



DEPARTMENT OF CHEMICAL ENGINEERING



PROFESSOR A.W. PATWARDHAN

Head, Department of Chemical Engineering
B. Chem. Eng., M. Chem. Eng., Ph. D.

This year the chemical engineering faculty members published 229 papers in International refereed journals, 12 book Chapters, 23 patents, presented 39 papers in National and International conferences and 48 invited lectures were delivered in industry, symposia, and workshops.

The faculty members and students of the Department received various awards in the academic year 2018 – 2019 for their contributions:

Dr. Mathpati has received the 2017 Class of Influential Researchers of Ind. Eng. Chem. Res., Global team of 14 editors identified this inaugural class of influential researchers, who are early in their careers (less than 10 yrs or so into their independent research career), based on the quality and impact of their research. Citations of Prof. Parag Gogate are crossed 15000. Prof. M. Lakshmi Kantam was elected as Fellow of TWAS

in 2017, swearing in ceremony happened in Nov 2018. Prof Virendra Rathod received the IChE's Hindustan Lever Biennial award for the most outstanding Chemical Engineering under the age of 45. Prof. Parag Gogate received the ISCMA Award for an outstanding professor at ICT, he has published 30 research papers and has 1611 citations in 2017. Prof. K.V. Marathe's Book Chapter on LCA of PET bottles has been published in the book on PET bottles published by Elsevier. Out of ten chapters, this is the only chapter accepted by all the three reviewers without any comments and with compliments by reviewers and editors. Professor Parag Gogate received the Rajib Goyal Prize in Applied Science for 2016-2017 from Kurukshetra University. Professor M. Lakshmi Kantam Received the Goyal Prize in Applied Science for 2016-2017 from Kurukshetra University. Prof. A.B. Pandit received the Chemtrech Foundation's, Leadership & Excellence Award 2019 for Outstanding Achievement – R&D Excellence (by individual). Prof. A.B. Pandit and Dr. Jyoti Kumar wrote a book "Drinking Water Treatment for Developing Countries", Published by RSC.

Aditya Joshi's solution to problem posed in Romanian Mathematical Magazine was

published. His solution was one of the four published others being India, USA and Romania. Mr. Jayesh Mevada has received the INAE Innovative Student Projects Award 2018 at Masters Level. Team Ict has won bronze medal at iGEM award 2018 (340 teams participated), Project topic was "Smart Soil" and student members are Ninad Kumbhojkar, Supriya Prakash, Bhargav Patel, Atharva Chikhalikar, Marwan Malik (Xaviers college), Faculty are Prof. A. M. Lali, Dr. Shamlan Reshamwala, Dr. Shalini Deb. Dr. Preeti Subhedar a student of Dr. P.R.Gogate, has got the Dr. A. V. Rama Rao Foundation's Best Ph.D. Thesis and Research Award in Chemical Engineering/Technology for the year 2018. Omkar Dapurkar is final year UG student, who worked under Dr. P. R. Gogate during the summer and published one paper has got the The Chemical Weekly Prize for Best Research Paper Published in a High Impact Factor International Journal by an Undergraduate Chemical Engineering Student and received Second Prize. Mr. Nitin Thombre a student of Prof. Anand Patwardhan has received M P Chary Memorial Award for an outstanding Chemical Engineer below 35 Years, for his paper, "Ultrasound Assisted Cleaning of NF Polymeric Membranes: A Hybrid and Comparative Approach with Chemical Cleaning". Mr. Radhish Gupta, (M Chem Engg 2017 batch) received the Ambuja's Young Researcher's Awards for doing Post-Graduate Studies in India after GATE Examination. His thesis was titled "Studies in Water Recovery from Dye-Containing Aqueous Effluents using Membrane Separation". Mr. Keyur Mordiya a student of Prof. K. V. Marathe has been selected for the award of Prime Minister Fellowship under SERB. Prime Ministers Fellowship has received by 3 students of Prof.G.D.Yadav. Mr. Mayur Ladole, Gaurav Dastane, Nilesh Jadhav and Sarjerao Doltade, students of Prof. A.B. Pandit has received the Infosys Arohan Social Innovation Gold Award 2019. Mr. Anirudh

Venkatesh, Eeshan Godbole and Surabh K. T., students of Third Year B.Chem.Engg., won 2nd Prize in N. R. Kamath Memorial Quiz, Held in Datta Meghe College of Engineering, Organized by IChE Mumbai Regional Centre, March 2019. Mr. Jayesh Mevada a student of Prof. A.B.Pandit, and Mr. Yogesh Urunkar a student of Prof. J.B.Joshi, Prof.A.B.Pandit, Dr.C.S.Mathpati received the Gandhian Young Technological Innovation Award, March 2019. Mr. Nilesh Hendre, along with Mr. Nilesh Veer HWB, has received the first prize at the Outstanding Young Chemical Engineer 2019, National Level competition organized by IChE-MRC.

Shri Amol S. Kargutkar, a Lab Attendant in our Department has received the ISCMA Award for non-teaching staff (Class IV).

In department 45 Ph.D. theses were submitted along with 35 Masters theses. The number of Ph.D. Candidates in the Department is 172 and the number of M. Chem. Engg. With M.Tech has reached to 69, all with full scholarship from Department of Atomic Energy, Department of Biotechnology, CSIR, Department of Science and Technology, and several industry sponsored projects. Safety course was conducted for all Master students. It covers Process safety, Fire safety, Bio safety and radiation safety which are taught by Eminent faculties. Like every year Department took Summer research internship for students. This year 52 students from various Institutes were summer Interns.

This year also saw a very good placement for the Graduates of the Department. By the time of writing this report, we have placed 86% of students in Industry through campus interviews with minimum salary of 4 lakh, a maximum of 17 lakh per annum. All these placements are in core manufacturing sectors of chemical industry. Amongst post-graduates also 93% of the candidates have been placed in Industry and the rest have enrolled for higher studies.



PROF. SUNIL S. BHAGWAT

B. Chem. Engg., M. Chem. Engg., Ph.D. (Tech.)

Professor

Fellowships/ Memberships of Professional Bodies :

- Indian Institute of Chemical Engineers - Life Member and Past Chairman of Mumbai Regional Center
- Oil Technologists Association of India - Life Member
- Society for Industrial Chemistry - Life Member
- Indian Society for Surface Science and Technology - Life Member, Hon Secy, Western India
- Maharashtra Academy of Sciences - Fellow (2008)
- Industrial and Engineering Chemistry, American Chemical Society - Former Member, Editorial Advisory Board
- Journal of Surface Science and Technology - Member, Editorial Board

Highlights of research work done and its impact:

In the area of thermodynamics, we have employed a novel technology for refrigeration that is a combination of Vapour Absorption Refrigeration system (VAR) & Vapour Compression Refrigeration system (VCR) called "COMBO

VAR-VCR TECHNOLOGY". The combination has been optimized by the use of Exergy Engineering techniques such that an optimum use of both technologies results in maximum benefits. It reduces electrical energy consumption by using heat as an energy source. The heat can be obtained by solar collector or by agro waste through a boiler generating steam or by direct combustion of agro waste.

We are also studying the thermodynamic properties of novel working fluids which can replace commercially available LiBr-water systems.

We are also working on process design of liquid-liquid bi-phasic reactions for styrene hypochlorination. Using hydrogen peroxide and hydrochloric acid as a source for hypochlorous acid in situ; the effect of key parameters such as temperature, volume fraction and initial concentration of precursors on reaction rate and chlorohydrin selectivity is being investigated. The results of this work can serve as a basis for continuous process design for styrene oxide manufacture which is the major precursor for phenyl ethyl alcohol.

In the area of interfacial science, we are working on the development and synthesis of novel surfactants. We have developed amidoamine based cationic surfactants. The introduction of amide group in cationic surfactants enhances its biodegradability while also reducing its eco-toxicity. Amido-amine based Gemini surfactants have also been developed and characterized.

We are also studying the behavior of mixed surfactant systems. We have analysed the mixture behavior of ionic surfactants with nonionics and analyzed their synergistic activity. We are also studying development of mathematical models to characterize the behavior of surfactant mixtures. Such models shall aid in a priori prediction of the properties of surfactant mixtures.

Apart from that, we are also looking at employing surfactants as a media for carrying out reactions faster by virtue of their micelle forming ability. We are trying to optimise both the selectivity of the product and separation of the product using such methods.

We are also working on the extraction and the purification of minor constituents/phytonutrients from various vegetable oil refining waste, which have important potential applications in food, cosmetics and pharmaceuticals among others.

Publications (peer reviewed) so far : 75

Patents : 8

Conference proceedings/papers : 79

Seminars/Lectures/Orations delivered : >100

Ph.D.s Awarded as single/Co-Guide : 39

Masters Awarded as single/Co-Guide : 79

h-Index : 17

Citations : 922

Subjects taught :

- Chemical Engineering Thermodynamics-I
- Chemical Engineering Thermodynamics-II
- Interfacial science and engineering

Research interests:

Energy and exergy analysis, Interfacial science and engineering, Computer process simulation

Research students:

P.D.F.-

RA - 1

Ph.D. (Tech.) - 05

Ph.D.(Sc) - 01

M.Tech. -

M.Chem.Eng - 2

M.Sc -

Others (if any) -

Research publications:

International - 06

National - 00

Peer-reviewed -

Conference proceeding -

Books-

Patents :

International -

Indian -

Sponsored projects :

Government - 01

Private - 01

Professional Activities:

- Expert member, NBA committee
- Member, RRC, University of Mumbai
- Member, Journal of Surface Science and technology
- Brief career profile upto 200 words



VISHWANATH H. DALVI

*Ph.D. Chemical Engineering, The University of Texas at Austin
M.S., P.D. Eng., Process Design, University of Twente
B. Chem. Eng. University of Mumbai*

R. A. Mashelkar Assistant Professor

Highlights of research work done and its impact:

I am interested in developing sustainable solutions reviving the rural Indian economy. To this end I am working on developing an ultra-low cost, high performance solar thermal system which can

be used for drying, cooking or power production. I am simultaneously working on the next generation of anaerobic digestors to monetize agricultural residues by converting them into transportation fuels. I am also very interested in developing

waterless sanitation solutions that will simultaneously save millions of tons of freshwater and dramatically increase access to sanitation. On the side, I am interested in applied thermodynamics especially for describing solvated systems.

Publications (peer reviewed) so far : 15

Patents : 5

Masters Awarded as single/Co-Guide : 9

PhD Awarded as Single/Co-guide : 2

h-Index : 7

Citations : 328

Subjects taught :

- CET1713: Instrumentation and Process Control for Final Year B.Tech
- CEP1717: Optimization of Chemical Engineering Systems for Final Year B.Chem

- CET1716: Mathematical Methods in Chemical Engineering for Third Year B.Chem
- CET2055: Advanced Mass Transfer to M Chem
- CEP1705: Process Simulation 2 to Third Year B Chem
- PYT2404: Data Analysis to Second Year MSc Physics

Research interests:

Applied thermodynamics, Solar thermal energy, Molecular simulations

Research students : 10

P.D.F.- 1

RA - Nil

Ph.D. (Tech.) - 6

Ph.D.(Sc) - 0

M.Tech. - Nil

M.Chem.Eng - 4

M.Sc - Nil

Others (if any) - Nil

Research publications:

International - 15

Peer-reviewed - 15

Patents :

International - Nil

Indian - 7

Sponsored projects :

Government - Nil

Private- 2

Professional Activities:

None

Gaikar in academic research and as a consultant to several industrial concerns in the last two decades. As a Chair Professor on a position created by Bharat Petroleum Corporation Ltd. in the Institute of Chemical Technology (ICT), he has developed newer and novel technologies for the company, most recently for upgradation of vacuum residue and waste water management. He had developed a large number of oleochemicals from castor oil that were manufactured and marketed by another industrial concern.

Professor Gaikar extended his work on reactive separations to complex distillation columns including reactive distillation, salt effect in distillation and complex heterogeneous azeotropic distillation column designs. In particular, he had analyzed and successfully showed economical operation for a multicomponent azeotropic distillation column involving acetic acid-water mixtures in India's leading petrochemical company.

In the last few years, his group has developed several reactive sorbents for heavy metal extraction with extreme selectivity towards desired metal ions, affinity adsorbents for a number of closely related organic compounds, functionalized sorbents for capture of carbon-dioxide and nanoparticle synthesis having potential applications in pharmaceutical and specialty chemical industries. Currently, his group is working on several

specialty chemicals' synthetic reactions for development of continuous processes to improve selectivity to desired product and to minimize waste with energy integration. In the area of Biofuels, biolubricants, biodiesel, thermochemical conversion of biomass, his group has attained several newer milestones. The thermal conversion of lignocellulosic biomass is being developed to establish biorefinery concept. Another offshoot of this work is establishing, 'Steam Pyrolysis' as a waste treatment technique for dealing with concentrated organic waste.

His contribution to the field of hydrotropy and complex mixtures with surfactants has been pioneering, especially considering that his contribution has come entirely from the work done in ICT, India. His work, for the first time, established sodium ibuprofen as an efficient hydrotrope and drug solubilizer which is now being used in several drug formulations. He has also developed several formulations of hydrotropes with surfactants for potential applications in drug and pesticide industries.

His group has successfully developed aqueous solutions of hydrotropes based extraction process for natural products as an alternative to organic solvents that is also easily scalable to industrial operations. Recently his group has successfully conducted delignification using aqueous solutions of

hydrotrope as a substitute for chemical conversion techniques. The aqueous solutions are also useful in conducting organic synthesis as safer media and provide ease of recovery of products. His work on biochemical applications, using organic solutions of reverse micelles, is also recognized as first of its type, mostly for enzyme and protein recovery by cell permeabilization and purification.

Apart from his industrial and corporate relations, Professor Gaikar was rated as the Best Teacher by University of Mumbai in 2002 and several times by the students of the Institute. He is known for his innovative and out-of-box ideas for promoting engineering and technical education in the country, and inspiring young engineers to innovate. His originality in conceptualizing the Industry-Academia interaction in the form 'Young Innovator Choice Competition' in ICT has brought young chemical engineers/ technologists from all corners of the country and several industries seeking innovative answers for their problem, on the same platform. In 2014-15, he conceptualized the idea of 'Innovation Networking' of engineering institutes in the State of Maharashtra and has been spearheading the efforts of ICT in spreading the spirit of Innovation among young engineers.



PROFESSOR VILAS G. GAIKAR

FNAE, FMASc, MIIChe, FMOTAI, MISSST, MAMIC

Ph.D.(Tech.)(1986); MChemEngg(1984), BChemEngg(1982)

Bharat Petroleum Distinguished Professor of Chemical Engineering

Vice-Chancellor, Dr. Babasaheb Ambedkar Technological University, Maharashtra, (from March 2nd, 2016)

Fellowships/ Memberships of Professional Bodies :

- Fellow, Indian National Academy of Engineering
- Fellow, Maharashtra Academy of Sciences
- Life Member, Indian Institute of Chemical Engineers
- Life Member, Indian Society for Surface Science and Technology
- Fellow Member, Oil Technologists Association of India
- Life Member, Asian and

Mid-East Institute of Chemists

Highlights of research work done and its impart:

Professor Vilas G. Gaikar, a fellow of Indian National Academy of Engineering, has made outstanding research contribution to Chemical Engineering Science that has been applied by many industries in India and abroad. His work on Dissociation extraction and dissociation extractive crystallization has been practiced in chemical

industry where the other conventional methods of separation have been either economically impractical or are difficult to employ. His process of reactive crystallization for m-p-cresols was the first of its kind with extreme selectivity for separation of this most difficult-to-separate mixture.

Innovative approaches by synergizing theoretical developments with practical applications are hall marks of the work done by Professor

Publications (peer reviewed) so far : 189

National : 06;
International: 183

Patents (granted & Filed): 12

Conference proceedings/papers : 133

Seminars/Lectures/Orations delivered : 230

Ph.D.s Awarded as single/Co-Guide : 37

Masters Awarded as single/Co-Guide : 75

h-Index :

Google Scholar(31);
Scopus(27)

Citations :

Google Scholar(3299);
Scopus (2668)

Research interests :

Process Intensification,
Biofuels by pyrolysis, CO₂
conversion to liquid fuel

Research students :

P.D.F. - 00
RA - 00
Ph.D. (Tech.) - 02
Ph.D.(Sc) - 01

M.Tech. - 00
M.Chem.Eng - 00
M.Sc - 00
Others (if any) -

Research publications:

International - 10
National - 0
Peer-reviewed-
Conference proceeding - 01
Books-00

Patents :

International - 00
Indian - 01

Sponsored projects :

Government - 01
Private- 03

Professional Activities:

- Director, Aarti Drugs Ltd. (2006- to date)
- Chairman, Wester Region, AICTE(2017-)
- Member, Western Region Board of Apprenticeship and Training(2917-)
- Chairman, Expert Committee, Research, Innovation and Technology Transfer, RUSA-SPD, Maharashtra(2016-)

- Member, RUSA Council, Maharashtra State (2017-19)
- Member, Sectional Committee (Chem Engg), Indian National Academy of Engineering (INAE) (2015-2018), New Delhi
- Member, TASK Force, Bioenergy Sciences, Department of Biotechnology, Ministry of Science and Technology, Gol.(2014-2018)
- Member, Working group-Innovation Council, Maharashtra State(2015-2018)
- Member, National Program on Carbon Capture, Department of Science and Technology, Gol(2016-2019)
- Member, Advisory Committee, UGC-CAS program in Chemical Engineering, IISc(2019-)

Special Awards/Honours:

- Dr. G M Nabar Memorial Lecture, Color Society, 2018



PUSHPITO KUMAR GHOSH

PhD (Chemistry), Princeton University, USA

K. V. Mariwala-J. B. Joshi Distinguished Professor

Fellowships/ Memberships of Professional Bodies :

- Fellow, Indian Academy of Sciences

Highlights of research work done and its impact:

Novel Applications of Forward Osmosis (Sponsor: Godavari Biorefineries Ltd.)

A wide range of useful applications of Forward Osmosis have been devised employing complementary Feed and Draw streams having low and high osmotic pressures, respectively. Both Feed and Draw can gain as a result.

Practical methods have been devised for brine preparation using seawater – instead of fresh water or desalinated seawater – without compromising brine quality. Main advantage is energy savings

Students: B. C. Honmane (PhD student), S. Mogha (M. Chem.), S. Sunny (M. Chem.)

Unsaturated Fatty Acids from Saturated Feedstocks (collaboration with Professor G. D. Yadav); Sponsor: Asian Paints

Motivation: To convert inexpensive saturated oils/

fatty acids into unsaturated oils/fatty acids for alkyd preparation.

Highlight: Iodine value up to 130 g/100 g achieved and efficacy in drying oils application is demonstrated (performance test conducted at Asian Paints)

Student: Sonam Sancheti

Contaminants in Phosphate Fertilizers

Attempts were made to reconfirm the data of uranium analysis by laser fluorimetry provided by BARC. A second set of analysis was carried out by C-MET Hyderabad using the technique of ICP-OES. A third set of analysis on select samples was carried out by XRF (data courtesy Dr. D. Parvatalu). An analysis was also carried out on Egyptian phosphate rock sample provided by RCF.

DST Project entitled: Mitigating Water Woes in Marathwada (in collaboration with Dr. D. D. Sarode)

5000 LPH RO plant with >66% product water recovery achieved. Plant is presently producing around 10,000 litres of potable water which is being distributed by AUSA Municipal Council.

Method of concentrating the reject water stream by up to 50% with co-generation of dissolved fertilizer has been developed. (Ext. Collaborator: Aquaplus, Pune). Equipment has been procured for scale up of reject water concentration to 350 LPH.

ONGC Projects entitled: Use of composite foam to tackle the problems of oil spill and undesirable oil-in-water emulsion (in collaboration with Dr. Surajit Some)

Foams have been prepared. Selective uptake of oil from oil-water systems has been demonstrated. Oil can be squeezed out and the foam reused.

Iron-fortified salt

A collaborative initiative is underway with Dr. A. Gupta of University of Alabama and Dr. J. R. Chunawala of CSMCRI, Bhavnagar to understand the properties iron loaded synthetic hydrotalcite being considered for iron fortification. US patent was earlier granted for the invention.

Publications (peer reviewed): 3

Patents: 1 granted; 1 filed

Conference proceedings/

Laboratory



papers : 1
Seminars/Lectures/Orations delivered : 7

lectures during 2008-2018

Ph.D.s Awarded as single/Co-Guide : 1 (AcSIR)

Masters Awarded as single/Co-Guide : 3

h-Index : 37

Citations : 5452

Subject taught:

- Innovations in Chemical Technology;
- Industrial Engineering Chemistry;
- Industrial Inorganic Chemistry,
- Safety & Risk Management

Research interests:

Applied Chemistry, Sustainability Research, Outreach Programmes

Research students:

P.D.F.- 1

RA - 1

Ph.D. (Tech.) - 1

Ph.D.(Sc) -

M.Tech. - 1

M.Chem. Eng - 2

M.Sc - 0

Others (UGs/BTech) - 7

Research publications:

International - 3

National - 0

Conference proceeding - 1

Books - 0

Patents :

International - 1

Indian - 1

Sponsored Projects :

Government - 1

Private - 2

Professional Activities:

- Chairman, Water Technology Initiative, Department of Science & Technology, GoI
- Chairman, Project Evaluation Committee, Bilateral Programmes in Clean Tech Sector, DST-GITA

- Co-Chairman, CSIR Mission Mode Project on Sustainable Development through Catalysis

- Member, Asian Paints Technology Council

- Member, Board of Directors, Barefoot College, Tilonia, Rajasthan

- Member, Expert Committee for Appraisal of programmes and projects undertaken by the Department of Biotechnology, GoI during the 12th Plan.

- Member, NRDC National Prize Award Committee

- Member, Advisory and Screening Committee of the Common Research & Technology Development Hubs Programme of DSIR

- Vice President, Materials Research Society of India (MRSI)

Special Awards/Honours: Nil

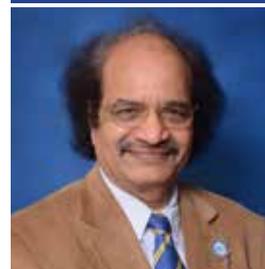
Profile:

Professor Pushpito Kumar Ghosh studied at Calcutta Boys' School and was a recipient of the prestigious National Science Talent Search Scholarship. He received his Bachelor's and Master's education in Chemistry at St.

Stephen's College, Delhi and IIT Kanpur, respectively. He thereafter obtained his PhD from Princeton University (U.S.A). He presently holds the K. V. Mariwala-J. B. Joshi Distinguished Professor's chair at the Institute of Chemical Technology,

Mumbai. He served from 1999 to 2014 as the Director of CSIR-CSMCRI, Bhavnagar, prior to which he functioned in senior R&D roles in ICI India and ICI plc during 1985 to 1998. He was also associated briefly with the University of Hyderabad and IIT Bombay.

COLLABORATORS – FACULTY, STUDENTS AND INDUSTRY PARTNERS IN RESEARCH PROJECTS



Prof. G. D. Yadav



Dr. D. D. Sarode



Dr. S. Srivastava
(Godavari Biorefineries)



Dr. Surajit Some



Prof. A. V. Patwardhan



Prof. B. M. Bhanage



Mr. R. Pathak
(Aquaplus Water Purifier Pvt. Ltd.)



Prof. Arunava Gupta
University of Alabama

Ph.D/POSTDOC STUDENTS



Mr. Bharat Honmane
(PhD Student)



Sonam Sancheti
(PhD Student)



Dr. Lokeshkumar Ramteke
(Research Associate)



DR. PARAG. R. GOGATE

B. Chem. Eng., M. Chem. Eng., Ph.D. (Tech.)

Associate Professor in Chemical Engineering

Fellowships/ Memberships of Professional Bodies:

- Member, Indian Institute of Chemical Engineers, 2003
- Young Associate of Maharashtra Academy of Sciences, 2007
- Member, National Academy of Sciences, Allahabad, 2009
- Young Associate, Indian Academy of Sciences, Bangalore, 2009-2012
- Member, Indian Society for Technical Education, 2011
- Young Associate, Indian National Academy of Engineering, 2012
- Member, Editorial Board, Ultrasonics Sonochemistry, 2013-onwards
- Chartered Member, Institution of Chemical Engineers, UK, 2013
- Fellow, Maharashtra Academy of Sciences, 2014
- Member, Board of Governors & Honorary Secretary, UDCT Alumni Association, 2013-2015, 2015-2017, 2017-2019
- Member, Editorial Board, Desalination and Water Treatment (Taylor &

Francis), 2016- 2018

- Associate Editor, Chemical Engineering Processing, Process Intensification (Elsevier), 2016-2019

Highlights of research work done and its impart:

Dr. Gogate has developed engineering design and scale up strategies for cavitation reactors based on the methodical analysis of the bubble behaviour and its implications on the cavitation intensity. Cavitation reactors are based on the key concepts of process intensification including the use of newer energy sources such as ultrasound and fluid energy. The theoretical aspects have considered the different approaches to understand the non-linear bubble dynamics also considering the chemical reactions occurring inside the bubble. Also based on fundamental analysis, a scheme has been developed to predict the cavitation intensity in the reactor which can aid in obtaining optimum design for cavitation reactors. The work has resulted into establishing the optimum set of design and operating parameters for

maximizing the cavitation effects for acoustic and hydrodynamic cavitation reactors and also formed the basis for new designs which can be functional at commercial scale operations.

The fundamental analysis has also been successfully transformed into pilot scale designs which are significantly more energy efficient as compared to the conventional designs. For the large-scale designs, Dr. Gogate has also performed the methodological analysis of the cavitation activity distributions based on the theoretical simulations and experimental mapping measurements to establish the enhanced activity. The successful design and application of pilot scale reactors operating on the basis of multiple frequency multiple transducer ultrasound irradiation can be considered as a significant achievement as this was the first such depiction in India and one of the few worldwide. The work has also allowed commercial scale installations for cavitation reactors which has been lacking.

The main focus of the recent

work has been on utilization of newer resources of energy for waste minimization, increasing the throughputs and converting the waste resources into useful products based on the application of the basic insights developed earlier. The process intensification studies with different industrially important applications such as chemical synthesis, wastewater treatment, crystallization and emulsification have clearly established the utility of cavitation reactors and have opened up many new areas of applications. The innovative work on using combined oxidation schemes for wastewater treatment/ water disinfection should help in achieving the dreams of a greener environment and also sustainable processing. It has been established and is under demonstration that new designs of cavitation reactors give about 50 to 400% intensification in the processing rates as compared to the conventional designs. The work on synthesis of nanomaterials has led to establishing the procedures for obtaining materials with desired characteristics especially in terms of the particle size and one patent application has been filed on this work with around 25 publications in international journals of high impact factor. Dr. Gogate has also put forward and successfully established the utility of hydrodynamic cavitation reactors with much higher energy efficiencies as compared to sonochemical

reactors. Dr. Gogate was one of the key researchers to start the research in this area, which has now been successfully implemented worldwide. Strategies for intensification of the cavitation activity based on the basic research work have also been successfully established with an objective of reducing the processing costs as well as enhancing the applicability of the cavitation phenomena. The mechanism of synergy for the combinatorial techniques of oxidation has been conclusively identified and this should help in achieving the intensification goals by using variable operation of the cavitation reactors especially for the wastewater treatment applications.

The fundamental work on intensification of enzyme activity due to the use of ultrasound has revealed that the application of ultrasound under optimized conditions results in about two fold increase in the activity of enzyme. This can be a major breakthrough in the area of enzymatic reactions which have been criticized for slow rates despite being Green processes with much higher selectivity. Thermodynamic studies with various enzymes indicated that there is a favorable change in the thermodynamic parameters due to the changes in the enzyme structure leading to enhanced reaction rates.

The research work has translated into commercial scale applications for two notable applications of

improved crystallization (pharmaceutical industry applications) and wastewater treatment (oil and gas industry for recycle of water). The research work and the developed engineering strategies are expected to have a significant impact on the other applications of cavitation reactors in a variety of areas such as specialty chemical synthesis, Biotechnology, Polymer chemistry, extraction of natural products, atomization, enhanced oil recovery, textile industry for enhancing the efficacy of dyeing technique etc. with immense scope for commercial exploitation.

Dr. Gogate has been consultant to many industrial organizations including Ecosphere Technologies in USA in the area of Process Intensification, Process Improvement, Scale up and Design of process equipments. Dr. Gogate has completed so far 10 projects successfully and many companies have renewed the contracts showing the level of satisfaction. Dr. Gogate, in collaboration with Ecosphere Technologies, USA, has recently developed a hybrid advanced oxidation reactor which intensifies the treatment process by 5–20 times as compared to the use of individual approaches depending on the application in question. The Ozonix® reactor has been successfully used for processing of the recycled fluids at commercial sites on over 1200 oil and natural gas wells during

hydraulic operations around the United States. Dr. Gogate is currently working on sponsored research projects worth over 1 Cr from DST in the field of intensification of chemical processing applications using cavitation reactors. Dr. Gogate is also working on collaborative projects with scientists from Portugal, Brazil and Ukraine.

The significance and exceptional quality of the research work is aptly reflected by the fact that the number of citations is remarkably high at around 12887 with an h-index of 62 as per scopus and over 16822 with h-index of above 69 as per google scholar. Dr. Gogate has also contributed 28 book chapters and has been also invited in collaboration with Prof. Pandit of the Institute of Chemical Technology to write two technology reports on Sonochemical Reactors and Hydrodynamic Cavitation Reactors as contribution to the European Roadmap of Process Intensification.

Publications (peer reviewed) so far : 304

Patents : 01

Conference proceedings/papers : 27

Seminars/Lectures/Orations delivered : 87

Ph.D.s Awarded as single/Co-Guide : 14

Masters Awarded as single/Co-Guide : 44

h-Index : 69

Citations : 16822 (as per google scholar)

Subjects taught :

- Process Calculations, Cavitation for green processes,
- Chemical Reaction Engineering, Engineering applications of digital computers.

Research interests :

Sonochemistry, Hydrodynamic Cavitation, Process Intensification, Water and Wastewater Treatment, Enzymatic Reactions, Polymer Chemistry, Advanced Oxidation Processes

Research students currently working :

P.D.F. - Nil

RA - Nil

Ph.D. (Tech.) - 20

Ph.D.(Sc) - Nil

M.Tech. - 03

M.Chem.Eng -02

M.Sc - Nil

Others (if any) -Nil

Research publications:

International- 42

National- Nil

Peer-reviewed-Nil

Conference proceeding- Nil

Book Chapters-3

Patents :

International - Nil

Indian - Nil

Sponsored projects :

Government- 05

Private- 02

Professional Activities:

- Member, Board of Governors & Honorary Secretary, UDCT Alumni Association
- Member, Editorial Board,

Desalination and Water Treatment (Taylor & Francis), 2016- 2018

- Associate Editor, Chemical Engineering Processing, Process Intensification (Elsevier), 2016-2019
- Member, Editorial board, Ultrasonics Sonochemistry (Elsevier), 2015-2018

Special Awards/Honours:

- Most Outstanding Faculty Research Award in the Chemical Engineering Discipline, Careers 360, 2018
- Outstanding Professor Award given by Indian Specialty Chemicals Manufacturing Association, 2018
- A.V. Rama Rao award for guiding the best Ph.D. Thesis of the Indian Institute of Chemical Engineers, 2018
- Rajib Goyal Prize, 2018

Profile:

Dr. Parag Gogate is Associate Professor at Institute of Chemical Institute, Mumbai and former Visiting Associate Professor at Purdue University, USA. He has received his Ph.D. in Chemical Engineering from ICT, Mumbai in 2002. His research interest includes Sonochemistry, Hydrodynamic Cavitation, Process Intensification, Water and Wastewater Treatment, Enzymatic Reactions and Polymer Chemistry. He was awarded Young Scientist/Young Engineer awards of INAE, NASI, IASc, INSA & The SCEJ Award for Outstanding Asian Researcher and

Engineer given by The Society of Chemical Engineers, Japan, 2013. He has received the Maharashtra State National award for best research work done by teachers of Engineering Colleges, Indian Society for Technical Education, New Delhi, 2016 and the Most Outstanding

Faculty Research Award in the Chemical Engineering Discipline, Careers 360, 2018. He has also received the Rajib Goyal Prize for Young scientist, 2018. Dr Gogate has contributed extensively to publishing in journals of high repute with over 280 international journal

publications along with over 16822 citations with h-index of above 69 as per google scholar as well as written 28 chapters in edited books. Dr Gogate has active consultancy projects with many national / international industries and also collaborations with many research groups worldwide.

PRG Lab from Advanced centre



Ultrasonic Reactors

Ultrasonic horn, Ultrasonic bath, Ultrasonic flow cell with varying frequency, power dissipation and operating capacities. Reactor setup based on constant temperature heating bath



SprayDryer

Spraymate PLC- Based Lab spray dryer with ultrasonic nozzle from Jay Instruments Systems PVT LTD.



Ultrasonic Continuous flow cell

Ultrasonic Continuous flow cell from INKARP instruments PVT. LTD.



PROF. J. B. JOSHI

B.Chem.Engg., Ph.D. (Tech)

Professor of Eminence,
Institute of Chemical Technology, Mumbai

Fellowships/ Memberships of Professional Bodies :

- Fellow, The World Academy of Sciences (TWAS),
- Fellow, Indian National Science Academy (INSA),
- Fellow of Indian Academy of Science (IASC),
- Hon. Fellow, Indian Institute of Chemical Engineers,
- Fellow, Maharashtra Academy of Sciences,
- Patron Fellow, Marathi Vidnyan Parishad

Highlights of research work done and its impart:

Professor Joshi has guided 90 Ph.D. thesis and 60 Masters thesis. He has published more than 511 papers in international cited journals and more than 60 state of the art reviews/ monographs/ book chapters. Specifically, he has co-authored (with Dr. L. K. Doraiswamy) a chapter on "Chemical Reaction Engineering: in new Chemical Engineers' Handbook and written a monograph on "Hydrodynamic Stability in Multiphase Reactors" in Advances in Chemical Engineering.

Professor Joshi has more than

11447 citations and h-index of 54 (web of science).

The Chem. Tech journal (published by ACS, USA upto 2002) through its editorial briefs (named heart-cut), has recommended the use of his procedures for the industrial design. Such a recommendation has been made five times which is a record by itself and is truly unique achievement.

Professor Joshi has been able to enhance the productivity and selectivity of a number of manufacturing processes including those competitively offered on the global basis. He has invented a large number of novel designs, which are far superior in performance and less expensive in capital and operating costs. For all these developments, there has been a strong basis of fundamental sciences. His major contributions include: (i) novel designs of multiphase equipment (for hydrogenation, oxidation, ammonolysis, hydrohalogenation, halogenations, alkylation, etc.). (ii) He has improved productivity and selectivity of a large number of ongoing commercial operations

resulting into 2 to 20 times enhancement in business.

His analysis and modeling of probably most complex multiphase reaction (NO_x absorption) has resulted into commercial designs of many plants with capacities in the range of 1 to 250 ton/day for selective manufacture of sodium nitrite and Process Intensification of nitric acid plants of capacities upto 700 tons/day. Extension of Professor Joshi's work in this area earned the British Oxygen Company the coveted Kirkpatrick Award of Chemical Engineering, McGraw Hill, 2002.

No wonder because of his proven and exceptionally successful track record, Professor Joshi is most sought after academic consultant.

Professor Joshi's leadership as Director (1999-2009) has brought total autonomous and subsequently separate University status to the Institute. He almost doubled the output of Ph.D. students, international publications, citation output per year. On the basis of publications per year, he brought the Department of Chemical Engineering at a rank

of 6th in the World (Survey carried out by Professor Sommerfield of Georgia Institute of Technology, USA).

He brought the project funding almost 10 times and donation 2 times the funding per year given by the state government.

During his tenure of 10 years, the external revenue generation (ERG) had a compounded growth of 25% per year. He created seven Endowment Chairs. He vastly improved the infrastructure and collected funds for the construction of about 40,000 m² of laboratory space, student, and faculty housing.

He has established two ultramodern research centers in the areas of bioenergy and atomic energy with research facilities for additional 130 Ph.D. and 60 Masters students.

He also started a comprehensive mission of Process Intensification with a strong participation of industry. He also started a new academic program of management for the doctoral students which has been very well received by the industry and the national research laboratories.

As a social responsibility, he has helped setting up ten small-scale commercial plants.

In India 125 billion dollar/year worth energy is used for household cooking: 50% of this energy is in commercial from (LPG, NG, Coal, kerosene) and 50% noncommercial solid fuels. The thermal efficiency of commercial

fuel in conventional cooking practice is 10 to 25%. Professor Joshi and co-workers have developed new designs of cookers (with capacities catering to 5 to 2000 persons) with thermal efficiency in the range of 65-75%. He has also developed new designs of stoves (for solid noncommercial fuels) having thermal efficiency in the range of 40 to 50% as compared with conventional practice of 10 to 20%. Both the technologies have been licensed. This invention is useful for the entire developing world. The technology of continuous cooking has also been transferred to society.

Professor Joshi has been very active in prompting science awareness in society. He has also motivated school and junior college students for selecting "research" as profession. For these two purposes, he (with the help of about 60 Ph.D. students in the institute) had held 200 workshops attending about 100,000 participants every year.

Professor Joshi is passionate about and has solved a large number of pollution problems and converted the liabilities into assets. In majority of cases, there have been innovative technologies.

Currently, is a president of Marathi Vidnyan Parishad which has been active in improving scientific temper of the society.

Publications (peer reviewed) so far : 511

Patents : 5

Conference proceedings/papers : 38

Seminars/Lectures/Orations delivered : 110

Ph.D.s Awarded as single/Co-Guide : 93

Masters Awarded as single/Co-Guide : 60

h-Index: 57

Citations : 12699

Based on Web of Science (all sources)

Subjects taught :

- Multiphase Reactor Engineering (M.Chem Engg)
- Multiphase Reactor Design (T.Y.B.Chem Engg)

Research interests:

Fluid Mechanics, Multiphase Reactor Design, Computational Fluid Dynamics, Atomic Energy, Solar Energy, Bio-Energy

Research students : 18

P.D.F.- 4

RA - 2

Ph.D. (Tech.) -14

Ph.D.(Sc) -NIL

M.Tech. - 1

M.Chem.Eng -NIL

M.Sc - NIL

Others (if any) - NIL

Research publications:

International- 486

National- 25

Peer-reviewed - 470

Conference proceeding- 38

Books - 9 (Book Chapters)

Patents :

International -1

Indian - 4

Sponsored projects:

Government- 2
Private- 3

Professional Activities (Membership of important Committees):

- Coal Cleaning Initiative, DST, Government of India

- Chairman Science Advisory Committee, CSIR-IICT Hyderabad

Special Awards/Honors:

Fellow, Indian National Academy of Engineers (INAE)

Laboratory



Particle Image Velocimetry Setup



Laser Doppler Anemometry



DR. RATNESH JAIN

PhD(Tech.) *Pharmaceutics*

UGC Assistant Professor and Ramalingaswami Fellow

Fellowships/ Memberships of Professional Bodies :

- Member, European Respiratory Society, Switzerland
- Member, Young Scientist Committee, Controlled Release Society, USA
- Mentor, Mentor-Protégé Program, Member, Controlled Release Society, USA

- Member, Controlled Release Society- USA and Indian Chapter
- Member, Association of Biotechnology Led Enterprises (ABLE), India
- Member, American College of Clinical Pharmacology, USA
- Member, Proteomics Society, India

Highlights of research work done and its impact:

“To learn • To integrate • To apply • To achieve”

This has been my motivation towards achievement of my short term and long term goals. I have a strong penchant for learning not only what is a part of my field of specialization, “Drug delivery systems in Pharmaceutical

sciences”, but also allied sciences bearing indirect but significant implications on the areas of my expertise. The research work conducted by myself during my early days to formulate a locally injectable liquid crystalline nanocarrier (LCNC) of ofloxacin-serratiopeptidase for effective non-surgical treatment of periodontitis. The dosage form was designed to form an in-situ “gel” after administration into the periodontal pocket where it would adhere to the mucosa of periodontal pocket due to its bioadhesive properties. Also, such a dosage form would act as a matrix to control release of both drug and peptide molecules. This formulation was found to be very effective in clinical studies and the results after thorough investigation are ready for publications. The objective of second investigation was to formulate a nanoemulsion for intranasal delivery of nitrendipine, which could deliver the drug through the nasal route for an increased bioavailability.

