THE OFFICE OF THE DEAN ALUMNI AND CORPORATE RELATIONS

Indian Institute of Technology Bombay

FUND UTILIZATION REPORT 2019-20

The Office of the
Dean Alumni and Corporate Relations

INTRODUCTION

OUR VISION

Initiate, nurture and sustain engagement with alumni and corporations as active partners in the Institute's pursuit of excellence.

OUR MISSION

- To create programs and opportunities for alumni and corporations to contribute to the development of the Institute.
- To manage initiatives and provide support to alumni and corporations to strengthen their engagement with the Institute.
- To provide support within the Institute to promote and strengthen engagement with alumni and corporations.
- To manage utilization and enhancement of Institute's endowments and gifts from well-wishers.

DEAN ACR MESSAGE

Dear Alum,

The past year was one of change and growth for your alma mater.

Prof. Subhasis Chaudhuri took over as IIT Bombay Director last year from Prof. Devang Khakhar, who completed two terms. IIT Bombay continued to be the best-ranked university in India in the Quacquarelli Symonds (QS) ranking. During the 57th Convocation Ceremony last August, more than 2,500 degrees were awarded. The institute inaugurated its newest hostel, Hostel 18 last year. At the Foundation Day this year, the Institute presented Distinguished Alumnus Awards to seven alumni and the Young Alumnus Achiever Awards to four alumni. The 'Faculty Alumni Network (FAN)' India Symposium and the Distinguished Alumni India Meet - one of our hallmark institute alumni events - took place in Goa last year.

But, most of all, I am delighted to share the news of the Silver Jubilee Reunion (SJRU) of the Class of 1994, Decennial Reunion of the Class of 2009, and the Ruby Reunion of the Class of 1979 that culminated with the Institute Alumni Day on December 22, 2019. The occasion was graced with the presence of 1000+ alumni. The energy that I encountered during the reunions was simply amazing. An amount of INR 26.6 crores was pledged on the Alumni Day, with the Silver Jubilee Batch of 1994 contributing INR 12.14 crores and the Golden Jubilee Batch of 1969 pledging INR 13.07 crores towards the Legacy project. Last but not the least; the Decennial Batch too contributed their share of INR 1.07 crore to this kitty. Both the SJRU and the Decennial Reunion set attendance records for their years. I am deeply impressed by the passion you, our alumni, have for the Institute, by the intense pride you feel as IIT Bombay

graduates, and by your commitment towards assuring a strong future for it. These funds will be utilised for a number of endeavours, grand and small; funding of legacy projects, upgrading of study facilities for students, labs as well as student scholarships.

On behalf of the Institute, I gratefully acknowledge each contribution and salute your generosity that ensures our success now and in the years to come. Thank you all for your support.

Do remain connected with us

Regards,

Suhas Joshi

Dean, Alumni and Corporate Relations

DONATION DETAILS

During 2019-20 the Institute received a total donation of Rs. 57.26 Crores. We express our deep gratitude and appreciation for the constant support shown by our alumni and other well-wishers of IIT Bombay. The major corporate donors for the last financial year were Bank of Baroda, HPCL, Mangalam Organics, British Petroleum, Goldman Sachs India Pvt. Ltd., Narotam Sekhsaria Foundation, Ansys, Portescap India Pvt. Ltd., and a few others. The major Alumni donations were from IITB Heritage Foundation, Mr. Abhay Pande, Dr. Mayur Datar, Mr. Raj Nair, Mr. & Mrs. Shamkant Sarkar and Class of 1993 and 1994, among others. The development and alumni activities of our Institute are not just a role model in India, and have been also appreciated by major international universities.

STUDENT AND HOSTEL DEVELOPMENT

B. Student and Hostel Development

All students are informed of various available opportunities of financial support. We also work with students to help them identify and apply for relevant fellowships and scholarships. Each year, numerous IITB students receive a number of prestigious awards, fellowships and scholarships enabling them to engage in a variety of activities including: spending time overseas, conducting independent research, and partial / full support for their education expenses. Our goal is to further student's academic endeavors by connecting worthy students to merit-based opportunities, to encourage self-development, and to make the application process a worthwhile learning experience. As and when you visit IIT Bombay, we hope that you will stop by our office to learn more!

Various student scholarships and fellowships have been instituted by well-wishers in various departments and at Schools for enabling students to undertake quality education.

B.1.Scholarships

B.1 .1. Impact of the scholarships on our students lives

- Scholarships help lessen impact of tuition costs.
- Scholarships help students have more time to focus on their studies.
- Scholarships reduce the financial burden on economically weak families of students.
- Scholarships add to the number of students that are provided financial assistance from Government funds.
- Scholarships help nurture philanthropy, among the recipients.

Please refer to the relevant section in **Appendix I.1** for a list of Scholarship recipients.

B.2. Doctoral Fellowships

The following Fellowships have been instituted by well-wishers of IIT Bombay for the benefit of bright and deserving students in various departments

- Schindler Doctoral Fellowship
- Shri Girish Vishnuprasad Desai award for Doctoral Students
- Ansys Doctoral Fellowship
- Dr. Gauri Shah Doctoral Women Fellowship

Please refer to the relevant section in **Appendix I.2** for a list of the Fellowship recipients.

B.3. Loan Scholarships

Financial Aid Program

The oldest initiative of IITBAA, FAP is a 13 year-old honour based system of sustainable peer-to-peer support that provides merit and need-based scholarships to economically and socially disadvantaged students. The motto of FAP is "To make IIT Education Financially Achievable." The shortlisting of beneficiaries is done on commonly-agreed beneficiary selection criteria. An in-person interview is conducted by a 12-member FAP Committee consisting of Institute representatives and IITBAA Board members, to verify the genuineness of received applications. Ever since its inception in 2007, FAP has assisted 903 students of IIT Bombay to the tune of INR 9.57 crores.

FAP covers the entire registration fees, tuition fees and mess bills of needy students with donations raised largely from alumni, the Erach & Meheroo Mehta Memorial-FFE Scholarship, IITBHF and CSR support (which includes donation from Tata Motors Ltd.). Past beneficiaries also donate back to the program in a timeline suited to their individual situations. In FY 2019-20, INR 1.1 crores was disbursed (includes disbursals made from IITB, IITBAA, TML and FFE) to 93 student beneficiaries (out of whom 62 were new students) in a total of 173 disbursals spanning two semesters.

During this same period, we received a combined total of INR 89.6 lakhs from Erach & Meheroo Mehta Memorial Scholarship–FFE, alumni, CSR support and past student beneficiaries. The INR 49.26 lakhs donated by past beneficiaries will be deployed back in the program to ensure that it remains sustainable and perpetual. To secure the qualitative participation of past beneficiaries, this year we initiated the 'Let the Beneficiary be the Benefactor' in FY 2019- 20 which encourages past beneficiaries to volunteer their time for FAP by participating in interview panel of scholarship aspirants, charting out yearly plans or assisting with backoffice IT operations. We have had a warm response toward this appeal. We hope that many more volunteers will come forward.

B.4. Awards and Prizes during Convocation 2019

We celebrated our 57th Convocation on August 10, 2019, at the Convocation Hall of IIT Bombay. Shri. Ramesh Pokhriyal 'Nishank', Hon'ble Minister of Human Resource Development, was the Chief Guest and delivered the Convocation Address.

In his address, Shri. Pokhriyal, told the students that education is a weapon using which they can transform their life, family and society. He said that convocation is a momentous occasion when students embark on the journey of taking the fruits of education to the outside world. The Minister said that culture should be joined with education, so that the individual has an enduring and firm foundation for growth.

For the detailed list of Various Awards, Medals and Prizes given out during the Convocation, please refer to the relevant section in **Appendix I.3.**

A statement of expenses and balances of the projects as indicated below .

B.4.1 Nitesh Thakor Excellence Award in Department of Biosciences and Bioengineering

Particulars	Amount (Rs)
Opening Balance as on 01-04-2019	3,45,582.50
Endowment as on 01-04-2019	3,13,950.00
Add: Interest upto 31-03-2020	18,837
Less : Transfer to Endowment	Nil
Less : Expenses during the year	Nil
Closing Balance as on 31-03-2020	6,78,369.50

B.4.2 Dr. P. V. Sukhatame Prize

Particulars	Amount (Rs)
Opening Balance as on 01-04-2019	1,27,418.00
Endowment as on 01-04-2019	15,00,000.00
Add: Interest upto 31-03-2020	90,000.00
Less: Program Expenditure (Honorarium to speaker)	-5,000.00
Less : Awards	-35,000.00
Closing Balance as on 31-03-2020	16,77,418.00

B.5. Student Development Fund

Thanks to the generous support of donors to IIT Bombay, the Student Development Fund has been established to ensure that our students do not miss out on exciting opportunities.

Funds from this account are typically used for travel grants to the students, to take part in various international conferences. Sometimes, also for scholarships for needy students, etc.

The following table shows the details of the amount currently available under the ‘Student Development Fund’.

Particulars	Amount (Rs)
Opening Balance as on 01-04-2019	18,52,460.74
Opening balance in Endowment	1,60,46,380.68
Add: Interest up 31-03-2020/addition	963,982.84
Add: addition	485,447.14
Less : Expenses during the year/transfer	-167,067.50
Closing Balance as on 31-03-2020	1,91,81,203.90

FACULTY DEVELOPMENT

Faculty Development

C.1. Chair Professorships

The Chair Professorship is a distinguished academic position of the Institute and is conceived as an academic honor to recognize outstanding Teaching/Research work and achievements of the permanent Faculty of the Institute. It can also be used to attract outstanding academicians to join the Institute as Visiting Faculty. Each Chair is supported by an endowment created from a donation to the Institute.

Establishment of new Chair Professorships is essential for IIT Bombay to attract and retain high quality research faculty, which are one of the key elements required to fulfill the goal of the Institute to be a leading International Research University. It is envisaged that Chairs will also lead to establish new areas of specialization through the recruitment of accomplished researchers in specific fields of study.

The endowment for a Chair is currently Rs. 1.25 Crore. Interest from the endowment is used to meet expenses of the Chair, which include an honorarium of up to Rs. 30,000 per month and contingency expenses. The salary of the Chair Professor and all other benefits (housing, medical, etc.) continue to be borne from Institute funds. Donors have the prerogative of naming the Chairs. The broad area of specialization for instituting the Chair may also be specified by the donor. The total number of Chair Professors for the year 2019 – 20 are 81 out of which 50 are Institute Chairs and 31 are Donor named Chairs.

List of Named/Institute Chair Professors in the Institute can be found in the **Appendix I.4**

C.2. Excellence in Teaching Awards

The 61st Teacher's Day celebration of IIT Bombay was held on September 9, 2019. Prof. Varun Sahni, Vice-Chancellor at Goa University was invited as Chief Guest and he presented awards for 'Prof. S. P. Sukhatme Award for Excellence in Teaching' and Dr. P. K. Patwardhan Technology Development Award' to select faculty members.

Indian classical dance performances arranged by the students of IIT Bombay marked the beginning of the celebrations, which were aimed at conveying their gratitude towards their teachers. Students introduced their professors and presented their subjective interpretation of what made them exceptional teachers.

The recipients of the Awards for Excellence in Teaching 2019 were:

- Prof. M. B. Patil, Department of Electrical Engineering
- Prof. Ratheesh Radhakrishnan, Department of Humanities and Social Sciences
- Prof. Sauvik Banerjee, Department of Civil Engineering
- Prof. George Mathew, Department of Earth Sciences
- Prof. S. V. Sabnis, Department of Mathematics
- Prof. Prabhu Ramachandran, Department of Aerospace Engineering
- Prof. G. G. Ray, IDC School of Design
- Prof. J. K. Verma, Department of Mathematics
- Prof. Subhankar Karmakar, Department of Environmental Science & Engineering
- Prof. Bhalchandra Puranik, Department of Mechanical Engineering
- Prof. B. A. Poovaiah, IDC School of Design
- Prof. Pooja Purang, Department of Humanities & Social Sciences
- Prof. A. M. Kulkarni, Department of Electrical Engineering
- Prof. A. S. Athavale, Department of Mathematics

C.3. Young Faculty Award Fund

IIT Bombay is undergoing this rapid growth phase even as other institutions in India and abroad are planning to expand too. This creates significant challenges in attracting faculty to IIT Bombay. Given the current hiring spurt, the Young Faculty Award program was designed to have a substantial long-lasting impact on IIT Bombay and its faculty profile. YFA awards can ensure that IIT Bombay offers a more attractive package to achieve better results in recruitment. The “Young Faculty Joining Bonus”, initially a Class of ’82 Legacy Project, has been awarded from 2010 onwards. Class of ’78, '83, ’84, ’85, ‘88,’89, ’90, ’91, ’92,’93 and 94 have also joined this project. The project focuses on supporting young faculty in their academic pursuits in order to attract outstanding young faculty to replace retiring faculty and to augment current faculty as a key element for IITB to maintain its long-term competitiveness. **Numbers of YFA award beneficiaries in the year 2019 – 20 were 119.**

The details of young faculty who have been awarded the "Young Faculty Awards" in the last financial year can be found in the **Appendix I.5**

C.4. Faculty Awards

List of faculty awards during the academic year 2019-20

Sr. No	Name of Faculty	Department	Name of Award
1	Prof. Ashok Joshi	Aerospace	Hotchand and Jamulabai Lala awardees 2019
2	Prof. A. M. Pradeep	Aerospace	
3	Prof. Dnyanesh N Pawaskar	Mechanical	D P Joshi Awardees 2019
4	Prof. Prabhu Ramachandran	Aerospace	
5	Prof. Krishna Jonnalagadda	Mechanical	Prof. Jaganmohan Awardee

C.5. D. P. Joshi Teaching Award

Particulars	Amount (Rs)
Opening Balance as on 01-04-2019	34,45,698.32
Additions during the year	-
Less: Expenses during the year	75,000.00
Interest	1,67,855.22
Closing balance as on 31-03-2020	35,38,553.54

C.6 Faculty Development Endowment Fund

Alumni and their families have come forward to set up endowments to boost faculty development within the Institute. Some of the programmes started during the year are as under:

A. Dr. Gauri Shah Endowment Fund

The Dr. Gauri Shah Endowment Fund was set up by Dr. Mayur Datar in memory of his late wife Dr. Gauri Shah. Dr. Mayur Datar is an alumnus of IIT Bombay, having graduated in 1998 from the department of Computer Science and Engineering.

This endowment fund aims to use fundamental research as a means to encourage academic excellence and scholarship at IIT Bombay. The objective of this programme is to nurture a culture of in-depth research within the department of Computer Science and Engineering.

The interest from this endowment will fund faculty with travel grants, fellowship and contingency support.

B. Dhananjay Joshi Endowment Fund

The Dhananjay Joshi endowment fund was instituted by the family of Late. Mr. Dhananjay Joshi. Mr. Joshi was our alumnus, he graduated from the department of Chemical Engineering in 1969. This programme supports in-depth research in the domains of chemical engineering, electrical/electronics and communication engineering and physics. The programme envisages to breed scholars who are inspired to take up challenging problems in the specified domains.

The Programme proposes to provide 'Research Facilitation Grants'.

INFRASTRUCTURE PROJECTS

D.1. The Wadhwani Electronics Lab

The Wadhwani Electronics Lab (WEL) symbolizes the long standing association of IIT Bombay Electrical Engineering department with Wadhwani Foundation. WEL was established in the year 2001, and has served as the hub for most curricular lab courses in the Electrical Engineering department. Each year, more than 600 undergraduate students and 200 postgraduate students visit WEL for lab courses, working on their projects, and for various workshops. WEL cultivates a vibrant community of highly capable and passionate engineers and research assistants that continually demonstrate excellence through developmental activities. WEL alumni (RAs) have demonstrated broad impact through start-ups, impactful industry and academic positions, and numerous awards and recognition. WEL continues to enable countless students, faculty and lab assistants to learn hardware engineering through workshops and internships.

A brief summary of highlights and activities at WEL during the past calendar year is as below :

WEL hosted curricular lab courses for 495 students in spring 2018-19 and for 656 students in autumn 2019-20 semester.

- A new course (EE 113) was introduced to provide hands-on introduction to various aspects of electrical engineering to first year students

- Several systems development activities were undertaken at WEL; significant outcomes include new 'Made in WEL' boards, namely: a new Intel Max-10 CPLD development board (Xenon) to be used in digital systems lab course, development of an 'all in one portable lab' board to be used for conducting MOOC courses and workshops and portable transmitter board for use in communication systems lab course.

- Several workshops conducted for outreach through QIP, Xilinx university program, SPARC, etc.

- WEL hosted several interactive games and demos for alumni and their families on alumni day on December 22, 2019

- Project work done by students at WEL won awards at various for a such as Intel python hackfury2, INAE youth conclave, IEEE International Sensors and Measurement Student Contest at 2019 IEEE Sensors conference, etc.

- 6 publications by WEL RAs and other students working at WEL in prestigious international journals and conferences.

- 9 Project Assistants (Staff) were recruited at WEL to support additional activities undertaken in this phase, with renovation undertaken to increase seating space in WEL.

QIP workshop attendees (May 2019)

Activities during alumni day (December 22, 2019)

Volunteers and visitors – alumni day (December 22, 2019)

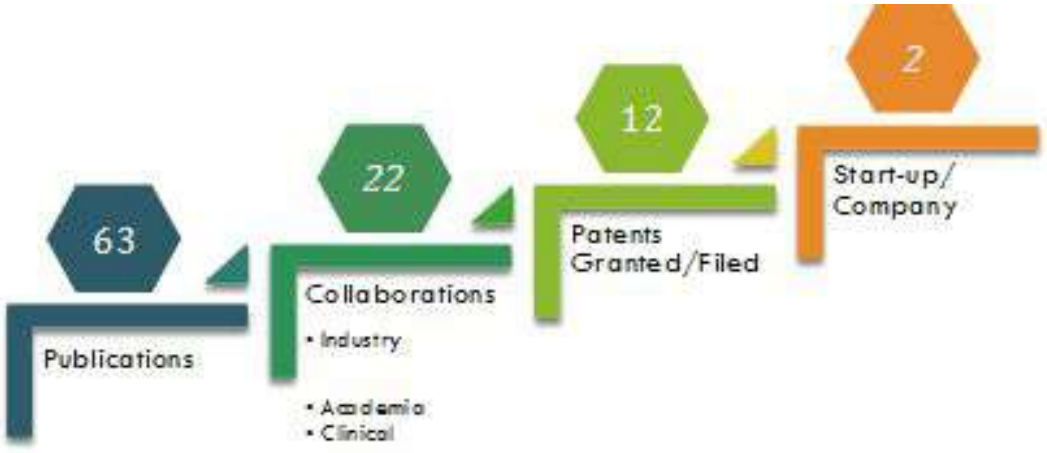
Workshop for students of KV IIT Powai

Snapshots of WEL activities during 2019

D.2. Wadhwani Research Centre for Bioengineering (WRCB)

Wadhwani Research Centre for Bioengineering (WRCB), an interdepartmental centre of IIT Bombay, has completed 5 years of its operation. Our mission has been to support translational research in selected thrust area of bioengineering, fostering cross-disciplinary collaborations within the Institute as well as with researchers from other institutes, hospitals and industry. In these 5 years, the center has undertaken 62 research projects including the 10 recent projects that will develop deployable solutions against COVID-19, creating an active pipeline of potential products and technologies that need to be pursued further. These projects have resulted in 63 publications, 12 patent applications and 2 new entrepreneurial ventures. The two startups Immuno ACT and ClarityBio that resulted from initial funding from WRCB are currently incubating at SINE. WRCB supported projects range from diagnostics, drug delivery and microfluidic-based devices to biosimilars. While some of these projects are in the early stage, some of the projects have led to the logical next step of a tie-up with an industry partner either for validation or human trials. The success of WRCB is a result of extraordinary interdisciplinary collaborations in research and useful interactions with industries and reputed academia abroad enabled by the center.

WRCB recently concluded its 7th call for project proposals specifically designed to find deployable solutions for the COVID--19 pandemic. We received an overwhelming response in the form of 29 proposals from faculty in various departments. Of these, we approved 10 projects in areas that included rapid testing for the virus and antibody, algorithm-- based group testing, thermal scanning for public entry points, nano--porous masks, air filters for ventilators, devices to disinfect public spaces, and tracking and predicting the spread of the disease with GIS models. The WRCB core committee together with external experts screened and selected 10 proposals for funding in a short span of 2 weeks. A series of online meetings were conducted, where the project investigators were invited to make presentations to the committee which not only provided recommendations about selection but also gave expert suggestions to the investigators to improve their chances of success in deploying the proposed solution. The projects will be monitored and mentored at regular intervals, A report on commercialization of the technologies will be shared with the Wadhwani Foundation.



The Summary of Contribution of WRCB during the Phase - I (2005 -2019)

In yet another commendable development, WRCB faculty members have published 11 scientific papers and 1 patent from the Department of Biotechnology (DBT), Government of India, funded "Infrastructure Facility for Advanced Research and Education in Diagnostics" project. The project has more than 20 faculty members from different departments working in collaboration. The grant has several scientific deliverables in addition to the infrastructure facility that needs to be set up, maintained and offered to external users on a cost-share basis.

WRCB has been successfully executing a number of outreach programs to improve our connect with the external world. Among these, WRCB's Corporate Affiliate Program (CAP) is a subscription-based program for industries in the healthcare sector. WRCB facilitates specific interaction between CAP members and relevant faculty with the aim (i) to understand the technology gaps faced by our member companies and (ii) to undertake industry sponsored research to fill those gaps. We currently have 8 member companies with a few more in the pipeline. Dr. Reddy's Laboratories is the latest addition to the program. As a part of outreach activities, WRCB conducts various events, workshops, meetings, seminars, etc. (eg. WRCB Industry Day, WRCB Clinical Day, CAP members' exclusive events) which provide ample opportunities to researchers and prospective partners to interact. WRCB organized our 5th meeting of the Advisory Board members in August 2019. In the meeting, Prof. Wangikar then gave a brief update on activities and outcomes of the centre. This was followed by discussions amongst advisory board members, faculty members and WRCB's Corporate Affiliates. Advisory board members provided feedback on the center's activities and outcomes.

A Snapshot of Corporate Affiliate Program (CAP) of WRCB

5th Meeting of the Advisory Board Members of WRCB

In 2019, Wadhwani Foundation appointed Price water house Cooper (PwC) to evaluate the progress of WRCB. PwC undertook a massive exercise that included 60--odd interviews of the various stakeholders. Based on these interactions with WRCB's stakeholders, PwC submitted a report to Wadhwani Foundation. In their report PwC has lauded WRCB'S scientific efforts and the Associated manpower. IIT Bombay has now submitted a proposal to Wadhwani Foundation to scale up the activities of WRCB into Phase-II by building on the lessons learnt in Phase-I.

D.3. Tinkerer's Laboratory

Over the last 5 years, Tinkerers' Lab has emerged as a fundamental resource for all technical student led activities on campus. The attendance, defined as student footfalls to the lab has been sizable and climbing steadily.

With approximately 5000+ student beneficiaries using the lab till date. The space for the lab has also doubled from 700 sq. to 1500 sq. ft and in the future will go up to 5000 sq. ft. when the lab shifts into the upcoming academic Maker Space of IIT Bombay, at the Desai Sethi Centre for Entrepreneurship. The management structure of the lab continues to be student driven and the students' council has in place a system for a smooth transition of management control to successive batches of students.

The lab at IITB is the only TL that so far that has achieved financial self-sustainability beyond the initial support of the class of 1975. Between 2014 to 2019 INR 1,26,56,521 has been spent with donations from the class of 1975 and 1966. The final trench of donations of USD 81,194 from C'66 was transferred to TL in 2019. Five successful start-ups have emerged from TL in 5+ years.

Usage statistics

Average Student Footfall: Over 200 unique students visited the lab every month to work on different projects and participate in events, including various tech teams, clubs, PG students, and project heads also routinely visit and use the lab facilities.
Currently lab usage is dominated by undergraduate students with approximately 70% of the UG students having used the lab facility at least once in the past year. This is comparable to the MIT Maker Workshop, the most popular comparable student led lab with a similar mission.

Major Equipment usage data :

- 3D Printers: TL has Four 3D printers with average usage time of 20 hours/ per day which caters to a wide range of departments.

- Laser Cutter: 20 unique students every week.

Events and Programs

Flagship Events

- During XLR8, the flagship event of Electronics and Robotics Club, TL had 700+ students visit the lab in around a month.

- During the RC Plane competition, the flagship event of Aeromodelling Club, about 400+ students visit the lab.

Niche Events by TL Team

Music Tech Meet-up (30+ attendees), Plasma Arc Speaker (30+ attendees), Tinkering Session (40+ attendees) and How things Work on Biosensors (30+ attendees), Introduction to Different Sensors (20+) during Tinkering Weekend, Workshops on Solidworks (30+) and Internet of Things Workshop conducted by Prof Asim Tewari (60+ students)

Training Sessions

Training session for machines like Laser Cutting Machine, 3D printers, CNC & Power Tools held every weekend, witnesses around 400+ students in three weeks including UGs, PGs and PhDs.

Smart India Hackathon (SIH)

TL had been part of the Organising Team of the SIH 2019 - Hardware Edition Grand Finale. The prototypes were made by the students in a period of around 4 days. For SIH Internal Hackathon 2020, 10 teams (50+) visited TL.

Projects

Projects have been undertaken by over 500 students through Individual Projects (15+), Course Projects (50+), Do It Yourself (DIY) Projects (50), Institute Technical Summer Projects (250+), Technovation (30)

TL Talks

- Tinkerers' Lab conducted a talk on innovation and entrepreneurship by Prof. John Kojiro Moriwaka, CEO Silicon Valley Ventures.

- TL Talks on new technology, innovation & entrepreneurship by Rahul Prajapat (STAB OC (2014-15) & Co-founder, Tvarit AI) and Aman was also conducted.

Internet of Things Workshop conducted by Prof. Asim Tewari

Student participation in TL Talks

TL Talk conducted by Prof John Kojiro Moriwaka, CEO of Silicon Valley Ventures

Outreach program with Vidya NGO Presented various indigenously developed robots to school children

D.4. Tata Centre for Technology and Design

Tata Centre for Technology and Design, at IIT Bombay (TCTD, IITB), has been working with the purpose of developing technology solutions that are designed to take on the unmet needs of resource-constrained communities within India and across the world.

Using an end to end innovation approach, TCTD, IITB is now in its seventh year since inception in 2014, acting as a virtual centre with research, academic and immersive components that draw faculty members and graduate students from across IIT Bombay. With TCTD, IITB's support to seed and translational research projects, the IITB faculty-led project teams from across the Institute have been designing technological solutions for social challenges in the domains of Food and Agriculture, Energy, Education, Healthcare, Housing, Water and Waste Management.

Research Component

The Centre conducted a comprehensive review process of the 50 existing projects and looked closely at the progress of the seed and translational projects, in November 2019 and February 2020. 45 projects received extensions for various timelines, with 7 projects' additional fund requests approved. TCTD, IITB is working at translating several of them in terms of design, business innovation and technology transfer frameworks. Five projects were recommended as closed across various domains. Five new research proposals from across the Centre's domains were recommended by the domain experts, external reviewers and Executive Committee (EC) at TCTD, and then approved by Dean ACR, IIT Bombay, for the Centre's research support. A host of 33 patent applications have been noted in the invention disclosure process of the ongoing projects. Nine projects have struck collaborations with external start-ups to begin the process of engagement while continuing to develop their technologies.

Snapshot of Project Activities

Academic Component

Human resources in the form of Tata Fellows, have shown an encouraging trend with 12 students joining the batch in 2019-20. This selection was based on the recommendations of the faculty members with regard to the potential students' interest in their research projects. The new batch of Tata Fellows started with the Pro Seminar course in January 2020, as the core faculty members restructured the curriculum of MNG 629 before delivery. This revision of the course is based on the learnings over the past five years, with 103 Tata Fellows and 122 non-Tata Fellows having been through the course. The academic

courses - MNG 629-630 and CL 724 – and field visits have contributed immensely to the pedagogy and based on their observations the students conduct need identification exercises to solve the identified problems. TCTD, IITB hopes to support and train these M. Tech. students and Ph.D. scholars into future leaders with a familiarity to the development challenges in the socio-political context.



Ancillary Activities

As outreach to the relevant segments TCTD, IITB has been conducting courses in End to End Innovation for the academic circles outside IIT Bombay. As a part of the Continuing Education and Quality Improvement Programmes at IIT Bombay, the Centre organises five-day courses - a unique combination of lectures, case studies, project exercises and lab sessions put together. With over 1250 faculty and students from engineering colleges of non-premier cities participating in these workshops, the courses offer a fair share of hands-on experience to the non-IIT aspirants in the field of social innovation and designing technology solutions. The annual TCTD Symposium in IIT Bombay is another conclave that draws stakeholder groups from across the country. About 13 teams participated in the intensive 7-week long iNCUBATE and IDEAS programs organized by the Desai Sethi School for Entrepreneurship at IIT Bombay, to help identify customer need and validate the need hypothesized at the start of the project. This has helped the teams to redefine their scope of work and helped the Centre to assess the potential in the proposed solution in a better way.


Facilities' Support

The current Product Realization Lab with its extensive array of mechanical and electronic equipment and machines supports the Centre's projects in the product development process. The integrated waste management facility to house the waste management projects will help address the domain-based challenges using the campus as a test bed.

Way Forward

With several mature projects, TCTD, IITB is looking for assistance in translating them in terms of design, business innovation and technology transfer frameworks. Getting champions to take the lead in connecting the solutions to the users is hoped. The few market-ready research projects are exploring collaborative and external funding opportunities to make the market connect smoother. The interaction with stakeholders at the symposiums is expected to bring on relevant problem statements, based on the need from the end users, across the Centre's seven domains. The focus is to match these stakeholders' discussions with the interests of the IIT Bombay faculty from across the various disciplines, build a need-finding framework and strike better collaborations.

D.5. Desai Sethi School of Entrepreneurship

Desai Sethi School of Entrepreneurship (DSSE) was established in 2014 as DS Centre for Entrepreneurship, to provide an academic context for entrepreneurship through content and connects. This was made possible with a generous donation of one million dollars from Desai -Sethi Foundation run by IITB alumnus (B.Tech., Electrical Engineering, 1975) and his wife Neerja Sethi, co-founders of Systems International (Syntel).

