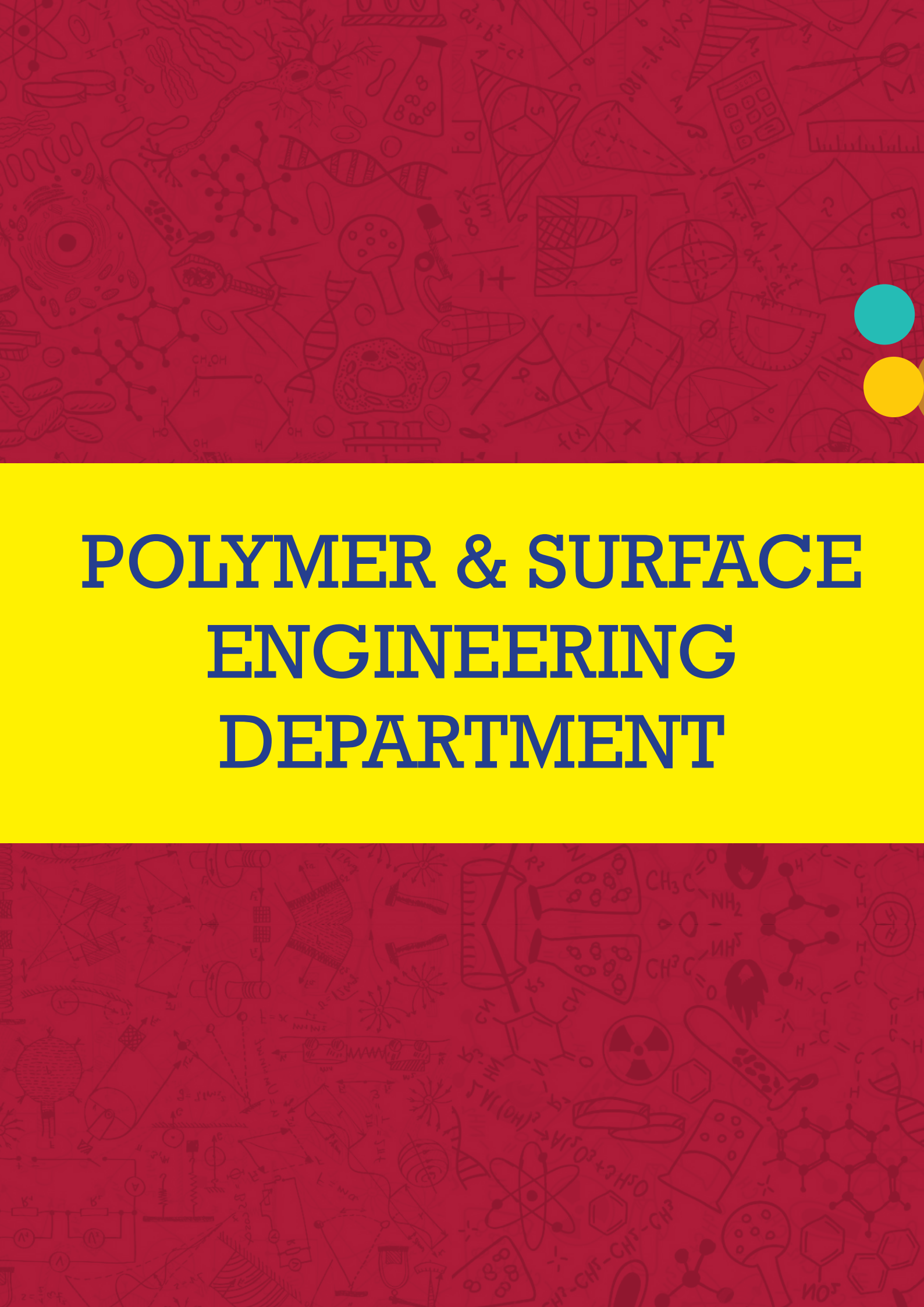
**51) Future plans of the Department Research Plan:**

- To expand the current research expertise by incorporating expertise from various contemporary areas of research such as nanoscience, bioorganic chemistry, materials chemistry, computational chemistry, theoretical chemistry
- To develop research facilities to meet international standards with respect to analytical facilities, lab facilities, etc
- To enrol quality students for PhD and train them rigorously through course work and research
- To undertake research problems of industrial relevance
- To introduce, develop and nurture the culture of commercialization of research and documenting the work as patents

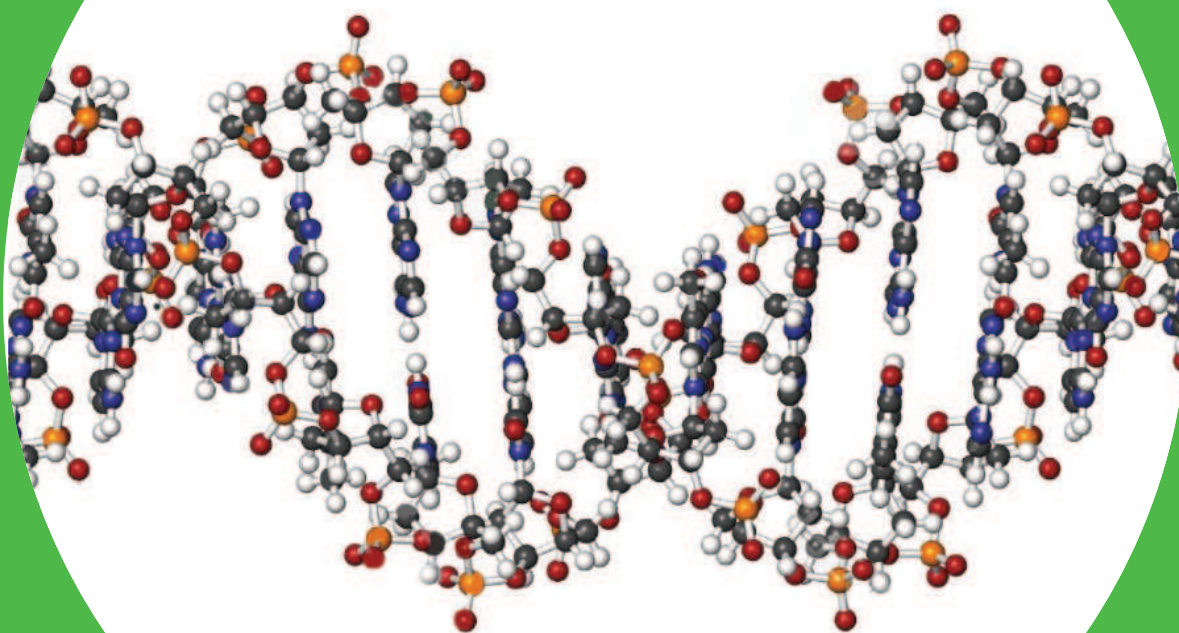
**Academic Plan:**

- Develop the current M.Tech programme further in terms of quality and make it on par with the international standards.
- Launching of new M. Tech. Programme in Tribology.
- Provide the students excellent laboratory, computational, research and instrumental facilities
- Make online resources available to the students
- Collaborate with reputed Universities and institutions to improve the academic standards
- Provide opportunities to the students to work in reputed institutes as interns

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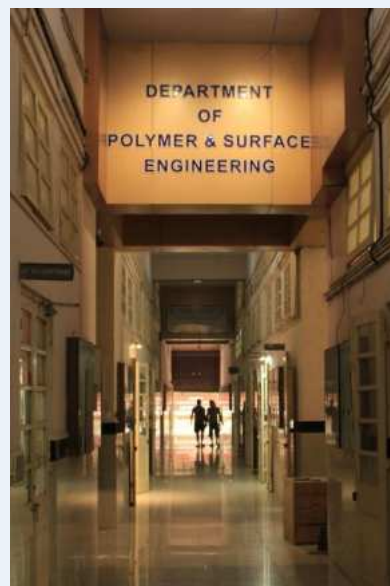
# POLYMER & SURFACE ENGINEERING DEPARTMENT





# Polymer & Surface Engineering Department

During the inception, year 1946, this division offered a B.Sc (Tech) course for two years in Technology of Plastics and Technology of Paints, Pigments and Varnishes. In 1952, along with other divisions three years B.Sc (Tech) program was introduced. From 1998, the three year B. Sc (Tech) course has been replaced by four year post H.S.C course. The intake strength was only four students per year in Polymer and surface engineering Technology branches. Later on, the strength was increased to 8 per year and now it is 16 per year in each of these two technology courses. In addition to under graduate program, the department has Master's and Doctoral Programs also. The department received a grand donation of Plastindia Foundation, Mumbai in 1997 to initiate the new program – three semesters M. Sc (Tech) in Plastics Processing. In the year 1999, the department received donation of modern equipments worth USD 100,000 from Gratag Macbeth of USA in association with Advanced Graphics Systems, India.



The department has received funds under FIST and DRS schemes. The department has fully refurbished laboratory and equipped with all state of the art instrument. The department the placement recorded for UG and PG are excellent and large numbers of students going for higher studies. The faculty members are having excellent interactions with industries and are involved in consultations and members of varies committees.

Department work in the areas like Polymer Blends and Synthesis of Tailor-made Polymers by Living Radical Polymerization, Polyurethane Dispersion, Anticorrosive Coatings, Nano-Particle Synthesis, Particulate Polymer Composites, Bio-nanocomposites, Biodegradable Polymers and Composites, Speciality Coatings, Nanocomposites, Biopolymer, Rheology of Polymers etc

The department has very good testing facility to carry out research work. Major characterization equipments includes XRD, Leica Microscope, DSC, TGA, FTIR, Nano particle size analyzer, Contact Angle measuring system, Zeta Potential meter, HPLC, Computer Colour Matching system, Tensile strength tester, BOD and COD analyser, Rheometer HDT/ Vicat Apparatus Optical Instruments Spectrophotometer Color Eye 7000 A Spectralight III XRD Water vapor and Gas vapor Permeability Surface Tension meter DMA etc Department also have Polymer processing Equipment like Single screw extruder Twin screw extruder Two roll mill Injection molding machine Blown film extruder and many other small testing analytical and processing instruments.

There are total 6 faculty members who engaged in high quality fundamental as well as applied research and they have got over 500 publications in Indian and International journals. The number of publication over the last three years (2012-15) is 150. There are 9 permanent and 4 temporary non-teaching staff members in the dept. Department has 9 laboratories occupying 500 sq. m. floor area and 450 sq m classroom and seating area.

The faculty of the Department has good interaction with the industry. A number of industries have been benefited by the technical advice given by the faculty. There have been a number of industrial and governmental research projects in which problems of mutual interest are investigated and the students as well as the Department have been benefitting by this interaction. Department faculty has

govt. projects from UGC,DST, AICTE and TEQIP in the last three years amounting to Rs. 300 lakhs in the last three years. They also have project work from the industry like Tata motors Supreme Petrochem of value over Rs 30 lakhs.

About 50% of the under graduate and post graduate student go abroad for higher studies. Some of the institutes where the student's gets admissions are Akron, Texas, Colorado, Cornell, Carnegie Mellon University, Jeorgia Institute of Technology in the USA etc .We achieve 100% campus placement for UG and 80% for PG students. The companies that visit for campus interview are Asian Paints, DSM, Welspun, Saint Gobain, Hindustan Speciality Chemicals, Pidilite, Kansai Nerorac K Tech Dow Chemicals and many others. Salaries offered are in the range of 5 lakhs per annum.

Departmental Students also organize technical event every year called "Rangotsav" where paper presentation, quizzes and other events are held in the dept in which students from all over India participate and competes. Annual get together for alumni is also planned which is a cultural event. Department have 7 endowment where in people from industry share their experience with the students. Renowned Alumni of the Department Mr. A.S. Dani Mr. H.K. Momaya Mr. M.C. Choksi Mr. Ravi Raghavan Mr. S.C. Jain Mr. B.M. Thakkar and many more.

Our vision is Empowering skills and knowledge about latest Research in the field of Polymer and Surface Coating Technologies. And mission is to pursue world class on excellence in education and research in the areas of Polymer and Coating Technology for sustainable development of industries that require trouble shooting competencies in these core areas of knowledge

## Advances in Polymer & Coating – Rangotsav 2017



Chief Guest Dr. Shreekant Diwan



Inauguration



Technical Session I



Technical Session II





IDP Gudge Prof. M. A. Shenoy



Organizing Committee

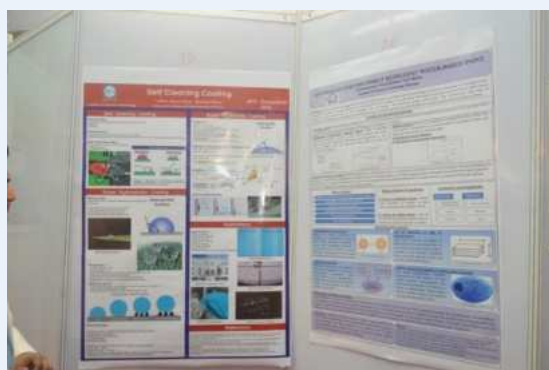
## Advances Manufacturing Technologies & New Material ICT-CIPET Workshop – 2016





## Advances in Polymer & Coating – Rangotsav 2016





# **1. Year of establishment :**

The department of Polymer and Surface Engineering was established in 1946 and has undergone

changes in its nomenclature. Earlier it was known as Paints, Pigments and Varnishes (PPV) Section.

The B.Sc. (Tech.) courses were converted into post-B.Sc. three-year courses in 1966 and finally further converted into B. Tech. programmes in 1988, which are post-HSSC (12th Grade).

Since 1961 the Department started M.Sc.(Tech.) in Chemical Technology which is currently M.(Tech.) in polymer engineering as well as Surface Coatings Technology.

**2. Is the Department part of a School/Faculty of the university?**

Deemed University under section-3 of UGC Act-1956 with Maharashtra Govt.'s Elite Status and Center of excellence, Matunga, Mumbai-400 019

**3. Names of programmes offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., D.Sc., D.Litt., etc.)**

- B.Tech (Polymer Engineering and Technology, Surface Coating Technology)
- M.Tech (Polymer Engineering and Technology, Surface Coating Technology)
- Ph.D (Polymer Engineering and Technology, Surface Coating Technology)
- Integrated Masters in (Polymer Engineering and Technology, Surface Coating Technology)
- Integrated Ph.D in (Polymer Engineering and Technology, Surface Coating Technology)
- Ph. D. (Science) in Chemistry
- Ph. D. (Science) in Green Technology

**4. Interdisciplinary programmes and departments involved**

- Department of Mathematics
- Department of Physics
- Department of General Engineering
- Department of Chemical Engineering
- Department of Chemistry

**5. Courses in collaboration with other universities, industries, foreign institutions, etc.**

Nil

**6. Details of programmes discontinued, if any, with reasons**

Nil

**7. Examination System: Annual/Semester/Trimester/Choice Based Credit System**

|                  | In-Semester evaluation |                   | End-Semester-Exam | Components of continuous mode                                                                                  |
|------------------|------------------------|-------------------|-------------------|----------------------------------------------------------------------------------------------------------------|
|                  | Continuous mode        | Mid Semester-Exam |                   |                                                                                                                |
| <b>Theory</b>    | 30%                    | 30%               | 40%               | Quizzes, class tests (open or closed book), home assignments, group assignments, <i>viva-voce</i> assignments, |
| <b>Practical</b> | 50%                    | -                 | 50%               | Attendance, <i>viva -voce</i> , journal, assignments, project, experiments, tests                              |

### Grades:

The total marks (in-semester + end-semester) of a candidate in a subject head are converted into a letter grade, based on the relative (and some-times the absolute) performance of the student. For granting class a grade point of 6.0 and above will be considered equivalent to First class.

| Letter Grade | AA | AB | BB | BC | CC  | CD | DD  | EE |
|--------------|----|----|----|----|-----|----|-----|----|
| Grade Point  | 10 | 9  | 8  | 7  | 6.5 | 6  | 5.5 | 5  |

### Repeat End-Semester Examination

For those candidates who fail in a subject head or are eligible for appearing at the repeat examination, **Repeat End-Semester Examination** is conducted within one month from the declaration of the results of regular end-semester examination. The marks obtained by candidates in the in-semester examinations (continuous assessment and periodic test) will be carried forward in such cases.

### Improvement of performance:

A candidate will be allowed to appear for the **entire examination** after the regular end-semester Examination as per the respective rules to improve the performance.

### 8. Participation of the department in the courses offered by other departments

Nil

### 9. Number of teaching posts sanctioned, filled and actual (Professors/Associate Professors/Asst. Professors/others)



|                                                   | Sanctioned | Filled | Actual (including CAS & MPS) |
|---------------------------------------------------|------------|--------|------------------------------|
| <b>Professors</b>                                 | 2          | 0      | 2                            |
| <b>Associate Professors</b>                       | 3          | 2      | -                            |
| <b>Asst. Professors</b>                           | 3          | 3      | -                            |
| <b>Others (Endowment one for associate Prof.)</b> | 1          | 1      | -                            |

**10. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance**

| Name                        | Qualification | Designation         | Specialization                        | No. of Years of Experience | No. of Ph.D./ M.Phil. students guided for the last 4 years |
|-----------------------------|---------------|---------------------|---------------------------------------|----------------------------|------------------------------------------------------------|
| <b>Prof. R.N.Jagtap</b>     | Ph.D. Tech    | Professor           | Paint Technology                      | 24                         | 10                                                         |
| <b>Prof. P. A. Mahanwar</b> | Ph.D. Tech    | Professor           | Polymer Science and Technology        | 26                         | 16                                                         |
| <b>Dr. V. V. Shertukade</b> | Ph.D. Tech    | Associate Professor | Polymer Science and Technology        | 22                         | 2                                                          |
| <b>Dr. A. S. Sabnis</b>     | Ph.D. Tech    | Assistant Professor | Paint Technology                      | 9+ 2.5*                    | 2                                                          |
| <b>Dr. S. T. Mhaske</b>     | Ph. D Tech    | Assistant Professor | Paints & Polymer Science & Technology | 14                         | 5                                                          |
| <b>Mr. A. R. Rao</b>        | M. Tech       | Assistant Professor | Polymer Science and Technology        | 14+2*                      | 0                                                          |

\*: industry experience

**11. List of senior Visiting Fellows, adjunct faculty, emeritus professors**

1. Prof. M. A. Shenoy
2. Prof. M. R. Sawant
3. Dr. Samui
4. Dr. Milind Deshpande
5. Dr. M.Tipana
6. Mr. S.P.Joshi
7. Mr. Mahesh Aaradhe

**12. Percentage of classes taken by temporary faculty – programme-wise information**

No temporary faculties



### 13. Programme-wise Student Teacher Ratio

| Sr.No | Class  | Students<br>(considering<br>ongoing courses for<br>SY TY and final<br>year of polymer as<br>well as coating<br>technology) | Teacher |
|-------|--------|----------------------------------------------------------------------------------------------------------------------------|---------|
| 1     | B-Tech | 96                                                                                                                         | 8       |
| 2     | M-Tech | 70                                                                                                                         | 6       |
| 3     | Ph.D   | 2-3 (average)                                                                                                              | 5       |

### 14. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual

| No | Support staff<br>(technical) | Actual | Sanctioned | Filled |
|----|------------------------------|--------|------------|--------|
| 1  | Lab Assistant                | 3      | 3          | 3      |
| 2  | Laboratory Technician        | 1      | 1          | --     |
| 3  | Instrument Mechanics         | 1      | 1          | 1      |
| 4  | Laboratory Attendant         | 5      | 5          | 5      |

### 15. Research thrust areas as recognized by major funding agencies

- Nanotechnology
- Green routes for polymer synthesis
- Polymer processing.

### 16. Number of faculty with ongoing projects from a) national b) international funding agencies and c) Total grants received. Give the names of the funding agencies, project title and grants received project-wise.

|   |                               |                                           |
|---|-------------------------------|-------------------------------------------|
| 1 | <b>Sponsor</b>                | Ministry of Textile- BlueTex Pvt. Ltd.    |
|   | <b>Title</b>                  | Bio based coating for textile application |
|   | <b>Duration</b>               | 2 yrs                                     |
|   | <b>Total amount</b>           | Rs.34 lakhs                               |
|   | <b>Principal Investigator</b> | Professor R. N. Jagtap                    |
|   | <b>Research Fellow</b>        | Ambadas Garje                             |
|   |                               |                                           |
|   | <b>Sponsor</b>                | Pidilite Industries                       |

|   |                               |                                                                                                        |
|---|-------------------------------|--------------------------------------------------------------------------------------------------------|
| 2 | <b>Title</b>                  | Pickring emulsions for adhesive application                                                            |
|   | <b>Duration</b>               | 5 yrs                                                                                                  |
|   | <b>Total amount</b>           | Rs.20 lakhs                                                                                            |
|   | <b>Principal Investigator</b> | Professor R. N. Jagtap                                                                                 |
|   | <b>Research Fellow</b>        | Rajesh Prabhu                                                                                          |
|   |                               |                                                                                                        |
| 3 | <b>Sponsor</b>                | Evonik Industries                                                                                      |
|   | <b>Title</b>                  | Placing Functionality to coatings                                                                      |
|   | <b>Duration</b>               | 4 Year                                                                                                 |
|   | <b>Total amount</b>           | Rs. 17 lakhs                                                                                           |
|   | <b>Principle Investigator</b> | Professor R. N. Jagtap                                                                                 |
|   | <b>Research Fellow</b>        | Pratiket Bamane                                                                                        |
|   |                               |                                                                                                        |
| 4 | <b>Sponsor</b>                | BRNS                                                                                                   |
|   | <b>Title</b>                  | High energy radiation assisted depolymerization of polyethylene terephthalate for coating applications |
|   | <b>Duration</b>               | 3 years (2012-2015)                                                                                    |
|   | <b>Total amount</b>           | 21,00,000/-                                                                                            |
|   | <b>Principal Investigator</b> | Dr. Anagha Sabnis                                                                                      |
|   | <b>Research Fellows</b>       | Vandana Jamdar (Ph.D. Tech)                                                                            |
|   |                               |                                                                                                        |
| 5 | <b>Sponsor</b>                | Indian Council of Agricultural Research (ICAR), Govt. of India                                         |
|   | <b>Title</b>                  | Feasibility of PTA substituting IPA to the extent possible in the manufacturing of lamination adhesive |
|   | <b>Duration</b>               | 6 months                                                                                               |
|   | <b>Total amount</b>           | Rs 14.00/- Lakhs                                                                                       |
|   | <b>Principal Investigator</b> | Professor R. N. Jagtap                                                                                 |
|   |                               |                                                                                                        |
|   | <b>Sponsor</b>                | Board of Research in Nuclear sciences (BRNS), DAE, Govt. of India                                      |

|   |                               |                                                                                                                           |
|---|-------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| 6 | <b>Title</b>                  | Development of volatile organic compound (VOC) free radiation indicator labels along with prototype product manufacturing |
|   | <b>Duration</b>               | 3 years (March 2012 to 2015)                                                                                              |
|   | <b>Total amount</b>           | Rs 24.50/- Lakhs                                                                                                          |
|   | <b>Principal Investigator</b> | Dr. Shashank T. Mhaske                                                                                                    |
|   |                               |                                                                                                                           |
| 7 | <b>Sponsor</b>                | DST- TIFAC New Delhi (2011-15)                                                                                            |
|   | <b>Title</b>                  | Survey of Medium, small and micro Enterprenurs in Plastics at Dharavi Cluster, Mumbai                                     |
|   | <b>Duration</b>               | 4 Year                                                                                                                    |
|   | <b>Total amount</b>           | Rs. 21,50,000:00                                                                                                          |
|   | <b>Principle Investigator</b> | Prof. P. A. Mahanwar                                                                                                      |
|   |                               |                                                                                                                           |
| 8 | <b>Sponsor</b>                | AICTE New Delhi(2013-16)                                                                                                  |
|   | <b>Title</b>                  | Development of Conducting Polymer nanofibers by Electrospinnig and Polymer Nano fiber composites for Fuel Cells           |
|   | <b>Duration</b>               | 3 Year                                                                                                                    |
|   | <b>Total amount</b>           | Rs. 9,90,000:00                                                                                                           |
|   | <b>Principle Investigator</b> | Prof. P. A. Mahanwar                                                                                                      |
|   |                               |                                                                                                                           |
| 9 | <b>Sponsor</b>                | BRNS(2014-17)                                                                                                             |
|   | <b>Title</b>                  | Development of Heat Shrinkable cable and sheets for electrical and electronic application                                 |
|   | <b>Duration</b>               | 3 Year                                                                                                                    |
|   | <b>Total amount</b>           | Rs. 35, 00, 000                                                                                                           |
|   | <b>Principle Investigator</b> | Prof. P. A. Mahanwar                                                                                                      |
|   |                               |                                                                                                                           |
|   | <b>Sponsor</b>                | DST/FIST(2007-11)                                                                                                         |

|    |                               |                                                                             |
|----|-------------------------------|-----------------------------------------------------------------------------|
| 10 | <b>Title</b>                  | Infrastructure Development at department of Polymer and Surface Engineering |
|    | <b>Duration</b>               | 3 Year                                                                      |
|    | <b>Total amount</b>           | Rs. 45,00,000                                                               |
|    | <b>Principle Investigator</b> | Prof. P. A. Mahanwar                                                        |
|    |                               |                                                                             |
| 11 | <b>Sponsor</b>                | DST/FIST(2013-15)                                                           |
|    | <b>Title</b>                  | Infrastructure Development at department of Polymer and Surface Engineering |
|    | <b>Duration</b>               | 2 Year                                                                      |
|    | <b>Total amount</b>           | Rs. 1, 25,00,000                                                            |
|    | <b>Principle Investigator</b> | Prof. P. A. Mahanwar                                                        |
|    |                               |                                                                             |
| 12 | <b>Sponsor</b>                | RGST(2015-2018)                                                             |
|    | <b>Title</b>                  | Development of Controlled Release formulations of Agrochemicals             |
|    | <b>Duration</b>               | 3 Year                                                                      |
|    | <b>Total amount</b>           | Rs. 53,00,000                                                               |
|    | <b>Principle Investigator</b> | Prof. P. A. Mahanwar                                                        |
|    |                               |                                                                             |
| 13 | <b>Sponsor</b>                | Reliance Industries Ltd                                                     |
|    | <b>Title</b>                  | Shortcut PET fibres in high performance Coating                             |
|    | <b>Duration</b>               | 6 month                                                                     |
|    | <b>Total amount</b>           | 11 lakhs                                                                    |
|    |                               |                                                                             |
| 14 | <b>Sponsor</b>                | Colors                                                                      |
|    | <b>Title</b>                  | Novel resins for uv radiation curing                                        |
|    | <b>Duration</b>               | 4 year                                                                      |
|    | <b>Total amount</b>           | 20 lakh                                                                     |
|    |                               |                                                                             |

|    |                     |                                                                                          |
|----|---------------------|------------------------------------------------------------------------------------------|
| 15 | <b>Sponsor</b>      | M/S Shah Petroleum Ltd.                                                                  |
|    | <b>Title</b>        | Development of green plasticizer as replacement to phthalate base plasticizer            |
|    | <b>Duration</b>     | 4 year                                                                                   |
|    | <b>Total amount</b> | 48 lakh                                                                                  |
|    |                     |                                                                                          |
| 16 | <b>Sponsor</b>      | DRDO                                                                                     |
|    | <b>Title</b>        | Development of Phase Change Polymers as Maintenance Free Thermal Energy Storage Material |
|    | <b>Duration</b>     | 3 year                                                                                   |
|    | <b>Total amount</b> | 22.22 lakh                                                                               |
|    |                     |                                                                                          |
| 17 | <b>Sponsor</b>      | SDKDCH, Nagpur                                                                           |
|    | <b>Title</b>        | Development of Mineral Trioxide Aggregates                                               |
|    | <b>Duration</b>     | 3 year                                                                                   |
|    | <b>Total amount</b> | 19.5 lakh                                                                                |
|    |                     |                                                                                          |
| 18 | <b>Sponsor</b>      | Unilever Industries Limited                                                              |
|    | <b>Title</b>        | Biopolymers for Responsible Growth                                                       |
|    | <b>Duration</b>     | 1 year                                                                                   |
|    | <b>Total amount</b> | 13.6 lakh                                                                                |
|    |                     |                                                                                          |
| 19 | <b>Sponsor</b>      | Evonik India Ltd.                                                                        |
|    | <b>Title</b>        | Responsive Polymer Based Intelligent Devices                                             |
|    | <b>Duration</b>     | 3 year                                                                                   |
|    | <b>Total amount</b> | 22 lakh                                                                                  |
|    |                     |                                                                                          |
| 20 | <b>Sponsor</b>      | DBT-ICT Centre for Energy Biosciences (DBT-ICT-CEB)                                      |
|    | <b>Title</b>        | Integrated biorefinery for production of sorghum seed protein                            |

|    |                     |                                                                                                                                  |
|----|---------------------|----------------------------------------------------------------------------------------------------------------------------------|
|    | <b>Duration</b>     | 3 year                                                                                                                           |
|    | <b>Total amount</b> | 1.13 Cr                                                                                                                          |
|    |                     |                                                                                                                                  |
| 21 | <b>Sponsor</b>      | Unilever Industries Limited                                                                                                      |
|    | <b>Title</b>        | Shape selective isolation and surface modification of nanocellulose                                                              |
|    | <b>Duration</b>     | 3 year                                                                                                                           |
|    | <b>Total amount</b> | 36.25 Lakh                                                                                                                       |
|    |                     |                                                                                                                                  |
| 22 | <b>Sponsor</b>      | Department of Science & Technology DST (MoFPI)                                                                                   |
|    | <b>Title</b>        | Synthesis and characterization of nano-cellulose and its application in biodegradable polymer composite films for food packaging |
|    | <b>Duration</b>     | 4 year                                                                                                                           |
|    | <b>Total amount</b> | 32.73 lakh                                                                                                                       |

#### 17. Inter-institutional collaborative projects and associated grants received

a) National collaboration

b) International collaboration

Nil

#### 18. Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, AICTE, etc.; total grants received.

Please refer to point 17

#### 19. Research facility / centre with

- State recognition
- National recognition
- International recognition

#### 20. Special research laboratories sponsored by / created by industry or corporate bodies

Undergraduate and Research laboratory–sponsored by Sauradip chemical industries PVT LTD –inaugurated by Dr. Kishore M. Shah dated at 16<sup>th</sup> Dec’16

#### 21. Publications:



|                                                                                 |                    |                      |                      |                  |                  |               |
|---------------------------------------------------------------------------------|--------------------|----------------------|----------------------|------------------|------------------|---------------|
|                                                                                 | Prof. R. N. Jagtap | Prof. P. A. Mahanwar | Dr. V. V. Shertukade | Dr. A. S. Sabnis | Dr. S. T. Mhaske | Mr. A. R. Rao |
| Number of papers published in peer reviewed journals (national / international) | 30                 | 41                   | 5                    | 36               | 66               | -             |
| Monographs:<br>Chapters in Books:<br>Edited Books:                              | -                  | -                    |                      | -                |                  | -             |
| Citation Index                                                                  | 326                | 659                  |                      | 111              | 960              | -             |
| Impact Factor                                                                   | 1.2-3.5            | 0.26-2.7             |                      | 1.2-3.8          | 0.253-3.91       | -             |
| h Index                                                                         | 10                 | 14                   |                      | 6                | 15               | -             |

## 22. Details of patents and income generated:

| No. | Inventors                                                                                                                         | Title                                                                                              | Country | Funding Agency     |
|-----|-----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|---------|--------------------|
| 1.  | Mhaske<br>Shashank Tejrao<br><br>Kadam Pravin<br>Gopal<br><br>Kelkar Sunder<br>Tukaram<br><br>Savvashe<br>Prashant<br>Bhairavnath | Microwave synthesis of polyamide hot melt adhesive.<br><br><b>Patent No : 3305/MUM/2014</b>        | India   | POLYFIBRE LIMITED. |
| 2.  | Mhaske<br>Shashank Tejrao<br><br>Kadam Pravin<br>Gopal<br><br>Vaidya Parth<br>Nitin<br><br>Savvashe<br>Prashant<br>Bhairavnath    | Novel poly(ester-amide) hot melt adhesive using castor oil.<br><br><b>Patent No : 128/MUM/2015</b> | India   | POLYFIBRE LIMITED. |

|    |                                                                                                                                |                                                                                                                                                                       |       |                    |
|----|--------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--------------------|
| 3. | Mhaske<br>Shashank Tejrao<br><br>Kadam Pravin<br>Gopal<br><br>Vaidya Parth<br>Nitin<br><br>Savvashe<br>Prashant<br>Bhairavnath | Novel poly(ester-amide) hot melt adhesive using ricinoleic acid.<br><br><b>Patent No : 127/MUM/2015</b>                                                               | India | POLYFIBRE LIMITED. |
| 4. | Mahanwar<br>Prakash Anna<br><br>Praharaj<br>Bhatnagar Manoj                                                                    | Centrifugal and Electrocentrifugal Spinning Machine for Synthesis of Micro and Nano Fibers from Polymer Melts & Solutions<br><br><b>Patent No : 3395 / MUM / 2015</b> | India | No                 |
| 5  | Mahanwar<br>Prakash Anna<br><br>Bambole Vaishali<br>Abhay                                                                      | Synthesis of Polyether Sulfone and Mixture of SiO <sub>2</sub> and Al <sub>2</sub> O <sub>3</sub> Nanocomposites”<br><br><b>Indian - 95 / MUM / 2014</b>              | India | No                 |
| 6  | Mahanwar<br>Prakash Anna<br><br>Bambole Vaishali<br>Abhay                                                                      | Synthesis of Polyether ether ketone Carbon Nano Platelets Composites”,<br><br><b>Indian – 96 / MUM / 2014</b>                                                         | India | No                 |
| 7  | <b>Mahanwar<br/>Prakash Anna</b><br><br>Sawant Manohar<br>Ramchandra                                                           | Microcapsule and Process for Production Thereof<br><br><b>Indian – 2712 / MUM / 2014</b>                                                                              | India | No                 |
| 8  | <b>Mahanwar<br/>Prakash Anna</b><br><br>Bambole Vaishali<br>Abhay                                                              | Nanocomposites Carbon & Nano – plated Chain with Polyetheretherketone (PEEK)<br><br><b>Indian – 629 / MUM / 2012</b>                                                  | India | No                 |
| 9  | <b>Mahanwar<br/>Prakash Anna</b><br><br>Bambole Vaishali<br>Abhay                                                              | Nanotube Polymer Composition”<br><br><b>Indian – 1110 / MUM / 2012</b>                                                                                                | India | No                 |

### 23. Areas of consultancy and income generated :

| Sr.No. | Industry Name                         | Area                | Income Generated | Name of the Faculty  |
|--------|---------------------------------------|---------------------|------------------|----------------------|
| 1      | Super Urea Coat Ltd.                  | Process Development | 1.2 lacs         | Prof. R.N Jagtap     |
| 2      | Silvolac Ind.                         | Process Development | 1.2 lacs         | Prof. R.N Jagtap     |
| 3      | Jain Irrigation Ltd.                  | Process Development | 1.2 lacs         | Prof. R.N Jagtap     |
| 4      | Crompton & Greaves                    | Expert Advise       | 1.2 lacs         | Prof. R.N Jagtap     |
| 5      | Board of Research in Nuclear Science. | Expert Advise       | 15 lacs          | Prof. R.N Jagtap     |
| 6      | Vinnati Organics Ltd                  | Expert Advise       | 1.2 lacs         | Prof. R.N Jagtap     |
| 7      | Technova Imaging Systems Ltd.         | Expert Advise       | 2.4 lacs         | Prof. R.N Jagtap     |
| 8      | Ishaan Industries                     | Process Development | 1.2 lacs         | Prof. R.N Jagtap     |
| 9      | BASF India Ltd                        | Expert advise       | 80000/-          | Dr. A.S. Sabnis      |
| 10     | Pidilite industries                   | Expert advise       | 1.5 lacs         | Dr. A.S. Sabnis      |
| 11     | Miscellaneous                         | Expert advise       | 2 lacs           | Dr. A.S. Sabnis      |
| 12     | Shell India Pvt. Ltd.                 | Development project | 10 lacs          | Dr. A.S. Sabnis      |
| 13     | Polyfibre Ltd.                        | Product Engineering | 5,00,000/-       | Dr. S.T.Mhaske       |
| 14     | Supreme                               | Product Engineering | 1,00,000/-       | Dr. S.T.Mhaske       |
| 15     | BASF                                  | Product Engineering | 3,00,000/-       | Dr. S.T.Mhaske       |
| 16     | M/s Associated Chemicals, Mumbai.     | Expert advise       |                  | Prof. P. A. Mahanwar |

|    |                                                     |               |  |                             |
|----|-----------------------------------------------------|---------------|--|-----------------------------|
| 17 | M/s Shiva Chemical Pvt. Ltd., Mumbai.               | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |
| 18 | M/s Texcel Plastics Ltd., Mumbai                    | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |
| 19 | M/s Chembond Chemicals Ltd., Mumbai                 | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |
| 20 | M/s Jagdamba Enterprises, Jodhpur.                  | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |
| 21 | M/s Rayechem RPG. Ltd., Mumbai.                     | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |
| 22 | M/s Jai Bharat Textiles., Mumbai                    | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |
| 23 | M/s Gondallia Associates, Mumbai.                   | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |
| 24 | M/s Ajay Industries Akola                           | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |
| 25 | M/s D. G. False Flooring system Mumbai              | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |
| 26 | M/s Sun Petrochemicals Pvt. Ltd. Mumbai.            | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |
| 27 | M/s Shanoo Paints Pvt. Ltd. Mumbai.                 | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |
| 28 | M/s Advance Paints Pvt. Ltd., Mumbai.               | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |
| 29 | M/s British Scaffolding International Ltd.. Mumbai. | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |
| 30 | M/s Shushama & Electricals, Mumbai.                 | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |

|    |                                         |               |  |                             |
|----|-----------------------------------------|---------------|--|-----------------------------|
| 31 | M/s Supreme Industries. Ltd. Mumbai.    | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |
| 32 | M/s Larsen & Tubro. Ltd. Mumbai.        | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |
| 33 | Al- Yamaha Paints Factory, Saudi Arebia | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |
| 34 | M/s Shaha Plasti Coats. Mumbai.         | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |
| 35 | M/s. Varsha Coaters. Rajkot.            | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |
| 36 | M/s Jesons Industries. Ltd. Mumbai.     | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |
| 37 | M/s Clariant (India). Ltd. Mumbai.      | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |
| 38 | M/s Noble Chemicals, Germany            | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |
| 39 | M/s Asian Paints Ltd, Mumbai            | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |
| 40 | M/s Mumbai Port Trust                   | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |
| 41 | M/s RCF, Mumbai and Thal,               | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |
| 42 | M/s Kansai Goodlass Nerolac, Mumbai     | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |
| 43 | M/s Finolex Industries Ltd, Ratnagiri   | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |
| 44 | M/s British Scalfholdings Pvt. Ltd.     | Expert advise |  | <b>Prof. P. A. Mahanwar</b> |

**24. Faculty selected nationally / internationally to visit other laboratories / institutions / industries in India and abroad**

|                                                      |         |               |                           |
|------------------------------------------------------|---------|---------------|---------------------------|
| Hesse Lignal                                         | Germany | International | <b>Dr. S.T.Mhaske</b>     |
| Firat Ltd.                                           | Turkey  | International | <b>Dr. S.T.Mhaske</b>     |
| National Plastics                                    | Dubai   | International | <b>Dr. S.T.Mhaske</b>     |
| Wayne                                                | USA     | International | <b>Dr. S.T.Mhaske</b>     |
| Garware wall ropes                                   | Pune    | National      | <b>Dr. S.T.Mhaske</b>     |
| SupremePetrochemLtd.                                 | Raigad  | National      | <b>Dr. S.T.Mhaske</b>     |
| Jai Corp. Ltd.                                       | Vapi    | National      | <b>Dr. S.T.Mhaske</b>     |
| K. J. Sommaiya College of Engineering                | Mumbai  | National      | <b>Prof. P.A.Mahanwar</b> |
| Saboo Siddiqui College of Engineering.               | Mumbai  | National      | <b>Prof. P.A.Mahanwar</b> |
| Veermata Jijabai Technical Institute                 | Mumbai  | National      | <b>Prof. P.A.Mahanwar</b> |
| Garware Institute of Carrier Education & Development | Mumbai  | National      | <b>Prof. P.A.Mahanwar</b> |

**25. Faculty serving in**

- a) National committees b) International committees c) Editorial Boards d) any other (please specify)

| <b>Sr. No.</b> | <b>Committee</b>                                                                                            | <b>Name of the faculty</b> |
|----------------|-------------------------------------------------------------------------------------------------------------|----------------------------|
| 1.             | Vice Chairmen,<br>Indian Plastics<br>Institute, Mumbai Chapter.                                             | <b>Dr. S.T.Mhaske</b>      |
| 2.             | Secretary, The Color<br>Society, India                                                                      | <b>Dr. S.T.Mhaske</b>      |
| 4.             | Hon. President, Color Society, Mumbai.                                                                      | <b>Prof. P.A.Mahanwar</b>  |
| 5.             | Member Board of Governors, UDCT<br>Alumni Association, Mumbai.                                              | <b>Prof. P.A.Mahanwar</b>  |
| 6.             | Member, Technical Advisory Committee<br>Ministry of Science & Technology,<br>Government of India, New Delhi | <b>Prof. P.A.Mahanwar</b>  |
| 7.             | Course Co-ordinator DPAT, Garware<br>Institute University of Mumbai                                         | <b>Prof. P.A.Mahanwar</b>  |



|     |                                                                                                                                        |                           |
|-----|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| 8.  | Permenant Invitee: Indian Small Scale Paint Association (ISSPA) Indian Resin Manufacturers Association (IRMA)                          | <b>Prof. P.A.Mahanwar</b> |
| 9.  | All India Printing Ink Manufacturer's Association (AIPIMA)                                                                             | <b>Prof. P.A.Mahanwar</b> |
| 10. | All India Plastics Manufacturer's Association (AIPMA)                                                                                  | <b>Prof. P.A.Mahanwar</b> |
| 11. | Hon. President: Indian Paint and Coating Association ( Western Region)                                                                 | <b>Prof. P.A.Mahanwar</b> |
| 12. | Life Member: Indian Plastics Institute                                                                                                 | <b>Prof. P.A.Mahanwar</b> |
| 13. | Member Secretary: All Plastics Recycler's Association (APRA)                                                                           | <b>Prof. P.A.Mahanwar</b> |
| 14. | Life Member: Society of Polymers                                                                                                       | <b>Prof. P.A.Mahanwar</b> |
| 15. | Life member: Society of Plastics Engineers                                                                                             | <b>Prof. P.A.Mahanwar</b> |
| 16. | Member: Bureau of Indian Standards CHD20                                                                                               | <b>Prof. P.A.Mahanwar</b> |
| 17. | Member, Board of Governors, UDCT Alumni Association                                                                                    | <b>Prof. P.A.Mahanwar</b> |
| 18  | Vice-President, Color Society, Mumbai                                                                                                  | <b>Prof. R. N. Jagtap</b> |
| 19  | Member, Society for Plastic Engineering                                                                                                | <b>Prof. R. N. Jagtap</b> |
| 20  | Member, Society for Chemistry                                                                                                          | <b>Prof. R. N. Jagtap</b> |
| 21  | Member, American Chemical Society                                                                                                      | <b>Dr. A. S. Sabnis</b>   |
| 22  | Member, Committee for Raw materials for Paints, Varnishes and related Products Sectional Committee, CHD 21, Bureau of Indian Standards | <b>Dr. A. S. Sabnis</b>   |
| 23  | Member, Color Society                                                                                                                  | <b>Dr. A. S. Sabnis</b>   |
| 24  | Member , Alumni Association, UDCT                                                                                                      | <b>Dr. A. S. Sabnis</b>   |
| 25  | Member, Organization of Women in Science from Developing World (OWSD)                                                                  | <b>Dr. A. S. Sabnis</b>   |

## 26. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops,

training programs and similar programs).

| Name of Faculty   | Training Courses                                           | Duration                               | Sponsored By |
|-------------------|------------------------------------------------------------|----------------------------------------|--------------|
| Dr. Anagha Sabnis | Faculty development programme                              | 7 Days                                 | TEQIP        |
|                   | Computational method of analysis, VJTI, Mumbai             | 5 Days<br>8-12 <sup>th</sup> July 2013 | TEQIP        |
|                   | Patenting System in India, Nagpur                          | 5 days<br>1-5 <sup>th</sup> Feb 2016   | AICTE        |
| Mr A. R. Rao      | Textile Composite & Nano Composite, VJTI, Mumbai           | 6<br>Days 30 oct- 4 nov 2017           | AICTE        |
|                   | Advanced in Application of Nano Technology, CIRCOT, Mumbai | 5 Days<br>11-15 sept, 2017             | TEQIP        |
|                   | Bio-fuel , NITTR                                           | 14 Days<br>March 2013                  | AICTE        |
|                   | Wave theory & application, VJTI, Mumbai                    | 6 Days<br>2-7 <sup>th</sup> Jan 2017   | AICTE        |
| Dr. S. T. Mhaske  | Wave theory & application, VJTI, Mumbai                    | 6 Days<br>2-7 <sup>th</sup> Jan 2017   | AICTE        |

## 27. Student projects

- percentage of students who have done in-house projects including inter-departmental projects: 100%
- percentage of students doing projects in collaboration with other universities / industry / institute: Nil

## 28. Awards / recognitions received at the national and international level by

- Faculty**

| Sr. No. | Award                                                                                                                                                                                                                | name of faculty       |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| 1.      | <b>3<sup>rd</sup> National Award for Technology Innovation in “Green Polymeric Materials &amp; Products”</b> By Dept. of Chemicals and petrochemicals, <b>Ministry of Chemicals and fertilizers. Govt. of India.</b> | <b>Dr. S.T.Mhaske</b> |
| 2       | <b>Young Associate of Maharashtra Academy of Sciences. Govt. of Maharashtra</b>                                                                                                                                      | <b>Dr. S.T.Mhaske</b> |
| 3       | <b>Secretary, IPI, Mumbai</b>                                                                                                                                                                                        | <b>Dr. S.T.Mhaske</b> |

|   |                                                                                |                             |
|---|--------------------------------------------------------------------------------|-----------------------------|
| 4 | <b>Received award of Fellow of Maharashtra Academy of Science, Pune, 2015.</b> | <b>Prof. P.A. Mahanwar,</b> |
|---|--------------------------------------------------------------------------------|-----------------------------|

• **Doctoral / post doctoral fellows:**

- 1) **Nikesh Samart** won Young Researcher Awards at International Conference on Advances in Science and Engineering (ICASE 2017), Regent's International College, Bangkok, January 20 – 22, 2017.
- 2) **Snehal Yedurkar** won Best oral presentation award at International Conference on Advances in Science and Engineering (ICASE 2017), Regent's International College, Bangkok, January 20 – 22, 2017.
- 3) **Sukanya Gangopadhyay, Arush Khanna, Madhumita Kulkarni and Prakash Mahanwar** won Best Paper Awards at Fourth International Conference On Polymer Processing And Characterization 2016, International Unit on Macromolecular Science and Engineering (IUMSE) Mahatma Gandhi University, Kottayam, Kerala, India
- 4) **Apurva Gaidhani** won Best Poster Awards at Fourth International Conference On Polymer Processing And Characterization 2016, International Unit on Macromolecular Science and Engineering (IUMSE) Mahatma Gandhi University, Kottayam, Kerala, India
- 5) **Gunawant Lokhande:** Best Research Paper(1<sup>st</sup> prize) in APC-Rangotsav2015, National Conference, ICT Polymer and Surface Engineering
- 6) **Dinesh Balgude, Kunal Wazarkar, Ajay Rane**  
1<sup>st</sup> Prize in Asian Paints Paper Contest-2013
- 7) **Rohit Pathak ,Dinesh Balgude, Amol Hajare**  
3<sup>rd</sup> Prize in Asian Paints Paper Contest-2013
- 8) **Mukesh Kathalewar and Nikita Mhadeshwar**  
Best Poster in MACRO-2015 held at Kolkata between 23-26 January 2015
- 9) **Kunal Wazarkar and Nikita Mhadeshwar**  
2<sup>nd</sup> Prize in Asian Paints Paper Contest-2014

• **Students :**

**Sravya Nuguri** Final Year Polymer

- Runner-up in Kryotech-IIT Kharagpur for presenting the best design for polio vaccine storage.
- Winner in Industry Defined Problem for providing a solution to-“Develop a highly abrasion resistant and scratch resistance transparent coating for Polycarbonate Surfaces” for Crizal- Essilor Lens Company organised by VORTEX-ICT-2016.
- Runner-up at Environ, Kshitij- IIT Kharagpur-2016 for providing an effective way to reduce the carbon footprint via “Microalgal Carbon Sequestration”
- Winner in Papyrus Presentation Competition on the topic- “Depolymerisation of Brominated Epoxy and Polycarbonate using Ultrasonication technique”.