Further research undertaken by myself involved work packages concerning formulation and characterization of various polymeric nanocarriers including soft-shelled systems like polymeric micelles and hard-shelled systems like polymeric nanoparticles. Nose to brain route of administration was studied to present a safe and acceptable alternative to conventional administration of various CNS targeted drugs

despite the fact that less than 1% of the researchers all over the world engage in this research. The rationale behind designing micelles was that micellar nanocarriers exhibit sizes (approximately 25 nm) that make them suitable for transport through the olfactory mucosa thus offering direct targeting of the entrapped moieties to the brain. Potential molecules like sumatriptan and zolmitriptan was investigated in various animal models like rats and rabbits. The effect of this delivery system was interpreted by combination of various sensitive radio-imaging techniques like gamma scintigraphy, autoradiography and SPECT and provided an in-depth knowledge of the nose-to-brain transfer of these molecules. We have also shown a detailed mechanism of transfer of these molecules involving various physiological and neurological phenomenon.

In addition to the above mentioned research, due to my keen interest in polymeric nanoparticles, I have established various collaborations for working with these systems. Here, drug loaded polymeric nanoparticles were formulated employing Poly Lactic-Glycolic acid (PLGA) derivatives, Poly-Lactic acid derivatives and PLGA-Heparin were developed for coating them on cardiac stents. The research work was aimed at probing the mechanism of drug release and evaluating the safety and efficacy of drug

nanoparticle coated stents.

The objective of the post-doctoral work undertaken by myself was to employ novel biodegradable starch derivatives for targeting drug nanoparticles to the tumour cells. The project involved exploitation of various hydrophobically modified starch derivatives for application as polymer matrix for nanoparticle preparation. The hydrophobic modifications were found to facilitate encapsulation of hydrophobic moieties like idarubicin and docetaxel. As a Humboldt post-doctoral researcher I moved a step ahead and am attempting to integrate principles of molecular biology to develop delivery systems that can tackle diseases at the genetic level. This investigation has been initiated with the objective of developing nanoparticulate system for the siRNA delivery for the treatment of pulmonary diseases. These nanoparticles, formulated with a commercial polymer, were found to sufficiently bind and stabilize a model siRNA against luciferase protein. The transfection efficiency and the knockdown of luciferase protein with this formulation was found to be significantly higher when compared with naked siRNA. Furthermore, the kinetics of siRNA release inside live cells is currently being evaluated by labeling different cell organelles and siRNA with suitable dyes and subsequent Fourier resonance energy transfer technique.

Currently, my research group

is focused on development of Biomaterials for controlled release of drugs/genes/proteins, Computational Pharmaceutics, Engineering of polymeric and metal nanoparticles for biomedical applications, Tissue engineering, biomedical devices and sensors.

Publications (peer reviewed) so far : 11

Patents: 7

Conference proceedings/papers : 28

Seminars/Lectures/Orations delivered : 5

Ph.D.s Awarded as single/Co-Guide : 1

Masters Awarded as single/Co-Guide : 3

h-Index : 14

Citations : 577

Subjects taught :

- Biopharmaceutical Engineering (CET1608)
- Introduction to Biopharmaceutical Manufacturing
- Research Methodologies (Chem eng)
- Research Methodologies (PBT)

Research interests:

Continuous process for polymeric/metal nanoparticles synthesis,; Material-Protein Interactions, Characterization of proteins, biologics and biosimilars, Cell Culture engineering and 3D printing

Research students currently working :

P.D.F.-

RA -

Ph.D. (Tech.) - 9

Ph.D.(Sc) - 3

M.Tech. - 3

M.Chem.Eng -

M.Sc -

Others (if any) - 3

Research publications:

International - 11

National -

Peer-reviewed -

Conference proceeding- 28

Books -

Patents :

International -

Indian - 7

Sponsored Projects :

Government- 6

Private- 7

Professional Activities:

- Member, European Respiratory Society, Switzerland
- Member, Young Scientist Committee, Controlled Release Society, USA
- Mentor, Mentor-Protégé Program, Member, Controlled Release Society, USA
- Member, Controlled Release Society- USA and Indian Chapter
- Member, Association of Biotechnology Led Enterprises (ABLE), India
- Member, American College of Clinical Pharmacology, USA
- Member, Proteomics Society, India

Special Awards/Honors:

International Awards, Fellowship and Recognition

- N. R. Kamath Book Award, for book entitled

'Nanoparticulate Drug Delivery: Perspectives on the Transition from Laboratory to Market', (Woodhead Publishing Series in Biomedicine), Woodhead Publishing (Elsevier), Institute of Chemical Technology, Matunga, India, 2014

- DAE Young Scientist Award, DAE-BRNS, Govt. of India , 2012
- Young Associateship from Maharashtra Academy of Sciences for the contribution and Engineering and Technology, Maharashtra Academy of Sciences, 2012
- Ramalingaswami Fellowship, Department of Biotechnology, Govt. of India, March 2012
- INSPIRE Faculty Fellowship, Department of Sciences and Technology and Indian National Sciences Academy, Govt. of India, June 2012
- Ramanujan Fellowship, Department of Sciences and Technology, Govt. of India, August 2011
- Alexander von Humboldt Postdoctoral Research Fellowship, Alexander von Humboldt Foundation, Germany, January 2011
- DST-DFG (Govt. of India & Govt. of Germany) award to attend Meeting of Nobel Laureate and Young Researchers in Physiology and Medicine, Lindau, Germany, DST-DFG (Govt. of India & Govt. of Germany), 2007

- Team Member of Indo-UK Biotechnology YES (Young Entrepreneurship Scheme), October 24-26, 2007

Academic Awards

- Qualified GATE-2003 (Graduate Aptitude Test in Engineering), Percentile: 99.43, All India Rank:37, 2003
- Rajabhai Kulkarni Memorial Prize for 2nd rank during Bachelor of Pharmaceutical Sciences Course , 2003
- Junior Research Fellowship University Grant Commission, India, August 2004
- Senior Research Fellowship, Board of Research in Nuclear Science, Department of Atomic Energy, India, March 2007
- Nomination for Best PG Student Institute of Chemical Technology, Mumbai, 2005, 2006, 2007

Research and Travel Awards

- First Best Poster Award, 8th International Symposium of Controlled Release Society on Advances in Technology and Business Potential of NDDS, Ahmedabad, February 26-27, 2008
- Dr. A. S. Nanivadekar First Best Poster Award, 2nd International Conference on "Drug Discovery & Development-South Asian Perspective, Mumbai, October 4-5, 2008
- Prizes for research awards, UDCT Alumni Association, 2008
- Best Poster Award (Second), 41st Annual Conference of Society of Nuclear Medicine, December 3-6, 2009
- Travel Grant to attend and present poster in 35th Annual Meeting and exposition of the Controlled Release Society, New York, USA, CRS Indian Chapter,

2008

- Travel Grant to attend and present poster in 35th Annual Meeting and exposition of the Controlled Release Society, New York, USA, 2008, Sahajanand Medical Technologies, 2008

Profile:

I am heading "National Facility for Analytical Characterization of Biopharmaceuticals" being setup by Department of Pharmaceuticals, Govt. of India in addition to the existing Biologics Characterization Lab at ICT. From 2012, I have taken various initiatives towards biosimilar characterization and educational initiative e.g. Biosimilar Workshop to support biopharmaceutical sector related to skill development, infrastructure development and entrepreneurship. I have more than 55 publications and 150 presentations.

laboratory



Prasad Pofali



Saurabh Patil



Sharwari Ghodke



Anomitra Dey



Nanda Rohra



Ganesh Gaikwad



Tejal Pant



Aanshu Deokuliar



Kritika Gupta



Ashish Pandit



Marianne Saldanha



Akshay Mergu



Vikas Bawane



Prajakta Nikam



Amita Puranik



Pankti Ganatra



SACHIN JADHAV

Ph.D. Chemical Engineering
Assistant Professor in Chemical Engineering

Fellowships/ Memberships of Professional Bodies:

Applying to IICChE

Highlights of research work done and its impact:

My research work emphasizes on prevention and remediation of environmental contaminations, groundwater and surface water treatment, Industrial wastewater treatment, membrane-based treatment methods, magnetic nanoparticle-based adsorption methods, environmental engineering, process design, and process modeling and simulation. The work involves fieldwork as well as laboratory experimentation with statistical data analysis by computer-aided simulation and theoretical knowledge. I work across multi-disciplinary platforms of biochemical engineering, solid-liquid filtration, nanotechnology, drying, and granulation to build international/national reputation through collaboration with institutes, industries and external parties. Recently I have started expanding my horizons in Life cycle assessment and environmental impact of various processes. I manage

lab and ongoing projects by design of experimentation, statistical analysis, including selecting the appropriate analysis procedure, setting up data for analysis, judging validity and reliability of data, and producing publications.

Publications (peer reviewed) so far: 10

Patents : N/A

Conference proceedings/papers : N/A

Seminars/Lectures/Orations delivered : N/A

Ph.D.s Awarded as single/Co-Guide : N/A

Masters Awarded as single/Co-Guide : N/A

h-Index : 07

Citations: 309

Subjects taught :

Chemical Engineering Laboratory

Research interests :

Water and Wastewater Treatment, Membrane-based Separation, Nanomaterials Synthesis and their Applications, Adsorption-based Separation, Waste Valorization, Petrochemicals, Chemical and Enzymatic Kinetics, Process Modeling and Simulation, Drying

Technology, Industrial Crystallization, Life Cycle Assessment

Research students currently working : 05

P.D.F.-

RA -

Ph.D. (Tech.) -

Ph.D.(Sc) -

M.Tech. -

M.Chem.Eng - 05

M.Sc -

Others (if any) -

Research publications:

International - 09

National - 01

Peer-reviewed -

Conference proceeding

Books-

Patents :

International - 0

Indian - 0

Sponsored projects :

Government - 0

Private - 0

Professional Activities:

Applying for IICChE

Special Awards/Honours:

Mrs. Padma Kelkar Endowment Award from Chemical Engineering Department



PROF. ARVIND.M. LALI

B. Chem, M. Chem, Ph.D Tech (Chem. Eng.)
Head, DBT-ICT Centre for Energy Biosciences
Professor of Chemical Engineering

General Research Interest and Expertise :

Bioenergy, biofuels & biomass to other chemicals, purification of proteins, nucleic acids and other biomolecules, natural and synthetic APIs high value organic/inorganic chemicals, continous chromatography, Modeling and adsorptive separations, biocatalysis and biotransformations, bioreactors design, mixing and dynamics of solid-liquid fluidized bed, dynamics of gas-solid circulating fluidizing bed, process integration and intensification, process development characterization and scaleup.

Fellowships of National and International Academies of Science or Engineering:

Fellowships/ Memberships of Professional Bodies :

- Member, Task Force on Production of Methanol using Biomass/Municipal Solid Waste/source other than coal, NITI Aayog, New Delhi, 2017-2018
- Member, Scientific Advisory Committee (SAC), Centre of Innovative and Applied Bioprocessing (CIAB), Mohali, 2016 – 2019
- Research Council as a

Scientific Expert/Member for Bharat Petroleum Corporation Ltd. (BPCL), 2016-2018

- Consultant to a number of Companies in India and abroad for chemical/biochemical and biopharmaceutical/ pharmaceutical manufacturing
- Member, Task Force Committees on Biofuels; Algal Biotechnology; and Nutrition and Food Security, Department of Biotechnology, Ministry of Science & Technology, Government of India, 2011 onwards
- 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, Maharashtra Academy of Sciences
- 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, Research Council Committee, IMTECH, Chandigarh.

Highlights of research work done and its impact:

Prof. Arvind Lali's research involves creating sustainable R&D platform for production of Biofuels, Bioenergy and Bioproducts. He is involved in development of a number of potentially impacting technologies and their translation into demonstration plants (pilot/commercial). The DBT-ICT 2G Ethanol Technology for lignocellulosic ethanol production has been scaled up with a demonstration plant at India Glycols Ltd., Kashipur Uttarakhand, India. This renewable platform technology has been successfully demonstrated with commercial plants being set up by HPCL and BPCL companies.

The other major technologies developed and transferred to

the industry are:

Enzymatic saccharification process for Cellulose: A novel continuous, faster and smarter enzymatic saccharification process for cellulose with the lowest enzyme dosage has been designed. This technology with much wider application to a number of biochemicals and chemicals is currently operational at the India Glycols Ltd. 10 ton/day lignocellulosic ethanol demonstration plant at Kashipur.

Bio-refinery of Agricultural wastes: A novel biorefinery platform for converting agro-wastes into sugars has been developed that can be further fermented to higher value products. This is being translated into pilot plant with an output of 100kg/day with Privi Biotech Ltd.

Bio-Crude/Bio-CNG Technology: A novel technology for conversion of MSW and wet algae into a "bio-crude oil" which is carbon densified liquid that can be upgraded to fuel or converted into biogas in high yields.

Algal Technology for Sewage water treatment: A novel technology for algae based sewage treatment technology that is both efficient and rapid, and results in near drinking quality water. This technology along with liquefaction and biogas technology mentioned above are being scaled up in collaboration with Bharat Petroleum Corp. Ltd.

Green Fat splitting Technology: A novel continuous enzymatic

fat splitting technology that is a green & zero-discharge process. This is being translated into pilot plant with an output of 1.0 ton/day with Privi Biotech Ltd. with the help of DST-TSD grant.

Soya Bio-refinery: A novel competitive continuous multi-stage fractionation technology for production of protein isolate from non-toasted defatted soybean flakes. Near complete recovery and superior quality of highly bioactive proteins and non-protein components (cellulose and isoflavones) are the salient features of the process. This is currently being commissioned and technology has been proven on a 100kg/day pilot plant facility at Kanoria chemicals, Vishakhapatnam.

Detoxification of oil-seeds: A technology for detoxification and improvement of oil-seed meals/cakes for feed applications has been licensed to Godrej Agrovet Ltd., Mumbai.

Representative Publications (2018-2019)

- Wagh A.S., Ukarde T. M., Pandey P. H., Lali A. M., Pawar H. (2019) Self-catalysed deconstruction of acid modified kappa-carrageenan for production of 5-Hydroxymethyl furfural. *ACS Sustainable Chemistry & Engineering*. <https://doi.org/10.1021/acssuschemeng.9b02186>
- Yadav M. G., Vadgama R. N., Kavadia M. R., Odaneth A. A., Lali A. M. (2019) Production of Pentaerythritol Monoricinoleate (PEMR)

by immobilized *Candida antarctica* lipase B. *Biotechnology Reports* 23, e00353

- Soni S., Sathe S.S., Sheth R. R., Tiwari P., Vadgama R. N., Odaneth A. A., Lali A. M. (2019) N-terminal domain replacement changes an archaeal monoacylglycerol lipase into a triacylglycerol lipase. *Biotechnology for biofuels* 12 (1), 110
- Sarnaik A., Abernathy M. H., Han X., Ouyang Y., Xia K., Chen Y., Zhang F., Pandit R., Lali A. M., M.Lindhart R., Tang Y. J., Koffas M., (2019) Metabolic engineering of cyanobacteria for photoautotrophic production of heparosan, a pharmaceutical precursor of heparin. *Algal research* 37, 57-63.
- Deb S.S., Reshamwala SMS., Lali A. M. (2019) Activation of alternative metabolic pathways diverts carbon flux away from isobutanol formation in an engineered *Escherichia coli* strain. *Biotechnology letters* 41 (6-7), 823-836
- Devi R., Joshi S., Lali A. M., Gantayet L. M., Verma R. (2019) Anion exchange separation of antimony and the integrated ion exchange process for decontamination of used zircaloy pressure tubes from Indian pressurized heavy water reactors. *Separation Science and Technology*, 1-9
- Sawant S. S., Gosavi S. N., Khadamkar H. P.,

Mathpati C. S., Pandit R., Lali A. M. (2019) Energy efficient design of high depth raceway pond using computational fluid dynamics. *Renewable energy* 133, 528-537

- Vadgama R.N., Odaneth A.A., Lali A. M. (2019) New synthetic route for polyricinoleic acid with Tin (II) 2-ethylhexanoate. *Heliyon* 5 (6), e01944
- Kavadia M., Yadav M.G., Vadgama R.N., Odaneth A.A., Lali A. M. (2019) Production of trans-free interesterified fat using indigenously immobilized lipase. *Preparative Biochemistry and Biotechnology* 49 (5), 444-452.
- Patil M.L., Lali A. M., Dalai A.K. (2019) Catalytic hydrodeoxygenation of nio-oil model compound for production of fuel grade oil. *Asia Pacific Journal of Chemical Engg.* E2317.
- Choudhari V.G., Odaneth A.A., Lali A. M. (2019) Application of high-throughput screening for evaluating hydrolytic potential of cellulases. *Biomass Conversion and Biorefinery*, 1-9.
- Ingle U., Lali A. M. (2019) Design of High Productivity Mixed Tocopherol Purification from Deodorized Distillates by Tandem Reverse Phase Chromatography. *Journal of the American Oil Chemists' Society*
- Shaikh A., Pawar A., Parmar H., Vadgama

RN., Odaneth A.A., Lali A.M. (2018) Conjugated Linoleic Acid production by Lactic Acid Bacteria: A Bio-transformation study in media with oil hydrolysates. *J Appl Biotechnol Bioeng.*, 5(5):321-327.

- Pawar H., Lali A.M. (2018) DICAT-2: A solid acid catalyst with a antagonistic backbone for microwave assisted synthesis of 5-HMF in IPA. *Industrial and Engineering Chemistry Research* 57(43).
- Sarnaik A., Nambissan V., Pandit R., Lali A.M. (2018) Recombinant *Synechococcus elongatus* PCC 7942 for improved zeaxanthin production under natural light conditions. *Algal Research*, 36; 139-151.
- Mhatre A., Gore S., Mhatre A., Trivedi N., Sharma M., Pandit R., Odaneth A. A., Lali A.M. (2018) Effect of multiple product extractions on bio-methane potential of marine macrophytic green alga *Ulva lactuca*. *Renewable Energy*, 132; 742-751.
- Sawant S. S., Khadamkar H.P., Mathpati C.S., Pandit R., Lali A.M. (2018) Computational and experimental studies of high depth algal raceway pond photo-bioreactor. *Renewable Energy*, 118; 152-159.
- Gharata K., Agarwal A., Pandit R.A., Lali A.M. (2018) Development of fed batch strategies to improve the production

of eicosapentaenoic acid from a marine microalga *Nannochloropsis oculata*. *Bioresource Technology Reports*, 4;193-201.

- Pawar H., Lali A., (2018) A solid acid catalyst with a antagonistic backbone for microwave assisted synthesis of 5-HMF in IPA. *Industrial and Engineering Chemistry Research*
- Zhang Z., Vancov T., Mackintosh S., Basu B., Lali A.M., Qian G., Hobson P., Doherty W (2016). Assessing dilute acid pretreatment of different lignocellulosic biomasses for enhanced sugar production. *Cellulose*, 23; 3771-3783.
- Mhatre, A., Patil, S., Agarwal, A., Pandit, R., & Lali, A. M. (2018). Influence of nitrogen source on photochemistry and antenna size of the photosystems in marine green macroalgae, *Ulva lactuca*. *Photosynthesis research*, 1-13.
- Agarwal, A., Patil, S., Gharat, K., Pandit, R. A., & Lali, A. M. (2018). Modulation in light utilization by a microalga *Asteracys* sp. under mixotrophic growth regimes. *Photosynthesis research*, 1-15.
- Sawant, S. S., Khadamkar, H.P., Mathpati, C.S., Pandit, R., Lali, A.M. (2018). Computational and experimental studies of high depth algal raceway pond photo-bioreactor. *Renewable Energy*. 118, 152-159.

- Mhatre, A., Navale, M., Trivedi, N., Pandit, R., & Lali, A. M. (2018). Pilot scale flat panel photobioreactor system for mass production of *Ulva lactuca* (Chlorophyta). *Bioresource technology*, 249, 582-591.
- Kavadia M, Yadav M, Odaneth AA, Lali A. M. (2018). Synthesis of designer triglycerides by enzymatic acidolysis. *Biotechnology Reports*.

Subjects Taught:

Downstream processing in biotechnology advances in adsorptive & chromatographic separations, instrumentation and process control, adsorptive separations and statistical methods

Specific Research Interests:

Bioenergy, biofuels & biomass to other chemicals, purification of proteins, nucleic acids and other biomolecules, natural and synthetic APIs high value organic/inorganic chemicals, continuous chromatography, Modeling and adsorptive separations biocatalysis and biotransformations, bioreactors design, mixing and dynamics of solid-liquid fluidized bed, dynamics of gas-solid circulating fluidizing bed, process integration and intensification, process development characterization and scaleup.

Research students currently being supervised:

- P.D.F. - 1
- RA - 8
- Ph.D. (Tech.) - 6
- Ph.D.(Sc) - 9

M.Tech. - 2
M. Chem. Eng - 3
M.Sc - Nil

Research Publications:

National - Nil
International - 98 (so far)
(Peer-reviewed) -
Conference proceeding - Nil
Books (if any) - Nil 3 (so far)

Patents :

International - 3 (granted)
Indian – 11 (filled)

Sponsored Projects :

Government - 6 (Ongoing)
Private- 2 (Ongoing)

Professional Activities:

- Member, Task Force on Production of Methanol using Biomass/Municipal Solid Waste/source other than coal, NITI Aayog, New Delhi, 2017-2018
- Member, Scientific Advisory Committee (SAC), Centre of Innovative and Applied Bioprocessing (CIAB), Mohali, 2016 – 2019
- Research Council as a Scientific Expert/Member for Bharat Petroleum Corporation Ltd. (BPCL), 2016-2018
- Consultant to a number of Companies in India and abroad for chemical/biochemical and biopharmaceutical/ pharmaceutical manufacturing
- Member, Task Force Committees on Biofuels; Algal Biotechnology; and Nutrition and Food Security, Department of Biotechnology, Ministry of Science & Technology,

Government of India, 2011 onwards

- Member, core group of scientists in the area of bioenergy with Ministry of New & Renewable Energy, Government of India
- Member, Department of Biotechnology, Ministry of S&T of India Task Forces in Biofuels; Algal Biotechnology; and Bioproducts and Bioprocesses
- Member, Maharashtra Academy of Sciences
- Member, Apex Committee, Food and Nutritional Safety, DBT, India
- Member, Task Force Committees on Biofuels, and Bioprocesses and Bioproducts DBT, India
- Member of the Scientific Advisory Committee (SAC) on Industrial Biotechnology (Department of Biotechnology-Government of India)
- Member, Research Council Committee, IMTECH, Chandigarh
- Member, Scientific Advisory Committee, IIT, Indore
- Adjunct Professor, School of Mechanical and Chemical Engineering, The University of Western Australia, Australia

Membership of Editorial Boards with name of journal and agency :

Member Editorial Journal of Preparative Biochemistry and Biotechnology

Special Awards/ Honours/ Accolades : Nil



LAKSHMI KANTAM MANNEPALLI

Ph.D. (Chemistry) Science

DR. B. P. Godrej Professor of Green Chemistry and Sustainability Engineering

Fellowships/ Memberships of Professional Bodies :

- Dr. B. P. Godrej Distinguished Professor
- Independent Board of Directors- Indo Amines Ltd.
- Independent Board of Directors-VOL.
- Independent Board of Directors- GBL
- Member, CSIR-HRDG-Inorganic & Physical Chemistry Research Committee
- Member, Research Advisory Council, GAIL, (2018-2021)
- Member, Department of Science and Technology-FIST (Chemical Sciences), (2015-till date)
- Member, Research Council, HEMRL (High Energy Materials Research Laboratory), Pune (DRDO) (2015-till date)
- Member, DST, SSR committee.
- Member, Department of Science and Technology-SAIF (Chemical Sciences), (2019-till date)
- Member, Third Part Evaluation Committee, R & D projects, Department of

Science and Technology

- Member, Board of Governors, IIT-Hyderabad.
- Member, Standing Committee for Promoting Women in Science
- Member, RAC- DRDO
- Chairperson , DST-PAC , I&PC, DST, India

Fellowships

- 2019- Goyal Award, Applied Sciences, Kurukshetra University, Kurukshetra
- 2018- Fellow of The World Academy of Sciences (TWAS)
- 2017-Devang Mehta – National Education Award (Women in Education Award)
- 2016- Fellow of the Maharashtra Academy of Sciences
- 2016-Professor Darshan Ranganathan Memorial Lecture Award , INSA
- 2016-Asian Paints Padma Vibhushan Dr. R. A. Mashelkar Medal and Chemcon Distinguished Speaker Award (For leadership in Science, Technology and Education)-CHEMCON-2016

- 2015- J.C.Bose Fellowship (DST)
- 2015-till date – Adjunct Professor, Tezpur Central University, Tezpur, Assam
- 2015- Eminent Scientist Award – Catalysis Society of India.
- 2014- Fellow of the Indian National Science Academy
- 2013 – Fellow of The Royal Society of Chemistry, UK
- 2011- Vasvik Award
- 2011 - Lifetime Achievement Award, Indian Chemical Society, 2011
- 2008 – Fellow of National Academy of Sciences, India
- 2008-till date – Adjunct Professor, RMIT University, Melbourne, Australia
- 2008- B.D. Tilak Visiting Fellow, UICT, Mumbai
- 2007 – RMIT Foundation Fellowship Award, RMIT Uni, Australia
- 2006- Fellow of Andhra Pradesh Akademy of Sciences, Hyderabad
- Editorial Board Member, Chemical Record (TCR), Wiley-VCH.

- Editorial Board Member, Journal of Chemical Sciences, Springer Publishers.

- Associate Editor, Catalysis in Green Chemistry and Engineering, Begell house

Highlights of research work done and its impact :

Annexure I

Publications (peer reviewed) so far : 333

Patents : 52

Conference proceedings/papers : 25

Seminars/Lectures/Orations delivered : 35

Ph.D.s Awarded as single guide : 41

Masters Awarded as single guide : 2

h-Index : 62

Citations : 13933

Subjects taught:

M. Tech. Green Technology: Nanomaterials-Fundamentals and Applications

Research interests:

Catalysis, Process chemistry, Nanomaterials

Research students:

P.D.F. - 4

RA -

Ph.D. (Tech.) - 01

Ph.D.(Sc) - 02

M.Tech. -1

M.Chem. Eng -0

M.Sc -

Others (if any) -

Research publications:

International - 8

National-

Peer-reviewed -

Conference proceeding - 2

Books- 0

Patents :

International -

Indian -

Sponsored Projects :

Government - 1

Private- 4

Professional Activities:

- Dr. B. P. Godrej Distinguished Professor

- Independent Board of Directors- Indo Amines Ltd.

- Independent Board of Directors-VOL.

- Independent Board of Directors- GBL

- Member, CSIR-HRDG-Inorganic & Physical Chemistry Research Committee

- Member, Research Advisory Council, GAIL, (2018-2021)

- Member, Department of Science and Technology-FIST (Chemical Sciences) (2015-till date)

- Member, Research Council, HEMRL(High Energy Materials Research

- Laboratory), Pune (DRDO) (2015-tilldate)

- Member, DST, SSR committee.

- Member, Department of Science and Technology-SAIF (Chemical Sciences) (2019-till date)

- Member, Third Part Evaluation Committee, R&D projects, Department of Science and Technology

- Member, Board of Governors, IIT-Hyderabad.

- Member, Standing Committee for Promoting Women in Science

- Member, RAC- DRDO

- Chairperson , DST-PAC , I&PC, DST, India

- Member, Selection Committee, Raja Ramanna Fellowship Scheme, DAE, India

Special Awards/Honours:

- 2019- Goyal Award, Applied Sciences, Kurukshetra University, Kurukshetra

- 2018- Fellow of The World Academy of Sciences (TWAS)



MRS KUMUDINI V MARATHE

ME in Metallurgical Engineering

Associate Professor

Fellowships/ Memberships of Professional Bodies:

M.Ind.Soc.Comp.Mat, M.I.I.Metal., M.I.W.S.A.

Highlights of research work done and its impact:

- Product/Process sustainability using Life Cycle Assessment
- Development of Hybrid Technologies for waste water treatment
- Removal of fluoride ion from concentrated stream
- Generated during membrane separation of ground water
- Modifications of UF Membranes for process intensification in waste water treatment
- Development of Coagulants and Flocculants.

Publications (peer reviewed) so far : 39

Patents :

Conference proceedings/papers :

Seminars/Lectures/Orations delivered :

Ph.D.s Awarded : 03

Masters Awarded : 31

h-Index : 1

No. of Citations : 769

Subjects taught :

Material Science and engg, Ind Engg Chem, Advanced Material Science, Material Technology

Research interests:

Bio-Electrochemical Membrane Reactor, Sustainability Studies, Algae Water Separation, Membrane Fabrication and modification Studies, Hydrometallurgical Extraction, Waste water treatment, Membrane separation, Corrosion, Metal composites, Development of new materials

Research students :

P.D.F.-

RA -

Ph.D. (Tech.) - 4

Ph.D.(Sc) -

M.Tech. -

M.Chem.Eng - 2

M.Sc -

Others (if any) -

Research publications:

International- 5

National-

Peer-reviewed - 5

Conference proceeding-

Book Chapter- 1

Patents :

International -

Indian -

Sponsored projects :

Government -

Private- 2

Professional Activities:

M.Ind.Soc.Comp.Mat, M.I.I.Metal., M.I.W.S.A.

Special Awards/Honors:

- Lecture Series Delivered on "Corrosion in Industries" in SRF (Shri Ram Fibres Industries Ltd.) , 2015
- Participation in New INDIGO NPP2 Project – Greentech: Talks delivered during the Co-Operation Days Technologies in Water Treatment (University of Cantabria, Spain) Water treatment Management (University of Oulu, Finland), 2013
- Best paper award at SYSTECH 2008, organized by BRNS, 2008
- ISTE National award for guiding the best M.Tech Thesis in Chemical Engg, 2005

Laboratory



DR. C. S. MATHPATI

B. Chem. Engg. M. Chem. Engg. Ph.D.
Associate Professor

Fellowships/ Memberships of Professional Bodies:

Life Member, IICChE

Highlights of research work done and its impact:

Research work comprises of the relative contribution of turbulent production, transport, dissipation terms estimated using the large eddy simulation results and comparison is made with

the modeled terms in RANS models. A User Defined Function (UDF) had been written in a commercial software FLUENT, which calculate the exact terms of transport equations from the fluctuating components. CFD simulations had been carried out in various equipments (such as channel flow, Taylor-Couette flow, Jet loop reactor, Stirred vessel with radial and

axial flow impellers), bubble column with various spargers. In these equipments, the agreement of RANS based models with the experiments was poor for mean or turbulent quantities or both. These deviations could be attributed to the modeling assumptions such isotropic flow, scalar turbulent viscosity, neglecting higher terms in turbulent and pressure

transport, redistribution of turbulent kinetic energy in all three directions. In order to eliminate some of these problems, modifications had been made to standard $k-\epsilon$ model in the literature. Some of these modifications (Launder Sharma low Reynolds number model, SST $k-\epsilon$ model and RNG $k-\epsilon$ model) had been tested in JLR using OpenFOAM software.

Recent work includes of corrosion and heat transfer studies of molten salt, flow assisted corrosion in various pipe fittings such as short elbows, long elbows, tee junctions etc., scale-up of photo bioreactors such as open raceway ponds, external lift- air lift reactor, studies in liquid-liquid extraction.

CFD modeling of fluidized bed of Li_2TiO_3 is done and validated with the experimental data reported in literature. The objective of the developed CFD model was to predict the minimum fluidization velocity of Geldart B class particles of different materials, of different sizes at different bed wall temperatures and with different fluidizing media, viz., air, helium etc. Also, Work is in progress for CFD simulation of blood flow inside the human body for different turbulent models.

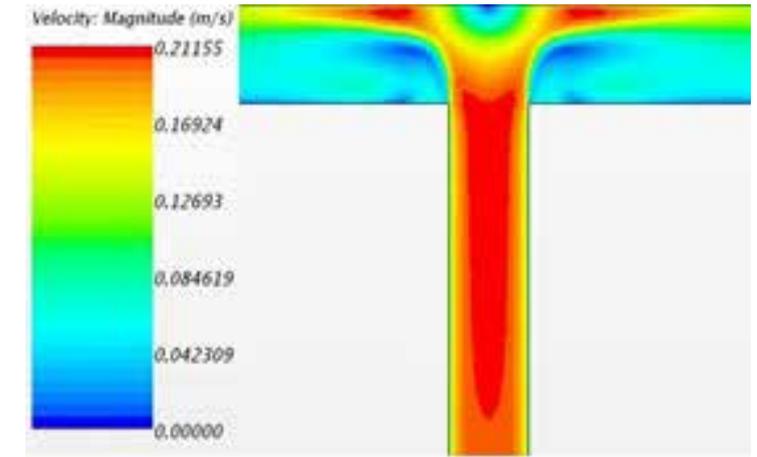


Figure 1: Tee junction dividing flow simulation



Figure 2: Molten salt flow loop

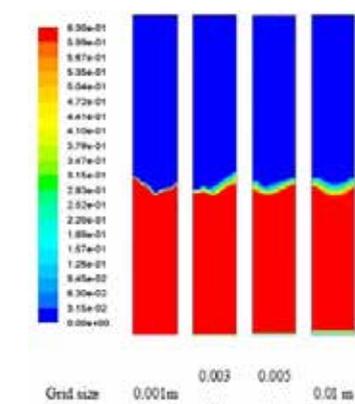


Figure 3: Contours of volume fraction of solids in Fluidized Bed

Publications (peer reviewed) so far : 34

Patents : 1

Conference proceedings/papers : 2

Seminars/Lectures/Orations delivered : 10

Ph.D.s Awarded as single/Co-Guide : 3

Masters Awarded as single/Co-Guide : 17

h-Index : 9

Citations : 420

Subjects taught :

- Process Simulation Laboratory-II (Third Year Chemical Engineering, Sem-VI)
- Transport Phenomena (M Tech-BPT, Sem I)
- Bioreactor Design and Control (M Tech-BPT, Sem II)
- Application of Computational Fluid Dynamics in Chemical Engineering (MChem. Engg. Sem II)
- Process Simulation Laboratory-II (Third Year Chemical Engineering, Sem-VI)

Research interests :

Computational Fluid Dynamics, Multiphase Reactor Design, High temperature corrosion analysis

Research students:

RA - 1
Ph.D. (Tech.) - 14

M.Tech. -1
M.Chem.Eng -2

Research publications:

International - 3
National - 1
Peer-reviewed - 4
Conference proceeding- 2

Sponsored projects:

Government - 4
Private - 3

Professional Activities:

Life Member, IChE

Laboratory

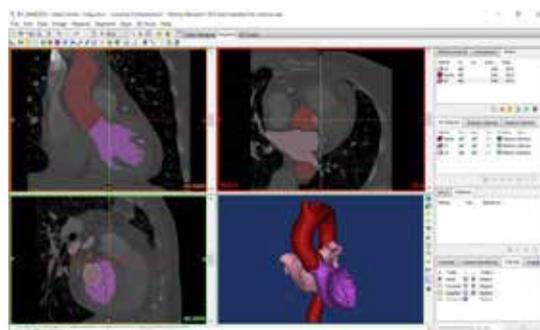
Experimental Set-up Design for Hydrodynamics Study



Lesser Doppler Anemometry



Particle Image Velocimetry Setup



Materialise MIMICS Software Belgium:
For creation of 3D model
(Application in Biomedical engineering)

**PARAG R NEMADE**

B. Chem. Eng., M. S., Ph.D.

Deputy Director (on deputation) ICT Marathwada Campus, Jalna, and UGC Assistant Professor

Fellowships/ Memberships of Professional Bodies : 2**Highlights of research work done and its impart:**

Publications (peer reviewed) so far : 17

Patents: 1 granted; 4 applied

Seminars/Lectures/Orations delivered : 1

Ph.D.s Awarded as single/ Co-Guide : 3

Masters Awarded as single/ Co-Guide : 23

h-Index : 9

Citations : 500

Subjects taught :

Introduction to Chemical Engineering, Thermodynamics-I, Material and Energy Balance Calculations

Research interests :**Research students currently working :**

Ph.D. (Tech.) - 7

Ph.D.(Sc) - 3

M.Tech. - 8

M.Chem.Eng - 2

Patents :

Indian - 1

Sponsored projects :

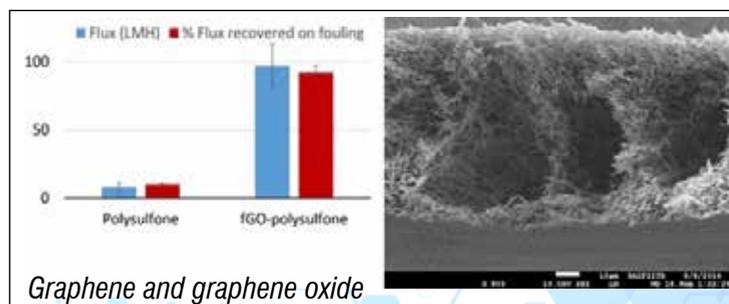
Government- 1

Private- 1

Membranes

Many operations in oils industry are solvent based wherein the solvent is recovered, usually by distillation at lower pressures. These vacuum based distillations are quite sensitive to leakages and lead to off spec products. Our endeavour is to develop pervaporation based membrane processes to replace or reduce the reliance of industry on vacuum distillation. Further, with increasing efforts towards zero-discharge, efficient use and reuse of water is paramount. Use of membrane technologies such as ultrafiltration and reverse osmosis could significantly aid these efforts to reclaim water as well as carry out process separations more efficiently. The research focuses on developing new membranes for use in process liquids and gases separation including pervaporation,

reverse osmosis, anti-fouling ultrafiltration membranes. Another focus of research in membranes is development of ultrathin barrier films for packaging applications. Currently, polymeric membranes are being developed using polymers such as polyethersulfone, polyvinylidene fluoride, cellulose acetate, etc. The membranes are then coated with high performance coating to achieve desired properties. The research is based both on developing better membranes and to improve the performance of the membranes with new coatings. We have developed high throughput antifouling membranes for protein separation and oil-water separations. Additionally, we are also in process of developing a low fouling high flux nanofiltration membrane.



We are looking to develop formulations with antioxidant, anti-ultraviolet nanoparticles for use in cosmetics, self-healing plastics etc. We also looking to develop thin barrier films using inorganic nanoparticles, platelets for long term storage of materials for improved packaging. Carbon nanomaterials are also been investigated in the development of high performance lubricants. We are also working on developing catalysts based on carbon nanomaterials. Some of the catalysts developed in our labs can carry out selective oxidation of benzylic alcohols to aldehydes without overoxidation to carboxylic acids, this route is not

employed in the industry currently as further oxidation of products cannot be prevented in the processes currently used. Efforts are on to study the catalytic effect for other substrates such as fatty alcohols. We were able to replace Lewis acid catalyst used in antibiotics synthesis and perform the reaction at room temperature with high yields, with efforts being directed to carry out the reaction in absence of organic solvent.

Sensors

There is an acute need for simple sensors for detecting adulteration in everyday food stuffs such as milk,

oils, ghee, water, etc. If the general populace is armed with awareness, knowledge and tools to identify pollution and adulteration, menace of pollution and adulteration can be tackled more effectively. Our focus is on developing facile techniques for detection of adulteration, pollutants, and unwanted chemicals. Our efforts are currently focussed on developing a facile, inexpensive sensor for detection of arsenic and pesticides in ground water, detection of milk and oil adulteration for mass usage. We have developed a sensitive hydrazine, catechol (phenolics) as well as urea sensors.

biorefractory pollutants, and prevention of biofouling in cooling tower circuits has been path-breaking, The technology of Ballast water treatment proposed by him along with (National Institute of Oceanography and National Chemical Laboratory) CSIR labs has been well recognized by the International Maritime Organization. This is likely to result in an independent sea water treatment technology testing facility, the first time in India.

He has developed novel designs cavitation reactors for a variety of cavitationally induced chemical, biological and physical transformations unit processes which are in successful commercial operations.

Prof. Pandit has authored over 376 (as per Scopus) publications, 6 books, and over 17 chapters and has 17 patents with over 15540 citations (as per Scopus web media) and H-Index 67. He is also on the Editorial Board of several International Scientific Journals. He has successfully guided 46 Ph.D.'s and 76 Master's students in Engineering and Technology so far.