The faculty team of DSSE includes three full-time professors of the Institute and five adjunct professors from the industry. They offer six courses and two labs, leading to B.Tech. Minor Programme in Entrepreneurship. These include foundation courses, domain specific courses lab courses focussed on entrepreneurship and product development, and Technology Venture Creation, the capstone course.

The Lab courses are run in the POC Lab that is equipped with basic prototyping facilities like a 3D printer, power tools and CNC milling machine. The Lab hosts bootcamps, workshops and a Makeathon for design thinking, product development, frugal innovation, etc.

Structured mentoring programs are enabled through a network of over 100 alumni and industry professionals. These include IDEAS – Class of 90s Legacy Project, I-NCUBATE – Lab to market program in collaboration with GDC, IIT Madras, and Women in Entrepreneurship – a CSR Project supported by CGI Information Systems and Management Consultants Pvt. Ltd. Bengaluru.

So far, over 1500 students from across departments and levels (UG, PG and Ph.D.) have taken the entrepreneurship courses. At least 600 – 700 of these students have taken more than one course or program from the School. Over 30 teams (students/alumni) have created start-up companies.

The Centre also organized several key events such as Deshpande Gopalakrishnan Symposium in 2018, Asian Universities Alliance workshop in July 2019, TEQIP in July 2019 and workshop on Innovation and Entrepreneurship for teachers and innovation/incubation managers in 2020.

An AUA-IITB session in progress and participants during the city tour

Sessions for TEQIP participants by Faculties In-Charge of different Centres at IIT Bombay

The Centre was renamed as DS School of Entrepreneurship in December 2019. As operations expand, the School remains committed to its vision of nurturing innovation and entrepreneurship through focussed courses and programs and contributing to the overall eco-system in the Institute as well as the region. Several initiatives are planned to enhance the capability and capacity through a dedicated building, additional courses, programs and outreach activities.

CLASS PROJECTS

E. CLASS PROJECTS

The Institute celebrates its Alumni Day in December every year. Batch reunions held during this period have included a tradition of contributing back to IITB through a Legacy Project to support various initiatives:

This contribution is viewed by the students as :

- A token of their appreciation for the role that the years at IITB played in their professional and persby onal development.
- A way of helping the Institute to advance its goals by supporting the Institute in critical areas which are underserved by Institute funding.

Following is the list of various class projects maintained by Dean ACR office

E.1. Class of '69

The Class of 1969 had their Golden Jubilee Reunion in December 2019. The Class decided to institute the C'1969 Golden Jubilee Legacy Project. Some of the projects identified by this group are as under:

1. **Study Rooms :** Creation of air-conditioned study room in hostel 6.
2. **LED Lighting Project :** To support the Institute replace conventional light fixtures with LED.
3. **Karnik-Ganesh Scholarship Fund:** Support needy students through the FAP program fund by IITBAA.
4. **Diamond Jubilee Scholarship :** Support scholarship programme for children of non-teaching staff initiated by the Institute during the Diamond Jubilee.

Particulars	Amount (Rs)
Opening Balance as on 01-04-2019	18,90,048.00
Additions during the year	1,04,85,001.44
Transferred to Hostel study room Project	15,28,185.00
Closing balance as on 31-03-2020	1,08,46,864.44

E.2. Class of '72

Class of 1972 initiated the project towards the Hostel maintenance during their Silver Jubilee Reunion in 1997. The amount was allocated for the upkeep of various Hostels on campus.

Particulars	Amount (Rs)
Opening Bal. as on 01-04-2019	53,17,261.02
Interest During the year	1,27,731.24
Expenditure during the year	Nil
Closing balance as on 31-03-2020	54,44,992.26

*** We are in a process of reaching out to the batch leaders and to IITBHF to repurpose these funds for the newer Institutional priorities**

E.3. Class of '75

Class of 1975 initiated the Tinkerer's lab project. This project has emerged as a fundamental resource for all technical student led activities on campus. This is an ongoing project and has been well received very well by students, faculty and alumni.

Particulars	Amount (Rs)
Opening Bal. as on 01-04-2019	(1,04,434.60)
Addition during the year	56,07,426.87
Expenditure during the year	13,51,681.01
Closing balance as on 31-03-2020	41,51,311.26

E.4. Class of '78

Particulars	Amount (Rs)
Opening Bal. as on 01-04-2019	1,15,000.00
Addition during the year	Nil
Expenditure amt trf to YFA	Nil
Closing balance as on 31-03-2020	1,15,000.00

*** We are in a process of reaching out to the batch leaders and to IITBHF to repurpose these funds for the newer Institutional priorities**

E.5. Class of '80

The Batch of 1980 Alumni chose "Rejuvenation of Powai lake" project as a part of their Legacy project. Powai lake has deteriorated over the years due to siltation, weeding, sewage and other encroachments. The funds have been used for the betterment of Powai Lake and its surroundings.

Particulars	Amount (Rs)
Opening Bal. as on 01-04-2019	16,28,445.00
Addition during the year	Nil
Expenses during the year	Nil
Closing balance as on 31-03-2020	16,28,445.00

*** We are in a process of reaching out to the batch leaders and to IITBHF to repurpose these funds for the newer Institutional priorities**

E.6. Class of '86

Class of 1986 celebrated its Silver Jubilee reunion in December 2011.

The batch initiated a programme to support the Counselling Cell and improve the mental health of the students.

Counseling Services Program: In order to appropriately address the emotional and physiological needs of the students, there was a desire to establish and enhance a professional counseling service program that entails the following:

Recruiting professional physiological counselor. Formalizing and providing mentoring services through the alumni community to help with career counseling and industry mentoring.

Particulars	Amount (Rs)
Opening Bal. as on 01-04-2019 (Endowment)	44,14,425.00
Additions during the year	Nil
Interest during the year	2,48,700.00
Closing balance as on 31-03-2020	46,63,125.00

- The funding from this project remained unutilised as the salaries for the counselors and other expenses for the project continued to be paid from the Institute. Effective this year the payhead expenses along with other project expenses will be paid directly from this project.

E.7. Class of '87

The Class of 1987 had their Silver Jubilee Reunion in December 2012. The Class have donated funds to IITB with a view to promoting academic and research activities, faculty welfare and student assistance. Their LP consists of the following schemes:

1. **Technology and Development Solutions Cell:** This program will support a center under the CTARA that will allow IITB to carry out relevant academic and research activities as well as to accept and deliver projects that apply technology to solve developmental needs in rural areas.
2. **Student Financial Assistance:** This is a student assistance project to support financial needs of the students.

Particulars	Amount (Rs)
Opening Balance as on 01-04-2019	42,23,187.89
Additions during the year	Nil
Interest during the year	2,37,668.59
Closing balance as on 31-03-2020	44,60,856.48

*** A process has been initiated to reach out to the batch leaders and to IITBHF to repurpose this funds for current Institutional priorities**

E.8. Class of '88

The Class of 1988 had their Silver Jubilee Reunion in December 2013. The Class decided to support setting up of a Lab :

1. **EE Department Laboratory Fund:** The batch has supported innovation and research and to that effect they propose to contribute Rs 40 lakhs to the EE Department to specifically support the activities of innovation laboratory of EE Department. A fresh proposal for setting up this lab has now been submitted to the batch leaders for utilising the funds available for the laboratory.

2. **Scholarship - Legacy of 1988:** Funds have been endowed for supporting scholarship from the interest amount received from the endowment.

Particulars	Amount (Rs)
Funds available for EE Laboratory	50,60,000.00
Endowed Funds for Scholarship from Legacy 1988	32,81,506.00
Interest during the year	1,96,890.36
Expenditure during the year for scholarship	2,60,000.00
Closing balance on scholarship funds as on 31-03-2020	32,18,396.36

E.9.Class of '89

The Class of 1989 had their Silver Jubilee Reunion in December 2014. The Class decided to institute the C '1989 Silver Jubilee Legacy Project, which consists of the following three schemes:

Particulars	Amount (Rs)
Opening Balance as on 01-04-2019	29,77,053.00
Additions during the year	Nil
Interest during the year	NIL
Expenditure during the year	NIL
Closing balance as on 31-03-2020	29,77,053.00

*** A process has been initiated to reach out to the batch leaders and to IITBHF to repurpose this funds for current Institutional priorities**

E.10. Class of '90

The Class of 1990 had their Silver Jubilee Reunion in December 2015. The Class decided to institute the C'1990 Silver Jubilee Legacy Project. The batch initiated various new projects from their legacy funding over and above the regular projects supported by the legacy batches. Some of these projects are:

1. **IDEAS Programme:** Innovation, Development and Entrepreneurship Programme with Alumni Support was started to provide resources and to foster innovation at IIT Bombay for furthering entrepreneurship.

2. **Clean Green Campus:** To create a model clean green campus at IIT Bombay

which will be a benchmark for every other Institution in India.

3. **Art at IIT Bombay :** To install artefacts at prominent locations within the campus.

Particulars	Amount (Rs)
Opening Balance as on 01-04-2019	3,44,86,616.41
Additions during the year	Nil
Expenses /Transfers to projects	84,48,989,44
Closing balance as on 31-03-2020	2,60,37,626.97

E.11. Class of '91

The Class of 1991 had their Silver Jubilee Reunion in December 2016. The Class decided to support the walkway project. The construction is currently underway.

Particulars	Amount (Rs)
Opening Balance as on 01-04-2019	4,05,23,496.63
Additions during the year	37,65,239.00
Expenses	4,11,584.00
Closing balance as on 31-03-2020	4,38,77,151.63

E.12. Class of '92

The Class of 1992 had their Silver Jubilee Reunion in December 2017. The Class decided to support multiple projects which include :

1. Study Rooms : Creation of air-conditioned study rooms in hostels
2. Student Wellness Programme
3. Café'92 : Setting up of a Café near the Lecture Hall Complex

Particulars	Amount (Rs)
Opening Balance as on 01-04-2019	3,00,92,972.94
Additions during the year	2,09,36,455.29
Expenses & project transfers	1,81,42,750.00
Closing balance as on 31-03-2020	3,28,86,678.23

E.13. Class of '93

The Class of 1993 had their Silver Jubilee Reunion in December 2018. One of the major Project from this batch is supported by Alum Mr.Abhay Pande. This is the HSS Annex Building Project .

The process for signing an MOU for identifying the balance projects is in progress for allocation of the remaining funds received.

Particulars	Amount (Rs)
Opening Balance as on 01-04-2019	2,49,68,863.00
Additions during the year	4,42,71,277.00
Transferred to HSS Annex Project	-5,00,00,000.00
Closing balance as on 31-03-2020	1,92,40,140.00

E.14. Class of '94

The Class of 1994 had their Silver Jubilee Reunion in December 2019. The Class decided to support some of the ongoing projects of the Institute from the C'199 Silver Jubilee Legacy Project. Some of the projects identified are as follows:

1. **Young Faculty Awards:** The Class proposed to contribute to the YFA program, which provides a joining bonus to young faculty members joining IITB. The objective is to assist IITB to recruit Professors with excellent credentials.

2. **Retired Faculty Wellness Fund:** Health benefits for faculty members who retired prior to 2003 from IITB and do not have any post – retirement medical scheme "health benefits".

3. **Student Scholarships:** This is a student assistance project to support financial needs of the students.

Particulars	Amount (Rs)
Opening Balance as on 01-04-2019	-
Additions during the year	2,32,14,640.44
Transferred to HSS Annex Project	-
Closing balance as on 31-03-2020	2,32,14,640.44

IIT BOMBAY HERITAGE FOUNDATION DONATIONS

F. IIT Bombay Heritage Foundation Donations

The IIT Bombay Heritage Foundation was established as a non-profit public benefit corporation and received its status as a tax-exempt organization from the IRS on July 5, 1996. The Foundation has authorization under the Federal Classification level of 170(b)(1)(A)(vi). The Foundation is not organized for the private gain of any person. It is organized under the Nonprofit Public Benefit Corporation Law for charitable purposes. The specific purposes for which the Foundation is organized are: to fund and promote education and research among students of the Indian Institute of Technology, Bombay.

The Donations received from IITBHF are to support various activities, and are accounted for under the heads mentioned above. Following is the list of some major donations granted by

IITBHF in the year 2019-20.

Category	Grant 208	Grant 210	Grant 211	Grant 212	Grant 213	Total	Cumulative Total
Class of 1966 Legacy Project – Tinkerer's Lab Expansion Project	$81194.88					$81194.88	$81194.88
Financial Aid Program (FAP)	$1250.00			$9692.45		$10942.45	$176766.16
IDC Golden Jubilee Fund	$969.90			$240.45		$1210.35	$2179.90
Prof. A. Jaganmohan Memorial Fund	$20000.00					$20000.00	$68300.00
Sameer Halepete Chair Professorship	$1000.00					$1000.00	$169000.00
Sanjay Mansingh Funds to set up the "Brijraj Chandra Mansingh Chemical Instrumentation Laboratory" in the Department of Chemistry.	$50000.00					$50000.00	$50000.00
VMWare Research Grant in support of Prof. Mythili Vutukuru at IITB	$20000.00					$20000.00	$20000.00

Wadhwani Research Center for Bioengineering (WRCB) at IITB		$500000.00				$500000.00	$2500000.00
Wadhwani Electronics Lab (WEL) at IIT Bombay		$50000.00				$50000.00	$757771.00
Class of 1982 YFA Project		$4092.54				$4092.54	$483519.32
Retired Faculty Wellness Fund	$1200.00	$1651.13		$244.20		$3095.33	$36139.54
HATS		$1651.13		%12938.16		$14589.29	$363866.77
Scholarship		$222068.49				$222068.49	581 Scholarships
To support Diamond Jubilee Child Nutrition Center of Excellence - ChiNu project setup by Center for Technology Alternatives for Rural Areas (CTARA) at IITB			$25000.00			$25000.00	$198000.00
Prof. Biswas Scholarship Fund				$977.70		$977.70	$5500.70
Class of 1998 Gift				$204761.58		$204761.58	$204761.58
To Support Center for Technology Alternatives for Rural Area (CTARA) at IIT Bombay				$15000.00		$15000.00	$41500.00
Gautam Advani Fund				$750.00		$750.00	$6187.00
Prof. N R Kamath Chair for Institute	$97.50	$1651.13		$1793.45		$3542.08	$284084.14

and Excellence.							
Sanjay Mansingh Funds to set up the "Brijraj Chandra Mansingh Chemical Instrumentation Laboratory"				$50000.00		$50000.00	$100000.00
Student Development Fund				$5674.52		$5674.52	$453233.52
Tarun Kant Chair Professorship	$12418.80			$97.50		$12516.30	$24935.10
Class of 1982 YFA Project				$3263.36		$3263.36	$486782.68
Class of 1969 Golden Jubilee					$27751.00	$27751.00	$94435.16
Total Grants made in 2019	$188131.08	$781114.42	$25000.00	$305433.37	$27751.00	$1327429.87	6608157.00

LECTURE SERIES

G. LECTURE SERIES

G.1 Prof. N. R. Kamath Chair Distinguished Lecture

Prof. N. R. Kamath Chair Distinguished Lecture by Prof. Kaushik Basu was organized on August 2. The talk was on “The Economics of Digital Platforms: Theory and Policy Options". Prof. Kaushik Basu is Professor of Economics and the C. Marks Professor, International Studies at Cornell University, and former Senior Vice President and Chief Economist of the World Bank (2012-16).

G.2 Prof. C. N. R. Rao Lecture

1. Prof. C. N. R. Rao Lecture was organized on Nanoscience and Nanotechnology on September 26. The title of the talk was “Advanced Nano-materials for clean energy, environment, and health”. The speaker was Prof. Ajayan Vinu who is currently working as a Global Innovation Chair Professor and Director of Global Innovative Center for Advanced Nanomaterials at the University of Newcastle.

2. Prof. C. N. R. Rao lecture was organized on Nanoscience and Nanotechnology on January 8, 2020. The speaker was Nobel Laureate in Chemistry, Professor Grubbs who is the current Victor and Elizabeth Atkins Professor of Chemistry at the California Institute of Technology, a title he has held since 1990. His talk was on "Applications of Organic Chemistry to the solutions of Practical Problems".\

G.3 C. V. Seshadri Chair Distinguished Lecture

C. V. Seshadri Chair Distinguished Lecture was organized on *November 29, 2019*. The speaker was Dr. Ajit Sapre. The talk was on Technology initiatives by Reliance Industries to meet global challenges. Dr. Ajit Sapre is the Group President (R&T), Reliance Industries Ltd.

G.5 Shashwat Panda Memorial Lecture by Pureheart Capital

Inaugural Shashwat Panda Memorial Lecture by Pureheart Capital was held on February 13th 2020, in Prof. B. Nag auditorium, VMCC. The speaker, Mr. Gurcharan Das, is a renowned author, commentator and public intellectual. He enlightened the audience with his talk on "Making a life vs Making a living".

G.6 Institute Distinguished Lecture (in memory of Prof. K. C. Khilar)

The Institute Distinguished lecture in memory of Prof. K. C. Khilar was organized on March 12th 2020 in Prof. B. Nag auditorium, VMCC. The speaker, Dr. Janhavi Raut, is Director, R&D at Unilever R&D Center and she gave a talk on "Microbiomics: Role of Microbe – Microbe and Host – Microbe interaction in shaping microbial communities."

MAJOR EVENTS ORGANIZED BY DEAN ACR OFFICE

H. Major Events Organized By Dean ACR Office

H.1. FAN and DAM 2019

The Faculty Alumni Network (FAN) India Symposium and the Distinguished Alumni (DA) India Meet were held on April 6th and 7th, 2019 at Taj Exotica Resort in Goa. The Faculty Alumni Network (FAN) is a community of IIT Bombay faculty and alumni with backgrounds as researchers, university faculty, students, and administrators. FAN's goals are to assist IIT Bombay in its efforts to become a word-class research and teaching center. The theme of the FAN India Symposium 2019 was 'New and Advanced Materials and Sustainable Chemical Sciences'. In accord with the theme, conveners Prof. Jayesh Bellare from the Department of Chemical Engineering and Prof. R Murugavel from the Department of Chemistry were selected to lead the Symposium as conveners. The Symposium was organised into two sessions with 'New and Advanced Materials' as the morning session and Sustainable Chemical Sciences as the afternoon session with over 45 participants for both the sessions. The morning session was chaired by Prof. Srikant Sastry from the Theoretical Sciences Unit, Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) which saw participation from IITB alumni across academia and industry. The afternoon session was chaired by Prof. Alisagar Contractor who has retired from the Department of Chemistry, IIT Bombay. This session too saw a healthy mix of participants from academia and industry consisting of alumni from IITB and subject matter experts (SMEs).

The Distinguished Alumni India Meet 2019 was held on 7th April 2019. It is a select gathering of IIT Bombay's most illustrious alumni who meet annually to discuss the Institute's priorities and plans and also give their opinions and suggestions on the course of action going forward. This year, IIT Bombay is primarily focussing on four priorities including a) enhancing the students' experience, b) strengthening faculty and research, c) building a culture of innovation and entrepreneurship d) creating a world-class campus.

H.2. Institute Valedictory Function

The Institute Valedictory Function took place on May 3, 2019 at Prof. B. Nag Auditorium in Victor Menezes Convention Centre. The last event in the life of any graduating student. It was indeed a time of mixed emotions for everyone. The chief guests were Mr. Abhay Pandey, General Partner, A91 Partners and alumnus of Computer Science Engineering and Mr. Gagan Bhalla, CEO and COO of Apollo Sugar and Apollo White Dental and an alumnus of Civil Engineering.

Prof. Subhasis Chaudhuri, Director, IIT Bombay, Prof. Soumyo Mukherjee, Dean SA, and Prof. Suhas Joshi, Dean ACR, were also among the dignitaries. The respective representatives also shared their memories of their institute life. The Outstanding Contribution Awards were also given out to felicitate the members of the student alumni relations cell who have contributed substantially to the institute as members of Dean (Alumni and Corporate Relations) Office. The awardees Karan Mantri, Samarth Agrawal, Taveesh Garg, Vaishali Agarwal and Mrinal Dharmik.

H.3. Japan Visit

A delegation from IITB including Prof. Subhasis Chaudhuri (Director, IIT Bombay); Prof. Suhas Joshi (Dean ACR); Prof. Milind Atrey (Dean R&D) (September 4 onward); Prof. K. Momaya (SJMSOM); Kapil Kaul, VP IITB-DRF; Sharad Saraf, Chairman, Technocraft visited Tokyo in the first week of September. The agenda of this visit was to get connected with more and more Corporates and reach out to the Alumni Community. The delegation visited the following companies: Murata Manufacturing, Daikin, NEC, FUSO/Diamler Asia Trucks, Sony Corporation, Yahoo, Honda R&D and few others. The delegation also visited Tokyo University.

IIT Bombay Alumni Connect Program: The meeting was attended by more than 100 alumni from Japan. It appeared that there is a big influx of alumni in Japan during 2016-2018. The event was a great success.

H.4. Alumination

This year's edition of Alumination, was held on October 12-13. Three of our esteemed alumni - Mr. Arvind C. Bidaye (Scientific officer at Bhabha Atomic Research Centre), Mr. Amit Mittal (Senior Manager at Aditya Birla Finance Limited) and Mr. Zishaan M. Hayath (Founder and CEO of Toppr.com) presented their views on working conditions in their respective sector. Talk on the fundamentals of entrepreneurship was delivered by our very own alumnus - Mr. Saurabh Garg, the co-founder and CBO of NoBroker.in on October 12. On the final day, the fest concluded after a greatly rousing, motivational talk by Mr. Rizwan Koita, co-founder and CEO of CitiusTech, as he presented an account of his life after IITB and the invaluable insight he gained along the way.

H.5. US Canada Road Show

The IIT Bombay leadership team conducted its annual roadshow to the United States in the month of October. This year the team also added Canada to their itinerary. The roadshow this year lasted 2 weeks from October 10 to 22, 2019 and the team traveled to 6 cities meeting alumni, corporate and university partners across the USA and Canada. The major highlight of this year's roadshow was the alumni connect events in the following cities San Francisco in Bay Area, Seattle, Houston, Toronto and New York.

H.6. Re-union Events in India

Chennai Alumni Reunion: IIT Bombay organized a Chennai Alumni Reunion on November 9, 2019. The attendees were more than 100. It was conducted in Mauve Lilac, The Raintree, 636, Anna Salai, Teynampet.

Jaipur Alumni Reunion: In the Jaipur Alumni Reunion on November 16, 2019 more than 200 alumni attended the event. It was conducted in Kewra Lawns, Hotel Diggi Palace, Diggi House, Shivaji Marg.

H.7. Alumni Day and Presentation of Distinguished Service Awards

The alumni day was a get together of all the alumni of the Institute on December 22. The Distinguished Service Awards and the Chapter Service Awards were also presented at the occasion. On the day, the respective batches of alumni have pledged a total of Rs. 26.26 Cr for the Institute. The Silver Jubilee Batch (Class of 1994) has pledged a sum of Rs. 12.14 Cr towards the Legacy project. A Legacy Project is a project adopted by the batch celebrating its Silver Jubilee anniversary, for the betterment of the Institute and of the people associated with it, as a way of giving back to the alma mater and to leave behind a lasting legacy and remembrance of their silver jubilee reunion. Mr. Parasvil Patel from the class of 2009-10 announced the Legacy Project Gift. The Decennial Batch (class of 2009-10) has pledged about Rs. 1.05 Cr.

As a part of the function, Distinguished Service Awards were bestowed on two alumni this year, who besides being achievers in their own chosen domains, have contributed in a notable and sustained manner to the progress of the Institute. The award, instituted in the year 1999, consists of a certificate, memento and an Uttaria. This year, the award was conferred on Mr. Aaloke Surie (B. Tech.'70 Mechanical Engineering) and Ms. Rekha Koita (B. Tech.'92 Metallurgical Engineering Materials).

The Chapter Service Awards, instituted during the Diamond Jubilee year celebrations was conferred on Dr. Sushil Bhatia B. Tech.'66 Electrical Engineering, Mr. Madhusudan Reddy M (M. Sc'74 Applied Geology) and Mr. Sanjay Dhall (B. Tech'85 Mechanical Engineering). The award is conferred on select alumni who have contributed in a very notable and sustained manner to the progress of the Chapter and also to the progress of the Institute. It consists of a certificate, memento and an Uttaria.

Major highlight of the event was the launch of the Regular Giving Programme by Prof. Subhasis Chaudhuri, Director, IIT Bombay. This program will encourage the students and Alumni of the Institute to give back to their alma mater on regular basis which will go towards a number of endeavors grand and small in the service of the Institute and the current students

H.8. Alumni Reunions

Multiple reunions of various batches of the Institute were conducted in the month of December 2019.

- Silver Jubilee Reunion of Class of 1994 was conducted from *December 20-22*. The batch of 1994 has pledged a sum of Rs. 12.14 Cr. towards the Legacy project. They would be looking at deploying these funds in a number of projects largely related to student well-being, including scholarship programs for deserving students,

upgradation of study facilities across the hostels, supporting the ongoing institute efforts for student counseling, amongst other things.

- Class of 1969 had a grand 50th year reunion in January 2019, 107 Alumni attended the event along with their Spouses and Families. On the Alumni Day 10 representatives from the Class of 1969 presented the batch contribution of Rs. 13.07 Cr to the Institute towards their legacy project. These funds go towards a number of endeavors grand and small in the service of the Institute and the current students.

- Decennial Reunion of Class of 2009 - 10 was conducted from *December 20-22*. This reunion had 151 Alum participants along with their family. Decennial batch contributed their share of Rs. 1.07 Cr to the Institute. They also took the time pledge to give their valuable time of 3000 hrs to the Students and the Institute. This is first of its kind initiative.

- Ruby Reunion of Class of 1979 was held from *December 20 - 22*. Total number of 32 Alumni attended this reunion with their family and spouses.

- Reunion of Class of 1982 was conducted from December 30 - January 2 Total no of 63 Alums attended this event. Partial event was on Campus and thereafter they went to Lonavala for further celebrations.

H.9. Foundation Day and Distinguished Alumnus and Young Alumni Achievers Award Presentations

IIT Bombay celebrated its Foundation Day, the 61st anniversary of its inception on March 11, 2020 by honouring the contributions of its faculty members as well as erstwhile students, who as alumni have left their indelible imprint on their chosen fields of profession. The ceremony commenced with a welcome address by the Director of IIT Bombay Professor Subhasis Chaudhuri, highlighting key milestones achieved by the Institute in 61 years. Welcoming the guests, he said, “IIT Bombay stood 1st in India and 44th in the world in the recently released QS World University Rankings 2020 by Subject. We are proud that IIT Bombay has provided quality education to thousands of students. Over the years, we have also enhanced our presence in research. Today, more than 30 percent of our students are enrolled in Ph.D. programmes. We are proud that IIT is contributing to society with the efforts of its faculty members and students”.

The Chief Guest of the function Prof. Ashutosh Sharma, Secretary, Department of Science and Technology, Government of India, in his address, said, “IIT Bombay has made rapid progress in 61 years. The Institute is showing an upward performance and we should further aim to be one of the top 20 institutions in the next 10 years. More and more bright students are opting for PhD programmes and research. Students should give real contributions to the society which will contribute towards problem-solving. IIT Bombay is going in the right direction and in the right speed”.

The Institute on the occasion honoured its select alumni for their achievements in diverse fields ranging from academics, research and entrepreneurship. The 'Prof. S. C. Bhattacharya Award for Excellence in Research in Pure Sciences' and 'Prof. H. H. Mathur Award for Excellence in Research in Applied Sciences, IIT Bombay Research Awards for

the year 2018, the Distinguished Alumnus Awards and Young Alumnus Achiever Awards' were given away.

The IIT Bombay Research Awards 2018 were also presented in this function which included:

- Research Publication Award 2018
- Impactful Research Award 2018
- Research Dissemination Award 2018
- Early Research Achiever Award 2018
- Prof. Krithi Ramamritham Award for Creative Research 2018

Seven alumni received Distinguished Alumnus Awards, 4 were honoured with Young Alumnus Achiever Awards, 2 faculty members were awarded for excellence in research work, 12 faculty members were awarded IIT Bombay Research Awards for 2018 and 1 faculty member was awarded Prof. Krithi Ramamritham Award for Creative Research for 2018.

- **Prof. Varadarajan Chari**, B.Tech. '74, Chemical Engineering (Academia)
- **Prof. Janat Shah,** B.Tech. '80, Mechanical Engineering (Institution Building)
- **Mr. Surendra Murlidhar Vaidya,** B.Tech. '83, Metallurgical Engineering (Technology/ Research)
- **Prof. Mayuresh Kothare,** B.Tech. '91, Chemical Engineering (Academia)
- **Prof. Guarav Sukhatme,** B.Tech. '91, Computer Science and Engineering (Academia)
- **Prof. Kavita Ramanan,** B.Tech. '92 Chemical Engineering (Academia)
- **Mr. Abidali Neemuchwala,** M.Tech. '92 Industrial Management (Corporate)

The 'Prof. S.C. Bhattacharya Award for Excellence in Research in Pure Sciences' was conferred on -

- **Prof. Kanchan Pande,** Department of Earth Sciences.

The 'Prof. H.H. Mathur Award for Excellence in Research in Applied Sciences' was conferred on-

- **Prof. Sunita Sarawagi,** Department of Computer Science and Engineering

The Young Alumni Achiever Awards (YAAA) are for alumni who have made outstanding achievements in their chosen field of work and are below 40 years of age. These awards were instituted in the year 2011. The awardees this year include:

- **Mr. Shaikh Shahnawaz Ali**, B.Tech. '03, Electrical Engineering
- **Mr. Ankit Mehta,** Dual Degree (B.Tech.+M.Tech.) '05, Mechanical Engineering
- **Mr. Rahul Singh,** B.Tech. '06, Mechanical Engineering
- **Mr. Ashish Bhat,** B.Tech. '07, Electrical Engineering

APPENDIX

FUNDED SCHOLARSHIP DETAILS

I. Testimonial of Scholarship and Fellowship

DONEE MESSAGES	DONORS MESSAGE
Thank you for your generous, financial support towards the **Ruyintan & Monica Mehta Scholarship,** I am the recipient of the above mentioned scholarship for the academic year 2019-2020.	We hope you succeed academically and blaze a trail of achievement that can be followed by others in your family.
Thank you for your generous, financial support towards the **Gratian Farias F/e Memorial Scholarship,** I am the recipient of the above mentioned scholarship for the academic year 2019-2020.	I'm happy that you have received this scholarship to assist you! Now you have a responsibility to work hard and get the best possible education out of IIT, which will lead you to a great position of authority, respect, and wealth. And that will enable you to help many more who aspire to IIT!
Thank you for your generous, financial support towards the **Sudaya Scholarship,** I am the recipient of the above mentioned scholarship for the academic year 2019-2020	Congratulations! FYI, I also did Chemical Engineering from IIT Bombay. Best wishes for your new academic year
Thank you for your generous, financial support towards the **Prof. S. L. Narayanamurthy Full Scholarship**_dual Chemical, Female I am the recipient of the above mentioned scholarship for the academic year 2019-2020.	Thanks for this acknowledgement - it means a lot to me, and even more so after the sad demise of Prof. S L Narayanamurthy earlier this week. I am grateful that he consented to the set-up of this scholarship in his name a few years ago.
Thank you for your generous, financial support towards the **Mrs. Kumudini Ranadive Scholarship,** I am the recipient of the above mentioned scholarship for the academic year 2019-2020.	Dear Fellow, You are very welcome. It is indeed my pleasure. Which year and hostel are you in? I remember my time at IIT very fondly, hard yet a lot of fun! Do keep in touch.