**Sumeet Gupta** Final Year Coatings

- Manifesto (Poster presentation, Vortex 2016) – 1<sup>st</sup> Prize

**Dhawal Unune** Final year

- PSE Asian Paints paper Competition- 1<sup>st</sup> Prize, OYCE Poster Presentation-1<sup>st</sup> Prize, Rangotsav Poster-1<sup>st</sup> Prize, UMIT TPP- 1<sup>st</sup> Prize

**Sainath Jadhav** Final Year

- Polymer Industrial Defined Problem(Vortex 2016)-1<sup>st</sup> Prize

**Abhinay Bhagat** Final Year Polymer

- Duet Dance at Pratibhimb VJTI-1<sup>st</sup> Prize

**Mayuri Porwal** Third Year Polymer

- Selected as prestigious S.N. Bose Scholar Programm, 2017
- M.V.Joshi Platinum Jubilee Endowment Award (2016 for securing highest marks in SEM 1 and 2)
- Professor M.A.Nabar Prize for standing first in Chemistry 2016

**Pratik Mantri** Third Year Polymer

- Jr. Industry Defined Problem Vortex 2015:1st Prize

**29. Seminars/ Conferences/Workshops organized and the source of funding (national / international) with details of outstanding participants, if any.**

| Sr. No. | Title of Workshop/Seminar/ Conference                                                                                      | Speaker                                                            | Date of Event                                      |
|---------|----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|----------------------------------------------------|
| 1       | Advances in Polymers and Coatings: Rangotsav 2017                                                                          | Plenary Lectures, Paper / Poster Presentations                     | 18 <sup>th</sup> march, 2017                       |
| 2       | Advanced Manufacturing Technology and New Materials                                                                        | Plenary Lectures                                                   | 22 <sup>nd</sup> April 2016                        |
| 3       | Advances in Polymers and Coatings: Rangotsav 2016                                                                          | Plenary Lectures, Paper / Poster Presentations                     | 6 <sup>th</sup> feb, 2016                          |
| 4       | Seminar on “Experiencing Breakthroughs in Separation & Detection Techniques” by Agilent                                    | From Agilent                                                       | 23 <sup>rd</sup> June, 2015                        |
| 5       | DST – TIFAC: MSME, ICT and APRA workshop on “3D Printing and its Applications”                                             | Mr. Siddhanth Pai, Prototype Printing, Pune                        | 25 <sup>th</sup> February, 2015                    |
| 6       | ICT – IPI One Day workshop on “Advances in Analytical Techniques for Plastics, Polymer, Composites & Packaging Industries” | Dr. Swaminathan Sivaram, NCL - CSIR                                | 10 <sup>th</sup> April, 2015                       |
| 7       | Advances in Polymers and Coatings: Rangotsav 2015                                                                          | Plenary Lectures, Paper / Poster Presentations                     | 30 <sup>th</sup> – 31 <sup>st</sup> January, 2015  |
| 8       | DST – TIFAC: MSME, ICT and APRA seminar on “Health, Safety, Cleanliness and Hygiene at Workplace”                          | Several Invited Speakers including Dr. Anil Kakodkar               | 15 <sup>th</sup> – 16 <sup>th</sup> December, 2014 |
| 9       | Golden Jubilee Visiting Fellowship Lecture on “Photovoltaics Education & Research at UNSW and ACAP / AUSIAPV”              | Dr. Richard Paul Corkish, University of New South Wales, Australia | 7 <sup>th</sup> August, 2014                       |

|    |                                                                                                |                                                         |                                                    |
|----|------------------------------------------------------------------------------------------------|---------------------------------------------------------|----------------------------------------------------|
| 10 | Seminar on “Nanotechnology in Australia”                                                       | Prof. Gunther Andersson, Flinders University, Australia | 26 <sup>th</sup> March, 2014                       |
| 11 | Advances in Polymers and Coatings: Rangotsav 2014                                              | Plenary Lectures, Paper / Poster Presentations          | 17 <sup>th</sup> – 18 <sup>th</sup> January, 2014  |
| 12 | UDCT Diamond Jubilee Visiting Fellowship in Polymer Science & Technology                       | Dr. Lalit Varshney, Head – RTDS, BARC                   | 7 <sup>th</sup> September, 2013                    |
| 13 | Tipco - UDCT Diamond Jubilee Visiting Fellowship in Thermosets & Composites                    | Dr. Suryasarthi Bose, IISc Bengaluru                    | 5 <sup>th</sup> – 6 <sup>th</sup> September, 2013  |
| 14 | Synpol – ICT Diamond Jubilee Visiting Fellowship in Science & Technology of Pigments Endowment | Mr. Amit S. Ambelal                                     | 31 <sup>st</sup> August, 2013                      |
| 15 | Advances in Polymers and Coatings: Rangotsav 2013                                              | Plenary Lectures, Paper / Poster Presentations          | 15 <sup>th</sup> – 16 <sup>th</sup> February, 2013 |
| 16 | Seminar on “Current Research Trends in Polymer Science”                                        | Dr. George Bechtold, DFG, Germany                       | 1 <sup>st</sup> December, 2012                     |

### 30. Code of ethics for research followed by the departments:

- (a) Plagiarism is avoided using web based tools
- (b) Honesty, team work is promoted
- (c) Avoid results manipulation

### 31. Student profile programme-wise:

#### B.Tech

| Name of the Programme | Applications received                                                                          | Selected |        | Pass percentage      |        |
|-----------------------|------------------------------------------------------------------------------------------------|----------|--------|----------------------|--------|
|                       |                                                                                                | Male     | Female | Male                 | Female |
| 2017-18               | <b>As per our communication with academic section, ICT. This data can be obtained from DTE</b> | 28       | 7      | Pursuing First Year  |        |
| 2016-17               |                                                                                                | 23       | 9      | Pursuing Second Year |        |
| 2015-16               |                                                                                                | 23       | 11     | Pursuing Third Year  |        |
| 2014-15               |                                                                                                | 18       | 11     | Pursuing Final Year  |        |
| 2013-14               |                                                                                                | 24       | 6      | 100                  | 100    |
| 2012-13               |                                                                                                | 26       | 7      | 100                  | 100    |

#### M.Tech

| Name of the Programme | Applications received | Selected |        | Pass percentage |        |
|-----------------------|-----------------------|----------|--------|-----------------|--------|
|                       |                       | Male     | Female | Male            | Female |

|           |     |    |    |                      |     |
|-----------|-----|----|----|----------------------|-----|
| (M.Tech)  |     |    |    |                      |     |
| 2017-2019 | 97  | 21 | 10 | Pursuing First Year  |     |
| 2016-2018 | 100 | 20 | 7  | Pursuing Second Year |     |
| 2015-17   | 77  | 17 | 4  | 100                  | 100 |
| 2014-16   | 35  | 14 | 8  | 100                  | 100 |
| 2013-15   | 30  | 16 | 5  | 100                  | 100 |
| 2012-14   | 40  | 21 | 6  | 100                  | 100 |
| 2011-13   | 31  | 14 | 9  | 100                  | 100 |

### 32. Diversity of students: Not applicable for UG

Applicable for PG

| Name of the Programme<br>(refer to question no. 4) | % of students from the same university | % of students from other universities within the State | % of students from universities outside the State | % of students from other countries |
|----------------------------------------------------|----------------------------------------|--------------------------------------------------------|---------------------------------------------------|------------------------------------|
| 2017-19                                            | 0                                      | 54.8                                                   | 45.2                                              | -                                  |
| 2016-18                                            | 14.3                                   | 53.6                                                   | 32.06                                             | 0.04                               |
| 2015-17                                            | 27.27                                  | 50                                                     | 22.72                                             | -                                  |
| 2014-16                                            | 15.8                                   | 57.9                                                   | 26.3                                              |                                    |
| 2013-15                                            | 28.57                                  | 71.42                                                  | -                                                 | -                                  |
| 2012-14                                            | 18.51                                  | 81.48                                                  | -                                                 | -                                  |
| 2011-13                                            | 26.08                                  | 73.91                                                  | -                                                 | -                                  |

### 33. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise.

GATE Qualified Student Last 4 Years: 42

| Sr. No | Name                      | Catergory | Year    |
|--------|---------------------------|-----------|---------|
| 1      | Ahmad Hamza               | Open      | 2017-18 |
| 2      | Animesh Kumar             | Open      | 2017-18 |
| 3      | Debarati Maity            | Open      | 2017-18 |
| 4      | Devesh Kothari            | Open      | 2017-18 |
| 5      | Dwij Kamlesh Dave         | Open      | 2017-18 |
| 6      | G S Jyoti Darsan Mohanty  | Open      | 2017-18 |
| 7      | Gauri Prakashrao Deshmukh | OBC       | 2017-18 |
| 8      | Harsh Ayesh Pandya        | Open      | 2017-18 |



|    |                         |      |         |
|----|-------------------------|------|---------|
| 9  | Kamalakanta Maikap      | Open | 2017-18 |
| 10 | Nagarajaniyer C         | Open | 2017-18 |
| 11 | Omkar Subash Borde      | OBC  | 2017-18 |
| 12 | Pratik Kasbe            | SC   | 2017-18 |
| 13 | Priyanka Mojad          | OBC  | 2017-18 |
| 14 | Rahul Singh             | SC   | 2017-18 |
| 15 | Sabyasachi Behera       | SC   | 2017-18 |
| 16 | Shruti Parkhe           | OBC  | 2017-18 |
| 17 | Sonam Khuntia           | Open | 2017-18 |
| 18 | Vidula Randugwar        | Open | 2017-18 |
| 19 | <u>Jeganathan R</u>     | Open | 2017-18 |
| 20 | Anurag Gupta            | Open | 2017-18 |
| 21 | Mule <u>Anup</u>        | Open | 2016-17 |
| 22 | Mehta Linchon           | Open | 2016-17 |
| 23 | Nal Prakash             | Open | 2016-17 |
| 24 | Patel Meghkumar         | Open | 2016-17 |
| 25 | Tejashree Amberkar      | Open | 2016-17 |
| 26 | Sakshi Arora            | Open | 2016-17 |
| 27 | Satdive Ajinkya         | SC   | 2015-16 |
| 28 | Prajapati Jignesh       | Open | 2015-16 |
| 29 | Gautampurkar Anshul     | Open | 2015-16 |
| 30 | B. Ashok Kumar          | Open | 2015-16 |
| 31 | Chaudhary Tushar        | Open | 2015-16 |
| 32 | Mukesh Chauhan          | OBC  | 2015-16 |
| 33 | Stuti Shukla            | Open | 2015-16 |
| 34 | Apurv Nitin             | Open | 2015-16 |
| 35 | Samant Tanmay           | Open | 2015-16 |
| 36 | Bramhech Indrajit       | Open | 2015-16 |
| 37 | <u>Bamane Pratiket</u>  | SC   | 2014-15 |
| 38 | <u>Bhanarkar Sachin</u> | NT-B | 2014-15 |
| 39 | <u>Pranavbalaji R</u>   | Open | 2014-15 |
| 40 | <u>Bhavya Goyal</u>     | Open | 2014-15 |
| 41 | <u>Gayatri Balraj</u>   | SC   | 2014-15 |
| 42 | <u>Irshad Inamdar</u>   | Open | 2014-15 |

#### 34. Student progression

| Student progression    | Percentage against enrolled |
|------------------------|-----------------------------|
| UG to PG               | 32                          |
| PG to M.Phil.          | 00                          |
| PG to Ph.D.            | 40                          |
| Ph.D. to Post-Doctoral | 00                          |

|                               |    |
|-------------------------------|----|
| Employed                      |    |
| Campus selection              | 75 |
| Other than campus recruitment | 25 |
| Entrepreneurs                 | 1  |

### 35. Diversity of staff

| Percentage of faculty who are graduates  |     |
|------------------------------------------|-----|
| of the same university                   | 85  |
| from other universities within the State | 15  |
| from universities from other States      | Nil |
| from universities outside the country    | Nil |

**36. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period :** Nil

### 37. Present details of departmental infrastructural facilities with regard to

- Library : common facility for entire Institute
- Internet facilities for staff and students: All faculties as well as students have the facility for Internet access.
- Total number of class rooms : details as below
- Research laboratories: details as below
- Class rooms with ICT facility : 2 nos
- Students' laboratories : details as below
- Research laboratories: details as below

| Sr. NO | Available area (sq. m) | Capacity | Classroom      |
|--------|------------------------|----------|----------------|
| 1      | 124                    | 30       | Lecture Hall 1 |
| 2      | 124                    | 30       | Lecture Hall 2 |
| 3      | 210                    | 60       | PRC Class Room |

### 38. List of doctoral, post-doctoral students and Research Associates

| Sr. No. | Room No. | Name of Room/Laboratory  | Experimental /Comp    | Sq. Mt. |
|---------|----------|--------------------------|-----------------------|---------|
| 1       | A-163    | Instrument Lab           | Characterization      | 91.86   |
| 2       | A-161    | GPC Room                 | Testing               | 10.62   |
| 3       | A-164    | Research Lab/ Instrument | Synthesis and Testing | 39.42   |
| 4       | A-164    | Color Matching lab       | Testing               | 39.42   |
| 5       | A-169    | Processing Lab.          | Processing            | 103.34  |
| 6       | A-171    | Research Lab             | Synthesis             | 50.90   |
| 7       | A-134    | Research Lab.            | Synthesis             | 57.22   |
| 8       | A-134    | Research Lab             | Synthesis             | 99.22   |

| Faculty | Host University  | Other universities |
|---------|------------------|--------------------|
|         | Nakula S. Bhutad | Gunwant Lokhande   |

|                             |                   |                     |
|-----------------------------|-------------------|---------------------|
| <b>Prof. R. N. Jagtap</b>   | Pratiket Bamane   | Sachin Chambhare    |
|                             | Ambadas Garje     | Poonam Saindane     |
|                             | Rajesh Prabhu     | Santosh Wagh        |
|                             |                   | Yogesh Chimankar    |
|                             |                   | Tushar Sontake      |
|                             |                   | Dipak Tathe         |
|                             |                   | Raghunath Ingle     |
|                             |                   | Nishant Tale        |
|                             |                   | Prashant Gupta      |
|                             |                   | Mustafa Kapadia     |
|                             |                   | Kirti Trivedi       |
|                             |                   |                     |
| <b>Prof. P. A. Mahanwar</b> | Chandan Fuke      | Sunder Kelkar       |
|                             | Khushi Gorasia    | Snehal Yedurkar     |
|                             | Pravin Gaikawad   | Priyanka Oberoi     |
|                             | Nikesh Samarth    | Bhuwanesh Sharma    |
|                             | Manoj Bhatnagar   | Savita Bansode      |
|                             | Rohit Tarade      | Rakesh Patil        |
|                             | Vinayak Kamble    | Pallavi Deshmukh    |
|                             | Ravindra Gadhave  | Dhyaneshvar Karad   |
|                             | Vivek Gawal       | R. H. Dongre        |
|                             | S. Sahay          | Adarsh Telvekar     |
|                             |                   | Shweta Umale        |
|                             |                   | Malhar Kulkarni     |
|                             |                   |                     |
| <b>Dr. A. S. Sabnis</b>     | Mukesh Kathalewar |                     |
|                             | Dinesh Balgude    |                     |
|                             | Vandana Jamdar    |                     |
|                             | Kunal Wazarkar    |                     |
|                             |                   |                     |
| <b>Dr. S. T. Mhaske</b>     | Aarti More        | Vijay Jamnik        |
|                             | Manoj Mali        |                     |
|                             | Nidhi Shah        | Ajit Patil          |
|                             | Ganesh Phalak     | Sumit Lal           |
|                             | Deepak Patil      | Hitesh Singh        |
|                             | Arjit Gargil      |                     |
|                             | Rishabh Chaudhary |                     |
|                             | Sumit Tated       |                     |
|                             | Swapnil Kokate    |                     |
|                             | Pravin Kadam      |                     |
|                             | Parag Wasekar     |                     |
|                             | Niranjan Savdekar |                     |
|                             | Kunal Yeole       |                     |
|                             |                   |                     |
| <b>Dr. V. V. Shertukade</b> | Chaitanya Mundhe  | Pramod Nikam        |
|                             | Ulka Rane         | Prarthana Dhanvijay |
|                             | Vaishnav Gharat   |                     |
|                             |                   |                     |

**39. Number of post graduate students getting financial assistance from the university.**

Nil

**40. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology.**

NO

**41. Does the department obtain feedback from**

**a. Faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback?**

Yes and it is recorded in MIS system

**b. Students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback?**

**c. Alumni and employers on the programmes offered and how does the department utilize the feedback?**

Feedback forms are stored in files of Department office

**42. List the distinguished alumni of the department (maximum 10)**

| Sr. No. | Name & Brief Data                                                                                                                   | Business                                       |
|---------|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| 1       | Mr. Ravi K. Marphatia – B.Sc.(Tech), PPV., 1949, Consultant to many industries & Visiting Professor at UICT for Surface Coatings    | Consultant                                     |
| 2       | Mr. B.M.Thakkar - B.Sc.(Tech), PPV, 1944<br>Producer of raw materials for thermosetting Resins and Moulding compounds               | Tipco Industries Ltd.                          |
| 3       | Mr. B.S. Rajpurohit - B.Sc. Tech), Plastics , 1960<br>Producer of Equipment in Polymers and plastics such as PVF, PP, PVDF and FRP. | Chemical Process Equipments Ltd.               |
| 4       | Mr. J.R. Shah                                                                                                                       | M.D. Jayvee Organics Mumbai                    |
| 5       | Mr. Ashwin S. Dani                                                                                                                  | M.D. Asian Paints                              |
| 6       | Dr. Y.B. Vasudev                                                                                                                    | Ex. Senior V.P. (Tech) Reliance Industries Ltd |
| 7       | Mr. J.M. Nadkarni                                                                                                                   | Ex. M.D. Bombay Paints                         |
| 8       | Mr. M.C. Choksi                                                                                                                     | Ex. M.D. RPL                                   |

|    |                    |                                          |
|----|--------------------|------------------------------------------|
| 9  | Mr. A.E. Ladhabhoy | Ex. Senior V.P. Reliance Industries Ltd. |
| 10 | Mr. N.K. Narkhede  | Ex. M.D. Narchem Industry                |

**43. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts.**

| Sr. No. | Title of Workshop/Seminar/Conference                                                                                       | Speaker                                                            | Date of Event                                      |
|---------|----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|----------------------------------------------------|
| 1.      | Advances in Polymers and coatings: Rangostav 2017                                                                          | Plenary Lectures, Paper / Poster Presentations                     | 18 <sup>th</sup> March 2017                        |
| 2       | Saurdip Chemical industries Pvt Ltd.                                                                                       | Visiting Fellowship Lecture                                        | 22 <sup>nd</sup> Sept 2017                         |
| 3       | Advanced Manufacturing Technology and New Materials                                                                        | Plenary Lectures                                                   | 22 <sup>nd</sup> April 2016                        |
| 4.      | Advances in Polymers and coatings: Rangostav 2016                                                                          | Plenary Lectures, Paper / Poster Presentations                     | 6 <sup>th</sup> February 2016                      |
| 5.      | Seminar on “Experiencing Breakthroughs in Separation & Detection Techniques” by Agilent                                    | From Agilent                                                       | 23 <sup>rd</sup> June, 2015                        |
| 6.      | DST – TIFAC: MSME, ICT and APRA workshop on “3D Printing and its Applications”                                             | Mr. Siddhanth Pai, Prototype Printing, Pune                        | 25 <sup>th</sup> February, 2015                    |
| 7.      | ICT – IPI One Day workshop on “Advances in Analytical Techniques for Plastics, Polymer, Composites & Packaging Industries” | Dr. Swaminathan Sivaram, NCL - CSIR                                | 10 <sup>th</sup> April, 2015                       |
| 8.      | Advances in Polymers and Coatings: Rangotsav 2015                                                                          | Plenary Lectures, Paper / Poster Presentations                     | 30 <sup>th</sup> – 31 <sup>st</sup> January, 2015  |
| 9.      | DST – TIFAC: MSME, ICT and APRA seminar on “Health, Safety, Cleanliness and Hygiene at Workplace”                          | Several Invited Speakers including Dr. Anil Kakodkar               | 15 <sup>th</sup> – 16 <sup>th</sup> December, 2014 |
| 10.     | Golden Jubilee Visiting Fellowship Lecture on “Photovoltaics Education & Research at UNSW and ACAP / AUSIAPV”              | Dr. Richard Paul Corkish, University of New South Wales, Australia | 7 <sup>th</sup> August, 2014                       |
| 11.     | Seminar on “Nanotechnology in Australia”                                                                                   | Prof. Gunther Andersson, Flinders University, Australia            | 26 <sup>th</sup> March, 2014                       |
| 12.     | Advances in Polymers and Coatings: Rangotsav 2014                                                                          | Plenary Lectures, Paper / Poster Presentations                     | 17 <sup>th</sup> – 18 <sup>th</sup> January, 2014  |
| 13.     | UDCT Diamond Jubilee Visiting Fellowship in Polymer Science & Technology                                                   | Dr. Lalit Varshney, Head – RTDS, BARC                              | 7 <sup>th</sup> September, 2013                    |
| 14.     | Tipco - UDCT Diamond Jubilee Visiting Fellowship in Thermosets & Composites                                                | Dr. Suryasarthi Bose, IISc Bengaluru                               | 5 <sup>th</sup> – 6 <sup>th</sup> September, 2013  |



|     |                                                                                                |                                                |                                                    |
|-----|------------------------------------------------------------------------------------------------|------------------------------------------------|----------------------------------------------------|
| 15. | Synpol – ICT Diamond Jubilee Visiting Fellowship in Science & Technology of Pigments Endowment | Mr. Amit S. Ambelal                            | 31 <sup>st</sup> August, 2013                      |
| 16  | Advances in Polymers and Coatings: Rangotsav 2013                                              | Plenary Lectures, Paper / Poster Presentations | 15 <sup>th</sup> – 16 <sup>th</sup> February, 2013 |
| 17. | Seminar on “Current Research Trends in Polymer Science”                                        | Dr. George Bechtold, DFG, Germany              | 1 <sup>st</sup> December, 2012                     |

**44. List the teaching methods adopted by the faculty for different programmes.**

Industry visits are arranged for better understanding of the subject. Powerpoint presentations including relevant videos from internet are made available for students.

**45. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored?**

Regular feedbacks from students, employees as well as alumni are obtained and accordingly course content is modified. Also, the methodology adopted in “continuous assessment” help in generating a bridge between different courses.

**46. Highlight the participation of students and faculty in extension activities.**

Guest lectures from industry people are arranged to let the students know current research and technology going on about the concerned topic. Students are allowed to interact and ask questions to them. Along with the theoretical knowledge, regular In-plant visits are arranged by the department to well known industries to give in depth knowledge about the subject.

**47. Give details of “beyond syllabus scholarly activities” of the department.**

Technical conference “Rangotsav” is arranged annually, wherein undergraduates, post graduates and doctoral fellows from host as well as other industries are encouraged to present their research and/or review articles.

**48. State whether the programme/ department is accredited/ graded by other agencies? If yes, give details.**

Nation Board of Accreditation for Bachelor Course B.Tech (Polymer Engineering and Technology, Surface Coating Technology)

Nation Board of Accreditation for Master Course M.Tech (Polymer Engineering and Technology, Surface Coating Technology)

**49. Briefly highlight the contributions of the department in generating new knowledge, basic or applied.**

Department of PSE is actively engaged in basic and applied research. The department is rated as the best Polymer engineering department in India in terms of quantity and quality of research. A large amount of funding generated through research projects and new projects approved by industries and government agencies and industrial consultancy. Faculty members are actively engaged in consultation activity and are helping industries to improve the productivity as well as bring down the cost of production.

**50. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the**

## **department.**

### **Strength**

Flexible structure

Faculty take part in administrative affairs

Good interpersonal relationships

Teaching (both UG and PG) and research programmes exist in a large variety of frontier as well as unique areas.

A large no. of high monetary value sponsored research projects.

A large no. consultancy projects

State of the art laboratories

### **Weaknesses**

Limited campus space

Limited hostel facilities

No specific contact hours for PG students. Hours may be inadequate in comparison with other institutions in the country.

Limited number of faculty and no recruitment in last ten years.

### **Opportunities**

Refresher courses and Continuing Education Programs for industry personnel

Revision of B.Tech. / M. Tech. Syllabi for better recognition worldwide (GPA system, continuous evaluation, etc.)

Web based teaching programs / distance education programs can be started

Collaboration with leading Universities at International level

Infrastructure needs to be upgraded

### **Challenges**

Competition from Indian institutes and Universities

## **51. Future plans of the department.**

Increase in the number of research

Centre for Eco-friendly Plastic Processing and Recycling : Professor P.A. Mahanwar / Dr. S. T. Mhaske

More linkage with the universities within and abroad will be established so also with the industry. This is expected to reflect in better exposure to the students and also implementation of innovative research activities by cross cultivation.

The background of the entire page is a dark blue field filled with a dense, repeating pattern of white line-art icons. These icons represent various scientific disciplines: biology (cells, DNA helix, microscope, mushroom, virus), chemistry (molecular structures, beakers, flasks, chemical formulas like CH<sub>3</sub>OH, CH<sub>2</sub>C=O, and CH<sub>3</sub>C(=O)NH<sub>2</sub>), physics (circuit diagrams, geometric shapes like spheres and cubes, mathematical symbols like pi and infinity), and general science (atom, calculator, ruler, compass, and a biohazard symbol).

# PHARMACEUTICAL SCIENCES AND TECHNOLOGY DEPARTMENT





## Pharmaceutical Sciences and Technology Department

The Department of Pharmaceutical Sciences and Technology (DPST) was established in the year 1943, with the initiation of the B.Sc. (Tech) course in Pharmaceuticals and Fine Chemicals, a two year course, followed by the Bachelor of Pharmacy (B.Pharm) a three year course, starting in 1958. Subsequently the Masters courses in both streams and Doctoral courses commenced. Today DPST offers the B.Tech (Pharmaceutical Chemistry and Technology) and B.Pharm, both four year courses, M.Tech in Pharmaceutical Technology and M.Pharm in three branches; Pharmaceutics, Pharmaceutical Chemistry and Medicinal Natural Products. The Department also supports the M.Tech courses of ICT in Bioprocess Technology, Green Technology and Perfumery. Ph.D. (Tech) programs are offered in Pharmaceutical Technology, Pharmaceutics, Pharmaceutical Chemistry, Pharmacology and Pharmacognosy while PhD programmes are offered in Biotechnology and Chemistry.

The B. Tech. course which deals with the technology of manufacture of drugs and pharmaceuticals, has all the ingredients for a solid foundation in basic sciences, mathematics, computation and chemical engineering. Basic science subjects like chemistry, mathematics and physics are dealt with in depth, while students are introduced to subjects of biochemistry, microbiology and pharmacology. Strong background knowledge of chemical engineering including chemical reaction engineering, unit operations, separation processes, instrumentation and process control, and stoichiometry is imparted to synergize with the major focus, which is on manufacturing process technology and chemistry of intermediates and fine chemicals, active pharmaceutical ingredients (API), natural products, and pharmaceutical formulation development.

The goal of the B.Pharm course, the first course in the state of Maharashtra, is to enable an understanding of the science of drugs and drug actions. The course involves a detailed study of Pharmaceutics, Pharmaceutical and Medicinal chemistry, Pharmacology, Pharmaceutical Analysis and Pharmacognosy. The course is supported with in depth courses in basic sciences namely, organic chemistry, inorganic chemistry, physical chemistry, biochemistry, microbiology, maths and other relevant subjects like biotechnology, forensic pharmacy, management. The focus is on development of an expertise in the chemistry of drugs, drug effects, dosage regimen, drug toxicity and interactions with adequate knowledge of the synthesis of drugs, principles of drug formulation design and evaluation and regulatory requirements.

The vision of DPST is to be a globally recognized premier educational and research centre with world class facilities, adopting international best practices, focused on the integration of science and technology in the areas of Drug Discovery, Drug Delivery, Organic Process Research and Herbal Healthcare Products. In keeping with the vision the **mission** of the department is to achieve the best in pedagogy and research, through creation of a dedicated team of faculty and state of art research facility, to develop skilled manpower and innovative cost effective technology to support national healthcare programmes.

Currently the student strength of DPST is 190 undergraduates, 43 Masters Students and 138 PhD students. The thrust areas of research include Pharmaceutical and Medicinal Chemistry, Drug Delivery Technology, Pharmacology and Pharmacognosy. DPST has received recognition as a Centre of Advanced Studies in Pharmaceutical Science and Technology, from the UGC and support under the DST FIST programme. Faculty are involved actively in research and have attracted number of projects from Government of India and the industry both national and



international. Over the past five years, total grants of more than Rs. 17 crores have been received. DPST has over the years built up infrastructure for teaching and research and has modern facilities and sophisticated equipment. In the past five years DPST has over 350 Publications in peer reviewed high impact factor journals, 15 patents filed, 23 monographs on herbal medicines and 21 books and book chapters.

Our distinguished alumni include Dr. John Kapoor, Dr. A.V.Rama Rao, Dr. Shirish Modi, Dr. K. Anji Reddy, Prof. M.R.Baichwal, Dr. R.P.Iyer, Dr. Dhiren Thakker and Nitin Deshmukh amongst others.

Several Symposia, seminars, workshops and endowment lectures are regularly organised by the department. A few of the events organized in the last few years are mentioned below:

**International Symposium on Drug Discovery in Infectious Diseases and Cancer (DDIDC) held on 16<sup>th</sup>-17<sup>th</sup> Jan, 2013 organized by Dept. of Pharm Sci. And Tech.**







**International workshop on research writing skills “Publish or Perish” held on 12<sup>th</sup>-13<sup>th</sup> Nov, 2013 organized by Dept. of Pharm Sci. And Tech.**





**Prof. M.R. Baichwal Endowment lecture**  
**Held on 23<sup>rd</sup> Oct, 2013 organized by Dept. of Pharm Sci. And Tech.**  
**Dr. Amit Misra, CSIR Lucknow**





**Prof. S.K. Pradhan Endowment lecture  
held on 28th Jan, 2014 organized by Dept. of Pharm Sci. And Tech.  
Speaker Dr. G. Mugesh with guests and faculty**



**Prof. R.S Baichwal Seminar  
held on 5th march, 2014 organized by Dept. of Pharm Sci. And Tech.  
Speakers and Faculty**





### ICT UKIERI Seminar on Green Processing Technologies for Poorly Soluble Drugs







**Themis Chemicals Visiting Fellowship Endowment Lecture Held On 11<sup>th</sup> Feb, 2014 Organized By Dept. of Pharm Sci. and Tech.**



**Cipla Endowment Lecture held on July 24<sup>th</sup>, 2014 organized By Dept. of Pharm Sci. and Tech.**

**Dr. Sanjib Bhakta with Prof. M.S. Degani**



**Prof M.R. Baichwal Endowment Lecture**

**held on February 23<sup>rd</sup>, 2015 organized by Dept. of Pharm Sci. and Tech.**

**Prof Bhupinder Singh Bhoop with Prof. P.V. devarajan, Head, Dept. of Pharm Sci. and Tech.**





**Professor S. K. Pradhan Endowment Lecture**  
**held on February 23<sup>rd</sup>, 2015 organized by Dept. of Pharm Sci. and Tech.**  
**Dr. Jyoti Chattopadhyaya with audience**



**TEQIP Workshop on Intellectual Property Rights**  
**Held On Feb 4<sup>th</sup>, 2015 Organized By Dept. of Pharm Sci. and Tech.**



**1. Year of establishment:** 1943

**2. Is the department part of a School/Faculty of the university?** Yes

**3. Names of programmes offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., D.Sc. D.Litt., Etc.)** B.Pharm, B.Tech (Pharma), M.Pharm (Pharmaceutics, Pharmaceutical Chemistry, Medicinal Natural Products), M. Tech (Pharma), M.Tech (Pharma. Biotechnology), Ph.D. (Tech), Integrated Ph.D.

**4. Interdisciplinary programmes and departments involved:** Nil

**5. Courses in collaboration with other universities, industries, foreign institutions, etc. :** Nil

**6. Details of programmes discontinued, if any, with reasons:** Nil

**7. Examination System:** Semester

**8. Participation of the department in the courses offered by other departments:**

M. Tech (Green Tech), M. Tech (Bioprocess Technology), M.Tech (Pharma. Biotechnology) and M. Tech (Perfumery)

**9. Number of teaching posts sanctioned, filled and actual (Professors/Associate, Professors/Asst. Professors/others)**

|                      | Sanctioned | Filled | Actual (including CAS and MPS) |
|----------------------|------------|--------|--------------------------------|
| Professors           | 3          | 1      | 8                              |
| Associate Professors | 6          | 4      | 2                              |
| Asst. Professors     | 7          | 7      | 3                              |
| Others               | 1          | -      | 1                              |

**10. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance**

| Name                 | Qualification                        | Designation                                 | Specialization           | Number of Years of Experience (Years) | Number of Ph.D. Students guided for the last 4 years |         |
|----------------------|--------------------------------------|---------------------------------------------|--------------------------|---------------------------------------|------------------------------------------------------|---------|
|                      |                                      |                                             |                          |                                       | Completed                                            | Ongoing |
| K. G. Akamanchi      | B.Sc., B. Sc. (Tech.), Ph.D. (Tech.) | Professor of Pharmaceutical Technology      | Pharmaceutical Chemistry | 31                                    | 12                                                   | 10      |
| Purnima D. Amin      | B. Pharm., M. Pharm., Ph.D. Tech     | Professor in Pharmacy                       | Pharmaceutics            | 27                                    | 6                                                    | 11      |
| Ganesh U. Chaturbhuj | PhD (Tech)                           | Asst. Professor in Pharmaceutical Chemistry | Pharmaceutical Chemistry | 13                                    | 0                                                    | 6       |

|                          |                                           |                                                                                                                   |                                  |                            |    |    |
|--------------------------|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------|----------------------------------|----------------------------|----|----|
| Hemchandra K. Chaudhari  | PhD (Tech)                                | Asst. Professor in Pharmacy                                                                                       | Pharmaceutical Chemistry         | 2.5                        | 0  | 0  |
| Mariam S. Degani         | B.Pharm, M.Pharm, PhD (Tech)              | HOD of Pharmaceutical Science and Technology; Professor in Pharmaceutical Chemistry                               | Pharmaceutical Chemistry         | 30                         | 3  | 17 |
| Padma V. Devarajan       | B.Pharm, M.Pharm, PhD (Tech)              | Professor of Pharmacy                                                                                             | Pharmaceutics                    | 29                         | 11 | 19 |
| Prajakta Dandekar Jain   | Ph. D. (Tech.) in Bioprocess Technology   | UGC Assistant Professor in Engineering Sciences                                                                   | Pharmaceutical Biotechnology     | 4                          | -  | 5  |
| Joshi Shrirang Vidyadhar | B.Sc., B. Sc. (Tech.), Ph.D. (Tech.)      | Professor in Pharmaceutical Chemistry                                                                             | Pharmaceutical Chemistry         | 23 (Industry)<br>3 (Acad.) | -  | 0  |
| Archana Ramesh Juvekar   | B.Pharm. M.Pharm. Ph. D (Tech.)           | Professor in Pharmacology and Physiology                                                                          | Pharmacology                     | 29                         | 04 | 10 |
| K.S.Laddha               | PhD Tech                                  | Professor                                                                                                         | Pharmacognosy and Phytochemistry | 26                         | 5  | 11 |
| Vandana B. Patravale     | Ph.D. (Tech.)                             | Professor of Pharmaceutics                                                                                        | Pharmaceutics                    | 25                         | 10 | 21 |
| Sadhana Sathaye          | PhD Tech                                  | Associate Professor in Pharmacy                                                                                   | Pharmacology                     | 24                         | 03 | 13 |
| Vikas N. Telvekar        | B.Sc, B.Sc (Tech), M.Sc (Tech) PhD (Tech) | Assistant Professor in Pharmaceutical Chemistry                                                                   | Pharmaceutical Technology        | 13                         | 8  | 8  |
| Pradeep Ratilal Vavia    | B.Pharm. M.Pharm.Ph. D (Tech.)            | Professor in Pharmaceutics, Academic Dean, I/c Head, Department of oils, Oleochemicals and Surfactants Technology | Advance Pharmaceutics            | 22                         | 12 | 16 |

**11. List of senior Visiting Fellows, adjunct faculty, emeritus professors, and senior visiting fellows:**

- Professor Donald Abraham
- Professor Theresa M. Allen
- Dr A. H. Bandivdekar
- Dr. N. H. Balasinor
- Professor Bhupinder Singh Bhoop
- Dr. Jyoti Chattopadhyaya
- Mr. Mahendra B Chaudhari
- Mr. Bidhan Dasgupta
- Dr. Pankaj B. Desai
- Dr. Vilas Dhanukar
- Mr. Sundeep Dugar
- Dr. Susheel Durani
- Dr. Krishna N. Ganesh
- Prof (Dr). Kanjaksha Ghosh
- Dr. Sudipta Maiti
- Professor Amit Misra
- Professor Goverdhan Mehta
- Dr. Kasim Mookhtiar
- Dr. G. Mugesh
- Dr. Kuppuswamy Nagarajan
- Prof. Anant Paradkar
- Dr. M.G.R. Rajan
- Professor Dr. P. S. Ramani
- Dr. B. S. Shankarnarayna Rao
- Dr. Rajiv Sarin
- Dr. Shobhona Sharma
- Professor Dhiren R Thakker
- Professor Dr. Ganesh Thakur
- Professor P. Thyagarajan
- Dr. Lohit Tutupalli
- Dr. Vijay Walame
- Prof. M.R.Yadav

**Adjunct Faculty:**

- Dr. Noel D'Souza

- Dr. Bansi Lal

**Emeritus Professors: Nil**

**12. Percentage of classes taken by temporary faculty – programme-wise information: NA**

**13. Programme-wise Student teacher ratio:**

B.Pharm: 11.89

B.Tech: 2.50

M.Pharm: 4.64

M.Tech (Pharma): 1.45

PhD (Tech): 10.76

**14. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual: Sanctioned: 15, Filled: 13, actual: 16 (13+3 Temporary)**

**15. Research thrust areas as recognized by major funding agencies:**

**UGC CAS-I:**

Molecular Drug Design

Synthesis of Drugs by Novel methods

Design and Development of novel drug delivery systems

**UGC CAS-I:**

Nano Drug Delivery systems

Pharmacological and Toxicological screening models

CAMM (Computer Aided Molecular Modelling) based drug design and Process Chemistry

**DST – FIST**

Drug Discovery and Development

Drug Delivery Systems

Pharmaceutical and Phytochemical investigations of drugs and natural products

**16. Number of faculty with ongoing projects from a) national b) international funding agencies and c) total grants received. Give the names of the funding agencies, project title and grants received project-wise.**

**Number of faculty involved: 12**

| Funding Agency | Project Title                                          | Total amount (Rs.) | National/International |
|----------------|--------------------------------------------------------|--------------------|------------------------|
| AICTE          | Extraction of phytochemicals by using green technology | 25,00,000          | National               |

|                                                                        |                                                                                                                                        |             |          |
|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------|----------|
| AICTE                                                                  | Process Engineering For Fabrication of Micro/ Nano Particles                                                                           | 18,00,000   | National |
| AICTE Research Promotion Scheme                                        | Design, synthesis and evaluation of peripherally restricted cannabinoid receptor 2 selective agonist for treatment of neuropathic pain | 16,00,000   | National |
| All India Council for Technical Education (RPS)                        | Isolation standardization and pharmacokinetic profiling of herbal drug                                                                 | 22,66,667   | National |
| BRNS                                                                   | Design, synthesis & evaluation of <sup>18</sup> F ligands for diagnosis of Alzheimer's disease                                         | 18,72,265   | National |
| Central Council for Research in Ayurveda & Siddha, Department of AYUSH | Studies on purification & detoxification (Sodhana prakriya) of toxic Ayurvedic medicinal plants                                        | 5,91,000    | National |
| Central Council for Research in Ayurvedic Sciences (CCRAS)             | Safety/Toxicity Study of Classical Ayurvedic Formulations                                                                              | 16,40,000   | National |
| DAE-BRNS                                                               | CD44 Targeted Hyaluronic acid-siRNA Bearing COS Nanoplexes                                                                             | 16,95, 000  | National |
| DBT                                                                    | Nanotherapeutics with Lipidic nanoparticles for the treatment of malaria                                                               | 1,07,90,000 | National |
| DBT                                                                    | Extraction and isolation of seabuckthorn actives for developing nanocarrier based cosmeceuticals                                       | 58,34,000   | National |
| DBT                                                                    | NANOCOS™: -COS-siRNA nanoplexes for inhibiting intracellular mycobacterial                                                             | 19, 99, 000 | National |
| DBT                                                                    | Synthesis and Cellular evaluation of Novel Palladacycle complexes for breast cancer                                                    | 24,81, 000  | National |
| DBT                                                                    | Development and Evaluation of Fixed Dose Combination for Tuberculosis By using Hot Melt Extrusion technology                           | 45,00,000   | National |
| DBT-ICMR                                                               | Rectal microbicide nanotherapeutics for HIV/ AIDS                                                                                      | 65,42,400   | National |



|                                   |                                                                                                                                        |             |          |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------|----------|
| Department of Biotechnology       | Development and evaluation of Fixed Dose Combination (FDCs) for Tuberculosis using Hot Melt Extrusion Technology                       | 45,78,000   | National |
| Department of Biotechnology       | Custom deigned efficient safe intracellular targeted nanoparticulate veterinary drug delivery system                                   | 63,61,000   | National |
| Department of Biotechnology       | Targeted Nanoparticulate Drug Delivery System of Doxorubicin for hepatic cancer using asialoglycoprotein receptor mediated approach    | 48, 82, 000 | National |
| Department of Biotechnology (DBT) | Early Translational Study Of Orally Administered Nanoparticulate Carriers For Pulmonary Targeting Of Anti-Tubercular Drug Combinations | 1,01,49000  | National |
| Department of Science Technology  | Evaluation of anti-epileptic activity of medicinal plants in animal models of epilepsy                                                 | 30, 11, 782 | National |
| DST                               | Therapeutic approaches using controlled transdermal delivery to treat neurodegenerative diseases in aging populations                  | 26,62,800   | National |
| DST (Ramanujan fellowship)        | Knocking down pathways responsible for intra-macrophage survival of Mycobacterium tuberculosis: RNAi-Nano approach                     | 25,00, 000  | National |
| ICMR                              | Nanotechnology-based diagnostic module for detection of brucellosis                                                                    | 18,44,524   | National |
| ICMR                              | Evaluation of Targeted Nanoparticulate Drug Delivery System in Clinical Cases of Tuberculosis in Non-Human Primates                    | 12,27,000   | National |
| ICMR                              | Preclinical testing for safety of synthetic peptide 1of 80 kDA HAS for development of anti-fertility vaccine                           | 12,00,000   | National |

|                                                                               |                                                                                                                   |           |          |
|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-----------|----------|
| Indian Council of Medical Research                                            | Quality Standards of Indian Medicinal plants & Preparation of Monographs thereon                                  | 25,60,572 | National |
| Indian Council of Medical Research                                            | Quality Standards of Indian Medicinal plants and Preparation of Monographs thereon                                | 31,51,539 | National |
| Indian Council of Medical Research (Department of Health Research)            | Development of Nasal Drug Delivery System of Antiepileptic Drugs for Emergency Therapy                            | 10,08,724 | National |
| Rajiv Gandhi Science and Technology Commission                                | Developing technology for extraction and isolation of Anti-Arthritic drugs from plants indigenous to Maharashtra. | 55,16,999 | National |
| Rajiv Gandhi Science and Technology Commission (RGSTC), Govt. of Maharashtra, | 3D cell culture Technology for Developing Affordable Bioengineered Skin for Burn Patients                         | 85,10,000 | National |
| Rajiv Gandhi Science and Technology Commission                                | Extraction of Volatile oil from Orange Peels, Separation of Limonene from it and its Industrial Applications      | 19,49,250 | National |
| RGNF                                                                          | Novel lipidic drug delivery system by HME                                                                         | 12,85,000 | National |
| Science & Engineering Research Board (SERB), Govt. of India                   | Design and Synthesis of Novel Antimycobacterial Agents                                                            | 18,68,000 | National |
| Science & Engineering Research Board (SERB), Govt. of India                   | Design, Synthesis and Evaluation of Novel Hypoglycemic Agents                                                     | 12,00,000 | National |
| SERB, DST                                                                     | Ramanujan Fellowship                                                                                              | 73,00,000 | National |

|                                                                               |                                                                                                                                                                                                                      |             |               |
|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------------|
| TEQIP                                                                         | Microwave assisted Halogenation reactions using flow reactor                                                                                                                                                         | 27,00,000   | National      |
| UGC                                                                           | Continuous process for the production of solid lipid nanoparticles (SLN) as drug-carrier systems via hot-melt extrusion (HME)                                                                                        | 7,00,000    | National      |
| UGC (Startup Research grant)                                                  | Exploring biodegradable polymer combination for developing nanoparticles for delivering therapeutic nucleic acids                                                                                                    | 6,00,000    | National      |
| UGC Major research Project                                                    | Design, Synthesis and Biological Evaluation of 2-Phenyl-4,5-(substituted)thiophene-3-carboxylic acid derivatives as Anti-inflammatory agents                                                                         | 7,52,000    | National      |
| UGC-MRP                                                                       | Design and synthesis of novel arylquinoline analogues as potential anti-tuberculosis agents                                                                                                                          | 19,96,000   | National      |
| UKIERI (UK-India Education and Research Initiative) funded by British Council | Hot melt extrusion assisted solid dispersions for oral bioenhancement of poorly bioavailable drugs under collaborative project 'process analytics enabled green technologies for processing of poorly soluble drugs' | 40,00,000   | International |
| University Grants Commission                                                  | Design and Synthesis of Anti-diabetic agents                                                                                                                                                                         | 12,40,000   | National      |
| University Grants Commission                                                  | Design, synthesis & biological evaluation of 2- pheny-4, 5-(substituted) 3- carboxylic acid derivatives as anti-inflammatory agents                                                                                  | 7,52,500    | National      |
| DSIR                                                                          | Development of Controlled Release (CR) formulation of Natural Highly Purified Human Chorionic Gonadotropin (hCG)                                                                                                     | 1,59,55,000 | National      |
| DAE BRNS (2015-18)                                                            | Innovative Formulations of Radioprotectors and Immunomodulators Developed in BARC                                                                                                                                    | 30,44,000   | National      |

|                                              |                                                                               |                     |          |
|----------------------------------------------|-------------------------------------------------------------------------------|---------------------|----------|
| Board of Research in Nuclear Sciences (BRNS) | Intranasal colloidal formulations for diagnostic and therapeutic applications | 24,40,400           | National |
| DST                                          | Scientific validation and documentation of traditional knowledge              | 4,25,000            | National |
| RUSA                                         | Skin-on-a-chip for preclinical and biomedical applications                    | 35,00,000           | National |
|                                              | <b>Total</b>                                                                  | <b>13,69,13,640</b> |          |

