



**DEPARTMENT OF
BIOTECHNOLOGY
CENTRE FOR
ENERGY
BIOSCIENCES**

ABOUT THE DEPARTMENT



The DBT-ICT Centre for Energy Biosciences (DBT-ICT-CEB) is a unique place that integrates basic and translational science capabilities for bioprocess development and scale up. Funded by the Department of Biotechnology, Ministry of Science and Technology, India, the Centre was established and formally inaugurated in May 2009. Established at a total cumulative cost equivalent to more than USD 15 million, the Centre is a part of the Institute of Chemical Technology (ICT) at Matunga, Mumbai, which is a deemed University under Section 3 of UGC Act 1956. The Centre was set up as a result of vision and efforts of Dr. M. K. Bhan, Secretary DBT and Dr. Renu Swarup, Advisor, DBT, and functions under the leadership of Dr. G. D. Yadav, Vice Chancellor,

ICT. The projects and technical programs at the Centre are coordinated by Prof. Arvind Lali. The Centre is focused primarily at developing biotechnologies for deriving biofuels and other products from renewable resources for reducing India's rising dependence on petroleum and cut down greenhouse gas emissions. The Centre believes in building multidisciplinary capacity for development of integrated technology packages.

The Centre successfully completed its first phase of five years in 2013 and was awarded an extension of five years by the Department of Biotechnology with the extended mandate of upscaling and upgrading the platform technologies developed during the first phase. The 10 Ton/day biomass pilot plant set up by Industry

has successfully validated all segments of the novel DBT-ICT Lignocellulosic Ethanol Technology in a continuous non-stop flow mode from biomass size reduction to ethanol fermentation. The technology is at present being taken to commercial scales by different oil marketing companies. The Centre has developed a highly competent working groups in the area of Synthetic biology, Fermentation technology, Green/Chemical catalysis, Algal technologies, Enzyme engineering & technology, Separation technologies. These groups have developed a range of globally competitive cutting edge technologies that are at present being translated to demonstration and commercial scale plants.

With an outstanding achievement in the first phase,

the second phase progressed to develop platform technologies for conversion of all domestic, industrial and agricultural wastes to renewable products (fuel, food, feed, material, energy and chemicals) using smart combinations of chemical and biological technologies. Also during the second phase, the Centre has developed an integrated biorefinery concept through multi-product processing using chemical or biological routes that are being taken up for technology transfer or scaleup. The Centre has expanded its state-of-art facility and procured several high-end equipment's and instruments that not only leads to high level contemporary research but also an accelerated development of several more scalable technologies based on the knowledge base generated. The Centre having completed its second phase in 2018, aims to continue the work in an intensive mission mode for innovative research and translation of developed technologies.

The Centre for Energy Biosciences has attracted a large number of industrial and academic collaborations as a result of its reputation of conducting cutting edge research and delivering viable and scalable solutions to the biotech industry. The Centre is also part of several national and international academic collaborations (Indo-UK, Indo-Australia, Indo-German, Indo-US and several national projects) with grants amounting to more than 10 million USD under various R&D schemes

floated by Ministry of Science and Technology, Government of India. The technologies developed at the DBT-ICT Centre have been secured through patent filings across the world. A number of technologies have been already licensed to industries for pilot and commercial scale plants.

AIMS:

- Envisage the end goals as clearly as possible at all times
- Put all multiple disciplines to work in close co-ordination
- Combine expertise at two ends of the spectrum i.e. molecular biology and engineering sciences
- Scale up and apply evolving principles/ideas progressively alongside development in order to make sure that efforts are time efficient and not wasted and the technology zeroes to viability at a faster rate

RESEARCH GROUPS

GREEN/ CHEMICAL CATALYSIS

Objectives

- Developing second and next generation sustainable biofuel technologies
- Development of biorefinery concept through multiproduct processing
- Scaling up and implementing biofuel plants in decentralized manner

Approaches

- Innovative pre-treatment strategies

- Radical intensification for enzyme process
- Intensification of fermentation steps

Achievements

- Technology developed for pre-treatment of low & high lignin biomass
- Production of separate enzyme amenable cellulose and hemicellulose fractions along with lignin
- Novel two step continuous enzyme process with rapid reaction rates and reduction in enzyme dosage and reaction time
- More than 90 % yield of sugars from biomass
- High ethanol tolerant strains for C5 & C6 fermentation
- High cell density column fermenters
- More than 90 % theoretical yield
- Low cost Pervaporation & distillation system

Technology Highlights

- Continuous process throughout; low CAPEX & low plant footprint
- Biomass to ethanol in less than 24 hours
- Ethanol yield > 300 L/Ton biomass
- Technology components patent protected worldwide
- IGL Pilot plant operational from April 2012 and first phase commissioned successfully

ENZYME TECHNOLOGIES

Objectives

1. To develop viable processes for microbial/ enzyme catalyzed bio-

- transformations
- 2. Develop stable immobilized biocatalyst preparations
- 3. Production and cost effective purification of expressed biocatalyst
- 4. Bioreactor designs for process scale-up
- 5. Engineer/develop specific enzymes with desired activity profiles
- 6. Develop suitable over-expression systems for selected biocatalysts

Approaches

- In silico biocatalyst structure-function relationship studies
- Reaction/ Biocatalyst engineering
- Integration of processes
- Process scale up
- Reactor engineering

FERMENTATION TECHNOLOGIES

Objectives

- Identifying and designing microorganisms
- Lab scale optimization and production
- Large scale production

Approaches

- Modification of growth phases
- Media engineering
- Fermenter design
- Extractive fermentation

ALGAL BIOTECHNOLOGIES

Objectives

- Explore algae as a source of biofuel feedstock/biodiesel/ value added products
- Develop knowledge, technology and process strategies for sustainable production of algae as

feedstock for fuel & chemicals

- Photo bioreactor/Raceway pond designing for efficient scale up of algae as biofuel feedstock

Approaches

- Screening & selection of algae
- Growth and media engineering, consortia design, CO₂ mitigation
- Strain improvement by genetic modification/ metabolic engineering/ hybridization
- Photo bioreactor/Raceway pond designing
- Harvesting and processing

SYNTHETIC BIOLOGY

Objectives

- Designing microbes/algae/ cyanobacteria for synthesis of drop in biofuels (butanol, biodiesel, biohydrocarbons) and high value products (proteins, lipids, alcohol, organic acids, carotenoids)
- Large scale bioproduction of amino acids
- Synthesis of furanics from biomass

Approaches

- Pathway analysis for redirecting fluxes towards biofuel production
- Construction of synthetic metabolic pathways for production of high value compounds
- Vector construction for shuttle/transient/integrative cloning and expression of genes
- Recombinational methods for over expression / silencing of genes

- Alleviating product toxicity in biofuel production by directed evolution for tolerant strains

SEPARATION TECHNOLOGIES

Objectives

- Thermodynamic and hydrodynamic characterization of various adsorbents for RPC, NPC, HIC, HCIC, IEX, Affinity, IMAC, SEC & mixed mode chromatography
- Design & development of separations of bio-based, natural, synthetic & semi synthetic products using adsorptive & chromatographic separation
- To improve the product purity, productivity and process economics (commercial viability) through designing of selectivity and process engineering
- Designing of membrane (UF, MF and NF) and extractive separation, crystallization and precipitation (use of smart polymers and poly/ electrolytes) and to explore their possible integration with chromatographic separation
- Mechanistic and empirical models for adsorption and separation mechanisms
- Process monitoring through process optimization and product characterization
- Designing, engineering and scale up of chromatographic reactors (Packed bed, EBA, FBA, SMB, FMB, Segmented), skids as well as pilot and production plants

Approaches

- High Throughput Process Development (HTPD)
- Selectivity Engineering
- Process Integration and intensification
- Quality by Design (QbD)
- Reactor design and engineering
- PAT (Process Analytical Technology) and controls
- Design of adsorbents and affinity ligands
- Process and product

characterization, Validation and risk analysis

- Computational fluid dynamics

IP MANAGEMENT TECHNOLOGY AND COMMERCIALIZATION UNIT

Objectives

- Capacity building within the centre in IP Management
- IP protection to technologies generated at

the centre

- IP Management with regards to technology transfer and licensing

Approaches

- Filing of Indian, PCT's, and foreign patents
- Spreading awareness on IP issues
- Preparing MOUs, CDAs/ NDAs and MTAs

PRESENT SCENARIO

Currently the Centre has following human resource

Faculty	Professor - 2 Associate Professor - 4 Assistant Professor - 3 Research Scientist - 5 Research Associate - 7	22
Ph. D Scholars	PhD Bioprocess Technology PhD Biotechnology PhD Science PhD in Chemical Engineering	30
M. Tech Students	Bioprocess Technology Chemical Engineering	12
Support Staff		21

SUPPORT STAFF

Sr. No	Name	Designation
1.	Vibha Raut	Instrumentation Engineer (Electrical/Electronics)
2.	Akshay Kolge	Instrumentation Engineer (Electrical/Electronics)
3.	Padmini Iyre	Executive Assistant
4.	Mayur Khairat	Project Engineer
5.	Pankaj Shinde	Project Assistant
6.	Deepti Kataria	Typist cum Clerk
7.	Shreya Chopdekar	Typist cum Clerk
8.	Megha Pujari	Office Assistant
9.	Shilpa Tondlekar	Office Assistant
10.	Subhash Mandavkar	Project Attendant
11.	Nilesh Satve	Project Attendant