I.1. Funded Scholarship detail

DONOR NAME	SCHOLARSHIP NAME	Student Names	Roll No.	Department
Sanjeev Jorapur	Jorapur Family Scholarship	Pukh Raj Patel	190110068	MEMS
Mukul Paithane	Sandhya Paithane Hostel Scholarship			
Abhay Kulkarni	Mr. S.j. & Mrs S.s. Kulkarni			
Bharat Shiralkar	Mr. S.s. Shiralkar			
Victor Menezes	Nina Menezes Scholarship			
Tarak Goradia	Mr. Shantilal H. Goradia			
Kumar Vora	Mrs Vimla Vora Scholarship			
Rajesh Rajaraman	N. S. Rajaraman			
Abhay Talsania	Named Scholarship In Any Dept In The Name Of Abhay Himatlal Talsania			
Abhay Talsania	Named Scholarship In Any Dept In The Name Of Abhay Himatlal Talsania	Sachin Kumar	19B080022	Humanities and Social Sciences

Nitish Thakor	Nitish Thakor Scholarship			
Sanjay Joshi	Indirabai And Anant Phanse Memorial Scholarship			
Sanjay Joshi	Seetabai And Ramchandra Pendse Memorial Scholarship			
Sanjay Joshi	Kalika And Ganesh Patwardhan Memorial Scholarship			
Subodh Ghonge	Subodh Ghonge Scholarship			
Subodh Ghonge	Subodh Ghonge Scholarship	Yagna Teja Reddy Velagala	160110082	MEMS
Victor Menezes	Menezes Foundation Scholarship			
Ashok Kulkarni	Ashok Vasant Kulkarni Scholarship			
Prafulla Nabar	Ms Usha M. Nabar Scholarship			
Dev Purkayastha	Bibha Nandi Majumdar Scholarship	Yash Mutha	18B080026	Humanities and Social Sciences

Manuel Kakkanattu	Shri. Kakkanattu M. Mathew Scholarship			
IIT UK IIT UK Alumni	Iit Uk Alumni Scholarship			
Firoze Katrak	Class Of 1974 Anonymous Scholarship			
Shaporji Pallonji	Shaporji Pallonji Rising Star			
Shaporji Pallonji	Shaporji Pallonji Rising Star	Heetak Shah	190260039	Engg. Physics
V V S Laxman	Yuva Unstoppable			
Mamata Desai	Dilip Desai Scholarship			
Mamata Desai	Dilip Desai Scholarship	Hriday Mittal	18D170012	Engg. Physics
Samir Kapoor	Dinanath And Gayatri Nath			
Bhautik Doshi	Sponsor's Payback Scholarship			
Bhautik Doshi	Sponsor's Payback Scholarship	Richeek Das	190260036	Engg. Physics
Devinder Randhawa	Devinder Randhawa Scholarship			

Devinder Randhawa	Devinder Randhawa Scholarship	Ajith R	180010004	Aerospace Engg.
Rajeev Ranadive	Mrs. Kumudini Ranadive Scholarship			
Yezdi Dordi	Dordi Family Scholarship			
Yezdi Dordi	Dordi Family Scholarship	Chaitanya Kedia	180040027	Civil Engg.
Kumar Vora	Dr Vishakha Doctor Scholarship			
Utkarsh Jain	Smt. Suraj Kanwar Golechha Scholarship			
Sandeep Desai	Pramod Desai Scholarship			
Sandeep Desai	Pramod Desai Scholarship	Himanshu Rajpoot	190260024	Engg. Physics
Sandeep Desai	Shanta Desai Scholarship			
Sandeep Desai	Saili & Sandeep Desai Scholarship			
Ashutosh Gunderia	Ashutosh Gonderia Scholarship			
Ashutosh Gunderia	Ashutosh Gonderia Scholarship	Achin Parashar	170040076	Civil Engg.

Madan Avadhani	Avadhani Scholarship			
Yagnaswamy Chellam	Yagnaswamy Chellam Scholarship			
Joydeep Yadav	Anil Chakraborty And Suraj K. Yadavscholarship			
Joydeep Yadav	Anil Chakraborty And Suraj K. Yadavscholarship	CHETAN KUMAR	190040030	Civil Engg.
Mokshay Madiman	Shantadurga Sujir Scholarship			
Kumar Vishwanathan	Smt. Santhi Krishnan Memorial Scholarship			
Kumar Vishwanathan	Smt. Santhi Krishnan Memorial Scholarship	Vikrant Nagpure	160100074	Mechanical Engg.
Pardaman Sawhney	Vidya Scholarship			
Mokshay Madiman	Mangesh V. Madiman Scholarship			
Makarand Chipalkatti	Dr. H.r. Chipalkatti Memorial Scholarship			
Salil Donde	The Donde Meritocracy Award			

Salil Donde	The Donde Meritocracy Award	Anish Chaurasiya	180260007	Engg. Physics
Vipul Deokar	Vipul Deokar Scholarship			
Rajinder Singh	Shri. Harcharan Singh Minhas Scholarship			
Ravi Apte	Shrimati Indumati Bakore Scholarship			
Ravi Gujar	Vithaldas Jariwala Memorial Scholarship			
Ravi Gujar	Vithaldas Jariwala Memorial Scholarship	Arpit Malhotra	170040035	Civil Engg.
Sambit Singh	Ashalatas And Bijoy Kumar Singh Scholarship			
Rajeshwari Chellam	Lakshmi Chellam Scholarship			
Rajeshwari Chellam	Lakshmi Chellam Scholarship	Samyak Ajmera	19B080023	Humanities and Social Sciences
Dhrumil Gandhi	Hasumati Gandhi Scholarship			
Giridharan Iyengar	Mr. & Mrs. Ranganathan Scholarship			
Jugal Tandon	Dr Bk Tandon			

Jugal Tandon	Dr Bk Tandon	Utkarsh Gupta	190040128	Civil Engg.
Anuradha Narasimhan	Prof Dhamdhere			
Class of 1990 Scholarship	Round Memorial Schoalrship In Memory Of Ravi Ramamurthy			
Ruyintan Mehta	Ruyintan & Monica Mehta Family Scholarship			
Ruyintan Mehta	Ruyintan & Monica Mehta Scholarship			
Rajesh Rajaraman	S Ramamritam Scholarship			
Rajesh Rajaraman	S Ramamritam Scholarship	B Priyanka	180040026	Civil Engg.
Dev Purkayastha	Dwaraka Nath Shuklo Baidya Scholarship			
Jitu Jhaveri	Education Support Scholarship			
Girish Kamath	Electrical Engineering Department Scholarship			
Dev Purkayastha	Gajendra Chandra Malakar Scholarship			

Girish Shah	Girish & Datta Shah Scholarship			
Girish Shah	Girish & Datta Shah Scholarship	Garima Agrawal	180040039	Civil Engg.
MESARG Educationa l Trust	Mrs. Carlotta Saenz Rivera Scholarship			
Sameer Shirdhonka r	Meera And Vasant Keshav Sheorey Scholarship			
Sameer Shirdhonka r	Meera And Vasant Keshav Sheorey Scholarship	Aditya Jain	190040007	Civil Engg.
Chris Farias	Gratian Farias, Flight Engineer, Memorial Scholarship			
Rajiv Kundalkar	Shankar Ganesh Kundalkar Scholarship			
Shenoy Menezes	Iit Alumni At Microsoft Scholarship			
Shenoy Menezes	Iit Alumni At Microsoft Scholarship	HARDIK MURARKA	160110046	MEMS
Gagan Singh	Gul Bhutani Scholarship			
Rajiv Puranik	Puranik Foundation Scholarship			

Rajiv Puranik	Puranik Foundation Scholarship	Siddesh Agrawal	190040117	Civil Engg.
Prasad Bidarkota	Shakuntala Devi Scholarship			
Himanshu Patel	Indravadan M. Patel Scholarship			
Himanshu Patel	Indravadan M. Patel Scholarship	Ashutosh Patel	190040022	Civil Engg.
Gagan Singh	J.P. Singh Scholarship			
Shashank Kulkarni	Shashank Kulkarni Scholarship			
Jayant Sathaye	Jayant Sathye Scholarship			
Kumar Vora	Shri Amritlal Vora Scholarship			
Kumar Vora	Shri Amritlal Vora Scholarship	Lokesh Agrawal	16b030001	Civil Engg.
Kumar Vora	Shri Madhukar Kelkar Scholarship			
Anil Diwan	Shee Ratnakar Hariharrao Diwan Memorial Scholarship			
Anil Diwan	Shreemati Manik Ratnakar Diwan Memorial Scholarship			

Dev Purkayastha	Sandra Lee Purkayastha Scholarship			
Niranjan Talwalkar	Shubha And Anand Talwalkar Scholorship			
Kumar Shah	Kumar & Susan Shah Scholarship			
Kumar Shah	Kumar Shah Scholarship			
Rajendra Shah	Lalita Shah Scholarship			
Rajendra Shah	Lalita Shah Scholarship	Gargee Barke	18B080007	Humanities and Social Sciences
Narendra Joshi	Named Scholarship In Any Dept In The Name Of Narendra Joshi			
Sandeep Vijayakar	Lata Vijayakar Scholarship			
Rajinder Singh	Smt. Mohinder Kaur Minhas (Parents Of Rajinder Harcharan Singh C'88) Scholarship			
Deepak Kamath	Manohar & Sunita Kamath Scholarship			
Himanshu Patel	Manorama I. Patel Scholarship			

Himanshu Patel	Manorama I. Patel Scholarship	Avin Rai	19b080009	Humanities and Social Sciences
Prafulla Nabar	Mr M. G. Nabar Scholarship			
Lionel D'Luna	Lionel J. D'luna Scholarship			
Rajeev Mundhe	Mr. Balkrishna K. Mundhe Scholarship			
Subodh Ghonge	Alumni Sponsored Scholarship			
Subodh Ghonge	Alumni Sponsored Scholarship	SHIVPRASAD KATHANE	180110076	MEMS
Jitu Jhaveri	Scholarship In Excellence			
Sunita Parasuram an	Sri Ramana Maharshi Scholarship			
Mahesh Navani	Shape India Scholarship			
Sandesh Joshi	Sandesh Joshi Scholarship			
Ravi Gujar	Vasudeva Kamath Memorial Scholarship			
Toos Daruvala	Toos And Hira Daruvala Scholarship			

Toos Daruvala	Toos And Hira Daruvala Scholarship	Sristy Kushwaha	180110088	MEMS
Ravi Apte	Shri C.k. Apte Memorial Scholarship			
Suhas Pai	Anant Pai Scholarship			
Sameer Shirdhonkar	Vasant And Meera Sheorey Scholarship			
Sandeep Kishore	Har Asha Foundation Scholarship			
Judy Stamps	V. V. Krishnan Scholarship			
Jagadish Iyengar	Berigai Rama Iyengar Scholarship			
Jagadish Iyengar	Berigai Rama Iyengar Scholarship	Himanshu Chandani	190110027	MEMS
IITBHF	Iit Bombay Heritage Fund Scholarship			
Sameer Shirdhonkar	Vasant And Meera Sheorey Scholarship	Vaishak Vijayan M	160040108	Civil Engg.
Sandeep Kishore	Har Asha Foundation Scholarship	nishika tolambiya	19b080015	Humanities and Social Sciences

Judy Stamps	V. V. Krishnan Scholarship	dinesh Yadav	180040034	Civil Engg.
Judy Stamps	V. V. Krishnan Scholarship	Satyajeet Machale	190110085	MEMS
Judy Stamps	V. V. Krishnan Scholarship	Mohit Chhaparwal	190110047	MEMS
Pratap Srivastava	Anita Srivastava Scholarship	CHITRA YADAV	190040031	Civil Engg.
Mayur Datar	Mrs Gauri Shah Scholarship			
Narendra Joshi	Mrs Pratibha Mulekar Scholarship			
Suhas Pai	Laxmi Pai Scholarship			
Prafulla Nabar	Nalini G. Nabar Scholarship			
Atul Thakkar	Atul Thakkar Scholarship	M SUDEEP GOWDA	190010046	Aerospace Engg.
Narendra Joshi	Narendra Joshi Scholarship-aerospace			
IITB HF	Iit Bombay Heritage Fund Scholarship			
Abhay Talsania	Mrs Vasant Himatlal Talsania Scholarship	Aakash Kumar Singh	180020002	Chemical Engg.

Pinakin Shah	Mrs. Shobha Pinakin Shah			
Prakash Karpe	Anand And Sudha Karpe			
Samir Kapoor	Anisbert And Kumarie Sequeira Scho			
Balaji Srinivasan	Preeti And Balaji Srinivasan Scholarship			
Narendra Kirpalani	Bulchand And Rani Kirpalani Scholarship			
Sandeep Desai	Pramod & Shanta Desai Scholarship			
Dady Dadyburjor	Burjor S. Dadyburjor			
Dady Dadyburjor	Burjor S. Dadyburjor	JOSHIN KUMAR	160020068	Chemical Engg.
Gautam Kollu	Kollu Family Scholarship			
Niraj Shah	Chamanlal And Labhkunwar Kothary,			
Niraj Shah	Chamanlal And Labhkunwar Kothary,	Naman Chindaliya	160020007	Chemical Engg.
Surendra Gupta	Devki And Bishan Chand Gupta			

	Memorial Scholarship			
Surendra Gupta	Surendra And Karen Gupta Scholarship			
Surendra Gupta	Surendra Gupta Legacy Scholarship			
Ravi Nene	Gopal B Nene Scholarship			
Ravi Nene	Gopal B Nene Scholarship	Vedant kumar Sultania	190020129	Chemical Engg.
Praful Dand	Nirmalaben Vishanji Dand And Laxmiben Narsi Lodaya Scholarship			
Himanshu Saxena	Usha Saxena Scholarship			
Sandeep Kishore	Har Asha Foundation Scholarship			
Sandeep Kishore	Har Asha Foundation Scholarship	Harshita Agarwal	180020034	Chemical Engg.
Manav Kumar	Sheodan Singh Teotia Memorial Scholarship			
Pankaj Jagtap	Shree Anantrao Jagtap Scholarship			
Pradyumna Namdev	Sudaya Scholarship			

Pradyumna Namdev	Sudaya Scholarship	Pawan Kumar	190020081	Chemical Engg.
Surendra Gupta	Gupta Family And Arc Scholarship			
Avi Nash	Indira Manudhane Scholarship			
Abhay Talsania	H. J. Talsania Scholarship			
Abhay Talsania	H. J. Talsania Scholarship	Mayank Chittora	160020055	Chemical Engg.
Abhay Talsania	Jagjivan Ujamshi Talsania Scholarship			
Kirit Bhansal	Justin Bhansali Memorial Scholarship			
Balaji Srinivasan	Lakshmi And Kadayam Srinivasan Scholarship			
Ruyintan Mehta	Ruyintan & Monica Mehta Scholarship			
Ruyintan Mehta	Ruyintan E. Mehta Scholarship			
Sudarsana Yeleswarapu	Dr. Y. Srinivasa Rao Memorial Scholarship			

Sudarsana Yeleswarapu	Dr. Y. Srinivasa Rao Memorial Scholarship	Sonal Kumar	17D070045	Electrical Engg.
Jitu Jhaveri	Education Support Scholarship			
Praful Dand	In Loving Memory Of Our Mothers Nirmalaben Vishanji Dand And Laxmiben Narsi Lodaya Scholarship			
Narendra Joshi	Shubhada Joshi Scholarship-chemical			
Joseph D'Souza	D'souza-govil Hostel/mess Scholarship	Baldev Choudhary	160020066	Chemical Engg.
Atul Athalye	Prof. S. L. Narayanamurthy Full Scholarship	Sayali Kshirsagar	16B030008	Chemical Engg.
Atul Athalye	Prof. S. L. Narayanamurthy Full Scholarship	Saavi Yadav	170020003	Chemical Engg.
Pratap Srivastava	Anita Srivastava Scholarship			
Greater New York Chapter	Greater New York Chapter Alumni Scholarship			
Milind Mahajan	Prabhakar D. Mahajan Scholarship	Kaligandla Chandana Sahitya	190040051	Civil Engg.

Hussain Bhatia	Abbas Bhatia/john A. Martin Scholarship			
Firoze Katrak	Class Of 1974 Anonymous Scholarship			
Amitabh Mitra	Prof. K,k. Mitra Scholarship			
Chris Farias	Gratian Farias F/e Memorial Scholarship			
Chris Farias	Gratian Farias F/e Memorial Scholarship	Karan Chittora	180040050	Civil Engg.
Riz Mithani	Riz Mithani Scholarship			
Sanjay Vinekar	R.n. Vinekar Memorial Scholarship			
Rajiv Kundalkar	Shankar Ganesh Kundalkar Scholarship-civil			
Jayant Kanitkar	Kanitkar Merit Scholarship			
Jayant Kanitkar	Kanitkar Merit Scholarship	Sudarshan Gupta	190040119	Civil Engg.
Uday Patil	Vijaya Patil			
IIT Bombay Heritage				

Fund Scholarship				
Parag Tole	Prabhakar And Madhavi Tole Scholarship	D CHANDRASEKHARA S S HETHA HAVYA	190050031	Computer Science And Engg.
Parag Tole	Prabhakar And Madhavi Tole Scholarship	Battepati Karthikeya	190050026	Computer Science And Engg.
Ashok Kulkarni	Ashok Vasant Kulkarni Scholarship			
Atul Thakkar	Atul Thakkar Scholarship			
Balaji Srinivasan	Preeti And Balaji Srinivasan Scholarship			
Balaji Srinivasan	Preeti And Balaji Srinivasan Scholarship	Bhavesh Dhingra	160050108	Computer Science And Engg.
The Patel Family	Hima & Chandrakant C. Patel Scholarship			
Chandrakant Patel	Renjen Scholarship			
Chandrakant Patel	Renjen Scholarship	Saurav Garg	180050093	Computer Science And Engg.
Kishor Trivedi	Shridharbhai Trivedi Scholarship			

Anand Patel	Ratibhai V Patel Scholarship			
Kishor Trivedi	Sridharbhai Trivedi Scholarship			
Kishor Trivedi	Sridharbhai Trivedi Scholarship	Purvi Poonia	190050087	Computer Science And Engg.
Jinesh Vora	Udaykumar Vora Scholarship			
Ruyintan Mehta	Ruyintan & Monica Mehta Scholarship			
B.N. Srinivas	Moon Stone Presents			
Kaushal Patel	Kaushal & Shweta Patel Scholarship	Gaurav Didwania	160050020	Computer Science And Engg.
Kaushal Patel	Kaushal & Shweta Patel Scholarship	Ramya Narayanasamy	170050100	Computer Science And Engg.
B.N. Srinivas	Moon Stone Presents			
B.N. Srinivas	Moon Stone Presents	Rajat Jain	180100091	Computer Science And Engg.
Sunil Grover	True Blue Partners Scholarship			
Chandrakant Patel	The Patel Family Scholarship			
Class of 1990 Scholarship	Class Of 1990 Scholarship			

Rajat Jain	Dalal Scholarship			
Class of 1990 Scholarship	Class Of 1990 Scholarship	Ritika Ritika	180050087	Computer Science And Engg.
Victor Menezes	Nina Menezes Scholarship	Harshal Patil	160070018	Electrical Engg.
Vinod Menon	Vinod Menon Gold Scholarship			
Sanjay Joshi	Narayan And Laxmibai Joshi Memorial Scholarship			
Atul Thakkar	Atul Thakkar Scholarship			
Atul Thakkar	Atul Thakkar Scholarship			
Atul Thakkar	Atul Thakkar Scholarship	Yatish Patil	190070076	Electrical Engg.
Sudhind Dhamankar	Diwakar & Jyoty Dhamankar Scholarship			
Sandeep Bala	Sustainable Energy Scholarship			
Kishor Trivedi	Sridharbhai Trivedi Scholarship			
Kumar Vishwanathan	Smt. Santhi Krishnan Memorial Scholarship			

Kumar Vishwanathan	Smt. Santhi Krishnan Memorial Scholarship	Rishav Ranjan	180070045	Electrical Engg.
Laxminarayana Iyengar	Padma Scholarship			
Manjunath Bhat	Susheela And Subray Bhat Scholarship			
Dhrumil Gandhi	Dr. Jayantilal Gandhi Scholarship			
Dhrumil Gandhi	Dr. Jayantilal Gandhi Scholarship	Fazal Ahmad	160070043	Electrical Engg.
DJ Gandhi	Ee Alumni Scholarship			
Gagan Singh	J.p. Singh Scholarship			
Gagan Singh	J.p. Singh Scholarship	Nutan choudhary	19D070040	Electrical Engg.
Sunil Shah	Smt. Ila Chandrakant Shah Scholarship			
Victor Menezes	Menezes Foundation Scholarship			
Ashutosh Gore	Ee Alumni Sponsored Scholarship1			
Giridharan Iyengar	Mr And Mrs. G. Iyengar Scholarship			

Deepak Kotwal	Deepak Kotwal 1970 Batch Scholarship	jay patil	18B080013	Humanities and Social Sciences
Narendra Joshi	Digamber And Nilima Joshi Scholarship			
Narendra Joshi	Aditya Joshi Scholarship			
IITB HF	Iit Bombay Heritage Fund Scholarship			
Narendra Joshi	Aditya Joshi Scholarship	Kavin Prasath	170100099	Mechanical Engg.
Amol Kirtikar	Kirtikar Class Of 86 Scholarship			
Shubham Singhal	Mr. Rajiv Singhal Memorial Scholarship			
Vinod Menon	Vinod Menon Gold Scholarship			
Sandeep Vijayakar	Mukund Vijayakar Scholarship			
Sandeep Vijayakar	Mukund Vijayakar Scholarship	Rishabh Gupta	190100100	Mechanical Engg.
Kishor Kulkarni	Kishor M. Kulkarni Scholarship With Thanks To Unesco			

Kishor Kulkarni	Kishor M. Kulkarni Scholarship With Thanks To Unesco	Rongali Sai Bhargav	190100102	Mechanical Engg.
Kishor Kulkarni	Kishor M. Kulkarni Scholarship With Thanks To Prof. S. K. Bose, 1st Director Of Iitb			
Rohit Karnik	Apj Abdul Kalam Scholarship			
Rohit Karnik	Apj Abdul Kalam Scholarship	Satyam Raj	190100106	Mechanical Engg.
Ashutosh Gunderia	Ashutosh Gonderia Scholarship			
Raj Singh	Ms Kamaljit K Minhas Scholarship			
MESARG Educationa l Trust	Mr. And Mrs. R. G. Gokhale Scholarship			
MESARG Educationa l Trust	Mr. And Mrs. R. G. Gokhale Scholarship	Sahil Jain	180020087	Mechanical Engg.
Anupam Tiwari	T.c. Tiwari Scholarship			
Anupam Tiwari	T.c. Tiwari Scholarship	Gyandev Gupta	190100051	Mechanical Engg.
Narendra Joshi	D.p. Joshi Scholarship			

Vinod Menon	Dr. P. Remadevi Menon Scholarship			
MESARG Educational Trust	Ramchandra.g.gokhale Scholarship			
MESARG Educational Trust	Ramchandra.g.gokhale Scholarship	Aman Mishra	160100052	Mechanical Engg.
MESARG Educational Trust	Mrs. Prabhat. R. Gokhale Scholarship			
MESARG Educational Trust	Mrs. Prabhat. R. Gokhale Scholarship	Neilabh Banzal	170010014	Mechanical Engg.
Vidyadhar Kulkarni	Vidyakar And Radhika Kulkarni Scholarship			
Shashank Kulkarni	Shashank Kulkarni Scholarship-mechanical			
Deepak Kamath	Kamath Family Scholarship			
Sandeep Vijayakar	Schol :Mr Mukund Vijayakar Schol			
Narendra Joshi	Shubhada Joshi Scholarship-mechanical			
Deepak Kamath	Manohar & Sunita Kamath Scholarship			

Pankaj Shah	Shardaben B. Shah Scholarship			
Anand Garde	Archaeologist Moreshwar Garde Scholarship	Risvan O	180110063	MEMS
Anand Garde	Artist Vinayak Javadekar Scholarship			
Rajesh Radhakrishnan	C Vimala Menon & M.r.k Menon			
Anand Garde	Educator Malati Garde Scholarship			
Anand Garde	Grandma Saraswati Javadekar Scholarship			
Anand Garde	Grandma Yesutai Garde Memorial Scholarship			
Anil Diwan	K. A. L. Kameswari Scholarship			
Bhalchander Vishwanath	Meenakshi Vishwanathnan			
raj pendse	Raj Pendse For Mrs. Jyotsna Pendse			
Subodh Ghonge	Undergraduate Scholarship			

IITB HF	Prof. N.b.ballal Scholarship			
IITB HF	Prof. N.b.ballal Scholarship	Prajwal Patil	190110063	MEMS
Vinod Menon	Vinod Menon Gold Scholarship			
Kirit Bhansal	Kirit Bhansali Scholarship			
Girish Kulkarni	Girish Kulkarni Scholarship			
Girish Kulkarni	Girish Kulkarni Scholarship	Payal Choudhary	190110061	MEMS
Sanjay Agrawal	Agrawal Low Latency Messaging Scholarship			
Yogesh Kher	Inspiration Scholarship			
Dev Purkayastha	Nagesh C Chaudhuri Scholarship	Shashank Kumar Sahu	16d110024	Mechanical Engg.
Narendra Joshi	Narendra Joshi Scholarship			
Dev Purkayastha	Ashish Prasad Nandi Majumdar Scholarship			
Dev Purkayastha	Bijoya Chaudhuri Sholarship			

Kumar Vora	Dattatraya Vishnu Bal Scholarship			
Dev Purkayastha	David J. Dunn Scholarship			
Noorali Walla	Mrs. Minaz Sonawalla Scholarship			
Dev Purkayastha	Himangshushekhar Purkayastha Scholarship			
Dev Purkayastha	Usha Purkayastha Scholarship			
Noorali Walla	Mr Kasamali Virani Scholarship			
Noorali Walla	Mr. Badruddin Sonawalla Scholarship			
Noorali Walla	Mr. Badruddin Sonawalla Scholarship	Krutarth Dhaduk	19D170012	Energy Science and Engineering
Vinod Menon	Vinod Menon Scholarship			
Vinod Menon	Vinod Menon Scholarship	Deepanshu Mahajan	19D170014	Energy Science and Engineering
Vinod Menon	Vinod Menon Scholarship			

Vinod Menon	Vinod Menon Scholarship	Dhir Priyam Singh	18d110003	MEMS
IITB HF	Iit Bombay Heritage Fund Scholarship			
Girish Kamath	Electrical Engineering Department Scholarship	Aishwarya Agarwal	170040118	Electrical Engg.
Deepak Sabnis	Prof. G.n. Revankar Scholarship			
Sukumar Thanawala	Dr. Chandrakant Thanawala Scholarship			
Deepak Sabnis	Prov Mv Hariharan			
George Tharakan	George Tharakan Scholarship			
Girish Kamath	Electrical Engineering Department Scholarship			
D L Shah	D L Shah Trust Scholarship	AMAN SHAIKH	19D070051	Electrical Engg.
D L Shah	D L Shah Trust Scholarship	omprasad vibhute	19D100012	Mechanical Engg.
D L Shah	D L Shah Trust Scholarship	ATHARVA LAGWANKAR	19D100009	Mechanical Engg.