Research Photos:

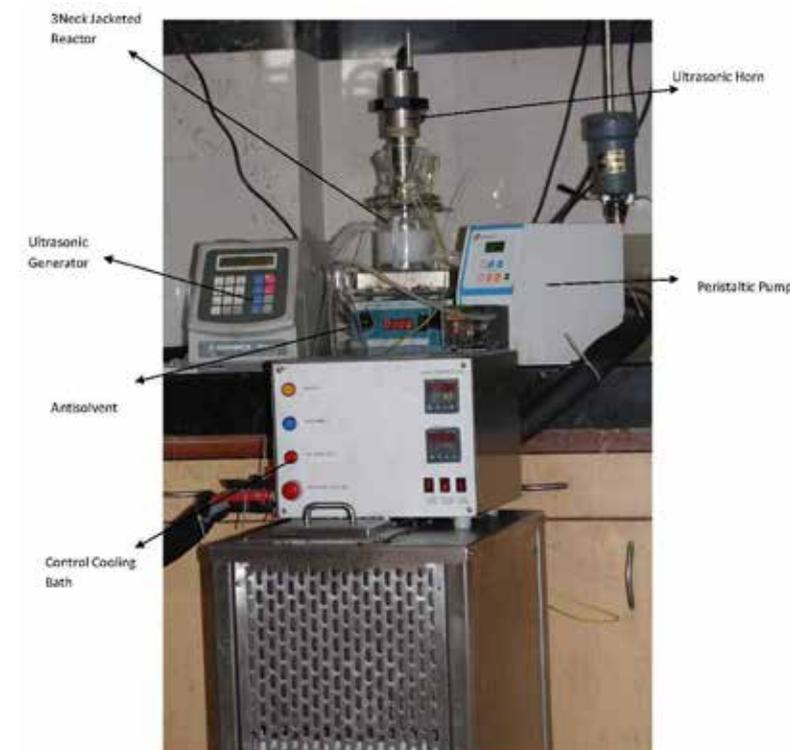


Figure 1: Anti solvent crystallization setup

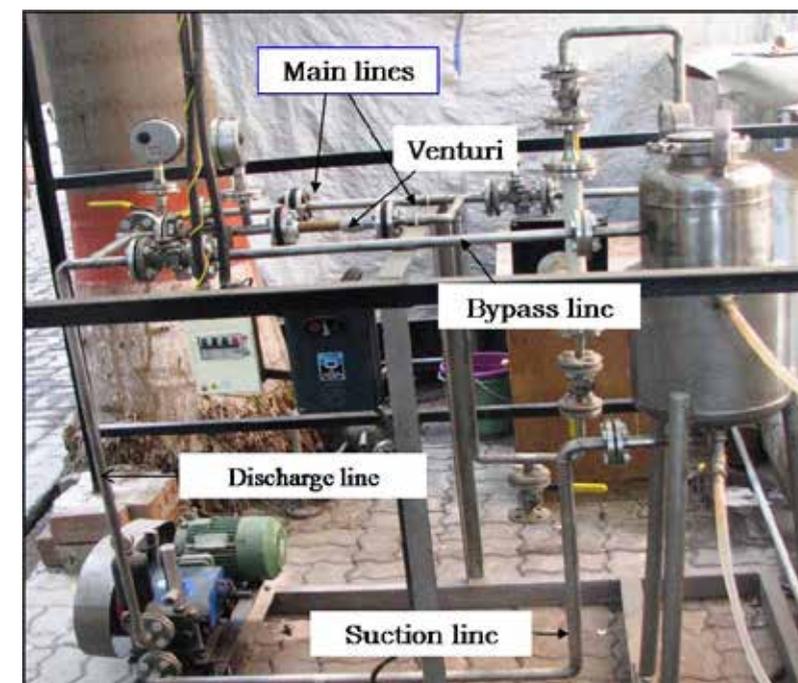
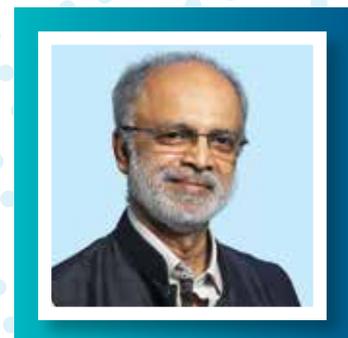


Figure 2: Hydrodynamic cavitation setup



PROF. ANIRUDDHA BHALCHANDRA PANDIT

Ph.D. (Tech.) Chemical Engineering, Department Of Chemical Technology, University Of Bombay (1980-1984).

B.Tech. Chemical Engineering, Banaras Hindu University, Indian Institute Of Technology (1975-1980).

U.G.C. Research Scientist 'C' (Professor Grade)

Dept. of Chemical Engg. , Institute of Chemical Technology
Dean HR, Institute of Chemical Technology.

Fellowships/ Memberships of Professional Bodies:

Fellowship of Academics

- J. C. Bose Fellowship, 2015
- Fellow, The World Academy of Sciences, 2015
- Fellow, National Academy of Sciences in India, Allahabad, 2009
- Fellow, Indian National Science Academy, 2008
- Fellow, Indian Academy of Sciences, 2008

- Fellow, Indian National Academy of Engineering, 2006
- Fellow, Maharashtra Academy of Sciences, 1996

Highlights of research work done and it's impact:

His first publication in the area of hydrodynamic cavitation for Chemical Transformation was in 1992. He has subsequently published over 120 articles till date in the area of cavitation. He

has applied this technique for a variety of applications from laboratory to industrial scale (mg to tonnes/day level). The range of applications includes (a) Biotechnology for intra-cellular enzyme recovery; (b) Chemical Engineering and Technology for sono-crystallization, esterification of variety of compounds and nanoparticle synthesis.

His work in the area of effluent water treatment (degradation/mineralisation) containing



Figure 3: Biogas generation from food waste

Publications (peer-reviewed) so far: 376

Patents: 17

Conference proceedings/papers: 105

Seminars/Lectures/Orations delivered: 45

Ph.D.'s Awarded as single/Co-Guide: 46

Masters Awarded as single/Co-Guide: 76

h-Index: 80 -Google Scholar / [67 - Scopus]

i10-index: 293 (Google Scholar)

Citations: 22487 (Google Scholar) / [15540- Scopus]

Subjects taught:

- Environmental Engineering & Process Safety
- Chemical Project Economics,
- Design of Multiphase Reactors,
- Project Engineering & Economics

Research interests:

Physical and Chemical

Processing applications of Cavitation phenomena, Sonochemistry, Ballast Water Treatment, Study of opportunities in industrial wastewater treatment and its reuse applications, Synthesis of chelating agents for wastewater treatment, Mixing in Mechanically agitated contactors: Experimental and CFD Investigations, Design of nozzles for hydrodynamic cavitation: Experimental and CFD Investigations, Modeling of Stoves, Optimization of cooking devices, Polymer Degradation, Cellulose Dissolution, Use of non-conventional energy sources, Development of novel ceramics from waste, Synthesis of Nanomaterials (organic-inorganic), Pyrolysis of biomass for value-added products, Application of biochar for improving soil fertility, Life Cycle Assessment (LCA) Studies, Portable device for detection of heavy metal, bacteria and water contaminants, Biotechnology:

Microbial disinfection using hydrodynamic cavitation, Protein modification, Cell disruption, Selective recovery of intracellular biomolecules at the cell disruption stage, Magnetic Nanoparticles (MNP) for enzyme immobilization, Microbial fuel cell, Portable microscope for diagnosis and educational purposes, Degumming enzyme development for textile industry.

Research students :

P.D.F. - 01

Ph.D. (Tech.) - 22

Ph.D. (Sci.) - 04

M.Tech. - 02

M. Chem. Engg -04

Research Assistant - 02

Research publications:

International - 376

Books - 05

Patents: 17

International: 05

Indian: 12

Sponsored projects:

Government: 6

Private: 3

Professional Activities:

- Member of DST-FIST
- Member of UGC-SAP
- Member of DST ChemEngg PAC
- Member of DST MOFPI PAC
- Adjunct Professor at BIT's Goa Campus
- Member, Board of Governor of IIT Bombay
- Chairman, HyCa Technology Pvt. Ltd., Mumbai
- President, Land Research Institute (LRI)

Special Awards/Honours:

- Winner of University Challenge 2018, India Innovation Growth Programme (IIGP) 2.0 organized by DST-Lockheed Martin-Tata Trusts, 2018.
- Shri G. M. Marve Prize for Most Research-Oriented Group' from Chemical Engineering, 2018.
- 'Outstanding Young Chemical Engineer (OYCE) Award 2018', Indian Institute of Chemical Engineers, Mumbai Regional Centre (IIChe-MRC), 2018.
- 'Zee 24 Taas Young Innovator Award', 2018.
- 3M-CII Young Innovator Challenge award, 2018.
- National Bio-entrepreneurship Competition ABLE BEST, 2018.
- 'Best Oral Presentation Award' at 'International Conference on Desalination' organized by Indian Desalination Association & NIT Trichi, 2018.
- C-Zero Challenge (Water Disinfection) IIT Madras, 2018.
- C-Zero Challenge (Insulating Ceramics) IIT Madras, 2018.
- 'Best Oral Presentation Award' at '3rd National Seminar on Advanced Oxidation Processes' organized by SECAS, 2018.
- 'INAE-Innovative Student Project Award-2018' by Indian National Academy of

Engineering (INAE), 2018.

- 'Best Papyrus Oral Presentation Award' organized at Institute of Chemical Technology, Mumbai, 2018.
 - 'Best Teacher Award (Final Yr. B.Tech.)' of the year, 2019.
 - 'Innovative Young Chemical Engineer Award' organized by IIChe, Pune, 2019.
 - 'Arohan Social Innovation Award- Gold Category,' INFOSYS - 2019
 - Winner of Open Innovation Challenge 2019, Innovation Growth Programme (IIGP) 2.0 organized by DST-Lockheed Martin-Tata Trusts, 2019.
 - CHEMTECH Leadership and Excellence Award 'Outstanding Achievement - R&D Excellence', 2019.
 - Gandhian Young Technological Innovation award/appreciation -2019
- General publications:**
- Process Intensification Opportunities in Multiphase Stirred Tank Reactors, S. B. Kausley, M. D. Yadav, G. G. Dastane, C R. Holkar, Aniruddha B. Pandit, Chemical Industry Digest, (2018)
 - Hydrodynamic cavitation as a novel reactor for treatment and reuse of industrial wastewater, Jayesh S. Mevada, Sumedh Devi, Shankar B. Kausley, Chandrakant R. Holkar, Aniruddha B. Pandit, ICC Chemical News, (2018)
 - Advanced oxidation

Processes for Wastewater Treatment, Chaitanya Shah, Akash M. Gondaliya, Shankar B. Kausley, Ketan S. Desai, Aniruddha B. Pandit, ICC Chemical News, (2018)

- Effluent Treatment Technologies In Chemical Industries, Aniruddha B. Pandit, Shankar B. Kausley, Ketan S. Desai, ICC Chemical News 2019
- Primary Treatment Steps for Industrial Wastewater, Aniruddha B. Pandit, Shankar B. Kausley, Ketan S. Desai, ICC Chemical News 2019

Profile:

Prof. A. B. Pandit can be described as singularly responsible individual who proposed and promoted Hydrodynamic Cavitation based Physico-chemical and biological transformations. Successful technologies have also been developed for a social cause such as water disinfection for rural masses. A unique blend of theory, modeling, experiments, and final implementation has resulted in a successful design and scale-up of cavitation reactors from lab to industrial scale. His insights into the fundamental understanding of Cavitation reactors (termed coined by him) has opened a gamut of possible applications of these reactors. His current work in hand pump-based water disinfection for rural India is revolutionary in nature and will be extremely useful in the developing countries as it has resulted into a modified

hand-pump design giving more than 98% disinfection in one pass. His contribution to ICT ENERGY group has resulted into energy-efficient processes for cooking,

solar steam generation, and efficient smokeless Solid Fuel Chullas (Stoves) designs.

A unique scientific, creative approach of using fundamental knowledge, coupled with

simple, elegant experiments demonstrating Industrial and Social utility has been the hallmark of Prof. Pandit's contribution to Science and Technology.

Laboratory



Gaurav Dastane, Mayur Ladole, Ashish Yadav, Amol Waghmode, Joydeb Mukherjee, Shankar Kausley, Amruta Badnore, Nilesh Rane, Chandrakant Holkar, Nilesh Jadhav, Chandrakant Bhogale



PROF. ASHWIN PATWARDHAN

Ph. D.
Head & Professor of Chemical Engineering

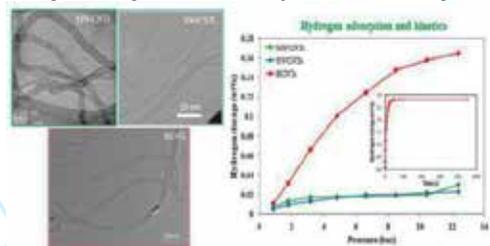
Fellowships/ Memberships of Professional Bodies: FNAE

Highlights of research work done and it's impart:

Modification of Carbon Nanotubes; Synthesis, Characterization and Applications:

Floating catalyst chemical vapor deposition method was used for synthesis of boron doped carbon nanotubes (BCNTs) using ethanol, ferrocene, triethyl borate

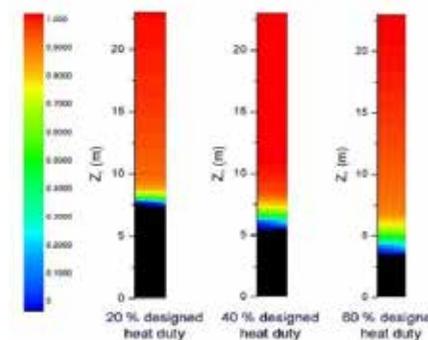
(or boric acid) as carbon, catalyst and boron precursor respectively. Hydrogen storage value for BCNTs was found to be 2.5 wt% at 77K and 10 bar and can be described using Langmuir adsorption



isotherm. Boron, Nitrogen-codoped carbon nanotubes (B, N-CNTs) were synthesized in similar manner using imidazole as nitrogen source. For, B, N-CNTs hydrogen storage value was 1.96 wt% at 77K and 16 bar. Hydrogen adsorption values with time follows pseudo second order kinetics for both BCNTs, B, N-CNTs.

Modeling of Two Phase Flow Instability in Vertical Tube Boiling Evaporators:

New methodology has been developed for modeling of full range flow boiling phenomenon which covers all the regimes in long vertical tube at high pressure. CFD simulations have been performed on tubes of lengths 7 m, 13.4 m and 23 m at a pressure range of 86–172 bar. Eulerian-Eulerian two fluid model along with appropriate wall boiling models and phase interaction models are used to model the different sections. Axial distribution profiles of various thermal hydraulic have been plotted to get insights of flow boiling phenomenon occurring in a 23m long evaporator tube. CFD approach shows advancement over one dimensional approach in the prediction of thermal hydraulic characteristics.



Mathematical modeling of tea bag infusion kinetics:

The objective of the present research work is to develop a mathematical model for tea bag infusion kinetics. The tea bag papers and the



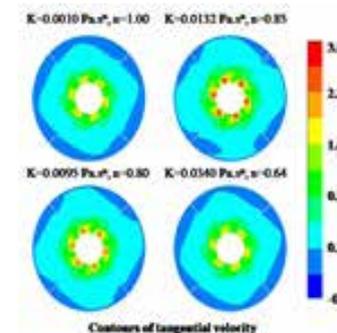
bed formed inside the tea bag affect the infusion rate. Concerning this, tea bag papers were characterized, and the tea bed permeability study was performed. The tea bag paper parameters were quantified in terms of pore area distribution, pore size and % porosity. The woven structure of PET tea bag paper showed high pore size and % porosity. With an increase in porosity, the permeance of tea components through the tea bag paper increases. The developed model has been used to obtain tea bag infusion profile using equilibrium parameters, i.e. partition constant (K), the initial content of tea solute and tea bed permeability (k). The Predicted infusion profiles and experimental data are in good agreement having mean relative error < 10 %.

CFD modeling of gas-liquid stirred tank reactors and fermenters:

CFD modeling of gas-liquid stirred tank reactors and fermenters:

CFD model has been developed to understand the flow pattern in the gas-liquid reactor. To study the effect of fluid rheology, gas flow rate

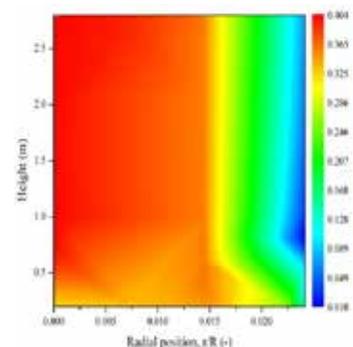
and impeller speed on the hydrodynamics of the stirred tank reactor and to validate the CFD results, a lab-scale standard stirred tank reactor has been set-up. The work by Joshi et al. (2011) and Khapre and Munshi (2015) was reproduced for Newtonian and non-Newtonian fluid using the standard and realizable k- ϵ model, respectively in to validate the CFD model for single-phase flow. It was observed that developed CFD model can predict the data with a good agreement. The figure shows the dimensionless tangential velocity profiles along the dimensionless radius for non-Newtonian fluid (0.1% solution of CMC).



Hydrodynamic of multiphase flow in vertical pipe:

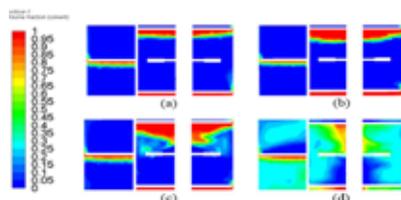
The prediction of bubble size distribution is of utmost importance as it prevails the heat, mass, and momentum transport mechanisms. In the present work, numerical simulations of gas-liquid two-phase flow in a vertical pipe have been performed using population balance modeling. The effects of different coalescence and breakage models have been

studied. The wall peak and core peak case in the bubbly flow regime is considered for the prediction of the radial distribution of the gas void fraction, interfacial area concentration, bubble size distribution, Sauter mean diameter, and gas and liquid velocities. The combination of Brownian coalescence and Ghadiri breakage model is recommended for the prediction of the wall peak case, whereas the combination of Luo coalescence and Ghadiri breakage model is recommended for the prediction of the core peak case.



CFD-PBM simulations of Asymmetric rotating Impeller Contactor:

In the present study, hydrodynamic characteristics of asymmetric rotating impeller extraction column (ARIC) such as holdup and drop size distribution (DSD) have been investigated using combination of computational fluid dynamics (CFD) and population balance modelling (PBM). Simulations were carried out on full scale 3-D geometry of 5-stage ARIC. The two phase flow was modelled by employing the



Euler-Euler approach together with Reynolds averaged k- ϵ mixture turbulence model. The effect of universal and Kumar Hartland drag model on the hydrodynamic was investigated. The breakage and coalescence model of Coualaloglou and Tavlarides was used to simulate the droplet size distribution. The CFD-PBM model was validated by comparing the results of simulations such as mean drop size and holdup with the experimental results of previous published data on ARIC.

DNS of Flow Patterns in Multi-Particle Systems:

Statistical convergence studies have been performed to test the degree of accuracy of the data. The length and time scales of the turbulent structures obtained from the three-dimensional velocity data have been estimated by relating them with the Kolmogorov length scale. A benchmark study is currently being performed by testing various combinations of domain sizes, mesh sizes, time step sizes and discretization schemes to develop basic guidelines for carrying out space resolved DNS.

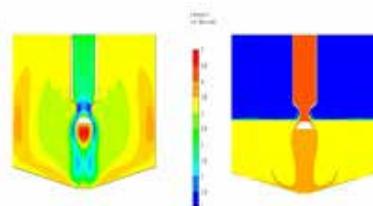


Design aspects of Gravity Settlers:

CFD study of the gravity settlers is been performed. The aim of the study is to achieve optimize operating conditions for maximum separation efficiency. The CFD model for single-phase and two-phase flow in the settlers is developed. Selection of the turbulence model along with drag laws and various operating conditions is been studied. It was noticed that, the low RE turbulence model preformed well as compared to standard k-epsilon model. Lab scale experimental facility is developed. The settling behavior in the continuous operation of the settler is studied. The Contours of axial velocity and concentration profile is shown in figure

Synthesis and application of graphene:

Graphene oxide, a chemical



derivative of graphene was synthesized by electrochemical exfoliation of graphite. In electrochemical exfoliation route, electrolyte properties, density of graphite source, applied bias, temperature were shown to have direct affect the final morphology and chemical features of graphene oxide sheets. A novel graphite electrode geometry used gave advantage of controlled layer

by layer graphite exfoliation. This approach allows narrow size distribution of graphene oxide flakes through multiple exfoliation and re-exfoliation. Obtained graphene oxide was found to have single to few no. of layers of sheets along with maximum lateral dimension $24\mu\text{m}$. The graphene oxide was successfully incorporated into PVA polymer matrix. PVA-GO composites were prepared with varying weight percentage of GO.

Publications (peer reviewed) so far : 115

Conference proceedings/papers : 58

Seminars/Lectures/Orations delivered : 58

Ph.D.s Awarded as single/Co-Guide : 22

Masters Awarded as single/Co-Guide : 51

h-Index : 23

Citations : 1618

Subjects taught:

- Momentum and Mass Transfer
- Advanced Reaction Engineering
- Material and Energy Balance Computations

- Advanced Separation Processes

Research interests :

- Transport Phenomena
- Computational Fluid Dynamics
- Membrane Separations
- Liquid – Liquid extraction
- Thermal Hydraulics

Research students :

Ph.D. (Tech.) - 9

Ph.D.(Sc) -

M.Chem.Eng - 2

Research publications:

International- 7

Conference proceeding - 20

Sponsored projects :

Government - 3

Private - 1

Special Awards/Honours:

Fellow of Indian National Academy of Engineering

Profile :

Dr. A. W. Patwardhan Joined the Department of Chemical Engineering as a Lecturer in Chemical Engineering in June 1998 became Professor in February 2016 and is currently Head of Chemical Engineering Department. His area of work concerns

the understanding and quantification of momentum, heat and mass transfer processes in different process equipment and membrane separation processes by a combination of experimental and mathematical modeling from first principles including computational fluid dynamics (CFD) and population balance modeling. Some of the systems investigated by him are: stirred tank reactors, gas inducing impellers, jet mixers in tanks and in-line jet mixers, ejectors as gas – liquid contactors, Pump-Mix Mixer Settlers, Pulsed extraction columns, Assymmetric Rotating Disc contactors, Gas entrainment in tanks, Supported liquid membranes, Carbon Nanotube Synthesis using floating catalyst Chemical Vapor Deposition, etc. His work has had a large scientific impact – guided 22 Ph. D.s (9 ongoing Ph D students), 51 Masters students, published 115 papers, completed 19 research projects. The industrial impact of the work has been design of several extraction equipment in Chemical Industry leading to benefits of several Crores per year.

Laboratory



Tea bag Permeability Measurement



Pulsed Disk and Doughnut Extraction Column Setup



Stirred Tank Reactor



Pulsed Disk and Doughnut Extraction Column Setup



High performance computing system



PROF. ANAND VINAYAK PATWARDHAN

B. Chem. Eng. (UDCT, Mumbai, 1983), M. Chem. Eng. (UDCT, Mumbai, 1985), Ph.D. (Tech.) in Chem. Eng. (UDCT, Mumbai, 1988)
Professor of Chemical Engineering

Fellowships/ Memberships of Professional Bodies:

Life member of Indian Institute of Chemical Engineers

Highlights of research work done and its impact:

Membrane separation (separation and recovery of organic chemicals and metals from organic and aqueous streams; pollution control; development of ceramic membranes)

- Separation of various metal

ions from aqueous streams using supported liquid membrane

- Separation of metal ions like U, Nd, Pb, Co, Zn, Sr, Cs, and their mass transport parameters
- Separation of organic acids from aqueous stream using the flat sheet supported liquid membranes
- Scale-up from laboratory scale to industrial scale equipment

- Removal of sulphur compounds from various petroleum fractions
- Mathematical modelling of membrane separation phenomena
- Development of ceramic membranes for industrial applications
- Water recovery from effluents containing dyes, pesticides, surfactants. Water recovery from effluents from textile

industry, and refineries.

- Development of grafted resins and membranes (extractants) for precious metals.

Green Technology (ionic liquids for solvent extraction and reactions; value-added chemicals from non-edible oils; greener organic chemical process development)

- Enantioselective synthesis, kinetic resolutions of racemic mixtures, chiral molecular recognition, group transfer reactions using chiral auxiliaries / catalyst, synthetic organic chemistry for pharmaceutical aspects.
- Multiphase catalysis relies on the transfer of organic substrates into the catalyst phase or on catalysis at the phase boundary. Most organic substrates do not have sufficient solubility in the catalyst phase to give practical reaction rates in catalytic applications. The catalytic / solvent role of ionic liquids in such cases is being explored for some industrially relevant reactions.
- Epoxidation of edible and non-edible oils for industrially useful chemicals.
- Separation of C7 and C8 liquid mixtures with ionic liquids as extracting solvents.
- Friedel-Crafts alkylation of phenols using ionic liquids as catalysts has been successfully demonstrated at laboratory scale.

- Bioprocess Technology (synthesis of chemicals and microbial colorants / pigments)
- Development of viable and efficient bioconversion process for the production of the L-ascorbic acid from inexpensive starting materials, such as, glucose.
- Development of analytical method for simultaneous quantitative estimation of L-ascorbic acid and 2-keto-L-gulonic acid.
- Effect of precursor addition on the production of L-ascorbic acid during fermentation.
- Effect of intracellular enzyme inhibitor on the yield of L-ascorbic acid.
- Production of natural colours or pigments by screening various microbes producing natural pigments / colours, and the development of a fermentation process for the same as the use of fermentation processes possess a number of advantages when compared to vegetable sources, including the possibility of continuous cultivation, and the rapid multiplication of microorganisms.

Publications (peer reviewed) so far : 67

Patents : 1

Conference proceedings/papers : 67

Seminars/Lectures/Orations delivered : 22

Ph.D.s Awarded as single/Co-Guide :

17 completed; 3 on-going

Masters Awarded as single/Co-Guide :

48 completed; 2 on-going

h-Index: 21; i10 index: 38;

Citations:

Scopus (1810);

Google Scholar (1810)

Subjects Taught :

- Separation Processes (CET-1402: T. Y. B. Chem. Eng.)
- Process Development and Engineering (CET-1505: Final Y. B. Chem. Eng.)
- Transport Phenomena (CET-1105: S. Y. B. Tech.)
- Chemical Engineering Operations (CET-1401: T. Y. B. Chem. Eng.)

Research Interests:

- Adsorption (wastewater recovery and pollution control)
- Membrane separation (separation and recovery of organic chemicals and metals from organic and aqueous streams; pollution control; development of ceramic membranes for pollution control and recovery of valuable chemicals)
- Green Technology (ionic liquids for solvent extraction and reactions; value-added chemicals from non-edible oils; greener organic chemical process development)

Research students :

Ph.D. (Tech.): 3

M. Chem. Eng: 2

Undergraduate Summer Fellows (if any) - 7

Research Publications:

National - 2
International - 2
(Peer-reviewed) - 4
Conference proceeding - 2
Books (if any) - 1 chapter

Sponsored Projects:

Government: 1;

Professional Activities:

a) Membership of important Committees:

- Member – Experts' panel formed by the DSIR (New Delhi) for accreditation of Research and Development units of various industries

- Member – reviewers' panel of Global Initiative of Academic Networks (GIAN), IIT Kharagpur

- PhD / Master's Open Defence Examinations of IIT Kharagpur; IIT Bombay; NIT Rourkela

- Faculty selection committees: IIT Kharagpur; Mumbai University; NMU Jalgaon

- BOG Member: UDCT Alumni Association; Thadomal Shahni Engineering College, Mumbai

- Member – Research and Recognition Committee in Chemical Engineering, Chemical Technology and Biotechnology (Engineering) under the faculty of Science and Technology

Special Awards/Honours / Accolades:

- Best teacher awarded voted by Second Year B. Tech. (all branches) for the year 2019

Laboratory



Laboratory Photograph with student



Mr. Pritesh Patil (Ph.D. student)



PROF. VIRENDRA K. RATHOD

PhD (Tech), Institute of Chemical Technology, Mumbai

M.Tech, Nagpur, B.Tech, Nagpur

Professor

Membership of professional bodies:

- Elected Fellowships: Fellow of Maharashtra Academy of Sciences
- Membership (Professional societies, institutes, associations, alumni associations, all by applications and not by election by peers):
- Member of IChE,
- Member of UDCT alumina Association,
- Member of OTA,
- Member, Academic Counsel, Dr. BATU, Lonere, Maharashtra
- Office bearer of Professional Bodies, Conferences, Symposia etc.:
- Treasurer, Chemcon 2013,
- Member Technical Committee Chemcon 2013,
- Conveyor, Workshop and Training programme on Chemical Engineering Laboratory, 2011 and 2010
- Conveyor, workshop CO2 utilization and Green Chemistry, sponsored by DST, 2013
- Conveyor, Workshop on New vistas water treatment technologies sponsored by

DST, 2013

- Member, organizing committee for "Chemcareers 2012" organized by ICT-Royal Society of Chemistry (RSC)" October 2012.
- Member, 2nd International Indo German Symposium on Green Chemistry and Catalysis for Sustainable Development, 2012.
- Member, Technical Committee, Asia Pacific Congress on Catalysis (APCAT 7)

Highlights of research work done and its impact:

Studies in extraction and purification of bioactive molecule from natural sources

The interest in traditional medicines is growing substantially since several modern drugs are banned due to their increased side effects apart from being expensive. India has a rich array of registered and widely popular medicinal plants. Mangiferin is a major component of mango leaves and is an important natural drug with wide applications in pharmaceutical and other related industries. It shows antioxidant, antitumor,

and antiviral properties. The present work involves use of novel extraction processes such as ultrasound assisted extraction (UAE), microwave assisted extraction (MAE) and adsorptive purification of the natural product. In (UAE), effect of various extraction process parameters such as extraction solvent, extraction time, temp, frequency on extraction yield will be studied. Most significant parameters would be found out and statistical optimization of most significant process parameters to get maximum yield. This study also aims towards understanding the kinetics and to develop the model for this extraction process under different parameters to predict extraction rate constant, initial extraction rate and equilibrium concentration. Final purification is carried out by adsorption chromatography.

Studies in enzyme immobilization

Immobilization has been developed as an emerging tool for the stabilization, ease of recovery and continuous utilization of enzymes. After immobilization, the operational

stability (such as thermal, pH stability, chemical stability as well as their storage stability) of enzymes profoundly increases which helps to extend their applications. Also, it eases the separation process and facilitates continuous utilization of enzymes by lowering the contamination in the reaction medium which causes magnificent decrease in the purification cost. Additionally, it can be implemented in continuous mode as well as fixed bed mode for various industrial applications. Recently, metal organic framework (MOF) has gained prodigious appreciation from all over the world as tailored porous hybrid material. It has a distinctive attribute such as structural stability, surface topology, low densities, crystallographic structure, designable organic ligand, and high pore volume. Taking advantage of these intrinsic properties, MOF has been widely employed as a potential support material for enzyme immobilization. Generally, one can introduce the enzyme within MOFs via two different strategies: de novo approach (in which frameworks are formed around the enzyme molecules) and binding onto pre-synthesized MOF (which includes surface immobilization, pore encapsulation, and covalent binding). Both the strategies manifest the improvement in the catalytic properties such as activity, efficiency and stability.

Process intensification in enzyme catalysed reaction:

Biotransformation covers a wide range of chemical and biochemical processes, including biocatalysis, fermentation processes, and biologically based waste treatment processes. Application of enzymes as biocatalysts is highly favored due to their excellent substrate specificity and stereoselectivity as well as their effectiveness to work under mild conditions with low environmental burden. Enzymes are widely applied in the bioindustrial manufacture of esters which eventually find application in various areas, e.g. food and feed products, cosmetics and pharmaceuticals. However, enzymatic processes often suffer from substrate and/or product inhibition, unfavorable equilibria, unwanted product (bio) transformation, and low stability of the enzyme. Many enzymatically catalyzed reactions are slow and have challenging separation requirements, the nexus between enzymatic biotransformation and process intensification technology is particularly important. Research efforts have been directed towards addressing these drawbacks to a certain extent. Process intensification is a rapidly growing field of research and industrial development that has already created many innovations in chemical process industry. It is directed toward substantially smaller, cleaner, more energy-efficient

technology. Furthermore, it aims at safer and sustainable technological developments. Application of ultrasound and microwave techniques to the enzymatic synthesis of valuable esters can reduce the reaction time and give even better yields, also making the process greener. Thus, process intensification is an equipment technology, catalyst, reagent, solvent, or chemical pathway which enables product synthesis at a higher rate, in a smaller volume, generating less waste, and consuming less energy than the conventional alternative.

Hydrodynamics and Mass Transfer Studies in Pulsed Sieve-plate Extraction Column and Mixer-settler

The complex behavior of the hydrodynamics and mass transfer performance, leads to difficulties in the design and performance of pulsed sieve plate extraction column. Dynamics and mass transfer in a liquid-liquid extraction column are essentially determined by the behavior of the dispersed phase. It seems obvious that the changes in the characteristics such as hold-up, drop size, axial dispersion, flooding in the column have to be considered in order to describe conveniently the hydrodynamics of the column. Many empirical models for predicting the hydrodynamics in a liquid-liquid extraction column has been proposed and reviewed by various investigators.

The research work aims at

the experimental study of the effect of operating and design variables for elucidation of hydrodynamics of the pulse sieve plate extraction column using various types of plate and different column configuration and the description of a mathematical model and the different algorithms which would be developed for the simulation of extraction column. The Phase Reversal studies have been carried out in a Pulsed Sieve Plate extraction column 0.152 m in diameter.

Remotely operated Combined Air-lift Mixer-settler Unit will be studied in detail for its easiness of operation. Mixer-Settler provide good mixing and reasonably good phase separation performance but rather large hold-ups. Each mixer-settler unit provides a single stage of extraction. Mixer-settlers are used when a process requires longer residence times and when the solutions are easily separated by gravity. This research deals with the comparison of performance of the pulsed sieve plate extraction column with the mixer-settler and their effect on the column efficiency.

Studies in Water Treatment Technologies

Membrane technique is being used and well commercialized for the removal of fluoride from the ground water. Presently, membrane units are in operation in villages at domestic level, which generates fluoride free water and concentrated

fluoride stream. Hence, it is proposed to carry out the comprehensive study on the removal of fluoride from concentrated retentate stream overcoming the drawback of membrane technology. Design of a complete process for purification of drinking water including calcium, magnesium and nitrate will be carried out as well. The various parameters i.e. concentration of lime, concentration of reactants, pH and contamination and effect of other ions present in feed which influences this separation are in progress. Based on optimized parameters of membrane filtration and precipitation techniques, a process will be designed which will also be tested by experimentation. The experimental data obtained after above mentioned experimentation will be analyzed on Ion Selective Meter and Particle Size Analyze to develop a complete process for water treatment.

Hydrodynamics of Extraction Systems

Optimization of the hydrodynamic characteristics such as drop size, dispersed phase hold-up, flooding and axial dispersion in pulsed sieve plate column for water-kerosene system has been done with 0.76m diameter and 1m long-pulsed sieve plate column. The optimized geometrical parameters are perforation diameter of 0.003m, plate spacing of 0.05m and fractional free area of 0.2. The optimized operating

parameters are throughput of 0.013m/s at phase ratio (A/O) of 1:1 and pulsed velocity of 0.025m/s. At the optimized geometrical and operating parameters, Sauter mean Diameter (d_{32}) attained was 0.0013m, dispersed phase hold-up (ϕ) obtained was 0.18 with throughput ($V_{cf} + V_{df}$) of 0.013m/s. Continuous phase axial dispersion coefficient (E) was 6.56×10^{-4} m²/s. The design of pulsed sieve plate column in terms of diameter and height has been done. The equilibrium data is generated for 0.3M HNO₃-TBP-dodecane system and the mass transfer study have been conducted for the removal of dissolved TBP from aqueous 0.3M HNO₃ stream. NTU required was 1.52 and the HTU of 0.63 for optimized flow rate and other geometrical and operating conditions was calculated from the experimental results. For removal of dissolved TBP from 202 ppm to 5 ppm, the NTU required was 3.7 and HTU was constant i.e.0.63m at constant set of geometrical as well as operating conditions. Thus the desired height of the column would be 2.3m. From experimental throughput data, the column diameter required for 100 kg/hr of 0.3M HNO₃ feed was 0.085m.

Research Interest and Expertise:

Separation Processes, Process Intensification, Waste Water Treatment, Enzyme Modification and Treatment, Bio-separation, Nuclear reprocessing, Extraction

of natural ingredients, Nanoparticles preparation, Biodiesel Manufacturing, Enzymatic Catalyzed Reactions

Publications (peer reviewed) so far : 175

Patents : 02

Conference proceedings/papers : 02

Seminars/Lectures/Orations delivered : 107

Ph.D.s Awarded as single: 22

Masters Awarded as single: 89

Post Doctoral Fellows supervised : 05

Awards/honors:

National - 04

International - 01

h-Index : 32

Citations : 3570

Subjects Taught :

Heat Transfer, Advanced

Heat transfer, advanced processes in perfume & flavour technology, Advance Multiphase engineering, Chemical Reaction Engineering

Specific Research Interests:

Enzymatic Catalyzed Reactions, Separation Processes, Process Intensification, Waste Treatment, Enzyme Modification and Treatment, Bio-separation, Nuclear reprocessing, Extraction of natural ingredients, Biodiesel Manufacture

Research students:

P.D.F. - 2

RA - 02

Ph.D. (Tech.) - 20

Ph.D.(Sc) - 5

M.Tech. - 5

M. Chem. Eng - 2

Research Publications:

International - 35

Books (if any) - 2

Patents :

Indian - 02

Sponsored Projects:

Government - 02

Private - 08

Professional Activities:

Member IChE

Member Academic Couseal, BATU, Lonere

Any other relevant additional information.

- Membership of Editorial Boards with name of journal and agency :
- Editorial board of Catalysis Green Chemistry and Engineering (Begell House Publication, USA)
- Guest editor for two special issues i.e. Journal of Chemical Sciences (Springer) and Chemical Records (Wiley).

consequences of several operational parameters such as effect of pressure, filtration media, coagulant addition, etc. were studied. The characteristic properties such as cake resistance, medium resistance, cake porosity, cake compressibility was also determined along with the elemental analysis of the cake.

- The plant Stevia is a natural sweetener which belongs to the Asteraceae family. The leaves of *S. rebaudiana* accumulate sweet-tasting diterpene glycosides, known as steviol glycosides. The present study establishes new method for extraction of glycosides from stevia leaves followed by clarification of extract by using flocculants and/or Ultra-filtration membrane, concentration of glycosides by nanofiltration obtaining high purity glycosides. This process will establish a "Green" method for clarification and isolation of high quality glycosides.
- Sodium Perborate (SPB) has been predominantly used in detergents. Since Sodium Percarbonate (SPC) can produce more active oxygen content compared to SPB, SPC can replace SPB in bleaching agents. Conventionally, SPC is synthesized using wet process involving multiple unit operations. The present study aims at synthesizing SPC using

simple, dry process by minimizing unit operations.

- Cassava is the third most important staple crop for the world. With its drought resistant properties, it is considered as the crop for the future. Cassava is the root of the plant which is dried and converted to chips or flour form. Traditional processing is time consuming and takes 5-7 days for processing and produces poor quality product. CassavaTech is the dryer developed by ICT that carries processing in 8 hours and saves 95% energy as against electrical options. The project is being piloted in India and Kenya.
- Turmeric, traditionally known as Haldi, an important medicinal plant and spice, is produced by 15 lakh farmers on 5,00,000 acre of land. Traditional turmeric processing is laborious, consumes 30 days and costs Rs. 30,000/acre. The processing also leads to non-availability of the land for the next crop for considerable time period. HaldiTech is a novel technology developed during Ph.D. work that can process 10,000 kg of turmeric (produce of 1 acre) in 24 hrs with targeted Rs. 15,000 as against traditional process that takes 30 days and costs Rs. 30,000. HaldiTech targets Rs. 1500 crore annual market of turmeric

processing through agri-waste based novel drying technology.

- Jaggery is a traditional Indian sweetener but has been replaced by sugar in Indian household because of its hygroscopic nature. The importance of jaggery as a sweetening agent has increased recently because of its medicinal properties. Thus there is need to make jaggery available in free flowing powder form. This study analyses strategies for granulation of jaggery and difficulties encountered in upscaling of the process.
- Fish is considered to be one of the cheapest sources of animal proteins. However, fresh fish contain up to 80% water and is one of the most perishable foods. Drying is one of the oldest methods for preserving fish. Although open sun drying is a cheap method of preservation, the fish are likely to be contaminated by sand and dust and are thus expected to show a higher microbial content. The primary objective of this study is to address the issues in open sun drying by analyzing the microbial and biochemical quality of the sun dried fish and its comparison with other drying techniques.
- Slack coal, generated during the process of mining, transportation, handling and on exposure to the weather, can be utilized effectively by forming briquettes, which otherwise



BHASKAR NARAYAN THORAT

B. Chem. Engg., M. Chem. Engg., PhD Tech.

Director, Department of Chemical Engineering
ICT-IOC campus, Bhubaneswar, Odisha

b. Fellowships/ Memberships of Professional Bodies :

- President, World Forum for Crystallization, Filtration and Drying (WFCFD)
- Member, State Environment Appraisal Committee, MoEF, Maharashtra Govt.