## 17. Inter-institutional collaborative projects and associated grants received

### National Collaborations

| Project Title                                                                                                            | Name of the collaborating Institute         | Grant Received | Funding agency                    |
|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|----------------|-----------------------------------|
| Design, synthesis & evaluation of 18F ligands for diagnosis of Alzheimer's disease                                       | BARC                                        | 18,72,265      | BRNS                              |
| Development and evaluation of fixed dose combinations (FDC's) for tuberculosis using Hot Melt Extrusion Technology (HME) | ICT-ICT                                     | 45,78,000      | DBT                               |
| Synthesis and Cellular evaluation of Novel Palladacycle complexes for breast cancer                                      | Dept. of Chemistry, ICT                     | 24,81,000      | Department of Biotechnology       |
| Custom design efficient safe intracellular targeted nanoparticulate veterinary drug delivery system                      | BVC, NIRRH                                  | 63,60,000      | Department of Biotechnology       |
| NANOCOS™: -COS-siRNA nanoplexes for inhibiting intracellular mycobacteria                                                | The Foundation for Medical Research, Mumbai | 19, 99, 000    | Department of Biotechnology       |
| Early Translational Study Of Orally Administered                                                                         | National JALMA Institute of Leprosy &       | 1,01,49,000    | Department of Biotechnology (DBT) |

|                                                                                                                     |                                                                            |             |                                                                              |
|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|-------------|------------------------------------------------------------------------------|
| Nanoparticulate Carriers For Pulmonary Targeting Of Anti-Tubercular Drug Combinations                               | Other Mycobacterial Diseases, Agra                                         |             |                                                                              |
| Rectal Microbicideal Nanotherapeutics for HIV/ AIDS                                                                 | National Institute for Research in Reproductive Health, Mumbai             | 65,42,400   | Department of Biotechnology (DBT)- Indian Council of Medical Research (ICMR) |
| Development and evaluation of siRNA loaded nanomedicine in computational and cellular Models                        | IIT-Bombay, National Institute of Research in Reproductive Health (Mumbai) | 2,82,32,000 | Department of Science and Technology                                         |
| Evaluation of antiepileptic activity of plants in animal model of epilepsy                                          | NIMHANS-ICT                                                                | 34,61,000   | DST                                                                          |
| Evaluation of Targeted Nanoparticulate Drug Delivery System in Clinical Cases of Tuberculosis in Non-Human Primates | BVC, NIRRH                                                                 | 12,27,000   | ICMR                                                                         |
| Preclinical testing for safety of synthetic peptide 1 of 80 kDA HAS for development of anti-fertility vaccine       | NIRRH, National Institute of Nutrition Hyderabad                           | 12,00,000   | ICMR                                                                         |
| Nanotechnology-based Diagnostic Module for Detection of Brucellosis                                                 | Bombay Veterinary College, Mumbai                                          | 18,44,524   | Indian Council of Medical Research (ICMR)                                    |
| Innovative Formulations of Radioprotectors and Immunomodulators Developed in BARC                                   | DAE BRNS (2015-18)                                                         | 30,44,000   | BRNS                                                                         |
| Intranasal colloidal formulations for diagnostic and therapeutic applications                                       | Board of Research in Nuclear Sciences (BRNS)                               | 24,40,400   | BRNS                                                                         |

## International Collaborations

| <b>Project Title</b>                                                                                                  | <b>Name of the collaborating Institute</b>                                                                                                         | <b>Grant Received</b> | <b>Funding agency</b>                                                         |
|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------------------------------------------------------------------------------|
| Antitumor and anti-metastatic potential of Indian spices                                                              | University of Delaware (DE), USA                                                                                                                   | \$15600               | University of Delaware (DE), USA                                              |
| Investigation of biologically active molecules as novel therapeutic strategies in Parkinson's disease                 | King's College London<br>Wolfson Centre for Age-Related Disease<br>Department of Neurodegeneration, Wolfson Wing, Hodgkin Building<br>London, U.K. | £13800                | Newton Bhabha (DST inspire)                                                   |
| Screening of new therapeutic entities in Alzheimer's disease                                                          | King's College London<br>Wolfson Centre for Age-Related Disease<br>Department of Neurodegeneration, Wolfson Wing, Hodgkin Building<br>London, U.K. | £13800                | Newton Bhabha (DST inspire)                                                   |
| Process analytics enabled green technologies for processing of poorly soluble drugs                                   | University of Bradford, UK                                                                                                                         | £40,000               | UKIERI (UK-India Education and Research Initiative) funded by British council |
| Therapeutic approaches using controlled transdermal delivery to treat neurodegenerative diseases in aging populations | University of Geneva, Switzerland                                                                                                                  | Rs. 26,62,800         | Department of Science and Technology (DST)                                    |
| Artificial sensory systems for Optimizing palatability of paediatric pharmaceutical formulations                      | St. Petersburg ITMO University, Russia                                                                                                             | Rs.25,27,000          | DST and Russian Foundation for basic research                                 |

**18. Departmental Projects Funded By DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, AICTE, Etc.; Total Grants Received.**

**DST-FIST:** Rs. 1.5 Crore

**UGC CAS-I:** Rs. 1.5 Crore

**UGC CAS-II:** Rs. 2, 62, 50, 000

**AICTE MODROB:** Rs. 30 lakhs



**Total:** Rs. 5, 92, 50,000

**19. Research Facility/Centre with State, National or International Recognition:** NA

**20. Special Research Laboratories Sponsored By / Created By Industry or Corporate Bodies**

Nano Drug Delivery and Drug Discovery Laboratory supported by J.B.Chemicals and Pharmaceuticals Ltd., Worli, Mumbai 400018

**21. Publications:**

**Number of papers published in peer reviewed journals (national / international):** 452

**Monographs:** 23

**Number of books, chapters, edited books:** 68

**22. Details of patents and income generated**

| <b>Patent filed/granted</b>                                                                                                                     |                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| <b>Title</b>                                                                                                                                    | <b>Patent number</b>    |
| Pharmaceutical Compositions for Colloidal Drug Delivery                                                                                         | PCT/IN2011/000730       |
| Bio adhesive barrier film and spontaneous plug forming teat dips                                                                                | 1998/MUM/2012           |
| Nanocarriers for targeted delivery of active agents                                                                                             | 2166/MUM/2012           |
| Method of manufacturing concentrated silver Nano powder                                                                                         | 2797/MUM/2014           |
| Methods for preparation of water-soluble and water-insoluble derivatives of saccharides and alkali, alkaline earth, transition and noble metals | 2594/MUM/2014           |
| Pharmaceutical composition for bioenhancement of active agents                                                                                  | 1108/MUM/2012           |
| Pharmaceutical composition for transdermal application                                                                                          | 1218/MUM/2012           |
| Pharmaceutical composition for combined immunization and therapy against macrophage host related infections                                     | 2266/MUM/2012           |
| Non-invasive vaccine delivery system for immunization against brucellosis using green technology                                                | 2920/MUM/2013           |
| Design Patent: Inhaler - Design No. - 261054                                                                                                    | Certificate No: 37238   |
| Point-of-care diagnostic test for rapid detection of brucellosis                                                                                | 3183/MUM/2013           |
| Nanodrug delivery based on combination therapy for treating parasite infections                                                                 | 3567/MUM/2013           |
| Highly porous dosage forms                                                                                                                      | 887/MUM/2014            |
| Novel lipid based carrier                                                                                                                       | 2881/MUM/2015           |
| Novel targeted lipid bioconjugates and delivery system thereof                                                                                  | 2822/MUM/2015           |
| Device for conserving low temperatures                                                                                                          | TEMP/E-1/18754/2017-MUM |
| Dialysis assembly for dissolution testing.                                                                                                      | E1/11472/2017-MUM       |
| Kit for pyrogen detection and depyrogenation of water                                                                                           | 4070/MUM/2015           |

|                                                                                                                          |               |
|--------------------------------------------------------------------------------------------------------------------------|---------------|
| Microfluidic device for the development of in vitro co-culture of mammalian tissues                                      | 20161000456   |
| Viral reservoir site targeted novel nanocarriers for treatment of HIV AIDS                                               | 2251/MUM/2015 |
| Surface modified dual targeted nanocarrier for anticancer drug delivery                                                  | 3626/MUM/2015 |
| Pharmaceutical composition containing Olmesartan medoxomil in an amorphous form prepared by hot melt extrusion           | 2252/MUM/2015 |
| " Paus water purifier- a new generation charcoal free technology for water purification"                                 | 3427/MUM/2015 |
| Nanostructured Lipid Carrier of propofol for improved parenteral delivery.                                               | 2871/MUM/2015 |
| Rapid Microbial detection kit with smart capture technology                                                              | 3434/MUM/2015 |
| Antifungal preparations                                                                                                  | 3451/MUM/2015 |
| Synergistic antimicrobial combinations                                                                                   | 7685/MUM/2016 |
| Pharmaceutical invention of bromocriptine                                                                                | 201721009236  |
| A novel Formulation of Darifenacin hydrobromide for over active bladder syndrome (OAB)                                   | 201721014044  |
| Development and evaluation of Wedelolactone for anti-epileptic activity by using nasal formulation for improved efficacy | CBR: 12433    |
| Novel dendrimer and application thereof                                                                                  | 201621034246  |
| Stable atovaquone nanoparticles with increased bioavailability and pharmaceutical composition of the same                | 201621020162  |
| Ion exchange resin based extended release gastro-retentive dosage forms                                                  | IN 249226     |
| Oral dispersible film compositions prepared by twin-screw hot melt extrusion technology                                  | 201741000424  |
| Topical preparations of carbomer based gel and emulgel using twin-screw hot melt extrusion technology                    | 20174100425   |
| Pharmaceutical compositions containing melt extruded ibuprofen and fixed dose combinations thereof                       | 201621022853  |
| Pharmaceutical dosage form comprising antimalarial ingredients in a solid dispersion using hot melt extrusion technology | 1674/MUM/2013 |

|                                                                                                                 |                         |
|-----------------------------------------------------------------------------------------------------------------|-------------------------|
| Fabrication of cyclodextrin template mesoporous silica particles for improved dissolution of carbamazepine      | 422/MUM/2013            |
| Continuous manufacturing process for preparing directly compressible grade api's by melt granulation technology | 201621015220            |
| Pharmaceutical compositions containing rifampicin using hot melt extrusion.                                     | 1581/MUM/2012           |
| Co-processed excipients and process for preparing the same                                                      | 3212/MUM/2010           |
| Granular assemblies of hydroxyl propyl methyl cellulose and process of preparing the same                       | 572/MUM/2009            |
| An improved process for nucleophilic aromatic fluorination (provisional patent)                                 | TEMP/E-1/29091/2016-MUM |
| Device for conserving low temperatures                                                                          | TEMP/E-1/18754/2017-MUM |
| Dialysis assembly for dissolution testing.                                                                      | E1/11472/2017-MUM       |

### 23. Areas of consultancy and income generated industry sponsored R&D projects

| Funding Agency                          | Amount (Rs.) |
|-----------------------------------------|--------------|
| NeuroSci, Inc, Ohio, USA (2008-2013)    | 1,770,000    |
| Phoenix Pharmaceuticals LLC, USA        | 8,958,000    |
| Mahaan Proteins Ltd. India (2011-2012)  | 100,000      |
| Pfizer Pharmaceuticals, USA (2011-2012) | 250,000      |
| Abbott Healthcare (2013-2014)           | 205,000      |
| Zim Laboratories                        | 2,400,000    |
| Nippon Synthetic Chemicals Pvt. Ltd.    | 730,000      |
| Cyril Healthcare Pvt. Ltd.              | 200,000      |
| Uni Sankyo Pvt. Ltd.                    | 3,600,000    |
| Lubrizol Advanced Materials Pvt. Ltd.   | 300,000      |
| Lotus Surgical Pvt. Ltd.                | 1,708,000    |
| Nippon Synthetic Chemicals Pvt. Ltd.    | 730,000      |

|                                                                                |             |
|--------------------------------------------------------------------------------|-------------|
| Sanzyme Pvt. Ltd                                                               | 1,800,000   |
| Glenmark Pvt. Ltd., Mumbai                                                     | 482,563     |
| Omniactive Health Technologies                                                 | 636,378     |
| Alkem Pharmaceutical Pvt. Ltd                                                  | 1,000,000   |
| Sahajanand Medical Technologies Pvt. Ltd                                       | 1,700,000   |
| Grand Challenges Explorations Grants Round 11, Bill & Melinda Gates Foundation | ~ 6,000,000 |
| Emami Ltd.                                                                     | 1,000,000   |
| Quantimmune solutions Pvt. Ltd.                                                | 400,000     |
| Perrigo API India Pvt. Ltd.                                                    | 250,000     |
| ASG Biochem Pvt. Ltd.                                                          | 100,000     |
| FDC Ltd.                                                                       | 250,000     |
| Bajaj Healthcare Ltd(private)                                                  | 186,000     |
| Scope Excipients Ltd                                                           | 150,000     |
| Mascot Universal                                                               | 100,000     |
| Evonik Industries Ltd                                                          | 413,300     |
| P T Pharmacon                                                                  | 156,000     |
| Arihant Trading Co. Ltd                                                        | 150,000     |
| Bajaj Healthcare Ltd(private)                                                  | 300,000     |
| VVF Ltd                                                                        | 379,000     |
| Merck Ltd                                                                      | 1,200,000   |
| M/s. Total Herb Solutions P. Ltd                                               | 50,000      |
| Spring Bank Pharma, MA, USA                                                    | 350,000     |
| BASF                                                                           | 500000      |
| Gattefosse India Pvt Ltd                                                       | 545000      |
| Evonik Industries AG                                                           | 408000      |
| Merck Ltd                                                                      | 1969000     |
| Avenir Industries                                                              | 650000      |
| Punjab Chemicals and Crop Protection Ltd.                                      | 4,00,000    |

|                                      |                   |
|--------------------------------------|-------------------|
| Johnson and Johnson Pvt.Ltd          | 33,00,000         |
| Nippon Synthetic Chemicals Pvt. Ltd. | 3,01,399          |
| Nippon Synthetic Chemicals Pvt. Ltd. | 11,05,000         |
| T&T Pharma                           | 16,33,389         |
| Famycare India Ltd.                  | 5,00,000          |
| Neopharma Ltd.                       | 12,00,000         |
| Emami Ltd.                           | 6,84,000          |
| Neon Pharma                          | 6,72,719          |
| Synthite Industries Ltd              | 5,31,250          |
| Sulphur Mills Ltd.                   | 7,05,000          |
| Ferring Pharmaceuticals              | 47,72,500         |
| Amaterasu Lifesciences LLP           | 5,75,000          |
| Morsef Pharmaceuticals               | 3,54,000          |
| Phoenix Pharmaceuticals LLC, USA     | 30,00,000         |
| Zim Laboratories                     | 24,00,000         |
| Punjab Chemicals                     | 3,00,000          |
| Trichem Healthcare Ltd               | 3,00,000          |
| Bajaj Healthcare Ltd                 | 3,00,000          |
| BASF                                 | 500000            |
| <b>Total Income Generated</b>        | <b>65110498/-</b> |

**Consultancy:**

| <b>Funding Agency</b>                                     | <b>Amount (Rs.)</b> |
|-----------------------------------------------------------|---------------------|
| Phoenix Pharmaceuticals LLC, USA                          | 2,460,000/-         |
| Pfizer Pharmaceuticals, USA                               | 750,000/-           |
| Mahaan Proteins Ltd                                       | 50,000/-            |
| Abbott Healthcare (2013-2014)                             | 750,000/-           |
| Emcure Pharmaceuticals Pvt Ltd                            | 650,000/-           |
| Zim Laboratories                                          | 167,000/-           |
| M/S. Bajaj Health Care Pvt. Ltd.                          | 3,300,000/-         |
| CadilaPharma Pvt. Ltd., Ahmedabad, India                  | 2,000,000/-         |
| Sahajananad Medical Technologies Pvt. Ltd., Baroda, India | 2,980,000/-         |
| CavinKare Pvt. Ltd., Mumbai, India                        | 500,000/-           |
| Rubicon                                                   | 300,000/-           |
| Evonik Industries Ltd                                     | 210,000/-           |
| Scope Excipients Ltd                                      | 50,000/-            |
| Mascot Universal                                          | 50,000/-            |
| P T Pharmacon                                             | 100,000/-           |
| Bajaj Healthcare Ltd(private)                             | 250,000/-           |
| Arihant Trading Co. Ltd                                   | 50,000/-            |
| VVF Ltd                                                   | 150,000/-           |
| Merck Ltd                                                 | 350,000/-           |
| BASF                                                      | 200000/-            |
| Gattefosse India Pvt Ltd                                  | 100000/-            |
| Evonik Industries AG                                      | -                   |
| Merck Ltd                                                 | 200000/-            |
| Aarti Industries limited                                  | 10,00,000/-         |
| Aarti Industries limited                                  | 10,80,000/-         |
| Tata international project                                | -                   |
| Total herb solution                                       | 50,000/-            |



|                                                           |                    |
|-----------------------------------------------------------|--------------------|
| Avenir Industries FZE                                     | 7500 USD           |
| Total herb solution                                       | 1,44,000/-         |
| Cadila Pharma Pvt. Ltd., Ahmedabad, India                 | 5,00,000/-         |
| Sahajananad Medical Technologies Pvt. Ltd., Baroda, India | 7,45,000/-         |
| CadilaPharma Pvt. Ltd., Ahmedabad, India                  | 5,00,000/-         |
| Sahajananad Medical Technologies Pvt. Ltd., Baroda, India | 7,45,000/-         |
| Mankind Pharma                                            | 1,58,000/-         |
| Zim Laboratories                                          | 1,67,000/-         |
| Emcure Pharmaceuticals Pvt Ltd                            | 1,75,000/-         |
| Phoenix Pharmaceuticals LLC, USA                          | 8,40,000/-         |
| Zim Laboratories                                          | 1,67,000/-         |
| Astec Life Sciences                                       | 1,50,000/-         |
| Astec Life Sciences                                       | 1,00,000/-         |
| Balakrishna Industries                                    | 1,50,000/-         |
| Pest Control India                                        | 1,25,000/-         |
| Loreal India Ltd                                          | 3,00,000/-         |
| Astec Life Sciences                                       | 1,00,000,-         |
| Pest Control India                                        | 1,15,000/-         |
| Oceanic Laboratories P Ltd.                               | 30,000/-           |
| Satallite Pharma P Ltd                                    | 1,00,000/-         |
| Astec Life Sciences                                       | 1,20,000/-         |
| Agenta Pharma Ltd                                         | 3,47,000/-         |
| <b>Total Income Generated</b>                             | <b>2,40,12,500</b> |

#### 24. Faculty selected nationally / internationally to visit other laboratories / institutions/ industries in India and abroad

- Dr. G.U.Chaturbhuj: October 2013-September 2014 as UGC Raman Post-Doctoral Fellow, On Indo-US Obama Singh Knowledge Initiative 2012
- Dr. V.N.Telvekar: 2010-11, Post-Doctoral fellow, St. Johns University, USA

## 25. Faculty serving in National committees

| Faculty Name         | Committee                                                      | Designation                                                 |
|----------------------|----------------------------------------------------------------|-------------------------------------------------------------|
| Prof. A.R. Juvekar   | Pharmacy Council of India                                      | Inspector                                                   |
| Prof. P.R. Vavia     | Pharmacy Council of India                                      | Inspector (for Inspection of Institutions)                  |
| Prof. P.R. Vavia     | AICTE                                                          | Inspector (for Inspection of Institutions)                  |
| Prof. P.R. Vavia     | DSIR                                                           | Expert Member (for inspection of industrial R & D facility) |
| Prof. V.B.Patravale  | Association of Pharmaceutical Teachers of India – Women Forum  | Convener                                                    |
| Prof. V.B.Patravale  | Controlled Release Society Inc – Indian Chapter                | Chairperson-Scientific Committee Vice-President             |
| Prof. P.V. Devarajan | LIC for affiliation of Pharmacy Colleges, University of Mumbai | Chairman                                                    |
| Prof. P.V. Devarajan | Drug Information Association, India                            | Member Advisory Council                                     |
| Prof. P.V. Devarajan | DBT –SBIRI project                                             | Expert Committee Member                                     |
| Prof. P.V. Devarajan | DST Women Scientist Scheme (WOS-A)                             | Member- Subject Expert Committee (SEC)-Chemical Sciences    |
| Prof. P.V. Devarajan | Drug Information Association, India                            | Member Advisory Council                                     |

## International Committees

| Faculty Name         | Committee                                     | Designation                                               |
|----------------------|-----------------------------------------------|-----------------------------------------------------------|
| Prof. P.R. Vavia     | Asian Oceanic Cyclodextrin League             | Member, International Advisory board                      |
| Prof. P.R. Vavia     | Royal Pharmaceutical Society of Great Britain | Member, (Hon. Membership)                                 |
| Prof. P.V. Devarajan | Controlled Release Society (CRS), Inc, USA    | Board Member                                              |
| Prof. P.V. Devarajan | CRS- Young Scientist Mentor Protégé committee | Chair                                                     |
| Prof. P.V. Devarajan | Controlled Release Society, USA               | Member Board of Scientific Advisors                       |
| Prof. P.V. Devarajan | Controlled Release Society, USA               | Member Outstanding Research Paper Committee DDTR Journal  |
| Prof. P.V. Devarajan | Controlled Release Society, USA               | Cochair Outstanding Research Paper Committee DDTR Journal |

## Editorial Boards

| Faculty Name         | Committee                                                                 | Designation               |
|----------------------|---------------------------------------------------------------------------|---------------------------|
| Prof. K.G. Akamanchi | Indian drugs                                                              | Member of Editorial Board |
| Prof. K.G. Akamanchi | Indian Journal of Pharmaceutical Sciences                                 | Member of Editorial Board |
| Prof. V.B.Patravale  | Journal of Nanoscience and nanotechnology                                 | Associate editor          |
| Prof. V.B.Patravale  | International Journal of Pharma Bioscience and Technology                 | Editor                    |
| Prof. V.B.Patravale  | Bombay Technologist, in-house Journal of Institute of Chemical Technology | Editor                    |
| Prof. V.B.Patravale  | CRS Newsletter                                                            | Editor                    |
| Prof. P.V. Devarajan | Bionano Frontiers                                                         | Editorial Board Member    |
| Prof. P.V. Devarajan | Indian Drugs                                                              | Editorial Board Member    |
| Prof. P.V. Devarajan | Indian Journal of Pharmaceutical Sciences                                 | Editorial Board Member    |

**26. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs). Nil**

### 27. Student projects

• **Percentage of students who have done in-house projects including inter-departmental projects:**

**UG: 100%, Masters: 100%, PhD: 64.9%**

• **Percentage of students doing projects in collaboration with other universities industry / institute: 35.08%**

### 28. Awards / recognitions received at the national and international level by Faculty

| Faculty                | Award                                                                                       | Year |
|------------------------|---------------------------------------------------------------------------------------------|------|
| Prof. K. G. Akamanchi  | UGC-Visiting Fellow - Sardar Patel University, Vallabh Vidyanagar, Gujarat.                 | 2013 |
| Prof. K. G. Akamanchi  | Appointed as Independent Director on the Board of Aarti Drugs Ltd.                          | 2013 |
| Prof. P. D. Amin       | Indian Women Scientist in Chemical Industry News, 2011                                      | 2011 |
| Prof. P. D. Amin       | Fellow of Maharashtra Academy of Science.                                                   | 2014 |
| Prof. G. U. Chaturbhuj | UGC Raman Fellowship- for Post-Doctoral Research from Northeastern University, Boston, USA. | 2013 |
| Prof. M. S. Degani     | Felicitated by Indian Chemical Council as Woman Scientist in March 2012                     | 2012 |
| Prof. M. S. Degani     | Fellow of Maharashtra Academy of Sciences, 2012                                             | 2012 |
| Prof. P.V. Devarajan   | AAiPS Distinguished Educator and Researcher Award                                           | 2011 |

|                       |                                                                                                                                                                                                                                                               |      |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| Prof. P.V. Devarajan  | Industrial Research Award for Women Scientists                                                                                                                                                                                                                | 2011 |
| Prof. P.V. Devarajan  | Professor C. J. Shishoo Award. Research in Pharmaceutical Sciences, conferred by the Association of Pharmaceutical Teachers of India, 2013                                                                                                                    | 2013 |
| Prof. P.D. Jain       | Ramanujan Fellowship from DST, Govt. of India                                                                                                                                                                                                                 | 2011 |
| Prof. P.D. Jain       | Young Associate of Maharashtra Academy of Sciences for the contribution in Engineering and Technology, 2012<br>DAE Young Scientist Research Award, Department of Atomic Energy, Govt. of India, 2012<br>BioCARE Research Award for Women Scientist, DBT, 2013 | 2012 |
| Prof. A. R. Juvekar   | Awarded Milstein award 2014 from International Cytokine and Interferon Society (ICIS), Bethesda, USA.                                                                                                                                                         | 2014 |
| Prof. V. B. Patravale | Fellow of Maharashtra Academy of Sciences award (2011)                                                                                                                                                                                                        | 2011 |
| Prof. V. B. Patravale | BVDUPCP- Pharmacy Teacher of the year Award 2012                                                                                                                                                                                                              | 2012 |
| Prof. V. B. Patravale | Grant Awardee – ‘Nanovaccine for Brucellosis using Green Technology’; Grand Challenges Explorations Grants Round 11, Bill & Melinda Gates Foundation, (2013)                                                                                                  | 2013 |
| Prof. V. B. Patravale | Dr. P. D. Patil Best Pharmaceutical Scientist of the year Award – 2014                                                                                                                                                                                        | 2014 |
| Prof. V. B. Patravale | Association of Pharmaceutical Teachers of India (APTI), Maharashtra State (2014)                                                                                                                                                                              | 2014 |
| Prof. V. B. Patravale | Vividhlaxi Audyogik Samshodhan Vikas Kendra (VASVIK)                                                                                                                                                                                                          | 2014 |
| Prof. V. B. Patravale | Apex Committee’s Smt. Chandaben Mohanbhai Patel Industrial Research Award for Women Scientists – 2013 (2015)                                                                                                                                                  | 2013 |
| Prof. V. N. Telvekar  | The “Better Opportunities for Young Scientists in Chosen Areas of Science & Technology (BOYSCAST)” fellowship                                                                                                                                                 | 2014 |
| Prof. P. R. Vavia     | VASVIK Award in the category of Biological Sciences & Technology, for developing the Novel Drug Delivery Systems, Synthesis and application of novel polymers and excipients and targeted drug delivery in cancer treatment, January 2015                     | 2014 |

## Doctoral Students

1. Second prize for oral presentation in preclinical section for presentation entitled “Role of Carbohydrate based Ligands on the cytotoxicity and cell uptake of Doxorubicin nanoformulations”, Sandhya Pranatharthiharan, Mitesh D. Patel, Prof. Padma V. Devarajan at 6th International annual conference South Asian Chapter of American College of Clinical Pharmacology, 21st -22nd April, 2013, Mumbai.
2. Second prize for poster presentation in preclinical section for presentation entitled “PES Lopinavir nanoparticles: A promising approach to target multiple HIV reservoirs”, Bhagyashree Dalvi,

- Derajram Benival and Prof. Padma V. Devarajan at 6th International annual conference South Asian Chapter of American College of Clinical Pharmacology, 21st -22nd April, 2013, Mumbai.
3. Second prize for poster presentation in preclinical section for presentation entitled “Genotoxicity and Mutagenicity evaluation of Buparvaquone Solid Lipid Nanoparticles”, Maheshkumar Soni, Shelkar Nilakash, Bhagat Sharad, Gaikwad Rajiv, Samad Abdul, Prof. Padma V. Devarajan, Vanage Geeta at 6th International annual conference South Asian Chapter of American College of Clinical Pharmacology, 21st -22nd April, 2013, Mumbai.
  4. Second prize for poster presentation in first International Conference, Disso India 2013 for poster entitled “Modified USP Dissolution Apparatus II for Dissolution Testing of Buccal Tablets of Rivastigmine Hydrogen Tartrate” Vilas Malode, Prof. Padma V. Devarajan at the Lalit, 3-4 May 2013, Mumbai.
  5. Second prize for poster-Chawla S.; Devarajan P.V. Nano diagnostic approach for blood group detection in 7<sup>th</sup> International Conference organized by South Asian Chapter of American College of Clinical Pharmacology on “Clinical Pharmacology-Translational Research: Patient to Public Health”, 17-20 April 2014, held at Nehru Centre, Worli, Mumbai.
  6. Consolation prize for poster-Sandhya Pranatharthi haran; Padma.V. Devarajan, ‘Carbohydrate anchored stealth doxorubicin nanoformulations with improved efficacy in fibrosarcoma mouse model’ in Indo-US Workshop on nanoengineering in medicine, Dec 17-19, 2014 at AIIMS, Delhi.
  7. Dr. R. S. Satoskar Award for second prize for poster in preclinical section - Prashant Mande, Sagar Bachhav, Padma V. Devarajan, ‘Curcumin ESA-SMEDDS – Bioenhanced response in CFA-induced arthritis’ 8<sup>th</sup> International Conference organized by South Asian Chapter of American College of Clinical Pharmacology on “Clinical Pharmacology-Translational Research: Patient to Public Health”, 24-25 April 2014, held at Nehru Centre, Worli, Mumbai.
  8. S.S. Chawla, A.C. Gorakhshakar, K.Ghosh, P.V. Devarajan; Best international poster award for ‘Development of surface anchored silver nanoparticles: A Novel and easy blood detection system based on nanotechnology, Biomaterials International, Taiwan, June 2015.
  9. Dr. R. S. Satoskar Award of second prize for poster in preclinical section for poster titled ‘Curcumin ESA-SMEDDS- Bioenhanced response in CFA-induced arthritis’ presented by Prashant Mande\*, Sagar Bachhav, Padma V. Devarajan at 8<sup>th</sup> International Conference on “Clinical Pharmacology-Translational Research: Patient to Public Health” organized by South Asian Chapter of American College of Clinical Pharmacology, held at Nehru Centre, Worli, Mumbai, 24-25 April 2015.
  10. Best International Poster Award for poster titled ‘Development of surface anchored silver nanoparticles: A Novel and easy blood detection system based on nanotechnology’ presented by

- S.S. Chawla\*, A.C. Gorakhshakar, K. Ghosh, P.V. Devarajan at Biomaterials International organized by Chang Gung University, held at Chang Gung University, Taiwan, 1-5 June 2015
11. Ketan Mahajan, Preeti Wavikar, Nilesh Dhakar, Alok Shukla; Won 2<sup>nd</sup> Prize in BEST ABLE 2015 (Biotechnology Entrepreneurship Student Teams) sponsored by The Department of Biotechnology (DBT), Ministry of Science and Technology, Government of India and managed and administered by Association of Biotechnology Led Enterprises, ABLE – India, Bangalore, India, November 2015
  12. Ketan Mahajan, Won 1<sup>st</sup> prize (member of winner team) in Novartis Biotechnology Leadership Camp (Novartis BioCamp 2015) organized by Novartis, India, July 2015
  13. Nitin Jadhav, Nisha Yadav, Mrunal Patil, Mahendra Prajapati, Avinash Chaudhary; Won First prize in INDIA BIO 2015, organized by the Department of Information Technology, Biotechnology and Science & Technology, Government of Karnataka, Vision Group on Biotechnology, MM Activ Sci-Tech Communications (KITBT)- India, Bangalore, February 2015
  14. Nitin Jadhav, Nisha Yadav, Mrunal Patil, Mahendra Prajapati, Avinash Chaudhary; Awarded the title of “Unique Idea” by Indian Institute of Technology, Gandhinagar, November 2014
  15. Nitin Jadhav, Nisha Yadav, Mrunal Patil, Mahendra Prajapati, Avinash Chaudhary; Won 2<sup>nd</sup> prize in BEST ABLE 2014 (Biotechnology Entrepreneurship Student Teams) sponsored by The Department of Biotechnology (DBT), Ministry of Science and Technology, Government of India and managed and administered by Association of Biotechnology Led Enterprises, ABLE – India, Bangalore, India, October 2014
  16. Ketan Mahajan, Selected as participant among (30 research students worldwide) for Merck Sereno Innovation Cup 2014 to present Novel Research Business Plan organised by Merck Sereno Inc., Darmstadt, Germany, July 2014
  17. Ketan Patel, Mayank Patel, Jasmin Monpara, Subhash Ingle, Dhawal Chobisa; Won 3<sup>rd</sup> Prize in BEST ABLE 2013 (Biotechnology Entrepreneurship Student Teams) sponsored by The Department of Biotechnology (DBT), Ministry of Science and Technology, Government of India and managed and administered by Association of Biotechnology Led Enterprises, ABLE – India, Bangalore, India, November 2013
  18. Sharad Darandale, Won 3<sup>rd</sup> Prize in Novartis Biotechnology Leadership Camp (Novartis BioCamp 2013) organized by Novartis, India, July 2015
  19. Dishan Shan and Sharad Chormale, Won National Pharmacy Quiz Competition 64<sup>th</sup> Indian Pharmaceutical Congress, Chennai, December 2012
  20. Sharad Darandale, Winner of Johnson and Johnson Innovation Cup, organised by Johnson and Johnson Healthcare Pvt. Ltd, Mumbai, India, 2013



21. Smita Pawar, Winner of Johnson and Johnson Innovation Cup, organised by Johnson and Johnson Healthcare Pvt. Ltd, Mumbai, India, 2013
22. Mayank Patel, Selected as ESONN CEFIPRA Fellow (European School on Nanosciences and Nanotechnologies), Grenoble, France, September 2015
23. Lalit Vora, Received Amgen Research Student Travel Award from AAPS National Biotechnology Conference, San Francisco, USA, June 2015
24. Mayank Patel, Awarded Newton-Bhabha PhD Placement Programme Fellowship by Ministry of Science and Technology, India and British Council, October 2015
25. Ketan Patel, Selected by BASF for attending BASF Pharma days - 2012 at Heidelberg, Germany, 2012
26. Atul Raut, Won Best Poster Award 66<sup>th</sup> Indian Pharmaceutical Congress, Hyderabad, January 2014
27. Preeti Wavikar, Best Oral Presentation Award in International Symposium on New Perspectives in Modern Biotechnology, Puducherry, India, 2015
28. Jamiluddin Fakhruddin, Won Best Poster Award 65<sup>th</sup> Indian Pharmaceutical Congress, Delhi, India, December 2013
29. Nitin Jadhav, Won Best Poster Award 64<sup>th</sup> Indian Pharmaceutical Congress, Chennai, India, December 2012
30. Ketan Patel, Won Best Oral Presentation Award, 64<sup>th</sup> Indian Pharmaceutical Congress, Chennai, India, December 2012
31. Ketan Patel, Won Best Oral Presentation Award, South Asian chapter of American College of Clinical Pharmacology (ACCP), Mumbai, India 2013
32. Best poster Award at the ICMR sponsored 'National conference on Nanotechnology in drug delivery research: Innovations, challenges and opportunities' for poster entitled "Generic Oral Aprepitant nanoformulation: A Patent Non-Infringing Approach" at NMIMS, Mumbai, India, October, 2015 (Bhise K.)
33. Best Poster Award at the "2nd International Conference on Nanotechnology Based Formulations- NanoPharmaceuticals" for poster entitled "Artemether-Lumefantrine loaded Nanostructured Lipid Carriers (NLC) for treatment of cerebral malaria" organized by Select Biosciences India Private Limited held at Hyderabad, India, September 2015 (Prabhu P.)
34. OMICS International Best young researcher award - 2015 for presenting speech entitled "Targeted micelles of curcumin: Strategy for enhanced brain uptake" in 4th International conference and exhibition on 'Neurology and Therapeutics' Rome, Italy, July 2015 (Desai P.)
35. Third Prize for oral Presentation in "Preclinical Category" for work on " Nanostructured Lipid Carriers (NLC) of Artemether-Lumefantrine combination for oral malaria therapy" at the Eighth

International Annual Conference on "Translational Clinical Pharmacology Research in Drug Development" organised by South Asian Chapter of American College of Clinical Pharmacology held at Nehru Auditorium, Worli, Mumbai, India, April 2015 (Prabhu P.)

36. The Budding QbD Scientist Award - 2015 for the paper entitled, "QbD Based Development of Fenofibrate Nanosuspension: A Non-Infringing Approach" at the QbD in Pharma Development World Congress 2015, Chandigarh, India, April 2015 (Mirani A, Gite S.)
37. Ranbaxy Science Scholar Award - 2014 in the field of Pharmaceutical Sciences, Ranbaxy Science Foundation, India, March 2015 (Desai P.)
38. First prize for oral presentation and poster entitled, "Multifunctional nanocomposites of curcumin for neurodegenerative disorders" at Forteenth International Symposium on Advances In Technology And Business Potential of New Drug Delivery Systems, Mumbai, India, February 2015 (Desai P.)
39. Young Innovator in Bioprocessing Award (2nd Place) for research work entitled, "Bioenhanced ellagic acid solid solution: a systematic green approach" at Bioprocessing India 2014 conference, Mumbai, India, December 2014 (Desai P.)
40. Excellent poster award for topic entitled, "Pharmaceutical Co-Crystal Of Atovaquone: A Systemic Approach Towards Solubility Enhancement" at 5th Indo-Japanese International Joint Symposium on Overcoming Intractable Infectious Diseases Prevalent in Asian Countries, Tokyo, Japan September 2014 (Desai P.)
41. Excellent poster award for topic entitled, "Evaluation Of Punicalin And Punicalagin As GP 120-CD4 Binding Inhibitor: In Silico & In Vitro Screening" at 5th Indo-Japanese International Joint Symposium on Overcoming Intractable Infectious Diseases Prevalent in Asian Countries, Tokyo, Japan September 2014 (Mirani A.)
42. Excellent poster award for topic entitled, "Comparison of Phytopolyphenols as gp120-CD4 Binding Inhibitor: In Silico & In Vitro Screening" at 5th Indo-Japanese International Joint Symposium on Overcoming Intractable Infectious Diseases Prevalent in Asian Countries, Tokyo, Japan September 2014 (Gite S.)
43. First prize for poster entitled, "Green approach towards bioenhanced curcumin: process analytical technology (PAT) enabled scale up studies of curcumin solid solution using hot melt extrusion" at 1st International Conference on Industrial Pharmacy (ICIP) 2014, Kuantan, Malaysia, August 2014 (Desai P.)
44. Selected in top 6 research students amongst the entries from all over the world for Merck Serono Innovation Cup 2014, Darmstadt, Germany, July 2014 (Desai P.)

45. Agrawal A. has received the prestigious “Prime Minister’s Fellowship” for doctoral Research. This is a joint initiative of CII, Science & Engineering Research Board (SERB) and Sahajanand Medical Technologies Pvt. Ltd. as an Industry partner.
46. First prize for poster entitled, “SANS investigation of a micellar drug delivery system formed by a novel antioxidant- lipid bioconjugate” at Conference on Neutron Scattering 2014", Pune, India, February 2014 (Desai P.)
47. First prize for poster entitled, “In vivo investigation of anticancer activity and treatment associated toxicity of tamoxifen-loaded cationic lipomer” at 65th Indian Pharmaceutical Congress, Delhi, India, December 2013 (Desai P.)
48. Veneto Nanotech Prize (Winner of the second edition of the Cadini Prize) 2013 for the poster entitled "Influence of Newly Synthesized Mono-Guanidine Heterolipid based Cationic Nanocarriers in Treatment of Melanoma Tumor in C57BL/6 mice" at the NanotechItaly 2013, Italy, November 2013. (Prabhu R).
49. Selected amongst top 20 teams across India for BEST ABLE 2013 (Biotechnology Entrepreneurship Student Teams) sponsored by The Department of Biotechnology (DBT), Ministry of Science and Technology, Government of India and managed and administered by Association of Biotechnology Led Enterprises, ABLE – India, Bangalore, India, October 2012 (Desai P., Vyas S., Jain S., Bhuptani R., Mirani A.)
50. Best Poster Award for poster entitled, “Super Critical extraction method optimization of Seabuckthorn (SBT) berry oil B.O: Exploiting its role in anti-ageing” at The Omics group of conference, Hyderabad, India, September 2013 (Mirani A).
51. First prize for poster (Drug Delivery System Section) entitled, “Impact of drug loading on the anti Parkinsonism effects of lipid formulation of curcumin” at The South Asian Chapter of American College of Clinical Pharmacology: 6th International Conference on Innovation in 21st Century: Clinical Pharmacology in Current and Future environment, Mumbai, India, April 2013 (Fernandes C.)
52. Second prize for poster (Drug Delivery System Section- shared) entitled, “Bio-enhanced Atovaquone: Comparison of solid dispersion and nanosuspension” at The South Asian Chapter of American College of Clinical Pharmacology: 6th International Conference on Innovation in 21st Century: Clinical Pharmacology in Current and Future environment, Mumbai, India, April 2013 (Mirani A.)
53. Second prize for poster (Drug Delivery System Section- shared) entitled, “Solid lipid nanoparticles of Arteether/Ellagic acid: A novel combination therapy for treatment of malaria” at The South Asian Chapter of American College of Clinical Pharmacology: 6th International Conference on

Innovation in 21st Century: Clinical Pharmacology in Current and Future environment, Mumbai, India, April 2013 (Kadwadkar N.)

54. Second prize for poster (Preclinical Section- shared) entitled, “Selective Uptake of Nanostructured Lipid Carriers by Malaria Infected Red Blood Cells” at The South Asian Chapter of American College of Clinical Pharmacology: 6th International Conference on Innovation in 21st Century: Clinical Pharmacology in Current and Future environment, Mumbai, India, April 2013 (Jain S.)
55. Prize for poster entitled, “Curcumin-Celecoxib Dual Drug Loaded Ph-Sensitive Nanoparticulate Combination Therapy: A Novel Approach For The Treatment Of Inflammatory Bowel Disease” at Thirteenth International Symposium on Advances In Technology And Business Potential of New Drug Delivery Systems, Mumbai, India, January 2013 (Dalapathi G.)
56. First prize for poster entitled, “Discrepancy in therapeutic efficacy of nanoformulation against different breast cancer cell lines” at International Symposium On Drug Discovery For Infectious Diseases And Cancer, Mumbai, India, January 2013 (Shete H.)
57. Selected amongst top 20 teams across India for BEST ABLE 2013 (Biotechnology Entrepreneurship Student Teams) sponsored by The Department of Biotechnology (DBT), Ministry of Science and Technology, Government of India and managed and administered by Association of Biotechnology Led Enterprises, ABLE – India, Bangalore, India, October 2012 (Desai P., Fernandes C., Vyas S.)
58. First prize for poster entitled, “Bioenhancement of Curcumin Using Hot Melt Extrusion Technology: Formulation Development, In Vitro Characterization And In Vivo Pharmacokinetic Studies” and thus opportunity for podium presentation at Drug Delivery India 2012 - Innovations In Pharmaceutical & Manufacturing Sciences, Hyderabad, India, February 2012 ( Desai P.)
59. First prize for poster entitled “Development of mathematical model to predict release of poorly water soluble drug from tamarind seed polysaccharide matrices” at Twelfth International Symposium on Advances in Technology and Business Potential of New Drug Delivery Systems, Mumbai, India, February 2012 (Patale R., Desai P.)
60. Award for poster entitled “Engineering Nanostructured Lipid Carriers Of Genistein: Statistical Optimization” at Twelfth International Symposium on Advances in Technology and Business Potential of New Drug Delivery Systems, Mumbai, India, February 2012(Pai A., Swami M.)
61. Award for poster entitled “New Uses For Old Drugs: Clotrimazole Oral Nanoemulsion For Malaria” at Twelfth International Symposium on Advances in Technology and Business Potential of New Drug Delivery Systems, Mumbai, India, February 2012 (Borhade V., Shete H.)