Gautam Advani	Gautam Advani Scholarship	Arpit Menaria	170050057	Computer Science And Engg.
Radhika Rajan	Scholarship Mrs Amrutha Iyengar In Physics, Math, Chem For 5 Yr M.sc. Woman			
anil kumar	Virendra Kumar Scholarship			
Pradeep Anand	T. R.s. Anand And Bhanumati Anand Scholarship			
Pankaj Shah	Shardaben B. Shah Scholarship			
IITB HF	Iitb Alumni At Msft			
Prafulla Nabar	Nalini G. Nabar Scholarship			
Amey Parandekar	Alumni At Microsoft Scholarship			
Arunava Majumdar	M. J. Scholarship			
Raman Rao	Shri Raman K. Rao Scholarship			
Raj Mashruwala	Miss A. J. Majmundar			
Rajendra Agarwal	Rajendra Agarwal For Roopkumar			

	And Surajdevi Agarwal Schol			
Ravi Apte	Dr. Vijaya Apte Memorial Scholarship			
Dwarika Agarwal	Madho And Radha Agarwal			
Sameer Utrankar	Sawali Scholarship	Amey Kavade	18D100004	Mechanical Engg.
IITB HF	Iit Bombay Heritage Fund Scholarship1			
Amey Parandekar	Alumni At Microsoft Scholarship			
Shaleen Khurana	Khurana Scholarship	Shivkumar Modi	19D100011	Mechanical Engg.
IITB HF	Iit Bombay Heritage Fund Scholarship			
D L Shah	D L Shah Trust Scholarship	Tanmay Hiremath	19D070061	Electrical Engg.
Kishor Kulkarni	Dr. Kishor M Kulkarni Scholarship	Gudla Raghunandan Reddy	190010027	Aerospace Engg.
IITB HF	Iit Bombay Heritage Fund Scholarship			
IITB HF	Iit Bombay Heritage Fund Scholarship	Naman Agarwal	19D180017	CESE

D L Shah	D L Shah Trust Scholarship	Suraj Racha	18D110012	MEMS
Sameer Utrankar	Sawali Scholarship			
Avi Nash	Ee Alumni Sponsored Scholarship	Jay Sonawane	19D070026	Electrical Engg.
Sameer Utrankar	Sawali Scholarship			
Avi Nash	Ee Alumni Sponsored Scholarship	Utkarsh Saxena	190260044	Engg. Physics
D L Shah	D L Shah Trust Scholarship	Meghraj Chinchore	19D180008	CESE
IITB HF	Iit Bombay Heritage Fund Scholarship	Dhanush S	19D100006	Mechanical Engg.
IITB HF	M.j. Rao Scholarship	Abhay Goyal	170050007	Computer Science And Engg.
Samir Patel	Patel Scholarship			
Pankaj Shah	Shardaben B. Shah Scholarship_mechanical	Anirudha Singh Mertia	190100016	Mechanical Engg.
Pankaj Shah	Babubhai J. Shah Shah Scholarship			
IITBHF	IITBHF Scholarship			

Dev Purkayastha	Bibha Nandi Majumdar Scholarship			
Vinod Menon	Vinod Menon Scholarship	Aryan Jani	19D100002	Mechanical Engg.
IITBHF	IITBHF Scholarship	Anupradiksha Rajan	160100019	Mechanical Engg.
Yogesh Kher	Inspiration Scholarship	Sachin kumar	19B080022	Humanities and Social Sciences
Anand Garde	Prof. Madhav Garde Memorial Scholarship			
Rajesh Radhakrishnan	Rajesh Radhakrishnan Scholarship			
IITB HF	Iit Bombay Heritage Fund Scholarship			
IITB HF	Iit Bombay Heritage Fund Scholarship	Arjav Shah	160020004	Chemical Engg.
Bharat Desai	Desai Sethi Scholarship	Kavya Bhandari	160070036	
		Pratyush Ragini Singh	16D070046	
		Kochar Dimple Vijay	16D070010	

		Pokkuluri Mohana Madhumita	16D070050	
		Swadha Sanghvi	16D070037	
		Riya Kishor Baviskar	170050011	
		Poorvi R Hebbar	170050094	
		Sanjoli	17D100013	
		Duse Chaitrali Manoj	170260014	
		Manaswi Rajpurohit	170050048	
		Desham Sreya Reddy	180050028	
		Shreya Pathak	180050100	
		Missula Meghana	180050060	
		Khushi Kapadia	180050048	
		Vrinda Jindal	180050120	
		Shabnam Sahay	190050111	
		Surapaneni Sai Vigna	190050121	

		Tulip Pandey	190050125	
		Ilindra Sai Lakshmi Shreya	190050050	
		Palti Ramyasri	190050078	

FELLOWSHIP

I.2. Fellowship detail

NAME OF THE FELLOWSHIP	NAME OF THE STUDENT
SCHINDLER FELLOWSHIP	NISHANT RANJAN
SHRI GIRISH VISHNUPRASAD DESAI AWARD 2019-2020 FOR RESEARCH EXCELLENCE	DIVYA GUPTA
SHRI GIRISH VISHNUPRASAD DESAI AWARD 2019-2020 IN ACADEMIC EXCELLENCE	PRINCE VIJAY
SHRI GIRISH VISHNUPRASAD DESAI AWARD 2019-2020 IN ACADEMIC EXCELLENCE	SOMAPARNA GHOSH
ANSYS FELLOWSHIP	SUBRAT PRADHAN
ANSYS FELLOWSHIP	BEBHASH RAJ
ANSYS FELLOWSHIP	KADARI VINOD KUMAR
ANSYS FELLOWSHIP	ROHINI GULVE
GAURI SHAH FELLOWSHIP	SUKANYA BHATTACHARJEE

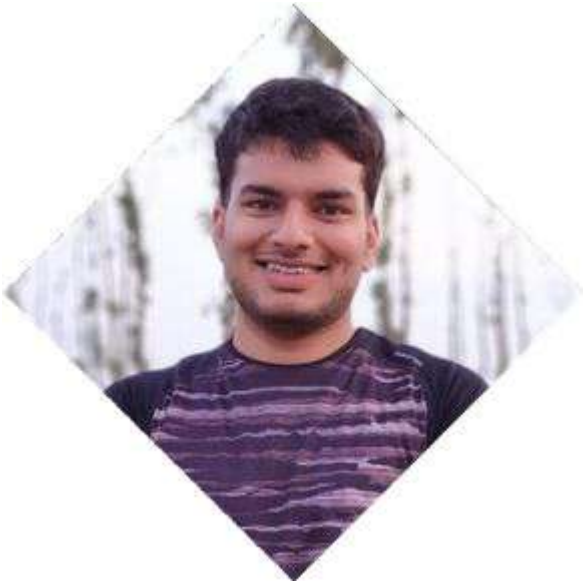
SCHINDLER FELLOWSHIP

Nishant Ranjan

PhD, First year DESE,
IIT Bombay

Name of the guide

Prof. Sandeep Kumar



PLASTIC AND AGRO-WASTE MANAGEMENT USING PLASTIC AND BIOMASS COGASIFICATION

The research focusses on development and study of a robust cogasification system which can handle real-world plastic wastes which posses heterogeneity due to varied plastic proportions and contamination by dirt and colourants along with agro wastes of different types.

The impact of the research would be reducing plastic wastes being littered or being sent to landfills. Landfilling and littering of plastic wastes result in soil, groundwater and water pollution which will be greatly reduced.

SHRI GIRISH VISHNUPRASAD DESAI AWARD 2019-2020 FOR RESEARCH EXCELLENCE

Divya Gupta

PhD, 4th year DESE,
IIT Bombay

Name of the guide

Prof. Anurag Garg

HYDROTHERMAL PRETREATMENT OF MUNICIPAL SOLID WASTE AND ITS COMPONENTS

The research aims at obtaining high calorific value product from wet municipal solid waste along with maximizing energy and resource recovery. Wet biodegradable fraction constitutes a major portion of the MSW (38-72%) in developing countries.

Hydrothermal carbonization (HTC) is similar to natural coalification which can utilise heterogeneous wet organic waste without any pretreatment to produce a homogeneous coal like hydrochar (calorific value upto 30 MJ/kg). Moreover, there is scope for recovery of value added materials from organic loaded process wastewater such as carbohydrates, organic acids, humic like substances, bioethanol or biogas. This process would reduce the amount of waste ending in landfills and reducing the greenhouse gas emissions from waste degradation.

SHRI GIRISH VISHNUPRASAD DESAI AWARD 2019-2020 IN ACADEMIC EXCELLENCE

Prince Vijay
PhD, 2nd year DESE,
IIT Bombay

Name of the guide
Prof. Harish C Phuleria

LONG TERM AIR POLLUTION EXPOSURE ASSESSMENT IN A COHORT OF ADULT WOMEN IN METROPOLITAN CITIES IN INDIA

Currently many urban areas in India, metropolitan areas, in particular, are facing high levels of air pollution, primarily emanating from vehicular sources. The high population density in these cities, coupled with years of exposures to air pollution put a large proportion of the population at risk to adverse long-term health effects of air pollution. There is an urgent need to perform studies in such cities on recent and current exposures, and to use refined exposure assessment tools. The study will investigate long-term exposure to air pollution in three metropolitan cities in India and develop predictive air pollution exposure models.

SHRI GIRISH VISHNUPRASAD DESAI AWARD 2019-2020 IN ACADEMIC EXCELLENCE

Somaparna Ghosh

Ph.D, 2nd year, DESE, IIT Bombay

Name of the guide

Prof. Sanjeev Chaudhari

DEVELOPMENT OF HOUSEHOLD UNIT FOR REMOVAL OF ARSENIC AND IRON FROM DRINKING WATER

Groundwater arsenic pollution is a worldwide concern. South-East Asia is the worst hit by this groundwater menace. The research focuses on the development of a household treatment unit that will be able to efficiently remove arsenic and iron from drinking water based on electrochemical technique. The impact of the research would be providing safe drinking water to people at low cost, who are affected by drinking arsenic contaminated water.

AWARDS AND PRIZES AWARDED DURATION CONVOCATION 2019

I.3. Awards and Prizes During Convocation 2019

Sr. No.	Name	Award	Roll No
1	Srivatsan Sridhar	Prof K C Mukherji Award	150070005
2	Samir Wadhwa	Tulsiram Devidayal, P.M. Natu, Damle Trust Prize	150100024
3	Vegesna Satya Venkata Rama Raju	Tulsiram Devidayal, P.M. Natu, Damle Trust Prize	173100010
4	Kulkarni Anish Kiran	Prof. R.P. Singh Memorial Prize	150260006
5	Triesha Singh	Chandrashekhar Prize	150020026
6	Debayan Sengupta	Shri R Vembu Iyer Memorial Prize	175060001
7	Srivatsan Sridhar	Dilip R Limaye Academic Excellence Award	150070005
8	Puneet Goel	Prof. A.B. Biswas Memorial & Shri Prakash Krishnan Award Prize(M.Sc)	175030022
9	Shalini Srivastava	Dr. Gargi Vishnoi Memorial Prize	111300003
10	Susnata Bhowmick	Prof. Hiralal Memorial Award	15B030029

Sr. No.	Name	Award	Roll No
11	Puneet Goel	Prof. Hiralal Memorial Award	175030022
12	Vegesna Satya Venkata Rama Raju	Shri Ashok Chaturvedi Memorial Prize(M.Tech)	173100010
13	Triveni Prasad Shukla	Prabhulal Bhatnagar Memorial Prize f Award	10409301
14	Garima Thareja	Mrs. Rama Mathur Memorial Prize	175090019
15	Susmi T S	Ajit Shelat Award	16307R012
16	Rishab Anand	Ajit Shelat Award	173070027
17	Chadha Karan Naresh	Bhavesh Gandhi Memorial Prize	140070014
18	Krishna Rijal	Bhavesh Gandhi Memorial Prize	175120004
19	Shashank Vijayakumar Obla	Akshay Dhoke Memorial Award	14D070021
20	Sudip Kumar Das	Prof. K.C. Khilar PhD Award	124020005
21	Tamaghna Chakraborti	Prof. K.C. Khilar PhD Award	114020010

Sr. No.	Name	Award	Roll No
22	Irfan Arif	Prof. K.C. Khilar Prize (M.Tech)	173020045
23	Sandip Mandal	R. G. Manudhane PhD Excellence Award	09302021
24	Shamik Misra	R. G. Manudhane PhD Excellence Award	144020001
25	Rohan Ohri	R. G. Manudhane M.Tech student Excellence Award best in M.Tech Thesis	173020002
26	Arjun Prashant Agrawal	Mr. Pranab Ranjan Sen Award	150110015
27	Kewal S Bhat	Mr. Pranab Ranjan Sen Award	14D110008
28	Triesha Singh	Indira Manudhane Student Excellence Award	150020026
29	Aishani Patnaik	Shubhada Mulekar Joshi Award	173300007
30	Arjun Prashant Agarwal	Prof. S N Sinha memorial award	150110015
31	Garima Thareja	Dr. P.V.Sukhatme Memorial Award	175090019
32	Rati Ludhani	Dr. P.V.Sukhatme Memorial Award	175090027

Sr. No.	Name	Award	Roll No
33	Prasanjit Dubey	Dr. P.V.Sukhatme Memorial Award	175280028
34	Shravana Kumar Yadav	Dr. P.V.Sukhatme Memorial Award	175280011
35	Sudip Kumar	S C Mehrotra Prize	150040080
36	Arkya Chatterjee	K Seshia Research Excellence Award	150260022
37	Chirame Sanket Sanjivan	K Seshia Research Excellence Award	14D260003
38	Simi Karan	Ramesh Chandra Sinha Academic Excellence Award	150100094
39	Asha Dhaka	Manorama Sinha Academic Excellence Award	150110020
40	Dhua Shyamal Kanaila	Malini Vyavahare (Indore) memorial award	163079004
41	Ghag Nandini Dilip Veena	Digamber and Nilima Joshi Award	124083008
42	Arkya Chatterjee	Mrs. Charusheela Dange Award	15026002

LIST OF INSTITUTE AND NAME CHAIR PROFESSORS

I.4. List of Named / Institute Chair Professors

List of Named chair:

Sr. No.	Name	Department	Name of Chair	Effective Date
1	Dr. Rohit Gurjar	Computer Sci. & Engg.	J. R. Issac Assistant Chair	10.09.2018
2	Prof. Kannan Iyer	Mechanical OR Chemical Engg.	L&T Chair	03.05.2018
3	Prof. Kannan Moudgalya	Chemical Engineering	Erach and Meheroo Mehta Advanced Education Technology	03.12.2018
4	Prof. Krithi Ramamritham	Computer Sci. & Engg.	Major Bhagat Singh Rekhi Chair	19.04.2017
5	Prof. Manoj Prabhakaran	Computer Sci. & Engg.	Vijay & Sita Vashee Chair	08.07.2017
6	Prof. Preeti Rao	Electrical Engg.	HAL R&D Chair	03.07.2017
7	Prof. R. Murugavel	Chemistry	Biswas Palepu Distinguished Chair in Department of Chemistry	19.06.2017
8	Prof. Rangan Banerjee	Energy Sci. & Engg.	Forbes Marshall Chair for Energy Science & Engineering	19.09.2017
9	Prof. Ravi Poovaiah	Any Department	D.L. Shah Chair for Innovation	28.08.2017
10	Prof. Rinti Banerjee	Any Department	Madhuri Sinha Chair	11.02.2018
11	Prof. S. Sudarshan	Computer Sci. & Engg.	Subbarao M. Nilekani Chair	04.10.2017
12	Prof. Shireesh Kedare	Energy Sci. & Engg.	Praj Industries Chair for Energy Science & Engineering	17.11.2017
13	Prof. Supratik Chakraborty	Computer Sci. & Engg.	Bajaj Group Chair Professor for Computer Science and Engineering	08.07.2017

Sr. No.	Name	Department	Name of Chair	Effective Date
14	Prof. Y. M. Desai	Civil Engg.	Jitendra K. & Meena J. Mehta Chair for Structural Engineering	19.05.2017
15	Prof. Anil Kumar	Any Department	Class of 1985 Chair for Technology & Sustainable Development	17.11.2017
16	Prof. Asim Tewari	Any Department	G.K. Devarajulu Chair	12.06.2017
17	Prof. D. Parthasarathy	Humanities & Social Sciences	India Value Fund Chair for H & SS Department	02.09.2017
18	Prof. R.O. Dusane	Any Department	P.K. Kelkar Chair for Excellence in Nano Technology	13.12.2016
19	Prof. Ravindra Gudi	Chemical Engineering	Artificial Intelligence and Machine Learning	03.12.2018
20	Prof. S. R. Kotha	Any Department	Pramod Chaudhari Chair for Green Chemistry and Industrial Biotechnology	19.09.2017
21	Prof. Santosh Gharpure	Chemistry	Perfumery Chair	03.12.2018
22	Prof. Shyam R. Asolekar	CESE	Maharashtra Pollution Control Board (MPCB) Chair for Environmental Technologies and Pollution Control	20.11.2018
23	Prof. Soumen Chakraborty	Computer Sci. & Engg.	Halete Family Chair for Artificial Intelligence	23.07.2019
24	Prof. Subhasis Chaudhuri	Electrical Engg.	Kamalnayan Bajaj Chair for Electrical Engineering	03.07.2017
25	Prof. Suhas Joshi	Mechanical Engg.	Rahul Bajaj Chair	12.06.2017

List of Institute Chair Professors

Sr. No.	Name	Department	Effective Date
1	Prof. Dulal Panda	Biosciences & Bioengineering	03.07.2017
2	Prof. Soumyo Mukherjee	Biosciences & Bioengineering	01.04.2016
3	Prof. Suparna Mukherji	CESE	09.11.2018
4	Prof. B.K. Mohan	CSRE	06.04.2016
5	Prof. K.V. Venkatesh	Chemical Engineering	17.11.2017
6	Prof. Jayesh Bellare	Chemical Engineering	04.10.2017
7	Prof. A.K. Suresh	Chemical Engineering	04.10.2017
8	Prof. Anurag Mehra	Chemical Engineering	12.04.2018
9	Prof. C.P. Rao	Chemistry	19.06.2017
10	Prof. K. P. Kaliappan	Chemistry	19.06.2017
11	Prof. R.B. Sunoj	Chemistry	19.06.2017
12	Prof. G. K. Lahiri	Chemistry	19.06.2017
13	Prof. M. Ravikant	Chemistry	07.06.2017
14	Prof. D.N. Singh	Civil Engineering	19.05.2017
15	Prof. M. C. Deo	Civil Engineering	19.05.2017
16	Prof. B.V.S. Viswanadham	Civil Engineering	02.05.2017
17	Prof. T.I. Eldho	Civil Engineering	12.01.2018
18	Prof. Deepankar Choudhury	Civil Engineering	18.10.2017
19	Prof. Sunita Sarawagi	Comp. Sci. & Engg.	19.04.2017
20	Prof. Kanchan Pande	Earth Sciences	19.05.2017
21	Prof. Santanu Banerjee	Earth Sciences	03.05.2018

Sr. No.	Name	Department	Effective Date
22	Prof. Sauvik Mahapatra	Electrical Engg.	03.07.2017
23	Prof. D. Manjunath	Electrical Engg.	03.07.2017
24	Prof. V. S. Borkar	Electrical Engg.	02.08.2017
25	Prof. Harish Pillai	Electrical Engg.	09.05.2018
26	Prof. Vivek Agarawal	Electrical Engg.	09.11.2018
27	Prof. Kishore Chatterjee	Electrical Engg.	13.11.2018
28	Prof. S.A. Soman	Electrical Engg.	13.11.2018
29	Prof. Santanu Bandyopadhyay	Energy Science	19.05.2017
30	Prof. Rowena Robinson	HSS	09.11.2016
31	Prof. Malhar Kulkarni	HSS	22.11.2018
32	Prof. K. Ramasubramanian	HSS	22.11.2018
33	Prof. B. Bandyopadhyay	System & Control Engg.	29.01.2018
34	Prof. Sudhir Ghorpade	Mathematics	18.05.2017
35	Prof. Amiya K. Pani	Mathematics	18.05.2017
36	Prof. Jugal K. Verma	Mathematics	25.04.2018
37	Prof. K. P. Karunakara Poopathi	Mechanical Engg.	12.06.2017
38	Prof. M. V. Rane	Mechanical Engg.	19.09.2017
39	Prof. B. Ravi	Mechanical Engg.	19.09.2017
40	Prof. Amit Agrawal	Mechanical Engg.	05.10.2018
41	Prof. Milind D. Atrey	Mechanical Engg.	04.05.2017
42	Prof. A. R. Kulkarni	Met. Engg. & Mat. Sci.	01.08.2017

Sr. No.	Name	Department	Effective Date
43	Prof. V. S. Raja	Met. Engg. & Mat. Sci.	01.08.2017
44	Prof. I. Samajdar	Met. Engg. & Mat. Sci.	26.08.2017
45	Prof. B. P. Singh	Physics	13.08.2017
46	Prof. Punit Parmananda	Physics	17.11.2017
47	Prof. A.V. Mahajan	Physics	17.11.2017
48	Prof. P. Ramadevi	Physics	23.04.2018
49	Prof. S. Bhargava	SJMSOM	26.08.2017
50	Prof.Dipendra Prasad	Mathematics	17.07.2019
51	Prof. M. Radhakrishna	Earth Sciences	28.06.2019

LIST OF YOUNG FACULTY AWARD RECIPIENTS

I.5.List of Young Faculty Award Recipients

Sr. No.	Name of Employee	Department	Amount
1	Debjani Paul	Bio-sci Bio-eng	400,000.00
2	Srikanth Srinivasan	Maths Dept.	100,000.00
3	Hari Varma	Bio-sci Bio-eng	100,000.00
4	Manjesh Hanawal	I.E. & O.R.	100,000.00
5	Vivek Sangwan	Mech. Eng.	100,000.00
6	Varun Bhalerao	Physics Dept.	100,000.00
7	Shantanu Tripathi	Mech. Eng.	100,000.00
8	Pradip Kalbar	Urban Sci & Eng	100,000.00
9	Sunita Srivastava	Physics Dept.	100,000.00
10	Sunita Srivastava	Physics Dept.	100,000.00
11	Preethi Jyothi	Comp Sci & Eng.	100,000.00
12	Preethi Jyothi	Comp Sci & Eng.	100,000.00
13	Swati Bhattacharya	Chemical Eng.	100,000.00
14	Leela Panchakarla	Chemistry Dept	100,000.00
15	Sharmistha Saha	Humanities & SS	100,000.00
16	Anish Modi	Enrgy Sci & Eng	100,000.00
17	Sugandh Malhotra	I.D.C	100,000.00
18	Lalit Kumar	Enrgy Sci & Eng	100,000.00
19	Manish Kumar	Civil Eng.	100,000.00
20	Ahonaa Roy	Humanities & SS	100,000.00
21	Sujit Jogwar	Chemical Eng.	100,000.00
22	Amber Shrivastava	Mech. Eng.	100,000.00
23	Anush Kapadia	Humanities & SS	100,000.00
24	Kasturi Saha	Electrical Eng.	100,000.00

Sr. No.	Name of Employee	Department	Amount
25	Nagamani Jaya Balila	M.E.M.S.	100,000.00
26	Neha Gupta	Humanities & SS	100,000.00
27	Sai Vinjanampathy	Physics Dept.	100,000.00
28	Siddharth Tallur	Electrical Eng.	100,000.00
29	Ronnie Sebastain	Maths Dept.	100,000.00
30	Arun Iyer	Humanities & SS	100,000.00
31	Amritanshu Shriwastav	C.E.S.E.	100,000.00
32	Amritanshu Shriwastav	C.E.S.E.	100,000.00
33	Soumya Bera	Physics Dept.	100,000.00
34	Shobhna Kapoor	Chemistry Dept	100,000.00
35	Sumiran Pujari	Physics Dept.	100,000.00
36	Suddhaseel Sen	Humanities & SS	100,000.00
37	Narendra Shiradkar	Electrical Eng.	100,000.00
38	V.S.S. Pavan Kumar Hari	Enrgy Sci & Eng	100,000.00
39	Sandeep Kumar	Enrgy Sci & Eng	100,000.00
40	Jahnavi Punekar	Earth Sciences	100,000.00
41	Janani Srree Murallidharan	Mech. Eng.	100,000.00
42	Shashi Ranjan Kumar	Aerospace Eng.	100,000.00
43	Sanjoy Pusti	Maths Dept.	100,000.00
44	Ritayan Mitra	Edu. Technology	100,000.00
45	Manish Pande	M.E.M.S.	100,000.00
46	Deepak Marla	Mech. Eng.	100,000.00
47	Deepak Marla	Mech. Eng.	100,000.00
48	Rashmi Gupta	Humanities & SS	100,000.00
49	Anshuman Kumar	Physics Dept.	100,000.00

Sr. No.	Name of Employee	Department	Amount
50	Anshuman Kumar	Physics Dept.	100,000.00
51	Sudipta Dasgupta	Earth Sciences	100,000.00
52	Riddhi Singh	Civil Eng.	100,000.00
53	Chandan Dasgupta	Edu. Technology	100,000.00
54	Balamurugan Palaniappan	I.E. & O.R.	100,000.00
55	Anirban Patra	M.E.M.S.	100,000.00
56	Basudev Biswal	Civil Eng.	100,000.00
57	Achintya Dutta	Chemistry Dept	100,000.00
58	Amrita Bhattacharya	M.E.M.S.	100,000.00
59	Krishnendu Haldar	Aerospace Eng.	100,000.00
60	Amuthan Ramabathiran	Aerospace Eng.	100,000.00
61	Pramod Murali	Electrical Eng.	100,000.00
62	Prasad Bokil	I.D.C	100,000.00
63	Vivek Kant	I.D.C	100,000.00
64	Debanjana Mitra	Maths Dept.	100,000.00
65	Rahul Maitra	Chemistry Dept	100,000.00
66	Amber Jain	Chemistry Dept	100,000.00
67	Pennan Chinnasamy	C.T.A.R.A.	100,000.00
68	Avradeep Pal	M.E.M.S.	100,000.00
69	Avishek Ranjan	Mech. Eng.	100,000.00
70	Karthik Sasihithlu	Enrgy Sci & Eng	100,000.00
71	Albert Thomas	Civil Eng.	100,000.00
72	Biplab Banerjee	C.S.R.E.	100,000.00
73	Aditi Chaubal	Humanities & SS	100,000.00
74	Dwaipayan Mukherjee	Electrical Eng.	100,000.00

Sr. No.	Name of Employee	Department	Amount
75	Mithun Chowdhury	M.E.M.S.	100,000.00
76	Anand Singh	Earth Sciences	100,000.00
77	Eswar Rajasekaran	Civil Eng.	100,000.00
78	Ramkumar Rajendran	Edu. Technology	100,000.00
79	Asish Sarangi	Enrgy Sci & Eng	100,000.00
80	Sakthi Chinnasamy	Earth Sciences	100,000.00
81	Avinash Bhardwaj	Mech. Eng.	100,000.00
82	Avinash Bhardwaj	Mech. Eng.	100,000.00
83	Harsha Hutridurga Ramaiah	Maths Dept.	100,000.00
84	Harsha Hutridurga Ramaiah	Maths Dept.	100,000.00
85	Rohit Gurjar	Comp Sci & Eng.	100,000.00
86	Rohit Gurjar	Comp Sci & Eng.	100,000.00
87	Soham Mujumdar	Mech. Eng.	100,000.00
88	Dipanshu Bansal	Mech. Eng.	100,000.00
89	Swati Pal	I.D.C	100,000.00
90	Pramod Kumar	Physics Dept.	100,000.00
91	Amit Singh	Mech. Eng.	100,000.00
92	Hridis Kumar Pal	Physics Dept.	100,000.00
93	Swatantra Pratap Singh	C.E.S.E.	100,000.00
94	Arun Mascarenhas	I.D.C	100,000.00
95	Satish Maurya	Earth Sciences	100,000.00
96	Karthikeyan Lanka	C.S.R.E.	100,000.00
97	Manoranjan Sahu	C.E.S.E.	100,000.00
98	Abhishek Chakraborty	C.E.S.E.	100,000.00
99	Abhijit Gogulapati	Aerospace Eng.	100,000.00

Sr. No.	Name of Employee	Department	Amount
100	Saptarshi Ghosh	Humanities & SS	100,000.00
101	Piyush Pandey	SJM Sch of Mgnt	100,000.00
102	Prabhir Vishnu Poruthiyil	CPS	100,000.00
103	Ankit Jain	Mech. Eng.	100,000.00
104	Rohan Chinchwadkar	SJM Sch of Mgnt	100,000.00
105	Vijayshankar Dandapani	M.E.M.S.	100,000.00
106	Saikat Mazumdar	Maths Dept.	100,000.00
107	Venkata Sai Vamsi Botlaguduru	C.E.S.E.	100,000.00
108	Monika Bhattacharjee	Maths Dept.	100,000.00
109	Mrinal Kumar	Comp Sci & Eng.	100,000.00
110	Deepoo Kumar	M.E.M.S.	100,000.00
111	Dhwanil Shukla	Aerospace Eng.	100,000.00
112	Tabish Nawaz	C.E.S.E.	100,000.00
113	Jason Picardo	Chemical Eng.	100,000.00
114	Anupam Guha	CPS	100,000.00
115	Susmita Naskar	Aerospace Eng.	100,000.00
116	Bharatkumar Suthar	Chemical Eng.	100,000.00
117	Nitin Kumar	Physics Dept.	100,000.00
118	Ishita Sengupta	Chemistry Dept	100,000.00
119	Chidambar Kulkarni	Chemistry Dept	100,000.00
			12,200,000.00

DISTINGUISHED ALUMNUS AWARDS

(2019)

I.6. Distinguished Alumnus Awards (2019)

Prof. Varadarajan V. Chari

B.Tech., 1974,

Chemical Engineering

Prof. Varadarajan V. Chari is Paul Frenzel Land Grant Professor of Liberal Arts in the University of Minnesota and adviser at the Federal Reserve Bank of Minneapolis. He is also the Founding Director of Heller-Hurwicz Economics Institute. He earned his B.Tech. degree in Chemical Engineering from IIT Bombay in 1974 and PhD degree from Carnegie- Mellon University in 1980.

After graduating from IIT Bombay, Prof. Chari worked as a Production Engineer at Union Carbide (India) Limited from 1974 to 1976. After completing his Ph.D. degree from Carnegie-Mellon University in 1980, he joined the J. L. Kellogg Graduate School of Management, Northwestern University as an assistant professor of managerial economics. In 1986 he moved to the Federal Reserve Bank of Minneapolis where he eventually became senior research officer and economic advisor. In 1992 he returned to the Kellogg Graduate School of Management as Harold H. Hines, Jr. Professor of Risk Management.

Sharing his professional experience, Prof. Chari said "When I graduated from IIT, I joined Union Carbide in Bombay and was a Production Engineer at their ethylene cracking plant for two years. Even though I had never taken any economics courses at IIT, somehow, I was admitted to the economics program at Carnegie. That was a stroke of luck since Carnegie was the hotbed of modern macroeconomics at the time. My adviser, Edward Prescott went on to win the Nobel Prize, as did Lars Hansen who was also on my committee, and Robert Townsend, also on my committee, is on most people's short list to win the prize. My first job after that was at the Kellogg school at Northwestern. That was a stroke of luck too, as Kellogg was a hotbed of game theory. One of my colleagues there has won the Nobel Prize, and others will soon as well. Eventually, I ended up at the best economics department in the world, Minnesota!"

Prof. Chari is regarded as one of the leading economists analyzing optimal fiscal and monetary policy. He has authored over 100 papers and a book. Several of his papers are required reading in the best graduate schools across the world. He has invented solution concepts in economics including 'Sustainable equilibrium, and Sophisticated equilibrium', which are now part of the standard toolkit of economists seeking to describe optimal policy. Prof. Chari has taught over 1000 Ph.D. students in economics, and served as principal adviser to approximately 100 Ph.D. students. The

Institute 'Heller Huwicz Economics Institute' founded by Prof. Chari at the University of Minnesota has raised over $15 million to support economic research.

Prof. Chari has many awards and honours to his credit which include: Fellow, Econometric Society (1999); Scholar of the College, College of Liberal Arts, University of Minnesota (2008-11); President of the Midwest Economics Association (2006-07); and has been invited to deliver 25 Keynote Addresses.