Highlights of research work done and its impact:

- Although considerable amount of techniques were developed to dewater waste activated sludge not many ETPs and CETPs in India are using them practically. The resources found in

municipal wastewater treatment sludge, more recently called bio-solids, are rich in nutrients and energy along with some minor components. Therefore, on-site filtration experiments were carried out at the local CETPs. The

goes waste or sold at low price. Briquetting of slack coal involves binder, which is driving factor for economic consideration. In Present study, efforts are being made to develop cost effective binder or sustainable binding technique.

Publications (peer reviewed) so far : 76

Patents : 10

Conference proceedings/papers : 96

Seminars/Lectures/Orations delivered : 04

Ph.D.s Awarded as single/Co-Guide : 25

Masters Awarded as single/Co-Guide : 67

h-Index : 16

Citations : 736

Subjects taught :

Unit Operations, Perspective of society in Science and Technology

Research interests :

Drying Technology and Particle Handling, Process Development, Multiphase reactors, Industrial Crystallization and Filtration

Research students :

Ph.D. (Tech.) - 7

Ph.D.(Sc) - 2

M.Chem.Eng - 5

Research publications:

International- 01

Conference proceeding- 03

Sponsored projects :

Government - 01

Private- 01

Professional Activities:

- Organizer 13th International Workshop on Crystallization, Filtration and Drying
- Member, CAC Advisory committee, Maharashtra Pollution Control Board.
- Scientific member, Nordic Baltic Drying Conference, Saint Petersburg, Russia.



DR. PRAKASH D. VAIDYA

B. E. (Chem. Engg.), M. Chem. Engg., PhD (Tech) in Chem. Engg.
RCF Associate Professor of Chemical Engineering

Fellowships/Memberships of Professional Bodies:

- Life Member, Indian Institute of Chemical Engineers
- Alumnus, Alexander von Humboldt Foundation, Germany

Highlights of research work done and its impact:

Reactive absorption of carbon dioxide into new absorbents

In this topic, kinetics of the reaction between carbon dioxide and new individual solvents/blends is studied in a stirred cell reactor. Besides, thermodynamic features such as vapor-liquid equilibrium are studied too. Solvent performance in a bench-scale absorber-desorber setup is also investigated.

Improved hydrogen production from reforming of bio-oxygenates

In this work, hydrogen production from bio-oxygenates via steam reforming, sorption-enhanced reforming, or aqueous-phase reforming is studied in a fixed-bed reactor. Much effort is focused on the synthesis of new materials/catalysts and

study of reaction kinetics.

Production of green diesel by hydrotreatment of non-edible vegetable oil

In this work, hydrotreatment of jatropha/karanja oil to diesel-range hydrocarbons over new catalysts is studied in a trickle-bed reactor. Much effort is focused on catalyst development and study of reaction kinetics.

Catalytic wet air oxidation for wastewater treatment

In this work, catalytic wet oxidation of model organic compounds/industrial wastewaters is investigated in an autoclave. Attention is focused on catalyst development and study of reaction kinetics of TOC or COD destruction. Another advanced oxidation process – Fenton's oxidation – is also studied.

Catalytic hydrodechlorination for treating chlorinated organic wastewaters

In this work, catalytic hydrodechlorination of model chlorinated organic compounds is investigated in a slurry reactor. New catalysts are synthesized and their performance is tested. Also, reaction pathway and kinetics are studied.

Catalytic hydrogenation of bio-oxygenates in the aqueous phase

In this topic, biomass-derived oxygenates or platform chemicals are hydrogenated to valuable products using heterogeneous catalysts in a slurry reactor. The prime objective is the study of reaction pathway and kinetics.

Study of reverse water gas shift

RWGS is a promising way of CO₂ utilization. Carbon monoxide formed during RWGS is a useful feedstock for chemicals and fuels. In this work, new catalysts for RWGS are explored. Trials are performed in a fixed-bed catalytic reactor using Ni-based catalysts at high temperatures.

Dry and mixed reforming of methane

Syngas is useful feedstock for chemicals and fuels. In this work, syngas is synthesized by dry and mixed reforming of methane over novel catalysts. This provides an effective option for valorization of two greenhouse gases, CH₄ and CO₂.

Publications (peer reviewed) so far : 85

Laboratory



PanAsia Heat Pump Dryer

Puschner Microwave Dryer

LabUltima Spray Dryer Brookfield Particle Flow Tester



Labconco Freeze Dryer

Convective Hot Air Dryer

Litel Infrared rotary dryer

Texture Analyzer



Infrared Tray Dryer

Vacuum Tray Dryer

Particle Size Analyzer

Patents : 2

Ph.D.s Awarded as single/
Co-Guide : 22

Masters Awarded as single/
Co-Guide : 36

h-Index : 25

Citations : 2515

Subjects taught:

- Chemical Reaction Engineering
- Design and Analysis of Experiments
- Fuels Engineering
- Environmental Engineering & Pollution Control

Research interests :

CO₂ capture, reforming reaction, hydrotreatment, wet air oxidation, hydrogenation

Research students currently working :

Ph.D. (Tech.) - 4

Ph.D.(Sc) - 1

M.Tech. - 5

M.Chem.Eng - 4

Research publications:

International- 22

Patents:

Indian - 1

Sponsored projects :

Government - 5

Profile:

Dr. Prakash Vaidya teaches chemical engineering at the Institute of Chemical Technology (ICT) in Mumbai. After earning his PhD from ICT in 2005, he worked as a postdoctoral fellow in the Universities of Porto (Portugal)

and Dortmund (Germany). In 2007, he joined academia and started his career as a lecturer at ICT. Since 2015, he is working as RCF Associate Professor of Chemical Engineering. He is an expert in separation and reaction engineering. His research interests are improved H₂ production from biomass surrogates, hydrotreatment of non-edible vegetable oils and effective capture and chemical recycling of CO₂. He has worked on several funded projects related to sustainability. His work has been successfully translated into the industry. Thus far, he has guided 22 PhD researchers and 36 Masters Students, and written 85 research articles and 2 patents.

Laboratory



Vapor-phase reactor



Trickle-bed reactor



Closed-loop absorber-desorber setup for CO₂ capture



Autoclave

Non-teaching Staff



Avdhut Prabhu
(Lab Attendant)



Prakash Parab
(Lab Attendant)



Suyog Patil
(Lab Attendant)



Amol Kargutkar
(Lab Attendant)



Shivram Sawant
(Lab Attendant)



Ganesh Masale
(Lab Attendant)



Amita Pawshhe
(Lab Attendant)



Mahesh Harkar
Sr. Technical Asstt.



Pravin Bhole
(Lab Assistant)



Rahul Mohite
(Lab Assistant)



Lalit Sawant
(Lab Assistant)



Vishal Bhambid
(Lab Assistant)



Urmila Sathe
(Junior Engineer)



Smita Waghmare
Clerk



Urvashi Vanjara
(Clerk)

B.Chem. Engg. Seminar 2018-19				
Sr. No	Roll No	Student Name	Title	Supervisor
1	15CHE1063	Darshak Ketan Gandhi	Biosafety of Nano Particle usage	Prof.A.B.Pandit
2	15CHE1040	Rahul Vishwas Pandare	Chemical systems in synthesis and separation requiring Population Balance approach	Prof.A.B.Pandit
3	15CHE1062	Sagar Vinod Lakhwani	Biodegradable Metal Chelating agents and their synthesis	Prof.A.B.Pandit
4	15CHE1016	Shivtej Kashinath Parsharam	Optimum Energy basket for India	Prof.A.B.Pandit
5	15CHE1078	Atharva Shashank Chikhalikar	Advances in Water Splitting Technologies	Prof.A.M.Lali
6	15CHE1032	Vaidik Rashesh Shah	Air Carbon Dioxide Capture-Utilization (CCU) Technologies	Prof.A.M.Lali
7	15CHE1013	Nisarg Amit Mankad	Drop-in Biofuels: Present and Future	Prof.A.M.Lali
8	15CHE1025	Chinmay Umesh Anikhindi	India and Seaweed Potential	Prof.A.M.Lali
9	15CHE1077	Neha Amol Padwal	A critical review of effluents arising from steel and allied industries	Prof. A. V. Patwardhan
10	15CHE1064	Devesh Mukesh Badsewal	A critical review of nitration, sulphonation, and hydrogenation processes, including their safety aspects	Prof. A. V. Patwardhan
11	15CHE1066	Gaurav Prafull Yewale	A critical review of water conservation / recycle strategies	Prof. A. V. Patwardhan
12	15CHE1050	Samadarshi Shambhu Maity	A critical review of fouling of polymeric membranes	Prof. A. V. Patwardhan
13	15CHE1005	Roshan Raghuram Shetty	Design and Applications of Microfluidic Oscillators	Prof. A. W. Patwardhan
14	15CHE1049	Lalit Namdev Lakhekar	Current status of Uranium extraction from sea water	Prof. A. W. Patwardhan
15	15CHE1060	Rushabh Manishbhai Shah	Ethane ethylene separation by membranes	Prof. A. W. Patwardhan

16	15CHE1069	Sarvesh Gopal Sarda	Design aspects of Pulsed Disc and Doughnut Extraction Columns	Prof. A. W. Patwardhan
17	15CHE1018	Varun Sundarkumar	Holistic Approach in Modeling of Drying Kinetics	Prof. B. N. Thorat
18	15CHE1041	Tanmay Omvijay Chaudhari	Effect of particle size and PSD on filtration kinetics	Prof. B. N. Thorat
19	15CHE1083	Aditya Vinay Biyani	Co-crystals: Recent Advances in Pharmaceuticals	Prof.B.N.Thorat
20	15CHE1020	Vishal ASHOK Sherkar	Natural Direct Type Solar Dryer	Prof. B. N.Thorat
21	13CHE1077	Snehal bhujang kharat	Evaluation of Algorithms for Random Packing of Spheres	Dr. C.S.Mathpati
22	15CHE1034	Sachin Hemant Jog	Machine Learning for Chemical Process Optimization	Dr.C.S.Mathpati
23	15CHE1038	Rushikesh Kishor Joshi	Freeze Crystallization: An alternative to Multiple Evaporation Systems	Dr.C.S.Mathpati
24	15CHE1014	Nihan Ashfaq Sheikh	Design and Optimization of Thermal Vapor Recompression Systems	Dr.C.S.Mathpati
25	15CHE1079	Rishikesh Ramnarayan Jaiswal	Design optimization of Lamella Settlers	Dr.C.S.Mathpati
26	15CHE1012	Yash Laxman Kamble	Microbial Electrochemical Systems: Perspectives and Applications	Prof.G.D.Yadav
27	15CHE1017	Aditya Swapneshu	Basel Advances in enzyme embedded metal organic frameworks	Prof.G.D.Yadav
28	15CHE1061	Shivani Shrikrishna Balla	environmental uses Nanoarchitectures of carbon aerogels for	Prof.G.D.Yadav
29	15CHE1073	Vaibhav Dnyaneshwar Tinghase	Graphene nanosheets and quantum dots for electrochemical reactions	Prof.G.D.Yadav
30	15CHE1036	Maitri Viren Vora	Studies in Life Cycle Analysis of PVC	Mrs.K.V.Marathe
31	15CHE1007	Vikram Sudarshan	Cultivation and harvesting of Algae from Marine Water for oil production	Mrs.K.V.Marathe

32	15CHE1065	Mrunal Vijayanand Sontakke	Super critical thermal cycle for power generation	Mrs.K.V.Marathe
33	15CHE1028	Sakshi Chandrakant Anantwar	Metallic biomaterials for bone support and replacement	Mrs.K.V.Marathe
34	15CHE1051	Abusaif Abdul khalik Khan	Ti based bulk metallic glassed for biomedical application	Mrs.K.V.Marathe
35	15CHE1030	Gaurav Sanjay Deshmukh	Synthesis of Borneol from alpha-pinene	Prof. LKM
36	15CHE1075	Aashna Sanjay Jalan	Synthesis of Campholenic aldehyde from alphapinene	Prof. LKM
37	15CHE1059	Anvita Narendra Ramteke	Processes for synthesis of l-menthol	LKM
38	15CHE1010	Tej Bhavin Gosrani	Energy conversion methods using seawater	Dr. P.D.Vaidya
39	15CHE1070	Raj Anil Valia	Zeolite materials for biomass conversion to biofuel	Dr. P. D. Vaidya
40	15CHE1082	Paresh Anil Agrawal	Strategies of valorization of sludge from wastewater treatment	Dr. P. D. Vaidya
41	15CHE1057	Prathamesh Shankar Pawar	Process intensification in HiGee distillation	Dr. P. D. Vaidya
42	14CHE1017	Pawan S. Nanaware	Recent membrane development for CO ₂ separation	Dr. P. D. Vaidya
43	15CHE1058	Arjun Apurva Shah	Critical Review for the Prior Art on Removal of Fluoride, Uranium and Arsenic from Wet Phosphoric Acid in the Context of Clean Phosphate Fertilizer Production	Prof.PK.Ghosh
44	15CHE1008	Sai Vivek Prabhala	Assessment of Technology Challenges in the Large Scale Application of Forward Osmosis for Dewatering	Prof.PK.Ghosh
45	15CHE1019	Yash Shailendra Gokhale	Review of Water Footprint in Bulk Chemical Manufacturing Processes	Prof.PK.Ghosh

46	15CHE1024	Shubham Sunil Sharma	Technology Status of Harvesting Energy from Salinity Gradients	Prof.PK.Ghosh
47	15CHE1004	Aditya Avinash Pol	Utilisation of Phosphogypsum for Production of Sulphuric Acid and Cement for Future Sustainability	Prof. P. K. Ghosh
48	15CHE1033	Ninad Mhatre	Recent advances in Ballast water treatment	Dr. P. R. Gogate
49	15CHE1074	Shreya Chatterjee	Recent advances in application of ultrasound for improved desalination	Dr. P. R. Gogate
50	15CHE1080	Badal Girish Lodaya	Recent advances in delignification of sustainable biomass sources for value added products	Dr. P. R. Gogate
51	15CHE1076	Pratik Laxman Aroskar	Recent advances in treatment of cyanide containing wastewaters	Dr. P. R. Gogate
52	15CHE1047	Shivani Pramod Chatlawar	Improved processing using Oscillatory baffled reactors	Dr. P. R. Gogate
53	15CHE1052	Prateek Dinesh Bansal	Silicone defoamers	Dr. P. R. Nemade
54	15CHE1071	Dhananjay Revanasiddayya Swamy	Biodegradable membranes for industrial applications	Dr. P. R. Nemade
55	15CHE1035	Mayank Mahendra Gathadi	Graphene synthesis: Kinetics and mechanistic studies	Dr. P. R. Nemade
56	15CHE1011	Sakshi Bhupendra Wasnik	Graphene oxide for fuel cells	Dr. P. R. Nemade
57	15CHE1037	Bhargav Bhavesh Patel	Process optimization for fabrication of microfluidic devices using 3D printer	Dr.R.D.Jain
58	15CHE1022	Apurva Rajeev Godbole	Process analytical tools for biopharmaceutical manufacturing	Dr.R.D.Jain
59	15CHE1027	Talha Afzal Kapadia	Membrane chromatography for biopharmaceutical separation	Dr.R.D.Jain

60	15CHE1042	Mrugal Anup Rangari	Continuous chromatography for downstream processing of Biopharmaceutical manufacturing	Dr. R. D. Jain
61	15CHE1009	Shubham Govindrao Bodemwad	Analytical tools to understand higher order structure of recombinant proteins	Dr.R.D.Jain
62	15CHE1044	Supriya S Prakash	Water stable metal organic framework(s): Synthesis and applications	Dr. Sachin Jadhav
63	15CHE1084	Sunny Jitendra Pawar	Advancements in minerals recovery by integrated membrane crystallization/ distillation	Dr. Sachin Jadhav
64	15CHE1068	Varun Mehul Trivedi	Recent developments in synthesis and industrial manufacture of resistant starch 3	Dr. Sachin Jadhav
65	15CHE1085	Yeshwant Prakash Kumavat	Smart membranes	Dr.Sachin Jadhav
66	15CHE1072	Yogesh Babarao Kalne	Biosteel: Manufacture, benefits, and applications	Dr.Sachin Jadhav
67	15CHE1055	Aaditya Upendra Joshi	Phenethyl alcohol: manufacture and use	Prof.S.S.Bhagwat
68	15CHE1045	Kaivalya Waman Pai	Polyglycerol and derivatives - synthesis and applications	Prof.S.S.Bhagwat
69	15CHE1023	Ashutosh Trivedi	Energy transfer FRET systems	Prof.S.S.Bhagwat
70	15CHE1002	Prajwal Pramod Gite	Solubilization and cosolubilization in surfactant solutions	Prof.S.S.Bhagwat
71	15CHE1054	Ninad Aniruddha Kumbhojkar	Heliostats	Dr.V.H.Dalvi
72	15CHE1003	Amol Khushal	Kulmethe Anaerobic digestion	Dr.V.H.Dalvi
73	15CHE1026	Charul Hemant Thakur	Oxidation of aliphatic alcohols	Dr.V.H.Dalvi
74	15CHE1046	Omkar Yogesh Dapurkar	Aldol condensation in the chemical industry	Dr.V.H.Dalvi
75	15CHE1021	Riddhesh Ashokbhai Patel	Thermal storage for power and process heating	Dr.V.H.Dalvi

76	15CHE1001	Akshay Shah	Biochar	Prof.V.K.Rathod
77	15CHE1056	Akshay Thakkar Shreya	Mass Transfer aspect of natural product extraction	Prof.V.K.Rathod
78	15CHE1081	Devayani Sanjay Pande	Techniques for concentration of natural products	Prof.V.K.Rathod
79	15CHE1067	Tejaswini Makarand Deshpande	Intnsification of enzyme catalysed reaction	Prof.V.K.Rathod
80	15CHE1086	Mansi Sharma	Role of enzymes in synthesis of perfume and flavour	Prof. V K Rathod

B. Chem. Engg. Home Paper 2018-19

Roll. No.	Name of Student	Topic	Guide
15CHE1075	Aashna Jalan	Studies of value added products from Rosemary essential oil and its applications	Dr. Chandu S. Madankar, Dr. C. S. Mathpati
15CHE1058	Arjun Shah	Studies of value added products from Rosemary essential oil and its applications	Dr. Chandu S. Madankar, Dr. C. S. Mathpati
15CHE1037	Bhargav Patel	Studies of value added products from Rosemary essential oil and its applications	Dr. Chandu S. Madankar, Dr.C.S. Mathpati
15CHE1086	Mansi Sharma	Synthesis of water dispersible epoxy.	Prof. (Dr.) R.N.Jagtap, Dr. V.H. Dalvi
15CHE1064	Devesh M Badsewal	Synthesis of water dispersible epoxy.	Prof. (Dr.) R.N.Jagtap, Dr. V.H. Dalvi
15CHE1076	Pratik Laxman Aroskar	Blends of recycled HDPE and PP	Prof. (Dr.) R.N.Jagtap, Dr. V.H. Dalvi
15CHE1025	Chinmay Anikhindi	Blends of recycled HDPE and PP	Prof. (Dr.) R.N.Jagtap, Dr. V.H. Dalvi
15CHE1014	Nihan Sheikh	Synthesis of Thermosetting acrylic emulsion	Prof. (Dr.) R.N.Jagtap, Dr.C.S. Mathpati
15CHE1082	Pareesh agrawal	Synthesis of Thermosetting acrylic emulsion	Prof. (Dr.) R.N.Jagtap, Dr.C.S. Mathpati
15CHE1027	Talha Kapadia	Separation, recycle and reuse of laminating packaging films	Prof. (Dr.) R.N.Jagtap
15CHE1049	Lalit N Lakhekar	Separation, recycle and reuse of laminating packaging films	Prof. (Dr.) R.N.Jagtap
15CHE1016	Shivtej Parsharam	High impact resistant coatings	Prof. (Dr.) R.N.Jagtap
15CHE1069	Sarvesh Sarda	High impact resistant coatings	Prof. (Dr.) R.N.Jagtap

15CHE1020	Vishal Ashok Sherkar	HCHD Free coatings	Prof. (Dr.) R.N.Jagtap
15CHE1073	Vaibhav Tinghase	HCHD Free coatings	Prof. (Dr.) R.N.Jagtap
15CHE1057	Prathamesh Shankar Pawar	Synthesis of Grit-free PEHAC emulsion	Prof. (Dr.) R.N.Jagtap
15CHE1084	Sunny Pawar	Synthesis of Grit-free PEHAC emulsion	Prof. (Dr.) R.N.Jagtap
15CHE1003	Amol Kulmethe	Synthesis of Universal adhesive having layer on layer morphology.	Prof. (Dr.) R.N.Jagtap
15CHE1004	Aditya Pol	Synthesis of Universal adhesive having layer on layer morphology.	Prof. (Dr.) R.N.Jagtap
15CHE1017	Aditya Baser	Development of Functional Wheat Bread with Fermented Legume Flour	Dr Snehasis Chakraborty, Prof. A.B. Pandit
15CHE1019	Yash Gokhale	Development of Functional Wheat Bread with Fermented Legume Flour	Dr Snehasis Chakraborty, Prof. A.B. Pandit
15CHE1021	Riddhesh Patel	Advanced Processing of Fruit Beverage: Process Optimization and Shelf-life Extension	Dr Snehasis Chakraborty, Dr. P.R. Gogate
15CHE1008	Sai Vivek Prabhala	Advanced Processing of Fruit Beverage: Process Optimization and Shelf-life Extension	Dr Snehasis Chakraborty, Dr. P.R. Gogate
15CHE1056	Shreya Thakkar	Advanced Processing of Fruit Beverage: Process Optimization and Shelf-life Extension	Dr Snehasis Chakraborty, Dr. P.R. Gogate
15CHE1047	Shivani chatlawar	Formulation of fish oil soft gels and nutritional bar	Dr. Jyotsna Waghmare
14CHE1017	Pawan Nannaware	Formulation of fish oil soft gels and nutritional bar	Dr. Jyotsna Waghmare
15CHE1080	Badal Lodaya	Synthesis and applications of nanofibers	Dr. Adarsh R Rao, Dr.C.S. Mathpati
15CHE1085	Yeshwant Kumavat	Synthesis and applications of nanofibers	Dr. Adarsh R Rao, Dr.C.S. Mathpati
15CHE1036	Maitri Vora	Removal of dyes from Wastewater	Dr. Surajit Some, Dr.P.R.Gogate, Mrs.K.V.Marathe, Prof.A.B.Pandit
15CHE1012	Yash Laxman Kamble	Removal of dyes from Wastewater	Dr. Surajit Some, Dr.P.R.Gogate, Mrs.K.V.Marathe, Prof.A.B.Pandit

15CHE1071	Dhananjay Swamy	Removal of dyes from Wastewater	Dr. Surajit Some, Dr.P.R.Gogate, Mrs.K.V.Marathe, Prof.A.B.Pandit
15CHE1078	Atharva Chikhalikar	Oil water separation	Dr. Surajit Some, Dr.P.R.Nemade, Dr.V.H.Dalvi
15CHE1077	Neha Padwal	Oil water separation	Dr. Surajit Some, Dr.P.R.Nemade, Dr.V.H.Dalvi
15CHE1055	Aaditya Upendra Joshi	Oil water separation	Dr. Surajit Some, Dr.P.R.Nemade, Dr.V.H.Dalvi
15CHE1054	Ninad Kumbhojkar	Design a plant to manufacture 2-chlorotrityl chloride - a key intermediate of Clotrimazole	Prof. A V Patwardhan, Prof.S.V.Joshi
15CHE1044	Supriya Prakash	Design a plant to manufacture 2-chlorotrityl chloride - a key intermediate of Clotrimazole	Prof. A V Patwardhan, Prof.S.V.Joshi
15CHE1052	Prateek Bansal	Design a plant to manufacture 2-chlorotrityl chloride - a key intermediate of Clotrimazole	Prof. A V Patwardhan, Prof.S.V.Joshi
15CHE1001	Akshay shah	Optimization of synthesis of Bifonazole - an imidazole antifungal drug	Prof. A V Patwardhan, Prof.S.V.Joshi
15CHE1060	Rushabh Shah	Optimization of synthesis of Bifonazole - an imidazole antifungal drug	Prof. A V Patwardhan, Prof.S.V.Joshi
15CHE1046	Omkar Y Dapurkar	Microencapsulation techniques for vitamins, volatile oils and flavours.	Prof. P. D. Amin, Prof.A. W. Patwardhan, Dr. Jyoti Gokhale
15CHE1024	Shubham Sunil Sharma	Microencapsulation techniques for vitamins, volatile oils and flavours.	Prof. P. D. Amin, Prof.A. W. Patwardhan, Dr. Jyoti Gokhale
15CHE1079	Rishikesh Jaiswal	Pickering emulsions for topical applications containing actives such as antiseptics, volatile oils. End product is incorporation in soap bars, shower gels, face wash for topical use.	Prof. P. D. Amin, Prof.A. W. Patwardhan, Dr.Jyotsana Waghmare

15CHE1002	Prajwal Gite	Pickering emulsions for topical applications containing actives such as antiseptics, volatile oils. End product is incorporation in soap bars, shower gels, face wash for topical use.	Prof. P. D. Amin, Prof.A. W. Patwardhan, Dr.Jyotsana Waghmare
15CHE1081	Devyani Pande	Synthesis of edible coating and its application in food systems	Dr. J. S. Gokhale, Dr.P.R.Nemade
15CHE1059	Anvita Ramteke	Synthesis of edible coating and its application in food systems	Dr. J. S. Gokhale, Dr.P.R.Nemade
15CHE1032	Vaidik Shah	Process Design for converting municipal solid waste into manure	Dr. J. S. Gokhale, Dr.P.R.Gogate, Mrs.K.V.Marathe
15CHE1045	Kaivalya Pai	Process Design for converting municipal solid waste into manure	Dr. J. S. Gokhale, Dr.P.R.Gogate, Mrs.K.V.Marathe
15CHE1023	Ashutosh Trivedi	Process development for Oxindoles	Prof. Vikas N Telvekar
15CHE1042	Mrugal Rangari	Process development for Oxindoles	Prof. Vikas N Telvekar
15CHE1070	Raj Valia	Process development for Tranexamic acid	Prof. Vikas N Telvekar
15CHE1013	Nisarg A. Mankad	Process development for Tranexamic acid	Prof. Vikas N Telvekar
15CHE1068	Varun Trivedi	Guerbet/ Branched Alcohols from Sustainable Sources	Dr. Amit P. Pratap, Dr.PD.Vaidya
15CHE1007	Vikram Sudarshan	Guerbet/ Branched Alcohols from Sustainable Sources	Dr. Amit P. Pratap, Dr.PD.Vaidya
15CHE1050	Samadarshi Maity	Novel Silicon Surfactants from Renewable Resources	Dr. Amit P. Pratap, Prof.S.S.Bhagwat, Dr.PD.Vaidya, Dr.Sachin Jadhav
15CHE1051	Abusaif khan	Novel Silicon Surfactants from Renewable Resources	Dr. Amit P. Pratap, Prof.S.S.Bhagwat, Dr.PD.Vaidya, Dr.Sachin Jadhav
15CHE1033	Ninad Mhatre	Design a plant to manufacture epoxide from non-edible vegetable oil	Prof. Shreerang V. Joshi, Dr.P.R.Gogate
15CHE1030	Gaurav Deshmukh	Design a plant to manufacture epoxide from non-edible vegetable oil	Prof. Shreerang V. Joshi, Dr.P.R.Gogate

15CHE1034	Sachin Jog	Design a plant to manufacture epoxide from non-edible vegetable oil	Prof. Shreerang V. Joshi, Dr.P.R.Gogate
15CHE1062	Sagar Lakhwani	Design a plant to manufacture 2-amino pyrimidine (key intermediate for sulphadiazine)	Prof. Shreerang V. Joshi, Prof.S.S.Bhagwat
15CHE1041	Tanmay Chaudhari	Design a plant to manufacture 2-amino pyrimidine (key intermediate for sulphadiazine)	Prof. Shreerang V. Joshi, Prof.S.S.Bhagwat
15CHE1040	Rahul Pandare	Synthesis and application of Graphene derivatives on Textiles	Dr Ravindra D Kale, Mrs.K.V.Marathe, Dr.V.H.Dalvi
15CHE1066	Gaurav Yewale	Synthesis and application of Graphene derivatives on Textiles	Dr Ravindra D Kale, Mrs.K.V.Marathe, Dr.V.H.Dalvi
15CHE1026	Charul Hemant Thakur	Utilization of polyester fibre waste	Dr Ravindra D Kale, Dr.P.R.Nemade, Prof.A.B.Pandit
15CHE1061	Shivani Balla	Utilization of polyester fibre waste	Dr Ravindra D Kale, Dr.P.R.Nemade, Prof.A.B.Pandit
15CHE1018	Varun Sundarkumar	Techno-economic feasibility study of Forward Osmosis as a means of spontaneous generation of pure water from seawater for the express purpose of brine preparation for the Solvay Process"	Professor Anand Patwardhan, Prof.B.M.Bhanage, Prof.P.K.Ghosh
15CHE1063	Darshak K Gandhi	Techno-economic feasibility study of Forward Osmosis as a means of spontaneous generation of pure water from seawater for the express purpose of brine preparation for the Solvay Process"	Professor Anand Patwardhan, Prof.B.M.Bhanage, Prof.P.K.Ghosh
15CHE1005	Roshan Shetty	Techno-economic feasibility study of Forward Osmosis as a means of spontaneous generation of pure water from seawater for the express purpose of brine preparation for the Solvay Process"	Professor Anand Patwardhan, Prof.B.M.Bhanage, Prof.P.K.Ghosh
15CHE1010	Tej Gosrani	Assessment of gains accruing from Integration of indigenous potassium sulphate process with Mannheim process	Professor Anand Patwardhan, Prof.B.M.Bhanage, Prof.P.K.Ghosh

15CHE1074	Shreya Chatterjee	Assessment of gains accruing from Integration of indigenous potassium sulphate process with Mannheim process	Professor Anand Patwardhan, Prof.B.M.Bhanage, Prof.PK.Ghosh
15CHE1022	Apurva Rajeev Godbole	Assessment of gains accruing from Integration of indigenous potassium sulphate process with Mannheim process	Professor Anand Patwardhan, Prof.B.M.Bhanage, Prof.PK.Ghosh
15CHE1065	Mrunal Sontakke	Assessment of comparative merits of liquid bromine and bromide-bromate intermediate of air blowing process in commercially important bromination reactions.	Professor Anand Patwardhan, Prof.B.M.Bhanage, Prof.PK.Ghosh
15CHE1038	Rushikesh Joshi	Assessment of comparative merits of liquid bromine and bromide-bromate intermediate of air blowing process in commercially important bromination reactions.	Professor Anand Patwardhan, Prof.B.M.Bhanage, Prof.PK.Ghosh
15CHE1067	Tejaswini Deshpande	Osmotic Dehydration of ginger cubes	Prof. R. S. Singhal, Prof.A. W. Patwardhan
15CHE1011	Sakshi Wasnik	Osmotic Dehydration of ginger cubes	Prof. R. S. Singhal, Prof.A. W. Patwardhan
15CHE1072	Yogesh Kalne	Functional Seasoning by co-extraction of bioactives	Prof. R. S. Singhal, Prof.A. W. Patwardhan
15CHE1028	Sakshi Anantwar	Functional Seasoning by co-extraction of bioactives	Prof. R. S. Singhal, Prof.A. W. Patwardhan
15CHE1083	Aditya Biyani	MTBE synthesis from Methanol and t butanol	Prof. G. D. Yadav
15CHE1035	Mayank Gathadi	MTBE synthesis from Methanol and t butanol	Prof. G. D. Yadav
13CHE1077	Snehal kharat	Butylated hydroxy toluene	Prof. G. D. Yadav
15CHE1009	Shubham Bodemwad	Butylated hydroxy toluene	Prof. G. D. Yadav

Research Project :

Ph.D. (Tech.) & (Sci.)				
No.	Research Scholar	Previous Institution	Project	Supervisor
1	Rahul Patil	ICT, Mumbai	Thermodynamics of Power Cycle	Prof. S.S. Bhagwat
2	Akshaya Chavan	ICT, Mumbai	Studies in Interfacial science	Prof. S.S. Bhagwat
3	Rahul Kamble	BATU, Lonere	Process intensification for the production of aromatic compounds	Prof. S.S. Bhagwat
4	Amol Gore	UDCT, Jalgaon	Extraction of phytonutrients from vegetable oils	Prof. S.S. Bhagwat
5	Vaishali Waghmare	LIT, Nagpur	Oxidation of para cresyl methyl ether to p-anisaldehyde	Prof. S.S. Bhagwat
6	Lokhande Kumudini	University of Mumbai	Synthesis and Characterization of surfactants derived from natural sources	Prof. S.S. Bhagwat
7	Kotian Prashant	University of Mumbai	Mixed surfactant systems	Prof. S.S. Bhagwat
8	Parab Pallavi	R. N. Ruia college	Thermodynamics of Phase equilibria relevant for absorption cycles	Prof. S.S. Bhagwat
9	Shinde Tukaram	LIT, Nagpur	Development of a novel phase change material based space heater	Dr. V.H. Dalvi
10	Panda Mihir	ICT, Mumbai	CFD modeling of thermal solar receivers and thermal energy storage	Dr. V.H. Dalvi
11	Yerudkar Aditi	VIT, Pune	Design and optimization of the central receiver tower solar field	Dr. V.H. Dalvi
12	Bapat Deepak	ICT, Mumbai	Thermodynamics of extraction systems	Dr. V.H. Dalvi
13	Dipankar Biswas	Pillai College of Engg., New Panvel	Development of novel solar thermal systems	Dr. V.H. Dalvi
14	Ghoderao Pradnya	Savitribai Phule Pune University, Pune	The study of four and five parameter cubic equations of state	Dr. V.H. Dalvi

15	Syed Tanweer Ahmed	LIT	Tea Components solubilization in water and thermodynamic studies of solubilization	Prof. V.G. Gaikar
16	Rathi Noopur	ICT	Engineering aspects of synthesis of nanoparticles and pharmaceutical cocrystals in microreactor and continuous reactors.	Prof. V.G. Gaikar
17	Labrath Yogita	ICT	“Process intensification of extraction and isolation of natural products.”	Prof. V.G. Gaikar
18	Hiware Suwarna	S.S.G.M College	Green synthesis of organic specialty chemicals in aqueous solutions	Prof. V.G. Gaikar
19	Bhandari Praveen	ICT	Intensified Industrial wastewater treatment	Prof. P.R.Gogate
20	Joshi Saurabh	ICT	Improvements in biofuel synthesis from sustainable resources	Prof. P.R.Gogate
21	Ayare Sudesh	Dr. Babasaheb Ambedkar Technological University, Lonere	Improved oxidation treatment schemes for industrial effluent treatment	Prof. P.R.Gogate
22	Thanekar Pooja	ICT	Combined Oxidation Processes Based on Hydrodynamic Cavitation for Treatment of Waste Water Containing Pesticides and Emerging Contaminates	Prof. P.R.Gogate
23	Khaire Rajeshree	ICT	Intensified Recovery of Valuable Products From Whey Using Ultrasound	Prof. P.R.Gogate
24	Sabnis Sarvesh	ICT	Improved separations and cleaning using ultrasound	Prof. P.R.Gogate
25	Pankaj Sinhmar	AISSMS, Pune	Intensification of chemical processing using cavitation reactors	Prof. P.R.Gogate
26	Pakhale Vinod	ICT, Mumbai	Improved water and wastewater treatment using combination approaches	Prof. P.R.Gogate

27	Gandhi Sudhir	LIT, Nagpur	Intensified production of biofuels from sustainable biomass sources	Prof. P.R.Gogate
28	Banakar Vikram	ICT, Jalgaon	Improved process for CaSO ₄ Crystallization in concentrated brine using ultrasound	Prof. P.R.Gogate
29	Moholkar Chaitanya	AISSMS College of Engineering, Pune	CFD of Improved process for CaSO ₄ Crystallization in concentrated brine using ultrasound	Prof. P.R.Gogate
30	Gujar Swapnil	Institute of Chemical Technology, Mumbai	Combined advanced oxidation processes for wastewater treatment	Prof. P.R.Gogate
31	Kininge Madhuri	Tatyasaheb Kore Institute of Engineering and Technology, Warananagar	Intensified synthesis of Levulinic acid from sustainable biomass	Prof. P.R.Gogate
32	Momin Rahat	Bharathi Vidyapeeth Deemed University, Pune	Improved membrane processing using ultrasound	Prof. P.R.Gogate
33	De Ananya	Indian Institute of Technology, Bombay	Synthesis of doped catalysts and application for wastewater treatment	Prof. P.R.Gogate
34	Daware Gaurav	Dr. Babasaheb Ambedkar Technological University, Lonere	Removal of Pyridine Derivatives from wastewater by using combination approaches of Adsorption, Ultrasound and Advanced oxidation processes	Prof. P.R.Gogate
35	Mawal Vijay	North Maharashtra University, Jalgaon	Improved methods for effective removal of Heavy Metals from Wastewater based on sustainable Adsorbents	Prof. P.R.Gogate
36	Kadlag Subhash	Dr. Babasaheb Ambedkar Technological University, Lonere	Intensified Conversion of sustainable biomass to value added chemicals using Ultrasound	Prof. P.R.Gogate
37	Lakshmi N J	Pondicherry (central) University	Intensified wastewater treatment based on hydrodynamic cavitation	Prof. P.R.Gogate

38	Agarkoti Chandroday	Indian Institute of Technology, Guwahati	Combined oxidation processes for improved effluent treatment	Prof. P.R.Gogate
39	Pofali Prasad	RMS College of Pharmacy, Bhanpura, Bhopal	Development and evaluation of Nanoplex for nucleic acid delivery	Dr. Ratnesh Jain
40	Ghodke Sharwari	Institute of Chemical Technology, Mumbai	Synthesis of Cyclodextrin based polymer for delivery of therapeutic actives	Dr. Ratnesh Jain
41	Dey Anomitra	Dr. D.Y. Patil University, Mumbai	Cellular and computational studies for nucleic acid-polymer complexes	Dr. Ratnesh Jain
42	Patil Saurabh	R.C. Patel Institute of Pharmaceutical Education and Research, Shirpur	Excipient Development for Pharmaceutical Dosage Forms	Dr. Ratnesh Jain
43	Rohra Nanda	Institute of Chemical Technology, Mumbai	Development of sustainable process for recombinant protein formulation	Dr. Ratnesh Jain
44	Gaikwad Ganesh	University Institute of Chemical Technology, North Maharashtra, Jalgaon	Topic Approval Pending	Dr. Ratnesh Jain
45	Pandit Ashish	Bharti Vidyapeeth College of Pharmacy, Navi Mumbai	Novel drug delivery systems of Chitosan oligomer developed using green approaches	Dr. Ratnesh Jain
46	Saldanha Marianne	Kings College, UK	Topic Approval Pending	Dr. Ratnesh Jain
47	Puranik Amita	Institute of Chemical Technology, Mumbai	Topic Approval Pending	Dr. Ratnesh Jain
48	Yadav Satyajeet	Bharti Vidyapeeth College of Engineering, Pune	Topic Approval Pending	Dr. Ratnesh Jain
49	Ganatra Pankti	Vivekananda education society's college of pharmacy	Topic Approval Pending	Dr. Ratnesh Jain
50	Pant Tejal	Hislop College's School of Biotechnology, Nagpur	Development of in vitro 3D lung model for biomedical application.	Dr. Ratnesh Jain (co-Guide)

51	Deokuliar Aanshu	Pondicherry University, Pondicherry	Understanding the cellular uptake behavior of polymeric nanoparticles	Dr. Ratnesh Jain (co-Guide)
52	Gupta Kritika	P.G.T.D Molecular Biology & Genetic Engineering, Nagpur	Development of Stable Cell line for Production of Recombinant Monoclonal Antibody	Dr. Ratnesh Jain (co-Guide)
53	Degweker Gautam	Ph.D. (Tech.)	Design of high productivity fermentation systems	Prof. A.M. Lali
54	Bellary Suveera	Ph.D (Sci.)	Designing microbial conversion of lignin	Prof. A.M. Lali
55	Gore Suhas	Ph.D (Sci.)	Improved biogas production from complex substrates	Prof. A.M. Lali
56	Dargode Priyanka	Ph.D (Sci.)	Consortium design for improved anaerobic digestion	Prof. A.M. Lali
57	Pawar Pratik R.	UICT, NMU, Jalgaon	Continuous cultivation of thraustochytrides for microbial oil production	Prof. A.M. Lali
58	Chakraborty Moushmi	LIT, Nagpur	Catalytic valorization of lignin	Prof. A.M. Lali
59	Savvashe Prashant	ICT, Mumbai	Design and development of air-lift photobioreactors for production of algae	Prof. A.M. Lali
60	Subramanian Sunu	A.C. Tech. Campus, Anna University Chennai	Continuous Chromatography for difficult Separations	Prof. A.M. Lali
61	Vasishta Ayush	SRM University, Chennai	Reaction engineering for production of Furan derivatives from bio based sugars	Prof. A.M. Lali
62	Mahale Jyoti	Indian Institute of Technology Kanpur	Novel routes to green C4 products from 2,3 butanediol	Prof. A.M. Lali
63	Asodekar Bhupal	University of Mumbai	Isolation of cellulose from lignocellulosic feedstock and its catalytic conversion to platform chemicals	Prof. A. M. Lali
64	Upadhyay Priya	St. Xaviers College, Mumbai	Engineered Pseudomonas putida. for the biosynthesis of aromatic chemicals from lignin derived model compounds and lignocellulosic biomass hydrolysate	Prof. A. M. Lali