12.	Krishna Monde	Project Helper
13.	Sameer Gawade	Project Attendant
14.	Santosh Yadav	Project Attendant
15.	Sandeep Ghole	Project Attendant
16.	Suhas Chile	Laboratory Attendant
17.	Prashant Mohite	Laboratory Attendant
18.	Prashant Koli	Laboratory Attendant
19.	Imran Mohd. Mustaf Khan	Laboratory Attendant
20.	Mangesh Kesarkar	Helper
21.	Kalpesh Gugale	Helper

MAJOR INSTRUMENTAL FACILITIES

Complete facilities provided to work in areas of DNA, Microbial Proteomics, Metabolomics and Metabolic Engineering, Downstream Processing & Separation technologies, Enzyme Technology, Fermentation Technology, Bioinformatics and Molecular Modeling

Name of Equipment	Units
Robotic System-Cell Explorer	1
GC with headspace sampler	1
GC with inert XL EI/CI MSD with Triple-Axis Detector	1
HPLC systems with UV, DAD, RI, ELSD and CAD detectors	9
HPLC-MS/MS (Q-TOF; Triple-Quad; Ion Trap)	3
SELDI	1
Preparative HPLC	2
Moisture Analyzer	1
RO and Analytical balances	4
Karl-Fischer Autotitrator	1
Fluorescence Microscope	1
Infrared Spectrophotometer (FTIR)	1
UV-VIS Spectrophotometers	2
Complete ELISA station	1
Versa Doc and Gel Doc Imaging System	1
PCR and RT-PCR	1
Gel electrophoresis systems & Image analysis	1
Ion Chromatographic system with ECD and BioScan detectors	1
Spectrofluorometer	1
Nano Drop	1
Algal Stirred Photo Bioreactor	4
1000L and 5000L Raceway Ponds	1

Pulse Amplitude Modulated Fluorimeter (PAM)	1
Olympus Microscope Model IX51 with camera and software	1
Continuous Chromatography System. Simulated Moving Bed lab cum pilot scale high pressure Multicolumn System	1
Microwave reactor systems	2
Continuous microwave reactor system	1
3L to 10L Bioreactors	8
Parallel 3x1L Bioreactor Assembly	1
Multiple micro-Fermenter assembly	1
Off-gas analyzer for the fermentation systems	1
Gradient PCR	2
Thermal Activity Monitor	1
Anaerobic work stations	2
Elemental analyzer	1
Parr/High pressure reactors	3
Microbial Identification System	1
Phenotype Microarray System	1
Particle size analyzer	1
Mini-raceway ponds	10
Accelerated Solvent Extraction Systems	1

FACULTY



PROFESSOR ARVIND MALLINATH LALI

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

Ph. D. Chem Engg.

Head, DBT-ICT-Centre for Energy Biosciences

SUBJECT TAUGHT (2017-18):

Bioprocess simulation modeling & bioreactor design, Instrumentation & process control, Adsorptive separations, Statistical methods

RESEARCH INTERESTS :

Bioenergy, biofuels & biomass to other chemicals, Purification of proteins, nucleic acids & other biomolecules, natural & synthetic APIs high value organic/inorganic chemicals,

Continuous chromatography, Modeling & adsorptive separations, Biocatalysis & biotransformatics, bioreactor design, Mixing & Dynamics of solid liquid

Fluidized bed, Dynamics of gas-solid Circulating fluidized bed, Process Integration & intensification, Process development, characterization & scale up

RESEARCH STUDENTS:

Ph.D. (guided) – 60 (so far), Ongoing - 14, Masters (guided) – 72 (so far) Ongoing - 3

RESEARCH:

International – 72 (so far)

PATENTS :

International – 23 (granted), 110 - (filed) (so far) National – 3 (granted), 43 (filed) (so far)



DR. SANDEEP BHASKAR KALE

Ph.D. Tech (Chem. Eng.)

Associate Professor

SUBJECT TAUGHT (2017-18):

Unit operations in bioprocessing, Bioanalytical Techniques, Advance topic in Adsorptive & Chromatographic separations, Membrane separations

RESEARCH INTERESTS:

Design and development of Downstream processes for Biopharmaceuticals, biological, Natural product & synthetic API (extraction,

biotransformation, Adsorptive & selective Chromatographic separations, Membrane filtration, crystallization, Lyophilisation & drying) Protein Stabilization, Process characterization Process integration & intensification, Optimization & controls, QbD, Analytical method development & Characterization, validation, enzyme Technology &

Biocatalysis, Fermentation Scale-up

RESEARCH STUDENTS :

Ph.D. (guided) – 9 (so far), Ongoing - 1, Masters (guided) – 27 (so far) Ongoing - 4,

RESEARCH PUBLICATIONS:

International – 23, National - 2

PATENT:

International – 6 (granted), 5 (filed) National – 2 (granted), 12 (filed so far)



DR. ANNAMMA ANIL ODANETH

Ph.D. Applied Chemistry

Associate Professor

SUBJECT TAUGHT

(2017-18):

Biological Sciences, Protein & Enzyme, Engineering, Biocatalysis, & Enzyme technology

RESEARCH INTEREST:

Biocatalysis & Microbial Fermentation for waste to value Products, secondary agricultural, Mining,

redesigning & implementing Proteins for food, feed, fuel & Functional molecule, synthesis, Yeast Microbiology & synthetic engineering, byproduct process Development, integration& intensification, process development, Characterization & scale-up

RESEARCH STUDENTS :

Ph. D. – 7 (guided), 14 (co-

guided) 8- (ongoing)
Master – 12 (guided), 3 (ongoing)

RESEARCH PUBLICATIONS:

International – 55

PATENT:

International – 20 (granted), 64 (filed) so
National – 1 (granted), 12 (filed) so far



DR. REENA PANDIT

B.Sc. Zoology, M.Sc. Marine Biology,

Ph.D Marine Biotechnology

Associate Professor

SUBJECT TAUGHT (2017-18):

Biochemistry & Green Biotechnology

RESEARCH INTERESTS:

Algal growth engineering for Production of biofuel & biochemical CO2 sequestration & waste water Management

using micro & macroalgal systems, Genetic engineering of cyanobacteria for Value added compounds

RESEARCH STUDENTS:

Ph. D. – 4 (guided), 1 – (co-guided)
4- (ongoing)
Masters – 13 (guided), 3

(ongoing)

RESEARCH PUBLICATIONS:

International – 9 (so far)

PATENTS:

International – 1 (filed)
National – 4 (filed), so far



DR. GUNJAN PRAKASH

Ph. D. Marine Plant Biotechnology
Associate Professor

SUBJECT TAUGHT :

General Microbiology,
Fermentation

RESEARCH INTERESTS:

Genetic engineering of
Microalgae for increasing
the photosynthetic efficiency,
abiotic stress resistance &
value added compounds,

Fermentation production
of value added compounds
from microorganisms, marine
protest & microalga

RESEARCH STUDENTS :

Ph. D. – 3 (ongoing),
Masters – 8 (guided), 4-
(ongoing)

RESEARCH PUBLICATIONS:

International – 13 (so far)
National - 2 (so far)
Patents: International – 2
(filed), National – 4 (filed) so
far



DR. SHAMLAN M. S. RESHAMWALA

Ph.D. Molecular Biology
Assistant Professor

SUBJECT TAUGHT:

Biosystems Engineering,
Patents & Intellectual Property
rights

RESEARCH INTERESTS:

Overexpression & secretion of

recombinant proteins, Enzyme
engineering for improved
catalysis & robustness,
Utilization of diverse feedstock
of biosynthesis of value added
molecules

RESEARCH STUDENTS: Nil

RESEARCH PUBLICATIONS:

International – 7 (so far)

PATENTS:

National – 3 (filed so far)



DR. MANJU BISHAN SHARMA

Ph. D. Microbiology
Assistant Professor

SUBJECT TAUGHT) :

Microbiology

RESEARCH INTERESTS :

Anaerobic digestion of
lignocellulosic biomass for
enhanced & rapid methane

production, Anaerobic
microbiology: mining of
efficient microbes, consortium
design & study of syntrophic

interactions amongst the consortium members
RESEARCH STUDENTS:

Nil
RESEARCH PUBLICATIONS:
International – 6 (so far)

PATENTS:
International – 1 (filed),
National – 1 (filed) (so far)



DR. HITESH PAWAR

Ph.D. Sci. Chemistry
Assistant Professor

SUBJECT TAUGHT: Nil
RESEARCH INTERESTS:
Conversion of bio-based Sugar to value added chemicals, Photocatalytic hydrogen production, Novel homogeneous, heterogeneous & transition metal catalysis, Synthesis of ionic liquids, deep entectic solvents,

Study of reaction kinetics & reaction mechanism, Designing & development of industrial catalyst, Process intensification & integration, Process development, characterization & scale-up, Chromatographic separation & purification of small molecules, Computational chemistry &

molecular modeling effluent treatment
RESEARCH STUDENTS: Nil
RESEARCH PUBLICATIONS:
International – 4 (so far)
PATENTS: International – 1 (granted) 4 – filed, National – 4 filed so far