Opportunity knocks at every door, including yours. Be on the alert, and hear the knock when it comes. Seize it, work hard knowing that you will fail the first dozen times. Be kind to all, especially those who report to you. Serve the community. Know that your success is entirely due to those around you, your family, your country, and the world.

Special Memories Associated with IIT Bombay

"A small group of us at IIT launched the first Mood Indigo Festival in the early 1970s. We never dreamed that it would be the grand event of today! In between Workshop and Fluid Mechanics, I somehow found the time to participate in debates and quiz bowls. We managed to get gold medals in both the Inter IIT competition twice. I still have fond memories of Professors Kamath and Patwardhan, and many others in the faculty, and especially fond memories of the wonderful friends I made. The memories of the food in the mess halls is perhaps not so pleasant!".

Prof. Janat Shah

B.Tech., 1980,

Mechanical Engineering

Prof. Janat Shah is the Director of Indian Institute of Management (IIM) Udaipur since 2011. He obtained his B.Tech. degree in Mechanical Engineering from IIT Bombay in 1980, and is a Fellow in Operations Management from Indian Institute of Management Ahmedabad (1989).

After graduating from IIT Bombay, Prof. Shah worked with Neeka Tubes Ltd., as Planning Manager from 1980-82 and with Jaydeep Engineering Pvt. Ltd. in Ahmedabad as Joint Managing Director from 1982-85, then did his Fellow programme in Operations Management from Indian Institute of Management Ahmedabad in 1989.

Before joining IIMB, Prof. Shah was Assistant Professor of Production and Operations Management with the Institute of Rural Management in Anand from 1989 to 1991.

Prof. Shah had joined Indian Institute of Management Bangalore (IIMB) as Assistant Professor of Production and Operations Management in 1991. He was appointed as Associate Professor in 1996 and Professor in 2001. At IIMB, during 2007-09, he was the Chairperson, Centre for Supply Chain Management and Chairperson, Post Graduate Programme (PGP) during 1999-2002.

Under the leadership of Prof. Shah, IIM Udaipur has achieved multiple milestones in less than ten years including its position being listed on the QS 2020 Masters in Management (MIM) Rankings as well as the Financial Times (FT) MIM Ranking 2019, recognized globally as key indicators of excellence for a B-school. IIMU is the youngest B- school in the world on both these rankings.

I n less than ten years since its establishment, IIM Udaipur has arrived on the global education scale by gaining accreditation from the Association to Advance Collegiate Schools of Business (AACSB). With this accreditation, the institute has joined the elite group of 5 percent of the world's B-schools to gain this prestigious distinction. IIM Udaipur was first among the second-generation IIMs to move to the new campus in 2016. The institute is consistently ranked in top 15 management schools in the country by NIRF and first among the second-generation IIMs and ranked in the top 5 management schools in research in India, according to the methodology used by UT Dallas.

Prof. Shah has held international faculty positions including Honorary Professor, Nottingham Business School, UK (2007- present); Visiting Professor, The Logistics Institute, NUS, Singapore (2001); Visiting Researcher, The Sloan School, MIT, Boston, (1997), and professional leadership including Chairperson, CII SCM Certification Committee from 2011; CII National Logistics Council from 2010; President, Society of Operations Management (2 0 0 7 - 1 0) ; Member , Society of Operations Management Executive Council (2005-07).

Prof. Shah has served as Chairman of AIB Management Studies, AICTE from 2017; Chairperson of EADS- SMI Chair Advisory Council (2009-11); Member on Board of Governors, IIM Bangalore (2005 - 07) ; Department Chair of Production & Operations Management, IIM Bangalore (2004-06); Member of Executive Education Committee, IIM Bangalore (2004-06); and Member of PGP Review Committee, IIM Bangalore (2004). He was also a member on the editorial board of International Journal of Procurement Management (2009-12).

As Chairman, AIB Management Studies, AICTE, Prof. Shah has been able to influence the board for creating the system of graded autonomy f o r management educational institution. As an author, Prof. Shah has written Supply Chain Management: Text and Cases which was published by Pearson Education, India and as a researcher, he has contributed to multiple prestigious management journals which are recognized internationally. Some of these journals include: European Journal of Operations Research; International Journal of Production Economics; Journal of the Operational Research Society; and Operations Research Letters.

Since September 2018, Prof. Shah has been serving as the President of Seva Mandir's board. Seva Mandir addresses the problems of resource management, livelihoods improvement and village- level governance in 700 rural villages in southern Rajasthan.

Prof. Shah has received Best Faculty- Overall: Student Award (1999); IBM Faculty Award (2008, 2005 and 2004); Prof. M.C. Puri Award, Operational Research Society of India (2017) and Change Maestro and Institution Builder of the Year Award by Industry Academia Conference (2018).

Hard work, long-term orientation, empathy and compassion for the people around you.

Special Memories Associated with IIT Bombay

"IIT Bombay was considerably different from the sheltered life I had while growing up in Ahmedabad. My experience at IIT Bombay opened up the world to me. The outstanding faculty at the Institute influenced my thinking and helped me develop a broader perspective on a whole range of issues. I also have fond memories of hostel life at IIT Bombay. I got the opportunity to make lifetime friends at the Institute".

Mr. Surendra Murlidhar Vaidya

B.Tech., 1983,

Metallurgical Engineering

Mr. Surendra Murlidhar Vaidya is the Executive Vice President and Business Head of Godrej Aerospace, a unit of Godrej & Boyce Mfg. Co. Ltd.

After graduating in Metallurgical Engineering from IIT Bombay in 1983, Mr. Vaidya chose to work in India and started his career as a welding engineer and developed ASME 'U' stamp capable welding practice for pressure vessels, heat exchangers, reactors and then got into special processes l ike heat treatments, chemical processing for systems used in nuclear, defence and space organizations.

Mr. Vaidya has set up a new business in aerospace – Godrej Aerospace in 1985, which has achieved important standards including AS-9100, ISO 14001, OHSAS

18001, NADCAP and ISO27001 and has become one of the trusted suppliers of critical components and assemblies to aerospace primes like Boeing, Airbus, Safran, Eaton, Moog, GE and Rafael etc. Godrej Aerospace has about 25 unique process and technologies for aerospace and defence.

Mr. Vaidya and his team have also set up a Centre of Excellence for sheet metal brackets used in aircraft engines. Mr. Vaidya cherishes the unique experience of development of Vikas Engine, Cryo engines, BrahMos sub- systems from scratch and developing not only manufacturing processes but also testing and accelerated acceptance test. According to him, bridging the gap between blueprint to blue skies has become an enriching knowledge for him and his team.

A strong metallurgical background has helped Mr. Vaidya is developing welding techniques in almost all alloys used in the industrial environment of Al, Ni, Cu, Fe, Ti, Co... and in varying thickness for aerospace, defence, oil and petroleum, chemical and fertilizers industry. He has unique experience in joining dissimilar metals with conventional arc welding processors, EB welding and non- conventional processes like friction welding and explosive cladding. MIG welding of aluminum up to 70mm thickness was a unique achievement.

Mr. Vaidya's contribution to his field of work also includes his expertise on electrochemical and chemical processes for aerospace defence and chemical industries. Electro polishing of large reactors up to 4 meters diameter and 30

meters long without brush technique was developed and product ionised without help

from any agency. His extensive work includes developing technology and simplifying work practices for Earth storable, cryogenic engines, missile engines, thrusters for satellites, BrahMos missiles and many parts/ sub-systems of aircrafts, and aircraft engines. Strategic development of aerospace as a product line and setting up an independent division from scratch i.e. infrastructure, team, systems, suppliers and customers and making this venture profitable with good product mix and long-term agreements and successfully providing vision for next 10 years is commendable.

Mr. Vaidya has many awards to his credit including Defense Technology Absorption Award – DRDO (2009 and 2018); TPM Excellence Award "Category A" JIPM, Japan (2013); The Best Industry Award from BrahMos (2013); Award for significant contribution and valuable support as an industry partner to meet the target of handing over of BrahMos Missiles System (2007); Award for excellence in Aerospace Indigenization – SIATI (2004). He has been awarded by the Aeronautical Society of India for development of Cryo Engine Technology for ISRO and also won Indira Engineering Excellence Awards as a symbol of excellence and a tribute to leadership in March 2009.

Nation building should be the prime focus for all of us and we should devote our full efforts and never say No to such noble cause and unique opportunities.

Special Memories Associated with IIT Bombay

My memories are still strong from the day of counselling, followed by admission and my first day at hostel 6 to getting used to the IIT environment of very high competition. Memories of Freshers Night to Mood Indigo and cultural activities, treks and sports in hostel and in gymkhana are still alive. Lush green campus near the Powai lake and hills at the backdrop with huge pipelines cutting across, big screen in convocation hall and presence of cows and buffaloes makes me nostalgic. These 5 years were probably the best I could get. Finally, selling of tube-light sander pairing them for hostel mates for a glass of lassi was a pleasure."

Dr. Mayuresh V. Kothare

B.Tech., 1991,

Chemical Engineering

Dr. Mayuresh Kothare is Chairman, and R. L. McCann Professor of Chemical Engineering and Bioengineering at Lehigh University, United States.

Dr. Kothare earned his B. Tech degree in Chemical Engineering from IIT Bombay in 1991 with a silver medal, M.S. and Ph.D. degrees in chemical engineering from the California Institute of Technology, Pasadena, CA, in 1995 and 1997, respectively.

He was a Research Assistant with the Swiss Federal Institute of Technology (ETH), Zurich, Switzerland during 1994- 96; a Visiting Scholar in electrical engineering at Purdue University (1995) and chemical engineering at the City College of New York, New York (1997); and a Postdoctoral Researcher with Mobil Oil Corporation (1997-98). His primary professional experience began as Assistant Professor of Chemical Engineering at Lehigh University (1998- 2003), Associate Professor (2003-08), Professor (2008-12) and Chairman of the Department of Chemical and Biomolecular Engineering (from 2012). He has held a Visiting Professor appointment in Biomedical Engineering at Johns Hopkins (2008-12). He was conferred the title of Guest Professor (2012-15) at East China University of Science and Technology, Shanghai.

Dr. Kothare has also served on review panels for proposals submitted to the US National Science Foundation, NASA, American Chemical Society, Swiss National Science Foundation and Dutch Technology Foundation. He has served as Associate Editor for the IEEE Transactions on Automatic Control, Automatica, IEEE Transactions on Systems, Man and Cybernetics: Systems, as Deputy Editor-in-Chief for IFAC Papers Online, and as Guest Editor for Journal of Process Control.

Dr. Kothare's research is focused on the theory of dynamical modeling, systems analysis and optimal control with applications as an experimental demonstration in microchemical systems, chemical process control and biomedical/neuro-engineering systems. His publications have not only had impact in chemical engineering research but have also been recognized as important contributions in other engineering disciplines including mechanical, electrical, aerospace and civil engineering. His research has resulted in 1 research monograph, 2 book chapters, over 140 refereed journal publications and archival conference proceedings, 80 technical abstracts, 5 issued US patents and 1 pending patent

application. One of his key theoretical contributions has been in the area of robustness analysis and synthesis of model-based constrained predictive controllers using Semi-Definite Programming. Other theoretical contributions include stability analysis and optimal controller synthesis for systems with actuator constraints using convex/ linear and bilinear matrix inequalities. On the experimental side, his work on modeling, design and control of microchemical systems and the use of embedded controller architectures for "controller-on-chip" applications has resulted in 4 US patents, of which one was licensed to industry. More recent experimental work has involved the design and commercial development of compact medical oxygen concentrators for rehabilitation therapy of patients with pulmonary disease. This work resulted in two US patents and led to the formation of a company for pursuing commercial product development.

Dr. Kothare, is a recipient of Reliance Heat Transfer Pvt. Ltd. Prize, J. N. Tata Endowment prize for outstanding students pursuing graduate studies outside India (1991); Sumant Mulgaonkar Memorial Award given by the Jamsetji Tata Trust, India, for demonstrating academic excellence (1991); Ted Peterson Graduate Student Paper Award, Computing and Systems Technology (CAST) division of AIChE (2000); P. C. Rossin Assistant Professorship, Lehigh University (2001- 03); Frank Hook Assistant Professorship (2002-04) and Alfred Nobel Robinson Award, Lehigh U. (2002); US National Science Foundation CAREER Award (2002-07); R. L. McCann Professorship,

Lehigh University (2004-present); one of 82 participants (age 30-45), 14th Frontier of Engineering Workshop of the US National Academy of Engineering (2008); IEEE Fellow (2012); AIChE

Fellow (2018); Guest Professorship, E. China U. of Sci. Tech., Shangai (2012-15); listed in most-cited researchers in Electrical and Electronics Engineering, Shanghai Global Ranking (2016); and inaugural speaker, Distinguished Lecture Series in Control Science and Engineering, Zhejiang University.

Perseverance when faced with adversity, respect for co-workers, openness to diversity of ideas when addressing complex problems, balancing a puristic viewpoint with pragmatism.

Special Memories Associated with IIT Bombay

"My favorite memories as a student at IIT Bombay have been the strong bonds and friendships I developed at my hostel - H4, and also with students in Chemical Engineering and other departments at other hostels. The challenging and gruelling course work was a natural reason to work in groups, learn from other students and in the process, build deep personal bonds. Late night chat sessions at the hostel (these were real "chats" in person in the pre-internet/ smart phone era, not the present day" online" ones on the internet!!) were a highlight and a great relief valve from the constant and high- intensity academic load. Breakfast was the highlight and best meal of the day, and walking to Chinese corner late at night provided for some night-time nutrition. What remains memorable to this day is the diversity of talent and raw intellect in the student population that the Institute was able to attract to campus and this made everyone humble and respectful to each other."

Prof. Gaurav S. Sukhatme

B.Tech., 1991,

Computer Science and Engineering

Prof. Gaurav S. Sukhatme is Professor of Computer Science, Electrical and Computer Engineering at the University of Southern California (USC). He holds the Fletcher Jones Foundation Endowed Chair in Computer Science and serves as the Executive Vice Dean at the USC Viterbi School of Engineering. He obtained his B.Tech. in Computer Science and Engineering from IIT Bombay in 1991, and M.S. and Ph.D. degrees in Computer Science from the University of Southern California (USC) in 1993 and 1997 respectively.

After a brief postdoc at USC, Prof. Sukhatme joined there as a faculty member. Presently, he is a Professor and Co- Director of the USC Robotics Research Laboratory. He is also Director of the USC Robotic Embedded Systems Laboratory, which he founded in 2000. Prof. Sukhatme was the Chairman of the Computer Science department at USC from 2012-17. He is one of the founders of the Robotics: Science and Systems conference. He was program chair of the 2008 IEEE International Conference on Robotics and Automation and the 2011 IEEE/ RSJ International Conference on Robots and Systems – the two largest academic conferences in the field. He serves as the Editor-in-Chief of the Springer Nature journal, Autonomous Robots, and has served in the past as Associate Editor of the IEEE Transactions on Robotics and Automation, the IEEE Transactions on Mobile Computing, and on the editorial board of IEEE Pervasive Computing.

Prof. Sukhatme's research has focused on networked robots, learning robots and f ield robotics. He has published extensively in these and related areas. He has served as the Principal Investigator on numerous NSF, DARPA and NASA grants and was a Co-PI on the Center for Embedded Networked Sensing (CENS), an NSF Science and Technology Center. He is recognized for formulating and solving problems in the design of networked robotic systems. His lab has produced novel work in the applications of robotic systems that plan and learn. These have found use in monitoring the natural ecosystem, particularly the aquatic environment. Recently, his research group has been active in the area of robot grasping and manipulation, using tools from estimation, learning, and motion planning.

Prof. Sukhatme is a Fellow of AAAI (2018) and a Fellow of IEEE (2010). He is a recipient of the Okawa Foundation Research Award (2006), NSF Career Award (2002), and the Jet Propulsion Laboratory Research Award (2000).

Learning keeps the mind young.

Special Memories Associated with IIT Bombay

"The dedication of the faculty in CSE and the Institute at large is an abiding memory for which I am grateful. I fondly remember the unparalleled fun and warmth of Hostel 8 (and another hostel I frequented). The friendships made in those four short years will always be with me".

Prof. Kavita Ramanan

B.Tech., 1992,

Chemical Engineering

Prof. Kavita Ramanan is a Professor of Applied Mathematics at the Brown University. She obtained her B.Tech. degree in Chemical Engineering from IIT Bombay in 1992 and M.Sc. in Applied Mathematics from Brown University in 1993.

Prof. Ramanan obtained her PhD in Applied Mathematics from Brown University in 1998 and was subsequently a post-doctoral fellow at the Technion in Haifa, Israel. She then worked as a member of technical staff at the Mathematical Sciences Center at Bell Laboratories before returning to academia as Associate Professor at the Mathematical Sciences Department of Carnegie Mellon University. She moved to Brown University as Professor of Applied Mathematics, where she has served as the Director of Graduate Studies and Associate Chair. She was made the Roland Dwight George Richardson University Professor of Applied Mathematics in 2018.

Prof. Ramanan's research interest lies in the field of probability theory, stochastic processes and their applications. She has pioneered new mathematical techniques for the study of networks of randomly evolving interacting processes and the development of tractable approximations that provides insight into a range of random phenomena arising in wireless communications, chemical reaction networks, the spread of diseases, neuronal networks and phase transitions in statistical physics. She has also made fundamental contributions to the theory of large deviations, which allows one to estimate probabilities of rare events, and its applications to high-dimensional data analysis and asymptotic convex geometry.

Prof. Ramanan is passionate about outreach, and founded the Math CoOp, a group that develops open-access math presentations for students at all levels, ranging from elementary school to undergraduates. She is also on the American Mathematical Society' s Student Mathematics Library Editorial Committee as a corresponding editor for the mathematics magazine 'Bhavana'. She is the faculty founder of the Student Chapter of the Association for Women in Mathematics at Brown University, which seeks to encourage and provide support to underrepresented students interested in the mathematical sciences.

She has four patents to her name and currently serves as the Deputy Director of the Institute for Computational and Experimental Research in Mathematics (ICERM) in Providence, Rhode Island. She also serves on the scientific advisory boards of ICERM and the Oxford- Imperial Centre for Doctoral training, and is an elected member of the

Executive council of the Association for Women in Mathematics.

Prof. Ramanan is elected Fellow of Institute of Mathematical Statistics (2013); American Mathematical Society (2018); Institute for Operations Research and the Management Science (2018); and American Association for the Advancement of Sciences (2019). She has been awarded a Simons Fellowship - 2018; the IMS Medallion Lecture – 2015; the Erlang Prize from the Applied Probability Society of INFORMS for "Outstanding contributions to applied probability" in 2006. She has also won the Stella Dafermos award in 1996 and was granted the Simon Ostrach Fellowship (1995-96).

"I do not have a mantra for success, as this is perhaps not what I would recommend aspiring to, but instead I have some for fulfillment:

Special Memories Associated with IIT Bombay

"Down IITB Nostalgia Lane - Playing basketball on bright floodlit courts at night. chasing lizards out of rooms of friends in a fright, running around the lake with hyenas howling, aware there may also be a leopard prowling, traveling to Delhi for an Inter-IIT meet, sitting atop the train instead of in my seat, riding the lows of a loss, the highs of a win, attending X'mas mass in church with coach Edwin, being inspired by UVS' teaching style, not getting much from "Glass blowing" in the mean while!

Mr. Abidali Z. Neemuchwala

M.Tech., 1992,

Industrial Management

Mr. Abidali (Abid) Z. Neemuchwala is Chief Executive Officer and Managing Director of Wipro Limited. He is overseeing more than $8 billion in revenue and over 182,000 employees serving clients across six continents. Mr. Neemuchwala obtained his master's degree in Industrial Management from IIT Bombay in 1992 and bachelor's degree in Electronics and Communication from Nation Institute of Technology, Raipur.

Mr. Neemuchwala has over 27 years of experience in the IT services industry with deep operational knowledge and broad strategic insight in building and scaling businesses. In 1992, he joined Tata Consultancy Services where he served for 23 years. Mr. Neemuchwala joined the organization during a time of acceleration for the nascent Indian IT services industry. He led and contributed to several impactful programs pioneering third-party quality certifications, process excellence programs, establishing global delivery models, scaling growth across service lines and delivering outsized results across business units including growing TCS'BPO business to over $2 billion in the span of few years.

In April 2015, Mr. Neemuchwala was appointed as the Group President and Chief Operating Officer of Wipro Limited. Seeing opportunities to enhance Wipro's agility and customer centricity, he created a more adaptable environment while driving deeper employee engagement. In early 2016, he was appointed as the Chief Executive Officer and Executive Director of Wipro. Instrumental in driving digitaltransformation throughout the organization focusing on simplification and modernization, Mr. Neemuchwala drove the creation of deep capabilities in human- centric design, artificial intelligence and hyper-automation. He spearheaded Wipro's largest deal in its history with a $1.5 billion deal.

Over a remarkable career spanning multiple countries and organizations, Mr. Neemuchwala is a proven global leader who has contributed to the growth of India's modern IT Industry through championing new advances such as global delivery, quality, process excellence and customer centricity, driving both business and personal success for his teams. As Wipro's CEO and Managing Director, he has set the standard for leadership driven from compassion and business insights transforming

the organization and setting the stage for a bright future.

Beyond business, Mr. Neemuchwala is passionate about driving change, developing communities, and diversity. Towards this, he renewed Wipro's commitment to the community driving an expansion of Wipro Cares, which engages with underprivileged communities to improve healthcare, education and environmental outcomes for all, providing education and educational resources to underprivileged children in addition to quality healthcare services, disaster rehabilitation and work on environmental causes such as waste management, water conservation and promoting biodiversity.

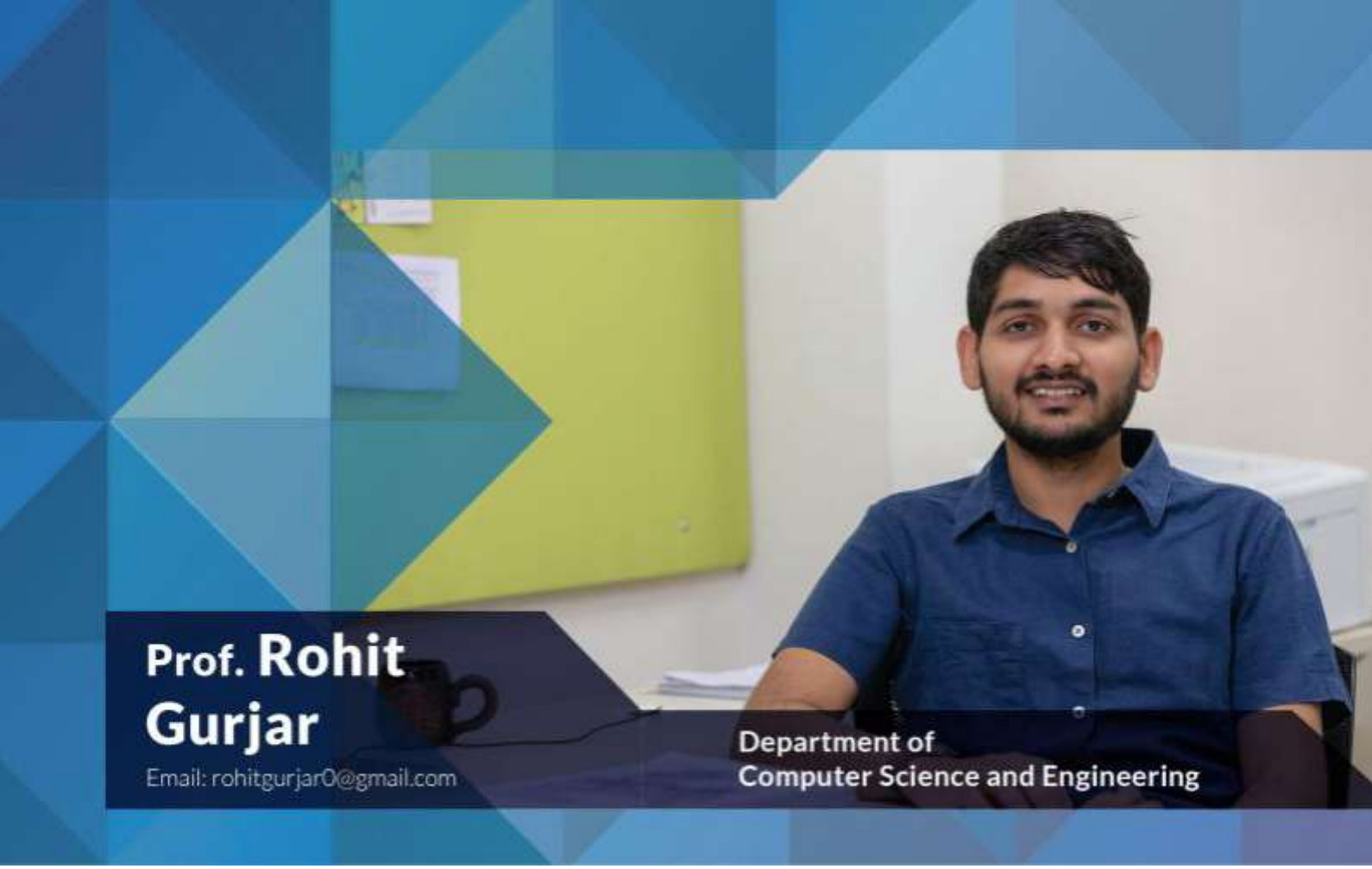
Mr. Neemuchwala is an active member of the Texas Economic Development Corporation, the Texas Governor's CEO Council, as well as the World Affairs Council of Dallas-Fort Worth serving on their Board of Directors. He is also a certified Software Quality Analyst; Certified Six Sigma Green Belt; won BPO CEO of the Year in 2010; received 2012 IPOC Shared Services Organization recognition for personal contribution to the industry.

Lead with compassion, take risks and fail fast.

Special Memories Associated with IIT Bombay

“I was a resident of H4 at IIT Bombay. I enjoyed swimming, playing chess and volleyball apart from academics in the Industrial Management department which later gave birth to IIT Bombay's School of Management. My best memories of the campus are eating late night and sighting the leopards"

NAMED CHAIR PROFESSORSHIP REPORTS



J.R. Isaac Chair
Assistant Professor

"I am honored to be one of the awardees of the J.R. Isaac Chair Assistant Professorship. I found it very encouraging that my research work was deemed to be worthy of this recognition. I am also immensely grateful for the generous financial support that is provided along with the position. The support has enabled me to attend conferences that is quite crucial for the progress of my research. It has also helped me with hosting visitors and thus, starting new research collaborations."

Prof. Rohit Gurjar

Teaching and Research Highlights

Teaching: In 2019, I taught two courses. First, I introduced a new course on "matching theory" which has been a very influential topic of study in computer science. The aim of the course was to study matchings in various algorithmic paradigms -sequential, parallel, bounded-space, randomized, online, approximation, counting etc. - and to pick up some ingenious ideas it inspires, explore open research problems around it. Second, I taught a course on basic algorithm design and complexity theory that was mainly designed for Masters first year students. This course was quite challenging and a learning experience for me as the masters students come with a widely varying degree of familiarity with the subject.

Research: In year 2019, my research activities were mainly focussed on the topic of algebraic algorithms and derandomization. The first involves designing algorithms for combinatorial optimization using linear algebraic operations like matrix rank computation. And the second one involves designing pseudorandom bits that look like random bits to a bound resource

algorithm. We looked at various problems around these two themes.

1. Deterministic representations of matroids is one of the questions that I started exploring last year and found it quite fascinating. Essentially, the problem asks: given a matrix that is generated by a random process, can we deterministically generate another matrix that has the same linear dependence relations among columns? We could achieve this for two specific cases which are known as Gammoids and Laminar Matroids. The first work has been submitted to a conference while the second one is under preparation.

2. Algebraic algorithms for submodular minimization: this was a work which I did with a B.Tech. student (as part of his BTP). Here we came up with an interesting class of algebraically representable submodular functions and designed a parallel algorithm for minimizing such functions. This work is also under submission.

Service and Public Engagement

The IARCS annual conference on Foundations of Software Technology and Theoretical Computer Science was held at IIT Bombay in December 2019. There were also some pre/post conference workshops on various topics in computer science. I was part of the organizing team for these conferences and workshops that required several months of preparations. The conference saw a participation of around 250 CS researchers from around the world.

Statement of Accounts

J.R. Isaac Chair Assistant Professor

(01.04.2019 to 31.03.2020)		
Particulars	**Endowment**	**Interest**
Opening Balance as on 01.04.2019	3,608,040.00	3,171,244.20
Interest earned during 2019-20		216,482.40
Expenses		-360,000.00
Closing Balance as on 31.03.2020	3,608,040.00	3,027,726.60
Total Balance	6,635,766.60	

Training of Highly Qualified People

	Master Students	Doctoral Students	Postdoctoral Students	Other (RA&TA)
Supervised	5	12	6	10
Co-Supervised	-	-	-	-
Graduated	4	4	1	4

List of Publications and Presentations

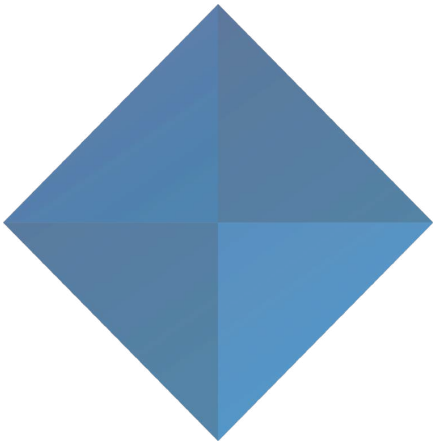
Publications:

1. A deterministic parallel algorithm for bipartite perfect matching. With Stephen Fenner and Thomas Thierauf. Communications of the ACM (CACM) 2019.

2. On the number of circuits in regular matroids. With Nisheeth Vishnoi. Symposium on Discrete Algorithms (SODA) 2019.

Presentations:

Talked on An Algebraic Algorithm for Submodular Minimization at Microsoft Research Bengaluru (Dec 2019) and Ulm University, Germany (July 2019).



Madhuri Sinha Chair Professor

The Madhuri Sinha Chair Professorship has enabled translational research, increased academia-industry partnerships and accelerated technology development and validation work in the areas of smart biomaterials, drug delivery, medical devices and nutraceuticals.