65	More Pooja	The Institute of Science, Mumbai	Anaerobic acidogenesis for production of volatile fatty acids from waste streams.	Prof. A. M. Lali
66	Pandey Preeti	Savitribai Phule Pune University, Pune	Catalytic transformation of CO ₂ to chemicals	Prof. A. M. Lali
67	Ukarde Tejas	Savitribai Phule University Pune, Pune	Catalysis for Liquefaction of Solid organic Waste	Prof. A. M. Lali
68	Chavan Aniket	The Institute Of Science. Fort. Mumbai.	Thermophilic Anaerobic Digestion for improved biogas production from waste hydrolysis	Prof. A. M. Lali
69	Gupta Vaishali	Kalinga University, Raipur	Fermentative Production of organic acids	Prof. A. M. Lali
70	Jadhav Ankur	St. Xavier's College, Fort	Process development for production of biodiesel precursor from non-conventional substrates using oleaginous microbial consortia	Prof. A.M. Lali
71	Vishwakarma Rakhi S.	ICT Mumbai	C-H activation by heterogeneous catalyst	Prof. M. Lakshmi Kantam
72	Kamble Paresh	Kirti College, Dadar	Biomass to value added chemicals	Prof. M. Lakshmi Kantam
73	Nakhate Pranav	Amity University	Process Intensification Study in Catalytic Ozonation, Fenton's Process and Membrane Reactor to Develop Hybrid Technologies for waste water Treatment	Mrs. K. V. Marathe
74	Patil Hrushikesh	VIT, Pune	Recycle and reuse of membranes in waste water treatment	Mrs. K. V. Marathe
75	Moradiya Keyur	DoT, SPPU, Pune	Surface Charge based algal water separation	Mrs. K. V. Marathe
76	Admane Shraddha			Mrs. K. V. Marathe
77	Shekhar Sawant	BATU, Lonere	Computational and Experimental Studies in Scale-Up of Multiphase Reactor	Dr. C.S. Mathpati

78	Achyut Pakhre	ICT, Mumbai	Role of Fluid Mechanics and Supersaturation Fields on the Size Distribution and Morphology of Crystals	Dr. C.S. Mathpati
79	Sandeep Gosavi	ICT, Mumbai	Computational and Experimental Study of Fluidization Phenomena	Dr. C.S. Mathpati
80	Bhavesh Gajbhiye	ICT, Mumbai	Transport Phenomena at Solid-Fluid and Fluid-Fluid Interface: Computational Fluid Dynamics and Flow Visualization	Dr. C.S. Mathpati
81	Yogesh Urankar	LIT, Nagpur	Thermal Efficiency Improvement in Solid Fuel Burning Device	Dr. C.S. Mathpati
82	Harshawardhan Kulkarni	CMS, Pune	Computational techniques for corrosion erosion problems	Dr. C.S. Mathpati
83	Sourabh Agarwal	Current institute: HBNI-IGCAR	Development of simulation code for the molten salt electrorefining of spent nuclear fuel	Dr. C.S. Mathpati
84	Shivanand Teli	LIT Nagpur	Study of transport phenomena in multiphase reactor design by using computational tool	Dr. C.S. Mathpati
85	Niraj Kulkarni	NIT Surat	Computational and Experimental Study of Fluidization Phenomena	Dr. C.S. Mathpati
86	Naresh Hanchate	ICT Mumbai	Experimental and Computational studies of gas solid systems	Dr. C.S. Mathpati
87	Shrikant Mete	BATU, Lonere	Batch Scheduling and optimal control of energy integrated networks	Dr. C.S. Mathpati
88	Parikshit Shahane	LIT, Nagpur	Robust design of mixed mode of heat integration in batch systems.	Dr. C.S. Mathpati
89	Prachi Dwidmuthe	UDCT Jalgaon	Computational study of blood flow in human body	Dr. C.S. Mathpati
90	Waval, Aniket	Mumbai University	Studies in crystallization for continuous synthesis of nanoparticles	Dr. Parag R. Nemade

91	Bhoje, Rutuja	Dr. Babasaheb Ambedkar technological university, Lonere	Graphene based high performance material for desalination	Dr. Parag R. Nemade
92	Rakte Dhruti	Dr. Babasaheb Ambedkar Technological University, Lonere	Graphene based high performance material for desalination	Dr. Parag R. Nemade
93	Pabbisetty Vaishnavi	Institute of Chemical Technology, Mumbai	Graphene based high performance material for desalination	Dr. Parag R. Nemade
94	Bajpai Shruti	IIT-BHU, Varanasi	Extraction and production of valuable compounds from aquatic macrophyte	Dr. Parag R. Nemade
95	Haral Sandeep	Laxminarayan Institute of technology, Nagpur	Value added products from seed industry wastes	Dr. Parag R. Nemade
96	Sardare Mamata	Dr. Babasaheb Ambedkar Technological University, Lonere	Remediation of polluted river waters	Dr. Parag R. Nemade
97	Ambre Jyoti Prakash	D. G. Ruparel college	Synthesis of Graphene oxide for environmental application	Dr. Parag R. Nemade
98	Gonsalves Olviya Stanny	Institute of Chemical technology	Development of organic solvent nanofiltration membranes	Dr. Parag R. Nemade
99	Baviskar Sayalee	Abasaheb Garware College, Pune	Polyurethane graphene nanocomposite and polyurethane silicone nanocomposite	Dr. Parag R. Nemade
100	Rane Nilesh Vijay	University Institute of Chemical Technology, NMU, Jalgaon	Regeneration of sodium cold trap using the surrogate system	Prof. Aniruddha Pandit
101	Ansari Shahid Ziauddin	University Institute of Chemical Technology, NMU, Jalgaon	Development and performance evaluation of the efficacy of novel anti-scaling agents	Prof. Aniruddha Pandit
102	Mevada Jayeshkumar Sevantilal	Institute of Chemical Technology, Mumbai	Sustainable processes for the development of keratin hydrolysate for the use as fertilizer, animal feed, and pet food	Prof. Aniruddha Pandit

103	Yadav Ashish	Institute of Chemical Technology, Mumbai	Microbial enzyme based natural fiber finishing: an eco-friendly approach	Prof. Aniruddha Pandit
104	Dastane Gaurav Ghanashyam	Institute of Chemical Technology, Mumbai	Design of Cavitating Devices	Prof. Aniruddha B Pandit
105	Bhogle Chandrakant Sharad	Institute of Chemical Technology, Mumbai	Depolymerisation of Post-consumer Poly(Ethylene Terephthalate) into value-added products using cavitation phenomenon	Prof. Aniruddha B Pandit
106	Yadav Satyajeet Shivraj	Bharti Vidyapeeth college of Engineering, Pune.	Development of hydrodynamic flow focusing droplet generator for preparation of mono-dispersed actinide oxide microspheres	Prof. Aniruddha B Pandit
107	Zakir Husain Mohammed Yusuf	University Institute of Chemical Technology Jalgaon.	Modeling and simulation of solid fuel-burning devices	Prof. Aniruddha B Pandit
108	Ladole Mayur Ramrao	Department of Food Technology, University Institute of Chemical Technology, North Maharashtra University, Jalgaon	Synthesis of Magnetic Nano supports for enzyme immobilization to study Biochemical transformations	Prof. Aniruddha B Pandit
109	Holkar Chandrakant Ramanth	Institute of Chemical Technology, Mumbai	Development of sustainable processes for green environment	Prof. Aniruddha B Pandit)
110	Kamble Rutuja Sachin	T.K.I.E.T., Kolhapur, Maharashtra, RCF (Mumbai)	Novel methods to avoid the biofouling in Membrane Bioreactor (MBR)	Prof. Aniruddha B Pandit
111	Doltade Sarjerao Babu	AISSMS College of Engineering, Pune	Development of CFD model to study the regeneration behavior of cold trap including passive heat transfer or surrogate system	Prof. Aniruddha B Pandit
112	Waghmode Amol	Institute of Chemical Technology, Mumbai	Design, Development, and optimization of energy-efficient cooking system	Prof. Aniruddha B Pandit
113	Mukherjee Joydeb	University of Calcutta & CSIR-CGCRI	Theoretical and experimental investigation of rheologically complex fluid systems	Prof. Aniruddha B Pandit

114	Patil Priyanka	Institute of Chemical Technology, Mumbai	CFD and experiments with packed bed catalytic systems	Prof. Aniruddha B Pandit
115	Kulkarni Rahul	Institute of Chemical Technology, Mumbai	Design of cavitating devices for nanoemulsion	Prof. Aniruddha B Pandit
116	Desai Ketan Shital Suresh	Laxminarayan Institute of Technology, Nagpur University	Hydrodynamic Cavitation: Sustainable & cost-effective technology for waste management	Prof. Aniruddha B Pandit
117	Chatake Vikram Shivadas	Laxminarayan Institute of Technology, Nagpur University	Pyrolysis of biomass, coconut shell and peanut shell for value-added products	Prof. Aniruddha B Pandit
118	Sahu Abha	B. M. Mahavidyalaya, Sec-8, Bhilai, Chhattisgarh.	Ultrasonication-assisted synthesis of eco-friendly, nano chelating agent/composites for wastewater treatment	Prof. Aniruddha B Pandit
119	Tambat Sneha	SGBAU Amravati University	Synthesis of MOF based photocatalyst	Prof. Aniruddha B Pandit
120	Sathe Priyanka Sayaji	Tamil Nadu Agricultural University, Coimbatore (M.Sc.)	Role of biochar to retain micronutrient content for improving soil fertility	Prof. Aniruddha B Pandit
121	Jadhav Nilesh Lakshaman	Pune University	Eco-friendly technologies for the synthesis of organic and inorganic materials	Prof. Aniruddha B Pandit
122	Sayyed Anwar	Pune University	Study of cellulose dissolution in direct dissolving solvent for the production of regenerated cellulose fibers	Prof. Aniruddha B Pandit
123	Bapat Deepak	ICT	Thermodynamics of Extraction System	Prof. A. W. Patwardhan
124	Lote Dhiraj	IIT Guwahati	Hydrodynamics of Multiphase Flow in Vertical Pipe	Prof.A. W. Patwardhan
125	Tiwari Shashank (Co-supervised)	NIT, Bhopal	DNS of Flow Patterns in Multi-Particle Systems	Prof.A. W. Patwardhan
126	Mali Chaitanya	DBATU, Lonere	Modeling of Two Phase Flow Instability in Vertical Tube Boiling Evaporators	Prof.A. W. Patwardhan

127	Hendre Nilesh	NIT, Trichy	CFD Modeling of Asymmetric RDC	Prof.A. W. Patwardhan
128	Dhekne Pallavee	DBATU, Lonere	Modeling of Infusion and Leaching Processes	Prof.A. W. Patwardhan
129	Ganjare Amol	ICT	Design Aspects of Gravity Settlers	Prof.A. W. Patwardhan
130	Hinge Shruti	ICT	CFD Modeling of Gas-Liquid Stirred Tanks Reactors and Fermenters	Prof.A. W. Patwardhan
131	Sawant Shrilekha (Co-Guide)	ICT	Synthesis and modification of carbon nanotubes: Experimentation and applications	Prof.A. W. Patwardhan
132	Biranje Pratiksha (Co-Guide)	ICT	Synthesis and Application of Graphene	Prof.A. W. Patwardhan
133	Pritesh S. Patil	ICT	Studies in membrane separation processes and related process development	Prof. A.V. Patwardhan
134	Rathod Wadilal	Dr. BATU, Lonere -Raigad	Process Intensification studies using spinning disc reactor	Prof. V. K. Rathod
135	Pawar Shweta	DR. D. Y. Patil University, Navi Mumbai.	Fermentative production of a biomolecule.	Prof. V. K. Rathod
136	Chavan Revati	Institute of Chemical Technology	Extraction of proteins from oil seeds	Prof. V. K. Rathod
137	Bhagwat Komal	Institute of Chemical Technology	Extraction of medicinally important compounds from natural sources	Prof. V. K. Rathod
138	Lanjekar Kavita	Institute of Chemical Technology	Extraction of biomolecules from natural sources	Prof. V. K. Rathod
139	Tomke Prerna	Institute of Chemical Technology	Studies in enzyme catalyzed reactions	Prof. V. K. Rathod
140	Nadar Shamraja	Institute of Chemical Technology	Studies in enzyme immobilization	Prof. V. K. Rathod
141	Girish Nhivekar	Institute of Chemical Technology	Studies in enzyme catalyzed reaction	Prof. V. K. Rathod
142	Gharat Neha	Institute of Chemical Technology	Modeling studies in extraction of natural products	Prof. V. K. Rathod
143	Patil Sujata	Institute of Chemical Technology	Extraction and purification of curcumin from turmeric	Prof. V. K. Rathod

144	Aarti M	JNEC, Aurangabad	Studies in enzymatic catalysed reactions	Prof. V. K. Rathod
145	Sose Meera	Pravara Rural Engineering College	Process intensification studies in enzyme catalyzed reaction	Prof. V. K. Rathod
146	Katyayini .T	Vellore Institute of Technology, Vellore	Studies in biomolecule extraction	Prof. V. K. Rathod
147	Tadkar Pravin	Institute of Chemical Technology	Process intensification in chemical engineering reactions	Prof. V. K. Rathod
148	Satao Nitin	TKIET, Warnanagar, Kolhapur	Extraction of phenolic compounds	Prof. V.K Rathod
149	Prashant Ingole	LIT, Nagpur	Study of degradation of pharmaceutical compounds by various advanced oxidation process	Prof. V.K Rathod
150	Shubhangi Kadu	TKIET, Kolhapur	Dye degradation using enzymatic method	Prof. V.K Rathod
151	Dhairyashil Shantre	Institute of Chemical Technology	Production of value-added products from reetha fruit	Prof. V.K Rathod
152	Swapnil Mane	Institute of Chemical Technology	Production of value-added products from reetha fruit	Prof. V.K Rathod
153	Jyoti Londhe	LIT, Nagpur	Utilization of waste for value added products using novel and green technology	Prof. V.K Rathod
154	Sonar Manjeshwari	Ruia College	Studies in extraction of biomolecules from natural sources	Prof. V. K. Rathod
155	Yadav Suraj	University of Pune, Pune	Studies in synthesis and applications of heterogeneous catalyst	Prof. V. K. Rathod
156	Jaiswal Kajal	Institute of Chemical Technology	Studies in Enzyme Catalysis	Prof. V. K. Rathod
157	Kamble Paresh	University of Mumbai	Separation of hydrocatechol and hydroquinone from reaction mixture	Prof. V. K. Rathod
158	Patole Shubhangi	D.D.N bhole college, Bhusawal, Jalgaon	Studies in esterification of acid	Prof. V. K. Rathod
159	Rajput Shailendrasingh P.	ICT, Mumbai	Studies on development of fuel briquettes	Prof. B. N. Thorat

160	Shete Rahul T.	ICT, Mumbai	Microencapsulation Techniques by Continuous Process	Prof. B. N. Thorat
161	Anand Chavan	ICT, Mumbai	Modelling, Simulation and Exergy study of dryers	Prof. B. N. Thorat
162	Shilpa Haramkar	ICT, Mumbai	Dewatering waste activated sludge	Prof. B. N. Thorat
163	Pise Viplav H.	ICT, Mumbai	Phytochemicals-extraction, isolation, value addition	Prof. B. N. Thorat
164	Shrinivasan Savita (ICT-IOC Bhubaneswar)	GGs, Indraprastha University, New Delhi	Reduction of Microbial load on dried food products	Prof. B. N. Thorat
165	Singh Madhavi (ICT-IOC Bhubaneswar)	Tezpur Central University	Value addition of food products through frying	Prof. B. N. Thorat
166	Nagwekar Nupur N.	Mumbai University	Biochemical and Microbiological Analysis of Dried Agricultural and Marine Food Products	Prof. B. N. Thorat
167	Jadhav Priyanka	Mumbai University	Resistant Starch	Prof. B. N. Thorat
168	Bhosale Ghanshyam	ICT, Mumbai	Multiphase reactor design for wastewater treatment	Dr.PD. Vaidya
169	Ghungrud Swapnil	University Institute of Chemical Technology, Jalgaon	Improved hydrogen production by Sorption-enhanced reforming processes	Dr. P. D. Vaidya
170	Kalelar Vinayak	V. I. T. Pune	Catalytic aqueous-phase reforming of model compounds of algal biomass	Dr. P. D. Vaidya
171	Kshirsagar Abhijeet	ICT, Mumbai	Studies in NO _x oxidation	Dr. P. D. Vaidya
172	Babu Prabijna S. S.	IIT, Mumbai	Alkali metal ceramic CO ₂ sorbents for sorption-enhanced steam reforming	Dr. P. D. Vaidya

M. Tech. / M.Chem. Eng.				
No.	Research Scholar	Previous Institution	Project	Supervisor
1	Shah Deepkumar	Vishwakarma government engineering college, Chandkheda, Ahmedabad	Study of bleach activators for laundry detergents	Prof. S.S. Bhagwat
2	Kaur Viveka	BIET, Jhansi	Study of binary working fluid for heat based vapour absorption refrigeration cycle	Prof. S.S. Bhagwat
3	Akshay Prabhakar	USCT, Guru Gobind Singh Indraprastha University, Delhi	Analysing the synergistic effects of various mixed surfactant solutions	Prof. S.S. Bhagwat
4	Ashish Kundaliya	Vishwakarma government engineering college, Ahmedabad, Gujarat	Energy and Exergy analysis of absorption refrigeration systems	Prof. S.S. Bhagwat
5	Nair Mamta	Government Engineering College, Thrissur, Kerala	Preparation and Characterization of Solar Selective Surfaces	Dr.V.H. Dalvi
6	Gupta Shivani	Institute of engineering and science, IPS Academy, Indore	Characterisation of novel solar thermal systems	Dr.V.H. Dalvi
7	Mogha Saransh	University School of Chemical Technology, Guru Gobind Singh Indraprastha University	Application of Forward Osmosis for Partial Concentration of Whey with Value Addition of Draw	Prof. P. K. Ghosh
8	Sunny Shwet	DAV University, Jalandhar	Optimisation studies on reduction of fresh water and detergent footprints in Washing Machine applications.	Prof. P. K. Ghosh
9	Marathe Yogesh	All India Shri Shivaji Memorial Society's College of Engineering, Pune	Removal of fluoride, uranium and arsenic contaminants in wet process phosphoric acid employed in fertilizer manufacture	Prof. P. K. Ghosh

10	Upasani Aditya	Vishwakarma Institute of Technology, Pune	Particle size reduction using ultrasound	Dr. P.R.Gogate
11	Thakur Smruti	LIT, Nagpur	Ultrasound Assisted catalysis synthesis and its application	Dr. P.R.Gogate
12	Lokhande Priyanka	MGM College of Engineering and Technology	Levulinic acid production from sugarcane residue	Dr. P.R.Gogate
13	Shinde Pankaj	Gharda Institute of Technology	Development and scale up of advance waste water technologies	Dr. P.R.Gogate
14	Salunkhe Susmita	K.M Kundanani College of Pharmacy, Mumbai	Improved Synthesis of microspheres using cavitation reactors with focus on health care application	Dr. P. R. Gogate
15	Utekar Pooja	Ideal College of pharmacy and Research, Mumbai	Intensification of enzymatic reactions using Ultrasound	Dr. P.R.Gogate
16	Ramakrishna Kajarekar Bhagyashree	KIT's College of Engineering, kholapur	Ultrasound assisted intensification of streptomycin production	Dr. P.R.Gogate
17	Dattatray Awari Harshad	Dr. Babasaheb Ambedkar Technological University, Lonere	Study of ultrasound assisted cooling crystallization of ampicillin trihydrate in comparison with convensional approach	Dr. P.R.Gogate
18	Sathyanarayana Kodavatiganti	Rajiv Gandhi University of Knowledge Technologies, Nuzvid	Treating Textile industry waste water using cavitation and advanced oxidation processes	Dr. P.R.Gogate
19	Valarmathi M	Anna University, Chennai	Ultrasound assisted synthesis of Fe doped TiO ₂ photocatalyst and its application in waste water treatment	Dr. P.R.Gogate
20	Rastogi Yashi	Bundelkhand University, Jhansi	Intensified recovery of whey protein using ultrasound	Dr. P.R.Gogate
21	Rituparna Ghosh (HBNI)	University of Calcutta	Absorption of NOx	Prof.J.B.Joshi

22	Nikam Prajakta	Department of Technology Shivaji University, Kolhapur	Development of Chitosan Films for food Packaging application	Dr. Ratnesh Jain
23	Mergu Akshay	Maharashtra Institute of Pharmacy	Analysis of Charge Variant of mAb	Dr. Ratnesh Jain
24	Bawane Vikas	Government College of Pharmacy, Amravati, Maharashtra	"Feed Optimization Of CHO Clone For Better Glycosylation"	Dr. Ratnesh Jain
25	Ajit kotkar	Amrutvahini college of pharmacy, sangmaner	Improvement of mAb production from CHO cell: Scale up from shake flask to bioreactor	Dr. Ratnesh Jain
26	Shaikh Mosin	Dr. BATU	Sustainability analysis of adsorption process based on LCA	Dr. S.V. Jadhav
27	Shahare Jayshree	Dr. BATU	Applications of magnetic nanoparticles on mitigation of heavy metals	Dr. S.V. Jadhav
28	Sneha Kulthe	NDMVP's, College of Pharmacy, Nashik	Designing of Extraction and purification strategies for capsaicinoids from chilli/pepper	Prof. A.M.Lali
29	Rohit Kousika	Visvesvaraya National Institute of Technology, Nagpur.	Modeling of Protein Extraction from Soy-flakes	Prof. A. M.Lali
30	Nakul Rathi			Prof. M. Lakshmi Kantam
31	Raj Musale	Treatment of Dye Polluted Waste Water using Modified Polyethersulfone Membrane	Dr. Babasaheb Ambedkar Technological University, Lonere	Mrs K V Marathe
32	Vipul Gupta	National Institute of Technology, Srinagar	Selective Separation of Organic & Metal Pollutants from Waste Water	Mrs K V Marathe
33	Bhor Chirag	Bharati Vidyapeeth College of Engineering	New adsorbent from Polyacrylonitrile	Dr. Parag R. Nemade

34	Balinge Rutuja	MGM College of Engineering and Technology, Kamothe, Navi Mumbai.	Synthesis of BiOI photocatalyst for degradation of Reactive Dyes	Dr. Parag R. Nemade
35	Mune Pratap	KIT's College of engineering, Kolhapur	Extraction of Urease enzyme using Three-phase partitioning method	Dr. Parag R. Nemade
36	Sankhe Sahil	MGM College of Engineering and Technology, Kamothe, Navi Mumbai	Intensification of extraction and formulation of natural oil from Garcinia indica seeds	Dr. Parag R. Nemade
37	Kumar Rohit	I.E.T Bundelkhand University Jhansi, UP	Photocatalytic degradation of thimet with UV mediated system.	Dr. Parag R. Nemade
38	Bonde Aniket	Shri Guru Gobind Singhji Institute of Engg. & Tech., Nanded, Maharashtra	CO2 Reduction using Electrochemical Methods	Dr. Parag R. Nemade
39	Patil Apurva	Datta meghe college of engineering, airoli, navi mumbai, Maharashtra	Synthesis of Amino acid based fatty acid esters	Dr. Parag R. Nemade
40	Kanchan Drugkar	Maharashtra Institute of Technology, Pune	Open-time enhancement in architectural paints	Dr. Parag R. Nemade
41	Vaibhav Nikhar	Institute of Chemical technology	Synthesis of silicone surfactants	Dr. Parag R. Nemade
42	Ingawale Mrunal	KIT's College of Engineerin, Kolhapur.	Fermentative production of degumming enzymes from the isolated strain	Prof. Aniruddha Pandit
43	Malhotra Muskan	Amity University, Noida	Breakage of disulfide bonds in proteins	Prof. Aniruddha Pandit
44	Maheshwari Rohit	University of petroleum and energy studies, Dehradun	AOP's for the wastewater containing caffeine	Prof. Aniruddha Pandit
45	Mangla Khushboo	Dr. S. S. B UICET, Chandigarh	Design of a continuous washing system for guar gum	Prof. Aniruddha Pandit

46	Mittal Ayush	University of petroleum and energy studies, Dehradun	Analysis of emulsion stability using predictive modelling	Prof. Aniruddha Pandit
47	Gupta Sagar	MNIT Jaipur	Modeling of the Asymmetric collapse of the cavity	Prof. Aniruddha Pandit
48	Gurunath Epli	DJ Sanghvi College of Engineering Mumbai	Hydrodynamics study of the pulsed disc and Doughnut extraction column	Prof. A.W. Patwardhan
49	Ravi Kumar	JMIT Kurukshetra	Design of stirred tank reactors: Gas-liquid dispersion in non-Newtonian fluids	Prof. A.W. Patwardhan
50	Mahammadkhan Rustamkhan Pathan	Vishwakarma Government Engineering College, Gujarat Technological University, Ahmedabad, Gujarat	Wastewater treatment of dye effluent using low cost adsorbent	Prof. A.V. Patwardhan
51	Akash Gupta	Bundelkhand Institute of Engineering and Technology, Dr. A.P.J. Abdul Kalam Technical University, Jhansi, Uttar Pradesh	Wastewater treatment using low cost natural adsorbent	Prof. A.V. Patwardhan
52	Tanvay Shinde	Removal of fluoride and arsenic from water using bauxite	T.S.E.C, Mumbai	Prof. V. K. Rathod
53	Thanmaya Gali	Studies in utilization of extraction of proteins from guava seeds	SRM university, Chennai	Prof. V. K. Rathod
54	Gurdev Singh	LCA of extraction of protein from rice bran	Kurukshetra university	Prof. V. K. Rathod

55	Srija Das	Biosynthesis of volatile aroma compounds by <i>kluyveromyces marxianus</i> using acid whey as carbon source	SRM university, Chennai	Prof. V. K. Rathod
56	Mohit Jagtap	Production of nanoparticles by spinning disk reactor	Babasaheb Ambedkar Technological university, Raigad	Prof. V. K. Rathod
57	Pravin Mogarkar	Extraction of aromatic compound and value added products i.e., sugar from mahua flower	Sau. Vasudhatai Deshmukh College of Food Technology, Amravati	Prof. V. K. Rathod
58	Kore Purvesh	AISSMS, Pune	Studies on the drying and Fluidization of Algal Slurry	Prof. B. N. Thorat
59	Shinde Nikhil	Dr. BATU, Lonere	Effect of particle size, shape and its distribution on filtration characteristics	Prof. B. N. Thorat
60	Kubade Akash	LIT, Nagpur	Reaction Engineering Approach for modeling of solar drying	Prof. B. N. Thorat
61	V S Sujith	Government engineering college, Thrissur	Studies in hydrotreatment of Karanja oil over novel non-sulfided nickel based catalyst	Dr. P. D. Vaidya
62	Mhatre Nikhil	Finolex academy of management and technology, Ratnagiri	New solvent for CO ₂ absorption: study of kinetics	Dr. P. D. Vaidya
63	Deb Debolina	Assam Engineering College, Guwahati	Kinetic investigation of ABE mixture for hydrogen production	Dr. P. D. Vaidya
64	Sunildutt Narendran	Government engineering college, Thrissur	Production of green diesel by hydrotreatment of non-edible vegetable oils	Dr. P. D. Vaidya
65	Sawant Varada	Gharda Institute of technology, Ratnagiri	A study on catalytic hydrodechlorination over ruthenium catalyst supported on zirconia	Dr. P. D. Vaidya

66	Mhatre Tejesh	Mahatma Gandhi mission's of engineering and technology, Kamothe	A study on performance of iron catalyst in wet air oxidation	Dr. P. D. Vaidya
67	Bagul Nikhil	Datta Meghe college of engineering, Mumbai	A study on aqueous phase hydrogenation of veratrole over Ru/C catalyst	Dr. P. D. Vaidya
68	Shiledar Akash	Sir Visvesvaraya institute of technology, Nashik	Catalytic wet air oxidation for industrial waste water treatment	Dr. P. D. Vaidya
69	Sankar Sriram	SRM institute of Science and Technology, Tamilnadu	Studies in wet air oxidation	Dr. P. D. Vaidya

Pass out students

Masters (Tech./Chem.Engg.)

Sr. No	Name	Course/College	Title	Supervisor
1	Chaudhari Prasad	MChem	Recovery of PGMs from secondary spent material sources	Dr. P.R. Gogate
2	Kashyap Shubham	MChem	Study of non-edible oils for biodiesel production by interesterification with ultrasonic assistance	Dr. P.R. Gogate
3	Sanaik Ketki	MTech. Green Tech	Cavitation assisted process intensification of heterogeneous reactions	Dr. P.R. Gogate
4	Oke Amogh	MTech BPT	Stabilization of waste water and sludge	Dr. P.R. Gogate
5	Gadhekar Amit	MChem	Cleaning of fouled membrane using cavitation	Dr. P.R. Gogate
6	Parasnis Mruganka	M.Tech(BPT)	Development of stable cell line secreting recombinant antibody	Dr. R.D. Jain
7	Rawat Shivam	M.Tech(BPT)	Improvising monoclonal antibody titer by feed optimization of hybridoma cell line	Dr. R.D. Jain

8	Mahajan Tushar	M.Tech (Green Tech)	Green alternative for synthesis of N,N,N-Trimethyl Chitosan	Dr. R.D. Jain
9	Pokhriyal Prashant	M.Tech BPT	Flux analysis and kinetic modeling of microbial systems for biochemical production	Prof. A.M. Lali
10	Gotmare Akshay	M.Chem Engg.	Intensification of Catalytic Liquefaction Process for Conversion of Municipal Solid Waste into Energy	Prof. A.M. Lali
11	Bhabad Mahadev	M.Tech BPT	Combined C5&C6 sugar fermentation to ethanol using genetically modified yeast	Prof. A.M. Lali
12	Narjary Dorothy	M.Chem.Engg.	Enhanced recovery of lactic acid from fermentation broth	Prof. A.M. Lali
13	Krishnan Anjali	M.Chem Engg.	Structure based biodegradability and half-life prediction of waste substrates used in Anaerobic Digestion.	Prof. A.M. Lali
14	Vignesh Shanmugam	M.Chem. Engg.	Membrane modification for improved performance	Mrs. K.V. Marathe
15	Shetalika Singh	M.Chem. Engg.	Bioelectrochemical membrane reactor	Mrs. K.V. Marathe
16	Susheel Yadav	M. Chem. Engg.	Bio-filling of hairline cracks in concrete	Prof.A.B. Pandit
17	Sumedh Devi	M. Chem. Engg.	Simulation study of a modified combined ammonia-water cooling and power generating cycle in Indian condition	Prof.A.B. Pandit
18	Viraj Khasgiwale	M.Tech. BPT	Chemical & Enzyme Modification of Gaur Gum	Prof.A.B. Pandit
19	Venkat Vaishali	M.Chem. Eng.	Comparison of Performance of Rotating Disc Column, Asymmetric Rotating Disc Column and Pulsed Disc and Doughnut Column for Liquid-Liquid Extraction	Prof. A.W. Patwardhan
20	Ramani Sudha	M.Chem. Eng.	Process Development for Recovery of Lithium from Seawater Bitterns	Prof.A.W. Patwardhan

21	Rohit Gulia	M.Chem.Engg.	Studies in water recovery from dye-containing aqueous effluents using membrane separation	Prof. A.V. Patwardhan
22	Aakash Chakraborty	M.Chem.Engg.	Studies in water recovery from dye-containing aqueous effluents using membrane separation	Prof. A.V. Patwardhan
23	Ketan Ingle	M. Tech	Utilisation of reetha seed coat for production of bioethanol	Prof. V.K. Rathod
24	Dhairiyashil Santre	M. Tech	Utilisation of waste for catalyst synthesis and its application in biodiesel production	Prof. V.K. Rathod
25	Rahul Walwatkar	M. Chem Engg	Process intensification of trehalose linoleate using ultrasound	Prof. V.K. Rathod
26	Bhushan Bamane	M. Chem Engg	Life cycle assessment of mangiferin extraction from mangifera indica L. leaves	Prof. V.K. Rathod
27	Prachi Sadawarte	M. Tech	Utilisation of food industry waste for extraction of flavours and its application	Prof. V.K. Rathod
28	Avinash Deshmukh	M. Tech	Different strategies for fermentative production of polyhydroxybutyrate	Prof. V.K. Rathod
29	Manish Salgaonkar	M. Tech	Exploration of metal organic framework for immobilisation of enzymes	Prof. V.K. Rathod
30	Bhere G.	M. Chem. Engg.	Experimental Studies of Atmospheric Freeze drying	Prof. B.N. Thorat
31	Thombre G.	M. Chem. Engg	Fundamentals of Cake Filtration	Prof. B.N. Thorat
32	Sikarwar A.	M. Chem. Engg.	Modeling of Solar Conduction Dryer	Prof. B.N. Thorat
33	Chinthapandu Prashanth	M. Chem. Engg.	Study of reverse water gas shift reaction over Ni/Al ₂ O ₃ and ZnO/Al ₂ O ₃ catalysts	Dr. P.D. Vaidya
34	Joshi Bhagyashree	M. Tech. (Green Tech.)	Aqueous phase reforming of butanol	Dr. P.D. Vaidya
35	Goyal Pranav	M. Tech. (Green Tech.)	A study on hydrotreatment of karanja oil over pd-based catalysts	Dr. P.D. Vaidya

Ph.D. (Tech./Sci.)				
Sr. No.	Name	Course/ College	Title	Supervisor
36	Kalpana Mahale	Ph.D. Tech.	Study of absorption cycle for power and refrigeration	Prof. S.S. Bhagwat
37	Vaibav Kedar	Ph.D. Sci.	Application of surfactant solution in petroleum industry	Prof. S.S. Bhagwat
38	Dabir Tasneem	Ph.D.Sci.	Thermodynamic studies of extraction and purification of phytochemicals from plant extract	Prof.V.G. Gaikar
39	Dubhashe Yogeshwar	Ph.D. Sci.	Process intensification of Nitrogen Heterocycles	Prof.V.G. Gaikar
40	M K MuffidahK	Ph.D.Sci.	Synthesis and characterization of nanoparticles using alumina membrane as template.	Prof.V.G. Gaikar
41	Sawant Vishal M.	Ph.D.(Tech.)	Design and Process Intensification of Novel Extractants for Selective Separation of Metal Ions	Prof.V.G. Gaikar
42	Jain Suyog Nandlal	PhD (Tech)	Improved adsorption processes for removal of dyes from wastewater	Dr. P.R. Gogate
43	More Snehal	PhD (Sci)	Improved Synthesis of Structured Triacylglycerols and their Applications	Dr. P.R. Gogate
44	More Nishant	PhD (Tech)	Improvements in emulsification and oil processing using cavitation reactors	Dr. P.R. Gogate
45	Yadav Manish	PhD (Tech) Chem. Engg.	Synthesis of Carbon Nanotubes	Prof. J.B. Joshi
46	Urunkar Yogesh	PhD (Tech) Chem. Engg.	Thermal Efficiency Improvement in Solid Fuel Burning Devices	Prof. J.B. Joshi
47	Dyawanpelly Sathish	PhD(Tech) Pharmaceuticals	Intracellular delivery of nanoparticulates for biomacromolecules	Dr. R.D. Jain
48	De Anomitra	PhD(Tech) BPT	Cellular and computational studies for nucleic acid-polymer complexes	Dr. R.D. Jain
49	Rao S. P. Poornima	Ph.D. (Sci.)	Improved production of acetic acid by Escherichia coli and Moorella thermoacetica	Prof. A.M. Lali

50	Singh Nitesh Kumar	Ph.D (Sci.)	Isolation, characterization and valorization of phenolic compounds from lignocellulosic biomass	Prof. A.M. Lali
51	Das Arijit	Int. Ph.D (Tech.)	Improved fermentation for 2,3 – butanediol production	Prof. A.M. Lali
52	Kavadia Monali	Ph.D. (Sci.)	Lipase mediated synthesis of designer lipids	Prof. A.M. Lali
53	Patil Parmeshwar	Ph.D. (Sci.)	Designing Biomass Deconstruction: Process Scale and High Throughput Analytical Scale	Prof. A.M. Lali
54	Patil Mallikarjun	Ph.D (Sci.)	Recovery and transformation of lignin to value added products	Prof. A.M. Lali
55	Deshmukh Gunjan P	Ph.D. Sci.	Hydroxylation of Phenol	Prof. M. Lakshmi Kantam
56	Molleti Jayaram	Ph.D.Sci.	Synthesis of Terpene derivatives	Prof. M. Lakshmi Kantam
57	Farnandes Godfree	Ph.D.Sci.	Synthesis of 3-pentanone	Prof. M. Lakshmi Kantam
58	Waghmare Govind	Ph.D. Sci.	Synthesis of Buparvaquone	Prof. M. Lakshmi Kantam
59	Hrushikesh Khadamkar	Ph.D. Tech	Studies in liquid-liquid extraction: Marangoni convection	Dr. C.S. Mathpati
60	Shekhar Sawant	Ph.D Tech.	Computational and Experimental Studies in Scale-Up of Multiphase Reactor	Dr. C.S. Mathpati
61	Amruta Badnore	Ph.D. (Tech.)	Synthesis of inorganic nanoparticles using cavitation technique	Prof. A.B. Pandit
62	Sanjivani Umale	Ph.D. (Tech.)	Studies on dye-sensitized solar cell and synthesis of silica from rice husk ash	Prof. A.B. Pandit
63	Farakte Raosaheb	Ph.D. (Tech)	Transport Phenomena in Multiphase Processes	Prof. A.W. Patwardhan
64	Yadav Manishkumar	Ph.D. (Tech)	Synthesis and Characterization of Carbon Nanotubes and Fibers	Prof. A.W. Patwardhan
65	Swapnil R. Chaudhari	ICT, Mumbai	Studies in advanced membrane separation processes	Prof.A.V. Patwardhan
66	Vandana Prabhu	ICT, Mumbai	Synthesis of ceramic membranes and its applications	Prof.A.V. Patwardhan

67	Yogesh K. Choughule (Chemistry)	Institute of Science, Mumbai	Studies in organic reaction systems for chiral discrimination processes	Prof.A.V. Patwardhan
68	Ketan S. Kulkarni (Chemistry)	G. J. College, Ratnagiri, Mumbai University	Studies in ceramic membrane synthesis and applications	Prof.A.V. Patwardhan
69	Dr. Priyanka Rao	Ph. D Tech,	Study of Extraction and Downstream Processing of biomolecules of medicinal value from natural source	Prof.V.K. Rathod
70	Dr. Nishat Khan	Ph. D Tech, Green Tech	Studies in enzyme catalyzed reactions	Prof.V.K. Rathod
71	Dr. Dhanashree Pandhare	Ph. D Tech, Green Tech	Studies in biocatalysis	Prof.V.K. Rathod
72	Dr. Anilkumar Gupta	Ph. D Sci., Chemistry	Studies in biodiesel production	Prof.V.K. Rathod
73	Dr. Sarita Gawas	Ph. D Sci., Chemistry	Studies in Process Intensification in Enzyme catalyzed Reaction.	Prof.V.K. Rathod
74	Dr. Sandip Shewale	Ph. D Tech, Chem. Engg.	Process intensification of extraction and purification of natural ingredients from herbs	Prof.V.K. Rathod
75	Tidke V. B.	Ph.D. Tech	Techno-commercial evaluation of sustainable technologies	Prof. B.N. Thorat
76	Patil Mayurkumar	Ph.D. (Tech.) Chem. Engg.	Exploration of novel absorbents for enhanced CO2 capture	Dr. P.D. Vaidya
77	Bhoite Ganesh	Ph.D. (Tech.) Chem. Engg.	Pre-treatment of bio-methanated distillery wastewater by catalytic wet air oxidation and Fenton oxidation to enhance further biomethanation	Dr. P.D. Vaidya
78	Barge Aditti	Ph.D. (Tech.) Chem. Engg.	Studies in water purification	Dr. P.D. Vaidya
79	Joseph Elizabeth	Ph.D. (Tech.) Chem. Engg.	Study of equilibrium and kinetic features of N,N-diethylethanolamine based CO2-capturing solvents	Dr. P.D. Vaidya
80	Yadav Abhimanyu	Ph.D. (Sci.) Chemistry	Sustainable H2 production by catalytic reforming	Dr. P.D. Vaidya