DR. POOJA JOSHI

Ph.D. Plant Biotechnology
Research Scientist

SUBJECT TAUGHT:
Patents & IPR
RESEARCH INTERESTS:
Plant biotechnology, IP protection & policy, Patent

Search & analysis, patent drafting & prosecution
RESEARCH STUDENTS: Nil

RESEARCH PUBLICATIONS:
National – 1 (so far),
International – 3 (so far), Book chapter – 1 (so far)
PATENTS: Nil



DR. SHALINI DEB

Ph.D. Sci. Biotechnology

Research Scientist

SUBJECT TAUGHT :

Nil

RESEARCH INTERESTS:

Metabolic engineering,
Synthetic biology, Protein,

Engineering, Gas fermentation,
high- throughput screening
Strategies for metabolites of
interest

RESEARCH STUDENTS: Nil

RESEARCH PUBLICATIONS:

International – 2 (so far)

PATENTS: International - 2
(so far)



DR. RAJESHKUMAR NATWARLAL VADGAMA

Ph.D. Sci. Biotechnology

Research Scientist

SUBJECT TAUGHT:

Industrial Biocatalysis

RESEARCH INTERESTS:

Enzyme & microbial
technology, Green chemistry,

design & development
catalyzed processes, Lipid
characterization, bio-molecule
isolation & purification

RESEARCH STUDENTS:

Nil

RESEARCH PUBLICATIONS:

International – 5 (so far)

PATENTS: 1 (so far)



DR. MAYUR SATHE

Ph.D. Chem. Eng.

Research Scientist

SUBJECT TAUGHT:

Bioreaction Engineering,
Transport phenomena,
Bioprocess equipment design

RESEARCH INTERESTS:

Reactor design, Process
Integration

RESEARCH STUDENTS: Nil

RESEARCH PUBLICATIONS:

International – 32

PATENTS: Nil



DR. JAYESH VARAVADEKAR

Ph. D.

Research Scientist

SUBJECT TAUGHT: Nil
RESEARCH INTERESTS:
Sustainable chemicals via
the bio-route, Fermentation,
Bioenergy, Microbial

electrosynthesis, Molecular
biology
RESEARCH STUDENTS: Nil

RESEARCH PUBLICATIONS:
Nil
PATENTS: 2



DR. SANJEEV K. CHANDRAYAN

Ph.D.

DBT Overseas Energy Biosciences Fellow

SUBJECT TAUGHT :
Microbiology & Biochemistry
RESEARCH INTERESTS:
Thermophiles & Thermozyms
for bioprocessing, Enzyme
discovery, Production &

engineering , Metabolic
Engineering of extreme
microbes for fuels & chemicals
RESEARCH STUDENTS:
Ph. D. - 1 (ongoing)
Masters- 2 (guided), 2

(ongoing)
RESEARCH PUBLICATIONS:
International- 22 (so far)
Patents: National- 1 (filed)



DR. SANJEEV K. CHANDRAYAN

Ph.D.

Ph. D. (Biological Sciences)
DST INSPIRE Faculty

SUBJECT TAUGHT :
Microbiology
RESEARCH INTERESTS:
Seaweed biofuel & bio-refinery,
Algal growth engineering,

Marine enzymes, Biomass to
bio-chemicals
RESEARCH STUDENTS:
Nil

RESEARCH PUBLICATIONS:
International – 16 (so far)
PATENTS: National - 2 (filed)



Dr. CRK Reddy

Ph.D. Marine Sciences
DBT Energy Biosciences Chair Professor

SUBJECT TAUGHT: Nil

RESEARCH INTERESTS:
Marine Microalgae farming,
Processing value addition

outreach

RESEARCH STUDENTS: Nil

RESEARCH PUBLICATIONS:
National – 4 (so far)

International – 80 (so far) Book
chapter – 3 (so far)

PATENTS: 1



MR. SANDIP KISAN KALE

*P.G. Diploma in Patent Law,
M. Sc. (Organic Chemistry)*
Research Associate

SUBJECT TAUGHT: Nil

RESEARCH INTERESTS:
Intellectual Property Rights
& Policy, Patent search &

Analysis, patent drafting, filing
prosecution

RESEARCH STUDENTS: Nil

RESEARCH PUBLICATIONS:
Nil

PATENTS: 1



MR. DEEPAK SARMA

M.Tech. (Bioprocessing Technology)
LLB
Research Associate

SUBJECT TAUGHT: IP

RESEARCH INTERESTS:
Patent prosecution, Trademark,
Copyright, Legal NDA/MOU

RESEARCH STUDENTS: Nil

RESEARCH PUBLICATIONS:
International - 1

PATENT: Nil

ONGOING STUDENTS FOR PH.D. (TECH)

Sr. no.	Research Scholar(Beginning with Last name)	Previous Institution	Title of Project	Supervisor
1.	Pawar Pratik R.	UICT, NMU, Jalgaon	Continuous cultivation of thraustochytrides for microbial oil production	Prof. A.M. Lali
2.	Chakraborty Moushmi	LIT, Nagpur	Valorisation of lignin to value added products	Prof. A.M. Lali
3.	Savvashe Prashant	ICT, Mumbai	Photobioreactor design for optimum growth and nutrient uptake of algae	Prof. A.M. Lali
4.	Subramanian Sunu	A.C. Tech. Campus, Anna University Chennai	Continuous Chromatographic Separation of Value-added products from Natural sources	Prof. A.M. Lali
5.	Vasishta Ayush	SRM University, Chennai	Process scale up and reaction engineering for production of FDCA from biomass derived sugars	Prof. A.M. Lali
6.	Mahale Jyoti	Indian Institute of Technology Kanpur	Novel routes to green C4 products from 2,3 butanediol	Prof. A.M. Lali
7.	Patil Mahendra	Institute of Chemical Technology, Jalgaon.	Continuous chromatographic separation of compounds using Simulated Moving Bed Chromatography	Prof. A.M. Lali
8.	Nair Sushitha	National Institute of Technology, Durgapur, West Bengal	Multi-objective parameter optimization and media engineering for integrated fermentation and purification of biomolecules	Dr. S.B. Kale
9.	Soni Surabhi	Jaypee University of Information and Technology (JUIT) Himachal Pradesh.	Designing and production of industrially relevant thermophilic lipases and esterases.	Dr. A. Anil
10.	Pawar Pratik P.	ICT, Mumbai	Process for production of edible grade microbial oil	Dr. A. Anil

ONGOING STUDENTS FOR PH. D. (SCI.)

Sr. no.	Research Scholar(Beginning with Last name)	Previous Institution	Title of Project	Supervisor
1.	Asodekar Bhupal	University of Mumbai	Isolation of cellulose from lignocellulosic feedstock and its catalytic conversion to platform chemicals	Prof. A.M. Lali

2.	Upadhyay Priya	St. Xaviers College, Mumbai	Engineering Pseudomonas sp. for the biosynthesis of aromatic compounds from lignocellulosic biomass hydrolysate	Prof. A.M. Lali
3.	More Pooja	The Institute of Science, Mumbai	Anaerobic acidogenesis for production of volatile fatty acids from waste streams.	Prof. A.M. Lali
4.	Pandey Preeti	Savitribai Phule Pune University, Pune	Semiconductor based photocatalytic solar water splitting for hydrogen production	Prof. A.M. Lali
5.	Ukarde Tejas	Savitribai Phule University Pune, Pune	Designing Catalytic Thermo Liquefaction of Polymeric Municipal Solid Waste	Prof. A.M. Lali
6.	Chavan Aniket	The Institute Of Science. Fort. Mumbai.	Thermophilic Anaerobic Digestion for improved biogas production from waste hydrolysis.	Prof. A.M. Lali
7.	Gupta Vaishali	Kalinga University, Raipur	Characterization of silver nanoparticles and identification of isolated strain producing silver nanoparticles	Prof. A.M. Lali
8.	Mahadik Chinmayee	St. Xaviers College, Mumbai	Saccharide synthesis from lignocellulosic biomass	Dr. A. Anil
9.	Khadye Vishwanath	V. G Vaze college	Production of Beta-glucosidase in Bacillus subtilis	Dr. A. Anil
10.	Shaikh Kurshedaktar	Ramniranjan Jhunjhunwala College, Mumbai	Developing Yarrowia lipolytica as a platform host for production of cellulases	Dr. A. Anil
11.	Kothari Shruti	Ramnarain Ruia College, Matunga	Tuning Fatty acid metabolism for biofuel and biochemical production.	Dr. A. Anil
12.	Fernandes Custan	St. Xaviers College, Mumbai	Designing of enzyme cocktail for the production of fermentable sugars	Dr. A. Anil
13.	Tupe Rasika	Ramnarain Ruia College, Matunga	Bioconversion of lignin derived monomers into value added products	Dr. A. Anil
14.	Mhatre Akanksha	St. Xaviers (Autonomus) College, Mumbai	Growth engineering of Ulva lactuca for improved and sustainable biomass production.	Dr. R. Pandit