Prof. Rinti Banerjee

Teaching and Research Highlights

We have developed patented platforms for micronutrient loaded infant body oils which allow enhanced permeation and absorption of vitamin D, folate and B12 vitamins as well as iron through skin. Indian and US patents have been granted for this technology. This technology has the potential to enhance micronutrient absorption in the early months of life in infants. This technology has been scaled up under GMP conditions and tested in clinical trials by our clinical partner KEM Hospital research Centre Pune. The technology has been licensed to a pharmaceutical company for commercialisation.

We have also developed high absorption nanoscale curcumin formulations which overcome the absorption barriers of regular curcumin. This allows enhanced cellular uptake and nutraceutical effects as a curcumin shot drink for antioxidant, anti-inflammatory and anti-cancer effects. An Indian patent has been granted for this technology. The technology has

been scaled up and licensed to two nutraceutical companies for commercialisation.

We have developed novel nanocomposite materials which act as multifunctional hemostatic agents for trauma care. The technologies have superior performance in comparison to existing commercial products and have added advantages of antibacterial and wound healing properties. Indian and US patents have been filed for this technology.

My teaching of various courses namely Biomaterials, Advanced Biomaterials and Tissue Regeneration, Physiology for Engineers, Bionanotechnology, have been recognised and I have been awarded the BSBE Excellence in Teaching Award 2019.

My research contributions have been recognised and I have been elected as Fellow, Society of Biomaterials and Artificial Organs 2019.

Service and Public Engagement

I have been actively engaging with the research community in my new role as Associate Editor ACS Biomaterials Science and Engineering. I have conducted several webinars advising and guiding early career scientists at postdoctoral and junior faculty positions in publishing trends, scientific manuscripts, career transitions in academia. I have also continued to serve as Editorial Board Member of Nature Scientific Reports.

I have also given a talk on Lab to Market Strategies as the inaugural talk in the PARIKALP series of IIT Kanpur Business Incubator to facilitate technology based commercialisation strategies.

I have been on the Advisory Committee of several national and international agencies including DST International Committee of Life Sciences and Health Sciences, DST International Committee of Materials Science and Engineering, CEFIPRA Scientific Council Member, CSIR Advisory Committee on Health Sciences.

Statement of Accounts

Madhuri Sinha Chair Professor

(01.04.2019 to 31.03.2020)		
Particulars	**Endowment**	**Interest**
Opening Balance as on 01.04.2019	3,608,040.00	3,171,244.20
Interest earned during 2019-20		216,482.40
Expenses		-360,000.00
Closing Balance as on 31.03.2020	3,608,040.00	3,027,726.60
Total Balance	6,635,766.60	

Training of Highly Qualified People

	Master Students	Doctoral Students	Postdoctoral Students	Other (RA&TA)
Supervised	5	12	6	10
Co-Supervised	-	-	-	-
Graduated	4	4	1	4

List of Publications and Presentations

Publications

1. Sarkar A, Carvalho E, Dsouza A, Banerjee R Liposome encapsulated fish oil protein tagged gold nanoparticles for intra-articular therapy in osteoarthritis. Nanomedicine 2019

2. Balakrishnan B, Joshi N, Thorat K, Kaur S, Chandan R, Banerjee R. A tumor responsive self healing prodrug hydrogel enables synergistic action of doxorubicin and miltefosine for focal combination chemotherapy. J Materials Chemistry B, 2019

3. Prasad C, Banerjee R. Ultrasound responsive spatiotemporal delivery of topotecan and curcumin as combination therapy for cancer. J Pharmacology & Exp. Therapeutics 2019

4. Banerjee R Celebration of interdisciplinarity and glimpses into the future ACS Biomaterials Sc & Engg. 2019 5, 1

5.Pund S, Joshi A, Banerjee R Engineered nanomaterials in functional foods Functional Foods 2019 In press Elsevier

6. Singh E, Osmani R, Banerjee R. Nanobioremediation: An emerging approach for a cleaner environment. 2019 in Microbial Bioremediation and biodegradation. In press Springer

7. Chandan R, Banerjee R Pro-apoptotic platforms for ultrasound responsive drug delivery Scientific Reports 2019

8. Sandbhor P, Banerjee R Point of care diagnostics for cancer Analyst 2019

9. Banerjee R Nanotechnology for drug delivery: current status and glimpses into the future Therapeutic Delivery 2018-19

Patents filed

1. Banerjee R Ultrasound responsive theranostics 2019

2. Banerjee R Point of care detection of bacterial infections 20193. Banerjee R Gel based platforms for detection of specific bacteria 2019

4. Banerjee R Core-shell nanoparticle platforms for detection of bacterial resistance 2019

5. Banerjee R et al Core shell nanoparticles for drug delivery in posterior segment of the eye 2019

6. Banerjee R et al Smart materials for point of care detection of matrix metalloproteases 2019

7. Banerjee R et al Nanocomposites for multifunctional hemostatic and trauma care 2019

Technologies licensed

1. Micronutrient loaded infant oils to Murali Krishnan Pharmaceuticals

Vijay & Sita Vashee
Chair Professor

"Thank you for your support in fostering excellence at IIT Bombay! The chair professorship is indeed a recognition and incentive, and the no-strings attached funding it brings with it a valuable resource."

Prof. Manoj Prabhakaran

Teaching and Research Highlights

I moved to IIT Bombay from UIUC in late 2016. After 3 years, currently I have a productive group here, involving a couple of PhD students, a masters student, a few undergraduate students (and occasionally, a postdoc). My main focus is on advanced theoretical cryptography tools (e.g., "secure multi-party computation (MPC)"), and translating them to practical applications. On the theoretical end, we have made advances in characterising which multi-party computations admit highly secure protocols. In another work, we have discovered surprising positive and negative results about secure computation in a minimalistic model of "One-way communication." We have also developed a theoretical model of secure computation (called "Zero-Communication Reduction") with applications to questions in computational complexity theory as well as cryptography. In a different line of work, we have extended the foundations of "Differential Privacy," a highly influential framework for

obtaining privacy guarantees in statistical databases. Other recent and ongoing work focus on emerging theoretical concepts like "Witness Encryption" and "Obfuscation." On the practical side, we are developing a programming language for implementing MPC protocols. Also, we have designed a "Functionally Encrypted Database" offering provable security guarantees, and efficiency that is adequate for many applications. Finally, we have proposed a paradigm called "CellTrees" for distributed data repositories, as an alternative to blockchains, offering scalability and functionality guarantees not available in Blockchains.

Service and Public Engagement

I serve as a member of the steering committees of the reputed Theoretical Cryptography Conference (TCC), as well as a new premier conference on Information Theoretic Cryptography (ITC). I also serve as an Associate Editor for Journal of Cryptology, the leading journal in the area. I served as General Chair for TCC 2018, and am serving as a Program Committee Chair for Indocrypt 2020.

I have contributed lectures to various instructional workshops in India, most recently at two workshops IISc and at TIFR Bangalore, and also given invited keynote talks at conferences in India.

I have also been engaging with the public on topics related to cryptography and security. I have served on a panel for school children, given a public lecture, submitted an affidavit on a court case in the Madras High Court (since then transferred to the Supreme Court) on security aspects of WhatsApp, and written an article on the security aspects of India's "Aadhaar" scheme.

Statement of Accounts

Vijay & Sita Vashee Chair Professor

(01.04.2019 to 31.03.2020)

Particulars	Endowment	Interest
Opening Balance as on 01.04.2019	7,315,500.00	4,938,485.00
Interest earned during 2019-20		438,930.00
Expenses		-360,000.00
Closing Balance as on 31.03.2020	7,315,500.00	5,017,415.00
Total Balance available	12,332,915.00	

Training of Highly Qualified People

	Master Students	Doctoral Students	Postdoctoral Students	Other (RA&TA)
Supervised	1	2	1	5 BTech Projects, 3 BTech R&D
Co-Supervised	-	-	-	-
Graduated	-	-	1	5

List of Publications and Presentations

Publications:

(Author names sorted alphabetically, as is the convention in this research community)

Suvradip Chakraborty, Manoj Prabhakaran, Daniel Wichs, "Witness Maps and Applications", to appear at PKC 2020.

Navneet Agarwal, Sanat Anand, Manoj Prabhakaran, "Uncovering Algebraic Structures in the MPC Landscape", EUROCRYPT 2019

Sibi Raj B. Pillai, Manoj Prabhakaran, Vinod M. Prabhakaran, Srivatsan Sridhar, "Optimality of a Protocol by Feige-Kilian-Naor for Three-Party Secure Computation", INDOCRYPT 2019

Anasuya Acharya, Manoj Prabhakaran, Akash Trehan, "An Introduction to the CellTree Paradigm (Invited Paper)", ICISS 2019

Shweta Agrawal, Rachit Garg, Nishant Kumar, Manoj Prabhakaran, "A Practical Model for

Collaborative Databases: Securely Mixing, Searching and Computing"(under submission)

Aman Bansal, Rahul Chunduru, Deepesh Data, "Extending the Foundations of Differential Privacy(under submission)

Varun Narayanan, Manoj Prabhakaran, Vinod Prabhakaran, "Zero-Communication Reductions"(under submission)

Shweta Agrawal, Yuval Ishai, Eyal Kushilevitz, Varun Narayanan, Manoj Prabhakaran, Vinod Prabhakaran, Alon Rosen,

"Cryptography from One-Way Communication: On Completeness of Finite Channels" (under submission)

Aarushi Goel, Abhishek Jain, Manoj Prabhakaran, Rajeevalochana Raghunath,"On the Role of Point-to-Point Channels inSecure Multiparty Computation"(under submission)

Selected Talks:

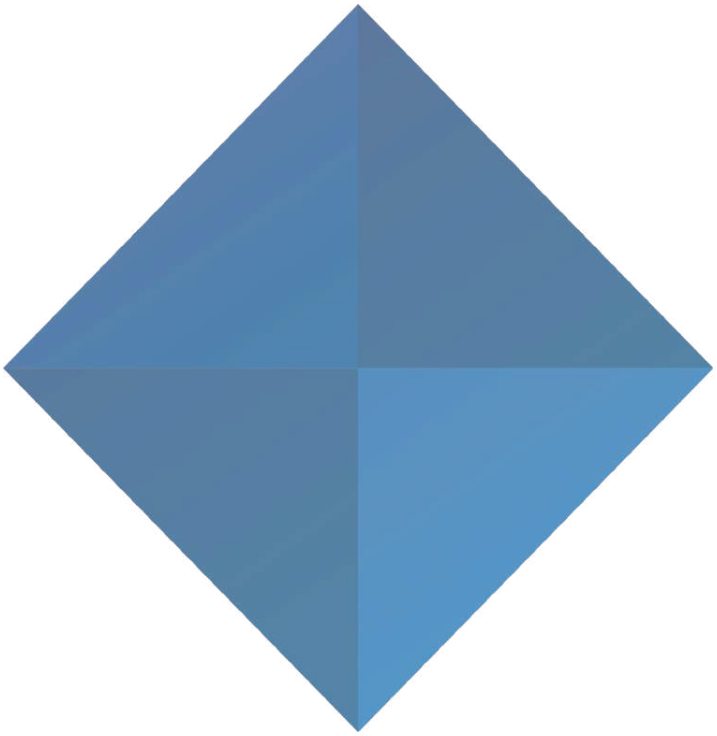
"Correlations in Cryptography" CSA50 - Pratiksha Trust Workshop on Theoretical Computer Science, IISc Bangalore, January 2019

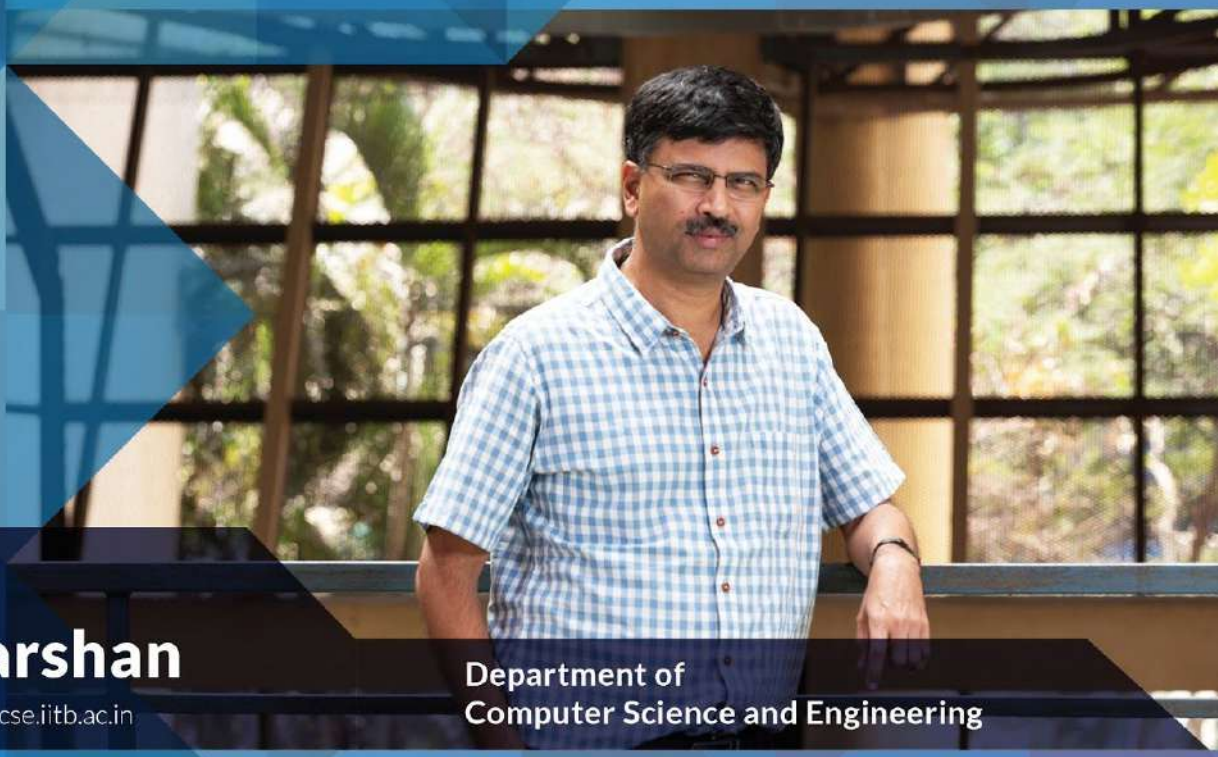
"Zero-Communication Reductions" Workshop on Lower Bounds in Cryptography, Bertinoro, Italy, July 2019.

"Extending the Foundations of Differential Privacy" Indocrypt (Keynote), Hyderabad, December 2019.

"On the CellTree Paradigm" ICISS (Keynote), Hyderabad, December 2019.

"Zero-Communication Reductions" MPC-Theory and Practice Workshop, IISc Bangalore, January 2020.





Prof.
S. Sudarshan
Email: sudarsha@cse.iitb.ac.in
Department of
Computer Science and Engineering

Subbarao M. Nilekani Chair Professor

"Occupying the Subrao M. Nilekani chair continues to be a privilege, and a recognition that I cherish deeply."

Prof. S. Sudarshan

Teaching and Research Highlights

I have focused on three major areas of research this academic year. One area of focus has been the XData system, which is the only system of its kind to help automatically detect errors in SQL queries, and also grade student queries by assigning partial marks. A short paper on this topic was published in the IEEE ICDE 2019 conference in Macau, and attracted positive comments at the conference.

A second are of focus was on fake news detection. We have been developing a system called Kauwa Kaate, which is designed to help users factcheck forwards that they receive on WhatApp or similar platforms (a common means of spreading fake news in India). We have developed a system which can be accessed from the Web or using an Android App, and has a backend that performs fmatching against data crawled from a number of fact checking sites, as well as trusted news sites. Work on this system was published/demonstrated in Jan 2020 at the ACM India CoDS-COMAD conference, and the

system was also demonstrated at TechFest at IIT Bombay, to very positive reviews. We are currently making the system more robust before publicizing it widely. The third are of focus was on holistic optimization of database applications. A PhD student who was working in this area in 2018 graduated early in 2019, and a new student has started working on this topic. We are exploring automatic rewriting of Python programs to optimize data access. There is significant scope for optimizing programs used for ML pipelines, and we are continuing work in this area.

Service and Public Engagement

I have acted Program Committee Chair for the prestigious IEEE ICDE 2020 to be held in Dallas Texas. Although the conference is in 2020, a large part of the work was done in 2019. I was also convenor for a special academic initiative on AI and Data Science at IIT Bombay, which has resulted in the formation of a new Centre for Machine Intelligence and Data Science (MinDS Centre) which will start functioning soon.

Statement of Accounts

Vijay & Sita Vashee Chair Professor

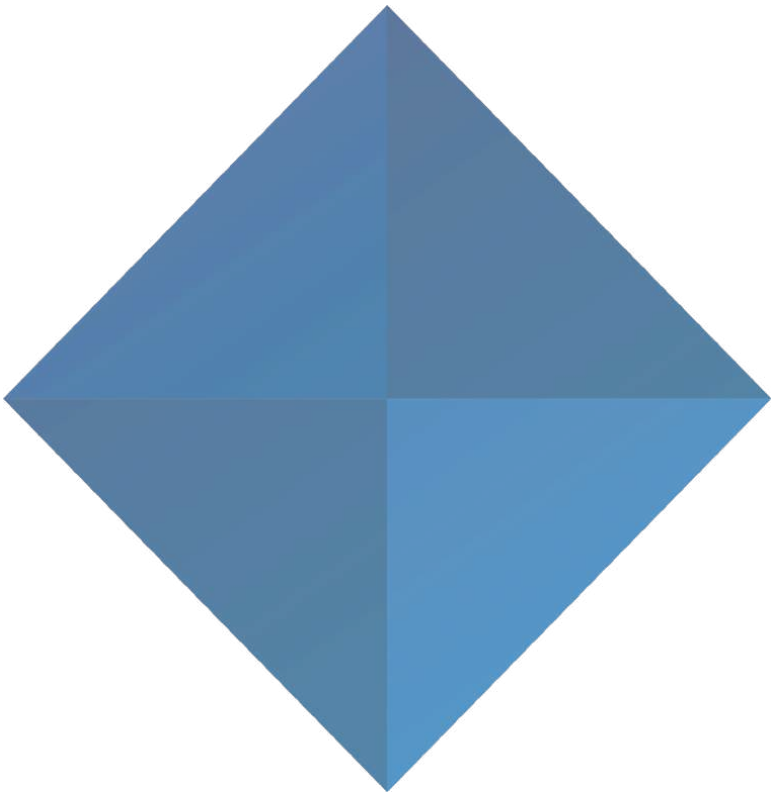
(01.04.2019 to 31.03.2020)		
Particulars	**Endowment**	**Interest**
Opening Balance as on 01.04.2019	4,800,000.00	717,806.00
Interest earned during 2019-20		288,000.00
Expenses		-360,000.00
Closing Balance as on 31.03.2020	4,800,000.00	645,806.00
Total Balance		5,445,806.00

Training of Highly Qualified People

	Master Students	Doctoral Students	Postdoctoral Students	Other (RA&TA)
Supervised	5	2	-	-
Co-Supervised	-	-	-	-
Graduated	5	2	-	-

List of Publications and Presentations

1. Automated Grading of SQL Queries, Bikash Chandra, Ananyo Banerjee, Udbhas Hazra, Mathew Joseph, S. Sudarshan, IEEE ICDE 2019, Macau: 1630-1633



Major Bhagat Singh Rekhi Chair Professor

"I truly appreciate the Donor's generosity towards this chair position, It means a lot to IIT Bombay and to me, personally."

Prof. Krithi Ramamritham

Teaching and Research Highlights

We have been examining – during the last half a dozen years – the application of CS research to solve real-world problems, using "computational thinking". In particular, the area of "smart energy management" is being studied, where we have an operational definition for being SMART: Sense Meaningfully, Analyze and Respond Timely! Our goal is to provide solutions that make energy usage purposeful, having lower environmental impact, and yet censuring the comfort level for the user. Details can be found at seil.cse.iitb.ac.in I have also been working on smart cities, and smart urban environments. All of these also set the agenda in my teaching endeavours, where students create smart artifacts and get deployment experience as part of their coursework.

Service and Public Engagement

Until recently I was Head of CUSE, Centre for Urban Science and Engineering, where the focus of our work is informed by the needs of urban areas. I have been writing a manuscript

on “Smart Energy Management” and also writing articles on several topics of general interest. I have been invited to give keynotes in many conferences devoted to CS, EE and beyond.

Statement of Accounts

Major Bhagat Singh Rekhi Chair Professor

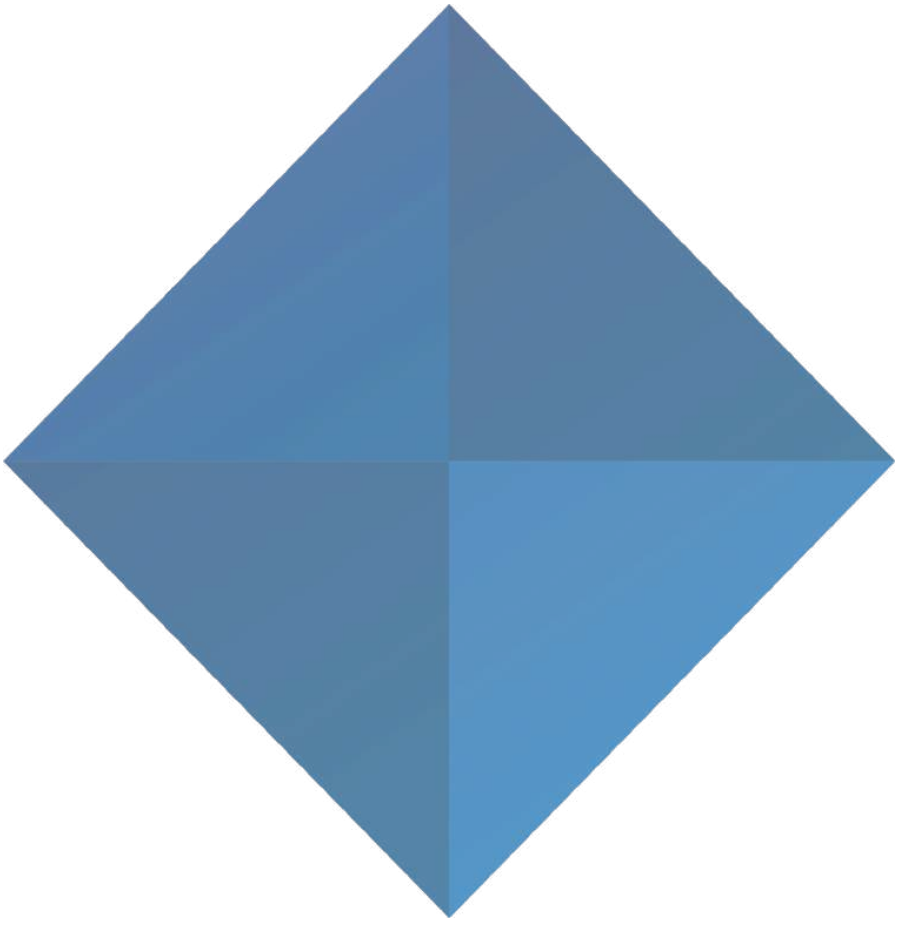
(01.04.2019 to 31.03.2020)		
Particulars	**Endowment**	**Interest**
Opening Balance as on 01.04.2019	4,881,538.00	6,239,660.97
Interest received during the year		292,892.28
Expenses		-300,000.00
Closing Balance as on 31.03.2020	4,881,538.00	6,232,553.25
Total Balance Available	11,114,091.25	

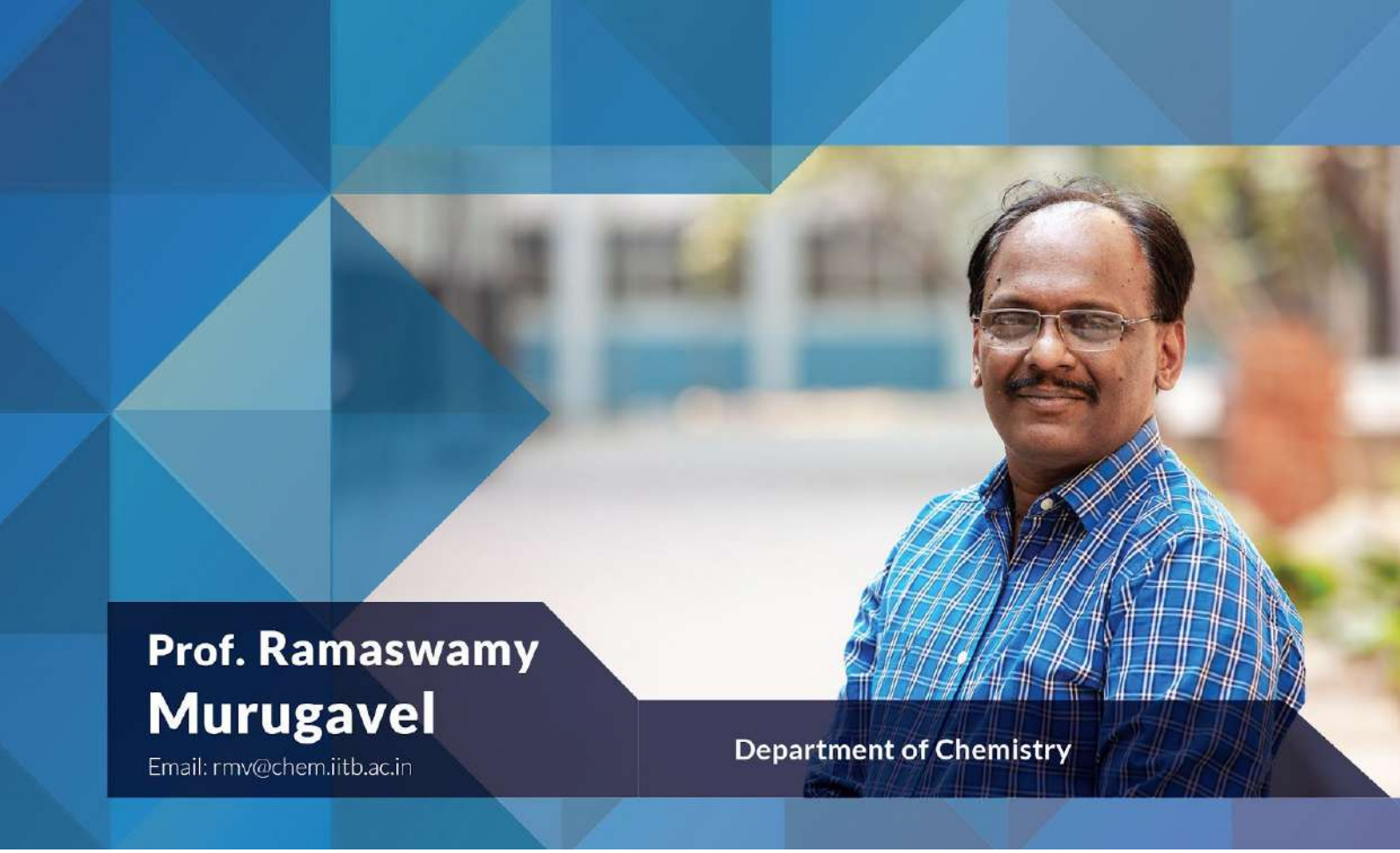
Training of Highly Qualified People

	Master Students	Doctoral Students	Postdoctoral Students	Other (RA&TA)
Supervised	4	8	-	Around 5
Co-Supervised	-	-	-	-
Graduated	5	2	-	Around 5

List of Publications and Presentations

For publications, please visit http://dblp.uni-trier.de/pers/hd/r/Ramamritham: Krithi?q=words Talks in several Conferences on Smart Energy Management Including 7th International Conference on Power Systems, December 2017, Pune Big Data Analytics: 5th International Conference, Hyderabad, India, December 12-15, 201





Biswas Palepu Distinguished Chair Professor Chemistry

"As I have expressed many times to you during your visits to IIT Bombay, creation of this chair at the Department of Chemistry goes to show your love and commitment to the department. I am happy to be the second occupant of this chair after Professor H B Singh. The department and I once again thank you for this kind gesture and look forward for your continued interaction with the department in the coming years. A Big Thank You."

Prof. Ramaswamy Murugavel

Teaching and Research Highlights

Our laboratory has been employing an organic-soluble organophosphates as the building block to assemble polyhedral molecules that resemble many of the secondary building units (SBUs) of zeolite materials. Reaction of this phosphate with a divalent metal such as Zn2+ in a donor solvent (L) leads to the isolation of tetranuclear metal phosphates [(RO)PO3Zn(L)]4 whose inorganic core resembles the zeolitic D4R SBU. In recent times, we have also unravelled that it is possible to isolate even larger SBUs through small variations in the reaction conditions. Thus, hitherto unknown discrete clusters with D6R and D8R SBU like cores (Zn6O18P6 and Zn8O24P8 cores, respectively) have been isolated by switching the solvent from methanol to acetonitrile and the co-ligand from DMSO to either 4-formylpyridine or 4-cyanopyridine. A rationalization of these building principles will be presented in this lecture, apart from highlighting the use of this class of compounds as molecular magnets, and phosphorus based perovskites, and energy related applications.

To carry out major research grants have been obtained from SERB, DST, CSIR, and MHRD. The current outlay of the sponsored projects is roughly Rs. 4.5 Crores.

Service and Public Engagement

Have been Vice-President of Chemical Research Society of India (CRSI), where I have played an important role in getting PhD students engaged in CRSI activities and they becoming life-members of the society. I continue to work with small colleges and less endowed research institutions by not only visiting these places and talking to the students and teachers (through Combined Academies Workshops, INSPIRE camps, etc.) but also host research interns in my laboratory for students coming from such institutions. I serve in several national committees related to funding and policy, recruitment, etc.