List summer Trainee students of the year 2018			
Sr. No.	Name of Student	Institute	Name of the Guide
1	Asitabh Annavaajhalan	Sardar Vallabhbhai National Institute of Technology (SVNIT, Surat)	Prof.A.B.Pandit
2	Avnish Singh	IIT (BHU)	Prof.G.D.Yadav
3	Ayesha Sayyed	MIT Academy of Engineering	Prof.V.K.Rathod
4	Chaitali Bankar	AISSMS College of Engineering, Pune	Dr.P.R.Gogate
5	Chinmay M. Nerkar	Vishwakarma Institute of Technolgy	Dr.C.S.Mathpati
6	Dipali Sharma	MIT Academy of Engineering, Alandi, Pune	Dr.P.R.Nemade
7	G Maheshwari	NIT Tiruchi	Prof.J.B.Joshi
8	Gaurav Chaudhari	AISSMS College of Engineering, Pune	Prof.Laxmi Kantam
9	Harshit Yadav	UPES Dehradun, B.Tech Chem. Engg. 3rd year	Prof.J.B.Joshi
10	Kishan Kumar Chandani	AISSMS College of Engineering, Pune	Prof.V.K.Rathod
11	Krishna Jaiswal	Visvesvaraya National Institute of Techology, Nagpure	Prof.J.B.Joshi
12	Kunal T. Ranjane	AISSMS College of Engineering, Pune	Prof.V.K.Rathod
13	Mayur Malasure	AISSMS College of Engineering, Pune	Dr.P.R.Gogate
14	Parth Patel	Btech 2nd year, IIT Patna Chemical Engineering,	Prof.J.B.Joshi
15	Shruti Sharma	IIT, Guwahati	Prof.J.B.Joshi
16	Sonali Agrawal	NIT Trichy	Dr.V.H.Dalvi
17	Subham Baban Gawade	MIT Academy of Engineering	Dr.P.R.Nemade
18	Sumedh Wankhede	MIT Academy of Engineering	Prof.V.K.Rathod
19	Ujwal K. Zore	Nation Institute of Technology, warangal	Prof.A.B.Pandit
20	Yash Jain	NIT Warrangal	Mrs.K.V.Marathe
21	Chaitanya Shah	Malaviya National Institue of Technology	Prof.A.B.Pandit
22	Saba Rahman	Zakir hussain college of Engineering & Tehnology AMU Aligarh	Prof.A.B.Pandit
23	Ganeshraj Baikerikar	D.J. Sangavi College of Engineering	Prof.A.B.Pandit
24	Pallavi Gatkal	Datta Meghe College of Engineering	Prof.V.K.Rathod
25	Ruchita Desai	Datta Meghe College of Engineering	Prof.V.K.Rathod
26	Aakash Choudhari	Mahatma Gandhi Mission college of Engg and Technolgyg	Prof.V.K.Rathod

27	Archana Maruti Shinde	Pune University	Dr.R.D.Jain
28	Chandan suthar	Sardar Vallabhbhai National Institute of Technology, Surat	Prof.Laxmi Kantam
29	Chandrashekhar Singh	National Institute of Technology, Warangal	Prof.B.N.Thorat
30	Faiza Patel	MIT Academy of Engineering	Dr.C.S.Mathpati
31	Gouri R Nayanar	Amrita School of Engineering	Prof.A.W.Patwardhan
32	Kalyani Kanpillewar	Manipal Institute of Technology	Prof.A.M.Lali
33	Lakshmi D. Voleti	Chaitanya Bharathi Institute of Technology	Prof.A.V.Patwardhan
34	Mohit Raje	Dr. Babasaheb Ambedkar Technological Unviersity Lonere	Dr.V.H.Dalvi
35	Neena Ragi	NIT Calicut	Prof.V.K.Rathod
36	Omkar Kishor Chati	Dr. Babasaheb Ambedkar Technological Unviersity Lonere	Prof.A.B.Pandit
37	Omkar V. Zolekar	Laxminarayan Institute of Technology, Nagpur	Dr.V.H.Dalvi
38	Parikshit Rane	NIT, Warangal	Prof.A.M.Lali
39	Poornima Kamble	BRACT Vishwakarma Institute of Technology pune	Prof.B.N.Thorat
40	Pragati D. Taware	Dr. Babasaheb Ambedkar Technological Unviersity Lonere	Mrs.K.V.Marathe
41	Priti Kumari	national institute of technology arunachal Pradesh	Prof.V.K.Rathod
42	Rushikesh Wanare	Dr. Babasaheb Ambedkar Technological Unviersity Lonere	Prof.V.K.Rathod
43	Rutuja Amrale	Vishwakarma Institute of Technolgy	Dr.P.R.Nemade
44	Salonee Saraiya	University of Pitbarge	Dr.P.R.Nemade
45	Shoeb Ahmed Syed	college of Engineering and Technology Akola	Dr.R.D.Jain
46	Vedang Nagre	Vishwakarma Institute of Technolgy	Prof.V.K.Rathod
47	Dr. G. Keerthiya	BMS College of Engg, Bangalore	Prof.V.K.Rathod
48	S.Akila	Seethalkshmi Ramaswami College, Tamil Nadu	Prof.Laxmi Kantam
49	Sakshi H. Garg	IIT Roorkee	Dr.P.R.Gogate
50	T. Avishkar	IIT (BHU)	Prof.J.B.Joshi
51	Komal Patel	S.S. Jondhale	Prof.V.K.Rathod
52	Namrata Panchal	S.S. Jondhale	Prof.V.K.Rathod

Detailed of Sponsored Projects

Government Agencies:	
Sponsor	Rajiv Gandhi Science and technology Commission
Title	Cold storage facility for storage of fruits and vegetables using heat based refrigeration system
Duration	5 years
Total amount	1.23 cr
Principal Investigator	Prof. Sunil S. Bhagwat
Research Fellows	Kalpana Mahalle, Pallavi Parab

Sponsor	Department of Science and Technology, Science and Engineering Research Board
Title	Design of in situ photocatalytic systems for CO ₂ conversion into useful organic materials using CdS Nanoparticles on the new polymeric CO ₂ specific adsorbents and graphene supports
Duration	4 years(Oct 2014-Sept 2018)
Total amount	Rs.54,80,900
Principal Investigator	Prof. V G Gaikar
Research Fellows	Ms.M. Muffidah (Ph.D. (Sci)), Ms Gabhane Suchita (Ph.D. (T)) and Ms. Bhoje Rutuja (Ph.D. (T))

Sponsor	Bharat Petroleum Corporation Limited
Title	Selection and Regeneration of potential ionic liquid for hydro processing feed stocks
Duration	2015-2018
Total amount	Rs.20,00,000
Principal Investigator	Prof. V G Gaikar
Research Fellows	Barkule Angad Babasaheb(Ph.D. (Sci))

Sponsor	Bharat Petroleum Corporation Limited
Title	Development of additive for use in Delayed Coker Unit (DCU) to improve liquid yield
Duration	2015-2018
Total amount	Rs. 2000000
Principal Investigator	Prof. V G Gaikar
Research Fellows	Kabade Ketan Balkrishna (Ph.D. (Tech))

Sponsor	Department of Science & Technology, New Delhi
Title	Mitigation of water problems in AUSA town, Latur: wastewater management, Gaothan Lake rejuvenation, Potable water production through desalination of lake water and training of residents in matter of sanitation and water conservation
Duration	2 years
Total amount	Rs. 173 lakh
Principal Investigator	Dr. D. Sarode (PI) and Prof. P. K. Ghosh (co-PI)
Research Fellows	2

Sponsor	ONGC
Title	Use of composite foam to tackle the problems of oil spill and undesirable oil-in-water emulsion
Duration	2 years
Total amount	Rs 18 Lakh
Principal Investigator	Dr. S. Some (PI) and Prof. P. K. Ghosh (co-PI)
Research Fellows	

Sponsor	Department of Science & Technology (WTI Scheme), New Delhi
Title	Treatment of Wastewater containing pesticides and emerging contaminants using novel approach of combined hydrodynamic cavitation and oxidation processes
Duration	3 years (2016-2018)
Total amount	Rs.54.4 Lacs
Principal Investigator	Dr. P.R. Gogate
Research Fellows	Pooja Thanekar

Sponsor	Department of Science & Technology (MOFPI Scheme), New Delhi
Title	Intensified recovery of valuable products from whey using ultrasound
Duration	3 years (2016-2018)
Total amount	Rs.41.4Lacs
Principal Investigator	Dr. P.R. Gogate
Research Fellows	Rajeshree Khaire

Sponsor	Department of Atomic Energy-ICT
Title	Improved process for CaSO ₄ crystallisation in concentrated brine using Ultrasound
Duration	3 years (2017-2020)

Total amount	Rs.35 Lacs
Principal Investigator	Dr. P.R. Gogate
Research Fellows	Sarvesh Sabnis, Vikram Banakar, Chaitanya Moholkar

Sponsor	Department of Science & Technology
Title	Water and wastewater treatment using hybrid advanced oxidation processes
Duration	3 years (2019-2022)
Total amount	Rs.74.48 Lacs
Principal Investigator	Dr. P.R. Gogate
Research Fellows	Lakshmi N J, Agarkoti Chandroday

Sponsor	Department of Science and Technology, India-Ukraine collaboration
Title	Hydrodynamic cavitation based intensified and low cost technology for industrial wastewater treatment containing toxic organic compounds and solid particles
Duration	2 years (2019-2022)
Total amount	Rs.13.02 Lacs
Principal Investigator	Dr. P.R. Gogate
Research Fellows	

Sponsor	ICT-DAE
Title	Conjugation and Radio labelling of various nano platforms for image guided theranostic applications
Duration	02/16-02/19
Total amount	Rs. 65,32,000/-
Principal Investigator	Dr Ratnesh Jain
Research Fellows	Ganesh Gaikward

Sponsor	DBT
Title	Green Process for the production and purification of low molecular weight Chitosan Oligomer using solid acid catalyst
Duration	09/16-09/19
Total amount	Rs.51,64,200/-
Principal Investigator	Dr Ratnesh Jain
Research Fellows	Saurabh Patil, Ashish Pandit

Sponsor	DBT
Title	Microfluidic Platform for Developing bioartificial Retina
Duration	04/18-04/20
Total amount	Rs.61,51,600/-
Principal Investigator	Co-Investigator
Research Fellows	Devashree Jahagirdar

Sponsor	BIRAC-BIPP
Title	Designing & Commercialization of affordable chemically defined serum free media & feed for high value Biosimilars Manufacture
Duration	03/18-03/20
Total amount	Rs.65,44,000/-
Principal Investigator	Dr. Ratnesh Jain
Research Fellows	

Sponsor	Rajiv Gandhi Science and Technology Commission
Title	Preclinical Evaluation of Full Thickness Wound Healing Using Starch Based Artificial Skin Substitute in Rat Model
Duration	07/18-07/20
Total amount	Rs.14,00,000/-
Principal Investigator	Dr. Ratnesh Jain
Research Fellows	Rohan Chabra, Nikita Aware

Sponsor	BIRAC-PACE
Title	Bio-printing of 3D skin in a microfluidic device for a pre-clinical investigation
Duration	03/19-09/20
Total amount	Rs. 49,40,000 /-
Principal Investigator	Co-investigator
Research Fellows	Advait Bhagwat

Sponsor	ICT-DAE
Title	Development of Hydrodynamic flow focusing droplet generator for preparation of monodisperse Actinide Oxide microspheres
Duration	01/18-01/21
Total amount	Rs.70,20,800/-
Principal Investigator	Dr. Ratnesh Jain
Research Fellows	Satyajeet Yadav

Sponsor	DBT, India
Title	DBT-ICT Centre for Energy Biosciences: New and Extension Proposals
Duration	2013 – 2018
Total amount	Rs.1800.00 Lakhs
Principal Investigator	Prof. A. M. Lali
Research Fellows	Kurshedaktar Majibullah Shaikh, Priya A. Upadhyay, Pratik R. Pawar, Pratik P. Pawar, Moushmi S. Chakraborty, Prashant Savvashe, Preeti Pandey, Nikhil Kadalag, Pooja More, Tejas Ukarde, Shruti Kothari, Sunu S., Ayush Vasishta, Jyoti Mahale, Vaishali Yash Gupta, Mahendra Ashok Patil, Kaustubh Rajeev Sawant

Sponsor	DBT, India
Title	Energy Biosciences Overseas Fellowship & Chairs
Duration	2009-2020
Total amount	Rs.1472.21Lakhs
Principal Investigator	Prof. A.M. Lali
Research Fellows	-

Sponsor	DBT, India
Title	Setting up Demonstration Plant to 1 ton/day MSW Into Energy
Duration	2017-2019
Total amount	Rs.670.39 Lakhs
Principal Investigator	Prof. A.M. Lali
Research Fellows	Ankur Jadhav

Sponsor	DST-KGDS
Title	Performance and durability improvements in the solar thermal desalination system at Narippaiyur and utilization of reject sea water for algae cultivation to produce biogas
Duration	2015-2020
Total amount	Rs.61.35 Lakhs
Principal Investigator	Prof. A.M. Lali
Research Fellows	-

Sponsor	DST-KGDS
Title	Customized, Demand Driven Convergent Water solutions to address prevalent and emerging water challenges in Mission Mode in Narrippaiyur Village, Ramanathapuram District, Tamil Nadu
Duration	2018-2021

Total amount	Rs.14.476 Lakhs
Principal Investigator	Prof. A.M. Lali
Research Fellows	-

Sponsor	DBT, India
Title	Setting up Demonstration Plant to convert 1 MLD Barapullah Nallah Sewage into Clean Water and Energy
Duration	2018-2020
Total amount	Rs.1467.71Lakhs
Principal Investigator	Prof. A. M.Lali
Research Fellows	-

Sponsor	DST
Title	Biomass to Chemicals
Duration	5 years
Total amount	Rs 91.71 lakhs
Principal Investigator	Prof. M.Lakshmi Kantam
Research Fellows	one

Sponsor	DAE
Title	Thermal hydraulic studies related to coolants for new generation reactors
Duration	Five years
Total amount	Rs.72,40,000/-
Principal Investigator	Dr. C. S. Mathpati
Research Fellows	Ms. Sona C.S., Mr. Bhavesh Gajbhiye

Sponsor	Centre of Excellence in Process Intensification (TEQIP-II)
Title	Design aspects of Two opposed jet microextractor: Experimental and Computational Fluid Dynamics
Duration	One year
Total amount	Rs.16,00,000/-
Principal Investigator	Dr. C. S. Mathpati
Research Fellows	Mr. Aniket Waval

Sponsor	DAE- BRNS
Title	Computational fluid dynamics and experimental study of fluidization of lithium titanate particles in fluidized and packed fluidized bed
Duration	Three years
Total amount	Rs.25,00,000/-
Principal Investigator	Dr. C. S. Mathpati
Research Fellows	Mr. Niraj Kulkarni

Sponsor	Science & Engineering Research Board (SERB)
Title	Design and scale-up of impinging jet crystallizer using experimental and computational fluid dynamics
Duration	12/01/2017 to 11/01/2020
Total amount	Rs.15,57,410 /-
Principal Investigator	Dr. C. S. Mathpati/ Prof. A. W. Patwardhan

Sponsor	DAE-ICT Center
Title	Graphene oxide based membranes for desalination
Duration	3 years
Total amount	Rs.73.24 lakh
Principal Investigator	Dr.Parag R Nemade and Neetu Jah
Research Fellows	Vaishnavi Pabishetty, Dhruvi Rakhte, Rutuja Bhoje, and Shreerang Datar

Sponsor	DBT under Twinning Program
Title	Microbial enzyme based natural fiber (Ramie) finishing: an ecofriendly approach
Duration	2016-19
Total amount	INR 35 lacs
Principal Investigator	Prof. A.B. Pandit
Research Fellows	Ashish Yadav

Sponsor	DST WMT
Title	Sustainable processes for the development of keratin hydrolysate for the use as fertilizer, animal feed, and pet food
Duration	2017-20
Total amount	INR 75 lacs
Principal Investigator	Prof. A. B. Pandit
Research Fellows	Jayesh Mevada, Ketan Desai

Sponsor	Indira Gandhi Center for Atomic Research (IGCAR)
Title	Characterization of the regeneration process for liquid sodium cold trap in a secondary system of fast
Duration	3 years
Total amount	Rs.3800000/-
Principal Investigator	Prof. A. B. Pandit
Research Fellows	Nilesh Rane, Sarjerao Doltade

Sponsor	BBSRC, UK
Title	Bioenergy, Fertilizer and Clean Water from Invasive Aquatic Macrophytes (UK 131,584 Sterling Pounds)
Duration	3 years
Total amount	Rs.11088912.64
Principal Investigator	Prof. A. B. Pandit
Research Fellows	-

Sponsor	DST- Science and Engineering Research Board
Title	J.C. Bose Fellowship
Duration	5 years
Total amount	Rs.8250000
Principal Investigator	Prof. A. B. Pandit
Research Fellows	-

Sponsor	Indo US Science and Technology – IIGP 2.0 2018
Title	A compact and cost-effective technology for on-site treatment & reuse of wastewater containing bio-refractory compounds
Duration	1 years
Total amount	Rs.1000000
Principal Investigator	Prof. A. B. Pandit
Research Fellows	Ketan Desai

Sponsor	DAE
Title	CFD Modeling of Asymmetric Rotating Disc Contactors
Duration	2015 – 2018
Total amount	Rs.58 Lakhs
Principal Investigator	Prof.A.W.Patwardhan
Research Fellows	Nilesh Hendre, Shruti Hinge

Sponsor	DAE
Title	Synthesis and modification of carbon nanotubes: modeling, experimentation and application
Duration	2015 – 2018
Total amount	Rs.54.3 Lakhs
Principal Investigator	Prof.A.W.Patwardhan
Research Fellows	Shrilekha Sawant, Pratiksha Biranje

Sponsor	IGCAR
Title	Thermal Hydraulic Studies on Boiling in Long Vertical Tubes
Duration	2015 – 2018
Total amount	Rs.43.75 Lakhs
Principal Investigator	Prof.A.W.Patwardhan
Research Fellows	Chaitanya Mali, Dhiraj Lote

Sponsor	DAE-ICT Centre
Title	Development of grafted resins and membranes (extractants) for precious metals
Duration	3 years
Total amount	Rs. 69 Lakh
Principle Investigator	Anant R. Kapdi
Co-Investigator	Prof. Anand V. Patwardhan
Research Fellow	Swapnil Rajput

Sponsor	RGSTC
Title	Utilization of Reetha fruit for value added products - Utilization of curcumin industry waste to produce value added products
Duration	3 years
Total amount	Rs.66 lakh
Principal Investigator	Prof. V.K Rathod
Research Fellows	Mr. Dhairyashil Santre, Mr. Swapnil Mane

Sponsor	Department of Biotechnology (Govt. of India)
Title	Economic Non-food sugar from variable mixed solid waste for high value chemical products
Duration	3 years
Total amount	Rs.322.956 Lacs

Principal Investigator	Prof. Bhaskar N. Thorat
Research Fellows	Shailendrasingh Rajput, Anand Chavan

Sponsor	Center for High Technology
Title	Development of superior absorbents for CO ₂ separation from biogas
Duration	28th March 2019 to 27th March 2022
Amount	Rs.85,56,960/-
Principal Investigator	Dr. P.D. Vaidya

Sponsor	TEQIP Phase 3
Title	Hydrogen production from macroalgal biomass via catalytic aqueous-phase reforming
Duration	1st October 2018 to 31st March 2020
Amount	Rs.7,10,000/-
Principal Investigator	Dr. P.D. Vaidya

Sponsor	Department of Science and Technology (HFC-2018)
Title	Improved hydrogen production from biogas using sorption-enhanced reforming
Duration	3 years
Amount	Rs.40,62,696/-
Principal Investigator	Dr. P.D. Vaidya

Sponsor	DST-DBT (Mission Innovation India - IC#3)
Title	Study on new green CO ₂ -capturing solvents
Duration	3 years
Amount	Rs. 57,91,680/-
Principal Investigator	Dr. P.D. Vaidya

Sponsor	DST-DBT (Mission Innovation India - IC#4)
Title	Catalytic aqueous-phase reforming of model compounds of microalgae and activated sludge
Duration	3 years
Amount	Rs.50,80,320/-
Principal Investigator	Dr. P.D. Vaidya

Private Agency:	
Sponsor	Marico
Title	Rice bran Oil refining
Duration	3 yrs
Total amount	Rs.27 lakh
Principal Investigator	Prof. Sunil S. Bhagwat
Research Fellows	Amol Gore

Sponsor	Amines and Plasticizers
Title	Surface studies on lean amine solvents from gas treating units
Duration	2 yrs
Total amount	Rs.2.53 lakh
Principal Investigator	Prof. Sunil S. Bhagwat
Research Fellows	

Sponsor	Hindustan Unilever Ltd
Title	Oil water interfacial tension of polymerised oil in presence of surfactants
Duration	1 yr
Total amount	Rs.13.91 lakh
Principal Investigator	Prof. Sunil S. Bhagwat
Research Fellows	

Sponsor	DOW Chemical International Pvt.Ltd.
Title	Study of Interfacial properties of oil and surfactant solutions
Duration	6 month
Total amount	Rs.3.37 L
Principle Investigator	Prof S.S. Bhagwat
Research Fellows	

Sponsor	University of Leeds
Title	BEFWAM – Bioenergy Fertilizer and Freshwater for Invasive Aquatic Macrophytes
Duration	31st Jan 2019 to 31st Jan 2022
Total amount	GBP 130,000/-
Principal Investigator	Prof. A. B. Pandit (VHD Co-investigator)
Research Fellows	Ninad Juvekar

Sponsor	Covestro India Pvt Ltd
Title	Development of PCM Poultry Warmer for Open Shed Poultryes
Duration	August 2018 – December 2019
Total amount	INR 5,00,000/-
Principal Investigator	Dr.V.H.Dalvi
Research Fellows	Tukaram Shinde

Sponsor	Hindustan Unilever Ltd, Mumbai
Title	Thermodynamics of Solubility of Tea components in water
Duration	4 years (2014 - 2018)
Amount	Rs. 45 lakhs
Principal Investigator	Prof. V G Gaikar
Research Fellows	Ms. Dabir Tasneem (Ph.D. (Sci)), Mr.Syed Tanveer (Ph.D. (T))

Sponsor	
Title	Study of Forward Osmosis related to Sugar Industry
Duration	3 years
Total amount	Rs 24 lakhs
Principal Investigator	Professor P. K. Ghosh
Research Fellows	Bharat Honmane

Sponsor	
Title	Dehydrogenaton reactions for industrial utility
Duration	4 years
Total amount	Rs.30 lakhs
Principal Investigator	
Co-Investigator	Professor G. D. Yadav
Professor P. K. Ghosh	
Research Fellows	Sonam Sancheti

Sponsor	Mangalam Organics Ltd.
Title	Improved processing of camphor, terpenes and resins
Duration	2 years (2017-2019)
Total amount	Rs.15 Lacs
Principal Investigator	Dr. P.R. Gogate
Research Fellows	Sinhmar Pankaj

Sponsor	Aditya Birla Science and Technology Center
Title	Evaluation of advanced technologies for waste water treatment of Fiber plants of ABG
Duration	3 years (2018-2019)
Total amount	Rs.11.67 Lacs
Principal Investigator	Dr. P.R. Gogate
Research Fellows	Swapnil Gujar

Sponsor	Technoforce
Title	
Duration	2013-2017
Total amount	Rs. 26 Lakhs
Principal Investigator	Prof. J. B. Joshi
Research Fellows	Achyut Pakhre

Sponsor	Technoforce
Title	
Duration	2013-2017
Total amount	Rs. 26 Lakhs
Principal Investigator	Prof. J. B. Joshi
Research Fellows	Ghanshyam Bhosale

Sponsor	United Phosphorous Limited
Title	
Duration	2016-2020 (4 years)
Total amount	Rs. 26 Lakhs
Principal Investigator	Prof. J. B. Joshi
Research Fellows	Prachi Dwidmuthe

Sponsor	PM Fellow
Title	
Duration	4 years
Total amount	Rs. 26 Lakhs
Principal Investigator	Prof. J. B. Joshi
Research Fellows	Mahesh (IIT Bombay)

Sponsor	Akseera Pharma, Canada
Title	New Formulations from Cannabis sp
Duration	07/18-07/20
Total amount	Rs.22,85,625/-
Principal Investigator	Dr Ratnesh Jain
Research Fellows	Prachi Padte

Sponsor	Bajaj Healthcare Mumbai and AUA General,UAE
Title	Chemo-Enzymatic Synthesis of Anti-infectives
Duration	04/15-03/18
Total amount	Rs.1,28,76,432
Principal Investigator	Dr Ratnesh Jain
Research Fellows	Lalit Khare

Sponsor	Anya Biopharma, Taiwan
Title	Activity Reduction of Peptidase Enzymes by various Metal Ion-Reducing agent combination
Duration	03/17-07/18
Total amount	Rs. 56,06,600/-
Principal Investigator	Dr. Ratnesh Jain
Research Fellows	Kritika Gupta, Saurabh Patil, Ashish Pandit

Sponsor	Stelis Biopharma
Title	Structural Characterization of Recombinant Protein
Duration	06/18-10/18
Total amount	Rs.10,95,447/-
Principal Investigator	Dr. Ratnesh Jain
Research Fellows	Marianne Saldanha, Amita Puranik

Sponsor	SA Pharmachem, Mumbai
Title	Evaluation New Probiotic Compositions
Duration	02/18-10/18
Total amount	Rs.31,09,300
Principal Investigator	Dr. Ratnesh Jain
Research Fellows	Devashree Jahagirdar

Sponsor	Himedia Lab, Mumbai
Title	To study the effect of increasing the enzyme concentration upon the reaction rate
Duration	05/17-10/18
Total amount	Rs.4,42,875/-
Principal Investigator	Dr. Ratnesh Jain
Research Fellows	Amita Puranik

Sponsor	Biocon, Malaysia
Title	HMWP Characterization of Insulin Products
Duration	07/17-07/19
Total amount	Rs. 41,02,780/-
Principal Investigator	Dr. Ratnesh Jain
Research Fellows	Mruganka Parasnis(JRF)

Sponsor	Lupin Ltd
Title	Development of laboratory scale SMB chiral separation method for either Brivaracetum (S,R) from its disterioisomer (S,S) from OR for BRT-III (S,R) from its disterioisomer
Duration	2018-2019
Total amount	Rs.28.00 Lakhs
Principal Investigator	Prof. A.M.Lali
Research Fellows	-

Sponsor	Pidilite Industries Ltd.
Title	On-Shore Cultivation of Macroalgae at Bhavnagar District's Gujarat
Duration	2018-2019
Total amount	Rs.42.00 Lakhs
Principal Investigator	Prof. A. M. Lali
Research Fellows	-

Sponsor	VOL, Mumbai
Title	Lab scale synthesis of fine and bulk chemicals
Duration	1 Year
Total amount	Rs. 11.8
Principal Investigator	Prof.M Lakshmi Kantam and Prof. V.K. Rathod
Research Fellows	2

Sponsor	VOL, Mumbai
Title	Lab scale synthesis of fine chemicals
Duration	1 Year
Total amount	Rs. 12.58
Principal Investigator	Prof.M Lakshmi Kantam and Prof. V.K. Rathod
Research Fellows	1

Sponsor	Marvel Drugs, Mumbai
Title	Development of economical processes for Important organic Intermediates
Duration	1 Year
Total amount	Rs. 8 Lakhs + Tax
Principal Investigator	Prof.M Lakshmi Kantam, Prof.V K Rathod
Research Fellows	1

Sponsor	Mangalam Organics, Mumbai
Title	Synthesis of terpene derivatives
Duration	1 Year
Total amount	Rs. 15 Lakhs + Tax
Principal Investigator	Prof.M Lakshmi Kantam, Prof. V K Rathod
Research Fellows	2

Sponsor	GACL, Baroda
Title	Hydroxylation of phenol.
Duration	1 year
Total amount	Rs. 30 Lakhs + Tax
Principal Investigator	Prof.M Lakshmi Kantam, Prof.G D Yadav and Prof. V K Rathod
Research Fellows	2

Sponsor	Reliance Industries Ltd
Title	Surface-Charge Driven Algal-Water Separations: Fundamentals, Measurement, and Process Control Strategy
Duration	June 2018 – June 2022
Total amount	Rs.17 lakhs 94 thousands
Principal Investigator	Mrs. K. V. Marathe
Research Fellows	Mr. Keyur Moradiya

Sponsor	Konark Industries Ltd
Title	Recycle and reuse of membranes in waste water treatment
Duration	July 2016 – July 2019
Total amount	Rs.17 lakhs 94 thousands
Principal Investigator	Mrs. K. V. Marathe
Research Fellows	Mr. Hrusikesh Patil

Sponsor	BIRAC- Bill and Melinda Gates Foundation
Title	Hygienic water free toilet
Duration	3 years
Total amount	Rs.21,22,000/-
Principal Investigator	Dr.P. R. Nemade
Research Fellows	-

Sponsor	United Phosphorous Limited
Title	CFD simulation of the piping network inside the human body
Duration	2016-2020 (4 years)
Total amount	Rs. 26 Lakhs
Principal Investigator	Dr. C.S. Mathpati
Research Fellows	Ms. Prachi Dwidmuthe

Sponsor	Reliance Industries Ltd.
Title	Liquid-Liquid Dispersion Studies in Static Mixers
Duration	18/08/18 to 16/02/19
Total amount	Rs.23, 60,000 /-
Principal Investigator	Dr. C.S. Mathpati
Research Fellows	Ms.Prachi Dwidmuthe

Sponsor	Raj Petro Specialties Pvt. Ltd.
Title	Development of Natural esters for Dielectric Applications
Duration	1.5 year
Total amount	Rs.17.50 Lakh
Principal Investigator	Dr. Parag R. Nemade
Research Fellows	Ms. Jyoti Ambre

Sponsor	Hindustan Unilever Ltd., Bangalore
Title	LDH Formation and Converging Diverging Cavitating Nozzles
Duration	3 Years
Total amount	Rs.7500000
Principal Investigator	Prof. A. B. Pandit
Research Fellows	Mr. Gaurav Dastane

Sponsor	Shri. K. V. Mariwala - Mariwala Trust
Title	Pyrolysis of biomass, coconut shell and peanut shell for value added products
Duration	4 years
Total amount	Rs.2600000
Principal Investigator	Prof. A. B. Pandit
Research Fellows	Mr. Vikram Chatake

Sponsor	WIPRO Foundation
Title	Integration of Sustainability Concepts in Chemical Engineering Education
Duration	2 years
Total amount	Rs.456250
Principal Investigator	Prof. A. B. Pandit
Research Fellows	Ms. Poonam Khatri

Sponsor	Unilever
Title	Modelling of Kinetics of Tea Infusion
Duration	2016 – 2019
Total amount	Rs.30.2 Lakhs
Principal Investigator	Prof.A.W. Patwardhan
Research Fellows	Ms. Pallavee Dhekne, Mr. Durgesh Jha

Sponsor	Konark Industries, Gujarat Alkali Ltd., Marvel Drugs, Kesar Petro products, Godavari Biorefineries Ltd, Indo Amines Ltd.
Title	- Extraction of curcumin from turmeric - Synthesis and characterization of catalysts, Standardization of separation methods using synthetic mixture - Synthesis of intermediates for pharmaceutical application - Synthesis of chemical by ammoxidation and optimization study - Development of economical process for FDCA - Conversion of alcohols to amines

Duration	1 year
Total amount	Rs.80 Lakh
Principal Investigator	Prof. V.K Rathod
Research Fellows	Sujata Patil, Paresh Kamble, Manjeshwari Sonar, Govind Waghmare

Sponsor	Covestro (India) Pvt. Ltd.
Title	PU as Flame retardant
Duration	3 years
Total amount	Rs.43.20 Lacs
Principal Investigator	Prof. Bhaskar N. Thorat
Research Fellows	Viplav Pise

Details of National and International collaborations

- University of Leeds
- Visva-Bharati
- CREEC in Makerere University of Uganda
- Chemical Engineering Department, NIT, Warangal
- Chemical Engineering Department, AISSMS College of Engineering, Pune
- Chemical Engineering Department, LIT, Nagpur
- University of West Hungary, Hungary
- University of Minho, Portugal
- University of Sao Paulo, Brazil
- Institute of Chemistry and Chemical Technology, Ukraine
- University of Newcastle, Australia
- Tata Institute of Fundamental Research, Mumbai
- Louisiana State University, Baton Rouge, USA
- Curtin University, Australia
- Nanoxpert Technologies, Mumbai, India
- National Institute of Research in Reproductive Health
- Foundation of Medical Research
- Department of Chemical Engineering, IIT-Bombay
- International Centre for Genetic Engineering and Biotechnology (ICGEB), New Delhi
- CSIR-National Institute for Interdisciplinary Science and Technology, Trivandrum
- Centre for Advanced Bioenergy Research, Indian Oil Corporation Limited, India
- The Energy and Resources Institute (TERI), New Delhi
- CSIR-CSMCRI, Bhavnagar
- Tata Institute of Social Sciences, Mumbai (TISS)
- Centre for Tropical Crops and Biocommodities, Queensland University of Technology, Brisbane, Australia
- Centre for Energy, The University of Western Australia, Perth, Australia
- CSIRO Energy Transformed Flagship, North Ryde, New South Wales, Australia
- NSW Department of Primary Industries, New South Wales, Australia
- Centre for Biomolecular Sciences, University Park, The University of Nottingham, UK
- School of Biological Sciences, Queens University of Belfast, UK
- School of Biological and Biomedical Sciences, Durham University
- Institute of Biological, Environmental and Rural Sciences, Aberystwyth University
- Centre for Synthetic and Systems Biology and School of Biological Sciences, The University of Edinburgh, Edinburgh, UK

- Bangor University, Bangor, Gwynedd, UK,
- The University of York Wentworth Way, York, UK
- Institute for Cell and Molecular Biosciences, Newcastle University, UK
- Department of Biological and Medical Sciences, Oxford Brookes University, UK
- Department of Chemical Engineering, Centre for Process System Computations, Curtin University, Perth, Western Australia
- CSMCRI, Bhavnagar
- BARC, Mumbai
- C-MET Hyderabad
- IIT Bombay
- RMIT university Australia
- University of New Castle, Australia
- Harvard Global
- NIT Rourkela
- Indian Institute of Technology Kharagpur
- Jadavpur University, Kolkata
- Paderborn University, Germany
- The University of Liverpool, UK
- University of Porto, Portugal

Publications					
No.	Title and authors	Journal	Vol. No.	Pages	Year
1	Thermodynamic Analysis of EMISE-water as a working pair for Absorption Refrigeration system. Gorakshnath Takalkar, Rahu Bhosale, Nilesh Mali, Sunil S. Bhagwat	Applied Thermal Engineering	148	78-795	2018
2	Synergism and Interfacial Property Study of Sodium Lauryl Ether Sulfate and Polysorbate 80 at the Air-Water Interface Shobha Desai, Sunil Bhagwat	Journal of Surfactants and Detergents	22(2)	237-247	2018
3	Thermophysical Properties of Ternary Systems Potassium Formate + Propylene Glycol/ Glycerol + Water Pallavi Parab, Sunil S. Bhagwat	Journal of Chemical & Engineering Data	64(1)	234-244	2018
4	Demulsification of crude oil emulsion by capacitive sensor system measurement: introduction to apparatus and methodology Vaibhav Kedar, Sunil S. Bhagwat	Journal of Dispersion Science and Technology	40	1-8	2019

5	Vapour liquid equilibrium of Potassium formate – Water: measurements and correlation by e-NRTL model Pallavi Parab, Goarkshnath D Takalkar, Sunil Bhagwat	Indian Chemical Engineer	58(1)	1-11	2019
6	Experimental Investigation of Isothermal Vapor–Liquid Equilibrium and Estimation of Excess Thermodynamic Properties (h E) of CHO 2 K–H 2 O from 278.15 to 423.15 K Gorakshnath D. Takalkar, Rahul R. Bhosale, Nilesh A. Mali, Sunil S. Bhagwat	Journal of Chemical & Engineering Data	64(4)	1488-1500	2019
7	Patil R.G., Panse S.V., Joshi J.B., Dalvi V. H. Alternative designs of evacuated receiver for parabolic trough collector	Energy	155	66-76	2018
8	Ghoderao P. N., Dalvi V. H., Narayan M. A four-parameter cubic equation of state for pure compounds and mixtures	Chemical Engineering Science	190	173-189	2018
9	Thalange V.C., Dalvi V.H., Mahajani S.M., Panse S.V., Joshi J.B. Deformation and optics based structural design and cost optimization of cylindrical reflector system	Solar Energy	158	687-700	2018
10	Highly Enantioselective One-Pot Synthesis of Chiral β Heterosubstituted Alcohols via Ruthenium–Prolinamide-Catalyzed Asymmetric Transfer Hydrogenation V K Vyas, P Srivastava, P Bhatt, V Shende, P K Ghosh, B M Bhanage	ACS Omega	3	12737-12745	2018
11	Channelizing the osmotic energy of proximate sea bitttern for concentration of seawater by forward osmosis under realistic conditions to conserve land requirement for solar sea salt production B Honmane, T Deshpande, A Dhand, R Bhansali, P K Ghosh	Journal of membrane science	567	329-338	2018

12	Study of fluoride content in some commercial phosphate fertilizers, LP Ramteke, AC Sahayam, A Ghosh, U Rambabu, MRP Reddy, KM Popat, B Rebarry, D Kubavat, KV Marathe, PK Ghosh*	Journal of Fluorine Chemistry	210	149-155	2018
13	Synthesis of ultrasound assisted nanostructured photocatalyst (NiO supported over CeO ₂) and its application for photocatalytic as well as sonocatalytic dye degradation, S.V. Sancheti, C. Saini, R. Ambati, P.R. Gogate.	Catalysis Today	300	50-57	2018
14	Ultrasound Assisted Synthesis of Iron doped TiO ₂ catalyst, R. Ambati, P.R. Gogate.	Ultrasonics Sonochemistry	40 (A)	91-100	2018
15	Ultrasound assisted synthesis of stable oil in milk emulsion: study of operating parameters and scale-up aspects, L. Patil, P.R. Gogate.	Ultrasonics Sonochemistry	40 (A)	135-146,	2018
16	Hybrid treatment strategies for 2,4,6-trichlorophenol degradation based on combination of hydrodynamic cavitation and AOPs, A. Barik, P.R. Gogate.	Ultrasonics Sonochemistry	40 (A)	383-394	2018
17	Degradation of Carbamazepine Using Hydrodynamic Cavitation Combined with Advanced Oxidation Processes, P. Thanekar, M. Panda, P.R. Gogate.	Ultrasonics Sonochemistry	40 (A)	567-576	2018
18	Improved Synthesis of medium chain triacylglycerol catalyzed by lipase based on use of supercritical carbon dioxide pretreatment, S. B More, J. S. Waghmare, P. R. Gogate, S. N. Naik.	Chemical Engineering Journal	334	1977-1987	2018
19	Intensified Degumming of crude soybean oil using cavitation reactors, N.S. More, P.R. Gogate.	Journal of Food Engineering	218	33-43	2018

20	Intensification of delignification and subsequent hydrolysis for the fermentable sugar production from lignocellulosic biomass using ultrasonic irradiations, P.B. Subhedar, P. Ray, P.R. Gogate.	Ultrasonics Sonochemistry	40(B)	140-150	2018
21	Intensification of heterogeneously catalyzed Suzuki-Miyaura cross-coupling reaction using ultrasound: Understanding effect of operating parameters and reactor type, S.V. Sancheti, P.R. Gogate.	Ultrasonics Sonochemistry	40(B)	30-39	2018
22	Combined treatment approaches based on ultrasound for removal of triazophos from wastewater, R.H. Jawale, P.R. Gogate.	Ultrasonics Sonochemistry	40(B)	89-96	2018
23	Kinetic and thermodynamic study of adsorptive removal of SDBS using novel adsorbent based on thermo-chemical activation of coconut shell, P.S. Bhandari, P.R. Gogate.	Journal of Molecular Liquids	252	495-505	2018
24	Synthesis of iron oxide nanoparticles in a continuous flow spiral microreactor and Corning® advanced flowTM reactor (AFRTM), P. L. Suryawanshi, S. H. Sonawane, B. A. Bhanvase, M. Ashokkumar, M. S. Pimplapure, P. R. Gogate.	Green Processing Synthesis,	7(1),	1-11	2018
25	Improved crystallization of ammonium sulphate using ultrasound assisted approach with comparison with the conventional approach, A.V. Mohod, P.R. Gogate.	Ultrasonics Sonochemistry	41	310-318	2018
26	Efficient removal of Acid Green 25 dye from wastewater using activated Prunus Dulcis as biosorbent: Batch and column studies, S.N. Jain, P.R. Gogate.	Journal of Environmental Management	210	226-238	2018