62. First prize for poster entitled “Freeze Drying : Exploring Potential In Development Of Orodispersible Tablets Of Sumatriptan Succinate” at 63<sup>rd</sup> Indian Pharmaceutical Congress, Bangaluru, India, December 2011 (Pandharipande P., Dalapathi G., Desai P.)
63. Award for poster entitled, “Atovaquone Nanosuspension For Intravenous Delivery: Toxicity Assessment, Pharmacokinetics, Tissuedistribution And In Vivo Antimalarial Efficacy Studies” at INDO-US Joint Symposium on Nanomedicine: Prospects and Challenges, Mumbai, India, November 2011 (Borhade V. Shete H.)
64. Gandhian Young Technological Innovation Award/Appreciation 2015' based on work related to the development of 'Rapid Non-invasive diagnostics kits for diabetic patients', 2015; Research student awarded at Rashtrapati Bhavan by Honourable Dr. Raghunath Mashelkar on 7<sup>th</sup> March, 2015.
65. Received 3<sup>rd</sup> Prize for 7th edition of BEST-India (Biotechnology Entrepreneurship Student Teams) based on work related to the development of “Pyrogen Detection Kit” on 3<sup>rd</sup> November, 2015.
66. Awarded Best oral presentation award in preclinical section for presentation entitled “Couroupita guianensis extract dampens postprandial glucose excursion in diabetic rats by inhibiting  $\alpha$ -glucosidase and  $\alpha$ -amylase enzyme activity” at 6th International annual conference South Asian Chapter of American College of Clinical Pharmacology, 21st -22nd April 2013, Mumbai.
67. Awarded Best poster award in preclinical section for presentation entitled “Antiepileptic efficacy of Luteolin: Assessment in animal models of Epilepsy” at 6th International annual conference South Asian Chapter of American College of Clinical Pharmacology, 21st -22nd April 2013, Mumbai.
68. Awarded Best poster award in preclinical section for presentation entitled “Evaluation of lipase inhibitory activity of various Orlistat formulations and excipients” at 65<sup>th</sup> Indian Pharmaceutical congress, 20-22<sup>nd</sup> December 2013, Delhi.
69. Bagged second prize for oral presentation award in preclinical section for presentation entitled “Bioactive fraction of Saraca indica prevents cataract development and progression in Streptozotocin-induced diabetic rats” at 7<sup>th</sup> International annual conference South Asian Chapter of American College of Clinical Pharmacology, 19<sup>th</sup> -20<sup>th</sup> April 2014, Mumbai.
70. Awarded best oral presentation award for presentation entitled “Antiepileptogenic and anti-oxidant effect of Terpinen-4-ol in pentylenetetrazole induced kindling model” at 8th International Annual Conference South Asian Chapter of American College of Clinical Pharmacology, 22nd April – 25th April 2015, Mumbai.

## 29. Seminars/ Conferences/Workshops organized and the source of funding (national

International) with details of outstanding participants, if any.

| Conference/Symposium/Workshop         | Title                                                                                         | State/National/International                                  | Duration                      | Source of Funding  |
|---------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------|-------------------------------|--------------------|
| Conference                            | Indo-US Symposium on Nanomedicine: Prospects and Challenges                                   | Institute of Chemical Technology, Mumbai                      | 2011, Two days                | IUSSTF             |
| University of Pune sponsored workshop | Modern Analytical tools in Quality Control of Phytopharmaceuticals                            | National                                                      | July, 2013                    | University of Pune |
| International workshop                | Research writing skills “Publish or Perish”                                                   | International                                                 | 12-13th Nov, 2013             |                    |
| Seminar                               | UKIERI Seminar - Green Processing Technologies for Poorly Soluble Drugs                       | National                                                      | 9th January 2014              | UKIERI             |
| Lecture                               | Multi Colour Imaging in Confocal Microscopy’ by Dr. Amit Kumar Bhattacharya                   | National                                                      | February 2014                 | Industry           |
| Seminar                               | ‘Careers in Clinical Research’ by Dr. Shekhar Dawkhari                                        | National                                                      | February 2014.                |                    |
| Workshop                              | Honing Mentoring Skills -- A Holistic Approach, Sessions I and II, Trainer: Mrs. Lakshmi Raju | National                                                      | May 5-9 and July 3-8, 2014    | TEQIP              |
| Workshop                              | Stress Management workshop, Trainer: Mrs. Lakshmi Raju                                        | National                                                      | June 18-24, 2014 (3 sessions) | TEQIP              |
| Workshop                              | Writing and presentation skills for the PG students of DPST                                   | National                                                      | June-July, 2014 (10 sessions) | TEQIP              |
| Seminar                               | ‘Scientific Writing Skills’ by Achievers League                                               | Bombay Technologist, Institute of Chemical Technology, Mumbai | September, 2014               | Industry           |
| Lecture                               | Merck Excipients and their Applications in Pharmaceuticals’ by Merck Ltd.,                    | Institute of Chemical Technology, Mumbai                      | December 2014                 | Industry           |



|                                        |                                                                                                                                                                                                                                                         |               |                                                              |                        |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------------------------------------------------|------------------------|
| Conference                             | 14 <sup>th</sup> International Symposium on Advances in Technology and Business Potential of New Drug Delivery Systems, Controlled Release Society                                                                                                      | National      | February 2015                                                |                        |
| Seminar and Workshop                   | Organized Seminar and Workshop on ' <i>Recent Strategies in CNS Drug Development</i> ' on under the Technical Education Quality Improvement Programme organized by Department of Pharmaceutical Science & Technology, Institute of Chemical Technology. | ICT           | 31 <sup>st</sup> October and 1 <sup>st</sup> November , 2012 |                        |
| ADMA Regional Symposium                | "Concept of GLP and importance of analysis of Ayurvedic raw materials and finished products"                                                                                                                                                            | Mumbai        | April 2012                                                   |                        |
| Conference                             | International Symposium on Drug Discovery for Infectious Diseases and Cancer                                                                                                                                                                            | ICT, Mumbai   | January 2013                                                 | CSIR, UGC and Industry |
| Disso India2013 Preconference workshop | Pharmaceutical Dissolution Technology: A Review                                                                                                                                                                                                         | International | 2013, one day                                                | SPDS                   |
| Conference                             | Regulatory Roadmap For Pharmaceuticals In Global Market                                                                                                                                                                                                 | National      | 2012, One day                                                | TEQIP                  |
| Seminar cum workshop                   | Recent Strategies In CNS Drug Development                                                                                                                                                                                                               | National      | 2012, two days                                               | TEQIP                  |
| Seminar cum workshop                   | Advanced Scientific Writing Workshop, Winter-2013                                                                                                                                                                                                       | National      | 2012, half day                                               | UGC-CCAS               |
| Workshop                               | Bayer (Under Scholarship Program and Guest Lecture Sessions)                                                                                                                                                                                            |               | ) 21 <sup>st</sup> Dec. 2012.                                |                        |
| Conference                             | Seminar cum-workshop on "Recent Strategies in CNS drug development at Institute of Chemical Technology, Mumbai                                                                                                                                          | National      | 31 <sup>st</sup> October -1 <sup>st</sup> November 2012      |                        |

|                               |                                                                                                                                                                                                 |                                          |                                 |         |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|---------------------------------|---------|
| Lecture                       | Lecture series by Prof. Krishnapriya Mohanraj on, "chemistry a new understanding" For M.Tech students of Department of Pharmaceutical Sciences and Technology under the aegis of TEQIP program, | Institute of Chemical Technology, Mumbai | Jan to March 2013               | TEQIP   |
| Workshop                      | Workshop on "preparing for aptitude tests- Finishing School" for masters and Ph.D. students of Department of Pharmaceutical Sciences and Technology under the aegis of TEQIP program            | Institute of Chemical Technology, Mumbai | 11-14 <sup>th</sup> Feb 2013    | TEQIP   |
| Seminar by Prof. A. B. Pandit | Seminar by Prof. A. B. Pandit on "Scientific writing"                                                                                                                                           | Bombay Technologist, ICT, Mumbai         | 5th December 2013               | TA, ICT |
| TEQIP National Seminar        | TEQIP National Seminar On "Regulatory Roadmap for Pharmaceuticals in Global Markets"                                                                                                            | Institute of Chemical Technology, Mumbai | 29 <sup>th</sup> November 2012. | TEQIP   |

### 30. Code of ethics for research followed by the departments:

Institute website has code of ethics which is followed by all the departments.

### 31. Student profile programme-wise

| Name of the Programme       | Applications received | Selected |        | Pass Percentage       |          |          |      |      |            |
|-----------------------------|-----------------------|----------|--------|-----------------------|----------|----------|------|------|------------|
|                             |                       | Male     | Female | Percentage of Passing | Male     | Female   | Fail | ATKT | Total Pass |
| <b>B. Pharm (2011-2012)</b> | 241                   | 10       | 18     |                       |          |          |      |      |            |
| 2011-2012                   |                       |          |        | 86.21                 | 2 (fail) | 2 (ATKT) | 2    | 2    | 25         |
| 2012-2013                   |                       |          |        | 93.10                 | 1        | 1        | 2    | -    | 27         |
| 2013-2014                   |                       |          |        | 100.00                | -        | -        | -    | -    | 29         |
| 2014-2015                   |                       |          |        | 100.00                | -        | -        | -    | -    | 29         |
| <b>B. Pharm (2012-2013)</b> | 296                   | 05       | 19     |                       |          |          |      |      |            |
| 2012-2013                   |                       |          |        | 92.59                 | 1 (fail) | -        | 1    | 1    | 25         |

|                                            |                             |    |    |        |                        |                 |   |    |    |
|--------------------------------------------|-----------------------------|----|----|--------|------------------------|-----------------|---|----|----|
|                                            |                             |    |    |        | 1(AT<br>KT)            |                 |   |    |    |
| 2013-2014                                  |                             |    |    | 96.00  | 1<br>(fail)            | -               | - | 1  | 24 |
| 2014-2015                                  |                             |    |    | 100.00 | -                      | -               | - | -  | 24 |
| <b>B. Pharm<br/>(2013-2014)</b>            | 165                         | 06 | 21 |        |                        |                 |   |    |    |
| 2013-2014                                  |                             |    |    | 96.30  | -                      | 1<br>(ATKT<br>) | 0 | 1  | 26 |
| 2014-2015                                  |                             |    |    | 92.86  | 1<br>(fail)            | 1<br>(ATKT<br>) | 1 | 1  | 26 |
| <b>B. Pharm<br/>(2014-2015)</b>            | Admission<br>through<br>DTE | 10 | 18 |        |                        |                 |   |    |    |
| 2014-2015                                  |                             |    |    | 85.71  | 3<br>(ATK<br>T)        | 1<br>(ATKT<br>) | 0 | 04 | 24 |
| <b>B. Pharm<br/>(2015-2016)</b>            | Admission<br>through<br>DTE | 11 | 19 |        |                        |                 |   |    |    |
| <b>B. Tech<br/>Pharma (2011-<br/>2012)</b> | 584                         | 10 | 08 |        |                        |                 |   |    |    |
| 2011-2012                                  |                             |    |    |        | 1<br>(fail)            | 1<br>(ATKT<br>) | 1 | 1  | 17 |
| 2012-2013                                  |                             |    |    |        | -                      | -               | - | -  | 18 |
| 2013-2014                                  |                             |    |    |        | -                      | 1 (fail)        | 1 | -  | 18 |
| 2014-2015                                  |                             |    |    |        | 1<br>(ATK<br>T)        | -               | - | 1  | 17 |
| <b>B. Tech<br/>Pharma (2012-<br/>2013)</b> | 745                         | 13 | 05 |        |                        |                 |   |    |    |
| 2012-2013                                  |                             |    |    |        | 1(AT<br>KT)            | -               | - | 1  | 17 |
| 2013-2014                                  |                             |    |    |        | 1(AT<br>KT)<br>1(fail) | -               | 1 | 1  | 18 |
| 2014-2015                                  |                             |    |    |        | 1(AT<br>KT)<br>1(fail) | -               | 1 | 1  | 18 |
| <b>B. Tech<br/>Pharma (2013-<br/>2014)</b> | 615                         | 07 | 11 |        |                        |                 |   |    |    |

|                                            |                             |    |    |        |                                |                             |   |   |    |
|--------------------------------------------|-----------------------------|----|----|--------|--------------------------------|-----------------------------|---|---|----|
| 2013-2014                                  |                             |    |    |        | 1<br>(fail)<br>2<br>(ATK<br>T) | -                           | 1 | 2 | 15 |
| 2014-2015                                  |                             |    |    |        | -                              | -                           | - | - | 18 |
| <b>B. Tech<br/>Pharma (2014-<br/>2015)</b> | Admission<br>through<br>DTE | 11 | 06 |        |                                |                             |   |   |    |
| 2014-2015                                  |                             |    |    |        | 1<br>(fail)<br>1<br>(ATK<br>T) | 1 (fail)<br>1<br>(ATKT<br>) | 2 | 2 | 13 |
| <b>B. Tech<br/>Pharma (2015-<br/>2016)</b> | Admission<br>through<br>DTE | 14 | 05 |        |                                |                             |   |   |    |
| <b>M. Pharm<br/>(2011-2012)</b>            | 380                         | 10 | 07 |        |                                |                             |   |   |    |
| 2011-2012<br>(MNP)                         |                             |    |    | 100.00 | -                              | -                           | - | - | 08 |
| 2011-2012<br>(Pharm. Chem)                 |                             |    |    | 75.00  | 2<br>(ATK<br>T)                | -                           | - | 2 | 06 |
| 2011-2012<br>(Pharmaceutics<br>)           |                             |    |    | 100.00 | -                              | -                           | - | - | 20 |
| <b>M. Pharm<br/>(2012-2013)</b>            | 222                         | 10 | 08 |        |                                |                             |   |   |    |
| 2012-2013<br>(MNP)                         |                             |    |    | 100.00 | -                              | -                           | - | - | 14 |
| 2012-2013<br>(Pharm. Chem)                 |                             |    |    | 93.75  | 1<br>(ATK<br>T)                | -                           | - | 1 | 15 |
| 2012-2013<br>(Pharmaceutics<br>)           |                             |    |    | 100.00 | -                              | -                           | - | - | 24 |
| <b>M. Pharm<br/>(2013-2014)</b>            | 201                         | 09 | 07 |        |                                |                             |   |   |    |
| 2013-2014<br>(MNP)                         |                             |    |    | 100.00 | -                              | -                           | - | - | 19 |
| 2013-2014<br>(Pharm. Chem)                 |                             |    |    | 100.00 | -                              | -                           | - | - | 06 |
| 2013-2014<br>(Pharmaceutics<br>)           |                             |    |    | 100.00 | -                              | -                           | - | - | 18 |
| <b>M. Pharm<br/>(2014-2015)</b>            | 206                         | 08 | 09 |        |                                |                             |   |   |    |

|                                            |     |    |    |        |             |                         |   |   |    |
|--------------------------------------------|-----|----|----|--------|-------------|-------------------------|---|---|----|
| 2014-2015<br>(MNP)                         |     |    |    | 77.78  | 2<br>(ATKT) | -                       | - | 2 | 07 |
| 2014-2015<br>(Pharm. Chem)                 |     |    |    | 100.00 | -           | -                       | - | - | 07 |
| 2014-2015<br>(Pharmaceutics)               |     |    |    | 100.00 | -           | -                       | - | - | 12 |
| <b>M. Pharm<br/>(2015-2016)</b>            | 196 | 12 | 06 |        |             |                         |   |   |    |
| <b>M. Tech<br/>Pharma (2011-<br/>2012)</b> | 13  | 1  | -  |        |             |                         |   |   |    |
| 2011-2012                                  |     |    |    | 100.00 | -           | -                       | - | - | 01 |
| <b>M. Tech<br/>Pharma (2012-<br/>2013)</b> | 10  | 4  | -  |        |             |                         |   |   |    |
| 2012-2013                                  |     |    |    | 60.00  | 2<br>(ATKT) | -                       | - | 2 | 3  |
| <b>M. Tech<br/>Pharma (2013-<br/>2014)</b> | 14  | 3  | 1  |        |             |                         |   |   |    |
| 2013-2014                                  |     |    |    | 71.43  |             | 1 (fail)<br>1<br>(ATKT) | 1 | 1 | 05 |
| <b>M. Tech<br/>Pharma (2014-<br/>2015)</b> | 21  | 1  | 3  |        |             |                         |   |   |    |
| 2014-2015                                  |     |    |    | 100.00 | -           | -                       | - | - | 04 |
| <b>M. Tech<br/>Pharma (2015-<br/>2016)</b> | 30  | 2  | 2  |        |             |                         |   |   |    |
| <b>Ph. D. (Tech.)<br/>(2011-2012)</b>      | 320 | 19 | 08 |        |             |                         |   |   |    |
| <b>Ph. D. (Tech.)<br/>(2012-2013)</b>      | 209 | 17 | 12 |        |             |                         |   |   |    |
| <b>Ph. D. (Tech.)<br/>(2013-2014)</b>      | 134 | 22 | 11 |        |             |                         |   |   |    |
| <b>Ph. D. (Tech.)<br/>(2014-2015)</b>      | 179 | 18 | 12 |        |             |                         |   |   |    |

### 32. Diversity of students

| Name of the Programme<br>(refer to question no. 4) | % of students from the same university | % of students from other universities within the State | % of students from universities outside the State | % of students from other countries |
|----------------------------------------------------|----------------------------------------|--------------------------------------------------------|---------------------------------------------------|------------------------------------|
| <b>Master in Pharmacy</b>                          |                                        |                                                        |                                                   |                                    |
| 2011-12                                            |                                        |                                                        |                                                   |                                    |
| 17                                                 | 11.76                                  | 41.18                                                  | 47.06                                             | -                                  |
| 2012-13                                            |                                        |                                                        |                                                   |                                    |
| 18                                                 | 5.55                                   | 66.66                                                  | 27.77                                             | -                                  |
| 2013-14                                            |                                        |                                                        |                                                   |                                    |
| 17                                                 | 17.64                                  | 47.06                                                  | 35.29                                             | -                                  |
| 2014-15                                            |                                        |                                                        |                                                   |                                    |
| 17                                                 | 0.0                                    | 52.93                                                  | 47.06                                             |                                    |
| <b>M. Tech Pharma</b>                              |                                        |                                                        |                                                   |                                    |
| 2011-12                                            |                                        |                                                        |                                                   |                                    |
| 1                                                  | 0.0                                    | 100.0                                                  | -                                                 | -                                  |
| 2012-13                                            |                                        |                                                        |                                                   |                                    |
| 4                                                  | 0.0                                    | 100.0                                                  |                                                   | -                                  |
| 2013-14                                            |                                        |                                                        |                                                   |                                    |
| 4                                                  | 0.0                                    | 100.0                                                  |                                                   | -                                  |
| 2014-15                                            |                                        |                                                        |                                                   |                                    |
| 4                                                  | 0.0                                    | 100.0                                                  | -                                                 | -                                  |
| <b>PhD Tech</b>                                    |                                        |                                                        |                                                   |                                    |
| 2011-2012                                          |                                        |                                                        |                                                   |                                    |
| 31                                                 | 50                                     | 100                                                    | 0                                                 | 0                                  |
| 2012-13                                            | 33.33                                  | 87.87                                                  | 9                                                 |                                    |
| 2013-2014                                          | 16.67                                  | 66.67                                                  | 16.6                                              |                                    |
| 24                                                 |                                        |                                                        |                                                   |                                    |
| 14-15                                              | 12.5                                   | 99.37                                                  | 4.166                                             |                                    |
| <b>PhD tech Integrated</b>                         |                                        |                                                        |                                                   |                                    |
| 2011-2012                                          |                                        |                                                        |                                                   |                                    |
| 1                                                  | 100                                    | 0                                                      | 0                                                 | 0                                  |
| 2012-13                                            | NA                                     | NA                                                     | NA                                                | NA                                 |
| 2013-14                                            | 100                                    | 0                                                      | 0                                                 | 0                                  |
| 14-15                                              | NA                                     | NA                                                     | NA                                                | NA                                 |

**33. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise.**

| Name of the examination | Number of students who have cleared the exam |
|-------------------------|----------------------------------------------|
| GPAT                    | 36                                           |



|      |   |
|------|---|
| GATE | 4 |
|------|---|

### 34. Student progression

| Student progression                                           | Percentage against enrolled |        |       |
|---------------------------------------------------------------|-----------------------------|--------|-------|
|                                                               | Academic year               | Number | %     |
| UG to PG                                                      | 2011-2012                   | 28/53  | 52.83 |
|                                                               | 2012-2013                   | 17/33  | 51.51 |
|                                                               | 2013-2014                   | 29/41  | 70.73 |
|                                                               | 2014-2015                   | 26/52  | 50    |
| PG to M.Phil.                                                 | 2011-2012                   | -      | -     |
|                                                               | 2012-2013                   | -      | -     |
|                                                               | 2013-2014                   | -      | -     |
|                                                               | 2014-2015                   | -      | -     |
| PG to Ph.D.                                                   | 2011-2012                   | 13/33  | 39.39 |
|                                                               | 2012-2013                   | 5/19   | 26.31 |
|                                                               | 2013-2014                   | 2/23   | 8.69  |
|                                                               | 2014-2015                   | 0/21   | 0     |
| Ph.D. to Post-Doctoral                                        | 2011-2012                   | 0/21   | 0     |
|                                                               | 2012-2013                   | 0/14   | 0     |
|                                                               | 2013-2014                   | 2/21   | 9.52  |
|                                                               | 2014-2015                   | 0/6    | 0     |
| Employed<br>Campus selection<br>Other than campus recruitment | 2011-2012                   | 15/53  | 28.30 |
|                                                               | 2012-2013                   | 13/33  | 39.39 |
|                                                               | 2013-2014                   | 6/41   | 14.63 |
|                                                               | 2014-2015                   | 10/52  | 19.23 |
| Entrepreneurs                                                 | 2011-2012                   | 2/53   | 0.037 |
|                                                               | 2012-2013                   | 0/33   | 0     |
|                                                               | 2013-2014                   | 3/41   | 7.32  |
|                                                               | 2014-2015                   | 0/52   | 0     |

### 35. Diversity of staff

| Percent of Faculty who are graduates   | Bachelors | Masters | PhD |
|----------------------------------------|-----------|---------|-----|
| Of the same University                 | 85%       | 100%    | 92% |
| From other university within the state | 15%       | -       | 8%  |
| From universities from other states    | -         | -       | -   |
| Universities outside the country       | -         | -       | -   |

36. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period: 1

37. Present details of departmental infrastructural facilities with regard to

a) Library: **Common Library for the Institute**

b) Internet facilities for staff and students: **Available on campus**

c) Total number of class rooms: **6 special lecture rooms**

d) Class rooms with ICT facility: **all**

e) Students' laboratories: **6**

f) Research laboratories: **16**

**38. Number of doctoral students**

a) from the host institution/university: **46**

b) from other institutions/universities: **94**

**39. Number of post graduate students getting financial assistance from the university.**

11 Masters's students under TEQIP

**40. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology. NA**

**41. Does the department obtain feedback from**

i) Faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback? **Yes. Teaching methodology is revised and upgraded based on the feedback. Curriculum revision is also based on feedback**

ii) Students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback? **Yes. Faculty counselled if required. Curriculum revised if required.**

iii) Alumni and employers on the programmes offered and how does the department utilize the feedback? **Yes. Changes in syllabus and teaching methods.**

**42. List the distinguished alumni of the department**

- Dr. John Kapoor
- Dr. A.V.Rama Rao
- Dr. Shirish Modi
- Dr. K. Anji Reddy
- Prof. M.R.Baichwal
- Dr. R.P.Iyer
- Dr. Dhiren Thakker
- Nitin Deshmukh

**43. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts.  
Academic Year 2011-2012**

| Sr. | Date            | Fellowship                                                                                     | Distinguished Speaker/Affiliation                                                                                                                                                                                | Title of Lecture                                                                                                                                                                                                     |
|-----|-----------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | October 1, 2011 | Foundation day alkyl amines – uict foundation day speaker endowment lecture                    | Dr. Sanyog Jain, Associate Professor, Centre for Pharmaceutical Nanotechnology, Dept. of Pharm-[aceutics,National Institute of Pharmaceutical Education and Research (NIPER), SAS Nagar (Mohali) , Punjab-160062 | Design, Synthesis and Biological Evaluation of Novel Multifunctional Carbon Nanotubes Based “Smart” Drug Delivery Platform                                                                                           |
| 2   | March 17, 2012  | Themis chemicals ict diamond jubilee dist-inguished fellow in pharmaceutical science – lecture | Professor Dr. P. S. Ramani, Senior Consultant Neurospinal Surgeon, Lilavati Hospital & Rese-arch Centre, Mumbai. INDIA                                                                                           | From Mixture to Mutation - The March of Medicine                                                                                                                                                                     |
| 3   | April 27, 2012  | Professor S. K. Pradhan endowment lectures                                                     | Dr. Susheel Durani, Professor, Department of Chemistry IIT Bombay, Powai, Mumbai – 400076                                                                                                                        | Chemical Interactions and Biomolecular Ontogeny: The Puzzles of Stereochemistry and Symmetry in Protein Structure                                                                                                    |
| 4   | April 27, 2012  | Professor S. K. Pradhan endowment lectures                                                     | Professor Goverdhan Mehta, FNA, FRS National Research Professor Lilly Grantee and Jubilant - Bhartia Chair, School of Chemistry, University of Hyderabad, Hyderabad 500046                                       | Lecture 1: Celebrating Chemistry for a Better World: Lessons and Inspiration from Organic synthesis Lecture 2: Harnessing Synergy Between Natural Products, Organic Synthesis and Drug Discovery for Human Wellbeing |
| 5   | March 29, 2012  | Professor (Mrs) M.R. Baichwal distinguished fellow in pharmaceutical sciences” lecture,        | Dr. Shobhona Sharma Professor, Department of Biological Sciences, TIFR, Mumbai                                                                                                                                   | Malaria Infected Red Cells: Can We Target Them                                                                                                                                                                       |
| 6   | March 29, 2012  | The Cipla distinguished fellow in pharmaceutical science” lecture,                             | Dr. Vijay Walame Consulting Homoeopath Lokmanya Hospital, Chinchwad, Pune                                                                                                                                        | Homeopathy: An Emerging Pharma-ceutical Science                                                                                                                                                                      |
| 7   | 30th April 2012 | Professor V. M. Kulkarni endowment lecture,                                                    | Prof (Dr). Kanjaksha Ghosh Director, National Institute of Immunohaematology, Mumbai                                                                                                                             | Pharmacotherapy of Sickl Cell Ana-emia: Why Indian Pharmaceutical Industry is Silent                                                                                                                                 |

|   |              |                                                        |                                                                                           |                                                |
|---|--------------|--------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------|
| 8 | May 11, 2012 | The Professor B. D. Tilak visiting fellowship lecture, | Professor P. Thyagarajan Pro - Chancellor (Research), Sri Ramachandra University, Chennai | Herbal Drugs as Block Busters: The Way Forward |
|---|--------------|--------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------|

### Academic Year 2012-2013

| Sr. No. | Date Lecture | Fellowship                                 | Distinguished Speaker / Affiliation                                                                                          | Title of Lecture                                                                                                                  |
|---------|--------------|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| 1.      | 11/05/2012   | Professor B.D. Tilak Endowment Lecture     | Dr. S.P. Thyagarajan Pro-Chancellor (Research) Professor of Eminence and Dean (Research) Sri Ramachandra University, Chennai | Herbal Drugs as Block Busters: The Way Forward                                                                                    |
| 2.      | 27/04/2012   | Professor S.K. Pradhan Endowment Lecture   | Dr. Susheel Durani Department of Chemistry Indian Institute of Technology Bombay, Powai, Mumbai                              | Chemical Interactions and Biomolecular Ontogeny: The Puzzles of Stereochemistry and Symmetry in Protein Structure                 |
| 3.      | 15/04/2013   | Professor S.K. Pradhan Endowment Lecture   | Dr. Krishna N. Ganesh Prof. & Director Indian Institute of Science Education and Research (IISER)                            | Lecture 1: Making Drugs out of Nucleic Acids<br>Lecture 2: Cationic Peptides and Peptide Nucleic Acids as Cell Penetrating Agents |
| 4.      | 18/04/2013   | Pharma-UGC CAS Visiting Fellowship Lecture | Prof. Anant Paradkar Director of the Centre for Pharmaceutical Engineering Science, University of Bradford, UK               | Cocrystals and Polymorphs :innovation in technologies                                                                             |
| 5.      | 04/01/2013   | Dept. of Sci. Tech.                        | Dr. B. S. Shankarnarayana Rao Professor, Dept of Neurophysiology of NIMHANS, Bangalore                                       | Ever changing brain: Neural Plasticity and Recovery of Functions in Neurological and Psychiatric disorders                        |
| 6.      | 22/04/2013   | Themis Chemicals UICT Diamond Jubilee      | Dr. Kuppuswamy Nagarajan Corporate Advisor, Hikal R & D Centre                                                               | New drug development; Indian achievements thus far                                                                                |
| 7.      | 17/03/2012   | Themis Chemicals UICT Diamond Jubilee      | Dr. P.S. Ramani Senior consultant Neuro & Spinal Surgeon to: I. Lilavati Hospital & Research Centre                          | From Mixture to Mutation                                                                                                          |

|     |            |                                            |                                                                                                                                                                                                  |                                                                                                 |
|-----|------------|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
|     |            | Jubilee                                    | II. Shushrusha Citizens Co-op Hospital                                                                                                                                                           |                                                                                                 |
| 8.  | 22/04/2013 | Professor V.M. Kulkarni Endowment Lecture  | Dr. Vilas Dhanukar Vice-President, Dr. Reddy's Laboratories Ltd                                                                                                                                  | Process Chemistry R&D in generic and NCE development                                            |
| 9.  | 30/04/2012 | Professor V.M. Kulkarni Endowment Lecture  | Dr. Kanjaksha Ghosh Director, National Institute of Immunohaematology (ICMR), Mumbai                                                                                                             | Pharmacotherapy of sickle cell anaemia: why Indian pharmaceutical industry is silent            |
| 10. | 10/04/2013 | CIPLA Endowment Lecture                    | Dr. M.G.R. Rajan Head, Radiation Medicine Centre, Biomedical group, Bhabha Atomic Research Center Professor                                                                                      | Positron Emitting Radio-pharmaceuticals                                                         |
| 11. | 29/03/2012 | CIPLA Endowment Lecture                    | Dr. Vijay Walame Consulting Homeopath, Lokmanya Hospital, Chichwad, Pune                                                                                                                         | Homoeopathy: An emerging pharmaceutical science                                                 |
| 12. | 29/01/2013 | Dr. (Mrs.) M.R. Baichwal Endowment Lecture | Dr. Pankaj B. Desai Professor of Pharmacokinetics and Biopharmaceutics Director, Drug Development Graduate Programme The James L. Winkle College of Pharmacy University of Cincinnati, Ohio, USA | Preclinical and Clinical Investigations of the Pharmacokinetic Interactions of Anticancer Drugs |
| 13. | 30/04/2012 | Dr. (Mrs.) M.R. Baichwal Endowment Lecture | Dr. Rajiv Sarin Director, ACTREC, Mumbai                                                                                                                                                         | Genetics of Cancer Predisposition and Cancer Pharmacology                                       |
| 14. | 29/03/2012 | Dr. (Mrs.) M.R. Baichwal Endowment Lecture | Dr. Shobhona Sharma Professor, Dept of Biological Sciences, Tata Institute of Fundamental Research, Mumbai                                                                                       | Malaria infected red cells: can we target them?                                                 |
| 15. | 22/12/2012 | Dr. (Mrs.) M.R. Baichwal Endowment Lecture | Dr. Lohit Tutupalli Director of Pharmacy and Chairman, Pharmacy & Therapeutics Committee San Joaquin County Mental Hospital and                                                                  | Role of Pharmacy in Psychiatry                                                                  |

|  |  |  |                                |  |
|--|--|--|--------------------------------|--|
|  |  |  | Health Services, Stockton, CA. |  |
|--|--|--|--------------------------------|--|

### Academic Year 2013-14

| Sr. No | Date of Lecture | Fellowship                                 | Distinguished speaker/Affiliation                                                                                                                                                | Title of Lecture                                                                                                |
|--------|-----------------|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| 1      | 05/03/2014      | Dr. R.S Baichwal Seminar                   | Professor Dhiren R Thakker Ferguson distinguished professor and associate dean for Entrepreneurial Development and Global Engagement, UNC Eschelman School of Pharmacy, UNC, USA | Creation of Intellectual Property and Entrepreneurism: An Integral Part of Academic Pursuit in 21st Century     |
| 2      | 05/03/2014      | Dr. R.S Baichwal Seminar                   | Sundeep Dugar, PhD President/CEO/Founder Sphaera Pharma, Singapore                                                                                                               | Academy as an engine of Innovation: From the perspective of a Biotech CEO                                       |
| 3      | 05/03/2014      | Dr. R.S Baichwal Seminar                   | Kasim Mookhtiar, PhD Chief Scientific Officer and EVP, Drug Discovery, Advinus Therapeutics Ltd, India                                                                           | Intellectual Property Creation in Indian Technology Intensive institutions: Been there-done it or new horizons? |
| 4      | 28/03/2014      | Dep. of Sci. & Tech.                       | Professor Dr. Ganesh Thakur Northeastern University, Boston, USA                                                                                                                 | Tuning Endocannabinoid System for Therapeutic gain                                                              |
| 5      | 11/02/2014      | Themis Chemicals visiting fellowship       | Dr. Abhay Harsulkar Professor and Head, Pharmaceutical Biotechnology, Poona College of Pharmacy, BVU, Pune                                                                       | Nutrigenomics or nutrient-gene interaction with reference to disease pathologies.                               |
| 6      | 28/01/2014      | Professor S.K. Pradhan Endowment Lecture   | Dr. G. Mugesh Professor, Department of Inorganic & Physical Chemistry, Indian Institute of Science                                                                               | 1. Synthesis and Biological activity of reduced graphene oxide nanosheets 2. Antioxidant nanoxymes              |
| 7      | 23/10/2013      | Dr. (Mrs.) M.R. Baichwal Endowment Lecture | Amit Misra Associate Professor, Principal Scientist and In-charge; Pharmaceuticals Division CSIR, Lucknow                                                                        | Inhalable particles targeting drugs affecting host responses to tuberculosis                                    |
| 8      | 10/09/2013      | Cipla distinguished                        | Theresa M. Allen, Professor of Pharmacology and Adjunct Professor of                                                                                                             | Development of liposomal nanoparticles for anticancer applications                                              |



|  |  |                     |                                 |  |
|--|--|---------------------|---------------------------------|--|
|  |  | visiting fellowship | Oncology, University of Alberta |  |
|--|--|---------------------|---------------------------------|--|

**44. List the teaching methods adopted by the faculty for different programmes.**

Blackboard teaching  
 LCD & Power Point presentations  
 Demonstrations through videos; on site demonstrations  
 Presentations by students  
 Application oriented assignments  
 Handouts followed by discussions

**45. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored?**

Programme objectives are met by:

- Advanced teaching methodologies are used to ensure effective communication and good understanding
- Students are trained in the class for analytical and independent thinking
- Innovation is highly encouraged
- Learning outcomes are monitored by:
- Quizzes, MCQs, assignments as continuous evaluation, mid semester exam and end semester exams
- Discussion on student performance and strategies to improve quality in faculty room meetings within department
- Student feedback and feedback from alumni and from industry a major stakeholder is also given due importance
- Participation of students and winning awards in intra and inter collegiate co-curricular events and in intra and inter collegiate technical events is evidence of good performance
- Successful and high placement % with good starting salaries
- Admission of students to other institutes of high excellence

**46. Highlight the participation of students and faculty in extension activities.**

Seven faculty members have delivered lectures at other institutes, conferences, seminars etc. Total number of lectures for past 4 years is 102.

One of the faculty members is associated with Shri Satya Sai Seva Organization which deals with value based education for children from age group 6 years to 16 years along with other activities such as organizing yoga camps, health camps, blood donation, orphanage visits etc. One of the faculty member is a member of Suvarna Tarunanchi Sanghatana which works in the areas of career guidance in schools and colleges, gram swacchata abhiyan (Cleanliness drive) and organizing sports and cultural events.

Students visit NGO's and work in slums, old age homes, hospitals like Tata Memorial Cancer Hospital as a part of community service. The responsibilities range from preparing innovative games, story play cards, library management, data management and distribution of food, clothes to the needy. They have also participated in initiatives like joy of giving and Swaccha Bharat Abhiyan.

**47. Give details of “beyond syllabus scholarly activities” of the department.**

Seminars, Projects, Industrial Visits and Industrial Training

**48. State whether the programme/ department is accredited/ graded by other agencies? If yes, give details.**

| Course          | Accreditation body | Period                                  |
|-----------------|--------------------|-----------------------------------------|
| B.Pharm         | NBA                | 2008-2013 (In process for 2014 onwards) |
| B.Tech          | NBA                | 2008-2013 (In process for 2014 onwards) |
| M.Pharm         | NBA                | 2013-2016                               |
| M.Tech (Pharma) | NBA                | 2013-2016                               |

**49. Briefly highlight the contributions of the department in generating new knowledge, basic or applied.**

- Creation of intellectual property by novel inventions
- Development of innovative drug delivery systems including nanotechnology based formulations
- New Chemical entities for diseases of national relevance, process development for pharmaceuticals and fine chemicals.
- Standardization of herbal medicines and their documentation as monographs
- Pharmacological and toxicological screening of medicinal natural products and development of animal models

**50. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.**

**Strength:**

- High quality intake of students and accomplished and reputed faculty members.
- A culture of excellence in Research and Technical Education in Pharmaceutical sciences and Technology with a track record of research publications in high impact factor journals
- Placements in Industry and in top level Universities abroad for higher Studies
- Development of entrepreneurship skills amongst graduates and post-graduates
- Strong networking with the pharma industry and professional bodies

**Weakness:**

- Overloading of teaching staff by administrative responsibility because of vacant positions
- Limited space and infrastructure
- Limited involvement in community and non-formal sector
- Insufficient funding for infrastructure and development
- Inadequate funding for maintenance of equipment

**Opportunities:**

- Low level of R&D in the industry
- Outsourcing by the industry
- Increasing awareness of and demand for higher education in health care
- Need for newer drugs and formulations
- Government funding for research

**Challenges:**

- National institute and University with Central Government funding
- Establishment of new Technological Institutes offering similar courses
- Foreign universities coming to India attracting students abroad and also in India
- Increased availability of other attractive employment opportunities in other sectors
- Limiting government regulations and policies.

**51. Future plans of the department.**

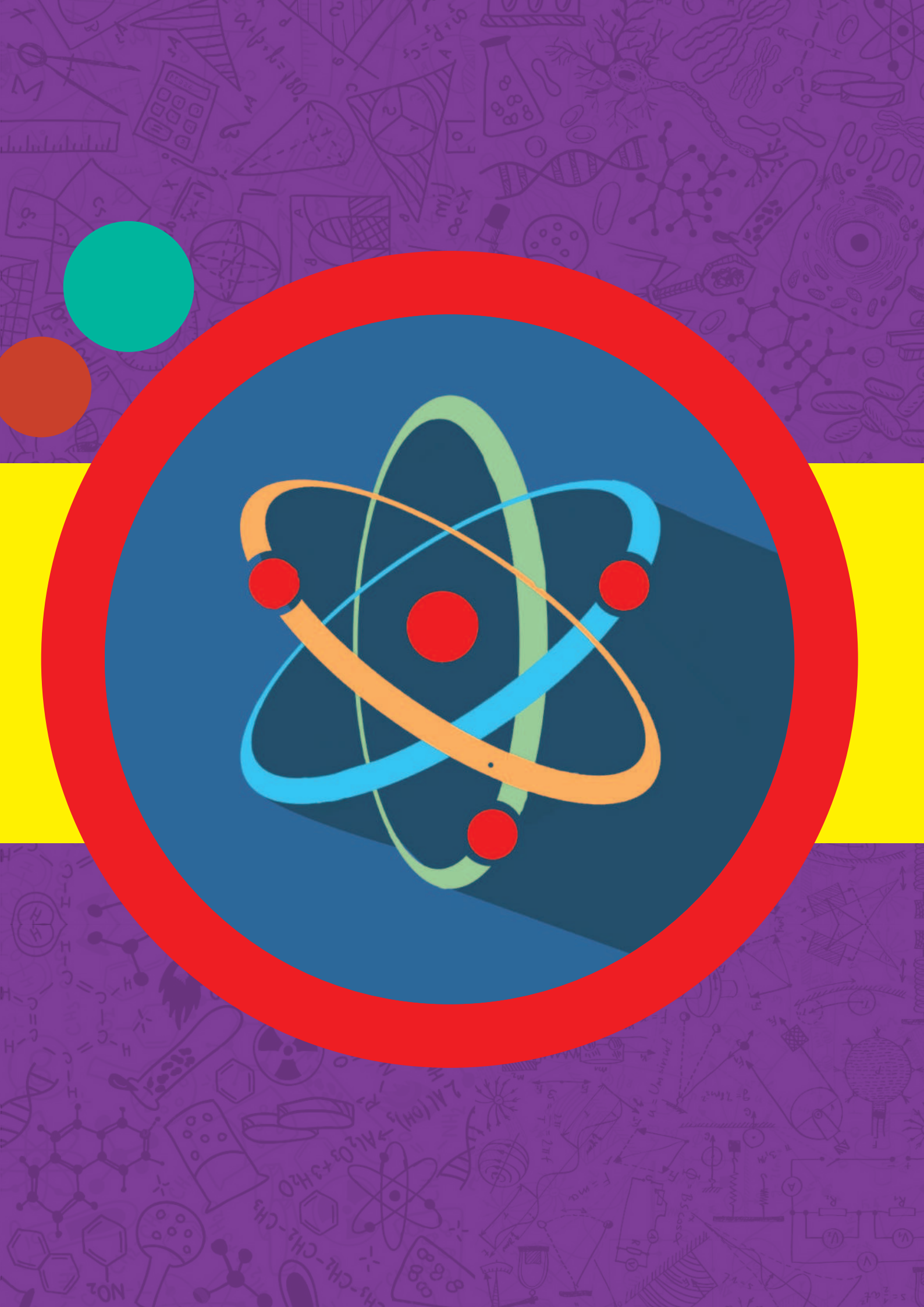
- Developing centres of research in  
Nano drug delivery systems  
Toxicology  
Cancer and infectious diseases  
Preclinical and clinical pharmacology  
UGC national networking centre in drug discovery and drug delivery
- Self-sustaining certificate courses in

Clinical pharmacy  
Regulatory affairs and IPR  
Pharmacoeconomics



# PHYSICS DEPARTMENT







# Physics Department

## Physics Department

The Department of Physics, which has the distinction of being one of the earliest Departments in the Institute, initially started as Optics Section in 1934, subsequently is established as an individual department. Department is housed in the Centre for Advanced Studies building. The department has current staff strength of 6, which includes **2 Professor, 1 Associate Professor, 3 Assistant Professor**. The department has extensive Polymer science research laboratory and well equipped UG/PG laboratories. An instrument mechanic, 1 STAs, 1 laboratory assistant and 3 lab attendants take care of our all instruments.

The department undertakes teaching basic and applied Physics to Engineering and other allied technology courses, interdisciplinary programmes from UG to M.Tech. courses. The department will be introducing more electives at UG/PG level. The unique **M.Sc. Programme in Physics with emphasis on material science** is started in 2014. The programme aims at preparing students who will have sound knowledge of core physics and extensive exposure to and understanding of analytical and characterization techniques.

The faculty of the department undertakes research in many aspects of material sciences such as **electro-optical properties of Polymers, Nano and Plasma treatments in molecular tailoring of material, carbon nanotubes/polymer composites and Polymer-Nano-composites for structure property relationship, magnetic properties of materials, nanodrug delivery, theoretical aspects of chemical engineering and green energy alternatives like solar thermal technologies. there is also a unique research in colour assessment of dyed textiles and colour perception.** Department has produced number of PhDs in Physics with specializations in Nanoscience, Nanotechnology & Polymer composites. Faculties have collaborations with other departments in the Institute, professional bodies and industries. Departmental faculty has patents to their credit and are also involved in consultancies. We have recorded **100% placement** of our **PhD graduates** in academic as well as industrial sector.

The major thrust areas of research carried out in the Department are:

- Polymer/Polymer Composites and nanocomposites:
  - Study of crystallization kinetics in polymers, polymer composites & polymer-nanocomposites, orientation studies of Polymers/Polymer composites & nanocomposites, Structure property relationship in Polymers. Polymer composites & nanocomposites.
  - Surface modification of polymer materials using plasma for improvement of adhesion of printability properties.

- Study of electrical, thermal, mechanical, dielectric and piezo electric properties of polymers and their composites
- Solar Thermal Applications
  - Designing of reflector shape
  - Determination of efficiency of collection of solar radiations
  - Configuration & surfaces of absorber pipes studies under different parameters.
  - Steam generation up to 250oC for industrial applications
- Colour Assessment of Dyed Fabric and Study of Geometric Attributes of Colour
- Nanoparticles synthesis
- Theoretical Aspects of Chemical Engineering in collaboration with Department of Chemical Engineering of the Institute.

The department has proved its competencies in **government funded** projects worth Rs **2.9 crores** and **private funded** projects worth **Rs.20.18 Lakhs**, having 7 national and 2 international Collaborations. The steadily increasing faculty contribution in terms of research **papers** is the prime trait of the Department having **115 Peer reviewed Publications /Journals with an estimated impact factors of 1 to 7.86 conference proceedings with over 1700 citations in just last 5 years alone**. The faculties also have a rare distinction of holding patents as compared to many Physics Departments of other Universities. In addition to being part of various committees of the Institute, Department faculty manage the goodwill of institution by participating in national committees of neighbouring universities & organizations, conducting various technical workshops. Projects for UG students on academic interest basis are routinely offered and teaching methods as per ICT norms are regularly revised via constant internal meetings and introducing innovative courses.

The Department of Physics, with able guidance from adjunct and senior professors, aims to bank on its Strengths and eliminate its weaknesses such as being regarded as support department for the institution as a whole, no admin staff & low alumni involvement to shape policies. To handle the new challenges such as **developing new analytical techniques or attracting talented students& faculties on national level** and make the best of its opportunities such as launching of a **new M.Sc. course with a research grade labs and excellent faculty spectrum**, the department is confident to make boundless changes in Physics education at Bachelors, Masters& PhD levels of the Institute by establishing **new interdisciplinary centre for material science, more electives, a computing centre along with strengthening collaboration with national labs**.

1. **Year of establishment – 1934**
2. **Is the Department part of a school/Faculty of the university? – YES**
3. **names of programmes offered (UG, PG, M.Phil., Ph.D., integrated masters; integrated - Ph.D., D.Sc. D.Litt., etc.) - M.Sc., PhD**
4. **Interdisciplinary programmes and departments involved - Courses for M. Tech. & M.Sc. (Textile Chemistry)**
5. **Courses in collaboration with other universities, industries, foreign institutions, etc. – NIL.**
6. **Details of programmes discontinued, if any, with reasons – NIL**
7. **Examination system: annual/semester/trimester/choice Based credit system – Semester.**

8. **Participation of the department in the courses offered by other departments - UG – 1st and 2nd year (both for B.Chem. Engg. & B.Tech.)**
9. **Number of teaching posts sanctioned, filled and actual (Professors/Associate Professors/ asst. Professors/others) –**

| Teaching Post       | Sanctioned    | Filled | Actual |
|---------------------|---------------|--------|--------|
| Professor           | 2             | 0      | 2      |
| Associate Professor | 2             | 1      | 1      |
| Assistant Professor | 5             | 3      | 2      |
| Other               | 1 DST<br>1FRP | 1      | 1      |

Professor Prof. V. D. Deshpande & Prof. R. R. Deshmukh are CAS appointed Professors.