Statement of Accounts

Biswas Palepu Distinguished Chair Professor Chemistry

(01.04.2019 to 31.03.2020)		
Particulars	**Endowment**	**Interest**
Opening Balance as on 01.04.2019	4,891,414.00	258,373.82
Interest for the period 2019-20		293,484.84
Expenses		-208,450.00
Closing Balance as on 31.03.2020	4,891,414.00	343,408.66
Total Balance		5,234,822.66

Training of Highly Qualified People

	Master Students	Doctoral Students	Postdoctoral Students	Other (RA&TA)
Supervised	1	14	3	1
Co-Supervised	-	-	-	-
Graduated	30	24	10	25

List of Publications and Presentations
Publications:

1) High-pressure crystallographic and magnetic studies of pseudo-D5h symmetric Dy(III) and Ho(III) Single Molecule Magnets, M. Norre, C. Gao, S. Day, S. Gupta, A. Borah, R. Murugavel, G. Rajaraman, and J. Overgaard, Inorg. Chem. 2020, 58, 717-729. DOI: 10.1021/acs.inorgchem.9b02962

2) Editorial: Special issue on 150 years of the periodic table, E. D. Jemmis, J. N. Moorthy, and R. Murugavel, J. Chem. Sci. 2019, 131: 113. DOI: 10.1007/s12039-019-1714-6

3) An Unprecedented Structural and Functional Mimic for Copper Amine Oxidase, R. Jangir, M. Ansari, D. Kaleeswaran, G. Rajaraman, M. Palaniandavar, and R. Murugavel, ACS Catalysis, 2019, 9, 10940-10950. DOI: 10.1021/acscatal.9b02326

4) Ceramic and Framework Phosphates Derived from Mono and Diesters of Phosphoric Acid R. Murugavel, Emergent Materials, 2019, 2,273-294.
DOI: 10.1007/s42247-019-00054-4

5) Facile Exfoliation of Single-Crystalline Copper Alkylphosphate van der Waals Solids to Single-Layer Nanosheets and Enhanced Supercapacitance ,G. A. Bhat, S. Halder, D. Chakraborty, S. Verma, R. Vaidhyanathan and R. Murugavel, Angew. Chem. Int. Ed., 2019, 58, 16844–16849. DOI: 10.1002/anie.201910157

6) Compositional Control as the key for achieving highly efficient OER electrocatalysis with cobalt phosphates decorated nanocarbon florets, J. Saha, S. Verma, R. Ball, C. Subramaniam, and R. Murugavel, Small, 2019, 1903334. DOI: 10.1002/smll.201903334

7) A Single-electron Single-ion Cerous Magnet, Sandeep K. Gupta, S. Shanmugan, T. Rajeshkumar, G. Rajaraman and R. Murugavel, Dalton. Trans. 2019, 48, 15928-15935. DOI: 10.1039/c9dt03052b

8) Hitherto unknown eight-connected frameworks formed from A4B4O12 metal organophosphate heterocubanes, K. Sharma, S. K. Gupta and R. Murugavel, Chem. Commun. 2019, 55, 7994-7997. DOI: 10.1039/C9CC01893J

9) Bimetallic nanoparticles anchored on core-shell support as an easily recoverable and reusable catalytic system for efficient nitroarene reduction, R. Antony, R. Marimuthu, and R. Murugavel, ACS Omega, 2019, 4,

9241-9250.
https://doi.org/10.1021/acsomega.9b01023

10) A Compelling and Complete Account of p-Block Chemistry, A review of the book "The Chemistry of the p-Block Elements: Syntheses, Reactions and Applications" by Anil J. Elias. Reviewed by R. Murugavel, Resonance, 2019, 24, 115-116. https://doi.org/10.1007/s12045-019-0761-0

Presentations:

1)"MolecularMetalPhosphates:Sensors,Catalysts andMagnets",Plenary Lecture Presented at the FCASI-2018, University of Rajasthan, Dec. 21-22, 2018.

2) "A decade plus of metal phosphate chemistry: What have we learnt?", Invited lecture presented at the IISER, Thiruvananthapuram, January 29, 2019.

3) "Molecular and Framework Metal Phosphates: Applications as Sensors, Catalysts and Molecular Magnets" Invited lecture presented at the Manonmaniam Sundaranar University, January 30, 2019.

4) "Molecular Metal Phosphate Materials: Applications as Sensors, Catalysts, and Molecular Magnets", Invited Lecture presented at the Recent Developments in Chemical Research, IIS University, Jaipur, Feb. 1-2, 2019.

5)"NewerSyntheticStrategiesforCovalent Organic and Covalent Metal-Organic Frameworks (COFs and CMOFs)", Invited talk at the "ChemPhysMat-2019" (CNR@85), JNCASR, Bangalore, Feb 20-22, 2019.

6)"TheScienceofPorousSolids:Past,Present,and Future",NationalScienceDaySymposium and SASTRA-CNR Rao Award Acceptance Talk at SASTRA University, Thanjavur, February 28, 2019.

7) "Controlling of Dimensionality of Metal Phosphates: A Chemical Synthesis Approach to New Materials" Invited lecture at VIT University, Vellore, March 09, 2019.

8) "Controlling of Dimensionality of Metal Phosphates: A Chemical Synthesis Approach to New Materials" Invited lecture at BHU, Varanasi, March 11, 2019.

9) "Controlling of Dimensionality of Metal Phosphate Frameworks", Presented at the 47th National Seminar on Crystallography, Anushaktinagar, Mumbai, June 20, 2019.

10) "Molecular & Framework Metal Phosphates: Sensors, Catalysts and Magnets", Lecture presented at ICMAT-2019, Singapore, June 24-28, 2019.

11) "Controlling of Dimensionality: A Chemical Synthesis Approach to New Materials", Invited lecture presented at IIT Indore (Prof. Ila 75th Birthday Symposium), July 13-15, 2019.

12) "Controlling of Dimensionality: A Chemical Synthesis Approach to New Materials", invited lecture at the Indo-German conference "Emerging Trends in Chemistry and Materials" August 28-29, 2019.

13) "Controlling Dimensionality of Metal Phosphate Frameworks: A Chemical Synthesis Approach to New Materials", Invited Plenary Lecture at CRIKC Conference, Nov. 02-03, 2019.

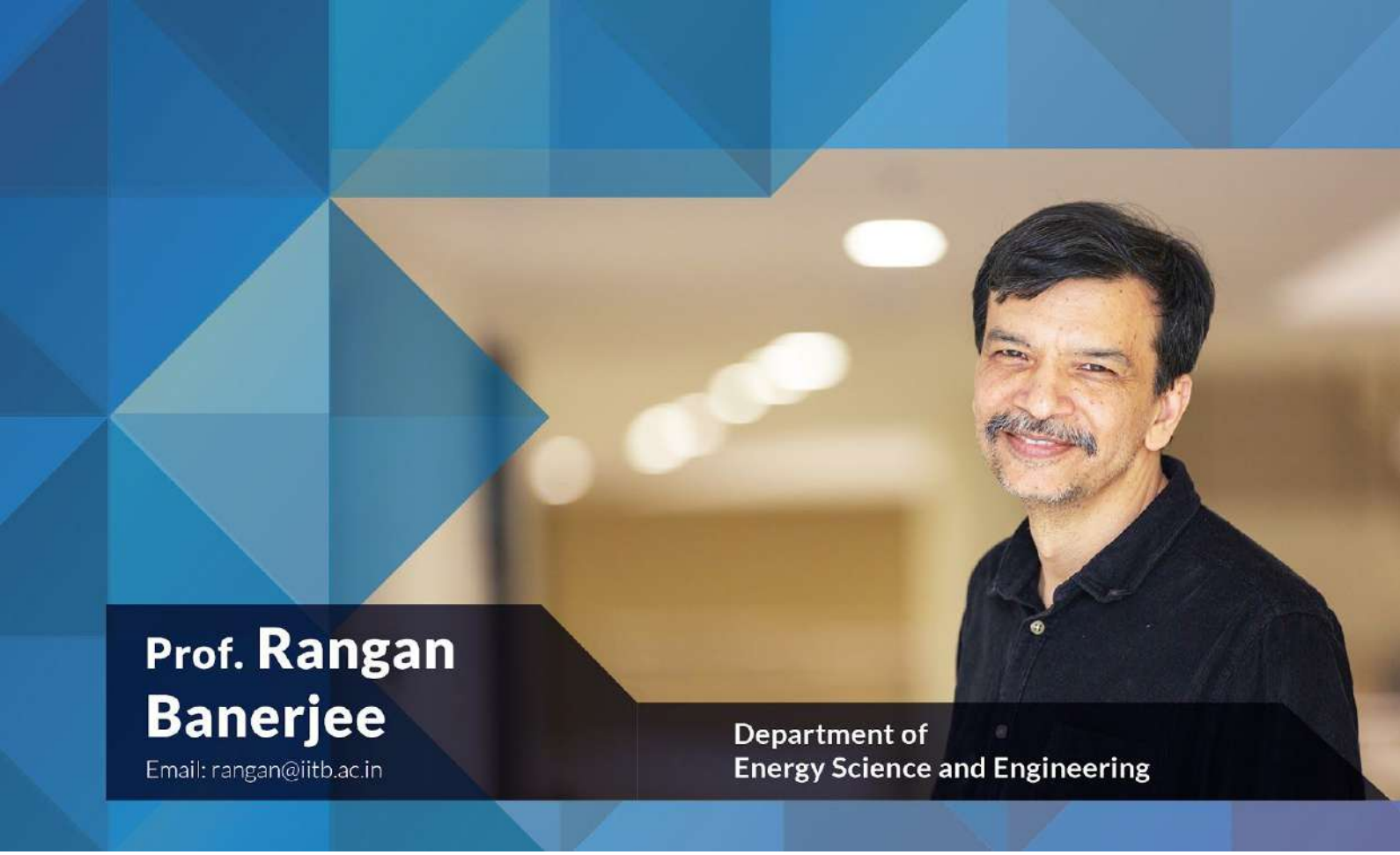
14) "Elevating Lanthanide Single-Ion Magnetism: Role of Symmetry and Axiality", Invited lecture presented at the MTMM-2019", IISER Bhopal, Nov. 27-30, 2019

15) "Thermally Labile Metal Mono and Dialkylphosphates: Ideal Precursors for Ceramic and 2- D Materials", Plenary lecture presented at the MTIC-2019, IIT Guwahati, December 11-14, 2019.

16) "Thermally Labile Metal Mono and Dialkylphosphates: Ideal Precursors for Ceramic and 2- D Materials", Plenary lecture presented at the ICACSEM-2020, Dept. of

Physical Chemistry, University of Madras, January 09, 2020.

17) "Organophosphates as Precursors for New Materials for Energy Applications", Invited lecture at NCU@10 Mini Symposium (10th Anniversary Of New Chemistry Unit), JNCASR, Bangalore, January 10, 2020.



Forbes Marshall Chair Professor for Energy Science & Engineering

"The Forbes Marshall fellowship helps in providing recognition for my work and flexibility to pursue new research."

Prof. Rangan Banerjee

Teaching and Research Highlights

We have created a modelling framework linking the economy with the energy sector to examine the impact of high renewable scenario on different income classes. We have also mapped the life cycle emissions of coal and gas based power in India based on the existing distributions of age, efficiency. We have developed a new cost effective technique for sky luminance measurement that can help in improved daylighting design for buildings. This has been implemented in a device and a patent filed. We have also developed a methodology for integration of a Phase Change Material based radiant heat exchanger into a building. A patent has been filed for this.

We have carried out a viability assessment for the Hyperloop for the PMRDA on energy and emissions impacts. We have assessed the viability of high temperature solar thermochemical processes for Zinc and Hydrogen production. The methodologies of assessing life cycle cost, carbon emission factor, cumulative energy demand, energy and exergy efficiency provide a systematic approach to compare new process routes for the generation of industrial products. We have also initiated work on analysing the calcium looping cycle for carbon capture from power plants. We have been exploring the issue of transitions in the Indian power sector and its implications.

Service and Public Engagement

I have been involved in developing a training module for engineering and science teachers as a part of the Swayam-ARPIT Scheme on Energy Systems Engineering – coordinating a National

Resource Centre to develop a MOOCs course. I have been on the Global jury for the Mission Innovation Champion Challenge – as the Indian representative selected by the Government of India, I have been a reviewer for the World Energy Outlook 2019 of the International Energy Agency. I have been involved as an IDPC member of the newly formed Centre for Policy Studies and designed and delivered a new post graduate level course on Energy Policy Analysis. I was part of the India China Dialogue at Tsinghua University examining synergies between India and China in Sustainable Energy and Urbanisation. I have been instrumental in preparing a concept note for a Centre of Excellence in Oil,Gas and Energy to provide technology leadership in research and capacity building for the oil and gas PSUs. We have signed a MOU with all the seven PSUs and the Centre is now being established. I have been on the jury of the Birla group to recognise and select the best projects in energy efficiency and sustainability and part of the jury of the Frost and Sullivan and TERI Sustainability awards.

I have been on the editorial board of

- International Journal of Thermodynamics
- Editorial Board - International Journal of Sustainable Energy
- Editorial Board - International Journal of Sustainable Engineering
- Editorial Board – Environmental Systems and Decisions
- Associate Editor - Frontiers in Energy Research - Process and Energy Systems Engineering
- Associate Editor - Energy for Sustainable Development

Statement of Accounts

Forbes Marshall Chair Professor for Energy Science & Engineering

(01.04.2019 to 31.03.2020)		
Particulars	**Endowment**	**Interest**
Opening Balance as on 01.04.2019	4,800,000.00	1,584,975.00
Interest received during the year		288,000.00
Expenses		-430,569.00
Closing Balance as on 31.03.2020	4,800,000.00	1,442,406.00
Total Balance		6,242,406.00

Training of Highly Qualified People

	Master Students	Doctoral Students	Dual Degree Students
Supervised	3	8	2
Co-Supervised	-	5	-
Graduated	2	3	2

List of Publications and Presentations

Journal Papers:

1. Kanitkar, T., Banerjee. R., and Jayaraman, T., (2019) An integrated modeling framework for energy economy and emissions modeling: A case for India, Energy, 167, pp 670-679.

2. Mallapragada, D. S., Naik, I., Ganesan, K. Banerjee. R. and Laurenzi, I. J., (2018), Life Cycle Greenhouse Gas Impacts of Coal and Imported Gas-Based Power Generation in the Indian Context, Environmental Science & Technology, American Chemical Society, 53 (1), pp 539–549.

3. Yadav, D. and Banerjee. R., (2018) A comparative life cycle energy and carbon emission analysis of the solar carbothermal and hydrometallurgy routes for zinc production, Applied Energy, 229, pp 577-602.

4. Maskarenj, M., Chawla, G., Banerjee. R., Ghosh, P.C. (2018) Evaluation of dynamic sky-type using novel angular sky luminance measurement system, Building and Environment, 146, pp. 152-165.

5. Maskarenj, M., Banerjee. R., Ghosh, P.C. (2018) Design and development of a low-cost angular sky luminance measurement system, Building and Environment, 142, pp. 22-33.

6. Garg, H., Pandey, B., Saha, S. K., Singh, S., Banerjee. R. (2018) Design and analysis of PCM based radiant heat exchanger for thermal management of buildings, Energy and Buildings, 169, pp. 84-96.

7. Yadav, D. and Banerjee. R., (2018) Economic assessment of hydrogen production from solar

driven high-temperature steam electrolysis process, Journal of Cleaner Production, 183, pp 1131-1155.

8. Nandi, B.R., Bandyopadhyay, S., Banerjee. R., (2018) Numerical modeling and analysis of dual medium thermocline thermal energy storage, Journal of Energy Storage, 16, pp 218-230.

Conference papers published:

1. Kumar P., Mishra T., Banerjee R. (2019), "Cost and Emission Trade-offs in Electricity Supply for the state of Maharashtra", 7th International Conference on Advances in Energy Research (ICAER-2019), December 10-12, 2019, IIT Bombay, Mumbai, India. (received the 'Prof. Ajit Kolar Best Paper award')

2. Kumar, P., Mishra, T. and Banerjee. R., (2018) Analyzing the Implications of Emission Control Norms for Indian Power Plants in near term scenarios using TIMES Framework, American Geophysical Union Fall Meeting 2018, Washington DC, USA, December 10-14, 2018.

3. Sri, P., and Banerjee, R., (2018) Sensitivity Analysis as a tool to assess Energy- Water Nexus in India, American Geophysical Union Fall Meeting 2018, USA, December 10-14, 2018.

4. Haran, S., Rao, A.B. and Banerjee, R., (2018) Techno-economic comparison of coal plants in India with conventional and advanced power generation technologies integrated with CO2 capture, 14th International Conference on Greenhouse Gas Control Technologies, (GHGT-14), Melbourne, Australia, October 21-25, 2018.

5. Das, J., and Banerjee. R., (2018) Life cycle energy and carbon footprint analysis of large MW scale grid connected wind power systems in India, E3S Web of Conferences 64, 08002, 3rd International Conference on Power and Renewable Energy (ICPRE 2018), Berlin, Germany, September 21-24, 2018.

Chapters (Books):

1. Singh, N., Mishra, T., Banerjee, R. (2019) Greenhouse Gas Emissions in India's Road Transport Sector. In: Chandra Venkataraman, Trupti Mishra, Subimal Ghosh, Subhankar Karmakar (eds) Climate Change Signals and Response; A Strategic Knowledge Compendium for India. Springer, pp 197-209.

2. Kumar, P., Mishra, T., Banerjee, R. (2019) Review of Indian Low Carbon Scenarios. In: Chandra Venkataraman, Trupti Mishra, Subimal Ghosh, SubhankarKarmakar (eds) Climate Change Signals and Response; A Strategic Knowledge Compendium for India. Springer, pp 177-196.

Invited Talks (National):

• Funding of IITs / Universities, Leadership for Academicians Programme (LEAP) – Mumbai, 8 March, 2019.

• Transitions in the Indian Electricity Sector, IIT Alumni Centre and NASI Workshop Bengaluru, 18 October, 2018.

• Panelistat Session: Sunny Side Up: Future of Solar Energy at 2nd Global Re-Invest India-ISA Partnership-Renewable Energy Investors Meet and Expo, India Expo Mart, Greater Noida, October 4, 2018.

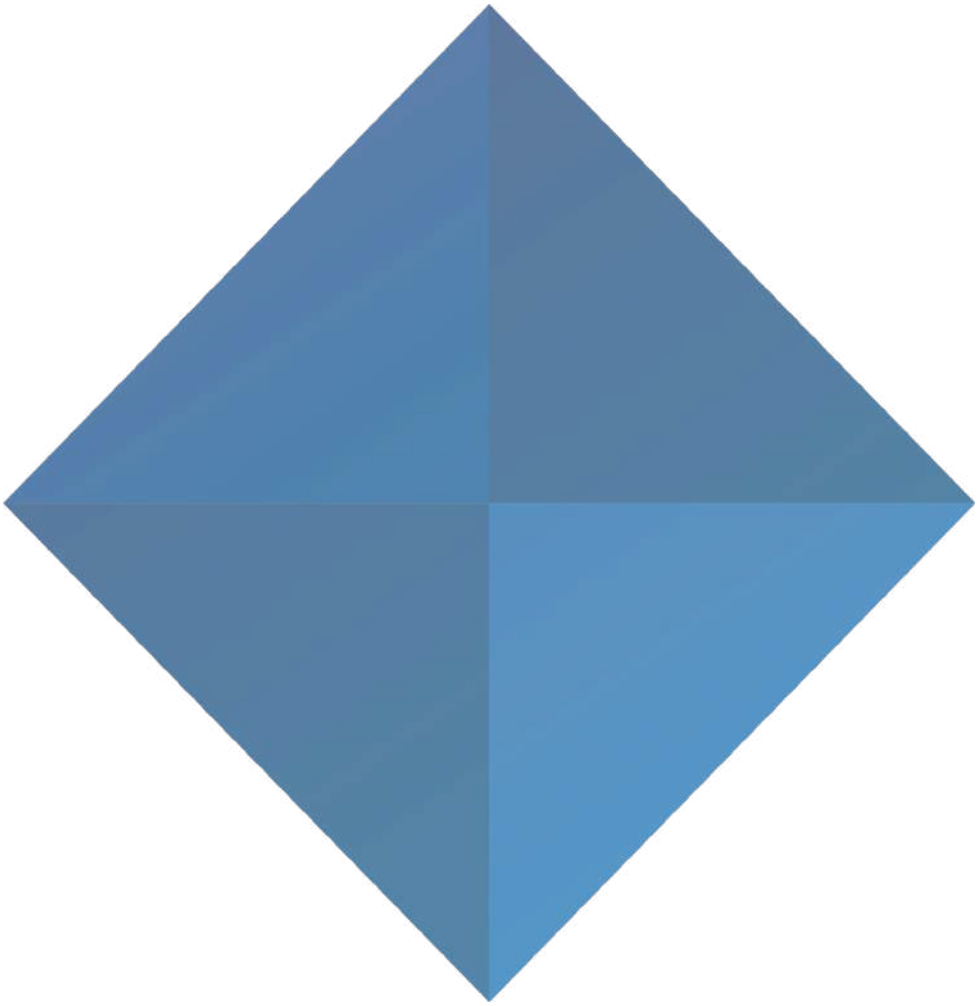
• Renewable Energy Grid Integration and Flexibility at Niti Aayog – IEA – ADB Western Regional Workshop on Indian Power Sector: Supporting a Low Carbon Transition, Pune, April 18, 2018.

• Modelling Transitions for the Indian Power Sector, CEEW Seminar - Transition to a clean Power Generation Mix, India Habitat Centre, New Delhi, April 12, 2018. Invited Talks (International):

• Sustainability analysis of Solar Zinc and Hydrogen Production Processes, Indo-German Workshop on Solar Thermochemical technologies for Green and Sustainable

Development, DLR Cologne, Germany, October 17-18, 2019.

• Transitions in the Indian Energy Sector, Asian Institute of Technology (AIT), Thailand, June 4, 2019. Education Extension Activities at IIT Bombay • "Economics of Climate Change," and "Cost of Saved Carbon," at 6th Summer School - Climate Science and Policy, IDP Climate Studies, IIT Bombay, 01-07-2019 and 05-07-2019.



Praj Industries Chair Professor

With the support under the Chair Professorship, I have started activities related design and testing of decentralized solar devices useful for rural and decentralized application. Thanks for the support".

Prof. Shireesh B Kedare

Teaching and Research Highlights

This year, we were able to design a solar bakery. Apart from my research on the tracking of heliostat, receiver for heliostat and solar stirling engine. The work on solar air heater and dryer is also continued. Service and Public Engagement I am associated with NISE (National Institute of Solar Energy) and involved in it in a advisory capacity. I have also travelled to many NITs and helped them in identifying and guiding the young faculty.

List of Publications and Presentations

1. Shivam K, Shendage D.J., Doke P., Kedare S.B., Bapat S.L., 'Numerical investigation of convective heat loss from upward facing cavity receivers of different shapes at different inclinations and temperatures', Jnl of Energy and Environmental Sustainability, Vol 8, p 7-11, (2019)

2. Tuwar O.S., Kedare S.B., Singh S.S., 'Validity of Approximate Boundary Conditions for radiative heat transfer in a Square Open Cavity', Journal of Heat Transfer, (2019)

3. Haque T., Tiwari M., Bose M. and Kedare S.B., 'Drying Kinetics, Quality and Economic Analysis of a Domestic Solar Dryer for Agricultural Products', https://doi.org/10.1007/s41403-018-0052-1, INAE Letters, Springer Publishers, Vol. 4 No. 3, pp 147-160, (2019)

4. Shendage D.J., Kedare S.B. and Bapat S.L., 'Numerical Investigations on Dish-Stirling Engine System', DOI: 10.1080/01430750.2017.1388840; International Jnl of Ambient Energy, 40 (3), pp 274-284 (2019)

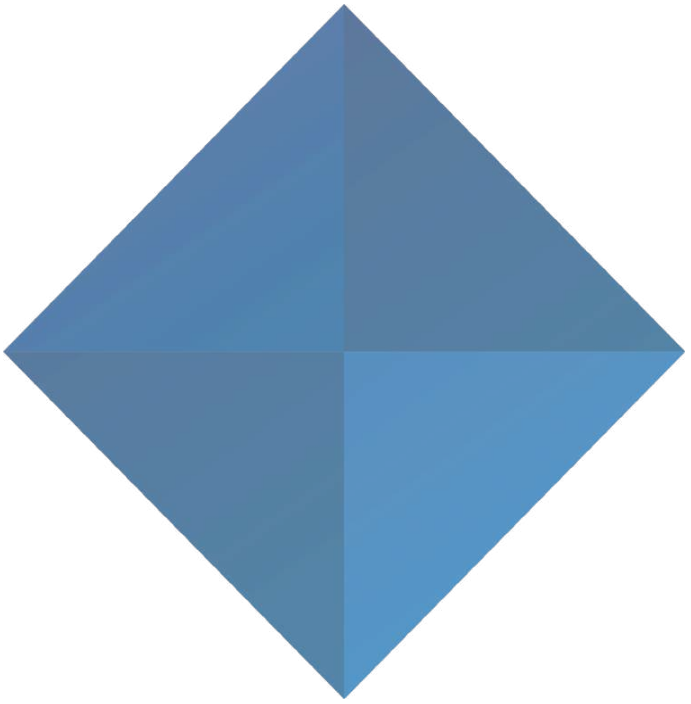
Statement of Accounts

Praj Industries Chair Professor for Energy Science & Engineering

(01.04.2019 TO 31.03.2020)	
Particulars	**Amount**
Opening balance as on 01.04.2019 (End. 39,00,000 /+ Int. 8,28,506/-)	4,728,506.00
Endowment broken on 01.04.2019	
New Endowment created for Awards with applicable interest (Rs.10,00,000/- + 65,000/-)	-1,065,000.00
Moved to Consumption mode (Rs. 29,00,000/-)	-3,663,506.00
Fund Available in Consumption mode as on 01.04.2019	3,663,506.00
Expenses during the year 2019-20	-360,000.00
Closing Balance as on 31.03.2020	**3,303,506.00**

Training of Highly Qualified People

	Master Students	Doctoral Students	Postdoctoral Students	Other (RA&TA)
Supervised	4	4	-	-
Co-Supervised	5	4	-	-
Graduated	6	-	-	-



D.L. Shah Chair Professor for Innovation IDC School of Design

"I am grateful to D. L. Shah for sponsoring the Chair Professorship which has enabled me to do substantial work in the Open Design space and which would be beneficial as a free resource for the public in large. Some of the open design projects undertaken are the development of 'Design History in India', 'Design Fundamentals', 'Design Knowledge Tools as part of Learning/Skills Development', Gandhi through Stories and Interactions, Jellow - a 'Communication Application for children with developmental disabilities', Free access to 'Open Design Projects' and D'Source - an open access digital learning environment for design in India."

Prof. Ravi Poovaiah

Teaching and Research Highlights

His current pedagogic as well as research and design interests are in areas related to Social Media Tools, Collaborative play-learn environments, Wayfinding systems, Interaction devices, Information visualisation, Designing for children and in Corporate strategy and Retail design. He is at present guiding 2 doctoral students researching in some of the above mentioned fields (11 have completed). He was the overall co-ordinator for the newly started B Des + Dual degree B Des + M Des program at IDC, IIT Bombay. The first batch completed and graduated in 2019. He has been coordinating along with NID and IIT Guwahati, a Ministry of Human Resources sponsored project named 'e-kalpa' to build an open access digital learning environment for design in India. The next phase of the project e-kalpa III has been sanctioned by MHRD with a fund allotment of 10 crores.

He has completed/working on the following projects in the year 2019-20:
1. D'source - Creating Digital-Learning Environment For Design In India (E-Kalpa)

2. Jellow – an innovative Augmentative and Alternative Communication (AAC) solution for children with difficulty in speaking

3. Vision 2020 - Corporate Visual Identity Program for the Retail Outlets of Bharat Petroleum Corporation Limited

4.Gandhi through Stories and Interactions – Online space + Interactive installation to be installed at all Science and Gandhi museums across the country

5.'Nature Embedded' a design technology experience interactive exhibition for the public

Links to recent ongoing projects:

D'source Project: http://www.dsource.in Gandhi through Stories and Interactions: www.gandhistory.in Jellow AAC Communicator: www.jellow.org Nature Embedded – a design technology experience:

http://www.dsource.in/events/naturembedded/ Sponsored Research Projects Grants ongoing in 2019-20:

[1] Jellow – an innovative Augmentative and Alternative Communication (AAC) solution that uses icons to aid communication in people learning to speak or with difficulty with speech and language – Rs. 65,00,000.00

[2] D'source - Creating Digital-Learning Environment For Design In India (E-Kalpa) = Phase II, Ministry Of Human Resource Development - Rs. 8,50,00,000.00 The phase III with an outlay of Rs 10,00,00,000.00 has been sanctioned in October 2019 by MHRD

[3] Swayam- Prabha – Online content for Resources on Design sponsored by Ministry of Human Resource Development – Rs. 96,00,000.00

[4] **Corporate Visual Identity Program** title Vision 2020 for the Retail Outlets of Bharat Petroleum Corporation Limited – Rs 30,00,000.00

Service and Public Engagement

He is involved with building open access digital resources related to 'Design Learning', 'Folk Tales', 'Designing for Children','Patterns in India', 'Design of Way-finding Systems' and 'Design in India' with access to networked collaborative information. Co-ordinated the design of LOGO for Leadership for Academicians Programme (LEAP) for the Ministry of Human Resources and Development, Delhi We also put up an exhibition based on the theme of Nature and Design called – 'Nature Embedded' a design technology experience from 3rd December to 7th December 2019 as part India International Science Fair to be held at Kolkata. The exhibition had 8 interactive/non-interactive exhibits/installations spread across 5000sq feet. The exhibition was open to the public with large participation and received wonderful reviews and feedback. We are keen to propose an Interactive Museum on the theme of Nature-Culture for children. We are seeking sponsors for this proposal.