15.	Agarwal Akanksha	Vellore Institute of Technology	Sustainable microalgal production: exploiting alternate carbon sources and nutrient recycling.	Dr. R. Pandit
16.	Sawant Kaustubh	The Maharaja Sayajirao University of Baroda	Development of molecular modification tools for sustainable production of hydrocarbons from cyanobacteria	Dr. R. Pandit
17.	Kumari Sujata	I.A.R.Institute, New Delhi	Microalgal chloroplast genetic Engineering for the production of carotenoids	Dr. G. Prakash
18.	Kadalag Nikhil	S.I.E.S College, Sion-West, Mumbai	Terpene production from microalgae	Dr. G. Prakash
19.	Yadav Namrata	Ramnarain Ruia College, Matunga, Mumbai	Biotransformation of steviolglycosides to sweeter derivatives as a artificial sweetner	Dr. G. Prakash
20.	Sathe Sneha	Ramnarain Ruia College, Matunga, Mumbai	Thermostzymes for biomass hydrolysis	Dr. S.K. Chandrayan

ONGOING STUDENTS FOR M. TECH

Sr. no.	Research Scholar (Beginning with last name)	Pervious Institution	Title of Project	Supervisor
1.	Bhabad Mahadev	Amrutvahini College of Pharmacy, Sangamner Dist A. Nagar	Combined C5&C6 sugar fermentation to ethanol using genetically modified yeast	Prof. A.M. Lali
2.	Panchal Archana Dinesh	Institute of Chemical Technology, Mumbai	Purification of Serratiopeptidase	Dr. S. B. Kale
3.	Sewalkar Sampada Jayant	Unversity Department of Pharmaceutical Sciences, Nagpur	Process based characterization of adsorptive and chromatographic media for purification of biomolecules	Dr. S. B. Kale
4.	Pavan Kumar K	B.V.Bhoomaraddi College of Engineering and Technology	Fundamentals and Process Investigation of Hydrophobic Interaction Size Exclusion Chromatography	Dr. S. B. Kale

5.	Gaonkar Priyanka Ramchandra	Saraswati Vidya Bhavans College of Pharmacy, Mumbai	Developing improved process for large scale removal of endotoxins in proteins and other biomolecules	Dr. S. B. Kale
6.	Sali Juili Shrikant	Institute of Chemical Technology, Mumbai	Production, Purification and characterization of self assembling lipase	Dr. A. Anil
7.	Waghmae Sunil Tulshiram	JNEC Aurangabad	Production of Astaxanthin from Haematococcus pluvialis	Dr. R. Pandit
8.	Tambe Jayesh Ramesh	Government College of Pharmacy Ratnagiri	Purification of dalbavancin from fermentation broth.	Dr. R. Pandit
9.	Shetty Aishwarya	Rizvi College of Engineering, Mumbai	Production of Paramylon from Euglena gracilis and evaluation of it's prebiotic effect	Dr. G. Prakash
10.	Gangil Nitin	Dr. H. S. Gour Central University, Sagar (M.P.)	Growth and secretom study of Thermobifida fusca on pretreated biomass	Dr. S. K. Chandrayan
11.	Barde Vijay	Sardar Vallabhbhai Patel Ag.& Tech. uni, meerut	Microbial/enzymatic degradation of PET	Dr. S. K. Chandrayan
12.	Sadasivan Brijitha	MGM CET, Kamothe	Spentwash treatment using microalgae	Dr. .R.Pandit

ONGOING STUDENTS FOR M. CHEM. ENGG.

Sr. no.	Research Scholar (Beginning with last name)	Pervious Institution	Title of Project	Supervisor
1.	Narjary Dorothy	NIT Jaipur	Production of Lactic acid	Prof. A.M. Lali
2.	Krishnan Anjali	Government Engineering College, Thrissur, Kerala	Biogas production and Design of Anaerobic Digester.	Prof. A.M. Lali

ONGOING PROJECTS

GOVERNMENT

Sr. no.	Title	Funding Agency	Amount (INR Lacs)	Duration
1.	Biphasic Fermentation for Triacyl Glycerol (TAG) production from pretreated lignocellulosic biomass hydrolysates using Mixed Microbial Cultures.	DBT, India	39.84	2017-2020
2.	Setting up Demonstration Plant to 1 ton/day MSW Into Energy	DBT, India	670.39	2017-2019
3.	International Genetically Engineered Machines Contest (iGEM)	DBT, India	20.00	2017-2019
4.	Pilot scale translational facility for value added chemicals from biomass	DBT-CEB-BIPP	50.00	2016-2017
5.	Performance and durability improvements in the solar thermal desalination system at Narippaiyur and utilization of reject sea water for algae cultivation to produce biogas	DST-KGDS	61.35	2015-2018
6.	Integrated biorefinery for production of sorghum Grain protein Phase II	DBT-AISRF, India	113.74	2015-2017
7.	Design of selective nanoporous membrane bioreactor for efficient production of bio-butanol from lignocellulosic sugar (SeNaMeB)	IGSTC,DST, India	115.40	2014-2017
8.	Green enzymatic fat-splitting technology for production of fatty acids and Acyl Glycerols	DST, India	847.53	2014-2017
9.	Transnational approaches to resolving biological bottlenecks in macroalgal biofuel production	DBT- BBSRC/ SuBBSea	201.672	2014-2017
10.	Integrated technologies for economically sustainable bio-based	DBT, India	113.74	2015-2017
11.	DBT-ICT Centre for Energy Biosciences: New and extension proposals	DBT, India	1800.00	2013-2018
12.	Improved production of biogas and bio-CNG from lignocellulosic biomass	MNRE	267.16	2013-2017
13.	Energy Biosciences Overseas Fellowship & Chairs	DBT, India	1472.21	2009-2020

PRIVATE PROJECTS

Sr. no.	Title	Funding Agency	Amount (INR Lacs)	Duration
1.	Developed of improved animal feed ingredient from seed meals	Godrej Agrovet Ltd.	100.00	2014-2017
2.	Research & Development of Chloroplast Derived Enzyme Mixtures	Gencrest LLP	246.00	2017-2019
3.	Developed of improved animal feed ingredient from seed meals	Godrej Agrovet Ltd.	100.00	2014-2017
4.	Research & Development & Generation, protection & Deployment of Innovation & Technologies in the field of Cellulosic Ethanol Technology & its scale up	L&T Hydrocarbon Engineering Ltd.	500.00	2017 & ongoing

PUBLICATIONS

- 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.
- 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.
- 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.
- Monali Kavadia, Manish Yadav, Annamma Odaneth, Arvind Lali (2018). Synthesis of designer triglycerides by enzymatic acidolysis. *Biotechnology Reports*.
- 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.
- Reshamwala, S. M., Deb, S. S., & Lali, A. M. (2017). A shortened, two-enzyme pathway for 2,3-butanediol production in *Escherichia coli*. *Journal of Industrial Microbiology & Biotechnology*, 44(9), 1273-1277. doi:10.1007/s10295-017-1957-5
- Warke, M. A., Pawar, P. P., Kothari, S. D., Odaneth, A. A., & Lali, A. M. (2017). Two stage approach for microbial oil production using *Yarrowialipolytica* NCIM 3590. *Advances in Biotechnology and Microbiology*, 5(1), 1-7. doi:10.19080/AIBM.2017.04.555648
- Soni, S., Sathe, S. S., Odaneth, A. A., Lali, A. M., & Chandrayan, S. K. (2017). SGNH hydrolase-type esterase domain containing Cbes-AcXE2: a novel and thermostable acetyl xylan esterase from *Caldicellulosiruptor bescii*. *Extremophiles*, 21(4), 687-697. doi:10.1007/s00792-017-0934-2
- Sathe, S. S., Soni, S., Ranvir, V. P., Choudhari, V. G., Odaneth, A. A., Lali, A. M., & Chandrayan, S. K. (2017). Heterologous expression and biochemical studies of a thermostable glucose tolerant β -glucosidase from *Methylococcus capsulatus* (bath strain). *International Journal of Biological Macromolecules*, 102, 805-812. doi:10.1016/j.ijbiomac.2017.04.078
- Pillai, V. V., Prakash, G., & Lali, A. M. (2017). Growth engineering of *Propionibacterium freudenreichii* shermanii for organic acids and other value-added products formation. *Preparative Biochemistry and Biotechnology*. doi:10.1080/10826068.2017.1381619
- Mhatre, A., Navale, M., Trivedi, N., Pandit, R., & Lali, A. M. (2017). Pilot scale