10. **Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance –**

| Name                                  | Qualification          | Designation | Specialization                                                                                                                                                                                                    | Years of Experience | No. of PhD/ MPhil students guided for the last 4 years |
|---------------------------------------|------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------------------------------------------|
| Prof. (MRS.) Vineeta Dinesh Deshpande | M.Sc.,<br>M. Phil, PhD | Professor   | Polymer nanocomposite-structure-property relationship, Solar thermal applications, Nano-drug                                                                                                                      |                     | 8 + 1 (CO-GUIDE)                                       |
| Prof. Rajendra Deshmukh.              | M.Sc.,<br>PhD B.Ed.,   | Professor   | Plasma Polymer Physics, Functionalization nano-particles. Molecular tailoring of using plasma for biomedical applications, physics, Electro-optical properties of Polymer Liquid-Crystals. Polymer nanocomposites |                     | 8 + 1 (PhD Tech)                                       |

|                    |                |                     |                                                                                                              |  |   |
|--------------------|----------------|---------------------|--------------------------------------------------------------------------------------------------------------|--|---|
|                    |                |                     | materials.                                                                                                   |  |   |
| Dr. Mohan Narayan  | M.Sc., PhD     | Associate Professor | Statistical Mechanics of & applications to Chemical Engineering Phenomena, Theoretical High, Energy Physics. |  | 2 |
| Dr. Neetu Jha      | M.Sc. PhD      | Assistant Professor | Carbon Graphene, Fuel Cell electro-catalyst, Energy storage and Electrochemical Sensors                      |  | 4 |
| Dr. Ashween Mohan  | M.Sc. PhD      | Assistant Prof      | Magnetic and Thermodynamic properties of materials, Low-Temperature Physics, Novel Materials                 |  | 0 |
| Dr. Awneesh Singh  | M.Sc. PhD. PDF | Assistant Prof      | Statistical Physics and Computational modelling of                                                           |  |   |
| Prof. S. V. Panse  | PhD            | Adjunct Professor   | Concentrating Solar                                                                                          |  | 1 |
| Prof. A. K. Kalkar | PhD            | Adjunct Professor   | Structure-property relationships in polymeric                                                                |  |   |

**11. List of senior Visiting Fellows, adjunct faculty, emeritus professors –**

**Visiting Faculty – 01**

Professor N. C. Debnath

**Adjunct Professor – 02**

Professor A. K. Kalkar

Professor S. V. Panse

**12. Percentage of classes taken by temporary faculty – programme-wise information – NIL**

**13. Programme-wise student teacher ratio – 15:1 (M.Sc. Physics Part I) 5:1 (M.Sc. Physics Part II)**

**14. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual**

| Support Staff       | Sanctioned | Filled | Actual |
|---------------------|------------|--------|--------|
| Sr. Tech. Assistant | 03         | 0      | 01     |

|                     |    |    |    |
|---------------------|----|----|----|
| Instrument Mechanic | 01 | 01 | 01 |
| Lab Assistant       | 01 | 01 | 01 |
| Lab Attendant       | 02 | 02 | 03 |

**15. Research thrust areas as recognized by major funding agencies –**

- Polymer Physics
- Solar energies and applications
- Nanoscience, Nanotechnology
- Plasma Processing, Electro-optics
- Nano-drug delivery

**16. Number of faculty with ongoing projects from a) national b) international funding agencies and c) total grants received. Give the names of the funding agencies, project title and grants received project-wise**

|              |                                                                                                                                                    |                        |            |                              |                   |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------|------------------------------|-------------------|
| AICTE RPS(c) | Synthesis, Characterization and Study of Properties of Nano-Fillers Based Polysiloxane Composites                                                  | 2 years                | 20 lakhs   | Prof. (Mrs.) V. D. Deshpande | Vrushali Murudkar |
| UGC Major    | Studies of Unique Morphological And Thermal Behavior of Reorganized Poly (Ethylene Terephthalate) And Its Nanocomposites With Organomodified Clay' | 3 years                | 12 lakhs   | Prof. (Mrs.) V. D. Deshpande | Amita Gaonkar     |
| BARC         | Development and characterization of selective coating for enhancement of radiation absorption of solar receivers                                   | 2 years                | 1.5 crores | Prof. (Mrs.) V. D. Deshpande | Satish Dubey      |
| DST-MoFPI    | Studies in Physico-Chemical Properties of                                                                                                          | 2 years (26/12/2012 to | 20.18 lakh | Dr. U. S. Annapure Dr. R. R. |                   |

|                                                     |                                                               |             |                                 |                                                     |              |
|-----------------------------------------------------|---------------------------------------------------------------|-------------|---------------------------------|-----------------------------------------------------|--------------|
|                                                     | Plasma Processed Rice grains                                  | 26/12/2014) |                                 | DeshMukh                                            |              |
| DST Inspire                                         | Development of Pt alloy based electrocatalyst for fuel cell   | 5 years     | 35 lakh                         | Dr. Neetu Jha                                       |              |
| DST Nanomission                                     | Development of metal oxide graphene based supercapacitor      | 3 years     | 25 lakh, 77 thousand, 6 hundred | Dr. Neetu Jha & Prof. A. B. Pandit                  |              |
| SERB, Startup grant for Young Scientist             | Development of electro-catalyst support for fuel cell         | 3 years     | 17 lakh, 40 thousand            | Dr. Neetu Jha                                       |              |
| BRNS, Young Scientist Research Award                | Development of Carbon based nanocomposites for supercapacitor | 3 years     | 11 lakh, 90 thousand            | Dr. Neetu Jha                                       |              |
| Universal Starch-Chem Allied Ltd. (Private Project) | Studies in Synthesis of Biodegradable Polymer                 |             | 20.18 lakhs                     | Dr. A. S. Sabnis Prof. R. R. Deshmukh Dr. Neetu Jha | Sinkar Mayur |

#### 17. inter-institutional collaborative projects and associated grants received –

| Collaborator          | National | International |
|-----------------------|----------|---------------|
| Prof. V. D. Deshpande | 02       | -             |
| Prof. R. R. Deshmukh  | 03       | 02            |
| Dr. M. Narayan        | 02       | -             |
| Dr. Neetu Jha         | 04       |               |
| Dr. Ashween Mohan     | 01       | 01            |
| Dr. A. Singh          | 04       | 01            |

##### 1. Prof. V. D. Deshpande:

Professor V. B. Patravale, Dept. of Pharma, ICT

Professor V. A. Pandit, Dept. of Pharmaceuticals, Bharati Vidyapeeth, Pune

##### 2. Prof. R. R. Deshmukh:

Dr. K. Navneetha Pandiyaraj, Dept. of Physics, SSIET, Coimbatore.

Dr. Varsha Kelkar-Mane, Department of Bio-tech, University of Mumbai.

Professor N. V. Bhat, BTRA. Mumbai.

Professor R. Dabrowski, Institute of Chemistry, Military University of Technology, Warsaw 00-908, Poland.

Professor R. B. Timmons, University of Texas, Arlington, USA.

Professor U. S. Annapure, ICT, Mumbai.

##### 3. Dr. M. Narayan



Dr. Vishvanath Dalvi, Dept. of Chemical Engg., ICT  
Dr. Bipin Koranga, Dept. of Physics, Kirori Mal College, University of Delhi

**4. Dr. N. Jha**

Dr. Shubra Singh, Anna University, Tamil Nadu  
Dr. Ashish Mishra, B.H.U., UP  
Dr. Shaijumon M. M., IISER, Trivandrum  
Prof. S. Ramaprabhu, IIT Madras, Chennai

**5. Dr. A. Mohan**

Dr. Christian Hess, Leibniz Institute for Solid State and Materials, Germany  
Dr. A. Thamizhavel, TIFR, Mumbai

**6. Dr. A. Singh**

Prof. Sanjay Puri, JNU, New Delhi  
Prof. Anirban Chakraborti, JNU, New Delhi  
Prof. Brojen Singh, JNU, New Delhi  
Prof. Shri Singh, BHU, UP  
Prof. Olga Kubsenok, Clemson University, USA

**18. Departmental projects funded by DST-Fist; UGC-SAP/CAS, DPE; DBT, ICSSR, AICTE, etc.; total grants received –**

|               |                                                                                                                                                    |         |            |                              |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------|---------|------------|------------------------------|
| AICTE RPS(c)) | Synthesis, Characterization and Study of Properties of Nano-Fillers Based Polysiloxane Composites                                                  | 2 years | 20 lakhs   | Prof. (Mrs.) V. D. Deshpande |
| UGC Major     | Studies of Unique Morphological And Thermal Behavior of Reorganized Poly (Ethylene Terephthalate) And Its Nanocomposites With Organomodified Clay' | 3 years | 12 lakhs   | Prof. (Mrs.) V. D. Deshpande |
| BARC          | Development and characterization of selective coating for enhancement of                                                                           | 2 years | 1.5 crores | Prof. (Mrs.) V. D. Deshpande |

|                                         |                                                                        |                                    |                                 |                                          |
|-----------------------------------------|------------------------------------------------------------------------|------------------------------------|---------------------------------|------------------------------------------|
|                                         | radiation absorption of solar receivers                                |                                    |                                 |                                          |
| DST-MoFPI                               | Studies in Physico-Chemical Properties of Plasma Processed Rice grains | 2 years (26/12/2012 to 26/12/2014) | 20.18 lakh                      | Dr. U. S. Annapure<br>Dr. R. R. Deshmukh |
| DST Inspire                             | Development of Pt alloy based electrocatalyst for fuel cell            | 5 years                            | 35 lakh                         | Dr. Neetu Jha                            |
| DST Nanomission                         | Development of metal oxide graphene based supercapacitor               | 3 years                            | 25 lakh, 77 thousand, 6 hundred | Dr. Neetu Jha                            |
| SERB, Startup grant for Young Scientist | Development of electro-catalyst support for fuel cell                  | 3 years                            | 17 lakh, 40 thousand            | Dr. Neetu Jha                            |
| BRNS, Young Scientist Research Award    | Development of Carbon based nanocomposites for supercapacitor          | 3 years                            | 11 lakh, 90 thousand            | Dr. Neetu Jha                            |
| Universal Starch-Chem Allied Ltd.       | Studies in Synthesis of Biodegradable Polymer                          |                                    | 20.18 lakhs                     | Dr. A. S. Sabnis                         |

Total Grant received: Rs. 3,12,43,600.00

**19. research facility / centre with**

state recognition

national recognition

international recognition

**20. special research laboratories sponsored by / created by industry or corporate bodies – No**

**21. Publications:**

Number of papers published in peer reviewed journals (national / international)

| Name                  | Number of Publications (Peer Reviewed) |
|-----------------------|----------------------------------------|
| Prof. V. D. Deshpande | 23                                     |
| Prof. R. R. Deshmukh  | 83                                     |
| Dr. Mohan Narayan     | 23                                     |
| Dr. Neetu Jha         | 24                                     |
| Dr. Ashween Mohan     | 07                                     |
| Dr. Aweesh Singh      | 21                                     |

Monographs - NIL

Chapters in Books - three chapters by Dr. R. R. Deshmukh

| Name of the Book                                                   | Authors                                                                                            | Name of the Chapter                                                                 | Editor(s)                                                       | Publishing                 | Year |
|--------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------|----------------------------|------|
| Advances in Biomaterials for Biomedical Applications               | <b>R. R. Deshmukh</b> , A. M. Trimukhe, K.N.Pandayaraj, A. Tripathi                                | Plasma surface modification of biomaterials for biomedical application              | A. Tripathi, J. S. Melo                                         | Springer                   | 2017 |
| Functionalized Engineering Materials and their Applications        | <b>R. R. Deshmukh</b> , K. Deshmukh, G. M. Joshi, A. Sharma,,S. Arora, R. Tibrawala, S. Kalinathan | Study of Morphology and Electrical Properties of Pure and Hybrid Polymer Composites | S. Thomas, N. Kalarikkal, Pious C. V., Z. Ahmad, J. T. Haponiuk | CRC Press                  | 2016 |
| Biopolymer Composites in Electronics                               | <b>R. R. Deshmukh</b> , K. Deshmukh, M. B. Ahmed, S. K. K. Pasha, K. Chidambaram                   | Biopolymer Composites with High Dielectric Performance: Interface Engineering       | K. K. Sadasivuni, D. Ponnammma, John-John                       | Elsevier Publisher         | 2016 |
| Liquid Crystalline Polymers: Volume 2--Processing and Applications | <b>R. R. Deshmukh</b>                                                                              | Electro-optic and Dielectric Responses in PDLC                                      |                                                                 | Springer                   | 2015 |
| Plasma Technologies for Textile & Apparel                          | N. V. Bhat <b>R. R. Deshmukh</b>                                                                   | Plasma processing of textiles to enhance their                                      | S.K. Nema, P.B. Jhala                                           | Woodhead Publishing, India | 2014 |

|                |                                      |                                     |                                  |                  |      |
|----------------|--------------------------------------|-------------------------------------|----------------------------------|------------------|------|
| Textile Dyeing | N. V. Bhat,<br><b>R. R. Deshmukh</b> | Pre-treatments of Textiles Prior to | Ira S. Krull, Sebastiano D'Amico | Intech Publisher | 2012 |
|----------------|--------------------------------------|-------------------------------------|----------------------------------|------------------|------|

Edited Books –NIL

Books with ISBN with details of publishers – **NIL**

Number listed in International Database (For e.g. Web of Science, Scopus) –all **mentioned in the Publication section – mostly Scopus**

Humanities International Complete, Dare Database - International Social Sciences Directory, EBSCO host, etc.) –NIL

Citation Index – range / average

|                       |          |         |
|-----------------------|----------|---------|
| Prof. V. D. Deshpande | 0 – 3.63 | / 3.63  |
| Prof. R. R. Deshmukh  | 0-131    | / 14.39 |
| Dr. Mohan Narayan     | 0-78     | / 13.19 |
| Dr. Neetu Jha         | 0-112    | / 23.52 |
| Dr. Ashween Mohan     | 0 – 2.7  | / 7     |
| Dr. Awneesh Singh     | 0-8      | / 2.43  |

**SNIP** – NIL

**SJR** – NIL

**Impact Factor – range / average**

|                       |                       |
|-----------------------|-----------------------|
| Prof. V. D. Deshpande | 0.89 to 3.586 / 2.791 |
| Prof. R. R. Deshmukh  | 0.35 to 5 / 2.77      |
| Dr. Mohan Narayan     | 1.014 / 1.014         |
| Dr. Neetu Jha         | 1.0 to 5.78/ 3.34     |
| Dr. Ashween Mohan     | 1.75 to 8.46 / 3.833  |
| Dr. Awneesh Singh     | 0.411 to 4.438 / 2.75 |

**h-index**

|                       |    |
|-----------------------|----|
| Prof. V. D. Deshpande | 06 |
| Prof. R. R. Deshmukh  | 19 |
| Dr. Mohan Narayan     | 10 |
| Dr. Neetu Jha         | 11 |
| Dr. Ashween Mohan     | 03 |
| Dr. Awneesh Singh     | 04 |

## 22. Details of patents and income generated

| Name of the Patent holder | Number of Patents           |
|---------------------------|-----------------------------|
| Prof. V. D. Deshpande     | 01                          |
| Prof. R. R. Deshmukh      | 01 (applied for US Patents) |
| Dr. Neetu Jha             | 01                          |

**Patent details**

| Name                  | Title                                                    | Country | Patent No.    |
|-----------------------|----------------------------------------------------------|---------|---------------|
| Prof. V. D. Deshpande | Pharmaceutical compositions for bioenhancement of active | India   | 1108/MUM/2012 |
| Prof. R. R. Deshmukh  | Plasma Surface Depositions of Thin                       | US      |               |
| Dr. Neetu Jha         | CNT based magnetic nanofluids                            | India   | 408/CHE/2008  |
|                       | CNT-M biosensor for detection of OP                      | India   | 1328/CHE/2008 |
|                       | Nanocomposites including carbon nanotubes having metal   | US      | 12/909547     |

**23. Areas of consultancy and income generated industrial consultancy**

| Name of the Company          | Consultant | Consultancy provided on             |
|------------------------------|------------|-------------------------------------|
| Universal Starch-Chem Allied |            | Conversion of starch to bio-polymer |

**24. Faculty selected nationally / internationally to visit other laboratories / institutions / industries in india and abroad - Dr. R. R. Deshmukh visited Univ of Texas, Arlington****25. Faculty serving in a) National committees b) International committees c) Editorial Boards d) any other**

|                      |                                                                                                                                                            |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dr. Mohan Narayan    | University of Mumbai, MSc Syllabus Committee                                                                                                               |
| Dr. Mohan Narayan    | Member of Board of Studies, Univ of Mumbai                                                                                                                 |
| Prof. R. R. Deshmukh | Advisory Committee, BITRA                                                                                                                                  |
| Prof. R. R. Deshmukh | Membership of Editorial Boards with name of journal and agency: International Journal of Materials Science and Applications, Science Publishing Group, USA |

**26. Faculty recharging strategies (UGC, ASC, Refresher / Orientation programs, Workshops, Training programs and similar programs) - 02****27. Student Projects**

Percentage of students who have done in-house projects including inter-departmental projects - 50%

Percentage of students doing projects in collaboration with other universities industry/ Institute – 50%

**28. Awards / recognitions received at the national and international level by**

Faculty - Prof. R. R. Deshmukh is a reviewer for many Journals in the field of Polymer Physics & Surface Sciences

Doctoral / post-doctoral fellows – Nil

Students - Nil

**29. Seminars/ Conferences/Workshops organized and the source of funding (national /international) with details of outstanding participants, if any**

Department organized the following workshops

- “Revisiting Thermodynamics” under TEQIP
- “Current trends in Polymer Physics” under UGC CAS
- “Modern Trends in Polymer science and Technology” under TEQIP
- “Nanomaterials: Emerging Trends” under TEQIP
- “Plasma Processing of Materials” under TEQIP

**30. code of ethics for research followed by the departments - the department adheres to the Institute policies**

**31. Student profile programme-wise**

| Name of the Programme  | Applications Received | Selected |        | Passes Percentage |        |
|------------------------|-----------------------|----------|--------|-------------------|--------|
|                        |                       | Male     | Female | Male              | Female |
| M.Sc. Admission – 2014 | 20                    | 02       | 03     | 100%              | 100%   |
| M.Sc. Admission – 2015 | 20                    | 03       | 02     | 100%              | 100%   |
| M.Sc. Admission – 2016 | 20                    | 03       | 04     |                   |        |
| M.Sc. Admission – 2017 | 36                    | 12       | 03     |                   |        |

**32. Diversity of students**

| Name of the Programme  | % of Student from Same Institute | % of Students from other university within state | % of Students from other university outside state |
|------------------------|----------------------------------|--------------------------------------------------|---------------------------------------------------|
| M.Sc. Admission – 2014 | 0                                | 100                                              | 0                                                 |
| M.Sc. Admission – 2015 | 0                                | 100                                              | 0                                                 |
| M.Sc. Admission – 2016 | 0                                | 100                                              | 0                                                 |
| M.Sc. Admission – 2017 | 0                                | 93                                               | 7                                                 |

**33. how many students have cleared civil services and Defense services examinations, net, set, Gate and other competitive examinations? Give details category-wise. - 0**

**34. student progression**

|                        |    |
|------------------------|----|
| UG to PG               | NA |
| PG to M.Phil.          | NA |
| PG to Ph.D.            | NA |
| Ph.D. to Post-Doctoral | NA |
| Employed               | NA |



**Campus selection** Yes

**Other than campus recruitment Entrepreneurs** NA

**35. Diversity of staff**

| Percentage of faculty who are graduates |     |
|-----------------------------------------|-----|
| Of the same University                  | -   |
| From other University within the State  | 33% |
| From Universities of other States       | 67% |
| From Universities outside the countr    | -   |

**36. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period – NIL**

**37. Present details of departmental infrastructural facilities with regard to**

- **Library** Yes
- **Internet Facilities for staff and students** Available
- **Total No. of classrooms** 02
- **Class rooms with ICT facilities** 02
- **Students Laboratory** 04
- **Research Laboratories** 04

**38. List of doctoral, post-doctoral students and research associates**

- a) from the host institution/university - NIL
- b) from other institutions/universities - 100%

**39. Number of post graduate students getting financial assistance from the university. – NIL**

**40. Was any need assessment exercise undertaken before the development of new programme(s)? if so, highlight the methodology. – Yes**

Extensive discussions with Subject Experts from BARC/IIT/University of Mumbai in framing the M.Sc. syllabus.

**41. Does the department obtain feedback from?**

**Faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback? – YES**

**Students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback? – As per ICT Rules**

**Alumni and employers on the programmes offered and how does the department utilize the feedback?** – As per ICT Rules

42. **List the distinguished alumni of the department** - NIL
43. **Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts:** Department has MS Patel Trust under which we invite eminent speakers from Polymer Physics
44. **List the teaching methods adopted by the faculty for different programmes:** As per ICT Norms
45. **how does the department ensure that programme objectives are constantly met and learning outcomes are monitored?** - Via constant internal discussions and interaction between faculties of the department & colleagues from other departments. also constantly innovating our courses.
46. **highlight the participation of students and faculty in extension activities:** The faculties of the department give lectures in colleges affiliated to neighboring universities
47. **Give details of “beyond syllabus scholarly activities” of the department:** Faculties participate in various conferences/workshops across the country
48. **State whether the programme/ department is accredited/ graded by other agencies? if yes, give details** – No
49. **Briefly highlight the contributions of the department in generating new knowledge, basic or applied** - By research/consultancy
50. **Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department** –

**Strengths:**

- The department is a major center for polymer research
- a center for research in solar - thermal tech.
- faculty with diverse research interests
- quality teaching
- a unique M.Sc. program with emphasis on material science

**Weaknesses:**

- low faculty strength
- no departmental administrative staff
- too much involvement of faculty in institute administration
- being regarded just as a support department
- negligible involvement of alumni of the department for its development & to shape its policies

**Opportunities & Challenges:**

- interdisciplinary work with technology departments

- launching of a unique M.Sc. course because of the varied infrastructure available in the department
- develop newer analytical techniques
- attract talented students/faculties on a national basis
- to get industry support & participation for the M.Sc. course

#### 51. Future plans of the department

- To establish a new interdisciplinary center for material science
- To further innovate the M.Sc. program by introducing more electives
- To set up a department computing center
- To further strengthen ties & collaboration with national laboratories
- To introduce more courses at the ug level

#### Lab Photos







# DBT-ICT CENTRE FOR ENERGY BIOSCIENCES









### **DBT-ICT Centre for Energy Biosciences**

The DBT-ICT Centre for Energy Biosciences (DBT-ICT-CEB) is a unique place that integrates basic and translational science capabilities for bioprocess development and scale up. Funded by The Department of Biotechnology, Ministry of Science and Technology, India, the Centre was established and formally inaugurated in May 2009. Established at a total cumulative cost equivalent to more than USD 15 million, the Centre is a part of the Institute of Chemical Technology (ICT) at Matunga, Mumbai, which is a deemed University under Section 3 of UGC Act 1956. The Centre was set up as a result of vision and efforts of Dr. M. K. Bhan, Secretary DBT and Dr. Renu Swarup, Advisor, DBT, and functions under the leadership of Dr. G. D. Yadav, Vice Chancellor, ICT. The projects and technical programs at the Centre are coordinated by Dr. Arvind Lali. The Centre is focused primarily at developing biotechnologies for deriving biofuels and other products from renewable resources for reducing India's rising dependence on petroleum and cut down greenhouse gas emissions. The Centre believes in building multidisciplinary capacity for development of integrated technology packages.

The Centre successfully completed its first phase of five years in 2013 and was awarded extension of five years by the Department of Biotechnology with the extended mandate of upscaling and upgrading the platform technologies during the first phase.

The Centre for Energy Biosciences has attracted a large number of industrial and academic collaborations as a result of its reputation of conducting cutting edge research and delivering viable and scalable solutions to the biotech industry. The 10 Ton/day biomass pilot plant set up by Industry in the first phase has successfully validated all segments of the novel DBT-ICT Lignocellulosic Ethanol Technology in discontinuous mode. The second phase shall involve integration of all the segments at full capacity in a continuous non-stop flow mode from biomass size reduction to ethanol fermentation. Also during the first phase, the Centre has been able to create and develop cutting edge technologies in the areas of biorefinery development, separation sciences, analytical sciences, enzyme technology, fermentation technology, algal biotechnology and metabolic engineering. The Center aims to continue the work in an intensive mission mode aimed at translation of developed technologies. To achieve its objectives the Centre has entered collaborations with several Industrial Partners and several of the joint initiatives have received federal support exceeding 10 million USD.

The Centre is also part of several national and international academic collaborations (Indo-UK, Indo-Australia, Indo-German, Indo-US and several national projects) with grants amounting to more than

10 million USD under various R&D schemes floated by Ministry of Science and Technology, Government of India. The Centre is in the process of expanding its state-of-art facility by procuring several high-end equipments and instruments that will not only lead to high level contemporary research but also an accelerated development of several more scalable technologies based on the knowledge base generated.

The Kick –off meeting for the BBSRC granted project titled “Cascade processes for integrated bio-refining of agricultural waste in India and Vietnam (CAPRI-BIO) on 30th – 31st May 2017.



The 4th Oversight committee meeting was conducted on 22nd – 23rd May 2017



Workshop organized by DBT for MI-India was conducted by ICT & ICGEB, New Delhi, on “Sustainable Biofuels Challenge” on 9<sup>th</sup> October 2017





Workshop on "Protein-Protein interaction technologies: Bacterial and yeast two hybrid systems & Lecture on "Careers in Biology" by Prof. Peter Uetz, Centre for the Study of Biological Complexity, Virginia Common Wealth University Richmond, VA, USA on 17<sup>th</sup> – 28<sup>th</sup> November 2015.





**Events organized by DBT-ICT Centre for energy Biosciences**  
**Inauguration of extension wing of DBT-ICT CEB by**  
**Honorable Union Minister Dr. Harsh Vardhan on 23rd June 2015**









Concept to Commercialization (C2C) Thought Leadership Symposium on Bioprocessing, 27<sup>th</sup> -28<sup>th</sup> May 2015





Bioprocessing India Event was organized on 17<sup>th</sup> -20<sup>th</sup> December 2014









Science Day Celebration 2011 held on 28<sup>th</sup> February 2011



## 1. Year of establishment – 2009



**2. Is the Department part of a school/faculty of the university? – No**

The Centre is established jointly by Department of Biotechnology (DBT), Government of India and Institute of Chemical Technology.

**3. Names of programmes offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., D.sc., D.Litt., etc.) –**

PG, Ph. D.

**4. Interdisciplinary programmes and departments involved**

| Course                              | Department                                                 |
|-------------------------------------|------------------------------------------------------------|
| M.Tech Bioprocess Technology        | DBT-ICT CEB                                                |
| Ph.D. (Tech.) Bioprocess Technology | Department of Oils, Oleochemicals & Surfactants Technology |
| Ph.D. (Science) BioTechnology       | Department of Chemical Engineering                         |
| Ph.D. (Science) Chemistry           | Department of Food Engineering & Technology                |
| Ph.D. (Tech.) Chemical Engineering  | Department of Pharmaceutical Sciences & Technology         |
| M. Tech Green Technology            | Department of Chemistry                                    |
|                                     | Centre for Green Technology                                |

**5. Courses in collaboration with other universities, industries, foreign institutions, etc.**

No

**6. Details of programmes discontinued, if any, with reasons**

No

**7. Examination system: Annual/Semester/Trimester/ Choice Based Credit System/ Semester Based Credit System**

**8. Participation of the department in the courses offered by other departments**

|                           |                                    |
|---------------------------|------------------------------------|
| Ph.D. (Science) Chemistry | Department of Chemical Engineering |
|---------------------------|------------------------------------|

|                                       |                             |
|---------------------------------------|-----------------------------|
| Ph.D. (Tech.)<br>Chemical Engineering | Department of Chemistry     |
| M. Tech Green<br>Technology           | Centre for Green Technology |

**9. Number of teaching posts sanctioned, filled and actual (Professors/Associate Professors/Asst. Professors/others)**

| Post                        | Sanctioned | Filled   | Actual (including CAS & MPS) |
|-----------------------------|------------|----------|------------------------------|
| <b>Professor</b>            | -          | -        | <b>Nil</b>                   |
| <b>Associate Professors</b> | <b>4</b>   | <b>4</b> | <b>Nil</b>                   |
| <b>Assistant Professors</b> | <b>4</b>   | <b>3</b> | <b>Nil</b>                   |
| <b><u>Others</u></b>        |            |          | <b>Nil</b>                   |
| <b>Research Scientist</b>   | <b>3</b>   | <b>3</b> |                              |
| <b>Research Associate</b>   | <b>1</b>   | <b>1</b> |                              |
| <b>Post-Doctoral Fellow</b> | -          | <b>1</b> |                              |

**10. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance**

| Name                 | Qualification              | Designation                                            | Specialization       | No. of Year of Experience | No. of Ph.D./ M.Tech/M. Chem. students guided for the last 4 years |
|----------------------|----------------------------|--------------------------------------------------------|----------------------|---------------------------|--------------------------------------------------------------------|
| Prof. Arvind M. Lali | Ph.D. Tech.                | Professor of Chemical Engineering<br>Head- DBT-ICT CEB | Chemical Engineering | 32 yrs                    | Ph.D. – 28<br>M.Tech.- 6<br>M.Chem.- 6                             |
| Dr. Sandeep Kale     | Ph.D. Tech. (Chem. Eng.)   | Associate Professor                                    | Chemical Engineering | 8 yrs                     | M.Tech.- 19<br>PhD.- 4                                             |
| Dr. Annamma Odaneth  | Ph. D. Applied Chemistry   | Associate Professor                                    | Biochemistry         | 8 yrs                     | Ph.D. – 4<br>M.Tech.- 4                                            |
| Dr. Reena Pandit     | Ph.D. Marine Biotechnology | Associate Professor                                    | Marine Biotechnology | 7 yrs                     | M.Tech.                                                            |

|                           |                                     |                                                 |                                      |           |    |
|---------------------------|-------------------------------------|-------------------------------------------------|--------------------------------------|-----------|----|
| Dr. Gunjan Prakash        | Ph. D. Plant Biotechnology          | Associate Professor                             | Biotechnology                        |           |    |
| Dr. Manju Sharma          | Ph. D Microbiology                  | Assistant Professor                             | Microbiology                         | 4yrs      | -  |
| Dr. Hitesh Pawar          | Ph. D. Chemistry                    | Assistant Professor                             | Chemistry                            | 3 yrs     | -  |
| Dr. Shamlan MS Reshamwala | Ph. D. Molecular Biology            | Assistant Professor                             | Molecular Biology                    | 4 yrs     | -  |
| Dr. Pooja Joshi           | Ph. D. Plant Biotechnology          | Research Scientist                              | Plant Biotechnology                  | 5 yrs     | -  |
| Dr. Sanjeev K Chandrayan  | Ph. D.                              | DBT-Energy Overseas Fellow (Research Scientist) |                                      | 3 yrs     | -  |
| Dr. Rajeshkumar Vadgama   | Ph. D. Science Biotechnology        | Research Scientist                              | Biotechnology                        | 10 months | -  |
| Dr. Shalini Deb           | Ph. D. Science                      | Research Scientist                              | Molecular Biology                    | 10 months | -  |
| Dr. Mayur Sathe           | Ph.D. Chemical Eng.                 | Research Scientist                              | Chemical Engineering                 | 6 months  | -  |
| Mr. Sandip Kale           | Post Graduate Diploma in Patent Law | Research Associate                              | Patent & IPR                         | 4 yrs     | -  |
| Mr. Deepak Sarda          | M.Tech LLB                          | Research Associate                              | Patent & IPR                         | 2 yrs     | -  |
| Dr. Nitin Trivedi         | Ph.D. Biological Science            | DST Inspire Faculty                             | Microbiology & Seaweed Biotechnology | 2 yrs     | -- |
| Dr. Prathmesh Wadekar     | Ph.D. Science                       | Post - Doctoral Fellow                          | Chemistry                            | 2 yrs     | -  |
| Dr. Sneha Sawant          | Ph.D. Biotechnology                 | Post - Doctoral Fellow                          | Biotechnology                        | 1 month   | -  |
| Dr. Juilee Palkar         | Ph.D. Biotechnology                 | Post - Doctoral Fellow                          | Biotechnology                        | 1 month   | -  |
| Ms. Ritika Srivastava     | Ph.D. Structural                    | Post - Doctoral Fellow                          | Structural Biology                   | 1 month   | -  |
| Dr. Chaitali Vira         | Ph.D. Biotechnology                 | Post-Doctoral Fellow                            | Biotechnology                        | 2 yrs     | -  |

### 11. List of Senior Visiting Fellows, Adjunct faculty, Emeritus Professors

No

### 12. Percentage of classes taken by temporary faculty – programme-wise information

M.Tech. Bioprocess Technology – 60% (faculty at the centre, all of whom are on tenure track basis)

### 13. Programme-wise student Teacher ratio

- M.Tech (Bioprocess Technology) – 4:1
- Ph. D. (Tech.) Bioprocess Technology- 3:1
- Ph.D. (Sci.) Biotechnology – 8:1

### 14. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual

| Sr. No. | Post                     | Sanctioned | Filled |
|---------|--------------------------|------------|--------|
| 1.      | Instrumentation Engineer | 02         | 02     |
| 2.      | Junior Assistant         | 05         | 05     |
| 3.      | Lab Assistant            | 10         | 10     |

### 15. Research thrust areas as recognized by major funding agencies

#### Biomass Deconstruction

Pretreatment is one of the key components in second generation bio-ethanol production contributing ~20% of the total cost, aiming towards producing enzymatically accessible cellulose by breaking lignin and hemicellulose barriers. Most of the processes developed throughout the globe are consolidated and biomass specific (non woody with low lignin content) limiting the commercialization of the same.

Our approach has been to develop a biomass independent process that not only yields high purity cellulose but also produces equally pure xylose and lignin streams, which can act as platform chemicals in numerous applications and not making process limited only to bio-ethanol as an end product. Furthermore, chemicals and reagents are efficiently recovered using advance unit operations with zero waste discharge, reducing overall economics of process

#### Enzyme Technology

The search for better enzymes for targeted activities and integration of processes to harness its potential is the scope of our research. The area of research for is divided into two main segments, namely; Enzyme Engineering and Process Engineering. These two approaches help integrate a rather unique approach in the field of Enzyme Technology, wherein, biotransformation is planned at the

atomic scale, developed at the molecular scale and integrated at the laboratory and pilot scale. The Enzyme engineering module works on in- silico enzyme design followed by applying tools from protein engineering. The work is primarily directed towards the development of enzymes with better physico-chemical properties and for targeted biotransformation problems. The Process Engineering module focuses on reaction engineering, reactor design and process integration and intensification. This unique combination of basic science and engineering principles has helped develop enzyme technologies with better efficiencies and end-product qualities.

The group is currently working on projects that employ enzymes for different fuel, food and pharma applications. The work entails processing agricultural residues and by-products of the agri-industry for valorization. The projects we handle include development of chemical and enzymatic methods and reactor systems for hydrolysing polysaccharides to sugars for fermentation and for nutraceuticals, proteins to bioactive peptides and oils to fatty acids that can be further derivatized for specific applications in food, pharma and lubricant industries.

### **Molecular & Synthetic Biology**

Molecular Biology Group focuses on production of green alternatives to petroleum-derived fuels via bioconversion lignocellulosic biomass (LBM) from a variety of sources. We aim to develop multiple versatile microbial host platforms that will be capable of utilizing all LBM components -sugars, acids and aromatic compounds and converting them into value-added products. Heterologous gene expression and pathway modification form the basis for reprogramming microbial metabolic pathways. By employing recombinant DNA technology, we aim to develop economically viable and sustainable technology for biofuel production. Apart from biofuels, other value added chemicals targeted for bio-production include flavour and fragrance chemicals and building block materials.

### **Fermentation Technology**

Fermentation group at DBT-ICT Centre for Energy Biosciences aims at developing advanced and progressive fermentation strategies for production of bio-based renewable biofuels (ethanol, butanol & Biomethane), industrial chemicals (lactic acid, propionic acid, acetic acid and 2,3-butanediol) and value added products (Vitamin B12, DHA and carotenoids) from sustainable feedstocks like agro-waste residues and other lignocellulosic biomass. The focus is to design commercially scalable advanced fermentation process technologies which are less capital intensive and with high productivities.

Economics of any industrially scalable process is the driving force for commercial success of any new technology and one of the biggest challenges for competing with existing as well as upcoming technologies for various bio-based products. Moving away from traditional batch technologies, development of Advanced Continuous Fermentation Systems is the key to transform industrial biotechnology with enhanced productivities.

### **Algal Biotechnology**

The Algal biotechnology Lab at CEB is working to develop algae as a commercially viable feedstock for renewable energy, feeds, nutraceuticals, bio-products, water conservation, waste water management and CO<sub>2</sub> abatement. It holds a sunlight driven facility to assist all research activities under natural sunlight to facilitate direct translation of lab based results to large scale. The approaches at CEB includes bio-prospecting of algal strains; nutrient and light optimisation; coupling of lignocellulosic derived sugar technology for mixotrophic growth, high value product development; genetic engineering, photobioreactor and raceway system design to develop economically viable methods of producing biofuels and other commodities. The advanced lab research is being scale-up by developing pilot-scale semi-commercial facility of large photobioreactors to support development of innovative, sustainable, and commercially viable algae-based biotechnology solutions for the production of biofuels and bio-products.

### **Separation & Bioprocess Technology**

Downstream processing accounts for major cost (>60%) component in production of biopharma, biologics, pharma, natural, nutraceutical, health supplements, food and feed products or ingredients used for various applications. Therefore process design, development, optimization, validation and scale-up from lab level to commercial plants is taken as key activity in the group. This is achieved through selectivity engineering during designing of bioprocesses, specifically in adsorptive and chromatographic separations, membrane separations, precipitation and crystallization, extraction and distillation as unit operations. Understanding of science underpinning the processes using molecular simulations and mathematical modelling is carried out to arrive at processes having superior objective functions for yield, purity and productivity with low cost (both CAPEX and OPEX). Group specifically deals with extraction and purification of proteins, enzymes, antibodies and hormones, photochemical, nutraceuticals and health supplements, food additives and feed supplements. In the process development high throughput process design (HTPD) tools are used with Quality by Design approach (QbD) to get best operative variables for successful scale up and consistent throughput as well as performance. Development of suitable analytical methods and its validation is another exercise in the group which gives better insight into the process for correct quality assessment and for design of process analytical technology (PAT).

Stability of the product another challenge on which work is being carried out. Conformational and colloidal stabilization of antibodies and other biopharma and biologics is being done to arrive at a strategy for their stabilization by which these products can remain stable even at room temperature and with other stress conditions. Development of new generation adsorbents and transformation of natural products is also carried out to reduce cost of purification and also to get products in minimum number of steps with superior yield and purity. Another dimension is valorisation of agro-products through secondary agriculture (using bioprocessing strategies) is done to obtain value added products. In all cases, process integration and intensification is carried out to benefit the overall manufacture. Thus, process and process equipment design and scale-up from lab level to commercial/full scale plant is carried out for successful translation of technologies at industrial scale.

**16. Number of faculty with ongoing projects from a) national b) international funding agencies and c) Total grants received; give the names of the funding agencies, project title and grants received project-wise.**



**Number of Faculty**

|                     |    |
|---------------------|----|
| Professor           | 01 |
| Associate Professor | 04 |
| Assistant Professor | 03 |
| Research Scientist  | 05 |
| Research Associate  | 05 |

**Ongoing Projects****Government Projects**

| <b>Sr. no.</b> | <b>Title</b>                                                                                                                                                                | <b>Funding Agency</b> | <b>Amount (in lakhs)</b> | <b>Duration</b> |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------------|-----------------|
| 1.             | Biphasic Fermentation for Triacyl Glycerol (TAG) production from pretreated lignocellulosic biomass                                                                         | DBT, India            | 39.84                    | 2017-2020       |
| 2.             | Pilot scale translational facility for value added chemicals from biomass                                                                                                   | DBT-CEB-BIPP          | 50.00                    | 2016-2017       |
| 3.             | Performance and durability improvements in the solar thermal desalination system at Narippaiyur and utilization of reject sea water for algae cultivation to produce biogas | DST-KGDS              | 61.35                    | 2015-2018       |
| 4.             | Integrated biorefinery for production of sorghum seed protein Phase II                                                                                                      | DST-AISRF             | 113.74                   | 2015-2017       |
| 5              | Design of selective nanoporous membrane bioreactor for efficient production of bio- butanol from lignocellulosic sugars                                                     | IGSTC, DST, India     | 115.40                   | 2014-2017       |
| 6              | Centre for Energy Biosciences: New and Extension Proposals                                                                                                                  | DBT, India            | 1800.00                  | 2013-2018       |
| 7              | Energy Biosciences Overseas Fellowship & Chair                                                                                                                              | DBT, India            | 1472.21                  | 2009-2020       |

## Private Projects

| Sr. no. | Title                                                                                                                                                                                                                                                 | Funding Agency                  | Amount (in lakh) | Duration  |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|------------------|-----------|
| 1       | Research development of chloroplast derived enzyme mixtures                                                                                                                                                                                           | Gencrest LLP                    | 136.50           | 2017-2019 |
| 2       | Engineering, Procurement, Construction, Installation, Commissioning and Operation & Maintenance services in the entire hydrocarbon chain with offerings across Upstream, Midstream & Downstream and Pipeline Projects (DBT-ICT-2G Ethanol Technology) | L&T Hydrocarbon Engineering Ltd | 500.00           | 2017-2027 |
| 3       | Developed of improved animal feed ingredient from seed meals                                                                                                                                                                                          | Godrej Agrovet Ltd. II          | 100.00           | 2016-2019 |

- a) Number of Ongoing Projects from National funding agencies: 7
- b) Number of Faculty with Ongoing Projects (national & International): 16
- c) Total Grants Received: 4411.54 Lakhs only

## 17. Inter-institutional collaborative projects and associated grants received

- a) National collaboration
- b) International collaboration

| Sr. No | Title                | Collaboration | Grant Received (INR Lakhs) |
|--------|----------------------|---------------|----------------------------|
|        | <b>International</b> |               |                            |

|    |                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                           |        |
|----|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1. | Design of selective nanoporous membrane bioreactor for efficient production of bio-butanol from lignocellulosic sugars | <ul style="list-style-type: none"> <li>Fraunhofer Institute for Ceramic Technologies &amp; Systems, Hermsdorf Germany</li> </ul>                                                                                                                                                                                                                                                          | 115.40 |
| 2. | Transnational approaches to resolving biological bottlenecks in macroalgal biofuel production                          | <ul style="list-style-type: none"> <li>School of Biological &amp; Biomedical Sciences, Durham Energy Institute, Durham University</li> <li>Centre for Advanced Research in International Agricultural Development (CARIAD), Bangor University</li> <li>Institute of Biological, Environmental and Rural Sciences, Aberystwyth University</li> </ul>                                       | 471.02 |
| 3. | Engineering enzymes, bacteria and bioconversion processes for advanced biofuels from waste grain straw                 | <ul style="list-style-type: none"> <li>Clostridia Research Group/ Life Sciences, University of Nottingham</li> <li>Centre for Novel Agricultural Products, Department of Biology, University of York</li> <li>Institute for Cell and Molecular Bioscience, Newcastle University</li> <li>Faculty Health &amp; life Sciences, Oxford Brookes University</li> </ul>                         | 272.08 |
| 4. | Integrated technologies for economically sustainable bio-based Energy                                                  | <ul style="list-style-type: none"> <li>Centre for Tropical Crops and Biocommodities, Queensland University of Technology, Brisbane, Australia</li> <li>The Centre for Energy, The University of Western Australia, Perth, Australia</li> <li>Department of Chemical Engineering, Curtin University, Perth, Australia</li> <li>New South Wales Department of Primary Industries</li> </ul> | 444.00 |

|     |                                                                                                               |                                                                                                                                                                                                                                                                                                                                     |                                                                                |
|-----|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
|     | <b>National</b>                                                                                               |                                                                                                                                                                                                                                                                                                                                     |                                                                                |
| 5.  | Transnational approaches to resolving biological bottlenecks in macroalgal biofuel production                 | <ul style="list-style-type: none"> <li>CSIR-Central Salt and Marine Chemical Research Institute, Bhavnagar, Gujarat</li> </ul>                                                                                                                                                                                                      | 471.02                                                                         |
| 6.  | Engineering enzymes, bacteria and bioconversion processes for advanced biofuels from waste grain straw        | <ul style="list-style-type: none"> <li>DBT-ICGEB Centre for Advanced Bioenergy Research, New Delhi</li> <li>School of Biotechnology, Jawaharlal Nehru University, New Delhi</li> <li>Department of Genetics, Madurai Kamaraj University</li> </ul>                                                                                  | 272.08                                                                         |
| 7.  | Integrated technologies for economically sustainable bio-based Energy                                         | <ul style="list-style-type: none"> <li>DBT-ICGEB Centre for Advanced Bioenergy Research, New Delhi</li> <li>DBT-IOC Centre for Advanced Bioenergy Research, Faridabad</li> <li>The Energy and Resources Institute, New Delhi</li> <li>National Institute of Interdisciplinary Science and Technology, Thiruvananthapuram</li> </ul> | 444.00                                                                         |
| 8.  | Macroalgal Biorefinery for CO <sub>2</sub> Sequestration and production of biofuel and valued added compounds | <ul style="list-style-type: none"> <li>CSIR-Central Salt and Marine Chemical Research Institute, Bhavnagar, Gujarat</li> <li>Aquagri Processing Private Limited</li> </ul>                                                                                                                                                          | 85.00                                                                          |
| 9.  | Green Enzymatic fat splitting technology for production fatty acids and acyl glycerols                        | <ul style="list-style-type: none"> <li>Acme Synthetic Chemicals</li> </ul>                                                                                                                                                                                                                                                          | 362.66 (industry contribution)<br>850.60<br>(DST contribution as grant to ICT) |
| 10. | Pilot Scale Translational Facility for Value Added Chemicals from Biomass                                     | <ul style="list-style-type: none"> <li>Privi Biotechnologies (P) Ltd.</li> </ul>                                                                                                                                                                                                                                                    | 395.00 (Industry Contribution)<br>390.00                                       |

|     |                                                                          |                                                                         |                                                                                                    |
|-----|--------------------------------------------------------------------------|-------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
|     |                                                                          |                                                                         | (BIRAC, DBT contribution to company as loan)<br>50.00<br>(BIRAC, DBT contribution to ICT as grant) |
| 11. | Lignocellulosic Ethanol Pilot Plant to Integrated Continuous Pilot plant | <ul style="list-style-type: none"> <li>India Glycols Limited</li> </ul> | 862.50 (Industry Contribution)<br>862.50 (BIRAC, DBT contribution to company as loan)              |

**18. Departmental projects funded by DST-FIST; UGC-SAP/CAs, DPE; DBT, ISSR, AICTE, etc.; total grants received**

| Sr. No | Title                                                                                         | Funding Agency | Amount (Rupees in Lakhs) | Duration   |
|--------|-----------------------------------------------------------------------------------------------|----------------|--------------------------|------------|
| 1      | DBT-ICT Centre for Energy Biosciences                                                         | DBT            | 2480.00                  | 2008-2012  |
| 2      | Development of Bioscience and Biotechnology for next generation biofuel                       | DBT            | 196.00                   | 2010-2012  |
| 3      | Extraction, purification of sorghum seed protein for delayed delivery of bioactives           | DBT            | 101.00                   | 2010-2012  |
| 4      | Improved Production of Biogas and Bio-CNG from Lignocellulosic Biomass                        | MNRE, India    | 267.16                   | 2013-2016  |
| 5      | DBT-ICT Centre for Energy Biosciences: New and Extension Proposals                            | DBT, India     | 1800.00                  | 2013-2018  |
| 6      | Extension: Intellectual Property Management and Technology Commercialization (IPM-TC)<br>Unit | BIRAC (DBT)    | 90.00                    | 2013- 2015 |

|    |                                                                                                                                  |                                                          |         |           |
|----|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|---------|-----------|
| 7  | Transnational approaches to resolving biological bottlenecks in macroalgal biofuel production                                    | DBT- BBSRC                                               | 498.41  | 2013-2016 |
| 8  | Engineering enzymes, bacteria and bioconversion processes for advanced biofuels from waste grain straw                           | DBT- BBSRC                                               | 806.76  | 2013-2016 |
| 9  | Integrated technologies for economically sustainable Bio-based Energy                                                            | AISRF Indo-Australia Grand Challenge Program, DST, India | 255.664 | 2013-2016 |
| 10 | Extraction, purification, stabilization and biological studies of natural gonadotropins and other uroproteins                    | SBIRI (BIRAC/DBT)                                        | 22.00   | 2011-2014 |
| 11 | Green Enzymatic Fat-Splitting Technology for Production of Fatty Acids and Acyl Glycerols                                        | DST                                                      | 850.60  | 2014-2016 |
| 12 | MacroAlgal Biorefinery for CO2 Sequestration and Production of Biofuel and Value-added Compounds                                 | DSIR                                                     | 85.00   | 2014-2016 |
| 13 | Design of Selective nanoporous membrane bioreactor for efficient production of bio-butanol from lignocellulosic sugars (SeNaMeB) | IGSTC                                                    | 115.40  | 2014-2017 |
| 14 | Integrated Biorefinery for Production of Sorghum Grain protein                                                                   | DBT                                                      | 113.74  | 2015-2017 |
| 15 | Energy Biosciences Chairs & Energy Biosciences Overseas Fellowship                                                               | DBT                                                      | 1472.21 | 2010-2020 |
| 16 | Development and Characterization of Alternative Affinity Adsorbent for Purification of Therapeutic Antibodies                    | DBT                                                      | 68.468  | 2013-2016 |
| 17 | Pilot scale translational facility for value added chemicals from biomass                                                        | DBT-SBIRI, DBT, India                                    | 22.50   | 2013-2015 |
| 18 | Biphasic fermentation for triacyl glycerol (TAG) production from pre-treated lignocellulosic biomass                             | DBT, India                                               | 1800.00 | 2013-2018 |



|    |                                                                                                                                                                             |            |         |           |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------|-----------|
| 19 | Performance and durability improvements in the solar thermal desalination system at Narippaiyur and utilization of reject sea water for algae cultivation to produce biogas | DBT, India | 1472.21 | 2009-2020 |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------|-----------|

**19. Research facility / centre with**

- ✓ state recognition
- ✓ national recognition

**20. Special research laboratories sponsored by / created by industry or corporate bodies research laboratories sponsored by:**

GE Healthcare, Agilent Technologist India Pvt. Ltd.