27	Intensified Synthesis of Medium Chain Triglycerides using Ultrasonic Reactors at a Capacity of 4L, A.V. Mohod, P.R. Gogate.	Ultrasonics Sonochemistry	42	347-355	2018
28	Ultrasound Assisted Enzymatic Degumming of Crude Soybean Oil, N.S. More, P.R. Gogate.	Ultrasonics Sonochemistry	42	805-813	2018
29	Intensification of esterification of karanja oil for production of biodiesel with optimization using response surface methodology, S. Joshi, P. R. Gogate, S. Kumar.	Chemical Engineering Processing	124	186-198	2018
30	Large scale emulsification of turmeric oil in skimmed milk using different cavitation reactors: A comparative analysis, L. Patil, P.R. Gogate.	Chemical Engineering Processing	126	90-99	2018
31	Improvement in biological oxidation process for the removal of dichlorvos from aqueous solutions using pretreatment based on Hydrodynamic Cavitation, P. Thanekar, M. Priyanga, P.R. Gogate.	Journal of Water Process Engineering	23	20-26	2018
32	Green Synthesis of nanocapsules for self-healing anticorrosion coating using ultrasound assisted approach, U. Bagale, S.H. Sonawane, B.A. Bhanvase, R.D. Kulkarni, P.R. Gogate.	Green Processing Synthesis	7	147-59	2018
33	Ultrasound assisted intensified synthesis of 1-benzyloxy-4-nitrobenzene in the presence of phase transfer catalyst, M. Diwathe, P.R. Gogate.	Chemical Engineering Journal	346	438-446	2018
34	Intensified Degumming of crude soybean oil using cavitation reactors, N.S. More, P.R. Gogate.	Chemical Engineering Processing	218	33-43	2018

35	Intensified Recovery of Lactose from Whey using Thermal, Ultrasonic and Thermosonication Pretreatments, R. Khaire, P.R. Gogate.	Journal of Food Engineering	237	240-248	2018
36	Treatment of atrazine containing wastewater using cavitation based hybrid treatment approaches, R.H. Jawale, O. Dapurkar, P.R. Gogate.	Ultrasonics Sonochemistry	130	275-283	2018
37	Synthesis and characterization of samarium and nitrogen doped TiO ₂ photocatalysts for photo-degradation of 4-acetamidophenol in combination with hydrodynamic and acoustic cavitation. S Bargole, S. George, V. K. Saharan, P. R. Gogate, A. B. Pandit	Separation and purification technology	209	254-269	2019
38	Sonocatalytic treatment of phosphonate containing industrial wastewater intensified using combined oxidation approaches. S. D. Ayare, P R. Gogate	Ultrasonics Sonochemistry	51	69-76	2019
39	Treatment of landfill leachate using different configurations of ultrasonic reactors combined with advanced oxidation processes. S. M. Joshi, P R. Gogate	Separation and Purification Technology	211	10-18	2019
40	Combined hydrodynamic cavitation based processes as an efficient treatment option for real industrial effluent. P. Thanekar, P. R. Gogate	Ultrasonics Sonochemistry	53	202-213	2019
41	Depolymerization of carboxymethyl cellulose using hydrodynamic cavitation combined with ultraviolet irradiation and potassium persulfate. Amrutlal L.Prajapat, Parag R.Gogate	Ultrasonics Sonochemistry	51	258-263	2019

42	Novel approaches based on hydrodynamic cavitation for treatment of wastewater containing potassium thiocyanate. Rajashree H.Jawale, Parag R.Gogate	Ultrasonics Sonochemistry	52	214-223	2019
43	Ultrasound assisted synthesis of stable oil in milk emulsion: Study of operating parameters and scale-up aspects. Saurabh M.Joshi, Parag R.Gogate	Ultrasonics Sonochemistry	52	375-381	2019
44	Ultrasound assisted synthesis of biodiesel from karanja oil by interesterification: Intensification studies and optimization using RSM. Shubham S.Kashyap, Parag R.Gogate, Saurabh M.Joshi	Ultrasonics Sonochemistry	50	36-45	2019
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160	Kinetic Modelling of Hydrogenation of Cardanol over Pd/C Catalyst; Patil B.R., Bari A.H., Pinjari D.V., Pandit A.B.	Indian Chemical Engineer	60	88-103	2018
161	Sequential Crystallization Parameter Estimation Method for Determination of Nucleation, Growth, Breakage, and Agglomeration Kinetics; Bari A.H., Pandit A.B.	Industrial and Engineering Chemistry Research	57	1370-1379	2018

162	Is reproducibility inside the bag?; Gomes F., Thakkar H., Lähde A., Verhaagen B., Pandit A.B., Fernández Rivas D.	Ultrasonics Sonochemistry	40	163-174	2018
163	Effect of brewing temperature, tea types and particle size on infusion of tea components Yadav G. U., Farakte R. A., Patwardhan A. W.	Int. Food. Res. J.	25(3)	1228 – 1238	2018
164	Hydrodynamic and Mass Transfer Characteristics of Asymmetric Rotary Agitated Columns Hendre N. V., Vaishali V., Farakte R. A. Patwardhan, A. W.	Ind. Eng. Chem. Res.	57	1630 – 1644	2018
165	Comparison of Models for Drag and Non-Drag forces for gas/liquid two-phase bubbly flow Lote D. A., Vinod V., Patwardhan A. W.	Multiphase Science and Technology	30(1)	31 – 76	2018
166	CFD simulations of the air-water two-phase vertically upward bubbly flow in pipes Lote D. A., Vinod V., Patwardhan A. W.	Ind. Eng. Chem. Res.	57	10609 – 10627	2018
167	CFD simulations to predict dispersed phase hold up in a pulsed sieve plate column Sen N., Singh K. K., Patwardhan A. W.*; Mukhopadhyay S., Shenoy K. T.,	Sep. Sci. Tech.	53	2587 – 2600	2018
168	Effect of Turbulent Dispersion on Hydrodynamic Characteristics in a Liquid Jet Ejector Sharma D., Patwardhan A. W., Ranade V. V.	Energy	164	10 – 20	2018
169	CFD Simulations of Two Phase Flow in Asymmetric Rotary Agitated Columns Farakte R. A., Hendre N. V., Patwardhan A. W.	Ind. Eng. Chem. Res.	57	17192 - 17208	2018

170	LLE and SLM studies for Pd(II) separation using a thiodiglycolamide-based ligand. S Kumbhaj, V Prabhu, AV Patwardhan	Membrane Water Treatment	9	463-471	2018
171	Studies in solvent extraction and supported liquid membrane for platinum recovery from chloride media by tris(2-ethylhexyl) phosphate. S Kumbhaj, V Prabhu, AV Patwardhan	Indian Chemical Engineer	61	15-27	2019
172	Synthesis and characterization of nanofiltration ceramic membranes using alumina doped with spent siliceous material from chemical industry. KS Kulkarni, SB Ekhande, S Muley, S Rajput, AV Patwardhan, AW Patwardhan	Separation Science and Technology	54	1502-1511	2019
173	Thiophene extraction from liquid fuel using ionic liquid. S Rajput, AV Patwardhan	Bombay Technologist	66	11-15	2019
174	Oxidase- like activity of magnetically separable nano ceria for catechol detection, Yadav, S.V., Rathod, V.K	SN Applied Sciences	In press		2019
175	Enzymatic synthesis of cosmetic grade wax ester in solvent free system: optimization, kinetic and thermodynamic studies, Jaiswal, K.S., Rathod, V.K	SN Applied Sciences	In Press		2019
176	Solar radiation as a renewable energy source for the biodiesel production by esterification of palm fatty acid distillate, Gupta, A.R., Rathod, V.K.	Energy	In press		2019
177	Acoustic cavitation assisted lipase B catalysed synthesis of polyethylene glycol stearate in a solvent free system via esterification: synthesis and optimization, Nhivekar, G.S., Rathod, V.K.	Journal of Chemical Technology & Biotechnology	In press		2019

178	Enzyme mimic oxidase-like activity of Fe ₃ O ₄ magnetic nanoparticles for dopamine detection, Yadav, S.V., Rathod, V.K.	Catalysis in Green Chemistry and Engineering	1(4)	357-368	2018
179	Preparation of combi-magnetic cross linked enzyme aggregates of cellulase and lipase, Nhivekar, G.S., Rathod, V.K.	Catalysis in Green Chemistry and Engineering	1(4)	345-355	2018
180	Biomining of orange peel peroxidase within metal organic frameworks (MOFs) for dye degradation, Salgaonkar, M., Nadar, S.S., Rathod, V.K.	Journal of Environmental Chemical Engineering	7(2)		2019
181	Extraction of curcuminoids from Curcuma longa: comparative study between batch extraction and novel three phase partitioning, Patil, S. S., Bhasarkar, S., Rathod, V.K.	Preparative Biochemistry and Biotechnology	In press		2019
182	Amino acid induced hyper activation of laccase and its application in dye degradation, Nadar, S.S., Rathod, V.K.	Biocatalysis and Agricultural Biotechnology	In press		2019
183	A co-immobilization of pectinase and cellulase onto magnetic nanoparticles for antioxidant extraction from waste fruit peels, Nadar, S.S., Rathod, V.K.	Biocatalysis and Agricultural Biotechnology	17	470-479	2018
184	Statistical optimization of xylanase and alkaline protease coproduction by Bacillus spp using Box-Behnken Design under submerged fermentation using wheat bran as a substrate, Limkar, M. B., Pawar, S.V., Rathod, V.K.	Biocatalysis and Agricultural Biotechnology	17	455-464	2018
185	Valorization of Food and Agricultural Waste: A Step Towards Greener Future, Rao, P., Rathod, V.K.	The Chemical Record	18	1-15	2018

186	Continuous Preparation of Nimesulide Nanoparticles by Liquid Antisolvent Precipitation using Spinning Disc Reactor, Rathod, W.R., Rathod, V.K.	Journal of Chemical Technology & Biotechnology	94(3)	919-926	2018
187	Magnetic-metal organic framework (magnetic-MOF): A novel platform for enzyme immobilization and nanozyme applications, Nadar, S.S., Rathod, V.K.	International journal of biological macromolecules	120(B)	2293-2302	2018
188	Aqueous two-phase extraction of punicalagin ($\alpha + \beta$) from pomegranate peel by response surface methodology, Indurkar, S.J., Rathod, V.K.	Separation Science and Technology	54(1)	51-58	2018
189	Ultrasound assisted chemical activation of peanut husk for copper removal, Ingle, P.K., Attarkar K., Rathod, V.K.	Green Processing and Synthesis	8	46-53	2018
190	Microwave assisted enzymatic synthesis of speciality esters: A mini-review, Khan, N.R., Rathod, V.K.	Process Biochemistry	75	89-98	2018
191	Enzyme-catalysed production of n-butyl palmitate using ultrasound-assisted esterification of palmitic acid in a solvent-free system, Khan, N.R., Gawas, S.D., Rathod, V.K.	Bioprocess and Biosystems Engineering	41(11)	1621-1634	2018
192	Exploring the potential of Mangifera indica leaves extract versus mangiferin for therapeutic application, Kulkarni, V.M., Rathod, V.K.	Agriculture and Natural Resources	52(2)	155-161	2018
193	Intensification of paracetamol (acetaminophen) synthesis from hydroquinone using ultrasound, Mane, S.N., Gadalkar, S.M., Rathod, V.K.	Ultrasonics Sonochemistry	49	106-110	2018
194	Waste cooking oil and waste chicken eggshells derived solid base catalyst for the biodiesel production: Optimization and kinetics, Gupta, A.R., Rathod, V.K.	Waste Management	79	169-178	2018

195	Effective adsorption of ciprofloxacin hydrochloride from aqueous solutions using metal-organic framework, Gadipelly, C., Marathe, K.V., Rathod, V.K.	Separation Science and Technology		1-7	2018
196	Utilization of banana peels for removal of strontium (II) from water, Mahindrakar, K.V., Rathod, V.K.	Environmental Technology & Innovation	11	371-383	2018
197	Solar energy as a process intensification tool for the biodiesel production from hempseed oil, Gupta, A.R., Jalan, A.P., Rathod, V.K.	Energy Conversion and Management	171	126-132	2018
198	Optimization of enzymatic synthesis of ethyl hexanoate in a solvent free system using response surface methodology (RSM), Gawas, S.D., Lokanath, N., Rathod, V.K.	Biocatalysis	4	14-26	2018
199	A novel step towards immobilization of biocatalyst using agro waste and its application for ester synthesis, Tomke, P.D., Rathod, V.K.	International journal of biological macromolecules	117	366-376	2018
200	Optimization of lipase-catalyzed synthesis of polyethylene glycol stearate in a solvent-free system, Nhivekar G.S., Rathod, V.K.	Green Processing and Synthesis	8(1)	30-37	2018
201	Ultrasound assisted process intensification of uricase and alkaline protease enzyme co-production in <i>Bacillus licheniformis</i> , Pawar, S.V., Rathod, V.K.	Ultrasonics Sonochemistry	45	173-179	2018
202	Combi-metal organic framework (Combi-MOF) of α -amylase and glucoamylase for one pot starch hydrolysis, Salgaonkar, M., Nadar, S.S., Rathod, V.K.	International journal of biological macromolecules	113	464-475	2018

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204	Extraction of total phenolic content from <i>Azadirachta Indica</i> or (Neem) leaves: Kinetics study, Shewale, S., Rathod, V.K.	Preparative Biochemistry and Biotechnology	48(4)	312-320	2018
205	Extraction and Purification of Polyphenol Oxidase: A Review, Panadare, D.C., Rathod, V.K.	Biocatalysis and Agricultural Biotechnology	14	431-437	2018
206	Enzyme assisted extraction of biomolecules as an approach to novel extraction technology: A review, Nadar, S.S., Rao, P., Rathod, V.K.	Food Research International	108	309-330	2018
207	Enhancement in synthesis of ethyl laurate catalyzed by fermase by combined effect of ultrasound and stage wise addition of ethanol, Gawas, S.D., Rathod, V.K.	Chemical Engineering and Processing: Process Intensification	125	207-213	2018
208	Calcium diglyceroxide catalyzed biodiesel production from waste cooking oil in the presence of microwave: Optimization and kinetic studies, Gupta, A.R., Rathod, V.K.	Renewable Energy	121	757-767	2018
209	Recovered polyvinyl alcohol as an alternative binder for the production of metallurgical quality coke breeze briquettes Prof.B.N. Thorat	Coal Preparation and Utilization	In Press		2019
210	Fenton oxidation and adsorption pretreatment for superior biogas recovery from biomethanated spent wash. Bhoite, G. M.; Vaidya, P. D.	Chem. Eng. Commun.	In Press		2019
211	New AMP/polyamine blends for improved CO ₂ capture: Study of kinetic and equilibrium features. Patil, M. P.; Vaidya, P. D.	Can. J. Chem. Eng.	In Press		2019

212	Kinetics of ozonation of phenol and substituted phenols. Bhosale, G. S.; Vaidya, P. D.*; Joshi, J. B.*; Patil, R. N.	Ind. Eng. Chem. Res	58	7461-7466	2019
213	Hydrotreatment of jatropha oil over noble metal catalysts. Patil, S. J.; Vaidya, P. D.*	Chem. Eng. Commun.	206	605-618	2019
214	Characterization of the superior CO ₂ -capturing absorbent blend AMP/PZ/EGMEE/Water. Patil, M. P.; Vaidya, P. D.*	Int. J. Greenhouse Gas Control	84	29-35	2019
215	Ruthenium-decorated carbon nanotubes as catalyst for wet air oxidation. Barge, A. S.; Vaidya, P. D.*	J. Environ. Chem. Eng.	7	102914	2019
216	Kinetics of CO ₂ absorption by aqueous mixtures of N,N'-diethylethanolamine and polyamines. Joseph, E. B.; Vaidya, P. D.*	Int. J. Chem. Kin.	51	131-137	2019
217	Cerium-promoted bi-functional hybrid materials made of Ni, Co and hydrotalcite for sorption-enhanced steam methane reforming (SESMR). Ghungrud, S. A.; Dewoolkar, K. D.; Vaidya, P. D.*	Int. J. Hydrogen Energy	44	694-706	2019
218	Iron-catalyzed wet air oxidation of biomethanated distillery wastewater for enhanced biogas recovery. Bhoite, G. M.; Vaidya, P. D.*	J. Environ. Manage.	226	241-248	2018
219	Aqueous-phase hydrodechlorination of model chlorinated organic compounds over Ru/C catalyst. Payal, D. D.; Vaidya, P. D.*	Chem. Eng. Commun.	205	657-666	2018
220	Reaction kinetics of steam reforming of n-butanol over Ni/hydrotalcite catalyst. Yadav, A. K.; Vaidya, P. D.*	Chem. Eng. Technol.	41	890-896	2018

221	Wet air oxidation of cresylic spent caustic - A model compound study over graphene oxide (GO) and ruthenium/GO catalysts. Barge, A. S.; Vaidya, P. D.*	J. Environ. Manage.	212	479-489	2018
222	Improved biogas generation from biomethanated distillery wastewater by pretreatment with catalytic wet air oxidation. Bhoite, G. M.; Vaidya, P. D.*	Ind. Eng. Chem. Res.	57	2698-2704	2018
223	Production of hydrotreated jatropha oil using Co-Mo and Ni-Mo catalysts and its blending with petroleum diesel. Patil, S. J.; Vaidya, P. D.*	Energy Fuels	32	1812-1821	2018
224	Catalytic wet oxidation of quinoline over Ru/C catalyst. Pachupate, N. J.; Vaidya, P. D.*	J. Environ. Chem. Eng.	6	883-889	2018
225	Kinetics of CO ₂ absorption into aqueous AMP/HMDA/TEG mixtures. Patil, M. P.; Vaidya, P. D.*	Chemistry Select	2	195-200	2018
226	On the production of bio-hydrogenated diesel over hydrotalcite-like supported palladium and ruthenium catalysts. Patil, S. J.; Vaidya, P. D.*	Fuel Process. Technol.	169	142-149	2018
227	Catalytic wet air oxidation using graphene oxide and ruthenium nanoparticles supported on graphene oxide. Vemula, S. Y.; Vaidya, P. D.*	Catal. Green Chem. Eng.	1	201-212	2018
228	Wet air oxidation of bisphenol-A, isophorone, p-hydroxybenzoic acid and p-toluidine over Ru/C catalyst. Vemula, S. Y.; Vaidya, P. D.*	Catal. Green Chem. Eng.	1	65-77	2018
229	Bench-scale study for CO ₂ capture using AMP/PZ/Water mixtures. Patil, M. P.; Vaidya, P. D.; Kenig, E. Y.	Chem. Eng. Trans.	69	163-168	2018

Patents				
No.	Inventors	Title	Country	Funding agency
1.	S. Maiti, P. Patel; C. Bhatt, B. Bharadia, M. R. Gajjar, P. S. Bapat, P. K. Ghosh	Household solar still with easy operation and maintenance and enhanced output	US Patent 9,908,790 (2018, CSIR)	
2	Prof. P.K. Ghosh	System and method for energy efficient extraction of pure water from seawater for preparation of pure concentrated brine from sodium chloride	Indian Patent Application Number TEMP/E-1/49243/2018-MUM (ICT) filed	
3	Gaikward G, Jain R, Dandekar P	Microdevice for nanoparticle and chemical synthesis	India	
4	Gaikward G, Jain R, Dandekar	Microreactor platform for nanoparticle synthesis	India	
5	Gaikwad G, Gore M, Jain R and Dandekar P	Biomimetic Gut multiwall plate	India	
6.	Lali Arvind Mallinath; Varavadekar Jayesh Suman; Reshamwala Shamlan M.S.	High cell density continuous fermentation of C5 sugar/s or both C5 & C6 sugars to ethanol	Indian Application No.: 201821027586	
7	Lali Arvind Mallinath; Wadekar Prathamesh Chandrashekhar; Patil Mallikarjun Laxmiputra; Patil Parmeshwar Shivajirao	Continuous operating system and process for partial or complete deconstruction of polymeric organic feed	Indian Application No.: 201821024740	
8	Lali Arvind Mallinath; Wadekar Prathamesh Chandrashekhar	A system and method for preparing pumpable polymeric organic feed slurry	Indian Application No.: 201821024733	

9	Lali Arvind Mallinath; Odaneth Annamma Anil; Pawar Pratik Prashant; Chourasia Vallari Ramesh	A method for producing microbial oil from lignin or lignin hydrolysate using oleaginous yeasts	PCT Application No.: PCT/IN2018/050506	
10	Lali Arvind Mallinath; Odaneth Annamma Anil; Pawar Pratik Prashant; Warke Mrunal Anil; Vadgama Rajeshkumar Natwarlal; Chourasia Vallari Ramesh	Extractive production of microbial oil using oleaginous yeasts	PCT Application No: PCT/IN2018/050225	
11	Lali Arvind Mallinath; Pawar Hitesh Suresh	Process for treating liquid industrial effluents to produce clean water and recovering pollutants for value addition	PCT Application No.: PCT/IN2018/050034	
12	Lali Arvind Mallinath; Pawar Hitesh Suresh; Shravan sreenivasan	A catalytic liquefaction (CTL) method for production of bio-crude oil using ionic liquid catalyst and preparation thereof	Indian Application Number: 201621025317	
			PCT Application No.:PCT/IN2017/050303	
			US Application No.: 16/320,569	
			Brazil Application No.: BR 11 2019 0015647	
			EPO Application No.: 17833711.9	
13	Lali Arvind Mallinath; Prakash Gunjan; Pillai Vijita V.	Continuous process for production of Vitamin B12	Indian Application Number: 201621017230	
14	Lali Arvind Mallinath; Odaneth Annamma Anil; Victoria Juliet Joanna; Choudhari Vikram Gunvant; Wadekar Prathamesh Chandrashekhar; Patil Mallikarjun Laxmiputra; Patil Parmeshwar Shivajirao; Asodekar Bhupal Ravindra; Prakash Indra; Huang Xiaoyan	Process for production of pure glucose from cellulose	USA: 15/746,217; Notice of Allowance; 2019	

15	Lali Arvind Mallinath; Odaneth Annamma Anil; Vadgama Rajesh; Warke Mrunal; Bhat Anuradha	Enzymatic process for fat and oil hydrolysis	Patent No.: IN308754; 2019
			Patent No.: PH1/2014/501720; 2019
			Patent No.: EP2809789; 2018
			Patent No.: MX354561; 2018
16	Lali Arvind Mallinath; Maurya Ritu Rahul	Separation of organic acid from mixtures containing ammonium salt of organic acids	Patent No.: US10221120; 2018
17	Lali Arvind Mallinath; Pawar Hitesh Suresh	Process for synthesis of furan derivatives from saccharides using acid catalyst and preparation thereof	Patent No.: US 15/038,416; Issued notice of allowance, 2018
			Patent No.: JP2016-533608; 2018
18	Lali Arvind Mallinath; Odaneth Annamma Anil; Birhade SachinkumarHiraman; Victoria Juliet Joanna; Sawant Sneha Chandrakant	A process for production of soluble sugars from biomass	Patent No.: JP2016-564438; 2018
			Patent No.: ZA2016/05597; 2018
			Patent No.: EP3094733; 2018
			Patent No.: SG11201605855T; 2018
			Patent No.: AU2015207338; 2018
19	Lali Arvind Mallinath; Odaneth Annamma Anil; PednekarMukesh Prabhakar	Process for fractionation of oligosaccharides from agri-waste	Patent No.: US 15/112,095; Issued notice of allowance, 2018
			Patent No.: JP2016-564437; 2018
			Patent No.: AU2015207336; 2018
			Patent No.: EP3094734; 2018
20	Lali Arvind Mallinath; Odaneth Annamma Anil; Nagwekar Pooja Devidas; Varavadekar Jayesh Suman; Wadekar Prathamesh Chandrashekher; Gujarathi Swapnali Subhash; Valte Rajeshwar Dattatraya; Birhade Sachin kumar Hiraman	Method for production of fermentable sugars from biomass	Patent No.: AR076925B1; 2018
			Patent No.: KR101842080; 2018
			Patent No.: CA2763588; 2018

21	Jayesh Mevada, A. B. Pandit (Application ID: 201921029631)	All in one compact microscope	India
22	Yogesh Urunkar, A. B. Pandit, J. B. Joshi, Parag Bhargav (Application ID: 201921011917)	Floating insulating fly ash ceramics	India
23	Vaidya, PD, Budhwani N, Bhagwat SS, Sinha, R, Chugh, P, Someswarudu, R.	Absorbent composition and method for removing acidic components from industrial gases	India, GAIL (India) Ltd.

Book

No.	Author(s)	Title	Publisher	Place	Year
1	Aniruddha B. Pandit, J. K. Kumar	Drinking water treatment for developing countries	Royal Society of Chemistry	India	2019

Book Chapter

No.	Author(s)	Title of the chapter	Editor	Publisher	Place	Page	Year
1	P.R. Gogate, A.V. Mohod	Process Intensification and parametric optimization in biodiesel synthesis using hydrodynamic cavitation reactors, Chapter in "Green Chemistry for Sustainable Biofuel Production"	Dr. G. Gude	Apple Academic Press in collaboration with CRC		203-238	2018
2	S.M. Joshi, P.R. Gogate	Process Intensification of Biofuel Production from Microalgae, Green Energy and Technology	Jacob-Lopes E., Queiroz Zepka L., Queiro M.	Springer, Cham		59-87	2018
3	R A Khaire, P R Gogate	Whey protiens	Charis M. Galanakis	Academic press		193-223	2019
4	Joshi, Jyeshtharaj B., Krishnaswamy Nandakumar, Ashwin W. Patwardhan, Arun K. Nayak, Vishnu Pareek, Monica Gumulya, Chunliang Wu et al.	"Computational fluid dynamics" In Advances of Computational Fluid Dynamics in Nuclear Reactor Design and Safety Assessment	Jyeshtharaj B. Joshi and Arun K. Nayak	Woodhead Publishing		21-238	2019

5	Joshi, Jyeshtharaj B., Arun K. Nayak, Nitin Minocha, Eshita Pal, Ankur Kumar, Mukesh Kumar, and Avinash Moharana	“Design of passive safety systems for advanced reactors using CFD” In Advances of Computational Fluid Dynamics in Nuclear Reactor Design and Safety Assessment	Jyeshtharaj B. Joshi and Arun K. Nayak	Woodhead Publishing		387-485	2019
6	K.V. Marathe, KR Chavan, P Nakhate	Life Cycle Assessment (LCA) of PET Bottles	Elsevier	William Andrew Publishing,			2019
7	Shankar B. Kausley, Gaurav G. Dastane, Jyoti K. Kumar, Ketan S. Desai, Sarjerao B. Doltade, and Aniruddha B. Pandit	Clean Water for Developing Countries: Feasibility of Different Treatment Solutions	Elsevier	Earth Systems and Environmental Sciences	India		2018
8	Dhiraj Lote , Chaitanya Mali, Ashwin W. Patwardhan	Computational Fluid Dynamics	J.B. Joshi, and Arun K Nayak	Woodhead Publishing		21-238	2019
9	S Rajput, AV Patwardhan, AR Kapdi, NN Sanzgiri, RS Chaughule*	Dendritic Polymers as Multifunctional Support (in the book titled 'Applications of One-Dimensional Nanomaterials')	RS Chaughule and RS Devan	American Scientific Publishers	Los Angeles		2019
10	Prerana Tomke	Value-Added Ingredients and Enrichments of Beverages	1.Alexandru Mihai Grumezescu 2. Alina Maria Holban	Elsevier	Romania	1-35	2019
11	Prerana Tomke	Impact of Nano-Engineering in Beverages Industry	1.Alexandru Mihai Grumezescu 2. Alina Maria Holban	Elsevier	Romania	1-35	2019
12	Vaidya, P. D.; Wu, Y. J.; Rodrigues, A. E.	Kinetics of ethanol steam reforming for hydrogen production, in Ethanol: Science and Engineering (Elsevier) -	Angelo Basile, Adolfo Iulianelli, Nejat T. Veziroglu	Elsevier			2018

In house Committee

Prof. S.S. Bhagwat

- Dean , Student affairs
- Vice-president, Technological association

Dr. V.H. Dalvi

- Timetable Committee
- Classroom Committee
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Engineering

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Prof. A.V. Patwardhan

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- Member – Students with special needs and mentoring Committee (Department of Chemical Engineering)
- Member – Board of Governors – UDCT Alumni Association (UAA)
- Member – Mentoring and Counselling Cell (ICT)
- Co-Chair – Outreach Activity / Social Responsibility Committee (ICT)
- Member – Canteen and Catering Committee (ICT)
- Member – Examination Committee (ICT)

Dr. P.D. Vaidya

- TEQIP Environment Coordinator
- Member, PGPC
- Member, Departmental Committees on Safety and Instrumentation

Seminars/ Lectures/ Conferences/ Symposia/ Workshops/ Summer or Winter Training Schoold attended/ Oral OR Poster Presentation

Prof. S.S. Bhagwat

- Three week programme at NIEPA “National Institute of Educational Planning & Administration” along with travel to University of Oxford.
- Invited as keynote speaker for “International Conference on Energy and Environment”(ICEE-1029) on 4th of January, 2019 at VIT, Pune.

- Invited as speaker for Research seminar series on “Interfacial Science & Engineering: Basics and Applications” on March 4, 2019 at Ahmedabad University, Gujrat.
- Invited as keynote speaker for National seminar on “Environment and Green Technology for Sustainable Development” on January 18-19, 2019 at college of

Engineering, Pune

- Delivered a lecture on “Energy and Exergy Engineering” at KLES Science & Commerce College.
- Invited to talk on “Importance of Sciences in Engineering” at Don Bosco Institute of Technology.
- Delivered lecture at Vivekanand Education

Society's College of Arts, Science & Commerce

Prof. P.K. Ghosh

Invited Lectures delivered during 2018-2019

- Case Studies of Innovations with an Eye on Green Technology, International Conference on Green Methods for Separation, Purification and Nanomaterial Synthesis (GMSP&NS-2018), Jain University, Bengaluru, April 24-25, 2018
- Illustrations of Opportunities to Convert Waste into Value, ICC Seminar on Wealth from Waste, Ankleshwar, Gujarat, April 27, 2018
- Case studies of innovative solutions to problems of industrial and societal relevance, Farewell Seminar

Details of invited lectures (National)

- P.R. Gogate, "Chemical Reaction Engineering" Training program for Field officers of Maharashtra Pollution Control Board, September 2018
- P.R. Gogate, "Process Calculations, Distillation & Extraction, Crystallization & Filtration", Invited Faculty in Refresher course on Chemical Engineering organized by Indian Chemical Council – Southern Regional Center, Ranipet, TN October 2018
- P.R. Gogate, "Combining oxidants with Cavitation Technologies for Process Intensification" Invited talk

in honour of Professor P. M. Bhat, 28 October, 2018

- The Discovery of Cozaar, Losartan Potassium Salt at DuPont: Case Study in Brief (Keynote Address), Conference on "From Health to Well Being: An Interdisciplinary Approach from Fundamental Sciences to Translational Medicine, St. Xavier's College, Mumbai, 9 January, 2019
- Technology development @ ICT –how SMEs can partner and benefit from the expertise, Technology options for sustainable growth of Indian chemical industry UAA Ahmedabad Chapter Silver Jubilee Seminar, Feb 9, 2019
- Practical applications of Forward Osmosis with eye on energy conservation (Keynote Address),

at workshop organized by Evonik, November 2018

- P.R. Gogate, Hydrodynamic cavitation for wastewater treatment, Invited Lecture in School on Advanced Oxidation Processes, BITS, Goa, November 2018
- P.R. Gogate, "Cavitation Technologies for Wastewater treatment", Invited lecture organized by MITCOE, Alandi, Pune, December 2018
- P.R. Gogate, "Chemical Reaction Engineering", Invited Faculty in Refresher course on Chemical Engineering organized by Indian Chemical Council,

National Conference on Novel Chemical Systems for Therapeutic and Energy Applications (NCSTEA-2019), Sardar Patel University, Anand, Gujarat, 1 March 2019

- Technology pull and technology push are both important: Illustrations from ICT Mumbai and CSIR-CSMCRI, Bhavnagar in the context of industry-academia collaboration and start-ups, Advances in Chemical Process Technology, ChemProtech India / Chemspec India 2019, Bombay Exhibition Centre, Mumbai, April 17, 2019

Prof. P.R. Gogate

- Participation at Achema 2018, Germany
- P.R. Gogate, "Process Intensification using Cavitation reactors" Invited lecture at Kurukshetra University, February 2019
- P.R. Gogate, "Process Calculations, Chemical Reaction Engineering, Distillation & Extraction, Crystallization & Filtration", Invited Faculty in Refresher course on Chemical Engineering organized by Indian Chemical Council – Southern Regional Center, Cuddalore, TN March 2019
- P.R. Gogate,

Mumbai, Maharashtra, February 2019

Sonocrystallization, Industrial training program on crystallization, Cipla, Mumbai, March, 2019

Prof. J.B. Joshi

- 12th International conference on Gas, liquid and solid (GLS-12), Brussels, Belgium

Dr. R.D. Jain

- Patil S, Gupta K, Pandit A, Dandekar P, Jain R, (2019) Oral delivery of peptides: Innovation to preclinical Evaluation 17th International Symposium on Advances in Technology and Business Potential of New Drug Delivery Systems organized by Controlled Release Society-Indian Chapter (CRS-IC) February 2019
- Ghodke S, Dandekar P and Jain R (2019), Polyrotaxane: Cyclodextrin Based Supramolecular Assembly, Poster Presentation at Controlled Release Society -Indian Chapter 2019, The Lalit, Mumbai, India, and February 2019.
- Mistry P, Khare L, Dandekar P (2019), Fabrication and characterization of starch-TPU based nano fibers for wound healing applications, Poster Presentation at 17th International Symposium on Advances in Technology and Potential of New Drug Delivery Systems, Controlled release society-Indian Chapter 2019, The Lalit, Mumbai, India, Feb 2019.
- Rohra N, Gaikwad G, Dandekar P and Jain R

(2019), Production of uniform insulin crystals using hydrodynamic flow focusing device for sustained release, Poster Presentation at 17th International Symposium on Advances in Technology and Business Potential of New Drug Delivery Systems, The Lalit, Mumbai, India, February 2019

- Dhawane M, Gupta K, Deshpande A, Jain R and Dandekar P (2019) Colorimetric point-of-care detection of cholesterol using chitosan nanofibers, Poster presentation at CRS-IC 2019, The Lalit-Mumbai, India, February 2019
- Krishnan RA, Mhatre O, Sheth J, Prabhu S, Jain R, Dandekar P (2019), Synthesis of Zinc oxide Nanostructures using orange peel oil and their incorporation in composite films with Chitosan, Poster presentation at 17th International Symposium of Controlled Release Society - Indian Chapter, The Lalit, Mumbai, India, February 2019.
- Jahagirdar D, Mandawgade S, Dandekar P and Jain R (2019), Evaluation of novel probiotic composition in Oral health, Poster Presentation at CRS Mumbai Chapter, The Lalit, Mumbai, India, February 2019
- Gaikwad G, Bangde P, Jain R and Dandekar P (2019), Continuous synthesis of trimethyl chitosan/

palladiumnanoparticles as potential anti-cancer therapy, Poster Presentation at 17th International Symposium of Controlled Release Society - Indian Chapter at Hotel The Lalit, Mumbai, February 2019.

- Gupta K, Modi D, Jain R and Dandekar P (2018) Production of High Titre Recombinant Monoclonal Antibody against TNF- α , Poster presentation at BPI 2018, Indian Institute of Technology-Delhi, India, December 2018
- Nagendra P, Saldanha M, Jain R, Dandekar P (2018) Optimization of Process Parameters to Maximize Antibody Production Using Design of Experiments, Poster Presentation at Bioprocessing India 2018, Indian Institute of Technology, Delhi, India, December 2018.
- Patil S, Dandekar P, Jain R (2018) Chitosan based coprocessed excipients for improved tableting 3rd Wadhvani Research Center for Bioengineering (WRCB) Industry Day, IIT, Mumbai, November 20, 2018
- Gore M, Bute M, Yadav S, Majumder A, Gosavi S, Jain R and Dandekar P (2018), Development and evaluation of artificial skin using microfluidics for preclinical research, Poster presentation at 3rd WRCB Industry Day 2018, Indian Institute of Technology Bombay, Mumbai, India, November 2018.
- Yadav D V, Gupta K,

- Dandekar P and Jain R (2018) Green Synthesis of Silver Nanoparticles and its Biomedical Application, Poster presentation at BESCON 2018, Indian Institute of Technology-Mumbai, India, October 2018
- Gaikwad G, Bangde P, Jain R and Dandekar P (2018), Continuous synthesis of trimethyl chitosan/palladiumnanoparticles as potential anti-cancer therapy, Poster Presentation at Conference BESCON-2018 at Indian Institute of Technology Bombay, India, October 2018.
 - Rohra N, Gaikwad G, Dandekar P and Jain R (2018), Process development for producing uniform insulin crystals using microfluidic device, Poster Presentation at Biological Engineering Society Conference 2018, Indian Institute of Technology, Bombay, India October 2018.
 - Tejal Pant, Prajakta Dandekar, Ratnesh Jain (2018) Development and characterization of 3D lung spheroids Poster Presentation at Biological Engineering Society Conference 2018, Indian Institute of Technology, Bombay, India October 2018.
 - Koli U, Nilgiriwala K, Sriraman K, Jain R, Dandekar P (2018), tackling tuberculosis infection in macrophages using chitosan oligosaccharide nanoplexes. Poster presentation at "Nanobioteck-2018", All India Institute of Medical Sciences(AIIMS), New Delhi, India, October 2018.
 - Aware N, Pant T, Jain R, Dandekar P (2018), Potential of Polymethylmethacrylate Copolymer for developing microcarriers for mammalian cell culture, Poster Presentation at NanoBioteck 2018, All India Institute of Medical Science, Delhi, India, October 2018.
 - Dey A, Dandekar P, Jain R. (2018) Exploring the Interaction of Chitosan Polymer with Lipid Bilayer For siRNA Delivery. Poster presentation at "Nanobioteck-2018", All India Institute of Medical Sciences(AIIMS), New Delhi, India, October 2018.
 - Koli U, Jahagirdar D, Dandekar P and Jain R (2018), Gene silencing using chitosan oligosaccharide-siRNA nanoplexes for alleviating lung diseases, Poster Presentation at SBC Mumbai, ICT, Mumbai, India, September 2018
 - Koli U., Jain R., Dandekar P. (2018), Gene silencing using chitosan oligosaccharide-siRNA nanoplexes for alleviating lung diseases. Poster presentation at Indian Chitin and Chitosan Meeting, National Chemical Laboratory (NCL), Pune, India, October 2018.
 - Krishnan RA, Mhatre O, Sheth J, Prabhu S, Jain R, Dandekar P (2018), Synthesis of Zinc oxide Nanostructures using orange peel oil and their incorporation in composite films with Chitosan, Poster presentation at 7th Indian Chitin and Chitosan Society Meeting, CSIR-NCL Pune, India, October 2018.
 - Dey A, Kamat A, Dandekar P, Jain R. (2018) The indispensable role of proton balance in the formation of self-assembled chitosan nanoparticles for siRNA delivery. Poster presentation at 7th Indian Chitin and Chitosan Society Meeting, CSIR-NCL Pune, India, October 2018.
 - Pant Tejal, Murarka Vidhi, Dandekar Prajakta, Jain Ratnesh (2018) Chitosan based microcarriers for potential large-scale culture of mammalian cells Poster presentation at 7th Indian Chitin and Chitosan Society Meeting, CSIR-NCL Pune, India, October 2018
 - Rohra N, Gaikwad G, Dandekar P and Jain R (2018), Hydrodynamic flow focusing for producing uniform insulin crystals giving sustained release, Poster Presentation at 1st Controlled Release Asia meeting 2018 at Biopolis, Singapore, September 2018.
 - Dey A, Dandekar P, Stenberg J, Jain R. (2018) Elucidating the uptake kinetics of chitosan nanoparticles for siRNA delivery. Poster Presentation at 1st Controlled Release Asia meeting 2018 at Biopolis, Singapore, September 2018.
 - Gaikwad G, Bute M, Gadge S, Gosavi S, Jain R and Dandekar P (2018), Split and Recombine Micromixer based continuous Synthesis of Chitosan Nanoparticles, Oral Presentation at Microfluidics and Lab on a Chip conference organized by SELECTBIO at Mumbai, India.
 - Ganatra P, Adithya Vs, Jain R and Dandekar P.(2019) FDM 3D printing as a tool for rapid prototyping and manufacturing of controlled release tablets. Poster presentation at 17th Controlled release society-Indian chapter at The Lalit, Mumbai. February 2019.
- Dr. S.V. Jadhav**
- TEQUIP III sponsored training on Enhancing Accountability and Responsiveness in Scientific Organisations, Osmania University, Hyderabad, 11 – 15 March 2019
- Prof. A.M. Lali**
- Invited as a speaker at "2nd EU-India Conference on Advance Biofuels" organized by Ministry of Petroleum & Natural Gas, Govt. of India & European Commission jointly at New Delhi on 12th -13th March 2019.
- Delivered a talk on "Biotechnology for Fuels & Chemicals" at ICGEB Course on Clean Energy "Development of Enzymes & Microbial Technologies for Clean Energy" at ICGEB, New Delhi on 18th -22nd February 2019.
 - Delivered lecture at Toray India Forum Series by Toray Industries India Pvt. Ltd. at The Claridges, New Delhi on 11th February 2019.
 - Participated in the AIDA's National Technical Seminar at New Delhi on 7th -8th February 2019.
 - Invited as a speaker on Chemical Conversion of bio-feedstocks in the context of the energy transition at symposium: An Energy Science & Technology Agenda for India organized by Shell Technology Centre, Bangalore on 31st January 2019.
 - Participated & presented poster in "India International Seaweed Expo & Summit" organized by Indian Chamber of Commerce at World Trade Centre, Mumbai on 22nd-24th January 2019.
 - Invited as a speaker and presented poster at the "23rd Refining & Petrochemicals Technology Meet" organized by Centre for High Technology Ministry of Petroleum & Natural Gas, Govt. of India at Mumbai on 12th -14th January 2019.
 - Delivered a lecture & attended a workshop on "Recent innovations in algal biofuels and bio-energy technologies" at University of Petroleum and Energy Studies, Dehradun on 3rd August 2018.
 - Invited as a speaker at DBT National Workshop on Bioenergy -2018 at IIT Roorkee organized by Department of Biotechnology, Govt. of India, New Delhi on 6th -7th July 2018.
 - Attended ACHEMA 2018, World Forum and Leading Show for the Process Industries at Frankfurt am Main, Germany on 11th -15th June 2018.
 - Invited as a Panelist for the Ethanol Summit of the Asia-Pacific organized by The U.S. Grains Council and Sponsors Growth Energy and the Renewable Fuels Association at Minneapolis, Minnesota, USA on 21st -23rd May 2018.
 - Participated in 3rd LBNET Conference in Session 1: "Challenge and opportunities in lignocellulosic Biorefining" organized by University of York, UK at Cheshire, UK on 16th -18th April 2018.
 - Attended AIDA's 2 day National Technical Seminar by AIDA, Hotel Eros, Nehru Place, New Delhi on 26th -27th March 2018.
 - Invited as a guest speaker at Dr. A K Dorle Memorial lecture series III in Nagpur organized by Alumni Association of University Department of Pharmaceutical Sc. Nagpur University on 14th March

2018.