- flat panel photobioreactor system for mass production of *Ulva lactuca* (Chlorophyta). *Bioresource Technology*. doi:10.1016/j.biortech.2017.10.058
- Sarnaik, A., Pandit, R., & Lali, A. (2017). Growth engineering of *Synechococcus elongatus* PCC 7942 for mixotrophy under natural light conditions for improved feedstock production. *Biotechnology Progress*, 33(5), 1182-1192. doi:10.1002/btpr.2490
 - Choudhari, V. G., Odaneth, A. A., & Lali, A. M. (2017). Hydrolytic potential of cellulose from *Penicillium funiculosum* and *Trichoderma reesii* against physicochemically different feedstock. *Advances in Biotechnology and Microbiology*, 5(2), 1-8. doi:10.19080/AIBM.2017.04.555665
 - Yadav, M. G., Kavadia, M. R., Vadgama, R. N., Odaneth, A. A., & Lali, A. M. (2017). Green enzymatic production of glyceryl monoundecylenate using immobilized *Candida antarctica* lipase B. *Preparative Biochemistry and Biotechnology*. doi:10.1080/10826068.2017.1381621
 - Yadav, M. G., Kavadia, M. R., Vadgama, R. N., Odaneth, A. A., & Lali, A. M. (2017). Production of 6-O-l-Ascorbyl Palmitate by Immobilized *Candida antarctica* Lipase B. *Applied Biochemistry and Biotechnology*. doi:10.1007/s12010-017-2610-5
 - Sawant, S., Bihade, S., Anil, A., Gilbert, H., & Lali, A. (2017) Two - way dynamics in β -glucosidase catalysis. *Journal of Molecular Catalysis B Enzyme*, 133, 161-166 doi:10.1016/j.molcatb.2016.08.010
 - Kavadia, M., Yadav, M., Odaneth, A. A., Lali, A. M. (2017). Production of Glyceryl Monostearate by Immobilized *Candida Antarctica* B Lipase in Organic Media. *Journal of Applied Biotechnology & Bioengineering*, 2(3). doi:10.15406/jabb.2017.02.00031
 - Rodriguez, V., L. O., SA, H., & Odaneth, A. (2017). Diversity of Ulvan and Cellulose Depolymerizing Bacteria Associated With the Green Macroalgae *Ulva* Spp. *Journal of Applied Biotechnology & Bioengineering*, 2(4). doi:10.15406/jabb.2017.02.00037
 - Vaze, R., Odaneth, A., & Lali, A. (2017). Controlled Protein Hydrolysis with Immobilized Alkaline Endo-Protease. *Journal of Applied Biotechnology & Bioengineering*, 2(2). doi:10.15406/jabb.2017.02.0002
 - Bihade, S., Pednekar, M., Sagwal, S., Odaneth, A., & Lali, A. (2017). Preparation of cellulase concoction using differential adsorption phenomenon. *Preparative Biochemistry and Biotechnology*, 47(5), 520-529. doi:10.1080/10826068.2016.1275009
 - Victoria, J., Odaneth, A., & Lali, A. (2017). Influence of cellulase cocktails favouring hydrolysis of cellulose. *Preparative Biochemistry and Biotechnology*, 47(6), 547-553. doi:10.1080/10826068.2016.1275006
 - Sarnaik, A., Pandit, R., & Lali, A. (2017). Growth engineering of *Synechococcus elongatus* PCC 7942 for mixotrophy under natural light conditions for improved feedstock production. *Biotechnology Progress*, 33(5), 1182-1192. doi:10.1002/btpr.2490
 - Gaikwad, S., Pandit, R., & Lali, A. (2017). Improved lipid productivity of *Chlorella* *Saccharophila* with urea and acclimated stress under natural light for biofuels. *Journal of International Academic Research for Multidisciplinary*, 5(1).
 - Patil, S., Pandit, R., & Lali, A. (2017). Photosynthetic acclimation of *Chlorella* *saccharophila* to heat stress. *Phycological Research*, 65(2), 160-165. doi:10.1111/pre.12171
 - Patil, S., Pandit, R., & Lali, A. (2017). Responses of algae to high light exposure: prerequisite for species selection for outdoor cultivation. *Journal of Algal Biomass Utilization*, (8)(1), 75-83

PATENTS GRANTED

Sr. no.	Inventor	Title	Country/Application no. & Date
1.	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
2.	Lali Arvind Mallinath; Odaneth Annamma Anil; Birhade Sachinkumar Hiraman; Victoria Juliet Joanna; Sawant Sneha Chandrakant	A process for production of soluble sugars from biomass	Patent No.: ZA2016/05597 Patent No.: 15706524.4; Issued notice of allowance, 2018 Patent No.: SG11201605855T; 2018 Patent No.: AU2015207338; 2018 Patent No.: US9862980; 2018
3.	Lali Arvind Mallinath; Odaneth Annamma Anil; Pednekar Mukesh Prabhakar	Process for fractionation of oligosaccharides from agri-waste	Patent No.: AU2015207336; Issued notice of allowance, 2018 Patent No.: EP15706523.6; Issued notice of allowance, 2018 Patent No.: US 15/112,095; Issued notice of allowance, 2018 Patent No.: SG11201605857Y; 2017
4.	Lali Arvind Mallinath; Odaneth Annamma Anil; Vadgama Rajesh; WarkeMrunal; Bhat Anuradha	Enzymatic process for fat and oil hydrolysis	Patent Application No. MX/a/2014/009145, Issued notice of allowance, 2017 Patent No.:CN2017070700140930; 2017 Patent No.: AU2013213921; 2017 Patent No.: JP2014-553823; 2017
5.	Lali Arvind Mallinath; Odaneth Annamma Anil; Nagwekar Pooja Devidas; Varavadekar Jayesh Suman; Wadekar Prathamesh Chandrashekher; Gujarathi Swapnali Subhash; Valte Rajeshwar Dattatraya; Birhade Sachinkumar Hiraman	Method for production of fermentable sugars from biomass	Patent No.: AR076925B1; 2018 Patent No.: KR10-2011-7030914, Issued notice of allowance, 2017 Patent No.: CA2763588; Issued notice of allowance, 2017

PATENTS FILED

Sr. no.	Inventor	Title	Country/Application no. & Date
1.	Lali Arvind Mallinath; Pandit Reena; Sarnaik Aditya	Method for enhanced bio-production of zeaxanthin	Indian Application No.:201821002293; PCT Application No.: PCT/IN2018/050189
2.	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	Indian Application No.:201721027460
3.	Deb Shalini Subir; Reshamwala Shamlan Mohammed Shafi; Lali Arvind Mallinath	Ammonia assimilation by recombinant microorganism	Indian Application No.: 201721023070
4.	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	Indian Application No.: 201721013545 PCT Application No.: PCT/IN2018/050225
5.	Lali Arvind Mallinath; Pandit Reena; Sarnaik Aditya; Rai Peeyush Shekhar	Genetically modified microorganism and process for production of zeaxanthin therefrom	Indian Application No.: 201721011982 PCT Application No.: PCT/IN2018/050189
6.	Lali Arvind Mallinath; Pawar Hitesh Suresh	Process for treating liquid industrial effluents to produce clean water and recovering pollutants for value addition	Indian Application Number: 201721002215 PCT Application No.: PCT/IN2018/050034
7.	Lali Arvind Mallinath; Sharma Manju; Pawar Hitesh Suresh; Gore Suhas	A process for generation of biogas from organic matter via its liquefaction to biocrude	Indian Application Number: 201621030327 PCT Application No.: PCT/IN2017/050385
8.	Lali Arvind Mallinath; Odaneth Annamma Anil; Victoria Juliet Joanna; Choudhari Vikram Gunvant; Mahadik Chinmayee Ramray; Sawant Sneha Chandrakant; Khairat Mayur Basavraj; Birhade Sachinkumar Hiranman	Rapid enzymatic hydrolysis process for production of fermentable sugars	Indian Application Number: 201621030093 PCT Application No.: PCT/IN2017/050382

9.	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
10.	Lali Arvind Mallinath; Prakash Gunjan; Pillai Vijita V.	Continuous process for production of Vitamin B12	Indian Application Number: 201621017230
			PCT Application No.:PCT/IN2017/050190

CONFERENCE, EVENTS, WORKSHOP & DELIVERED A LECTURE

FACULTY

Prof A.M. Lali

- AttendACHEMA 2018, World Forum and Leading Show for the Process Industries at Frankfurt am Main, Germany on 11th to 15th June 2018.
- Invited as a Panelist for the Ethanol Summit of the Asian –Pacific organized by The U.S Grains Council and Sponsors Growth Energy and the Renewable Fuels Association at Minneapolis, Minnesota, USA on 21st to 23rd May 2018.
- Participated at the 3rd LBNet Conference in session: Challenge and opportunities in Lignocellulosic Biorefinery at Shrigley Hall, Cheshire, UK on 16th to 18th May 2018.
- Visited Aston University to attend the meeting of our International partners as a part of BBSRC grant which include discussion on Cascade processes for integrated bio-refining of agricultural waste in India & Vietnam on 15th to 27th April 2018.
- Participated in the AIDA'S 2 Day Technical Seminar & Exhibition at New Delhi.
- Invited as a speaker at the Dr. A.K. Dorle Memorial Lecture III at Nagpur organized by Rashtrasant Tukadoji Maharaj Nagpur University on 14th March 2018.
- Invited as a speaker at the "EU-India Conference on Advance Biofuels, New Delhi on 7th – 8th March 2018.
- Participate in "International Conference on "Sustainable Biofuel 2018" at New Delhi organized by DBT, New Delhi on 26th & 27th February 2018.
- Visit Harvard University Cambridge, MA, USA ON 18th Nov to 3rd December 2017.
- Participated in Joint Mission Innovation/International Energy Agency Event on "Bioenergy for the Future" on 27th to 29th November 2017 at Ottawa, Canada.
- Participated Mission Innovation workshop "Innovation Challenge#4 Sustainable Biofuels Innovation Challenge" organized by Department of Biotechnology, New Delhi on 9th October 2017.
- Participated in "Burning Fields, Biofuels and Bettering Farm Life: Pursuing Responsible and Innovation through Mutual Learning" conference on Biomass Innovation organized by Maastricht University, The Netherland & IIT Delhi on 11th -13th September 2017 at New Delhi.
- Participated in 6th International Conference on "Lignocellulosic Ethanol" organized by The Directorate General for

Energy of the European Commission (DG ENER) on 27th & 28th September 2017 at Brussels, Belgium.