**21. Publications:**

**Number of papers published in peer reviewed journals (national/international) - 146**

**Monographs - Nil Chapter Books- 9 edited Books - Nil**

**Books with ISBN with details of publishers - Nil**

**Number listed in International Database (for e.g. Web of science, Scopus Humanities International Complete, Dare Database - International social sciences Directory, EBSCO host, etc.) - Nil**

**Citation Index – range / average - 3-1040**

**Impact factor – range / average - 07-5.0**

**h-index - 16-238**

**22. Details of patents and income generated**

**PATENTS GRANTED**

| Sr. No. | Title                                        | Patent no.                                                   | Inventors                                                                                                       | Income generated |
|---------|----------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|------------------|
| 1       | Enzymatic Process For Fat And Oil Hydrolysis | SG11201404463P<br>AU2013213921<br>JP2014-553823<br>US9512451 | Lali Arvind<br>Mallinath; Odaneth<br>Annamma Anil;<br>Vadgama Rajesh<br>Natwarlal;<br>Tribhuvan Nikhil<br>Vilas | NIL              |
| 2       | Method For Production Of                     | • US8709763 (US-DIV-I); 2009                                 | Lali Arvind<br>Mallinath; Odaneth                                                                               | 500+162.50L      |

|   |                                                                                        |                                                                                                                                                                                                                             |                                                                                                                                                                                       |     |
|---|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
|   | Fermentable Sugars From Biomass                                                        | <ul style="list-style-type: none"> <li>• US8338139; 2009</li> <li>• US8673596 (US-DIV-II); 2009</li> <li>• BD1005172; 2009</li> <li>• PK141809; 2009</li> <li>• ZA2011/09250; 2012</li> <li>• AU2010252547; 2015</li> </ul> | Annamma Anil; Nagwekar Pooja Devidas; Varavadekar Jayesh Suman; Wadekar Prathamesh Chandrashekher; Gujarathi Swapnali Subhash; Valte Rajeshwar Dattatraya; Birhade Sachinkumar Hirama |     |
| 3 | Continuous Counter Current Fluidized Moving Bed (FMB) And/Or Expanded Moving Bed (EMB) | <ol style="list-style-type: none"> <li>1. CN201080020354.2; 2015</li> <li>2. CA2754700; 2015</li> <li>3. ZA10-1370986; 2014</li> <li>4. US 8673225; 2009</li> </ol>                                                         | Lali Arvind Mallinath; Kale Sandeep B; Pakhale Vinod D; Thakare Yogeshwar N.                                                                                                          | -   |
| 4 | Process for Fractionation of Biomass                                                   | <ol style="list-style-type: none"> <li>1. JP2013-513816; 2015</li> <li>2. ZA2013/00133; 2010</li> </ol>                                                                                                                     | Lali Arvind Mallinath; Varavadekar Jayesh Suman; Wadekar Prathamesh Chandrashekher                                                                                                    | NIL |

#### PATENTS FILED AND/OR IN PROCESS OF PROSECUTION

| # No. | Title                                             | Patent no.   | Inventors                                                                   | Income Generated |
|-------|---------------------------------------------------|--------------|-----------------------------------------------------------------------------|------------------|
| 1.    | Ammonia assimilation by recombinant microorganism | 201721023070 | Deb Shalini Subir; Reshamwala Shamlan Mohammed Shafi; Lali Arvind Mallinath | NIL              |

|    |                                                                                                                      |                                       |                                                                                                                                                    |                        |
|----|----------------------------------------------------------------------------------------------------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| 2. | Extractive production of microbial oil using oleaginous yeasts                                                       | 201721013545                          | Lali Arvind Mallinath; Odaneth Annamma Anil; Pawar Pratik Prashant; Warke Mrunal Anil; Vadgama Rajeshkumar Natwarlal; Chourasia, Vallari Ramesh    | NIL                    |
| 3. | Genetically modified microorganism and process for production of zeaxanthin therefrom                                | 201721011982                          | Lali Arvind Mallinath; Pandit Reena; Sarnaik Aditya; Rai Peeyush Shekhar                                                                           | NIL                    |
| 4. | Process for treating liquid industrial effluents to produce clean water and recovering pollutants for value addition | 201721002215                          | Lali Arvind Mallinath; Pawar Hitesh Suresh                                                                                                         | NIL                    |
| 5. | Process for purification and refining of glycerol                                                                    | 201621000574<br>PCT/IN2017/05<br>0013 | Kale Sandeep Bhaskar; Lali Arvind Mallinath; Patel Bhavin Manubhai Jha Pamela; Gupta Vinod; Kohli Ashwani Kumar; Mital Vineet                      | 100L+ROYALTY FOR 10YRS |
| 6. | A process for generation of biogas from organic matter via its liquefaction to biocrude                              | 201621030327<br>PCT/IN2017/05<br>0385 | Lali Arvind Mallinath; Sharma Manju; Pawar Hitesh Suresh; Gore Suhas                                                                               | NIL                    |
| 7. | Enzymatic hydrolysis process for production of fermentable sugars                                                    | 201621030093<br>PCT/IN2017/05<br>0382 | Lali Arvind Mallinath; Odaneth Annamma Anil; Victoria Juliet Joanna; Choudhari Vikram Gunvant; Mahadik Chinmayee Ramray; Sawant Sneha Chandrakant; | NIL                    |

|     |                                                                                                                           |                                       |                                                                                                                                                 |                         |
|-----|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
|     |                                                                                                                           |                                       | Khairat Mayur<br>Basavraj; Birhade<br>Sachinkumar<br>Hiraman                                                                                    |                         |
| 8.  | A catalytic liquefaction (CTL) method for production of bio-crude oil using ionic liquid catalyst and preparation thereof | 201621025317<br>PCT/IN2017/05<br>0303 | Lali Arvind<br>Mallinath; Pawar<br>Hitesh Suresh;<br>Shravan sreenivasan                                                                        | NIL                     |
| 9.  | A novel glucose tolerant glucosidase enzyme (Mbgl)                                                                        | 201621022859                          | Lali Arvind<br>Mallinath;<br>Chandrayan Sanjeev<br>Kumar; Sathe<br>Sneha; Soni<br>Suarabhi                                                      | NIL                     |
| 10. | Continuous process for production of Vitamin B12                                                                          | 201621017230<br>PCT/IN2017/05<br>0190 | Lali Arvind<br>Mallinath; Prakash<br>Gunjan; Pillai Vijita<br>V.                                                                                | NIL                     |
| 11. | Suspended cultivation of macroalgae in photobioreactor                                                                    | 201621013008                          | Lali Arvind<br>Mallinath; Pandit<br>Reena Ajit; Mhatre<br>Akanksha Devinath;<br>Navale Mahesh<br>Maruti                                         | NIL                     |
| 12. | Photosynthetic microorganisms mediated rapid wastewater treatment using continuous photobioreactor                        | 201621011795                          | Lali Arvind<br>Mallinath; Pandit<br>Reena Ajit; Palkar<br>Juilee Ajit; Navale<br>Mahesh Maruti                                                  | NIL                     |
| 13. | Process for detoxification and improvement of seed meals, cakes and other products                                        | 201621011034                          | Kale Sandeep<br>Bhaskar; Lali<br>Arvind Mallinath;<br>Febin Pappachen;<br>Susmita Koley;<br>Narkhed Pitamber<br>Narayan; Naik<br>Rajesh Kasanji | 100L+ROYALTY FOR 10 YRS |
| 14. | Process For Production Of Pure Glucose From Cellulose                                                                     | 2782/MUM/<br>2015                     | Lali Arvind<br>Mallinath;<br>Odaneth<br>Annamma Anil;<br>Victoria Juliet<br>Joanna; Choudhari<br>Vikram Gunvant;                                | NIL                     |

|     |                                                                                             |                                                    |                                                                                                                                                                                    |     |
|-----|---------------------------------------------------------------------------------------------|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
|     |                                                                                             |                                                    | Wadekar<br>Prathamesh<br>Chandrashekhar;<br>Patil Mallikarjun<br>Laxmiputra; Patil<br>Parmeshwar<br>Shivajirao;<br>Asodekar Bhupal<br>Ravindra; Prakash<br>Indra; Huang<br>Xiaoyan |     |
| 15. | A Method For Production Of Isoprenoids By MEP Pathway In Engineered Pseudomonas Putida      | 2666/MUM/<br>2015                                  | Lali Arvind<br>Mallinath; Aruna<br>Mahesh; Krishnan<br>Archana                                                                                                                     | NIL |
| 16. | Separation Of Organic Acid From Mixtures Containing Ammonium Salt Of Organic Acids          | 2090/MUM/<br>2015                                  | Lali Arvind<br>Mallinath; Maurya<br>Ritu Rahul                                                                                                                                     | NIL |
| 17. | A Novel Shuttle Vector With Reversible And Extendable Modules For Engineering Of Host Cells | 3507/MUM/<br>2014                                  | Lali Arvind<br>Mallinath; Bajawa<br>Arjun Singh;<br>Matlani Rekha<br>Khushiramani                                                                                                  | NIL |
| 18. | Constructs For Gene Expression And Integration In Host Cell 2014                            | Indian<br>Application<br>No.:<br>3506/MUM/<br>2014 | Lali Arvind<br>Mallinath; Deb<br>Shalini;<br>Reshamwala<br>Shamlan M.S.                                                                                                            | NIL |
| 19. | Algal Variants Produced By Genome Shuffling                                                 | 1940/MUM/<br>2014<br>Inventors:                    | Lali Arvind<br>Mallinath; Prakash<br>Gunjan; Shukla<br>Bhavya; Vira<br>Chaitali; Rathod<br>Jayant Pralhad.                                                                         | NIL |
| 20. | Enzymatic Production Of Monoacylglycerol From Oil                                           | 1583/MUM/<br>2014                                  | Inventors: Lali<br>Arvind Mallinath;<br>Odaneth<br>Annamma Anil;<br>Vadgama Rajesh<br>Natwarlal;<br>Tribhuvan Nikhil<br>Vilas                                                      | NIL |
| 21. | Enzymatic Process For Synthesis Of Fatty Acid                                               | 1526/MUM/<br>2014                                  | Inventors: Lali<br>Arvind Mallinath;                                                                                                                                               | NIL |

|     |                                                                                                                     |                                             |                                                                                                                                                                              |     |
|-----|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
|     | Ester Of Polyols                                                                                                    |                                             | Odaneth<br>Annamma Anil;<br>Yadav Manish<br>Gyanendra.                                                                                                                       |     |
| 22. | A Process For<br>Fractionation Of<br>Oligosaccharides From<br>Cereal Bran                                           | 155/MUM/<br>2014;<br>PCT/IB2015/<br>000030  | Lali Arvind<br>Mallinath;<br>Odaneth<br>Annamma Anil;<br>Pednekar Mukesh<br>Prabhakar                                                                                        | NIL |
| 23. | A Process For Production<br>Of Soluble Sugars From<br>Biomass                                                       | 154/MUM/<br>2014;<br>PCT/IB2015/<br>000034  | Lali Arvind<br>Mallinath;<br>Odaneth<br>Annamma Anil;<br>Birhade<br>Sachinkumar<br>Hiraman; Victoria<br>Juliet Joanna;<br>Sawant Sneha<br>Chandrakant.                       | NIL |
| 24. | Process For Extraction Of<br>Polyphenols From<br>Biomass                                                            | 3808/MUM/<br>2013                           | Lali Arvind<br>Mallinath;<br>Odaneth<br>Annamma Anil;<br>Pednekar Mukesh<br>Prabhakar; Singh<br>Niteshkumar<br>Satish; Rathi<br>Abhijit; Iyer<br>Padmini;<br>Deshmukh Sharad | NIL |
| 25. | Recombinant E. Coli<br>Strain And Process For<br>Production Of Mannitol<br>Therefrom                                | 3807/MUM/<br>2013                           | Lali Arvind<br>Mallinath;<br>Reshamwala<br>Shamlan M.S.                                                                                                                      | NIL |
| 26. | Process For Synthesis Of<br>Furan Derivatives From<br>Saccharides Using Acid<br>Catalyst And Preparation<br>Thereof | 3664/MUM/<br>2013;<br>PCT/IB2014/0<br>02537 | Lali Arvind<br>Mallinath; Pawar<br>Hitesh Suresh                                                                                                                             | NIL |
| 27. | Multistage Membrane<br>Tree Model For<br>Separation Of Binary<br>Mixtures                                           | 2478/MUM/<br>2013                           | Lali Arvind<br>Mallinath; Valte<br>Rajeshwar<br>Dattatraya                                                                                                                   | NIL |



|     |                                                                                                                    |                                |                                                                                                                                                             |                                                                                                                      |
|-----|--------------------------------------------------------------------------------------------------------------------|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| 28. | A Process For Immobilization Of Microbial Cells For Biotransformation                                              | 3291/MUM/2012                  | Lali Arvind Mallinath; Mule Abhishek Dilip; Sawdekar Parikshit Rameshwar; Degweker Gautam Shashikant.                                                       | NIL                                                                                                                  |
| 29. | Process For Extraction And Purification Of Pentacyclic Triterpene Acid/S In High Yield And Purity                  | 2172/MUM/2012                  | Lali Arvind Mallinath; Kale Sandeep Bhaskar; Amritkar Vinod Dattatray                                                                                       | NIL                                                                                                                  |
| 30. | Raceway Pond System For Increased Biomass Productivity                                                             | 1705/MUM/2012;<br>WO2013186626 | Lali Arvind Mallinath; Pandit Reena; Prakash Gunjan; Mathapati Channamallikarjun; Gangal Swanand; Vira Chaitali; Palkar Juilee; Patil Smita; Gaikwad Sujata | NIL                                                                                                                  |
| 31. | A Process For Recovery Of Xylitol With High Yield And Purity                                                       | 421/MUM/2012                   | Lali Arvind Mallinath; Kale Sandeep Bhaskar; Kadam Sandip                                                                                                   | NIL                                                                                                                  |
| 32. | Process For Production Of Purified Hydrophobic/Plastifiable Protein/S, Their Hydrolysate/S And Applications Thereo | 420/MUM/2012                   | Lali Arvind Mallinath; Kale Sandeep Bhaskar; Kumar Prashant; Mane Sharmilee                                                                                 | NIL                                                                                                                  |
| 33. | Enzymatic Process For Fat And Oil Hydrolysis                                                                       | WO2013114178; 278/MUM/2012     | Lali Arvind Mallinath; Odaneth Annamma Anil; Vadgama Rajesh; Warke Mrunal; Bhat Anuradha                                                                    | Pilot plant being constructed for Demonstration with DST support<br>Total project cost = 850.60 L+362.50L = 1213.10L |
| 34. | A Process For Isolation Of Natural & Bioactive Proteins And Other Minor Components From                            | 3577/MUM/2010                  | Lali Arvind Mallinath; Odaneth Annamma Anil;                                                                                                                | Pilot plant being constructed for Demonstration with Kanoria                                                         |

|  |                            |  |                                                                                 |                                                                                    |
|--|----------------------------|--|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|  | Defatted Oil Seed Material |  | Iyer Padmini Raju; Ghosh Bidisha; T. D. Anupama; Rathi Abhijit; Deshmukh Sharad | Chemicals, Vizag.<br><br>ICT payment of 50.00L for the demonstration of technology |
|--|----------------------------|--|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------|

### 23. Areas of consultancy and income generated

#### A.2012-2013

| Sr. No. | Name of the Company     | Name of the Faculty | Period of Consultancy | Total Consultancy Amount | Faculty share   | ICT share      |
|---------|-------------------------|---------------------|-----------------------|--------------------------|-----------------|----------------|
| 1.      | M/s.Privi Organics Ltd. | Prof. Arvind M.Lali | 1 Year                | Rs.18,00,000.00          | Rs.12,00,000.00 | Rs.6,00,000.00 |

#### B.2013-2014

| Sr. No. | Name of the Company                      | Name of the Faculty | Period of Consultancy | Total Consultancy Amount | Faculty share  | ICT share      |
|---------|------------------------------------------|---------------------|-----------------------|--------------------------|----------------|----------------|
| 1.      | M/s.Camlin Fine Sciences Ltd.            | Prof. Arvind M.Lali | 1 Year                | Rs.10,00,000.00          | Rs.6,66,667.00 | Rs.6,00,000.00 |
| 2.      | M/s.Camlin Fine Sciences Ltd.            | Dr. Annamma Anil    | 1 Year                | Rs.5,00,000.00           | Rs.3,33,333.00 | Rs.1,66,667.00 |
| 3.      | M/s. Abhay Cotex Pvt. Ltd.               | Dr. Sandeep Kale    | 6 months              | Rs.7,20,000.00           | Rs.4,80,000.00 | Rs.2,40,000.00 |
| 4.      | M/s. Mitsubishi Chemical India Pvt. Ltd. | Dr. Sandeep Kale    | 6 months              | Rs.98,697.00             | Rs.65,798.00   | Rs.32899.00    |

#### C.2014-2015

| Sr. No. | Name of the Company | Name of the Faculty | Period of Consultancy | Total Consultancy Amount | Faculty share | ICT share |
|---------|---------------------|---------------------|-----------------------|--------------------------|---------------|-----------|
|---------|---------------------|---------------------|-----------------------|--------------------------|---------------|-----------|

|    |                                              |                     |          |                 |                 |                |
|----|----------------------------------------------|---------------------|----------|-----------------|-----------------|----------------|
| 1. | M/s.Warden International (Agencies) Pvt.Ltd. | Prof. Arvind M.Lali | 3 months | Rs.9,00,000.00  | Rs.6,00,000.00  | Rs.3,00,000.00 |
| 2. | M/s.Kanoria Chemicals & Industries Ltd.      | Prof. Arvind M.Lali | 1 year   | Rs.15,00,000.00 | Rs.10,00,000.00 | Rs.5,00,000.00 |
| 3. | M/s.Kanoria Chemicals & Industries Ltd.      | Dr.Annamma Anil     | 1 year   | Rs.10,00,000.00 | Rs.10,00,000.00 | Rs.5,00,000.00 |
| 4. | M/s.Catapro Technologies                     | Dr.Sandeep Kale     | 7 months | Rs.8,00,000.00  | Rs.5,33,333.00  | Rs.2,66,667.00 |

#### D.2015-2016

| Sr. No. | Name of the Company                      | Name of the Faculty | Period of Consultancy | Total Consultancy Amount | Faculty share | ICT share    |
|---------|------------------------------------------|---------------------|-----------------------|--------------------------|---------------|--------------|
| 1.      | M/s.Mitsubishi Chemicals India Pvt. Ltd. | Dr. Sandeep B.Kale  | 2 months              | Rs.75,600.00             | Rs.50,400.00  | Rs.25,200.00 |

#### E.2016-2017

| Sr. No. | Name of the Company     | Name of the Faculty | Period of Consultancy | Total Consultancy Amount | Faculty share | ICT share   |
|---------|-------------------------|---------------------|-----------------------|--------------------------|---------------|-------------|
| 1.      | Godrej Agrovet Pvt.Ltd. | Prof.A.M. Lali      | 1 Yr                  | 25,00,000.00             | 10,00,000.00  | 3,33,333.00 |
| 2.      | Godrej Agrovet Pvt.Ltd. | Dr. Sandeep Kale    | 1Yr                   | 25,00,000.00             | 15,00,000.00  | 5,00,000.00 |

#### 24. Faculty selected nationally/ internationally to visit other laboratories/ institutions/ Industries in India and abroad

- **Dr. Reena Pandit** Awarded the prestigious Bioenergy-Awards for Cutting Edge Research (B-ACER) Fellowship supported by Department of Biotechnology (DBT) & Indo-US Science & Technology Forum (IUSSTF) at Arizona State University, USA 2016

- **Prof A. M. Lali** was selected to be a part of the delegation to US for assessment of New technologies in Alternate Energy – Potential for India
- **Prof A. M. Lali** was selected to be part of the Project Review Monitoring Committee (PRMC) for “pre-clarification of molasses to improve the performance of alcoholic fermentation”
- **Prof A. M. Lali** presented The ICT mandate in the Indo Australia Grand challenge project to **Hon’ble Prime Minister Narendra Modi** at Brisbane 2014
- **Dr. Sandeep B. Kale** – Beyond Antibodies, Bangalore under TEQIP Programme
- **Dr. Gunjan Prakash** was selected for Indo-Queensland early career Fellowships 2012 by DBT and Queensland Government.
- **Dr. Annamma A Odaneth** was invited by Prof (Dr.) De-Xin Kong, Centre for Bioinformatics, College of Informatics, Huazhong Agricultural University, Wuhan, China from 22nd April 2015 to 25th April 2015.
- **Prof A.M.Lali and Dr. Annamma Odaneth** were invited to AICTE sponsored summer school at KIT, Kolhapur.
- **Dr. Annamma Odaneth** was selected as a resources person for the workshop on “bioinformatics and its applications in genomics and Proteomics at Hyderabad on 6<sup>th</sup>-7<sup>th</sup> October 2015

## 25. Faculty serving in

a) National committees b) International committees c) Editorial Boards d) any other (please specify)

### **Prof. Arvind M. Lali**

- Member, core group of scientists in the area of Bioenergy with Ministry of New and Renewable Energy, Government of India.
- Member, Department of Biotechnology, Ministry of S&T of India Task Force in Biofuels,  
Algal Biotechnology and Bioproducts and  
Bioprocesses
- Member, Apex Committees, Food and Nutritional Safety, DBT, India.
- Member, Task Force Committees on Biofuels, Bioprocesses and Bio-products, DBT, India.
- Member of the Scientific Advisory Committee (SAC) on Industrial Biotechnology
- Member, Biotech Research Society of India (BRSI)
- Member, Research Council Committee, IMTECH, Chandigarh
- Consultant to a number of companies in India & abroad for chemical/biochemical &

biopharmaceutical/pharmaceutical manufacturing

- Research Council as a Scientific Expert/Member for Bharat Petroleum Corporation Ltd. (BPCL), 2016-2018
- Member, Scientific Advisory Committee (SAC), Centre of Innovative and Applied Bioprocessing (CIAB), Mohali

**Dr. Sandeep Kale**

- Member, Indian Pharmaceutical Association (IPA)
- Member, Board of Governor (BOG), UDCT Alumni Association (UAA), 2012-2015
- Member, Biotech Research Society of India (BRSI)
- Dr. PD SETHI Award for Best Paper Publication, 2012

**Dr. Annamma A Odaneth**

- Member, Biotech Research Society of India (BRSI)
- DBT Nominee, (IBSC) for Advanced Enzyme Technologies Ltd.

**Dr. Gunjan Prakash**

- Member, Biotech Research Society of India (BRSI)

**Dr. Reena Pandit**

- Member, Biotech Research Society of India (BRSI)

**Dr. Manju Sharma**

- Member, Biotech Research Society of India (BRSI)

**Dr. Shamlan Reshamwala**

- Member, Biotech Research Society of India (BRSI)

**26. Faculty recharging strategies (UGC, ASC, refresher / orientation programs, workshops, training programs and similar programs)**

- Prof. A.M. Lali attended I Biofuture Summit at Sao Paulo on 24th -25th October 2017
- Prof. A.M.Lali attended 6<sup>th</sup> International Conference on “Lignocellulosic Ethanol” held at Brussels, Belgium on 25<sup>th</sup>-29 September 2017
- Prof.A.M.Lali, & Dr. Annamma Odaneth participate in CEM & MI2 Technology Exhibition held at Beijing, China on 5<sup>th</sup>-9<sup>th</sup> June 2017
- Prof.A.M.Lali participated in “Rice Research Summit: What can we learn from each other? At York, U held on 23<sup>rd</sup>-24<sup>th</sup> February 2017
- Prof. A. M. Lali participate in workshop on “Creating Investment Avenues on setting up of a second generation (2G) Ethanol project by Oil PUSs” held at New Delhi on 3<sup>rd</sup>

November 2016

- Dr. Sandeep Kale attended the Bioprocessing India 2016 at Mohali
- Dr. Shamlan Reshamwala attended the short term course on ‘Contemporary strategies for teaching and evaluation
- Prof A. M. Lali, Dr. Annamma Odaneth, Dr. Gunjan Prakash, Dr. Shamlan Reshamwala, Dr. Sanjeev Chandrayan, Dr. Aruna Mahesh & Dr. Chaitali Vira participate UK-India workshop on Industrial Biotechnology held on 12<sup>th</sup> September 2016.
- Dr. Reena Pandit Awarded prestigious Bioenergy awards for cutting edge research fellowship and to work with Prof. Peter Lammers at The Arizona Centre for Algae Technology and Innovation, Arizona, USA for August –October 2016.
- Dr. Nitin Trivedi attended workshop on "Synthetic and Systems Biology Applications in Bioenergy" held on 29 Feb -9 March at ICGEB, New Delhi.
- Prof A.M. Lali, Dr. Reena Pandit, Dr. Gunjan Prakash, Dr. Nitin Trivedi and Dr. Chaitali Vira attended a workshop on Advances in Algal Biotechnology held at IIT, Bombay on November 21, 2015
- Dr. Pooja Joshi and Mr. Sandip Kale attended FICCI-EBTC workshop on The European Patent System and EPO examination practice in the field of Pharmaceuticals and Biotechnology and Commercialization of IP on 5<sup>th</sup> October 2015.
- Prof A.M. Lali and Dr. Reena Pandit attended Seaweed Cultivation and Breeding and European Seaweed Production and Marketability Courses at Scottish Association for Marine Science conducted by the Scottish Marine Institute, Scotland from 11<sup>th</sup> - 14<sup>th</sup> May 2015.
- Honing Mentioning Skills- A Holistic Approach, From 5-9 May, 2014
- Bioprocessing India, December 2014
- Lecture series entitled “An introduction to metabolic modeling and its applications” Prof. David Fell, Professor of Systems Biology, Dr. Mark Poolman and Dr. Hassan Hartman, Oxford Brookes University, UK was conducted in January 23, 2015
- Dr. Reena Pandit attended the DBT Inter-Ministerial workshop on Quality Feedstock for Biodiesel “Algae: Potential next generation feedstock for biodiesel”, TERI, July 2015
- Dr. Gunjan Prakash, Dr. Aruna Mahesh, Dr. Ashish Misra, Dr. Aruna Goenka Agarwal and Dr. Rupali Walia attended Indo- US workshop and Conference in Systems & Synthetic Biology, JNU, 2014
- Dr. Reena Pandit attended the Hands on training and workshop Algal Biotechnology, “Challenges for growing next generation natural solutions for bio-fuels”, Vaze Kelkar College, May 2015.



Dr. Shamlan Reshawala attended a national seminar on 'Fungi in Biotechnology' organized by Department of Botany, SIES College and Mycological Society of India, Mumbai unit, on 28th-29th November 2014.

- Dr. Manju Sharma attended the Workshop for Grand Challenges India Recent Call on "All Children Thriving" under the DBT-BIRAC- BMGF Partnership on 14<sup>th</sup> November 2014 at ICT, Mumbai.
- Dr. Gunjan Prakash and Dr. Reena Pandit attended Indo-UK Scientific Seminar 'Prospects and Challenges in Algal Biotechnology' February 19-21, 2014, IIT-Gauwhati, India
- Dr. Reena Pandit and Dr. Gunjan Prakash attended Indo US workshop on "Cyanobacteria: Molecular Networks to Biofuels". 16<sup>th</sup> - 20<sup>th</sup> December 2013, Lonavla, India
- Dr. Pamela Jha attended the Workshop on "Concept 2 Commercialization Clone 2 Clinic Culture 2 Chromatography" jointly organized by ICT and GE, Mumbai, May 27<sup>th</sup> - 28<sup>th</sup> 2015.
- Dr. Pamela Jha attended the Workshop on "Advanced Techniques on Anti- cancer drug evaluation" organized by ACTREC, Navi Mumbai, Nov 3<sup>th</sup> -7<sup>th</sup>, 2014.
- Dr. Pamela Jha attended the Workshop on "IPR: A Strategic Tool to Transform Innovations into Technologies" organized by Department of Pharmaceutical Sciences & Technology, Institute of Chemical Technology, Mumbai, Sept 6, 2014.
- Dr. Rupali Walia attended 11th Management Capacity Enhancement Program for TEQIP Institutions at IIM-Kozhikode from 20<sup>th</sup> - 25<sup>th</sup> July 2015
- Dr. Rupali Walia attended International Training Programme On Leadership And Career Development for Women Scientists and Technologists ( 28<sup>th</sup> Aug -1<sup>st</sup> Sep 2015, Pune)
- Dr. Annamma Odaneth attended the different seminars and hands on session at "Protein- protein interaction technologies: Bacterial and yeast two-hybrid systems and their applications in combination with mass spectrometry and bioinformatics" from November 17<sup>th</sup> -27<sup>th</sup>, 2015

## **27. Student projects**

- Percentage of students who have done in-house projects including inter-departmental projects 54%
- Percentage of students doing projects in collaboration with other universities/industry institute 46%

## **28. Awards / recognitions received at the national and international level by faculty**

**Prof. Arvind M. Lali**

- Awarded “G.M.Marve” Prize for Most Research Oriented Group during 2016-17 by Institute of Chemical Technology, Mumbai
  - Science and Technology "Eminent Scientist" Award by KG Foundation, Coimbatore, 2016.
  - BIRAC Innovator Award 2016 by DBT & Chairman BIRAC, 2016.
  - UAA-ICT Distinguished Alumnus Awards in Academic, 2015.
  - Vasvik Award in Biological Sciences & Technology by Vividhlaxi Audyogik Samshodhan Vikas Kendra, Mumbai, 2013
  - IChE Sartorius India Chemcon Distinguished Speaker, 2008
  - Fellow, Maharashtra Academy of Sciences, 2007
  - IChE NOCIL award for excellence in design or development of process plant or equipment, 2006
  - Several awards for best poster presentations and for best oral presentations
- Resource person, Summer Winter School Scheme (SWSS) Kolhapur Institute of Technology's College of Engineering and to deliver lecture on 6<sup>th</sup> June 2015.
- Head, DBT-ICT Centre for Energy Biosciences
  - Chairman, TEQIP Industry Institute Interaction Cell
  - Chairperson : Research Recognition Committee (Bioprocess Technology)
  - Chairperson: Research Recognition Committee (Biological Sciences)

#### **Dr. Sandeep Kale**

- Resource person, Summer Winter School Scheme (SWSS) Kolhapur Institute of Technology's College of Engineering and to deliver lecture on 6<sup>th</sup> June 2015.
- Chair and Convener, Bioprocessing INDIA 2014 conference, 17<sup>th</sup> - 20<sup>th</sup> December 2014
- Consultant to Catapro Technologies, Nashik, 2014
- Resource person, faculty development program, PSG, Coimbatore

#### **Dr. Annamma A Odaneth**

- Resource person, Summer Winter School Scheme (SWSS) Kolhapur Institute of Technology's College of Engineering and to deliver lecture on 6<sup>th</sup> June 2015.
- Resource person for seminars conducted at Biomass And Bioenergy Research Center, National Key Laboratory Of Crop Genetic Improvement, Huazhong Agricultural University, Wuhan, Hubei, China on 23<sup>rd</sup> April 2015
- Resource person for Refresher Course in Biosciences on January 12, 2015 at - 'New

Era in Biological Sciences’ at the Birla College of Arts, Science and Commerce, Kalyan under the aegis of UGC-Academic Staff College, University of Mumbai.

- Resource person for seminar on “Transforming enzymatic transformations” on Institute of Biological, Environmental and Rural Sciences, Aberystwyth University, UK. on 21<sup>st</sup> November 2014

#### Doctoral / post doctoral fellows

| Sr. No | Name              | Award                                                                                                                                                                                         |
|--------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1      | Akanksha Agarwal  | Top 20 finalists in BEST-ABLE, 2015                                                                                                                                                           |
| 2      | Arjun Singh Bajwa | 2nd prize at BEST-ABLE, 2015                                                                                                                                                                  |
| 3      | Sneha Sawant      | Best poster award at Accelerating Biology C-DAC, 2014                                                                                                                                         |
| 4      | Hiral Shukla      | Young Scientist, Bioprocessing India, 2014                                                                                                                                                    |
| 5      | Shalini Deb       | Best poster award at Indo- US workshop and Conference in Systems & Synthetic Biology, JNU, 2014                                                                                               |
| 6      | Snehal Agrawal    | 1 <sup>st</sup> Bioprocessing India 2014                                                                                                                                                      |
| 7      | Lucy Nainan       | 2nd prize for poster at Bioprocessing India, 2014                                                                                                                                             |
| 8      | Sneha Sawant      | Best poster award at Young Researchers’ Conference, 2013                                                                                                                                      |
| 9      | Prashant Kumar    | 1 <sup>st</sup> Prize best poster at NHBT, Patiala 2012                                                                                                                                       |
| 10     | Gautam Degweker   | International Conference on Yeast Biology, IIT Mumbai, 10 December 2011<br>1st Prize for poster                                                                                               |
| 11     | Bhavin Patel      | Basics of Nanotechnology and its application 2014, CIRCOT, Mumbai.<br>Young Innovator in Bioprocessing - 2014,                                                                                |
| 12     | Sushmita Koley    | First prize in poster presentation in Healthcare & Nutrition, Bioprocessing India 2014                                                                                                        |
| 13     | Snehal Agrawal    | Third prize in oral presentation in Healthcare & Nutrition, Bioprocessing India 2014                                                                                                          |
| 14.    | Febin Pappachan   | First prize in poster presentation in Healthcare & Nutrition, Bioprocessing India 2014                                                                                                        |
| 15     | Mrunal Warke      | Won best poster award at 2nd International Indo German Symposium on Green Chemistry and Catalysis for Sustainable Development, ICT, Mumbai, 29 <sup>th</sup> – 31 <sup>st</sup> October 2012. |

|    |              |                                                                                           |
|----|--------------|-------------------------------------------------------------------------------------------|
| 16 | Mrunal Warke | Won second prize at Young Researchers' Conference, ICT, Mumbai, 13th - 14th January 2011. |
|----|--------------|-------------------------------------------------------------------------------------------|

28. Seminars/ Conferences/Workshops organized and the source of funding (national / international) with details of outstanding participants, if any

| # No. | Title                                                                                                                                                                                                                                                  | Date                                            | Source of Funding                                                                       |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1.    | The Kick -off meeting for the BBSRC granted project titled "Cascade processes for intergrated bio-refining of agricultural waste in India and Vietnam (CAPRI-BIO)                                                                                      | 30 <sup>th</sup> - 31 <sup>st</sup> May 2017    | Global Challenges Research Fund (GCRF)                                                  |
| 2.    | Workshop on "Valorisation of CO <sub>2</sub> & CH <sub>4</sub> from Anaerobic Digestion, Landfill and other Biological Processes"                                                                                                                      | 9 <sup>th</sup> - 10 <sup>th</sup> January 2017 | BBSRC India Partnership Award                                                           |
| 3.    | Workshop organized by DBT for MI-India was conducted by ICT & ICGEB, NewDelhi, on "Sustainable Biofuels Challenge"                                                                                                                                     | 9 <sup>th</sup> October 2017                    | DBT, New Delhi                                                                          |
| 4.    | The 4th Oversight committee                                                                                                                                                                                                                            | 22nd -23rd May 2017                             | DBT, New Delhi                                                                          |
| 5.    | Workshop on "Protein-Protein interaction technologies: Bacterial and yeast two hybrid systems & Lecture on "Careers in Biology" by Prof. Peter Uetz, Centre for the Study of Biological Complexity, Virginia CommonWealth University Richmond, VA, USA | 17th-28th November 2015                         | American Society for Microbiology (ASM) & Indo-US Science and Technology Forum (IUSSTF) |
| 6.    | DBT-Overseas Fellows and Chairs Conclave                                                                                                                                                                                                               | 10th April 2015.                                | DBT- Overseas fellowship                                                                |
| 7.    | Concept to Commercialization (C2C) Thought Leadership Symposium on Bioprocessing                                                                                                                                                                       | 27th-28th May 2015                              | Industries                                                                              |
| 8.    | Lecture on "Biological Photoreceptors-Basics and Modern Applications" by "Dr. Wolfgang Gaertner, Dept. of                                                                                                                                              | 2nd March 2015                                  | DBT-ICT CEB                                                                             |

|     |                                                                                                                                                                                                                |                                                  |                               |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-------------------------------|
|     | Heterogeneous Reactions, Group Leader of Photoreceptors Research , Max Planck Institute for Chemical Energy Conversion, Muelheim an der Ruhr, Germany                                                          |                                                  |                               |
| 9.  | Lecture on “ An introduction to metabolic modeling & its application” by Prof. David Fell, Prof. Mark Poolman Dept.of Biological & Medical Sciences & Dr. Hassan Hartman from Oxford Brookes University, UK    | 23 <sup>rd</sup> & 24 <sup>th</sup> January 2015 | DBT-BBSRC partnership funding |
| 10. | Bioprocessing India 2014                                                                                                                                                                                       | 17 <sup>th</sup> -20 <sup>th</sup> December 2014 | Industries & TEQIP            |
| 11. | Workshop for Grand Challenges India Recent Call on “ All Children Thriving” under the DBT-BIRAC- BMGF Partnership                                                                                              | 14 <sup>th</sup> November 2014                   | DBT- BIRAC, Govt. of India    |
| 12. | Lecture on “Foreign gene expression in chloroplast & oral delivery of therapeutic proteins” by Dr. Henry Daniell, Dept. of Biochemistry & Translation Research, Penn Dental School, University of Pennsylvania | 11 <sup>th</sup> July 2014                       | DBT-ICT CEB                   |
| 13. | Lecture on “The Four Imperatives of Energy & Their Implications in Sustainable Energy Development” by Prof. Dongke Zhang, University of Western Australia                                                      | 19 <sup>th</sup> April 2014                      | DBT-ICT CEB                   |
| 14. | Indo-US Workshop “Biofuels and Bio-products”                                                                                                                                                                   | 8 <sup>th</sup> March 2013                       | DBT-ICT CEB                   |
| 15. | Kick off meeting for The SuBBSea Macroalgal project at The Orchid Hotel, Mumbai                                                                                                                                | 24 <sup>th</sup> -25 <sup>th</sup> February 2014 | BBSRC Funding                 |

29. Code of ethics for research followed by the departments

- The Centre follows the code of ethics as set by the Institute.

30. Student profile programme-wise:

| Name of the | Applications | Selected | Pass percentage |
|-------------|--------------|----------|-----------------|
|-------------|--------------|----------|-----------------|

| <b>Programme</b><br>(refer to question no. 4) | <b>received</b> | Male | Female | Male | Female |
|-----------------------------------------------|-----------------|------|--------|------|--------|
| M.Tech Bioprocess Technology                  | 1030            | 65   | 45     | 100% | 100%   |
| Ph.D. Tech. Bioprocess Technology             | 170             | 25   | 8      | NA   | NA     |
| Ph. D. Science (Biotechnology)                | 248 (124)       | 12   | 12     | 10%  | 10%    |

33. Diversity of students

| <b>Name of the Programme</b><br>(refer to question no. 4) | <b>% of students from the same university</b> | <b>% of students from other universities within the State</b> | <b>% of students from universities outside the State</b> | <b>% of students from other countries</b> |
|-----------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------|
| PhD (Sci.) (Biotechnology)                                | -                                             | 82                                                            | 18                                                       | -                                         |
| PhD (Tech.)                                               | 77                                            | 6                                                             | 6                                                        | 11%                                       |
| M. Tech BPT                                               | -                                             | 69                                                            | 31                                                       | -                                         |

34. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise.

| <b>Category</b>            | <b>Students qualified</b> |
|----------------------------|---------------------------|
| Civil and defense services | Nil                       |
| NET and SET                | 4                         |
| GATE                       | 3                         |
| DBT JRF                    | 3                         |

35. Student progression

| <b>Student progression</b>                             | <b>Percentage against enrolled</b> |
|--------------------------------------------------------|------------------------------------|
| UG to PG                                               | 3%                                 |
| PG to M.Phil.                                          | Nil                                |
| PG to Ph.D.                                            | 91%                                |
| Ph.D. to Post-Doctoral                                 | 33%                                |
| Employed                                               |                                    |
| <input type="checkbox"/> Campus selection              | 80%                                |
| <input type="checkbox"/> Other than campus recruitment | 20%                                |



|               |    |
|---------------|----|
| Entrepreneurs | 1% |
|---------------|----|

36. Diversity of staff

| Percentage of faculty who are graduates  |     |
|------------------------------------------|-----|
| of the same university                   | 23% |
| from other universities within the State | 28% |
| from universities from other States      | 33% |
| from universities outside the country    | 5%  |

37. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period- Nil

38. Present details of departmental infrastructural facilities with regard to

a) Library

Students & Faculty of the Department can avail the facilities of the Institute library which is well-equipped with numerous volumes of textbooks, reference books, journals and digital journals.

b) Internet facilities for staff and students

The Institute has WI-FI facility on the campus and the students and staff can access it the same. The Centre also has private WiFi facility that can be used for any invited guests, non-teaching faculties and teaching faculties, all students and trainee personnel at the Centre.

c) Total number of class rooms - 1

d) Class rooms with ICT facility - 1

e) Students' laboratories - 3

f) Research laboratories - 7

39. List of doctoral, post-doctoral students and Research Associates

a) from the host institution/university -17

b) from other institutions/universities - 44

40. Number of post graduate students getting financial assistance from the university.

- At present, the Institute does not provide any financial assistance to the students. However, it does recommend that all post graduate students should be

supported by fellowships based on projects/endowments/ donations/IP revenues created by the institute.

41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology.

Yes. The Departmental committee made several deliberations. Experts from within the Institute and from other reputed Institutes were consulted. A syllabus committee comprising of faculty members of the Department and external experts was constituted to frame the syllabus.

42. Does the department obtain feedback from

- a. Faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback?

Yes. The feedback from the faculty members is taken by the Head of the Department and discussed in the Department meetings. Suitable changes are made in the teaching and evaluation accordingly.

- b. students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback?

Yes, the Head of the Department takes feedback from the students at the end of each semester. Besides this, some of the faculty members also obtain feedback from the students for their individual courses. The Institute has devised a centralised online feedback system for all the courses.

- c. alumni and employers on the programmes offered and how does the department utilize the feedback?

The Head of the Department and the faculty members have constant interaction with the alumni and their feedback is taken into account.

43. List the distinguished alumni of the department (maximum 10)  
NIL

44. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts.