- Attended EU-India Conference on Advanced Biofuels at Taj Mahal Hotel, New Delhi on 7th - 8th March 2018.

Prof. Lakshmi Kantam

- Delivered Keynote lecture at the IZC-2019, held at Perth, Australia from 7-12 July 2019.

Dr. C.S. Mathpati

- 6th International and 43rd National Conference on Fluid Mechanics and Fluid Power, 17-17 December 2016, Dept. of Applied Mechanics, MNNIT Allahabad on Computational Fluid Dynamics Of Heat transfer in Packed And Fluidized Bed Systems, Sandeep N. Gosavi, Niraj Kulkarni, C. S. Mathpati, D. Mandal
- Application of Computational Fluid Dynamics, VJTI, Matunga, Mumbai 400 019 on Computational Fluid Dynamics and its application, C. S. Mathpati
- 8th Global Conference on Global Warming on CFD modeling of a dual Fluidized Bed Gasifier, C. S. Mathpati

Prof. A.B. Pandit

- IGCS Winter School, held at IIT Madras, India, (2019), on Sustainable Waste Management: Municipal Solid Waste and e-Waste, Priyanka Sathe, A. B. Pandit

- 2nd International Conference on Bioresources, Energy, Environment & Materials Technology, Hongcheon, Gangwon Province, South Korea, (2018) on Groundnut shell Biochar-Production, characterization, and study of its interactive mechanism with crop fertilizer, Priyanka Sathe, A. B. Pandit
- DAE BRNS 8th Biennial Symposium on emerging trends in Separation Sciences and Technology, BITS-Pilani-Goa, (2018) on A two stage treatment of alkyd resin wastewater: Hydrodynamic cavitation followed by Peroxane process in gas inducing reactor, A. B. Pandit, Shankar Kausley, Ketan Desai

Lectures delivered:

- Invited speaker for review of 'INAE DST initiative on Laboratory safety and hazardous waste management' at Indian Institutes of Science Education and Research (IISER), Pune, (2019)
- Invited Talk, organised by ICT-UAA Silver Jubilee Seminar, 'Process Intensification Strategies for Chemical Industry: Some Options for Fine Chemicals Manufacturers' Ahmedabad, (2019)
- Invited as Key note Speaker at 'ACES-2019', 'Intensification of intracellular enzyme recovery', IISER Bhopal, (2019)

- Key note Lecture, CHEMIX 2019, 'National Opportunities for Chemical Engineers' VNIT Nagpur, (2019).
- Invited Talk at 'INAE-DST' consultative meeting on 'Laboratory Safe Practices and Waste Disposal in Academic and R & D Institutes' at Savitribai Phule Pune University, Pune, (2018).
- Key note speaker at 12th International Workshop on Crystallisation, Filtration, Drying – WFCFD, 'Engg. Design and Scale up of Crystallization', (2018).

Prof. A.W. Patwardhan

- CFD Modeling for Reactor Design, Symposium on Chemical Reaction Engineering 17-18th Dec. 2018, NCL
- Sawant, S. V., Patwardhan, A. W., Joshi, J. B. and Dasgupta, K., 2018. Synthesis of boron doped carbon nanotubes using floating catalyst chemical vapor deposition, Second International Conference on Nano Science and Engineering Applications ICONSEA-2018. JNTU-Hyderabad, India, 04-06 October, 2018
- Biranje, P. M., Patwardhan, A. W., Joshi, J. B. and Dasgupta, K., 2018. Synthesis of high aspect ratio graphene oxide sheets using one pot electrochemical exfoliation. Second International Conference

on Nano Science and Engineering Applications ICONSEA-2018. JNTU-Hyderabad, India 04-06 October, 2018

- Lote, D. A., and Patwardhan, A.W., 2018. Numerical Simulations of the Gas-Liquid two phase flow using population balance modelling in Vertical Pipe. 16th Multiphase flow conference and short course, Dresden, Germany. Dresden, Germany on November 13 - 16 2018
- Tiwari, S.S., Gosavi, S.S., Bale, S., Kulkarni, N., Mandal, D., Mathpati, C.S., Patwardhan, A.W., Joshi, J.B., 2018. Sensitivity Analysis for CFD Simulations of Randomly Arranged Packed Beds of Spheres. 12th International Conference on Complex Fluids and Soft Matter (CompFlu 2018) IIT-Roorkee on December 6 -9, 2018
- Mali, C.R., Lote, D. A. and Patwardhan, A.W., 2018. Experimental and Computational Studies for Two Phase Flow Pressure Drop in Vertical Tube Boiling. 7th International and 45th National Conference on Fluid Mechanics and Fluid Power (FMFP). IIT-Bombay, Mumbai, December 10-12, 2018
- Tiwari, S.S., Bale, S., Nandakumar, K., Patwardhan, A.W., Joshi, J.B., 2018. Direct Numerical Simulation for comparison of Flow Structures in Three-Dimensional Wake Flows. 7th International and 45th

National Conference on Fluid Mechanics and Fluid Power (FMFP). IIT-Bombay, Mumbai, December 10-12, 2018

- Mali, C.R., Vinod, V. and Patwardhan, A.W., 2018. New methodology for modeling pressure drop and thermal hydraulic characteristics in long vertical boiler tubes at high pressure. National Conference on Critical Heat Flux and Multiphase Flow, pp-48 IIT-BHU, Varanasi, December 22-23, 2018
- Mali, C.R. and Patwardhan, A.W., 2018. Thermal Hydraulics Study of High Pressure Flow Boiling in Vertical Tube. 71th Annual Session of Indian Institute of Chemical Engineers, (CHEMCON-2018). NIT-Jalandhar, December 27-30, 2018 conference
- Hinge, S.P. and Patwardhan, A.W., 2018. Residence Time Distribution Studies in Multi-stage Extraction Column., 71th Annual Session of Indian Institute of Chemical Engineers, (CHEMCON-2018). NIT-Jalandhar, December 27-30, 2018 conference
- Ganjare, A. V. and Patwardhan, A.W., 2018. Comparison of the Turbulence Models for Flow Fields Prediction of the Jet Flow Decay, 71th Annual Session of Indian Institute of Chemical Engineers, (CHEMCON-2018). NIT-Jalandhar, December 27-30, 2018 conference
- Dhekne, P. P. and

Patwardhan, A.W., 2018. Mathematical Modeling of Tea Bag Infusion Kinetics. 71th Annual Session of Indian Institute of Chemical Engineers, (CHEMCON-2018). NIT-Jalandhar, December 27-30, 2018 Conference

- Lote, D. A., and Patwardhan, A.W., 2018. Numerical Simulations of the Slug Flow for the Air-Water Two Phase Flow System in Vertical Pipe. 71th Annual Session of Indian Institute of Chemical Engineers, (CHEMCON-2018). NIT-Jalandhar, December 27-30, 2018 conference
- Biranje, P. M., Patwardhan, A. W., Joshi, J. B. and Dasgupta, K., 2018. Single step Electrochemical Exfoliation of Graphite: Synthesis, Optimization and Characterization. 71th Annual Session of Indian Institute of Chemical Engineers, (CHEMCON-2018). NIT-Jalandhar, December 27-30, 2018
- Sawant, S. V., Patwardhan, A. W., Joshi, J. B. and Dasgupta, K., 2018. Synthesis of boron doped carbon nanotubes and study of variation in boron concentration. 71th Annual Session of Indian Institute of Chemical Engineers, (CHEMCON-2018). NIT-Jalandhar, December 27-30, 2018
- Hendre N. V. and Patwardhan, A.W., 2018. Hydrodynamics of asymmetric rotating agitated extractor:

Investigation of drop size, holdup and mass transfer, 71th Annual Session of Indian Institute of Chemical Engineers, (CHEMCON-2018). NIT-Jalandhar, December 27-30, 2018

- Tiwari, S.S., Bale, S., Patwardhan, A.W., Nandakumar, K., Joshi, J.B., 2018. Direct Numerical Simulation for External and Internal Flows in Open FOAM. 71th Annual Session of Indian Institute of Chemical Engineers, (CHEMCON-2018). NIT-Jalandhar, December 27-30, 2018
- Dhekne, P. P. and Patwardhan, A.W., 2018. Mathematical Modeling of Tea Bag Infusion Kinetics. 2nd International Conference on Engineering Future Food, (EFF2019). Bologna, Italy, May 26-29, 2019
- Hendre N. V. and Patwardhan, A.W., 2018. CFD PBM simulations of asymmetric rotating impeller column, 14th International Conference on Gas-Liquid and Gas-Liquid-Solid Reactor Engineering (GLS-14) Guilin, China May 30 to June 3, 2019
- Bale, S., Tiwari, S.S., Nandakumar, K., Joshi, J. B., 2019. Direct Numerical Simulation (DNS) to Investigate the Effect of Schmidt Number on Mass Transfer through Packed Beds. 14th International Conference on Gas-Liquid and Gas-Liquid-Solid

Reactor Engineering (GLS-14) Guilin, China May 30 to June 3, 2019

Prof. A.V. Patwardhan

- "Cleaning of polyamide nanofiltration membranes: Comparison between conventional and ultrasound-assisted technology". Nitin V. Thombre, Anand V. Patwardhan, paper presented at 1st International Conference Materials & Environmental Science (ICMES), Kolhapur, December 2018".
- "COD reduction of industrial effluent by polyamide nanofiltration membranes". Snehal Patil, Atharwa Thigale, Nitin V. Thombre, Anand V. Patwardhan. Paper presented at 1st International Conference Materials & Environmental Science (ICMES), Kolhapur, December 2018".

Prof. V.K. Rathod

- Lecture on 'Application of Enzyme for conversion of Biomass in to value added product', Rowan University, USA
- Lecture on 'Heat Transfer and its application in heat exchanger design', BPCL Training programme, Mumbai, 2017
- Lecture on 'Utilization of solid waste from Food Industry for value added products' and 'Utilization of liquid waste from Food Industry for value added products', North

Maharashtra University Jalgaon, 2018

Dr. P.D. Vaidya

- 11th International Conference on Distillation & Absorption, September 16-19, 2018, Florence
- 7th International Hydrogen & Fuel Cell Conference (IHFC – 2018), December 9-11, 2018, Jodhpur

Poster and Oral Presentation:

Prof. B.N. Thorat

- A. P. Chavan, V. Vitankar, B. N. Thorat (2019) CFD Simulation of Solar Grain Dryer, Poster Presentation at Nordic Baltic Drying Conference, Saint Petersburg, Russia, June 12-14.
- A. P. Chavan, B. N. Thorat (2019) Mathematical Analysis of Solar Conduction Dryer using Reaction Engineering Approach, Oral Presentation at Nordic Baltic Drying Conference, Saint Petersburg Russia, June 12-14.
- K. Pai, A. P. Chavan, B. N. Thorat (2019) New theories discerning drying kinetics, Oral Presentation at Nordic Baltic Drying Conference, Saint Petersburg Russia, June 12-14.

Event Organization

Dr. P.R. Gogate

- Local Organizing Secretary, Student Chemcon 2018, October, 2018 (about 600 participants from

academic institutes, research laboratories and Industries)

Dr. R.D. Jain

- Society of biological chemist: one day seminar on 13th Oct 2018
- Biosimilar Workshop: Nov. 2018

Prof. A.M. Lali

- Lecture by Ms. Aishwarya Mohan, Research Manager, Cape Breton University Canada on "Mining marine by-products for functional molecules" on 25th January 2019.
- Lecture by Dr. Sarah Hotchkiss, Project Manager Cybercolloids Ltd. Ireland on "CyberColloids: a small Irish company with a big interest in seaweed" on 25th January 2019.
- Lecture by Dr. John Sewuster, Waypoint Business Solutions Inc., Canada (Chair) on "Staged bioprocessing- Maximizing economic value and biomass utilization" on 25th January 2019.
- Lecture by Dr. Noreen Breathnach, Consultant Ireland on "Overview of hand harvesting Ascophyllum nodosum from Ireland's pristine Atlantic waters to being a world leader in the marketplace" held on 25th January 2019.
- Lecture by Dr. S o m y a l a k s h m i Subramanian, Post Doctoral fellow, McGill University Canada, Post Doctoral

fellow, McGill University Canada on "Harnessing the potentials of the phytomicrobiome" held on 25th January 2019.

- Lecture by Prof. Ricardo Radulovich, Dept. of Biosystems Engineering, University of Costa Rica on "Exploring Solar Radiation Relations of Seaweeds Floating at Sea: A Tool to Counteract Ocean Warming?" held on 25th January 2019.
- Lecture by Dr. Anicia Hurtado, Scientist-Consultant in Seaweed Tissue Culture and Aquaculture, Philippines on "The Role of UKRI-GCRF Global Seaweed STAR in meeting the challenges of the Philippine Seaweed Industry" held on 25th January 2019.
- Organized Workshop on Synthetic Biology was organized held on 15th December 2018.
- Lecture by Prof. K.V. Venkatesh, Department of Chemical Engineering, IIT Bombay on "Computational Modelling in Synthetic Biology" held on 15th December 2018.
- Lecture by Mr. Bibhuti Pradhan, General Manager (CSR), Indian Oil Corporation Limited (IOC), Corporate, Office, New Delhi held on "International and National Perspectives of Sustainability and CSR" held on 24th September 2018.
- Lecture by Prof. Mark

Smales, University of Kent, UK on "Engineering mammalian cell factories for production of recombinant proteins, vesicles and gene therapies" held on 1st March 2019.

- Inaugural ceremony of Novel PerkinElmer-ICT HTS platform by Dr. Renu Swarup (Secretary, Department of Biotechnology, Govt. of India) held on 28th September 2018.

Dr. C.S. Mathpati

- 2 days' workshop for process intensification using Aspen Plus through COE-PI
- 3 days' workshop on Open Foam

Prof. A.B. Pandit

- Workshop organized in collaboration with WIPRO Foundation Ltd. 'Integration of Sustainability Concepts in Chemical Engineering Education', February 2018

Prof. A.V. Patwardhan

- Organized 'Safety Week' in Department of Chemical Engineering, 05 to 08 March 2019, with the active help of PhD students of Department of Chemical Engineering.

Prof. V.K. Rathod

- Convener, American Chemical Society School Festival (Workshop), 2018
- Treasurer, SCHEMCON, 2018

Prof. B.N. Thorat

- 13th International Workshop on Crystallization, Filtration and Drying, Feb 2019, ICT, Mumbai.

Dr. P.D. Vaidya

- Sandia National Laboratory's Workshop on "Orientation to Chemical Safety and Risk Management" in ICT in 2018

Industrial Consultancy

- Marico
- Galaxy
- Aditya Birla Science and Technology Co
- Jayant Agro
- KV Fires
- HUL
- Zoetis Pharmaceutical Research Pvt. Ltd.
- Bhavi Plast Pvt. Ltd.
- Panorama Consultants
- Eternis Fine Chemicals Pvt Ltd
- Sudarshan Pvt Ltd
- Member, Asian Paints Technology Council
- SS Techno Ltd
- Mangalam Organics Ltd
- Consultant, Atul Industries Limited
- Consultant, Rubamin Industries Limited
- Eternis
- Alkyl Amines
- Laxmi Organic
- UPL
- Technoforce
- Gangwal chemicals

- Mangalam drugs and organics
- Biocon .
- GACL
- Hikal
- Amarjyot Chemicals Ltd.
- Gencrest LLP
- Lupin Ltd.
- VOL
- Indian Centre for Plastic in the Environment; ICPE
- PET Packaging Association for Clean Environment (PACE)
- United Phosphorus Ltd
- Gujarat Narmada Valley Fertilizers & Chemicals Limited
- S.P. Textiles Pvt. Ltd
- Asian Paints
- Encore Natural Polymers Pvt. Ltd.
- Gothi Impex
- Godrej Soaps Ltd.
- Godrej Industries Ltd. (GIL), Mumbai
- Marico Industries Ltd.
- Sanjay Technoplast Pvt. Ltd.
- Dr. Reddy's Laboratories
- Hindustan Unilever Ltd., Bangalore
- Mariwala Trust
- Atul Ltd.
- Val Organics Pvt. Ltd., Mumbai
- Wipro Foundation
- NOCIL Ltd.
- Aegis Logistics Limited, Mumbai
- Gujarat Chlor Alkali Ltd. .
- Godavari Biorefineries Ltd.

- Konark Herbals and Health Care
- Hikel Ltd.
- Maldeep Catalysts India Pvt. Ltd.
- Azista Industries Pvt Limited
- J S Industries
- Pidilite Industries Limited
- Harman Finchem, Limited
- Sharon Bio-Medicine Limited
- Marval Drugs Pvt. Ltd.
- Spectrochem Pvt. Ltd.
- Pulcra Chemicals India Pvt. Ltd.
- Kansi Nerolac Paints Ltd.
- SS Techno Ltd.
- Ajista Industries Pvt. Ltd.

Major Accomplishment

Prof. S.S. Bhagwat

VAM implementation at Gokul was observed for entire season cycle and data analysed for further improvement.

Prof. V.G. Gaikar

As the First Vice-Chancellor of Dr. Babasaheb Ambedkar echnological University, Lonere, Maharashtra (State's Affiliating Technical University), established the affiliating system of the University, prepared Statutes, Ordinances and Rules and Regulations of the University, and developed e-governance system in the University along with Statewide admission and examination processes.

Dr. P.R. Gogate

Improved synthesis of Iron doped TiO₂ has been attempted based on the use of ultrasound during the sol-gel process and optimizing the important parameters to obtain the best catalyst with minimum particle size. The best catalyst obtained was with a minimum particle size of 99 nm under conditions of 0.4 mol% doping of iron, 60 min treatment of ultrasound, initial temperature of 30°C, propan-2-ol as the solvent and solvent to precursor ratio as 10. The particle size of the catalyst obtained through conventional approach under otherwise similar conditions has been found to be 325 nm. Various characterization techniques like DLS, Surface BET analysis, SEM, EDS, XRD and UV-Vis band gap analysis have been used for establishing the superior characteristics of the obtained catalyst. The subsequent application of the obtained best catalyst was also investigated in the photocatalytic degradation of Acid Blue 80 dye (fixed initial concentration as 10 ppm). The effect of various parameters like catalyst loading and UV power as well as intensification of degradation based on the addition of H₂O₂, ozone, Potassium persulfate (KPS) as process intensifying additives has been studied. Overall it was established that at an optimum catalyst loading of 0.2 g/L, 16 W of UV power and 0.4 g/L KPS loading, maximum degradation of 99.59 % was obtained in 120

min of irradiation also giving a COD reduction of 95%. Integral method of analysis for kinetics revealed that pseudo-first order kinetics explained the degradation very well. Comparative study of the different catalysts established that iron doped TiO₂ catalyst synthesized using ultrasound assisted approach gave the higher efficacy as compared to the iron doped TiO₂ catalyst synthesized using the conventional approach and undoped TiO₂.

Use of different cavitation reactors, namely, ultrasonic bath, ultrasonic flow cell, high speed homogenizer and hydrodynamic cavitation using orifice plate, circular venturi and slit venturi was investigated for obtaining stable emulsion of turmeric oil in skimmed milk. The effect of different operating parameters on the droplet size and stability has been investigated. The oil droplet size decreased from 282.5 nm to 239.3 nm with an increase in power amplitude from 20% to 80% in the ultrasonic flow cell whereas, in the case of hydrodynamic cavitation using orifice plate, an increase in pressure from 5 to 10 bar led to a decrease from 338.6 to 235.0 nm. In high speed homogenizer, the oil droplet size increased from 231.3 to 313.7 nm with an increase in input voltage from 100 to 140 V. The ability of these six emulsification devices to generate emulsions at large scale was assessed with an objective to compare efficiency of different reactors based on energy density. To

produce stable emulsion, the energy requirement of ultrasonic bath (98.28 J/mL) was observed to be far lower than that of ultrasonic flow cell (461.4 J/mL) and hydrodynamic cavitation with orifice plate (1008.00 J/mL), circular venturi (756.00 J/mL) and slit venturi (1008.00 J/mL). Also, in the case of emulsification using ultrasonic bath, the effectiveness of treatment approach was analyzed for the use of ultrasound and stirring in different combinations. The obtained results clearly established that ultrasonic bath reactor operated in combination with stirrer produced stable emulsion with minimum droplet size (232.2 nm) and 0.12 PDI value at lowest energy consumption.

Value addition of lactose to hydrolyzed lactose syrup containing glucose and galactose in major proportion was investigated using the novel approach of ultrasound assisted acid catalyzed lactose hydrolysis. The hydrolysis of lactose was performed in ultrasonic bath (33 kHz) at 50% duty cycle at different temperatures as 65°C and 70°C with hydrochloric acid (HCl) concentration also varied as 2.5 N and 3 N. It was observed that acid concentration, temperature and ultrasonic treatment were the major factors in deciding the time required to complete ~90% hydrolysis reaction. The ultrasonic assisted approach resulted in reduction of reaction time depending on the temperature, acid

concentration and time of ultrasonic exposure. It was observed that the maximum process intensification obtained by introduction of ultrasound in the lactose hydrolysis process for ~90% hydrolysis with 70°C and 3N HCl was reduction in the required time from 4 hours (without the presence of ultrasound) to 3 hours. The scale-up study was also performed using an ultrasonic bath with longitudinal horn (36 kHz as operating frequency) at 50% duty cycle with the optimized temperature of 70°C and acid concentration of 3 N. It was observed that the reaction preceded faster using ultrasonic assistance in the presence of stirring by axial impeller at rpm of 225±25. The time required to complete ~90% of reaction and the extent of hydrolysis remained almost the same as observed for small scale study on ultrasonic bath (33 kHz) at 50% duty cycle. Overall the work has presented a novel ultrasound assisted approach for intensified lactose hydrolysis.

A novel biosorbent synthesized from *Ficus racemosa* leaves based on the treatment using NaOH was applied for removal of Acid Blue 25 from aqueous solution. The synthesized biosorbent was characterized using scanning electron microscopy, Fourier transform infrared spectroscopy and Brunauer-Emmett-Teller analysis. NaOH treatment was demonstrated to remove lignin content from the biomass as well as induce

the development of significant pores. Batch experiments were performed to evaluate the effect of important operating parameters such as pH (range of 2-10), biosorbent dose (range of 1-10 g/L), contact time (range of 0-5 h), initial dye concentration (range of 50-400 mg/L) and temperature (range of 293-323 K) on the extent of removal of Acid Blue 25. The established optimum conditions were pH of 2, biosorbent dose of 4 g/L, contact time of 3 h and temperature of 323 K yielding maximum removal of dye. Pseudo-second order model was found to best fit the kinetic data. Langmuir and Temkin isotherm models were found to best fit the equilibrium data. The obtained thermodynamic parameters confirmed endothermic and spontaneous nature of adsorption. The study established the utility of novel biosorbent for removal of Acid Blue 25 dye with higher adsorption capacities (83.33 mg/g) as compared to the more commonly used adsorbents. Desorption studies conducted for seven cycles indicated potential reusability of synthesized biosorbent for the treatment of textile dye effluents.

Biodiesel offers as an excellent alternative to the petro-based diesel fuel and can be derived from the reaction of vegetable/non-edible oils and/or animal fats with alcohols using the transesterification reaction. In the present study, hydrodynamic cavitation device as High-Speed Homogenizer has been used

for the intensified production of biodiesel for the first time. The efficacy of biodiesel production was observed to be dependent on the operational parameters viz. molar ratio, catalyst loading and operating temperature. The maximum yield of biodiesel obtained in the present work was 97% for waste cooking oil as starting material and 92.3% for fresh cooking oil under optimized conditions of reaction time of 120 min, molar ratio of methanol to oil as 12:1, 3% wt loading of KOH and temperature of 50°C. The study demonstrated that the application of cavitation offers the advantages as enhanced progress of reaction in reduced reaction time and improved separation. Overall, high speed homogenizer has been established to be a viable approach for intensified biodiesel production with possibly favourable economics.

Ultrasound assisted intensification of synthesis of tricaprylin based on the enzyme catalyzed reaction of caprylic acid and glycerol was investigated with a novel approach of using ultrasound in only the initial stages of the reaction. Two types of immobilized lipases as Lipozyme RM (Rhizomucor Miehe) and Novozym 435 (*Candida Antarctica*) have been used in the work. The effect of ultrasonic conditions as treatment time and power as well as the reaction conditions as substrate molar ratio, reaction time and enzyme loading on the

extent of yield of tricaprylin has been investigated. It was established that the optimum pretreatment conditions were irradiation time as 30 min with ultrasonic frequency of 20 kHz, supplied power of 240 W, 70% duty cycle (7 s on 3 s off cycle) whereas the optimum reaction conditions were 4:1 molar ratio of caprylic acid to glycerol, enzyme loading as 3% and operating temperature of 50 °C. It was also established that reuse of enzymes for 10 cycles was possible without any significant effect on the activity of lipase. It was also conclusively established that compared to the conventional approach of synthesis, ultrasound pretreatment based approach greatly influenced the rate of reaction and maximum tricaprylin yield of 94.8% was achieved in 7 h of reaction time under the optimum conditions.

Curcumin, a dietary phytochemical, was extracted from rhizomes of *Curcuma amada* using ultrasound assisted extraction (UAE) with comparison of the results with the conventional extraction approach to establish the process intensification benefits. The effect of different operating parameters such as type of solvent, extraction time, extraction temperature, solid to solvent ratio, particle size and ultrasonic power on the extraction yield have been investigated in details for UAE. The maximum extraction was obtained at optimized conditions of 35 °C temperature, solid to solvent

ratio of 1:25, particle size of 0.09 mm, ultrasonic power of 250 W and ultrasound frequency of 22 kHz with ethanol as the solvent. Soxhlet extraction was used for establishing the curcumin content in the plant material and the results of extraction yield were expressed as a function of this maximum content. Under optimized conditions, the extent of curcumin extraction using UAE was 72% achieved in 1 h at 35 °C temperature, which was higher as compared to the batch extraction (about 62% in 8 h of treatment). Peleg's model was used to describe the kinetics of UAE and the model showed a good agreement with the experimental results. Overall, ultrasound has been established to be a good process intensification approach for extraction of curcumin with benefits of reduction in time as compared to batch extraction or operating temperature as compared to Soxhlet extraction, which can give economical benefits and also lead to greener processing.

Prof. Lakshmi Kantam

a) Application of clay catalysts for the synthesis of alpha-terpineol from alpha-pinene led to enhanced scope of heterogeneous catalysts for developing a clean economical process and replacing the traditional phosphoric acid/BF₃ catalyzed process. b) Heterogeneous titanium catalysts were developed for the synthesis of borneol from

alpha-pinene. c) Application of TS-1 catalysts for the hydroxylation of phenol for developing a clean economical process for hydroquinone and catechol. d) Developed heterogeneous vanadium catalysts for the ammoxidation of ortho-chlorotoluene to ortho-chlorobenzonitrile. e) Continuous process for the acylation of phenol to anisole using solid base catalysts. f) Process developed for the ammoxidation of acetylfuran to 3-hydroxy-2-methyl pyridine.

The knowledge generated through this work paves way for the development and design of cheaper catalytic materials and green processes for the industrially important intermediates.

Prof. A.W. Patwardhan

- Population balance modelling was successfully implemented and studied for the modeling of bubble size distribution for homogeneous and heterogeneous regimes
- New methodology for modeling of full range flow boiling phenomenon in long vertical tube at high pressure has been developed.
- CFD-PBM approach can be used to predict the hydrodynamics in asymmetric rotating impeller column type extractors.
- Hydrogen adsorption studies for carbon nanostructures shows 12 fold rise in BCNTs as

compared to SWCNTs and MWCNTs.

- In-house probe has been developed based on the principle of conductivity difference to measure the local gas-holdup for gas-liquid system
- Fully resolved Direct Numerical Simulation (DNS) have been performed for highly turbulent free shear flows ($Re > 104$) for the first time.

Prof. A.V. Patwardhan

Separation of various metal ions and organic acids from aqueous streams using supported liquid membrane. This is relevant for recovery of metals as well as in industrial pollution control. Scale-up from laboratory scale to industrial scale equipment is in progress.

- Water recovery from effluents containing dyes, pesticides, surfactants. Water recovery from effluents from textile industry, and refineries.
- Development of grafted resins and membranes (extractants) for precious metals.
- Separation of racemic aldehydes using vicinal diamines as chiral auxiliary has been successfully demonstrated at laboratory scale.
- Friedel-Crafts alkylation of phenols using ionic liquids as catalysts has been successfully demonstrated at laboratory scale.
- In-situ epoxidation of non-

edible oil using hydrogen peroxide has been achieved. This epoxidised oil is found suitable for making plasticisers.

- An innovative biotechnological approach for the production of L-ascorbic acid (vitamin C) has been successfully developed.
- Production of natural colorants using microbes has been accomplished, and the application of the same has been successfully tried for dyeing of natural fibres.

Prof. B.N. Thorat

Professor Bhaskar N. Thorat has carried out pioneering work in the area of Chemical Engineering, in particular Drying Technology, an important unit operation in chemical and allied industries.

- A large number of his research collaborators have become India's top most entrepreneurs. To name few of them such as Dr. Vaibhav Tidke, Dr. Tushar Gaware, Mr. Ganesh Bhare (S4S Technoservices Pvt Ltd, new Mumbai)
- He has to his credit 25 Ph.D's and over 60 Master degree completed researchers besides 8 post-doc research collaborators and several of these are working as faculty in India as well as abroad such as NUS (Singapore), NIT (Rourkela).
- Professor Thorat and his research team have several

innovative, patented and commercialized designs and technologies, such as Solar Conduction Dryer, Solar Grain Dryer, Microbutor, Screw Conveyor Dryer, Atmospheric Air Dryer

- He has to his credit reasonable good number of Internationally published research papers and book chapters and he is one of the leading Indian researcher in the area of Drying technology.
- Along with his one of the collaborator, Dr. Sachin Jangam, he has developed and commercialized heat Pump Assisted Dryer and the first unit was supplied to one of the Swiss companies through a local Engineering and design company, M/s. Panasia, based in Mumbai.
- Solar Conduction Dryer (SCD) is patented, most widely accepted, a breakthrough technology, developed in Professor Thorat's Advanced Drying laboratory of ICT
- The technology 'Solar Conduction Dryer' has been commercialized at mass scale across the length and breadth of India and so far 1700 units have been installed in 22 states in India and 10 countries of the world. This Technology has received the Bill & Melinda gates Foundation's most innovative and game changing technologies of 21st century. It also received Dell Innovation's top prize of USD 60,000

Prof.S.S. Bhagwat Reserach Group



Left to Right (1st Row): Rahul Kamble, Prashant Kotian, Kunal Pawar, Amol Gore
Left to Right (2nd Row): Akshaya Chavan, Prof. S.S. Bhagwat, Kumudini Lokhande, Pallavi Parab

Dr. V. H. Dalvi Reserach Group



Left to Right : Tukaram Shinde, Dr. V.H. Dalvi, Rinin Rajan, Sanket Chafle.

Prof.Prof. V.G. Gaikar Reserach Group



From Left: Siddharth Vaishnav (Intern), Nirmitt Solanki (Intern), Sarvesh Pandey (Intern), Sayed Tanveer(Ph.D. Scholar), Prof. V.G. Gaikar, Suwarna Hiware (Ph.D. Scholar), Muffida (Ph.D.), Uma Kulkarni (Intern), Siddhi Kotnis (Intern)

Dr. P.R. Gogate Reserach Group



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Third row (From Left to Right): Pooja Thanekar (Ph. D.), Rajeshree Khaire (Ph. D.), Dr. Parag Gogate (Associate Professor), Swapnil Gujar (Ph.D.), Vikram Banakar (Ph. D.),

Prof. P.K. Ghosh Reserach Group



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Prof. J.B. Joshi Reserach Group



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From bottom left to bottom right: Dr. Ankur Kumar, Prachi Dwidmuthe, Parul Goel, Prof. Jyeshtharaj. B. joshi, Dr. Vishal Bhusare, Dr. Vinayak Thalange, Dr. Anita Sharma

Dr. R.D. Jain Reserach Group



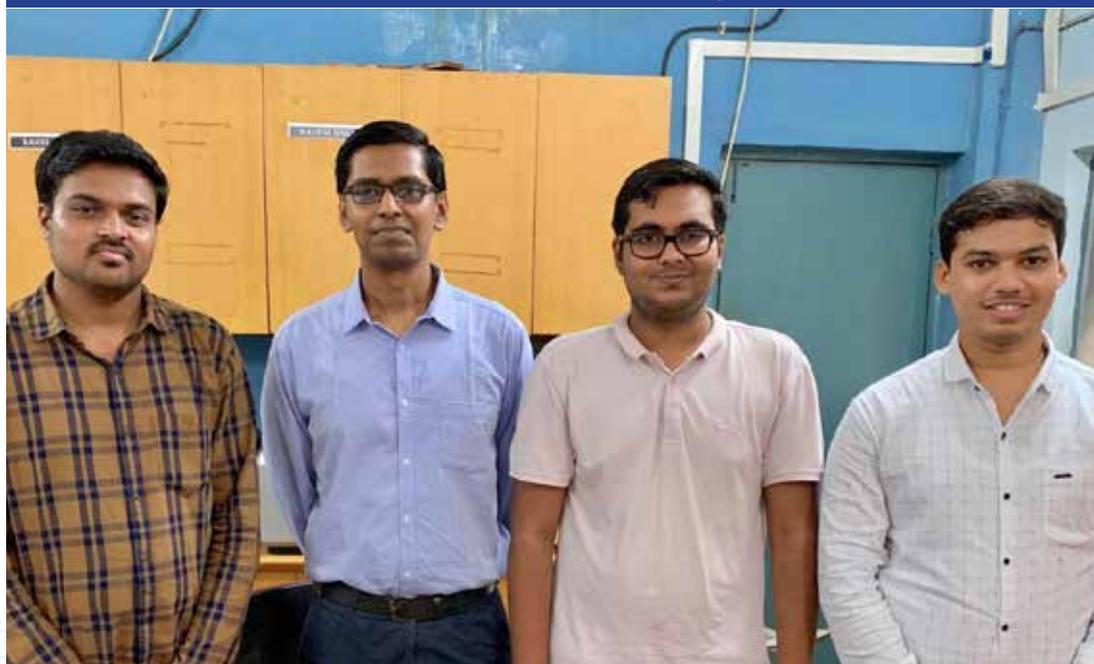
Dr. R.D. Jain with Students and colleagues

Prof. A.M. Lali Reserach Group



Prof. A.M. Lali with his students and colleagues

Dr. S.V. Jadhav Reserach Group



From Left to Right: Rohit Muradkar, Dr.Sachin Jadhav, Shubham Kumar, Dhiraj Sutar

Prof. Lakshmi Kantam Reserach Group



Left to Right: Gunjan Deshmukh, Jayaram Molleti, Govind Waghmare, Paresh Kamble, Prof. Lakshmi Kantam, Rakhi Vishwakarma, Nagraju Nekkala, Revati, Snehal Gajbhie

Mrs. K.V. Marathe Reserach Group



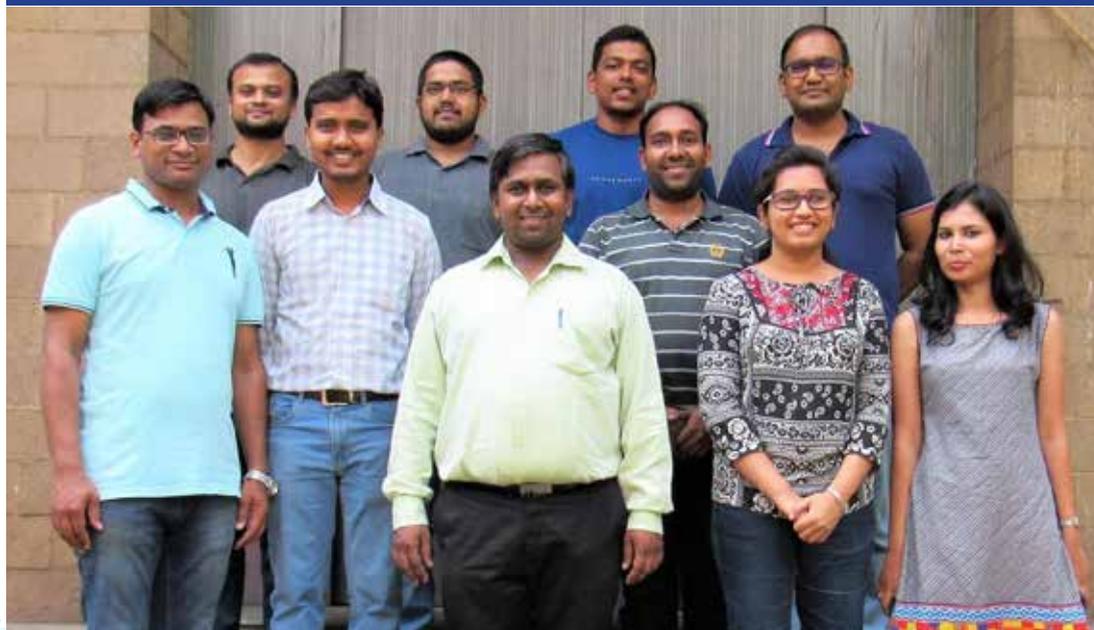
From Left To Right: Vignesh, Shafelika, Raj, Vipul, Pranav, Keyur and Hrushikesh

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