- Participated in Biofuture Summit 17' on 24th & 25th October 2017 at Hotel Estanplaza International, Sao Paulo, Brazil.
- Participated in "Bioenergy-Urja Utsav" organized by MoPNG, New Delhi at Pune on 7th & 8th July 2017.

Dr. Annamma Odaneth

- Visited Aston University to attend the meeting of our International partners as a part of BBSRC grant which include discussion on "Cascade processes for integrated bio-refining of agricultural waste in India & Vietnam" on 15th to 27th April 2018.
- Attended National Conference on Technological Empowerment of Women at New Delhi organized by The National Academy of Science, India on 8th & 9th March 2018.
- Participate in "International Conference on "Sustainable Biofuel 2018" at New Delhi organized by DBT, New Delhi on 26th & 27th February 2018.
- Attended the Inward Mission on Industrial Biotech in UK organized by UK Science and Innovation Network (SIN) on 11th – 16th February 2018.
- Invited as a guest speaker to address undergraduate students on "Promise and challenges for biofuels

in India" at G. N. Khalsa College of Arts, Science & Commerce on 3rd February 2018.

- Participated in consultative workshop on "New National Policy on Biofuels & 2G Ethanol Scheme" on 22nd November 2017.
- Attended IGSTC Annual Event (Partners Meet) organized by Indo –German Science & Technology Centre on 23rd October 2017 at Jodhpur.
- Participated Mission Innovation workshop "Innovation Challenge#4 Sustainable Biofuels Innovation Challenge" organized by Department of Biotechnology, New Delhi on 9th October 2017.
- Participated in Clean Energy Ministerial 8 (CEM8) & Second Mission Innovation (MI2) Summit on 6th -8th June 2017 at Beijing, China.
- Participated in "Bioenergy-Urja Utsav" organized by MoPNG, New Delhi at Pune on 7th & 8th July 2017.

Dr. Sandeep Kale

- Invited at the "International Symposium of Biochromatography & (SBCN) 2018 organized by Society of BioChromatography & NanoSeparations (SBCN) at Bordeaux, France on 14th to 17th May 2018.
- Invited as a Resources Person at the Pune University (SSPU) sponsored two day National level seminar

on "HPCL: Challenges in method development and troubleshooting organized by Sinhgad College of Pharmacy (SCOP), Pune on 22nd & 23rd January 2018.

- Attended Bioprocessing India 2017 as member of organizing committee at IIT, Guwahati on 9th to 11th December 2017.
- Participated in Petrochemical Investor Conclave 2017 organized by Indian Oil Corporation (IOCL) in Bhubaneswar on 16th November 2017.

Dr. Reena Pandit

- Participate in the India Seaweed Summit 2018, Mumbai on 28th February 2018.
- Participate in "International Conference on "Sustainable Biofuel 2018" at New Delhi organized by DBT, New Delhi on 26th & 27th February 2018.
- Attended 8th International Conference "Photosynthesis and Hydrogen Energy Research for Sustainability -2017" at University of Hyderabad on 30th October to 4th November 2017.
- Participated Mission Innovation workshop "Innovation Challenge#4 Sustainable Biofuels Innovation Challenge" organized by Department of Biotechnology, New Delhi on 9th October 2017.
- Participated in the Mission Innovation workshop on "Converting Sunlight Innovation Challenge" organized by DBT on 14th

September 2017.

- Participated in “Bioenergy-Urja Utsav” organized by MoPNG, New Delhi at Pune on 7th & 8th July 2017.

Dr. Gunjan Prakash

- Attended workshop on Genome Engineering organized by DBT, New Delhi at IIS, Bangalore on 24th to 29th June 2018.
- Participated in “Bioenergy-Urja Utsav” organized by MoPNG, New Delhi at Pune on 8th July 2017.

Dr. Pooja Joshi

- Participate in “International Conference on “Sustainable Biofuel 2018” at New Delhi organized by DBT, New Delhi on 26th & 27th February 2018.
- Participated in Petrochemical Investor Conclave 2017 organized by Indian Oil Corporation (IOCL) in Bhubaneswar on 16th November 2017.

Dr. Shamlan Reshamwala

- Invited as a Speaker at the workshop on “Research Methodology and IPR” organized by the KC College of Engineering and Management Studies and Research, Thane on 30th June 2018.

Dr. Sanjeev K. Chandrayan

- Attended the 42nd Annual meeting of the Biophysical Society at IISER, Pune on 9th to 11th March 2018.

Dr. Hitesh Pawar

- Attend ACHEMA 2018, World Forum and Leading Show for the Process Industries at Frankfurt am

Main, Germany on 11th to 15th June 2018.

- Visited Harvard University Cambridge, MA for research collaboration on 15th to 30th November 2017.
- Participated in “Bioenergy-Urja Utsav” organized by MoPNG, New Delhi at Pune on 7th & 8th July 2017.

Dr. Nitin Trivedi

- Participated in the International Conference on “Sustainable Biofuel 2018” organized at India Habitat Centre, New Delhi on 26th & 27th February 2018.
- Attended India Seaweed Summit organized at Mumbai on 28th February 2018.

Dr. Rajeshkumar Vadgama

- Attended conference on “India Centric R&D” organized by Technology & Energy Expert Committee (ICC) at K.J Somaiya College of Science and Commerce, Mumbai on 12th & 13th January 2018.

Dr. Mayur Sathe

- Attend ACHEMA 2018, World Forum and Leading Show for the Process Industries at Frankfurt am Main, Germany on 11th to 15th June 2018.
- Attended half day workshop at Raipur organized by the Ministry of Petroleum & Natural Gas in association with Chhattisgarh Government and Indian Oil Corp Ltd. on 13th April 2018.
- Participated in the International Conference on

“Sustainable Biofuel 2018” organized at India Habitat Centre, New Delhi on 26th & 27th February 2018.

- Attended workshop on “Rural Solid Waste Management to discuss availability of scalable and sustainable technologies of waste management in villages under swachh Bharat Mission –Gamin (SBM-G) organized by Ministry of Drinking Water and Sanitation (MoDWS) with IIT Delhi on 29th January 2018.

Dr. Shalini Deb

- Visited Harvard University Cambridge, MA for research collaboration on 14th to 29th November 2017.
- Participated in International Genetically Engineered Machine Competition 2017 held in Boston, USA on 9th to 13th November 2017.

Mr. Sandip Kale

- Attended PatSight-IP Symposium organized by Grid logics in Pune on 12th May 2017.
- Attended IP Seminar on “IP-Ideas to Innovation” at The Hyatt Regency, Mumbai on 3rd May 2017.

Mr. Deepak Sarda

- Attended PatSight-IP Symposium organized by Gridlogics in Pune on 12th May 2017.
- Attended IP Seminar on “IP-Ideas to Innovation” at The Hyatt Regency, Mumbai on 3rd May 2017.

STUDENTS

- Sneha Sathe participated

in the 42th Annual Meeting of Indian Biophysical Society-2018 conducted by IISER at Pune on 9th to 11th March 2018.

- Rutuja Sheth participated in the 42th Annual Meeting of Indian Biophysical Society-2018 conducted by IISER at Pune on 9th to 11th March 2018.
- Valerie Rodrigues participated in the India Seaweed Summit-2018 at Mumbai held on 28th February 2018.
- Akankash Mhatre participated in the India Seaweed Summit-2018 at Mumbai held on 28th February 2018.
- Naina Singh & Meghna Vanza participated in BPI-2017 Conference at IIT, Guwahati on 9th to 11th December 2017.
- Shaikh Kurshedaktar attended International Symposium on systems, Synthetic and Chemical Biology 2017 organized by Bose Institute, Kolkata on 5th to 7th December 2017.
- Mallikarjun Patil to pursue research at Saskatchewan University Saskatoon, Canada for period of 6 months from 1st July to 31st December 2017.
- Akankash Mhatre & Akankash Agrawal attended 8th International Conference “Photosynthesis & Hydrogen Energy Research for Sustainability -2017 organized at School of Life Sciences, University of Hyderabad on 30th October

to 4th November 2017.

- Prameshwar Patil attended BIRAC Innovators Conclave & Bio-Innovation Fair at Indian Habitat Centre, New Delhi on 21st & 22nd September 2017.
- Sujata Kumari & Shaikh Kurshedaktar workshop “Current trends in Bioinformatics and Genome Analysis” conducted by Birla School of Scientific Research held at Jaipur on 20th to 22nd January 2017.
- Parmeshwar Patil & Chinmayee Mahadik participated at APCAT 2017 Conference at Mumbai organized by Institute of Chemical Technology on 17th to 21st January 2017.