- Lecture on "Career in Biology" by Prof. Peter Uetz, Centre for the study of Biological Complexity, Virginia Commonwealth University, Richmond, VA, USA.
- Workshop on "Protein-Protein interaction technologies: Bacterial and yeast two hybrid systems" Prof. Peter Uetz, Centre for the study of Biological Complexity, Virginia Commonwealth University, Richmond, VA, USA.
- Lecture on " Bioenergy production from microorganisms : H<sub>2</sub> the future fuel" by Dr. Chitralekha Dasgupta, CSIR-NBRI, Lucknow.

- Lecture on “Waste not waste not. Catalysing a sustainable future (Catalytic routes to convert waste biomass to fuels & chemicals” by Prof. Karen Wilson, Aston University, Birmingham
- Lecture on "Biological Photoreceptors-Bascis and Modern Applications" by Dr. Wolfgang Gaertner, Dept of Heterogenous Rections, Group Leader of Photoreceptore Research, Max Planck Institute for Chemical Energy Conversion, Muelheim an der Ruhr, Germany
- Training Programme to train our research student for isolating protoplast of microalgae by Dr. Vishal Gupta, ICGEB, New Delhi.
- World Intellectual Property Day (26th April 2011)
- BD Flower program organized by BD Biosciences (18th July 2011)
- BIA separation seminar (21st July 2011)
- 2nd National Workshop on Proteomics (24th -26th August 2011)
- 6th National workshop on Preparative and Process Chromatography, 24th to 26th August 2011 at ICT,Mumbai
- Intellectual Property Workshop at ICT (27th February 2012)
- Science day Celebration (28th February 2012)
- Science day celebration on 20th February 2014.
- BBSRC-DBT Kick off meeting was organized on 24th and 25th February 2014.
- Inauguration of “Extension Wing of DBT-ICT CEB by Honorable Union Minister of Science & Technology & Earth Sciences Dr. Harsh Vardhan on 23rd June 2015.

45. List the teaching methods adopted by the faculty for different programmes.

**Methods adopted by the faculty**

- One to one interaction
- Power Point Presentation
- Continuous Assessment
- Experimental Demonstration
- Case study based teaching

46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored?

- We have a system of continuous assessment under which a series of tests, assignments, quizzes are arranged throughout the semester to monitor the progress of our students and teaching. There is also one formal mid-semester examination. The weightage of continuous assessment in the total marks is 30%, while that of the mid-semester exam is 30% and the end semester exam is 40%.
- We ensure advice from external experts by appointing them as visiting faculty.
- We regularly organize lectures by the experts.
- Students are encouraged to participate in co-curricular activities within and outside the institute.

47. Highlight the participation of students and faculty in extension activities.  
Students of Ph. D. & M.Tech. Participate in the inter collegiate events and competition organized by ICT
- Sportsaga (Marathon and Badminton) ICT
  - ICT PremierLeague (Cricket) ICT
  - Blood Donation Camps
  - Empressio (Gobal Business Model Competition)
  - ABLE-BEST (Biotech Entrepreneurship Competition)
  - TechFest (IIT B)
  - Manzar (ICT)
  - SAP Simulation workshop (RCF)
  - Saanj (ICT Indian Classical and Dance Music)
  - Vortex (ICT)

48. Give details of “beyond syllabus scholarly activities” of the department.

The faculty members of the Department are actively involved in various research activities like guiding Ph.D. students, industrial consultancy, executing sponsored projects and writing books and research papers. In addition, they contribute to the activities of other Departments / Universities as members of Ph. D. thesis evaluation and syllabus review committees.

Most of the faculty members of the Department have delivered invited lectures in conferences / seminars / workshops. They are regular resource persons for refresher courses conducted for college teachers.

49. State whether the programme/ department is accredited/ graded by other agencies? If yes, give details.
- Yes, M.Tech BPT is accredited by AICT MBA from 5 years
50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied.
- Feedstock independent technology for biomass deconstruction to sugars has been developed for lignocellulosic biomass feedstocks (e.g. rice straw, wheat straw, bagasse, empty palm fruit bunches, cotton and castor stalks, tea wastes, corn stover and corn cob).
  - The biomass-to-sugars and ethanol platform technology has been transferred to and translated by India Glycols Ltd to a scale of 10 ton per day biomass. The pilot plant is ready for commissioning and would be completely operational by the end of February 2016. Blueprints for higher scale plants are being worked out and are expected to be ready by March 2016.
  - Based on biomass derived sugars, other biorefinery technologies have been developed, transferred and translated to pilot scale plants by three Indian industries, which include production of vanillin, xylitol and cello-oligosaccharides from grain

bran; biorefinery for production of organic acids from biomass, and butanol from biomass.

- The work and existing expertise has also been extended to other novel concepts like refining of sugarcane extracts, oil seed biorefinery for production of protein concentrates and isolates, edible oils, phytosterols, isoflavones and other value adds; and platform technology for fatty acids and designer lipid derivatives. All these technologies are adequately protected worldwide.
- Globally competitive technologies have been developed for alcohols, organic acids, and different sugar derivatives including feed, food and functional molecules.
- World class infrastructure and expertise has been established to help Indian and global industrial biotech industry in fields of enzyme engineering & technology; separation and downstream processing; fermentation technology; and synthetic & molecular biology
- The intellectual property based on the platform technology has been protected through two Indian patent applications, 1299/MUM/2009 and 1762 /MUM/2010; these have been filed in thirty six (36) countries. Of these, three (3) patents have been granted in the USA, two (2) in South Africa and one (1) each in Bangladesh and Pakistan.
- The Centre at any time operates more than 10 industry sponsored projects. Ongoing projects include projects from Bacardi-Martini B.V., Netherlands; Wacker Chemie AG, Germany; The Coca Cola Company, USA; Godrej Agrovat Private limited, India; Wipro GE Healthcare Private Limited, India; Privi Biotechnologies Private Limited, India; Kanoria Chemicals & Industries Private Limited, India among others.

51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.

#### Strengths

1. Strong cross-disciplinary team – from basic biologies (molecular biology; biochemistry; microbiology; bioinformatics; plant biology) to biochemical engineering to chemical engineering
2. World class infrastructure with sustained investment of more than Rs. 10 cr per year (excluding salaries and fellowships).
3. Dedicated faculty, support staff and senior and junior research fellows closely working on overlapping themes
4. Strong relationship with industry both in India and abroad resulting in all projects being targeted towards industrial translation
5. Rapid generation of Intellectual property resulting in a large number of patents being filed both in India and abroad

## Weaknesses

1. Very wide spectrum of projects each covering ground from conceptualization to translation resulting in slow off-take of innovations to industry. A separate wing responsible for translation required.
2. Limited space of expansion of infrastructure to accommodate increasing projects and PhD fellows which not only restricts hiring of trained and senior staff and thus resulting in under-utilization of the opportunities
3. Lack of facilities to demonstrate the bench scale concepts at scale large enough to show the proof-of-concept to interested industry. A dedicated technology translation facility needed.
4. Currently spending about Rs. 15 cr/year, the Centre to require more than Rs. 25 cr/year to sustain its growing capabilities from 2017 onwards
5. Unable to attract joint projects within the Institute with other departments esp. in catalysis and synthetic materials

## Opportunities

1. Establishing one of the strongest group in the world in the area of synthetic biology and renewables technology
2. Aiding the government programs such as Clean India and Make-in-India
3. Establish India as one of the significant technology providers in the area of biofuels, bioenergy and renewables as well as in products of secondary agriculture
4. Exploitation of the generated IP to attract revenues exceeding Rs. 25 cr./year from 2017 onwards
5. Generate world class and competitive skilled manpower in the area of industrial biotechnology and renewable chemistry

## Threats

1. Inability to regularise the senior and productive scientists of the Centre as regular employees of the Institute which today results in job insecurity and lack of any job associated benefits (all the scientists are today employed in project mode).
2. Loss of highly developed and evolved scientists to competing institutes or industry as a result of point 1 above.
3. Possible inability to sustain and expand the sphere and activity and scope due to possible absence or discontinuation of the current leadership
4. Possible lack of coordination and emergence of unfavourable working atmosphere due to unhealthy competition amongst younger scientists that form the bulk of team of senior scientists
5. Domination of promotion of personal and non-scientific interests over collective welfare



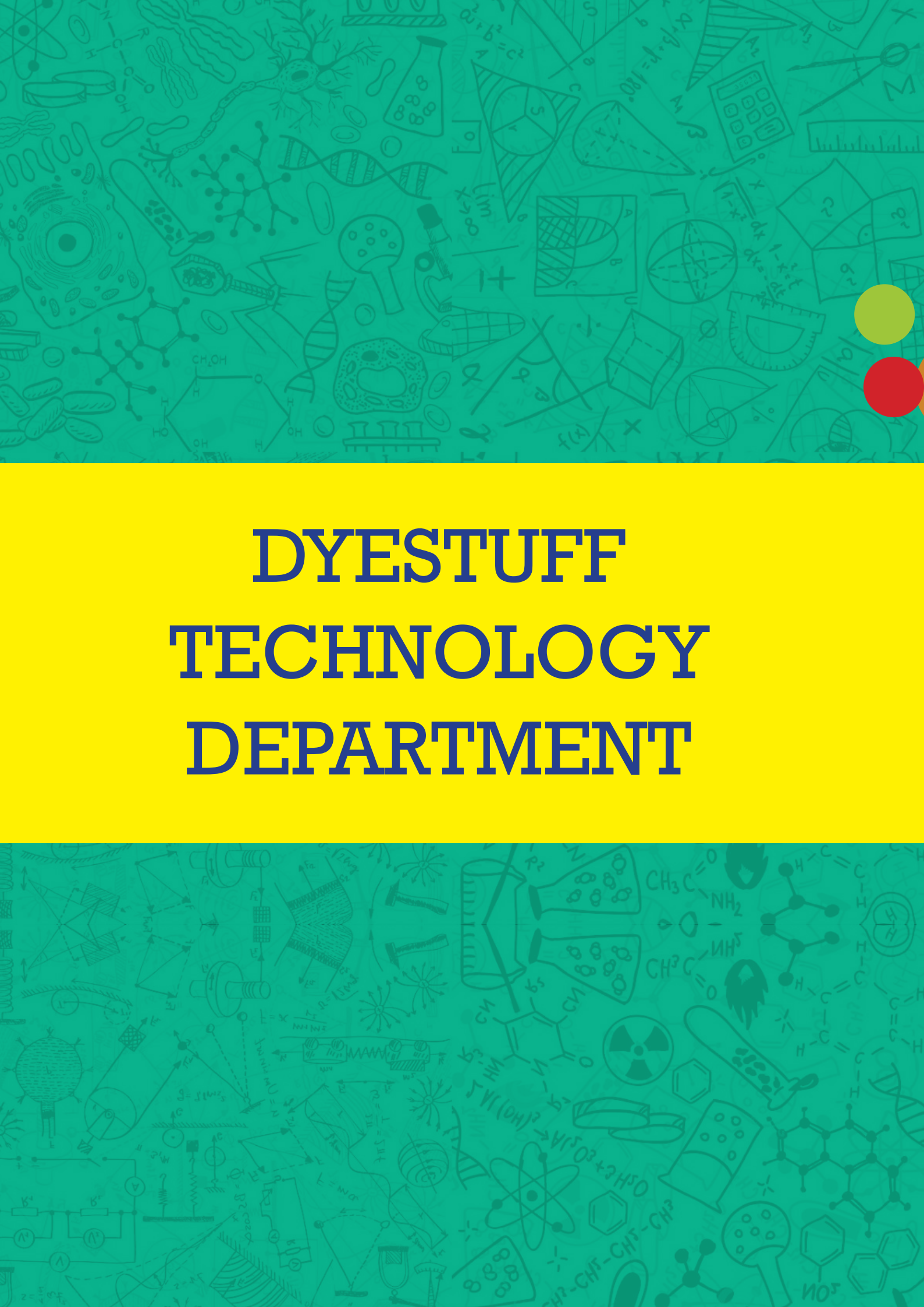
## 52. Future plans of the department.

The Centre aims to continue the work in an intensive mission mode to develop feedstock neutral technologies for generating value from waste (Municipal solid & liquid waste, agro residues and forest waste). Engineering of microbial/algal systems through optimally designed synthetic biology platforms for this purpose is underway. The utilization of waste streams for fermentative production of biochemicals/biomaterials of industrial relevance catering to the food, feed and fuel sectors forms the core mandate of the Centre.

The products targeted under the waste to value scheme at DBT-ICT Centre are as follows:

- Biofuel: Cellulosic Ethanol, Butanol, Bio-CNG, L-limonene, 2,3 Butanediol
- Food: Sugars (Glucose, Arabinose, Xylose, Cellobiose, Cellooligosaccharides, Xylooligosaccharides, Arabinoxylans), Xylitol, Mannitol, Maltol, Mono Acyl Glycerols (MAG), Di-Acyl Glycerols (DAG), Fatty Acids (FA), Glycerin, Sugar esters, Ascorbyl palmitate
- Feed: Poultry Feed, Aqua Feed
- Biomaterials: Green Polyethylene Ethylene Terephthalate (PET), Polylactic Acid (PLA) Polyethylene Glycol (PEG), Polyricinoleic Acid (PRA).
- Bio-chemicals: Terpenes, Isoflavones, Amino acids, Organic Acids (Acetic acid, lactic acid, propionic acid), Furfural, 5-Hydroxymethyl Furfural, Furan Di-carboxylic Acid, Designer Lipids, Flavor Lactones, Protein Isolates and Concentrates.

[illegible]



# DYESTUFF TECHNOLOGY DEPARTMENT





# Dyestuff Technology Department

## **Dyestuff Technology Department**

The Department of Dyestuff Technology was established in 1944 under the stewardship of Prof. K. Venkataraman, the then director of Institute of Chemical Technology (ICT, then known as UDCT), University of Mumbai. Under the successive leadership of highly experienced, talented and hard-working scientists and scholars such as Prof. B. D. Tilak, Prof. S. V. Sunthakar, Prof. S. Seshadri, Prof. D. W. Rangnekar, Prof. V. R. Kanetkar, Prof. P. M. Bhate and Prof. N. Sekar, the department has trained more than 1000 undergraduate students and over 450 postgraduate students.

Prof. K. Venkataraman did pioneering work in synthetic dyestuff chemistry, natural colorants, structural elucidation and spectral studies. His volumes on “The Chemistry of Synthetic Dyes” are still widely read and treated as the bible for dyestuff chemists and technologists worldwide. These have been translated into more than 14 languages.

Prof. B. D. Tilak worked extensively in the field of anthraquinone and naphthaquinone vat dyes, and on azide chemistry. Prof. S. V. Sunthakar investigated the chemistry of steroids, pesticides and silicon compounds in addition to exploring dyestuff chemistry. The contribution of Prof. S. Seshadri to Vielsmeier-Haack reaction and coumarin chemistry is very well recognized. Prof. D. W. Rangnekar published widely in the area of heterocyclic chemistry and was instrumental in initiating BRNS-BARC sponsored projects on the synthesis of laser dyes and solid state lasers. These projects, which became vital for the country post Pokhran-II, were successfully executed and completed by Prof. V. R. Kanetkar, who also modernized and refurbished the DRL (Dyes Research Laboratory). The outstanding research work (reported over 1000 publications) carried out by these stalwarts has created a permanent impact on dyestuff and allied industries, globally and locally. Presently Prof. G. S. Shankarling, Prof. P. M. Bhate, Prof. N. Sekar, Dr. S. Some, Dr. S. Saha and Dr. S. Sadhukhan been working in tandem to bring glory and glitter to the Department of Dyestuff Technology.

The Department is a unique center of learning that offers an advanced curriculum in tune with the latest industrial and academic developments. Not only it has produced a new generation of talented color technologists and bright researchers, but also led to an effective industry-academia relationship. The B. Tech course in Dyestuff Technology emphasizes the chemistry, technology and engineering of organic intermediates and colorants. The student leaves the Institute equipped with a working knowledge of laboratory synthesis, scaling up skills, key

manufacturing processes and analytical techniques.

## Research Trends in the Department

Currently, the Department has a strong research program in the area of functional colorants for biological sensors, security applications, lasers, optical storage devices, solar devices, electronics, radiation heat insulating glass windows, synthesis of colorants using green methods, Nanotechnology, perfumes and flavor technology, carbohydrate chemistry and computational chemistry. The department is also very active in the field of green chemistry, namely the synthesis and applications of Ionic Liquids and Deep Eutectic Solvents (DES) for industrial applications

In addition, the Department undertakes research in the emerging applications of conventional colorants including high performance pigments, dyes for ink-jet printing, security colors and colorants for contact lenses. Research in conventional dyestuff chemistry (reactive and vats) and synthetic organic chemistry is also carried out. The Department currently has about 80 undergraduate and 60 research students.

In keeping with the tradition of the Institute, the Department maintains close ties with the Indian as well as International Colorants and Chemical industry by way of consulting assignments. In recent times, its reach has truly become global. The Department has also collaborated with CSIR laboratories, Universities from India and abroad.

## About The Major Research Facilities

The Department is equipped with a functional organic synthesis laboratory. Facilities include:

|                                       |                                        |
|---------------------------------------|----------------------------------------|
| 500 MHz NMR instrument                | FT-IR Instrument                       |
| Flash chromatography                  | Oven                                   |
| Autoclaves, Hastelloy – 300 mL, 1 lit | Autoclaves, SS 316 – 3 x 600 mL, 5 lit |
| Parr hydrogenators – 300 mL, 600 mL   | Pressure reactor                       |
| Incubator                             | Lyophilizer / Freeze dryer             |
| Ice-Machine                           | Rotary evaporator                      |

## Events organized by Dyes Department

The Department of Dyestuff Technology organizes conferences, seminar and guest lectures every year in order to bridge the gap between industries and academia. The purpose of arranging such co-curricular activities enhances the exposure of the dyes and dyestuff manufacturing community to undergraduate and graduate students.

Dyes Department jointly organizes the International conference- “**Convention on Colorants (COC)**” biannually with DMAI (Dyestuff Manufacturers Association of India). The aim of the convention is to enhance cooperation between industry and academia. In the past five years three such conferences were organized namely COC 2011, COC 2013, COC 2015 and COC 2017.



In 2016, the department has started with a new concept of having an international symposium on ionic liquids to put forth a greener aspect of the chemistry to the world. On 21st and 22nd January 2016, the department had organized the **International Symposium on Ionic Liquids (ISOIL 2016)** in collaboration with Reliance industries Ltd. The focus was given on industrial applications of ionic liquids

Every year the department organizes a National Conference named “**National Symposium on Functional Application of Colorants**” (NSFAC). The main focus is on high technology applications of colorants other than textiles and conventional uses. Till 2015 five such symposia were organized by the department.

The department has organised one day work shop on “**Technology Innovation in Dyes and Pigment (TIDP\_2015)**” felicitating Prof. D.W. Rangnekar on account of his platinum jubilee celebration.

Apart from these technical events the department has been organizing “Dyes Day” since 2013, where all dyes alumni get chance to meet and have informal and formal discussions with each other. A panel discussion is organized where dyes alumni from industry share their experiences and help undergraduates to understand the current market status of dyes and chemical industries. The event ends with a cultural program where the students, faculty and alumni showcase their talent.

Along with this Department also organizes Memorial lecture series as a tribute to legends of department that includes K.V. Venkatraman lecture Kabbur Memorail lecture series, Dr. KKG Menon lecture etc.

The department ensures a good blend of technology, chemistry, engineering and extracurricular skills.

#### *COC 2013 and COC 2015*



*NSFAC*



*TIDP 2015*



*ISOIL 2016*



## **Perfumery & Flavour technology**

This interdisciplinary course came into existence since 1990. The program was then known as M.Sc(Tech) in Chemical Technology with specialization in Perfumery & Flavour Technology. The Industrial Body- Fragrance and Flavors Association of India (FAFAI) felt the need of technical manpower in this field and requested ICT (then UDCT) director Prof. M.M. Sharma for this course. It was funded by the FAFAI for the first 10 years since the genesis of the course. Other funding agencies include TEQIP, ICEOFF and Dr. R. Y. Mantri fellowship which began in 2015.

The quality of the training imparted to the students is reflected in the progress they are making in their individual careers. M.Tech in Perfumery & Flavour Technology is administered by the Department of Dyestuff Technology. Since this is an interdisciplinary course, faculties from different departments like Department of Food Engineering & Technology, Department of Oils, Oleochemicals & Surfactants Technology, Department of Pharmaceutical Sciences & Technology and Department of Chemical Engineering are involved in this program. Apart from the institute faculty there are many visiting faculties belonging to this industry that are associated with this course. This not only maintains a healthy academia industry interaction but also enlightens the students with opportunities available and the market scenario of this industry.

Doctoral programs in Perfumery & Flavour Technology is also offered by Department of Dyestuff Technology. Currently there are 8 recognized guides for the post graduate programs. There are 13 research fellows (12 M. Tech, 1 Ph. D) presently working on various projects like- green synthesis of perfumery & flavor molecules, extraction of essential oils from aromatic plants, creation of perfumes and flavor formulations, fragrance and flavor modifications- microemulsions & microencapsulation, slow release of perfumery and flavor chemicals, etc.

Under the successive leadership of highly experienced, talented and hard-working scientists and scholars, the program has trained more than 100 postgraduate students.

The program aims at “Empowering the knowledge of perfumery, flavors and cosmetics through learning a cutting-edge technology for the benefit of mankind”. It will do so by:

- Educating students and professionals in the area of perfumery, flavour, cosmetic technology.
- Serving and upgrading the aroma industry in the form of chemical technology so as to make them competitive in local and global market.

Actively nurturing with close co-operation at National and International levels, with reputed institutions, industries, research and development organizations and universities.

1. **Year of establishment:**1944

2. **Is the Department part of a school/faculty of the university?**

It is a separate department of the institute

3. **Names of Programmes offered (UG, PG, M.Phil., Ph.D., Integrated masters; Integrated Ph.D. etc.)**

Ph. D. (Tech.) ,Integrated PhD (Tech), Ph. D. (Sci.), M.Sc. (Organic chemistry) and B.Tech (Dyestuff Technology) and M.Tech (Dyestuff Technology)

4. **Interdisciplinary programmes and departments involved**

M.Tech (Perfumery and Flavour Technology) [Department of food engineering and technology, Department of Oils, Oleochemicals and surfactants technology, Department of Chemical Engineering]

M.Tech (Green Technology) [Department of food engineering and technology, Department of Oils, Oleochemicals and surfactants technology, Department of Chemical Engineering]

5. **Courses in collaboration with other universities, industries, foreign institutions, etc.**

None

6. **Details of programmes discontinued, if any, with reasons**

None

7. **Examination system:** Semester

8. **Participation of the department in the courses offered by other departments**

Various interdisciplinary courses with all other departments. Other department's subjects are offered as electives to our students subject to availability and eligibility

9. **Number of teaching posts sanctioned, filled and actual (Professors/Associate Professors/ Asst.Professors/others)**

|                  |   |   |                       |   |   |   |
|------------------|---|---|-----------------------|---|---|---|
| & MPS) Professor | - | 3 | - Associate Professor | - | 0 | - |
| Asst. Professor  | - | 3 | -                     |   |   |   |

Others  
(Visiting Faculty)

|   |   |   |
|---|---|---|
| - | 3 | - |
|---|---|---|



**10. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance**

| Name | Qualification | Designation | Specialization | No. of Years of Experience<br>Industrial/Academics | No. of Ph.D./M.Phil. students guided for the last 4 years |
|------|---------------|-------------|----------------|----------------------------------------------------|-----------------------------------------------------------|
|------|---------------|-------------|----------------|----------------------------------------------------|-----------------------------------------------------------|

|                        |              |                     |                                                                     |       |      |
|------------------------|--------------|---------------------|---------------------------------------------------------------------|-------|------|
| Prof .G.S. Shankarling | Ph.D. (Tech) | Professor           | Green Chemistry                                                     | 8/11  | 12   |
| Prof. P.M.Bhate        | Ph.D         | Professor           | Carbohydrate Chemistry                                              | 25/9  | 2    |
| Prof. N.Sekar          | Ph.D. (Tech) | Professor           | Tinctorial Colorants                                                | 0/31  | 11   |
| Dr. S.Some             | Ph.D.        | Assistant Professor | Synthesis of graphene derivatives and their functional applications | 0/3.0 | ---- |
| Dr. S.Saha             | Ph.D.        | Assistant Professor | Synthetic organic reactions and mechanistic investigatios           | 1/2.5 | ---- |
| Dr. Nabanita Sadhukhan | Ph.D.        | Assistant Professor | Inorganic chemistry                                                 | 1/2.0 | ---- |

**11. List of Senior Visiting fellows, Adjunct faculty, Emeritus Professors**

Prof. Surendra Kulkarni (Honorary Professor – Dyestuff Technology)

Vijay Sane (Gharda Chemicals Ltd)

D.G.Udas (Entrepreneur, Ultra Conserve Ltd.)



## 12. Percentage of classes taken by temporary faculty – programme-wise information

All classes are taken by permanent or visiting faculty

## 13. Programme-wise student teacher ratio

For B.Tech (Dyes) [All years] - STR 1:14

For M.Tech (Dyes) [All years] - STR 1:1.4

## 14. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual [total staff {for Dyestuff technology Department-8)}

|                     |      |             |
|---------------------|------|-------------|
| H.                  | R.   | Fegade      |
| InstrumentMechanic  | S.   | B. Sonawane |
| Senior LabAssistant | A.   | M. Patil    |
| Lab Assistant       |      |             |
| A.                  | R.   | Rawool      |
| LabAssistant.       | S.   | Chandiwade  |
| Lab Attendant       | P.B. | Rana        |
| LabAttendant        |      |             |

## 15. Research thrust areas as recognized by major funding agencies

|                       |                                                                                                                                                                                                                                  |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Prof. G.S.Shankarling | 1) Green Chemistry: Green chemistry and Technology mainly development of environmentally benign organic synthesis, Process chemistry, Catalytic system using enzyme for various Organic reaction, Preparation and application of |
|                       | 2) Synthesis of chemosensors for detection of cations and anions.                                                                                                                                                                |
|                       | 3) Studies in oxidation reactions                                                                                                                                                                                                |
|                       | 4) Synthesis and Purification of Spectroscopic grade Cucurbituril[7] for high power aqueous dye laser applications                                                                                                               |
|                       | 5) Colorants for Dye Sensitized Solar cell (DSSC)                                                                                                                                                                                |
|                       | 6) Photochromics and Thermochromics colorants                                                                                                                                                                                    |
|                       | 7) Development and characterization of selective coating for enhancement of radiation absorption of solar receivers.                                                                                                             |
|                       | 8) Ink jet colorants                                                                                                                                                                                                             |
|                       | 9) Flavour and perfumery Chemistry: Synthesis of novel Aroma chemicals                                                                                                                                                           |

|                               |                                                                                                                                                                         |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Prof. P.M.Bhate</b>        | 1) Intramolecular Diels alder reactions in carbohydrate chemistry                                                                                                       |
|                               | 2) Synthesis of Fiber reactive dyes and vat dyes                                                                                                                        |
|                               | 3) Natural product synthesis                                                                                                                                            |
| <b>Prof. N.Sekar</b>          | 1) Stand-off detection of explosives based on immunochemical                                                                                                            |
|                               | 2) Advanced laser dyes with high quantum yield and high photostability                                                                                                  |
|                               | 3) Colored fluorescent conducting polymers for photovoltaic applications –                                                                                              |
|                               | 4) NIR Fluorescent Colorants for Biological Imaging in biomedical diagnostics                                                                                           |
|                               | 5) Synthesis of red emitting coumarin laser colorants                                                                                                                   |
| <b>Dr. S.Some</b>             | 1) Graphene supported chiral reagent                                                                                                                                    |
|                               | 2) Tunable laser properties of dye decorated graphene derivatives                                                                                                       |
| <b>Dr. S.Saha</b>             | 1) Design and Synthesis of D-(pi-A) Type Dyes With Troger's Base Architecture: The Effect Of Molecular Topology On The Performance Of Dye-Sensitized Solar Cells (DSSC) |
|                               | 2) Cooperative Organocatalysis for Enantioselective Transformations                                                                                                     |
| <b>Dr. Nabanita Sadhukhan</b> | 1) Inorganic Chemistry                                                                                                                                                  |
|                               | 2) Monodisperse Polymer, Light responsive functional molecule                                                                                                           |

**16. Number of faculty with ongoing projects from**

**a) National   b) International funding agencies and   c) Total grants received. give the Names of the funding agencies, project title and grants received project-wise.**

Total amount granted to all faculty :- Rs 59181382 /-

Details of projects and other relevant information given in the table below:-

| Sponsor   | Title                                                                                                                       | Duration | Total amount (Rs.) | Principal Investigator | Research Fellows |
|-----------|-----------------------------------------------------------------------------------------------------------------------------|----------|--------------------|------------------------|------------------|
| AICTE-RPS | Synthesis of novel perimidine and quinaldine based NIR absorbing squarine dyes and study of their thermal and photophysical | 3 Years  | 750000/-           | Prof. G.S. Shankarling | Sushil khopkar   |

|                                     | Properties                                                                                                        |         |               |                                                |                      |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------|---------|---------------|------------------------------------------------|----------------------|
| DAE-BRNS                            | Development and characterisation of selective coating for enhancement of radiation absorption of solar receivers. | 2 Years | 1,43,35,000/- | Prof. G.S. Shankarling/<br>Dr. V. D. Deshpande | Amruta Joglekar      |
| DAE-BRNS                            | Synthesis and Purification of Spectroscopic grade Cuurbituril[7] for high power aqueous dye laser applications    | 3 Years | 30,44,800 /-  | Prof. G.S. Shankarling                         | Deepak Boraste       |
| Essilor international               | Development of IPP resistant blue dyes and UV absorber                                                            | 1 year  | 26,00,000     | Prof.G.S. Shankarling                          | Dr. Haribhau Kumbhar |
| Transition optical corporation ,USA | Synthesis of azo and anthraquinone dyes                                                                           | 2 years | 2,015,000     | Prof.G.S. Shankarling                          | Rishikant Sonune     |
| Deepak Nitrite Ltd                  | Synthesis of optical brightening agents                                                                           | 2 years | 9,50,000      | Prof.G.S. Shankarling                          | Aanand Parashar      |

|                                     |                                                                                                                    |         |            |                    |                                                                                                   |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------|---------|------------|--------------------|---------------------------------------------------------------------------------------------------|
| BRNS                                | Advanced laser dyes with high quantum yield and high Photostability                                                | 3 Years | 21, 00,000 | Professor N. Sekar | Mr. Ankush More (Junior Research Fellow), Mr. Shrikant Thakare (Junior Research Fellow)           |
| Principal Scientific Advisor to GOI | Optimization studies with an alternate route for vinyl sulfones manufacture and development of novel vinylsulfones | 3 Years | 59,00000   | Professor N. Sekar | Virendra Mishra (Junior Research Fellow)<br>Chaitannya Waman Ghanavatkar (Junior Research Fellow) |

|                      |                                                                                                   |         |           |                    |                                                    |
|----------------------|---------------------------------------------------------------------------------------------------|---------|-----------|--------------------|----------------------------------------------------|
| DST CERI             | Colored Fluorescent conducting Oligomers/Monomers For Dye Sensitized Solar Cell                   | 3 Years | 88,78,099 | Professor N. Sekar | Suryapratap J Sharma (Junior Research fellow)      |
| DST-SERB             | Phenonthroline-ly Coupled Tetracene Dimers-Novel Materials For Organic Electronics                | 3 Years | 37,58,480 | Professor N. Sekar | Zahir Ali Siddiqui (Junior Research Fellow)        |
| WRA                  | Synthesis of water soluble fluorescent colorants for high visible hydrophilic textiles substrates | 3 Years | 19,17,000 | Professor N. Sekar | Zeba N Khan (Junior Research Fellow)               |
| Ministry of Textiles | Novel Reactive Dye System Based on Diazonium Salts                                                |         | 27,84,000 | Prof.P.M.Bhate     | Rajkumari Vijilata Devi                            |
| UGC                  | Graphene supported chiral reagent                                                                 | 3 Years | 6,00,000  | Dr. Surajit Some   | Mr. Dattatray Appasha Pethsangave (Senior Research |
| BRNS                 | Tunable laser properties of dye decorated graphene derivatives                                    | 3 Years | 27,78,000 | Dr. Surajit Some   | Mr.Rahul Vijay Khose (Junior Research Fellow)      |

|                                                  |                                                                                                                                                                                   |         |           |                       |                                                          |
|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------|-----------------------|----------------------------------------------------------|
| SERB-DST                                         | Synthesis of 3D, fixable heteroatom doped carbon based metal oxide containing nanocomposites for its high-performance supercapacitor application                                  | 3 Years | 25,81,003 | Dr. Surajit Some      | Mr.Pravin Harishchandra Wadekar (Junior Research Fellow) |
| Science and Engineering Board of Research (SERB) | Design and Synthesis of D-(pi-A) <sub>2</sub> Type Dyes With Troger's Base Architecture: The Effect Of Molecular Topology On The Performance Of Dye-Sensitized Solar Cells (DSSC) | 3 Years | 29,90,000 | Dr. Satyajit Saha     | Mr.Valmik Jejurkar                                       |
| UGC-FRP                                          | Cooperative Organocatalysis for Enantioselective Transformations                                                                                                                  | 2 Years | 6,00,000  | Dr. Satyajit Saha     | ----                                                     |
| UGC                                              | Synthesis and application of novel water soluble organic and inorganic small molecules                                                                                            |         | 6,00,000  | Dr.Nabanita Sadhukhan | -                                                        |

## 17. Inter-Institutional Collaborative Projects and Associated Grants Received

### National Collaborations

#### Prof. G. S. Shankarling

- Dr. Subam Sahoo, SVNIT, Gujarat.
- Dr. Hirendra Ghosh, BARC, Mumbai.
- Dr. Alok Ray, , BARC, Mumbai.
- Dr. Sandip Nayak, BARC, Mumbai.
- Dr. Shakti Vinay Shukla, Principle Director, Fragrance and Flavor Development Center (FFDC), Kannauj, U.P

#### Prof. N. Sekar

- Dr.C.R.Suri (IMTech, Chandigarh)
- Dr. A.K.Paul (CSIO, Chandigarh)
- Dr. S.Panda (IIT, Kanpur)

**Dr. Surajit Some**

- Dr. Atul Chaskar ( University of Mumbai).
- Dr. Alok Ray (BARC, Mumbai)

**b) International Collaboration**

**Prof. G. S. Shankarling**

- Dr. Douglas McFarlane and Dr. Vijay Raghavan, Monash University, Australia.

**Prof. N. Sekar**

- Dr. P. Ramasawmi (Mauritius University, Mauritius)

**Dr. Surajit Some**

- Prof. Hyoyoung Lee (SKU Korea).
- Prof. Seong Chan Jun (South Korea)

**18. Departmental Projects Funded by DST; UGC-SAP/CAS, DPE; DBT, CSIR, AICTE, etc.; total grants received.**

12 projects in total (Details given in the table above) Total funding granted – Rs. 59181382/-

**19. Research facility / centre with**

- State recognition - Nil
- National recognition - Nil
- International recognition – Nil

**20. Special research laboratories sponsored by / created by industry or corporate bodies**

None

**21. Publications:**

**Details of papers published as given below:-**

| No. | Title and authors | Journal | Vol. | Pages | Year |
|-----|-------------------|---------|------|-------|------|
|-----|-------------------|---------|------|-------|------|



|   |                                                                                                                                                                                                      |                                                                       |     |           |      |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|-----|-----------|------|
| 1 | Reversible 'turn off' fluorescence response of Cu <sup>2+</sup> ions towards 2-pyridyl quinoline based chemosensor with visible colour change<br>Priyanka More,G,S,Shankarling                       | Sensors and Actuators, B: Chemical                                    | 241 | 552-559   | 2017 |
| 2 | A thiazoloquinoxaline based turn on chemodosimeter for detection of copper ions.<br>Saurabh Deshpande,Sushil Khopkar,G.S.Shankarling                                                                 | Dyes and pigments                                                     | 147 | 393-399   | 2017 |
| 3 | Process intensification of azo dyes<br>G.S.Shankarling,Pratik Deshmukh,Amruta Joglekar                                                                                                               | Journal of environmental chemical engineering                         | 5   | 3302-3308 | 2017 |
| 4 | Deep eutectic solvent / lipase :Two environmentally benign and recyclable media for efficient synthesis of N-aryl amines<br>Preeti Pant,G.S.Shankarling                                              | Catalysis letters                                                     | 147 | 1371-1378 | 2017 |
| 5 | Solvatochromic fluorescence properties of phenothiazine-based dyes involving thiazolo[4,5-b]quinoxaline and benzo[e]indole as strong acceptors<br>Saurabh Deshpande,Haribhau Kumbhar,G.S.Shankarling | Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy | 174 | 154-163   | 2017 |
| 6 | Metal-free oxidation of aldehydes to acids using the 4Na <sub>2</sub> SO <sub>4</sub> 2H <sub>2</sub> O <sub>2</sub> .NaCl adduct<br>Eknath Gaikwad,Vilas Patil,G.S.Shankarling                      | Environmental Chemistry Letters                                       |     | 1-7       | 2017 |
| 7 | Amberlyst-15 catalysed oxidative esterification of aldehydes using H <sub>2</sub> O <sub>2</sub> trapped Oxidant as terminal oxidant<br>Eknath Gaikwad ,Vilas Patil,G.S.Shankarling                  |                                                                       |     |           |      |

|    |                                                                                                                                                                                                                                |                                               |     |           |      |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----|-----------|------|
| 8  | An Effect of H-bonding in synthesis of 1,5-Diketones via Tandem Aldol-Michael Addition Reaction Using Room Temperature Ionic Liquid (RTIL)<br>Sujit Kamble,G.S.Shankarling                                                     | Chemistry select                              |     | 1917-1924 | 2017 |
| 9  | Choline based ionic liquids and their applications in organic transformation<br>Balu Gadilohar,G.S.Shankarling                                                                                                                 | Journal of Molecular Liquids                  | 227 | 234-261   | 2017 |
| 10 | Concentrated solar radiation aided energy efficient protocol for oxidation of alcohol using biodegradable task specific ionic liquid-choline peroxydisulfate<br>Balu Gadilohar,Saurabh Deshpande,Dipak Pinjari,G.S.Shankarling | Solar Energy                                  | 139 | 328-336   | 2017 |
| 11 | Photoswitchable conjugated assembly involving fluorescent boranil<br>Saurabh Deshpande ,Haribhau Kumbhar.G.S.Shankarling                                                                                                       | Journal of Luminescence                       | 179 | 314-321   | 2017 |
| 12 | Dihydroquinazolinone based “turn-off” fluorescence sensor for detection of Cu <sup>2+</sup> ions<br>Pravin Borase,Pranila Thale,G.S.Shankarling                                                                                | Dyes and Pigments                             | 134 | 276-284   | 2016 |
| 13 | A "turn on" fluorescent and chromogenic chemosensor for fluoride anion: Experimental and DFT studies<br>Pranila Thale,Pravin Borase,G.S.Shankarling                                                                            | Inorganic Chemistry Frontiers                 | 3   | 977-984   | 2016 |
| 14 | An Energy Efficient Sonochemical Selective Oxidation of Benzyl Alcohols to Benzaldehydes by Using Bio-TSIL Choline Peroxydisulfate<br>Balu Gadilohar,Dipak Pinjari, G.S.Shankarling                                            | Industrial and Engineering Chemistry Research | 55  | 4797-4802 | 2016 |

|    |                                                                                                                                                                                                                   |                              |     |             |      |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----|-------------|------|
| 15 | Novel, solid-state, highly fluorescent $\beta$ -ketoiminate spiroborates with aggregation induced emission<br>Haribhau Kumbhar,Saurabh Deshpande,G.S.Shankarling                                                  | Dyes and Pigments            | 127 | 161-169     | 2016 |
| 16 | M-CPBA mediated metal free, rapid oxidation of aliphatic amines to oximes<br>Vilas Patil,Eknath Gaikwad.G.S.Shankarling                                                                                           | Journal of Organic Chemistry | 81  | 781-786     | 2016 |
| 17 | Exciton delocalization and hot hole extraction in CdSe QDs and CdSe/ZnS type 1 core shell QDs sensitized with newly synthesized thiols<br>P.Singhal,Prashant Ghorpade,G.S.shankarling,R.Tripathi,H.Ghosh          | Nanoscale                    | 8   | 1823-1833   | 2016 |
| 18 | A choline hydroxide catalyzed synthesis of 2,3-dihydroquinazolin-4(1: H)-ones in an aqueous medium<br>Pravin Borase ,Pranila Thale,G.S.Shankarling                                                                | RSC Advances                 | 67  | 63078-63083 | 2016 |
| 19 | Nonanebis(peroxoic acid) mediated efficient and selective oxidation of sulfide<br>Eknath Gaikwad ,Vilas Patil,G.S.Shankarling                                                                                     | New Journal of Chemistry     | 40  | 223-230     | 2016 |
| 20 | Synthesis, characterisation, and study of the photophysical properties of highly stable imidazole-based novel solid-state fluorescent azo colourants<br>Preetam N. Moolya, Balu L. Lohar, Ganapati S. Shankarling | Coloration Technology        | 131 | 104-109     | 2015 |

|     |                                                                                                                                                                                         |                   |     |         |      |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----|---------|------|
| 21. | Aggregation induced emission (AIE) active $\beta$ -ketoiminate boron complexes: Synthesis, photophysical and electrochemical properties<br>Haribhau S. Kumbhar, Ganapati S. Shankarling | Dyes and Pigment  | 122 | 85-93   | 2015 |
| 22  | Synthesis and photophysical study of novel coumarin based styryl dyes                                                                                                                   | Dyes and Pigments | 120 | 190-199 | 2015 |

|     |                                                                                                                                                                                                                     |                                                                     |     |             |      |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|-----|-------------|------|
|     | AK Sanap, KK Sanap, GS Shankarling                                                                                                                                                                                  |                                                                     |     |             |      |
| 23. | An “off-on” colorimetric chemosensor for selective detection of Al <sup>3+</sup> , Cr <sup>3+</sup> and Fe <sup>3+</sup> : Its application in molecular logic gate<br>PN Borase, PB Thale, SK Sahoo, GS Shankarling | Sensors and Actuators B: Chemical                                   | 215 | 451-458     | 2015 |
| 24. | Steric hindrance induced regio and chemo selective oxidation of aromatic amine.<br>VV Patil, GS Shankarling                                                                                                         | Journal of Organic Chemistry                                        | -   | -           | 2015 |
| 25. | Synthesis and spectroscopic study of highly fluorescent $\beta$ -enaminone based boron complexes<br>HS Kumbhar, BL Gadilohar, GS Shankarling                                                                        | Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy | 146 | 80-87       | 2015 |
| 26. | Restriction of Molecular Twisting on a Gold Nanoparticle Surface<br>T Debnath, J Dana, P Maity, H Lobo, GS Shankarling, HN Ghosh                                                                                    | Chemistry-A European Journal                                        | 21  | 5704-5708   | 2015 |
| 27. | Energy efficient, clean and solvent free photochemical benzylic bromination using NBS in concentrated solar radiation (CSR)<br>S Deshpande, B Gadilohar, Y Shinde, D Pinjari, A Pandit, G Shankarling               | Solar Energy                                                        | 113 | 332-339     | 2015 |
| 28. | Highly efficient and stable peracid for rapid and selective oxidation of aliphatic amines to oximes<br>V V Patil, EM Gayakwad, G S Shankarling                                                                      | New Journal of Chemistry                                            | 39  | 6677-6682   | 2015 |
| 29. | Maleimide fused boron-fluorine complexes: synthesis, photophysical and electrochemical properties<br>PB Thale, PN Borase, GS Shankarling                                                                            | Dalton Transactions                                                 | -   | -           | 2015 |
| 30. | Photophysical and thermal properties of novel solid state fluorescent benzoxazole based styryl dyes from a DFT study<br>UN Yadav, HS Kumbhar, SS Deshpande, SK Sahoo, GS Shankarling                                | RSC Advances                                                        | 5   | 42971-42977 | 2015 |

|     |                                                                                                                                                                                                                         |                                             |     |             |      |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|-----|-------------|------|
| 31. | Choline peroxydisulfate oxidizing Bio-TSIL: triple role player in the one-pot synthesis of Betti bases and gem-bisamides from aryl alcohols under solvent-free conditions<br>BL Gadilohar, H S Kumbhar, G S Shankarling | New Journal of Chemistry                    | -   | -           | 2015 |
| 32. | Environmentally benign synthesis of 4-aminoquinoline-2-ones using recyclable choline hydroxide<br>AK Sanap, GS Shankarling                                                                                              | New Journal of Chemistry                    | 39  | 206-212     | 2015 |
| 33. | A metal free, eco-friendly protocol for the synthesis of 2, 3-dihydro-1H-perimidines using commercially available Amberlyst 15 as a catalyst<br>VV Patil, GS Shankarling                                                | Catalysis Communications                    | 57  | 138-142     | 2014 |
| 34. | A highly selective fluorescent chemosensor based on thio- $\beta$ -enaminone analog with a turn-on response for Cu (II) in aqueous media<br>HS Kumbhar, UN Yadav, BL Gadilohar, GS Shankarling                          | Sensors and Actuators B: Chemical           | 203 | 174-180     | 2014 |
| 35. | Choline Peroxydisulfate: Environmentally Friendly Biodegradable Oxidizing TSIL for Selective and Rapid Oxidation of Alcohols<br>BL Gadilohar, HS Kumbhar, GS Shankarling                                                | Industrial & Engineering Chemistry Research | 53  | 19010-19018 | 2014 |
| 36. | In Situ Generated Cetyltrimethylammonium Bisulphate in Choline Chloride–Urea Deep Eutectic Solvent: A Novel Catalytic System for One Pot Synthesis of 1, 3, 4-Oxadiazole<br>PA More, BL Gadilohar, GS Shankarling       | Catalysis Letters                           | 144 | 1393-1398   | 2014 |
| 37. | Synergistic effect of ultrasound and deep eutectic solvent choline chloride–urea as versatile catalyst for rapid synthesis of $\beta$ -functionalized ketonic derivatives<br>UN Yadav, GS Shankarling                   | Journal of Molecular Liquids                | 195 | 188-193     | 2014 |
| 38. | Quinoline-based chemosensor for fluoride and acetate: A combined                                                                                                                                                        | Sensors and Actuators B:                    | 197 | 73-80       | 2014 |

|  |                                                                                       |          |  |  |  |
|--|---------------------------------------------------------------------------------------|----------|--|--|--|
|  | experimental and DFT study<br>UN Yadav, P Pant, D Sharma, SK<br>Sahoo, GS Shankarling | Chemical |  |  |  |
|--|---------------------------------------------------------------------------------------|----------|--|--|--|

|     |                                                                                                                                                                                                                                                                        |                                        |     |             |      |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-----|-------------|------|
| 39. | Nonanebis (peroxoic acid): a stable peracid for oxidative bromination of aminoanthracene-9, 10-dione<br>VV Patil, GS Shankarling                                                                                                                                       | Beilstein journal of organic chemistry | 10  | 921-928     | 2014 |
| 40. | Eco-friendly and recyclable media for rapid synthesis of tricyanovinylated aromatics using biocatalyst and deep eutectic solvent<br>AK Sanap, GS Shankarling                                                                                                           | Catalysis Communications               | 49  | 58-62       | 2014 |
| 41. | Room temperature ionic liquid choline chloride–oxalic acid: A versatile catalyst for acid-catalyzed transformation in organic reactions<br>UN Yadav, GS Shankarling                                                                                                    | Journal of Molecular Liquids           | 191 | 137-141     | 2014 |
| 42. | Extensive Reduction in Back Electron Transfer in Twisted Intramolecular Charge-Transfer (TICT) Coumarin-Dye-Sensitized TiO <sub>2</sub> Nanoparticles/ Film: A Femtosecond Transient Absorption Study<br>T Debnath, P Maity, H Lobo, B Singh, GS Shankarling, HN Ghosh | Chemistry-A European Journal           | 20  | 3510-3519   | 2014 |
| 43. | Spectroscopy and laser characterization of synthesized supramolecular host cucurbit [7] uril using aqueous Rhodamine B dye<br>DR Boraste, M Gupta, G Shankarling, AK Ray, SK Nayak                                                                                     | Pramana                                | 82  | 271-275     | 2014 |
| 44. | Magnetic nanocatalyst for the synthesis of maleimide and phthalimide derivatives<br>PB Thale, PN Borase, GS Shankarling                                                                                                                                                | RSC Advances                           | 4   | 59454-59461 | 2014 |
| 45. | A novel colorimetric and fluorogenic chemosensor for selective detection of Cu <sup>2+</sup> ions in mixed aqueous media<br>UN Yadav, P Pant, SK Sahoo, GS Shankarling                                                                                                 | RSC Advances                           | 4   | 42647-42653 | 2014 |
| 46. | Choline chloride based eutectic solvents: direct C-3 alkenylation/ alkylation of indoles with 1,                                                                                                                                                                       | RSC Advances                           | 4   | 34938-34943 | 2014 |



|    |                                                                                                                                                                                                         |                         |         |               |      |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|---------|---------------|------|
|    | 3-dicarbonyl compounds<br>AK Sanap, GS Shankarling                                                                                                                                                      |                         |         |               |      |
| 47 | Red emitting NLO phoric 3-styryl coumarins ; Experimental and computational studies.<br><br>Tathe A.,Sekar N.                                                                                           | Optical materials       | 51      | 121-127       | 2016 |
| 48 | Aggregation induced emissive carbazole-based push-pull NLO phores ; synthesis,photophysical properties and DFT studies.<br><br>Lanke s.,Sekar N.                                                        | Dyes and pigments       | 124     | 82-92         | 2016 |
| 49 | A new type of triphenylamine based coumarine-rhodamine hybrid compound ; synthesis,Photophysical properties,Viscosity sensitivity and energy transfer.<br><br>Kothavale S.,Sekar N.                     | RSC ADVANCES            | 6(107)  | 105387-105397 | 2016 |
| 50 | Synthesis and optical response to acids and bases of a new styryl—dihydro-benzo[a]phenazine chromophores<br><br>Patil, S.R., Choudhary, A.S., Sekar, N.                                                 | Tetrahedron             | 72(49)  | 7968-7974     | 2016 |
| 51 | Acridine-1, 8-diones – A new class of thermally stable NLOphores: Photophysical, (hyper)polarizability and TD-DFT studies<br><br>Thorat, K.G., Tayade, R.P., Sekar, N.                                  | Optical Materials       | 62      | 306-319       | 2016 |
| 52 | Indole-Based NLOphoric Donor- $\pi$ -Acceptor Styryl Dyes: Synthesis, Spectral Properties and Computational Studies<br><br>Chemate, S., Sekar, N.                                                       | Journal of Fluorescence | 26 (6), | 2063-2077     | 2016 |
| 53 | NLOphoric and solid state emissive BODIPY dyes containing N-phenylcarbazole core at meso position – Synthesis, photophysical properties of and DFT studies<br><br>Telore, R.D., Jadhav, A.G., Sekar, N. | Journal of Luminescence | 179,    | 420-428       | 2016 |

|    |                                                                                                                                                                                                                               |                                |         |             |      |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------|-------------|------|
| 54 | Synthesis of triazine based dialdehyde Schiff's base – new templates for Molecular Imprinting and study of their structural and photophysical properties<br><br>Padalkar, V.S., Tathe, A.B., Sekar, N.                        | Arabian Journal of Chemistry   | 9,      | 1793-1800   | 2016 |
| 55 | Novel Rhodafluors: Synthesis, Photophysical, pH and TD-DFT Studies<br><br>Patil, S.S., Thorat, K.G., Mallah, R., Sekar, N                                                                                                     | Journal of Fluorescence        | 26 (6)  | 2187-2197   | 2016 |
| 56 | Synthesis and antimicrobial activity of novel 2-substituted benzimidazole, benzoxazole and benzothiazole derivatives<br><br>Padalkar, V.S., Borse, B.N., Gupta, V.D., Phatangare, K.R., Patil, V.S., Umapa, P.G., Sekar, N.   | Arabian Journal of Chemistry   | 9       | S1125-S1130 | 2016 |
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#### Book Chapter:

### **Prof. G. S. Shankarling**

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- Direct Dyes in Handbook of textile and industrial dyeing (Ed: M Clark), Woodhead Publishing, UK, 2011
- Acid Dyes in Handbook of textile and industrial dyeing (Ed: M Clark), Woodhead Publishing, UK, 2011

### **H-Index and Citations:**

| Faculty Name            | H-Index | Citations |
|-------------------------|---------|-----------|
| Prof. G. S. Shankarling | 17      | 798       |
| Prof. P.M.Bhate         | 04      | 124       |
| Prof. N.Sekar           | 18      | 929       |
| Dr. S.Some              | 17      | 635       |
| Dr. S.Saha              | 09      | 330       |

**22. Details of Patents and Income generated**

Recent Patent details are given in the table below

| No. | Inventors                                                                                                                          | Title                                                                                              | Country | Funding agency  |
|-----|------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|---------|-----------------|
| 1.  | G.S.Shankarling,Deepak Boraste                                                                                                     | Process for preparing Cucurbituril in high yield                                                   | India   |                 |
| 2   | G.S.Shankarling,Amruta Joglekar                                                                                                    | Synthesis of copper phthalocyanine using deep eutectic solvent                                     | India   |                 |
| 3   | G. S. Shankarling, Yogesh Sonawane, Krishna J. Jarag, Poonam M. Pawar, Sunanda Phadtare, Rishad Bumgara, Hyacinta R. Lobo, Balvant | A class of quaternary ammonium catalysts                                                           | India   |                 |
| 4.  | G. S. Shankarling, Krishna J. Jarag                                                                                                | Styryl molecules based on substituted-1,4-diphenethyl-1,2,3,4-tetrahydroquinoxaline-6-carbaldehyde | India   |                 |
| 5.  | G. S. Shankarling, Krishna J. Jarag, Dipak V. Pinjari, Aniruddha B. Pandit                                                         | Ultrasound assisted process for synthesis of chalcone                                              | India   |                 |
| 6.  | Prakash M. Bhate, Rajkumari Vijilata Devi, Shruti Masand, Lisan Shaikh, Samiksha Vaidya, Rajaram Dugane                            | Novel reactive dye system based on diazonium salts                                                 | India   | TEQIP (in part) |
| 7   | Prakash Bhate, Sunil Rokade and Kamlesh Vadagaonkar                                                                                | Preparation of achiral and chiral azo dyes from cyclic enol ethers                                 | India   | CSIR            |
| 8   | Surjit Some,Dattatray Pethsangave                                                                                                  | Graphene supported green approach for highly efficient fire retardant                              | India   | TEQIP (in part) |

|     |                                                      |                                                                                                                                  |               |                                                             |
|-----|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------|
| 9   | Surajit Some, Dattatray A.Pethsangave and P.K. Ghosh | Magnetic Graphene-Carrageenan-Iron Oxide Composite for Absorption of oils with recycle and reuse                                 | India         | TEQIP (in part)                                             |
| 10  | Surajit Some , Rahul V. Khose and Alok Ray           | Flame retardant transparent liquid based on novel functionalized GQDs.                                                           | India         | TEQIP (in part)                                             |
| 11. | Surajit Some and Hyoyoung Lee                        | Optical Fiber Containing Graphene Oxide and Reduced Graphene Oxide, and Method for Manufacturing Gas Sensor Containing The Same. | Unites States | Research & Business Foundation Sungkyunkwan University (KR) |
| 12  | Surajit Some, Youngmin Kim and Hyoyoung Lee          | Catalyst for Organic Reaction and Method of Use Thereof                                                                          | Unites States | Research & Business Foundation Sungkyunkwan University (KR) |

**23. Areas of Consultancy and Income generated**  
**Consultancy details of the faculty are given below:**

| Sr. No. | Faculty Name                   | Industry Name                      | Area                                                                      |
|---------|--------------------------------|------------------------------------|---------------------------------------------------------------------------|
| 1       | <b>Prof. G. S. Shankarling</b> | Metropolitan Eximchem Ltd          | Process development in Speciality chemicals, Intermediates, Agrochemicals |
|         |                                | Asahi India Glass Ltd              | Expert Advice                                                             |
|         |                                | Essilor International              | Expert Advice                                                             |
|         |                                | Reliance India Ltd.                | Product Innovation                                                        |
|         |                                | Hindustan Unilever Ltd, Mumbai.    | Product Innovation /Expert Advice                                         |
|         |                                | Jyothi Laboratories, Mumbai        | Product Innovation /Expert Advice                                         |
|         |                                | Diversey India Pvt Ltd., Mumbai    | Expert Advice                                                             |
|         |                                | Enviro controls Associates, Surat. | Product Innovation /Expert Advice                                         |
|         |                                | Sunbeam Monochem Pvt.Ltd           | Product Innovation /Expert Advice                                         |
|         |                                | Mallok Speciality chemicals        | Expert Advice                                                             |

|                |                                 |                                               |
|----------------|---------------------------------|-----------------------------------------------|
|                | Megafine Speciality chemicals   | Expert Advice                                 |
|                | Melog Speciality chemicals      | Expert Advice                                 |
|                | Cavin Care Pvt Ltd              | Expert Advice                                 |
|                | Midas Import Corporation        | Expert Advice                                 |
|                | Prem Mehendi centre             | Expert Advice                                 |
|                | Cyclopharma Chem Pvt Ltd        | Expert Advice                                 |
| Prof. N. Sekar | Megatic Intermediates Pvt. Ltd. | Process Development in Dyestuff Intermediates |
|                |                                 |                                               |
|                | Heubach Colours Ltd             | Expert Advice                                 |
|                | Spetrum Dyes Pvt. Ltd           | Developments in pigments                      |

#### 24. Faculty Selected Nationally / Internationally to visit other laboratories / Institutions / Industries in India and abroad

Prof. N. Sekar was selected and visited to University of Mauritius under UGC-TEC Consortium 2011-2012 for the period of 1 months during 4th Jan 2012 to 31st Jan 2012.

#### 25. Faculty serving in

a) National Committees b) International Committees c) Editorial Boards d) any other (please specify)

|                           |                                                                                                                                       |                        |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| 1. Prof.G. S. Shankarling | Sir. M. Visvesvaraya Institute of Governors                                                                                           | Member, Board of       |
|                           | IChE                                                                                                                                  | Life member            |
|                           | UDCT-Alumina Association                                                                                                              | Life member            |
|                           | <i>International Symposium on Ionic Liquids (ISOIL 2016)</i> in collaboration with Reliance industries Ltd                            |                        |
|                           | Technology Innovation in Dyes and Pigments (TIDP 2015)                                                                                |                        |
|                           | International conference- “ <i>Convention on Colorants (COC)</i> ” biannually with DMAI (Dyestuff Manufacturers Association of India) |                        |
|                           | Perfumery and Flavors Course                                                                                                          |                        |
|                           | Dyes Department                                                                                                                       |                        |
|                           | TEQUIP                                                                                                                                | Department Coordinator |
|                           | RRC Perfumery & Flavor Technology                                                                                                     | Chairperson            |
|                           | RRC Dyes                                                                                                                              | Chairperson            |

|                   |                                                                                                                                                                          |                                         |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| 2. Prof.N. Sekar  | Indian Chemical Society<br>Society for the Advancement of<br>Electrochemical Science and Technology<br>Indian Membrane Society, Fellow of Indian<br>Mathematical Society | Fellow                                  |
|                   |                                                                                                                                                                          | Fellow                                  |
|                   | Editorial Advisor to Colourage<br>SDC, UK                                                                                                                                | Colour publications<br>Corporate Member |
| 3.Prof. P.M.Bhate | SDC, UK                                                                                                                                                                  | Corporate Member                        |
|                   | Dyes and intermediates, sectional committee                                                                                                                              | Chairman                                |

**26. Faculty recharging strategies (UGC, refresher / orientation programs, workshops, training programs and similar programs).**

Various workshops were organized under TEQIP for faculty improvement. These details are given in the annual report (2013-14,2014-15)

**27. Student projects**

- a. percentage of students who have done in-house projects including inter-departmental projects

Overall percentage for research students of dyes department – 85%

- b. percentage of students doing projects in collaboration with other universities

1. Industry / Institute

Overall percentage for research students of dyes department – 15%

**28. Awards / recognitions received at the national and international level by**

- a. Faculty  
prof. n. sekar was selected and visited to university of mauritius under UGC-TEC Consortium 2011-2012 for the period of 1 months during 4th Jan 2012 to 31st Jan 2012.
- b. Doctoral / post doctoral fellows AwarDs  
•Dr. Vikas Padalkar selected and actively participated in 3rd Science Conclave Nobel Laureate Meet which was organized by IIIT-Allahabad, India. 8-14 Dec. 2010.  
  
•Mr.Vinod Gupta selected and actively participated in 3rd Science Conclave Nobel Laureate Meet which was organized by IIIT-Allahabad, India. 8-14 Dec. 2010.



- “Shri G. M. Abhayankar research presentation award” was awarded to mr. Vikas padalkar and mr. Vinod gupta for the year 2009-10 by ICT, Mumbai.
- Shri G. M. Abhayankar research presentation award” was awarded to mr. Kiran R. phatangare for the year 2010-11 by ICT, Mumbai.
- Young Researcher Award was awarded to Dr. Vikas Padalkar 5th Young Researchers Conference Organized by Institute of Chemical Technology, Mumbai, 13-14th Jan. 2011.
- Best paper presentation award, was awarded to Dr. Vikas Padalkar National Conference on Health and Disease, Organised by Indian Chemical Society, Mumbai Branch at Mithibai College Mumbai. 17-18 Jan. 2011
- Best poster presentation award, was awarded to Dr. Vikas Padalkar National Conferences on Green Chemistry organized by DAV College Amritsar, Punjab, India, Sept 2011.
- Mr. Kiran Phatangare actively participated in 3rd Science Conclave Nobel Laureate Meet which was organized by IIIT-Allahabad, India. 8-14 Dec. 2010.
- Best paper presentation award, was awarded to Dr. Vikas padalkar National Conference on recent trends in Nanotechnology, organized by Birala College, Kalyan, Mumbai, March 1-2, 2012.
- Best Thesis Award, was awarded to Dr. Vikas Padalkar (2010-2011) by Institute of Chemical Technology. 3 March 2012.
- Mr. Vinod D. Gupta selected and visited to University of Mauritius under UGC-TEC Consortium 2011-2012 for the period of 3 months during 28th November 2011 to 23rd February 2012.
- Prof. N. Sekar selected and visited to University of Mauritius under UGC-TEC Consortium 2011-2012 for the period of 1 months during 4th Jan 2012 to 31st Jan 2012. Dyestuff Technology I NAAC-Self Study Report I 399 functional applications of colorants, Oct 2012, Organised by ICT, Mumbai.
- Mr. Vinod Gupta awarded Best poster presentation award in National symposium on functional applications of colorants, Oct 2012, Organised by ICT, Mumbai.
- Mr. Amol Choudhary awarded Best poster presentation award in National symposium on functional applications of colorants, Oct 2012, Organised by ICT, Mumbai.
- “shri g. m. Abhayankar research presentation award” was awarded to Dr. Vikas Padalkar and Mr. Abhinav Tathe for the year 2012-13 by ICT, Mumbai.
- Mr. Ankush More awarded Best poster presentation award in National symposium on functional applications of colorants, Oct 2013, Organised by ICT, Mumbai.

- Pranila Thale and Pravin Borase won first prize in poster competition in 6th International Conventional of Colorants conference-2015 held at 'The club', Andheri on 3rd -4th March.
- Vilas Patil and Eknath gayakwad won third prize in poster competition in 6th International Convention on Colorants conference 2015 held at 'The Club', Andheri on 3rd-4th March
- Mrs. Sunanda B. Phadtare, was awarded with Dr. S. R. Purao Endowment Best Research Publication Prize for the publication in Dyes and Pigment, 2013, Vol 97, 105-112.
- Mrs. Anita Sanap and Yogesh Sonawane won first prize in poster competition in 5th International Conventional of Colorants conference-2013 held at Gandhinagar, Gujrat on 8th -9th January
- Mekonnen won second prize for poster presentation in Convention on Colorants 2017
- Pravin Borase received third prize for the oral presentation in NSFAC-2016
- Rohit Bhide received third prize for the oral presentation in NSFAC-2016
- Eknath Gayakwad awarded with Shri G.M. Abhyankar Students' Travel Assistance Award in 2016-2017
- Vilas Patil has received Dr. S.R. Purao Endowment Award for Best Paper on 5th April 2016 for J. Org. Chem., 2015, 80, 7876- 7883
- Mr. Balu Gadilohar received third prize for the oral presentation in CATSCOL-2016, Mumbai

**29. Seminars/ Conferences/Workshops organized and the source of funding (national/ international) with details of outstanding participants, if any.**

| Date             | Industry Expert Invited For Guest Lecture | Departmental Coordinator | Objective                                                        | Beneficiaries |
|------------------|-------------------------------------------|--------------------------|------------------------------------------------------------------|---------------|
| 29 November 2012 | Dr. Kamaljit Singh                        | Prof. N. Sekar           | Amazing conjugated molecules : A voyage from color to conduction | All Students  |
| 5 Feb 2013       | Prof. J.S.Miller                          | Prof. N. Sekar           | Organic based magnets                                            | All Students  |
| 15 Feb 2013      | Ms. Shanta Venkatesh                      | Prof. N. Sekar           | How to do literature survey                                      | All Students  |
| 29 August 2013   | Mr.C.Dabke                                | Prof.N.Sekar             | Industry expertise and revolution in dyestuff technology         | All students  |

|              |                        |                        |                                                                     |              |
|--------------|------------------------|------------------------|---------------------------------------------------------------------|--------------|
| 2 May 2013   | Mr.Vilas Sahasrabuddhe | Prof. G. S.Shankarling | Opportunities in marketing                                          | All students |
| 4 Jan 2014   | Mr.R.Sabnis            | Prof. P.M.Bhate        | Industry development and career opportunities for research students | All students |
| 8 April 2015 | Mr.Ambady Rajgopalan   | Prof.N.Sekar           | Design of Experiments                                               | All students |
| 19 June 2015 | Mr.Kamaljit Singh      | Prof.N.Sekar           | Collaborative Chemistry                                             | All students |
| 19 June 2015 | Mr.Kamaljit Singh      | Prof.N.Sekar           | Combating drug resistance                                           | All students |

### 30. Code of ethics for research followed by the departments

The research work, research publications, patents, thesis and any other publication arising out of the research work done by a student in the University shall be subject to the Plagiarism rules of the Institute, Clause 10 of “Code of Ethics and Code of Conduct” for the Faculty Members, and any other rules and regulations of the University pertaining to these.

Clause 10 states that :

All our knowledge has been built up communally. It follows that we must be able to rely on other people; we must be able to trust their word; without which the individual would be helpless to tell the true from false. A critical knowledge of the source of everything we examine is central to our craft. Hence, every researcher has to be very careful about the origin and reliability of his/ her work and must give full and fair recognition to the earlier contributors while publishing any finding. Plagiarism is an academic theft as it diminishes the original idea by fraudulent act. Plagiarism is not only an offense against the intellectual property rights of the original author but also undermines the authority and credibility of the academic enterprise in totality.

1. Definition: Taking over the ideas, findings, methods, interpretation, or text (written words) of another author, and presenting them thereafter as one's own creation without proper acknowledgment to its actual source and with the intention that they be taken as the work of the deceiver, is plagiarism.
2. The teachers and students must scrupulously acknowledge in their own work every intellectual debt for ideas, methods, and expressions in appropriate form. They have an obligation to oppose deception actively in themselves and in others and to question the claims the work makes and the sort of credit it grants to others.
3. The teachers should emphasize the necessity of and ensuring rigorous intellectual honesty in the use of sources and of utter respect for the work of others.

4. The teacher must exercise the greatest care not to use a student's ideas, research, or presentation to his/ her benefit without appropriate acknowledgment.
5. Any case of suspected plagiarism should be brought at once to the attention of the affected parties and to the profession through proper and effective channels. Such a case should be brought to the notice of the Dean (RCRM) for further action.
6. The gravity of a charge of plagiarism, by whomever it is made, must not diminish the diligence exercised in determining whether the accusation is valid.
7. In all cases of plagiarism the most scrupulous procedural fairness must be observed, and penalties must be appropriate to the degree of offense.
8. A teacher will be solely responsible for any plagiarized work authored outward alone or with anybody else, including his/ her own students/ colleagues or collaborators from outside.

### **31. Student profile programme-wise (For the academic year 2015-16)**

#### **32. Diversity of students**

| Name of the Programme (refer to question no. 4) | % of students from the same university | % of students from other universities within the State | % of students from universities outside the State | % of students from other countries |
|-------------------------------------------------|----------------------------------------|--------------------------------------------------------|---------------------------------------------------|------------------------------------|
| B.Tech (Dyes)                                   |                                        |                                                        |                                                   |                                    |
| M.Tech (Dyes)                                   | 25%                                    | 0%                                                     | 25%                                               | 50%                                |
| Ph.D                                            |                                        |                                                        |                                                   |                                    |

#### **33. set, gate and other competitive examinations? give details category-wise. – Nil**

#### **34. student progression**

| Student Progression             | Percentage against Enrolled |
|---------------------------------|-----------------------------|
| UG to PG                        | 70%                         |
| PG to M.Phil.                   | N.A                         |
| PG to Ph.D.                     | 30%                         |
| Ph.D. to Post-Doctoral          | 10%                         |
| Employed                        |                             |
| • Campus selection              | 100% Campus selection       |
| • Other than campus recruitment |                             |
| Entrepreneurs                   | 10%                         |

### 35. Diversity of staff

| Percentage of Faculty                                       |     |
|-------------------------------------------------------------|-----|
| Who are graduates from the same university                  | 60% |
| Who are graduates from other universities in the same state | 0%  |
| Who are graduates from another state's university           | 40% |
| Who are graduates from a foreign university-                | 0%  |

### 36. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.litt. during the assessment period

None (For permanent faculty Ph.D is mandatory)

### 37. Present details of departmental infrastructural facilities with regard to

#### a) Library

The Institute provides all learning resources at central Library and no separate Library is required at the Department level.

#### b) Internet facilities for staff and students

Internet facility is freely available to student and staff through the IPC (Information processing center). The entire campus of the institute is Wi-Fi enabled and can be accessed by students and staff through a simple registration process

#### c) Total number of class rooms

Dyes

classrooms

| Year     | Classroom | Area, m <sup>2</sup> |
|----------|-----------|----------------------|
| Capacity |           |                      |

|           |                |      |
|-----------|----------------|------|
| All<br>30 | Lecture Hall 1 | 21.6 |
| All<br>30 | Lecture Hall 2 | 21.6 |

**Remarks:**

1. All the other classrooms of the institute are shared with other programmes and equipped with Multimedia projectors.
2. Sufficient Number of Audio systems and Laptops are available in the Department
3. Department has a conference room (capacity = 40) for seminars, lectures and tutorial sessions.
4. All the classrooms have comfortable benches, air circulation, lighting

**d)**

**students' laboratories**

**e) Research**

**laboratories**

Additional details regarding laboratories and classrooms equipped with ICT facilities are given in the table below

**Dyestuff Technology**

1. Analytical Lab'L' Shape 72.54
2. Entire lab First Floor 211.77
3. Gr. Floor + Instrumentation lab 117.18
4. Pilot plant house (PPH) Under Renovation

**Oils, Surfactants and Oleochemicals Technology**

5. Godrej Pilot Plant 89.14
6. Process Lab 114.97
7. Tribo-application lab 34.83
8. Research lab 218.83
9. Godrej Lab 135.96
10. DNB Research Lab 183.00

**Pharmaceutical Chemistry and Technology**

11. Physio-Pharmacology 608
12. Technology of Liquid & topical Laboratory 833
13. Biochemistry & Microbiology Lab 699
14. Medicinal Natural Product & Pharmaceutical analysis 608
15. Pharmaceutical Formulation Technology – II (Old) 833
16. Pharmaceutical Product Development & Pharmaceutical Analysis (Old) (NUES) 833
17. Pharm. (Chem.) Technology (NUES) (Old) 833

**Food Engineering and Fermentation**



18. A-289 Processing Lab 1047.77
19. A-241 Analytical Lab 88.75
20. Biochem & Micro practical Lab/Lalwani Centre 71.05

\*Other departmental labs are accessible to research students

**38. List of doctoral, post-doctoral students and research associates a) from the host institution/university**

**Post-doctoral students:**

- 1 Dr. Rajpratap Kshatriya University of Khwajalu Natal, South Africa  
Diastereoselective alpha arylation of ketones using asymmetric catalyst  
Principal Investigator: Dr. Satyajit Saha
- 2 Dr. Deepti Lakhe I IIT, Mumbai  
Design and synthesis of novel cyanine dyes for high-tech applications  
Principal Investigator: Prof. N. Sekar

**Doctoral students:**

| Sr. No. | Research Scholar | Previous Institution                                                        | Project                                                                                                          | Supervisor                                        |
|---------|------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| 1.      | More Priyanka    | Institute of Chemical technology, Mumbai.                                   | Utilisation of biocatalyst in organic synthesis                                                                  | Dr. G.S. Shankarling                              |
| 2.      | Joglekar Amruta  | Institute of Chemical Technology, Mumbai                                    | Development and charatcterisation of speciality colorants using conventional and environmentally benign methods. | Dr. G.S. Shankarling                              |
| 3.      | Mande Prashant   | Institute of Chemical Technology                                            | Physio-chemical aspects of colourants in perfumery and flavor formulation                                        | Prof. N. Sekar                                    |
| 4.      | Prarena Lokhande | Department of Chemistry, ICT, Mumbai                                        | To Be Decided                                                                                                    | Prof. N. Sekar                                    |
| 5.      | Suvidha Shinde   | Department of Textiles and fibre processing and technology department, ICT, | Application of fluorescent dyes on textile and leather substrate                                                 | Prof. N. Sekar & Prof. R.V. Adivarekar (Co-guide) |

|    |                     |              |                                                      |                                                  |
|----|---------------------|--------------|------------------------------------------------------|--------------------------------------------------|
|    |                     | Mumbai       |                                                      |                                                  |
| 6. | Nitesh N Ayare      | ICT Mumbai.  | Synthesis of fluorescent dyes with high performance. | Prof. N. Sekar                                   |
| 7. | Ramugade Supriya H. | ICT, Mumbai. |                                                      | Prof. N. Sekar & Prof. R.V. Adivarekar(Co-guide) |

**b) from other institutions/universities**

**Doctoral students**

| Sr. No. | Research Scholar | Previous Institution    | Project                                                         | Supervisor              |
|---------|------------------|-------------------------|-----------------------------------------------------------------|-------------------------|
| 1.      | Moolya Preetam   | RPG Life Sciences       | Synthesis of High performance colorants                         | Prof. G. S. Shankarling |
| 2.      | Vajekar Shailesh | Ruparel College, Mumbai | Study and synthesis of novel colorant for High-tech application | Prof. G. S. Shankarling |

|    |                   |                                                |                                                                                                                  |                         |
|----|-------------------|------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-------------------------|
| 3. | Boraste Deepak    | Acoris Research Ltd. Pune                      | Studies in synthesis and applications of supramolecular host cavitands :Cucurbit[n]urils                         | Prof. G.S. Shankarling  |
| 4. | Ghorpade Prashant | VMV College, Amravati                          | Synthesis of novel deep eutectics and study of deep eutectics mixtures for catalytic action in organic synthesis | Prof. G.S. Shankarling  |
| 5. | Deshpande Saurabh | USV Ltd.                                       | Design and synthesis of novel heterocycles for high tech applications.                                           | Prof. G.S. Shankarling  |
| 6. | Borase Pravin     | Aditya Birla science and Tech comp Ltd. Mumbai | Synthesis of novel heterocyclic colorants and supramolecular host for high tech applications.                    | Prof. G.S. Shankarling  |
| 7. | Gayakwad Eknath   | Vidyabharti College Amaravati                  | Green methodologies for synthesis of novel heterocyclic colorants.                                               | Prof. G. S. Shankarling |
| 8. | Kamble Sujit      | Evotec India Ltd., India                       | Green approach in synthesis of heterocyclic compounds and synthesis of novel colorants.                          | Prof. G.S. Shankarling  |

|     |                |                                                       |                                                                                                                          |                        |
|-----|----------------|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------------------|
| 9.  | Pant Preeti    | V,G. Vaze College, Mumbai.                            | Synthesis of colourants for functional applications and implementation of green principles in organic reactions.         | Prof. G.S. Shankarling |
| 10  | Yogesh Patil   | Institute of Technology, Nirma University, Ahmedabad. | Dye degradation using Metal organic framework.                                                                           | Prof. G.S. Shankarling |
| 11. | Rathi Jyoti    | Vidyabharti College Amaravati                         | Implementation of Chiral Deep Eutectic solvent for selective organic synthesis.                                          | Prof.G.S. Shankarling  |
| 12. | Khopkar Sushil | University department Chemistry, Mumbai.              | Synthesis, photophysical properties and application of novel squaraines                                                  | Prof. G.S. Shankarling |
| 13. | Jachak Mahesh  | Centaur Pharmaceuticals Pvt. Ltd                      | Synthesis of novel colorants for metal Sensor applications and ink jet Ink formulations                                  | Prof. G.S. Shankarling |
| 14. | Patel Khushbu  | University department Chemistry, Mumbai.              | Synthesis of graphene oxide and its Functionalized derivatives as a Promising organocatalyst for organic transformations | Prof. G.S. Shankarling |
| 15  | Mehta Viral    | Texanlab laboratories,Pvt.Ltd                         | Yet to be decided                                                                                                        | Prof.G.S. Shankarling  |
| 16. | Margar Sachin  | Abasaheb Garware College, Pune.                       | Synthesis o Novel Coumarin Derivatives and Colorants Based on Fulvenes                                                   | Prof. N. Sekar         |

|     |                    |                                           |                                                                                           |                |
|-----|--------------------|-------------------------------------------|-------------------------------------------------------------------------------------------|----------------|
| 17. | Jadhav Manoj       | KET's V. G. Vaze College. Mulund, Mumbai. | Synthesis of Novel Colorants for Dyes Sensitized Solar Cells                              | Prof. N. Sekar |
| 18. | More Ankush        | S.S.G.M. College, Kopargon                | Design and synthesis of efficient fluorescent dyes with enhanced photophysical properties | Prof. N. Sekar |
| 19. | Kataria Santosh    | Ahmednagar College0                       | Synthesis of fused heterocycles with high hyperpolarisability                             | Prof. N. Sekar |
| 20. | Jadhav Siddheshwar | Shivaji University                        | Synthesis of fused heterocyclic fluorophores with non linear optical properties           | Prof. N. Sekar |

|     |                              |                                                        |                                                                                  |                |
|-----|------------------------------|--------------------------------------------------------|----------------------------------------------------------------------------------|----------------|
| 21. | Mallah Ramnath               | Birala College Kalyan                                  | Synthesis of Highly Fluorescent Fused Heterocyclic Compounds                     | Prof. N. Sekar |
| 22. | Gawale Yogesh                | B.N.N College, Bhiwindi, Thane                         | Synthesis and photophysical properties of functional molecules                   | Prof. N. Sekar |
| 23. | Earande Yogesh               | S.S.G.M. College, Kopargon                             | Greener Methods for Synthesis of Heterocyclic Compounds                          | Prof. N. Sekar |
| 24. | Archana Bhagwat              | New Arts, Science and Commerce College Ahmednagar      | Synthesis and Photophysical Properties of Polycyclic Fluorescent Compounds       | Prof. N. Sekar |
| 25. | Amol Jadhav                  | Department of Chemistry Shivaji University             | Synthesis of High Performance Fluorescent Fused Heterocyclic Systems             | Prof. N. Sekar |
| 26. | Kiran Ahavad                 | Ahmednagar College, Ahmednagar                         | Synthesis and application of heterocyclic ESIPT molecules                        | Prof. N. Sekar |
| 27. | Dhanraj Mobiya               | Department of Chemistry, Mumbai University             | Synthesis of novel fluorescent dyes and their applications                       | Prof. N. Sekar |
| 28. | Manali Rajashirake           | M .S. University, Badoda                               | Synthesis of high performance colourants for functional application              | Prof. N. Sekar |
| 29. | Mayuri Kadam                 | Department of Chemistry, Mumbai University             | Synthesis of novel fused heterocyclic fluorescent compounds and its applications | Prof. N. Sekar |
| 30. | Dinesh Patil                 | North Maharashtra University, Jalgaon.                 | Synthesis of novel dyes for DSSC applications                                    | Prof. N. Sekar |
| 31. | Sulochana Bhalekar           | Ahmednagar college, Ahmednagar                         | Synthesis of fluorescent colourants                                              | Prof. N. Sekar |
| 32. | Manish Raikwar               | The D.G. Ruparel College                               | Synthesis of highly fluorescent heterocyclic compounds                           | Prof. N. Sekar |
| 33. | Mishra Virendra              | University Of Mumbai. Kalina.                          | Synthesis of Fluorescent reactive dyes & their intermediates                     | Prof. N. Sekar |
| 34. | Yadav Sagar B.S.             | University of Mumbai, Kalina.                          | Synthesis of Heterocyclic Dyes with High performance Fluorescence.               | Prof.N.Sekar   |
| 35  | Chaitannya Waman Ghanavatkar | Gogate Jogalekar College Ratnagiri (aff.to Mumbai Uni) | Synthesis of photostable and fluroscent reactive dyes and their intermediates    | Prof.N.Sekar   |

|     |                                      |                                                                          |                               |                      |
|-----|--------------------------------------|--------------------------------------------------------------------------|-------------------------------|----------------------|
| 36  | Suryapratap<br>Jatashankar<br>Sharma | Institute of Science ,<br>Mumbai                                         | Yet not Decided               | Prof. N. Sekar       |
| 37  | Zahir Ali Siddiqui                   | University of Delhi,<br>Delhi                                            | Yet Not decided               | Prof. N. Sekar       |
| 38  | Zeba Naushad<br>Khan                 | Jai Hind College ,<br>Mumbai                                             | Yet Not Decided               | Prof. N. Sekar       |
| 39. | Vadagaonkar<br>Kamlesh<br>Shashikant | H.P.T. Arts and<br>R.Y.K. Science<br>college, Nashik                     | Studies in Colorants          | Prof. P. M.<br>Bhate |
| 40. | Nazim Ahmad<br>Abdul Aleem           | Shri Shivaji College<br>of Arts, Commerce<br>& Science College,<br>Akola | Synthesis of Natural Products | Prof. P. M.<br>Bhate |

|     |                                     |                                                                                                |                                                          |                      |
|-----|-------------------------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------------|----------------------|
| 41. | Garande Ashok<br>Malappa            | Ahmednagar<br>College, Ahmednagar                                                              | Total Synthesis of Natural<br>Products                   | Prof. P. M.<br>Bhate |
| 42. | Dugane Rajaram<br>Gangaram          | Department<br>of Chemistry,<br>Dr.Babasaheb<br>Ambedkar<br>Marathawada<br>Univrsity, Aurngabad | Studies in Chiral synthesis                              | Prof. P. M.<br>Bhate |
| 43. | Rajkumari<br>Vijilata Devi          | Ahmednagar College,<br>Ahmednagar.                                                             | Total Synthesis of Natural<br>Products                   | Prof. P. M.<br>Bhate |
| 44. | Dattatray<br>Appasha<br>Pethsangave | Dr.Babasaheb<br>Ambedkar<br>Marathawada<br>Univrsity,<br>Aurngabad,                            | Synthesis of grapheme<br>Derivative & their applications | Dr. Surajit<br>Some  |

|    |                 |                                       |                                                                                                                            |                   |
|----|-----------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------------|
| 45 | Rahul Khose     | Wilson College, University of Mumbai. | Synthesis of carbon nanoparticles and their applications.                                                                  | Dr. Surajit Some  |
| 46 | Pravin Vadekar  | Institute of Science, Mumbai.         | Synthesis and /characterization of Graphene Based Nano-composites and their applications in various Energy Storage Devices | Dr. Surajit Some  |
| 47 | Valmik Jejurkar | P.V.P. College Loni, Pravaranagar     | Design, Synthesis and applications of Troger's Base towards functional molecules and Organocatalysis                       | Dr.Satyajit Saha. |

**39. Number of post graduate students getting financial assistance from the university.**

Approx. 100%

**40. Was any need assessment exercise undertaken before the development of new programme(s)?**

**If so, highlight the methodology.**

No new program has been started recently

**41. Does the department obtain feedback from**

a.faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback? Yes

b.students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback? Yes

c. alumni and employers on the programmes offered and how does the department utilize the feedback? Yes

(A) feedback collected for all courses: YES

(B) specify the feedback collection process: Electronic. On our intranet, each student has a separate account and fills up feedback for each course at the semester end.

(C) percentage of students participating: 100%



(D) specify the feedback analysis process:

- (1) Feedback form has been prepared after a lot of brain storming which contain 32 questions.
- (2) Feedback is taken electronically and the activity is co-ordinated by Institutional and Departmental co-ordinator.
- (3) The collected feedback and compiled and specific comments are identified. These comments are communicated to concerned faculty members by Head of the Department

(E) Basis of reward / corrective measures, if any: Courses with very good feedback and bad feedback - the HOD will speak to the faculty member and find possibilities of improvement. Another indirect feedback is by students is voting for a Best Teacher Award.

(F) number of corrective actions taken in the last three years:

1. Corrective steps include special sessions for students not doing well. Many faculty members attended special programs for pedagogy and teaching skills.

2. Based on students' feedback, one or revision sessions of pre-requisite subject material are conducted before starting the course.

3. Improvements are made in continuous assessment practices based on students' input. The department follows and OBE (Outcome based education scheme and has certain specific PEO's i.e program educational outcomes and PO's i.e program outcomes.

#### 42. List the distinguished alumni of the department (maximum 10)

List given in the table below

| Name                      | Organisation                                          | Designation |
|---------------------------|-------------------------------------------------------|-------------|
| Surendra Pandey           | Symchem Research Labs Pvt Limited                     | Founder     |
| Dr.R. Rajagopal           | KnowGenix                                             | Founder     |
| Digambar Ramkrishna Tatke | Synthone Laboratories And Consultants Private Limited | Founder     |
| Dr.Murzban Karai          | Jenrashid Consultants                                 | Founder     |
| Pankaj Bet                | Bet & Bet Industries                                  | Founder     |
| Pramod Sawant             | Dreamland Dyes Private Limited                        | Founder     |
| Rajen Shah                | Techno Color Corporation                              | Founder     |
| Ravindra Bandivadekar     | B.J. Corporation, Kolhapur                            | Founder     |
| Savindar Singh Sarna      | Sarna Chemicals Pvt. Ltd.                             | Founder     |

|                     |                                             |                          |
|---------------------|---------------------------------------------|--------------------------|
| Siddhath Sikchi     | Clean Science & Technology P Ltd            | Founder                  |
| Narendra Parekh     | Pidilite Industries Ltd                     | Chairman                 |
| K.L. Rathi          | Sudarshan Chemicals                         | Chairman                 |
| Dr. Kishore Shah    | Sauradip Chemicals                          | Founder                  |
| Dr. Shavak Bhungara | Eskay Dyestuffs & Organic Chemicals Pvt Ltd | Managing Director        |
| B.L. Kaul           | Clariant                                    | Global Head              |
| Dr. R.B. Mitra      | Central Leather Research Institute          | Director                 |
| Dr. Ram Sabnis      | Pfizer Ltd                                  | Senior Patent Agent, USA |

#### 43. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts

In addition to the guest lectures mentioned elsewhere in this document, the following national conferences and international conventions were organised by the department

| Sr. No. | Conferences /Seminars / Workshop Organised                | Faculty Name                                                                                   | Date          | Location            |
|---------|-----------------------------------------------------------|------------------------------------------------------------------------------------------------|---------------|---------------------|
| 1       | Convention On Colorants                                   | Prof. P. M. Bhate,<br>Prof. N.Sekar,<br>Prof. G. S. Shankarling                                | Janurary 2013 | Gandhinagar, Gujrat |
| 2       | Convention On Colorants                                   | Prof. P. M. Bhate,<br>Prof. N. Sekar,<br>Prof. G. S. Shankarling,<br>Dr. S.Some,<br>Dr.S.Saha  | March 2015    | The Club Mumbai     |
| 3       | National Symposium of functional application of colorants | Prof. P. M. Bhate,<br>Prof. N.Sekar,<br>Prof. G. S. Shankarling                                | May 2013      | ICT, Mumbai         |
| 4       | National Symposium of functional application of colorants | Prof. P. M. Bhate,<br>Prof. N. Sekar,<br>Prof. G. S. Shankarling,<br>Dr. S. Some<br>Dr. S.Saha | May 2014      | ICT, Mumbai         |
| 5       | Workshop on safe practices in the laboratory              | Prof. P. M. Bhate,<br>Prof. N.Sekar<br>Prof. G. S. Shankarling                                 | March 2014    | ICT, Mumbai         |
| 6       | Technology Innovation in Dyes and pigments (TIDP)         | Prof.G.S. Shankarling                                                                          | Dec.2015      | ICT,Mumbai          |

|   |                                                                  |                                                            |           |             |
|---|------------------------------------------------------------------|------------------------------------------------------------|-----------|-------------|
| 7 | International Symposium on Ionic Liquids (ISOIL)                 | Prof.G.S. Shankarling                                      | Jan 2016  | ICT, Mumbai |
| 8 | Pigment finishing and printing technology and effluent treatment | Dr.Surajit Some<br>Dr.Satyajit Saha<br>Prof.G.S.Shnakrling | Sept 2016 | ICT,Mumbai  |
| 9 | National Symposium for functional Application of colorants       | Prof.N.Sekar                                               | Oct 2016  | ICT,Mumbai  |

**44. list the teaching methods adopted by the faculty for different programmes.**

As shown above the faculty mainly explain the subject through:

- 1) Audio-Visual Teaching aids (Presentations)
- 2) Case studies
- 3) Practical Experiences
- 4) Industry Visits
- 5) Home papers and Projects
- 6) Seminars
- 7) Tutorials
- 8) Time barred assignments

**45. how does the department ensure that programme objectives are constantly met and learning outcomes are monitored?**

The department has a feedback mechanism to overcome possible shortcomings. Also a credit based evaluation system is in place which stresses on continuous evaluation. Firstly the broad program objectives for all the courses of the department are :

Certain program outcomes are stressed upon i.e:

- An ability to apply knowledge in Dyestuff Technology and Engineering
- An ability to implement concept to commercialization(C C) concept of innovative ideas
- An ability to design and conduct experiments, as well as to analyze and interpret data
- An ability to design and synthesize organic colour molecules and intermediates to meet desired needs within realistic constraints such as economic, environmental, health and safety, production competency, and sustainability
- A recognition of the need for an ability to engage in lifelong learning

- A commitment to quality, timeliness, and continuous improvement.

These program outcomes are measured in each of graduate by a feedback mechanism which includes input from our alumni and also the employers.

These PO's and PEO's are constantly modified to conform with current trends in both academia and industry. Furthermore out programs are mapped with respect to our PO's and PEO's

**46. highlight the participation of students and faculty in extension activities - Nil**

**47. give details of “beyond syllabus scholarly activities” of the department.**

Several international and national level symposia and conferences are held annually. Also industry experts and distinguished alumni are invited for guest lectures , seminars and panel discussions which further the knowledge of our students. College level fests are regularly held in which our students actively participate, especially in technical events. Details of seminars and guest lectures organized by the department is mentioned previously.

**48. state whether the programme/ department is accredited/ graded by other agencies? If yes, give details.**

All the programs are accredited by AICTE and B.Tech (Dyes) program was last accredited by NBA vide letter NBA/ACCR-967/2007 dt. 19/07/2008. M.Tech (Dyes) is accredited by NBA vide 28-301-2010-NBA dt 21/10/2015

**49. Briefly highlight the contributions of the department in generating new knowledge, basic or applied.**

The department has done pioneering research work in the following fields

- 1) Development and applications of Ionic Liquids
- 2) Development and applications of deep eutectic solvents
- 3) Synthesis of novel cucurbiturils
- 4) Synthesis and applications of various types of chemosensors
- 5) Synthesis and applications of sensors for explosives
- 6) Synthesis and applications of laser dyes
- 7) Synthesis of natural products by easier protocols
- 8) Advancement in the fields of heterogeneous catalysts

The list of research publications attached previously gives an exhaustive idea of the research and development activities of the department over the past few years

**50. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.**

strengths:

- One of the oldest (a sort of heritage status) and reputed institution dedicated to chemical engineering processes and technologies with a remarkable rate of growth
- Teaching (both UG and PG) and research programmes exist in a large variety of frontier as well as unique areas
- Well qualified, senior and experienced faculty
- Academically, administratively and financially autonomous status of the institute
- Rs. 23 crore TEQIP programme is rated excellent

**51. future plans of the department.**

Future plans of the department are enshrined in the departmental vision 2020. It reads

- the department aspires to be one of the world's top color chemistry department by 2020. It will do so by-

- Providing knowledge and skilled based training at undergraduate and postgraduate level by designing, teaching, and periodically upgrading a color chemistry and technology syllabus in line with current anticipated trends in industry and academia
- Pursuing world class research in colourants and related areas-basic textile and leather coloration, functional colourants, organic process technology and specialty chemicals
- Proactively developing and maintaining close interaction with national and international research laboratories, universities and chemical industries