POSTER PRESENTATION

1. **Akanksha Agarwal**, Kashif Shaik, Krushna Gharat, Pavan Jutur, Reena Pandit and Arvind Lali, “Dynamics of microalgae metabolism under varying light intensities – a mixotrophic outlook”, 8th International conference on Algal biomass, biofuels and bioproducts-2018, Seattle, USA.
2. **Arijit Das**, Arvind Lali, “High cell density fermentation of *Bacillus* sp. for enhanced productivity of 2, 3-Butanediol”, 40th Symposium on Biotechnology for fuels and chemicals-2018, Clearwater, Florida, USA.
3. **Sneha Sathe**, Arvind M. Lali, Sanjeev K. Chandrayan, on “Structural mechanism explaining the glucose tolerance of β -glucosidase from *Methylococcus capsulatus* (bath strain)” in International Conference titled ‘42nd Annual Meeting of the Indian Biophysical Society’ at IISER, Pune during 9-11th March 2018.
4. **Shruti Kothari**, Annamma Anil and Arvind Lali, on title “Oleaginous yeast as suitable platform for production of value added biomolecules” in 10th Yeast Biology Conference at Jawaharlal Nehru University, New Delhi during 8th – 11th February, 2018.
5. **Kurshedaktar Shaikh**, Vishwanath Khadye, Annamma Anil, and Arvind Lali, on” A comparative study of two integrative approaches, YLEX and CRISPR/Cas9, in *Yarrowialipolytica*” in 10th Conference on Yeast Biology at School of Life Sciences, JNU & Amity University, Gurgaon during 8th – 11th February, 2018.
6. **Surabhi Soni**, Sanjeev Chandrayan, Annamma Anil and Arvind Lali, on title “Expression analysis of the *Thermomyces lanuginosus* lipase gene” in 10th Yeast Biology Conference at Jawaharlal Nehru University, New Delhi during 8th – 11th February, 2018.
7. **Pratik P. Pawar**, Annamma Anil and Arvind Lali,

on title “Strategies for production of Microbial oil using oleaginous yeast” in 10th Yeast Biology Conference at Jawaharlal Nehru University, New Delhi during 8th – 11th February, 2018.

8. **Akanksha Agarwal**, Smita Patil, Krushna Gharat, Reena Pandit and Arvind Lali, “Modification in light utilization efficiency by *Asteracys* sp. at varying light intensities under mixotrophic regimes”, 8th International conference on photosynthesis and hydrogen energy research for sustainability-2017, Hyderabad, India.
9. **Akanksha Mhatre**, Smita Patil, Akanksha Agarwal, Reena Pandit and Arvind Lali, “The influence of the nitrogen source on photochemistry and antenna size of the photosystems in marine green macroalgae, *Ulva lactuca*”, 8th international conference on photosynthesis and hydrogen energy research for sustainability-2017, Hyderabad, India.

ORAL PRESENTATION

1. **Priya Upadhyay** and Arvind M.Lali, on title “Chemo-biological routes for Lignin conversion to platform chemicals” in BioinnovaConference at Thakur college of Science and Commerce, Mumbai, 10th February, 2018.

3. **Kurshedaktar Shaikh**, Annamma Anil, and Arvind M Lali, on “Non-conventional yeasts: a platform for production of sustainable food, fuel and valuable chemicals” in 10th Yeast Biology Conference at Jawaharlal Nehru University, New Delhi during 8th – 11th February, 2018.
4. **Akanksha Mhatre**, Juilee Palkar, Prashant Savvashe, Mayur Sathe, Reena Pandit, and Arvind Lali, “Synergistic strategy for production of macroalgal biomass for biorefinery in photobioreactor along with phycoremediation of coastal city seawater”, 8th International conference on algal biomass, biofuels and bioproducts-2018, Seattle, USA.

COLLABORATIONS

Industrial Collaboration

- Agilent Technologies, India
- Wipro GE Healthcare Private Limited, India
- India Glycols Limited, India
- Privi Organics Private Limited, India
- Kirloskar Integrated Technologies Limited, India
- Privi Biotechnologies Private Limited, India
- Kanoria Chemicals & Industries Limited, India
- The Coca Cola Company, USA
- Atech Innovations, GmbH, Germany
- ACME Synthetic Chemicals Private Limited, Mumbai
- Camlin Fine Sciences Ltd, Mumbai.

- Godrej Agrovet Private Ltd, Mumbai
- Godrej Industries Ltd, India

Academic Collaborations

National

- DBT-ICGEB Centre for Advanced Bioenergy Research, New Delhi, India
- CSIR-National Institute for Interdisciplinary Science & Technology, Trivandrum, India
- The Energy and Resources Institute (TERI), New Delhi
- CSIR-Central Salt & Marine Chemical Research Institute (CSIR-CSMCRI), Bhavnagar, India

International

- Centre for Tropical Crops and Biocommodities, Queensland University of Technology, Brisbane, Australia
- Centre for Energy, The University of Western Australia, Perth, Australia
- Department of Chemical Engineering, Curtin University, Perth, Western Australia
- Clostridia Research Group/ Life Sciences, University of Nottingham, UK
- Institute of Biological, Environmental and Rural Sciences, Aberystwyth University, Aberystwyth, UK
- CNAP, Department of Biology, University of York, UK
- Institute for Cell and Molecular Biosciences, Newcastle University, UK
- Faculty Health & Life Sciences, Oxford Brookes University, UK

Ph. D. STUDENTS THESIS SUBMITTED

Sr.	Research Scholar	Course	Title of the project	Supervisor
1.	Patil Parmeshwar	Ph.D. (Sci.)	Designing Biomass Deconstruction: Process Scale and High Throughput Analytical Scale	Prof. A.M. Lali
2.	Kavadia Monali	Ph.D. (Sci.)	Lipase mediated synthesis of designer lipids	Prof. A.M. Lali
3.	Degweker Gautam	Ph.D. (Tech.)	Design of high productivity fermentation systems	Prof. A.M. Lali
4.	Rao S. P. Poornima	Ph.D. (Sci.)	Improved production of acetic acid by Escherichia coli and Moorella thermoacetica	Prof. A.M. Lali
5.	Patil Mallikarjun	Ph.D (Sci.)	Recovery and transformation of lignin to value added product	Prof. A.M. Lali
6.	Bellary Suveera	Ph.D (Sci.)	Designing microbial conversion of lignin	Prof. A. M. Lali
7.	Singh Nitesh Kumar	Ph.D (Sci.)	Isolation, characterization and valorization of phenolic compounds from lignocellulosic biomass	Prof. A.M. Lali
8.	Dargode Priyanka	Ph.D (Sci.)	Consortium design for improved anaerobic digestion	Prof. A.M. Lali
9.	Gore Suhas	Ph.D (Sci.)	Improved biogas production from complex substrates	Prof. A.M. Lali
10.	Das Arijit	Int. Ph.D (Tech.)	Improved fermentation for 2,3 – butanediol production	
11.	Tiwari Richa	Ph.D (Sci.)	Synthesis of dendrimer for catalysis and chromatographic separation	Dr. S.B. Kale
12.	Sonawane Anup	Ph.D (Sci.)	Development of sustainable biorefinery processes for secondary agriculture	Dr. S.B. Kale
13.	Singh Naina	Int. Ph.D	Designing strategies for stabilization of biomolecules using saccharides, salts and amino acids	Dr. S.B. Kale
14.	Patel Bhavin	Ph.D (Sci.)	Designing processes for cost-effective production and purification of biotechnology and bio-based products	Dr. S.B. Kale
15.	Nair Sushitha	Ph. D (Tech.)	Multi-objective parameter optimization and media engineering for integrated fermentation and purification of biomolecules	Dr. S.B. Kale
16.	Vanza Meghna	Ph.D (Sci.)	Designing strategies for purification and stabilization of plasma proteins	Dr. S.B. Kale
17.	Choudhari Vikram	Ph.D (Sci.)	Study on enzymatic deconstruction of lignocellulosic biomass	Dr. A. Anil
18.	Rodrigues Valerie	Ph.D (Sci.)	Mining of organisms associated with green macroalgae Ulva spp. for ulvan and cellulose saccharifying enzymes	Dr. A. Anil
19.	Sarnaik Aditya	Ph.D (Sci.)	Genetic and growth engineering of cyanobacteria for the production of hydrocarbons	Dr. R. Pandit

M. TECH. STUDENTS THESIS SUBMITTED

Sr.	Research Scholar	Course	Title of the project	Supervisor
1.	Pokhriyal Prashant	M.Tech BPT	Flux analysis and kinetic modeling of microbial systems for biochemical production	Prof. A. M. Lali
2.	Wannere Priyanka Sanjay	M.Tech BPT	Preparative Chromatographic purification of Lethal Toxin Neutralizing Factor peptide (LTNF)	Dr. S. B.Kale
3.	Choughule Shaktisinha Prasad	M.Tech BPT	Improvements for processing of coconut water and sugarcane juice	Dr. S. B. Kale
4.	Sorte Sneha Kamalakar	M.Tech BPT	Process development for fractionation of milk whey into proteins and lactose	Dr. S. B. Kale
5.	Khatkhatay Abdul Basit	M.Tech BPT	Fatty acid ester synthesis using immobilized lipases	Dr. A. Odaneth
6.	Rane Divyata Vilas	M.Tech BPT	Production of oil and carotenoids from red yeast	Dr. A. Odaneth
7.	Gharat Krushna Kanchan	M.Tech BPT	Growth engineering for enhanced PUFA production and development of a continuous cultivation and integrated lipid extraction strategy for microalgae	Dr. R. Pandit
8.	Nambissan Vishnu Damodaran	M.Tech BPT	Growth engineering of <i>H. pluvialis</i> for enhanced biomass and astaxanthin production	Dr. R. Pandit
9.	Laddha Hrishikesh Govardhan	M.Tech BPT	Development of combined “ex novo” and “de novo” fermentation strategies by Thraustochytrids and its potential applications	Dr. G. Prakash
10.	Bhattad Tanmay	M.Tech BPT	Production, structural characterization and functional analysis of paramylon from <i>Euglena gracilis</i>	Dr. G. Prakash
11.	Sheth Rutuja Rajan	M.Tech BPT	Enzymes and processes for rare sugar production	Dr. S. K. Chandrayan
12.	Athalye Shreya M.	M.Tech Green Tech.	Bio-concentration of the phosphate from effluents using microalgae	Dr. R. Pandit

M. CHEM. ENGG. STUDENTS THESIS SUBMITTED

Sr. no.	Name (Beginning with last name)	Course	Title of Project	Supervisor
1.	Gotmare Akshay	M.Chem Engg.	Catalytic upgradation of biocrude oil for enhancing its blendability in transport fuel	Prof. A.M. Lali

Ph. D. STUDENTS WHO WERE AWARDED PH.D. DEGREE

Sr. no.	Name	Course	Title of Project	Supervisor
1.	Bajwa Singh Arjun	Ph.D. (Tech.)	Engineering of corynebacterium glutamicum for the production of L-amino acids	Prof.A.M. Lali
2.	Pillai Vijita	Ph.D. (Sci.)	Production of organic acids and cobalamin using Propionibacterium	Prof.A.M. Lali
3.	Krishnan Archana R.	Ph.D. (Sci.)	Designing a microbial cell factory for IPP pathway engineering	Prof.A.M. Lali
4.	Sawant Sonal	Ph.D. (Sci.)	Engineering microbial host strains for heterologous production of value added chemicals	Prof.A.M. Lali
5.	Maurya Ritu	Ph.D. (Sci.)	Reactive separation of organic acids from fermentation broth	Prof.A.M. Lali
6.	Nainan Lucy	Ph.D. (Sci.)	Engineering Escherichia coli for the production of C-3 metabolites	Prof.A.M. Lali
7.	Yadav Manish	Ph.D. (Sci.)	Strategies for enzyme mediated synthesis of fatty acid esters	Prof.A.M. Lali
8.	Chavan Manoj	Ph.D (Tech.)	Valorization strategies for agro based products	Dr. S.B. Kale
9.	Febin Pappachan	Ph.D (Tech.)	Isolation and Improvement of Biobased Products for their Application as Ingredients/Supplements	Dr. S.B. Kale
10.	Narnaware Sharad	Ph.D (Tech.)	Separation and transformation processes for vegetable phytorefinery for healthcare and nutraceutical products from broccoli	Dr. S.B. Kale
11.	Redkar Gargi	Ph.D (Tech.)	Bioprocessing strategies to improve desirable quality attributes of bioproducts	Dr. S.B. Kale
12.	Koley Sushmita	Ph.D (Tech.)	Purification and characterization of antibodies and plasma biologics	Dr. S.B. Kale
13.	Daware Sachdeo	Ph.D (Sci.)	Chemical strategies for derivatization of natural product	Dr. S.B. Kale
14.	Agarwal Snehal	Int. Ph.D (Tech.)	Integrated chromatographic & membrane processes for purification of bioactives	Dr. S.B. Kale
15.	Vaze Rutuja	Ph.D. (Sci.)	Controlled protein hydrolysis for growth stimulating peptides	Dr. A. Anil
16.	Patil Smita	Ph.D (Sci.)	Study of photosynthetic efficiency of microalgae in response to environmental and designed condition	Dr. R. Pandit

M. TECH. STUDENTS WHO WERE AWARDED M.TECH DEGREE

Sr. no.	Name	Course	Title of Project	Supervisor
1.	Dhivya S	M.Tech. (BPT)	Purification of biomolecules by polyelectrolyte precipitation and membrane separations	Prof. A. M. Lali
2.	Patle Sandeepkumar	M.Tech. (BPT)	Designing strategy for purification of protein sweetener from crude extract.	Dr. S.B. Kale
3.	Kadam Aakanksha	M.Tech. (BPT)	Adsorptive chromatographic purification of biomolecules on porous polymeric adsorbents	Dr. S.B. Kale
4.	Kokate Mahesh	M.Tech. (BPT)	Purification of ovalbumin from chicken egg white	Dr. S.B. Kale
5.	Yelne Payal	M.Tech. (BPT)	Evaluation and basic engineering of unit processes for biomolecules	Dr. S.B. Kale
6.	Dubey Apoorwa	M.Tech. (BPT)	Fractionation of ULVA into value added products	Dr. A. Anil
7.	Chourasia Vallari	M.Tech. (BPT)	Production of Microbial oil by oleaginous yeasts using Lignocellulose derived feedstocks	Dr. A. Anil
8.	Karle Vaishali	M.Tech. (BPT)	Development of fermentation strategies to produce omega-3-fatty acids from thraustochyrids	Dr. G. Prakash
9.	Rai Peeyush	M.Tech. (BPT)	Microalgal growth engineering for enhanced carotenoid production	Dr. R. Pandit
10.	Ranvir Vikas	M.Tech. (BPT)	Expansin and expansin appended enzymes	Dr. S.K. Chandrayan
11.	Ghorband Sainath	M.Tech. (Green Tech.)	Effective bioremediation of industrial effluents using microalgae	Dr. R. Pandit

M. CHEM. ENGG. STUDENTS WHO WERE AWARDED M. CHEM. DEGREE ENGG.

Sr. no.	Name	Course	Title of Thesis	Supervisor
1.	Juneja Ranjana	M.Chem. Engg	Forward osmosis for concentration of biomolecules	Prof. A. M. Lali

MEMBERSHIP OF IN-HOUSE COMMITTEES

PROF. ARVIND. M. LALI

- Head, DBT-ICT Centre for Energy Biosciences
- Chairman, TEQIP Industry Institute Interaction Cell
- Chairperson : Research Recognition Committee (Bioprocess Technology)
- Chairperson: Research Recognition Committee (Biological Sciences)

ACADEMIC AND CENTRE MANAGEMENT

Sr. No	Committee	Members
1	F&A	Dr. Reena Pandit
2	Admission and Academics	Dr. Sanjeev K Chandrayan
3	GB/SAC/Chair fellow	Dr. Gunjan Prakash
4	General Administration	Dr. Manju Sharma
5	BPT/Lectures lode	Dr. Sandeep B. Kale
6	Stores/Electronics/Communication	Dr. Sanjeev K. Chandrayan
7	Softwares/Licensing	Mrs. Vibha Raut
8	RRCs	Dr. Shamlan Reshawala
9	Projects Management	Ms. Padmini Iyer
10	General upkeep & discipline	Dr. Annamma Anil
11	Attendant/Clerks/Accountant/Non-teaching staff management	Dr. Reena Pandit
12	Instruments & Maintenance	Mrs. Vibha Raut Mr. Akashay Kolge
13	Lab Upkeep + Safety + Disposal	Dr. Shamlan Reshamwala



2G Ethanol Technology: Signing of NDA between Institute of Chemical Technology & LSTK bidders: (i) Punj Lloyd, (ii) Tata Projects Ltd. & Lauren Engineers & Constructors Inc. (LEC) (iii) Toyo Engineering India Pvt. Ltd. Dated 24th July 2018 at ICT.



Participated and presented a poster in Mission Innovation - International Conference for Sustainable Biofuels 2018 organized by Department of Biotechnology & Ministry of Science & Technology, Govt. of India dated 26th -27th February 2018.



Visit of Prof. (Ms.) Maryse Lassonde-Scientific Director, FRQNT, Government of Quebec Research Agency in Natural Sciences and Engineering, Canada dated 13th February 2018.



Participated & presented a poster in “Unleashing Agri & Allied Entrepreneurship in Odisha” at Bhubaneswar organized by MoP&G dated 29th -30th June 2018.



Participated & presented posters in “Bioenergy-Urja Utsav” organized by MoPNG, New Delhi at Pune on 7th & 8th July 2017.



Participated in Clean Energy Ministerial 8 (CEM8) &
Second Mission Innovation (MI2) Summit on 6th -8th June 2017 at Beijing, China

RESEARCH GROUP PHOTOS



SYNTHETIC BIOLOGY

ALGAL BIOTECHNOLOGIES



ENZYME TECHNOLOGIES



FERMENTATION TECHNOLOGIES



SEPARATION TECHNOLOGIES



GREEN/CHEMICAL CATALYSIS



IPM-TC UNIT



TECHNICAL STAFF



DBT-ICT CEB FACULTY GROUP



SUPPORT STAFF



DBT-ICT CENTRE FOR ENERGY BIOSCIENCES