Statement of Accounts

D.L. Shah Chair Professor for Innovation

(01.04.2019 to 31.03.2020)

Particulars	Endowment	Interest
Opening Balance as on 01.04.2019	4,800,000.00	385,592.00
Moved from D.L. SHAH TRUST SCHOLARSHIP(2017)		1,370,000.00
Interest earned during 2019-20		288,000.00
Closing Balance as on 31.03.2020	4,800,000.00	2,043,592.00
Total Balance		6,843,592.00

Training of Highly Qualified People

	Master Students	Doctoral Students	Postdoctoral Students	Other (RA&TA)
Supervised	5	2	-	25
Co-Supervised	-	-	-	-
Graduated	5	1	-	-

List of Publications and Presentations

Conference Papers Published:
[1] Ravi Poovaiah B A, Design in Institutions in the last 100 years, Keynote at ICORD17 - 7th

International Conference on Research in Design, 2019, IISc Bangalore

[2] Aakash Johry, Ravi Poovaiah, Playfulness through the lens of toy design: a study with Indian preschool children with intellectual disability, International Journal of Play Volume 8, 2019 - Issue 3

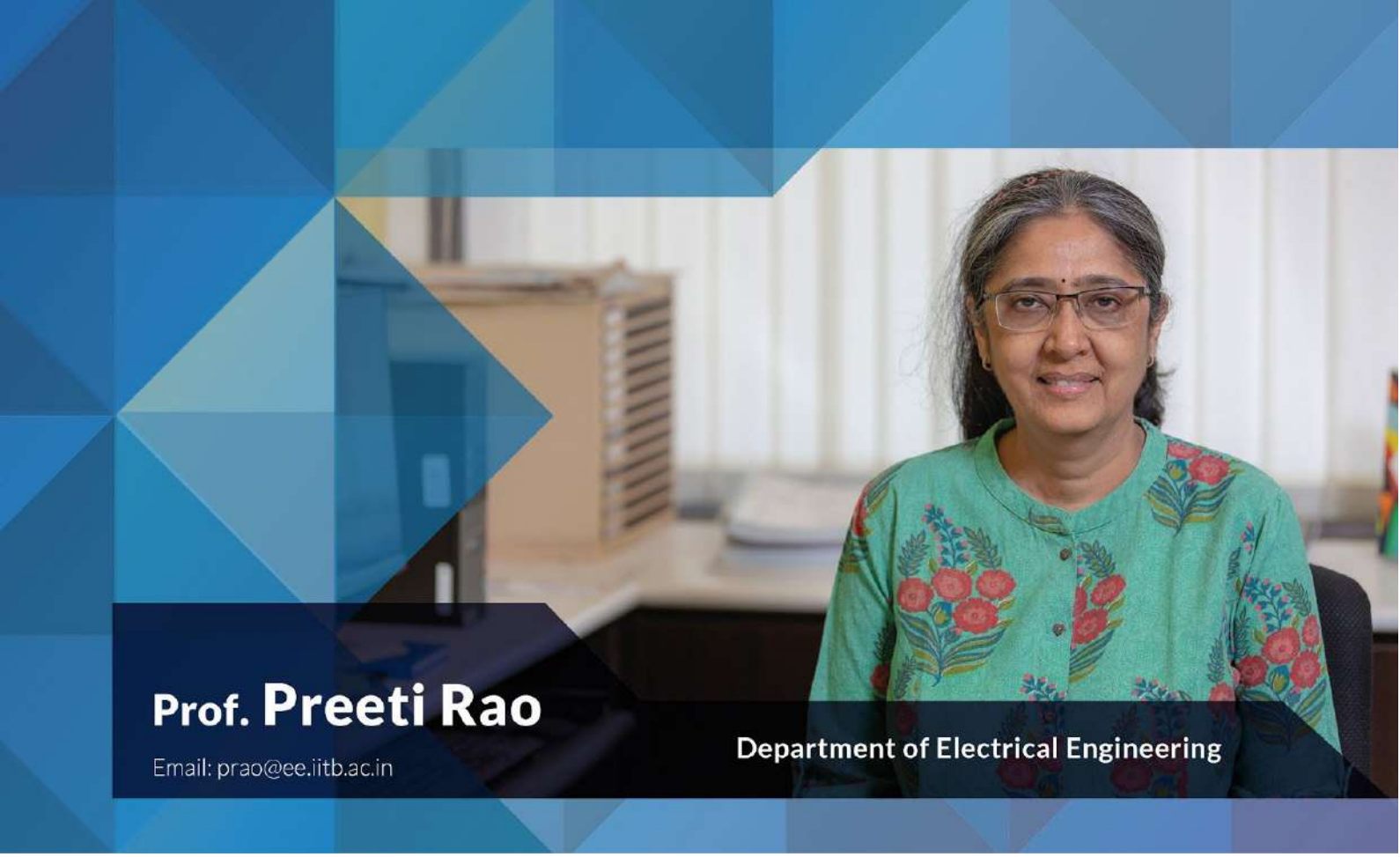
[3] Krishna Kumar, Ravi Poovaiah, " A Theoretical Framework for Interactive Visual Narratives (IVN)," ICORD19 - 7th International Conference on Research in Design,, 2019, IISc Bangalore

Overall Chair and Organisation:

[1] Conference PC Chair for Typography Day 2019 with the theme of 'Experimental Typography' being organized for the twelfth time from 2nd to 4th March 2019, at IDC School of Design (IDC), Indian Institute of Technology Bombay (IITB), Mumbai

[2] Conference PC Chair for Design Education 2019 Symposium held from 15th and 16th March 2019, at IDC School of Design (IDC), Indian Institute of Technology Bombay (IITB), Mumbai

[3] Conference PC Co-Chair for Typography Day 20202 with the theme of ''Typographic Dialogues: Local-Global' being organized for the 13th time on 28, 29 Feb and 1 March 2020, The Faculty of Arts and Design, The Applied Sciences University, Amman, Jordan



Prof. Preeti Rao

Email: prao@ee.iitb.ac.in

Department of Electrical Engineering

Hindustan Aeronautics Ltd R&D Chair Professor

"The HAL R&D Chair position has been to me a valuable acknowledgement of my work involving teaching and research in signal processing and speech/audio applications. I look forward to continuing to mentor students and apply my expertise to industry-relevant projects in the field."

Prof. Preeti Rao

Teaching and Research Highlights

1. Research in acoustic features and machine learning frameworks for the prediction of expert ratings on audio recordings of oral reading. Data collection designed and insights gathered via a few pilots of the system.

2. Developed computational representations for digital musicology research in the raga tradition.

3. Researched methods for speech enhancement for meetings transcription in noisy and reverberant settings. Developed system for synthesis and analysis of multi-channel speech in distant recording scenario.

Service and Public Engagement

1. Professor-in-charge, Continuing Education and Quality Improvement Programmes (CE&QIP), IIT Bombay.

2. Served as member of Recommendations committee for new M.Engg. program at IITB.

3. On Jury for "Women Entrepreneurship and Empowerment Mentorship Program", 2019.

4. Invited talk in CAMAD 2019, Mumbai University: Bridging the gap between music knowledge and performance practice with audio MIR.

5. Organised Workshop on Audio Processing for Computational Musicology and Musical Instruments at IIT Bombay and Dharwad. Delivered talks in both workshops 6. Delivered lecture on Audio IoT in TEQIP course at IIT Bombay. 7. Reviewer for NCC 2019, ISMIR 2019.

List of Publications and Presentations

1. P. Rao, "Aspects of Melodic Similarity", Invited talk at the Dagstuhl Seminar, Germany, January, 2019.

2. Krishna Subramani, Alexandre D'Hooge and Preeti Rao " Generative Audio Synthesis with a Parametric Model ", Late-Breaking/Demo, 20th annual conference of the International Society for Music Information Retrieval, Nov 2019, Delft, The Netherlands.

3. K. K. Ganguli and P. Rao "On the perception of raga motifs by trained musicians", The Journal of the Acoustical Society of America, Vol. 145(4), pp. 2418–2434, April 2019; doi: 10.1121/1.5097588

4. Amruta Vidwans, Prateek Verma, and Preeti Rao "Understanding and Classifying Cultural Music Using Melodic Features - Case Of Hindustani, Carnatic And Turkish Music", arXiv:1906.08916 [cs.SD]

5. P. Rao, K. Sabu, N. Nayak and B.S. Shreeharsha, "System for Automatic Assessment of Fluency in Spoken Language and A Method Thereof", Indian Patent Application No. 201921041761 dated October 15, 2019.

Statement of Accounts

Hindustan Aeronautics Ltd R&D Chair Professor

(01.04.2019 to 31.03.2020)		
Particulars	**Details**	**Amount**
Endowment Fund for Chair		13,000,000.00
Interest from previous period b/f (2018-19)		2,726,477.76
Hal Chair Corpus+interest C/F from previous years		15,726,477.76
Interest earned during 2019-2020		943,588.67
Annual honorarium payment for chair(2017-18)*	360,000.00	
Annual honorarium payment for chair (2019-20)	360,000.00	
Expenditure for Contigencies	219,172.00	
Balance interest as on 31.03.2020**		4,416.67
Total balance as on 31.03.2020		15,730,894.43

Training of Highly Qualified People

	Master Students	Doctoral Students	Postdoctoral Students	Other (RA&TA)
Supervised	5	2	-	-
Co-Supervised	-	1	-	-
Graduated	2	1	-	-

Erach and Meheroo Mehta Advanced Education Technology Chair Professor

"Engineering As I mentioned last time, this Chair has given the recognition that the distance education outreach work that I do is also important. Thanks Ruyintan".

Prof. Kannan M. Moudgalya

Teaching and Research Highlights

Conducted FOSSEE Summer Fellowship 2019 successfully. Selected 100 students from across the country based on a project work they completed. Their work was released as useful content for the community. The Fellows did useful work after coming to IIT Bombay as well. Validated that this mode of selection is better than examination based selection. Service and Public Engagement Validated the possibility of conducting hardware based massive distance workshops for teachers. In the eSim workshop, distributed 3,000 kits to about 150 Remote Centres, all through FedEx, and reached them before the workshop! Repeated it with Arduino Microcontrollers that were bought by teachers at Rs. 1,100 each, and distributed them in about 130 Remote Centres. We also conducted a massive workshop for 3,000 teachers on Linux. Conducted a pilot Job Fair with Drupal Community. Conducted a Job Fair with NASSCOM and got 30 students selected by 12 IT companies. These students are from different colleges across India. They were selected based on their performance in online tests conducted by the Spoken Tutorial project.

List of Publications and Presentations

• "Implementation of a Property Database and Thermodynamic Calculations in OpenModelica

for Chemical Process Simulation", by Rahul Jain, Priyam Nayak, Rahul A. S, Pravin Dalve, Kannan Moudgalya, P. R. Naren, Daniel Wagner, and Peter Fritzson, I&EC Research, 2019, 58, 7551-7560.

• "Towards Crowdsourced Flowsheets in Open-Modelica", by Priyam Nayak, Pravin Dalve, Rahul A. S, Rahul Jain, Kannan Moudgalya, P. R. Naren, Peter Fritzson, and Daniel Wagner, I&EC Research, 2019, 58, 11164-11174

• "Simultaneous Training of 10,000 Teachers through Weapons of Mass Instruction", Pan Commonwealth Forum 2019, Edinburgh, Sept. 2019, available at http://oasis.col.org/handle/11599/3404. Statement of Accounts Erach and Meheroo Mehta Advanced Education Technology

Statement of Accounts

Erach and Meheroo Mehta Advanced Education Technology

(01.04.2019 to 31.03.2020)		
Particulars	**Endowment**	**Interest**
Opening Balance as on 01.04.2019	10,488,389.00	222,807.64
Interest for the period 2019-20		503,303.34
20% tranfer to Institute Chair (As per MOU)	-2,100,000.00	
Expenses		-453,985.00
Closing Balance as on 31.03.2020	8,388,389.00	272,125.98
Total Balance		8,660,514.98

Training of Highly Qualified People

	Master Students	Doctoral Students	Postdoctoral Students	Other (RA&TA)
Supervised	One	One		
Co-Supervised				
Graduated				

Maharashtra Pollution Control Board (MPCB) Chair Professor for Environmental Technologies and Pollution Control

"There have been numerous benefits from working with MPCB – especially in the capacity of MPCB Chair Professor. First, the MPCB is an organization of the Government of Maharashtra entrusted with the task of environmental regulation - it is a network of socially inclined and progressive individuals and of scientific institutions. The institutions like MPCB make important choices and decisions and assist in fulfilling the so-called "development agenda" of the State and of the Union of India."

Prof. Shyam R. Asolekar

Teaching and Research Highlights

[1] Efficient and Effective Implementation of "Ban on Plastics": This techno-policy research guides the Government of Maharashtra to minimize single-use plastics in the environment and also push the production and use of substitutes such as cotton and other reusable materials.

[2] Sustainable Management of Urban Solid Waste: The production of Refuse-derived construction materials (RDCM), refuse-derived recyclable materials (RDRM) and refuse-derived fuels (RDF) would help support the construction boom in India in a sustainable manner. This sector will create green jobs in addition to various environmental and socio-economic benefits.

[3] Creation of the "Zero Waste Communities": Creating zero waste communities would involve processes like waste-reduction, onsite-segregation, decentralized treatment and recycling so that nearly no solid or liquid wastes go to landfills or sewers. This would

eventually become the building block of the so-called smart cities and villages.

Service and Public Engagement

Prof Asolekar makes two pronged efforts through his teaching and R&D projects. First, he incorporates the success stories highlighting the significance of circular economy in development of projects taking the case examples from municipalities, gated institutional campuses and industry. Second, he undertakes R&D projects for development and facilitation of sustainable technological interventions while enhancing the role of the members of the community in shaping the policy response for transitioning to sustainability. Prof Asolekar has been engaged in several projects dealing with sustainable development in rural areas and systemic transformation of institutional campuses - especially drawing benefits from the concepts of circular economy and integrated development.

List of Publications and Presentations

A] International Journal Singh, R., Cherrie, J. W., Rao, B., and Asolekar, S. R. (2020). Assessment of the future mesothelioma disease burden from past exposure to asbestos in ship recycling yards in India. International Journal of Hygiene and Environmental Health, 225, 113478. [B] Book Chapters 1. Sutar, R. S., Kumar, D., Kamble, K. A., Kumar, D., Parikh, Y. and Asolekar, S. R. (2019). Significance of Constructed Wetlands for Enhancing Reuse of Treated Sewages in Rural India. Waste Management and Resource Efficiency, S. K. Ghosh (ed.), Springer Nature Singapore Pte Ltd., 1221-1229.

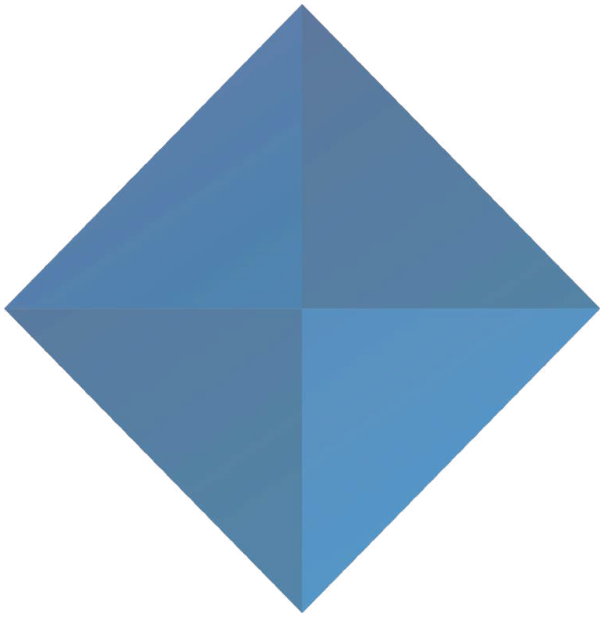
Statement of Accounts

MPCB Chair Professor for Environmental Technologies and Pollution Control

(01.04.2019 to 31.03.2020)		
Particulars	**Endowment**	**Interest**
Opening Balance as on 01.04.2019	8,800,000.00	1,004,825.00
Interest recd in 2019-20		528,000.00
Expenses		-360,000.00
Closing Balance as on 31.03.2020	8,800,000.00	1,172,825.00
Total Balance		9,972,825.00

Training of Highly Qualified People

	Master Students	Doctoral Students	Postdoctoral Students	Other (RA&TA)
Supervised	3	4	-	5
Co-Supervised	-	-	-	-
Graduated	1	2: Thesis Submitted	-	-



Perfumery Chair Professor

"We are grateful to Mr. Rasiklal Hemani for his generosity, which has allowed initiation of two activities under this endowment: 1. 'Rasiklal Hemani Fragrance and Flavour Chemistry Laboratory' has been set up in the Department of Chemistry, IIT Bombay. 2. A chair professorship named 'Perfumery Chair Professor' is instituted in the Department of Chemistry. I greatly appreciate your contribution as I believe that setting up of laboratory and chair professorship will spur the research in this important domain of chemistry."

Prof. Santosh J. Gharpure

Teaching and Research Highlights

Prof. Santosh J. Gharpure is involved in teaching chemistry courses at undergraduate as well as post graduate level. He was selected for the Departmental award for excellence in teaching, IIT Bombay in the year 2019.

Research activities: Gharpure's research group disclosed synthesis and isolation of highly unstable azirinobenzoxazole and benzoxazines in a chemodivergent fashion from aryl azido vinylogous carbonates by simple change in transition metal acetate. Thermal or rhodium(II) acetate mediated decomposition of these azides gave dihydroazirino benzoxazole.

Research Highlights: "Benzoxazoles and Benzoxazines by Intramolecular Aryl Azide Insertion" Victor Snieckus and Andy Tsai (Pfizer), Synfacts 2019, 15, 0486.

Service and Public Engagement

Prof. Santosh J. Gharpure is currently Professor- In-Charge of SINE – IIT Bombay's Technology Business Incubator, which helps start-ups. He is also involved in giving lectures in various colleges in and around Mumbai. In

addition, he is involved in conducting 'Organic Chemistry Summer School' in the Department of Chemistry. This was an intensive residential program aimed to strengthen the fundamentals in organic chemistry theory and practical with hands-on Laboratory sessions related to lecture topics. A total of 29 students (attached) from 14 different colleges and universities from Pune, Nagpur, Satara, Amravati, Ahmednagar, Aurangabad, Sangli, and Chandrapur districts from Maharashtra along with students from Goa and Gujrat participated in this program. These students were chosen from the colleges/universities, which lack the basic infrastructure for a research program and hence never get exposed to the frontier areas in Chemistry.

List of Publications and Presentations

Publications

1. "Transition-Metal Acetate-Promoted Intramolecular Nitrene Insertion to Vinylogous Carbonates for Divergent Synthesis of Azirinobenzoxazoles and Benzoxazines" S. J. Gharpure, S. Naveen, G. Samala, D. S. Vishwakarma, Chem. Eur. J. 2019, 25, 1456.

2. "Cascade Radical Cyclization on Alkynyl Vinylogous Carbonates for the Divergent Synthesis of Tetrasubstituted Furans and Dihydrofurans" S. J. Gharpure, Padmaja, V. Prasath, Y. G. Shelke, Org. Lett. 2019, 21, 223.

Presentations

1. S. J. Gharpure, "Conformational Analysis" invited talk at Department of Chemistry, Rashtrasant Tukadoji Maharaj Nagpur University January 18, 2019.

2. S. J. Gharpure, "Tandem reactions in the synthesis of oxa and aza-cycles" invited talk in 'Conference on "Energy and Environmental Challenges" (CE2C-2019)' VNIT, Nagpur, January 18-19, 2019.

3. S. J. Gharpure, "Diverse functionalization of alkynes for the synthesis of heterocyles" invited talk in 24th CRSI National Symposium in Chemistry (NSC-24) at CSIR-Central Leather Research Institute (CLRI), Chennai, February 8-10, 2019.

Statement of Accounts

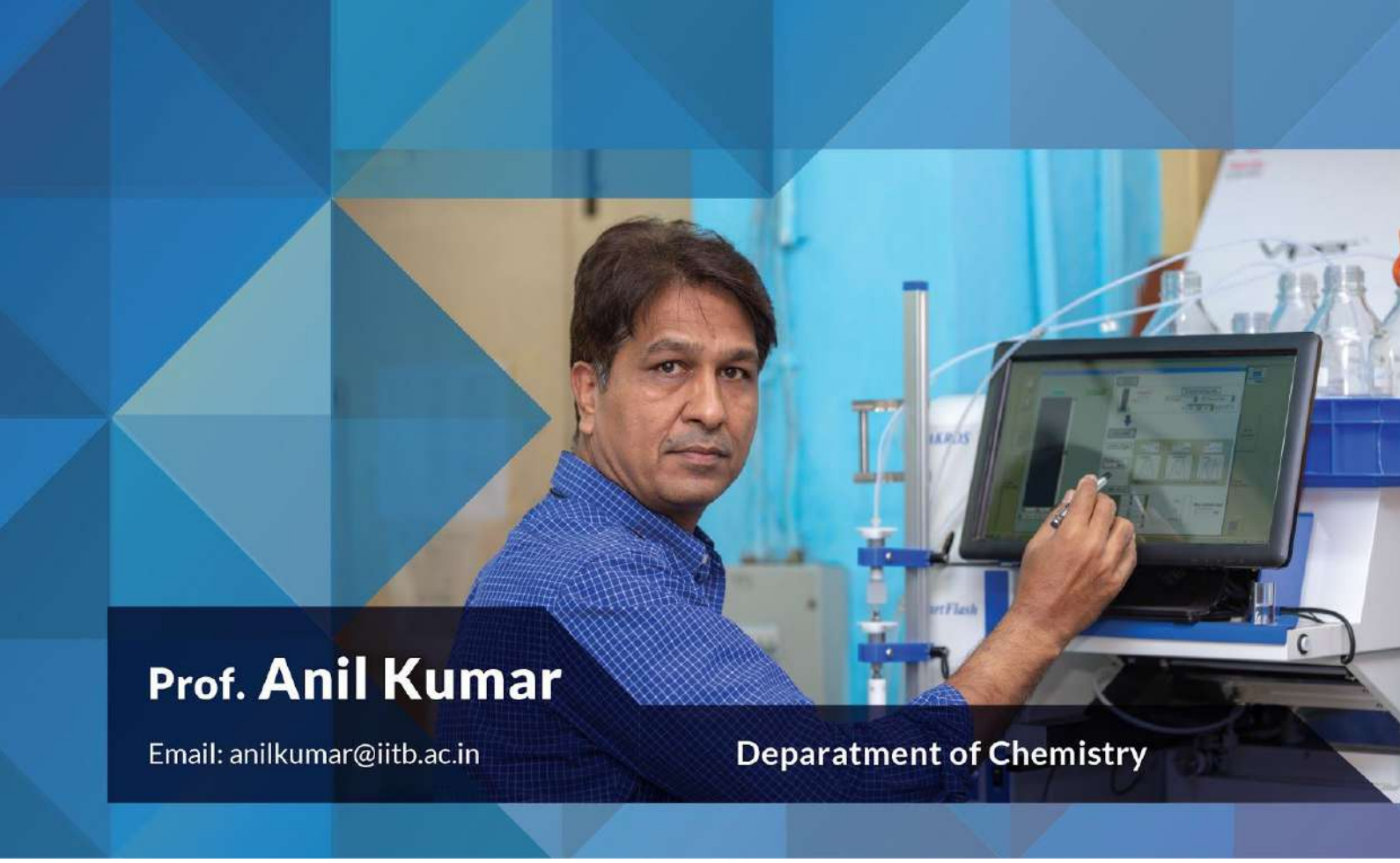
Perfumery Chair Professor

(01.04.2019 to 31.03.2020)

Particulars	Endowment	Interest
Opening Balance as on 01.04.2019	9,000,000.00	320,685.00
Interest received 2019-20		540,000.00
Fund Transfer to ICCF as per Institute Chair Norms 30.03.20	1,800,000.00	
Expenses		-360,000.00
Closing Balance as on 31.03.2020	7,200,000.00	500,685.00
Total Balance	7,700,685.00	

Training of Highly Qualified People

	Master Students	Doctoral Students	Postdoctoral Students	Other (RA&TA)
Supervised	2	15	2	-
Co-Supervised	-	1	1	-
Graduated	22	14	8	1



Class of 1985 Chair in Technology & Sustainable Development

"I thank the class of 1985 for supporting this chain in sustainable development. This is an important activity for nation building and helps us in strengthening our ongoing activities in the domain of "Continuous Flow Processes for Chemical Industries". This support provides us a platform and recognition to carry out our activities with more vigour. We used these funds to visit various academic and industrial labs in order to provide them skills to move their batch production into continuous production."

Prof. Anil Kumar

Teaching and Research Highlights

We have developed a new course in "Continuous Flow Chemistry" and have started teaching the PhD level students. I have also taken the lecture in Chemical Engineering to expose their students to continuous manufacturing. We have also developed a CEP course which helps working professionals to learn about this important technology which is crucial for sustainable development of chemical industries in India.

We have set up a state of the art facility in continuous flow chemical manufacturing. In this facility we have all the tools required for lab optimization to production scale optimization. We train various working scientists as well as various students to convert their batch chemical manufacturing into continuous manufacturing.

Service and Public Engagement

We regularly conduct training programs for chemical industries wherein we take three to four R&D Scientists and train them in do's and don'ts of continuous manufacturing. In this training we teach them theory as well as hands-on training to carry out all types of chemical reactions via continuous flow. In the last twelve months, we have trained teams from EISAI, Merck, Jay Chemicals, Delta Finochem, Saakar Healthcare, Medilux Labs, Sami Labs, and Colortex Industries. We are also in the process of developing video tutorials to reach a larger number of scientists so that they can get benefited from this important technological development leading to Green Chemical Manufacturing Processes.

List of Publications and Presentations

1. "High-Throughput Template-Free Continuous Flow Synthesis of Polyaniline Nanofibers" Rekha Singh, Karuna Veeramani, Rishab Bajpai, and Anil Kumar, Ind. Eng. Chem. Res., 2019, 58, 5864-5872
2. "Role of Molecular and Interchain Ordering in the Formation of a δ-Hole Transporting Layer in Organic Solar Cells" Naresh Chandrasekaran; Cheng Li; Shivam Singh;

Anil Kumar; Christopher McNeill; Sven Huettner; Dinesh Kabra; ACS Applied Materials and Interfaces, in press

Presentations:

1. Pfizer 2. Chemspec Agrochem 3. FCS Mumbai 4. DRILS Hyderabad 5. IGCW Conference 6. IISER Bhopal 7. MAHE Mangalore 8. Pidilite

Training of Highly Qualified People

	Master Students	Doctoral Students	Postdoctoral Students	Other (RA&TA)
Supervised	5	12	5	7
Co-Supervised	--	--	--	--
Graduated	2	2	2	--

Rahul Bajaj Chair Professor

"Prof Joshi would like to acknowledge the support received for the Chair with gratitude. The support has enabled us to provide experimental as well as computing facilities to the Ph.D. and M.Tech. students of IIT Bombay. In addition, association with the eminent personality like 'Rahul Bajaj' by virtue of the chair professorship, brings a lot of prestige."

Prof. Suhas Joshi

Teaching and Research Highlights

Research Highlights include:
Texturing of surfaces with femtosecond lasers to generate Laser Induced Periodic Surface Structures (LIPSS) and Multi-scale nono-structures help improve anti-biofouling properties of surfaces.

Modelling of fibre reinforced plastic (FRP) composites to understand their dynamic and fatigue characteristics helps understand their behaviour in complex conditions in the aerospace domain.

Free-form and precision machining of ultra-hard ceramics for the space applications has been a challenge that requires novel subtractive technologies that provide ease in operations and do not damage the surfaces produced.

Service and Public Engagement

1. Keynote Talk on 'Predicting Tool-life in Micro-milling using Data Analytics for Dies and Mold Applications', 17th NAMIS (An International Research Network on Nano and Micro Systems) Workshop, 24-27 November, 2019, IIT Bombay (India).

2. Keynote Talk on 'Micro-texturing of Surfaces' FDP on "Advances in Mechanical Engineering", is organized by Charutar

Vidyamandal, Anand, Gujrath, 19-20 June 2019.

3. Keynote Talk on 'Texturing of Surfaces for Functional Applications', 1st International Conference on Industry 4.0 and Advanced Manufacturing (I-4AM'19), Indian Institute of Sciences, Bangalore, 28-29 June, 2019.

4. 'Mechanics of Machining of Aerospace Materials', 2-day Program on understanding fundamental issues in machining of 'difficult-to-machine' materials such as superalloys, titanium alloys for Seco Tools Engineers, November 19-20, 2018 at IIT Bombay.

5. Research Methodology of Beginner Researchers: It involves understanding collection, classification, assimilation and compilation of the literature data and definition of research opportunities and objectives of the work. Planning and designing of experimental as well as analytical methods to carry out research followed by compilation of results and their interpretation. Finally, performing validation tests to confirm the experimental as well mathematical findings completes the research. This program was done for Masters and Ph.D. students of Government College of Engineering, Aurangabad, September 14-18, 2019 at IIT Bombay.

6. Membership

   i. Member of Academic Council of Walchand College of Engineering, Sangli, Maharashtra

   ii. Member of Academic Council of K. K. Wagh College of Engineering, Nashik, Maharashtra

Statement of Accounts

Rahul Bajaj Chair Professor

(01.04.2019 to 31.03.2020)

Particulars	Endowment	Interest
Opening Balance as on 01.04.2019	65,200,000.00	4,808,957.00
Interest earned during 2019-20		6,612,000.00
Transfer to Main accounts	-50,000,000.00	-5,700,000.00
Expenses		-1,305,860.52
Closing Balance as on 31.03.2020	15,200,000.00	4,415,096.48
Total Balance		19,615,096.48

Training of Highly Qualified People

	Master Students	Doctoral Students	Postdoctoral Students	Other (RA&TA)
Supervised	6	12	2	---
Co-Supervised	---	3	---	---
Graduated	6	4	---	---

List of Publications and Presentations

1. Alwin Verghese, Vinay Kulkarni and Suhas S. Joshi, Tool Breakage Prediction in Micro-milling from Force Signal Analysis using Machine Learning Methods, Trans. of ASME, Journal of Manufacturing Science and Engineering (Accepted for Publication, September 2020)

2. Vishwas Divse, Deepak Marla, Suhas S. Joshi, Finite Element Analysis of Tensile Notched Strength of Composite Laminates, Composite Structures, 255, (2021) 112880 https://doi.org/10.1016/j.compstruct.2020.112880

3. Avinash Khadtare, Raju S. Pawade and Suhas S. Joshi, Surface Integrity studies for Straight and Inclined Hole in Micro-drilling of Thermal Barrier

Coated Inconel 718: A Turbine Blade Application, Precision Engineering, 66, (2020) pp. 166-179. https://doi.org/10.1016/j.precisioneng.2020.07.010

4. Themistoklis Karkantonis, Anvesh Gaddam, Tian Long See, Suhas S. Joshi, Stefan Dimov, Femtosecond laser-induced sub-micron and multi-scale topographies fordurable lubricant impregnated surfaces for food packaging applications, Surface & Coatings Technology, 399, 15 (2020), 126166 https://doi.org/10.1016/j.surfcoat.2020.126166

5. 5. Reshma Siddiquie, Amit Agrawal, and Suhas S. Joshi, Surface alterations to impart antiviral properties to combat COVID-19 transmission, Transactions of the Indian National Academy of Engineering, 5:343–347 doi: 10.1007/s41403-020-00096-9

6. Anvesh Gaddam, Ashwin Prabhakaran, Amit Agrawal, Suhas S. Joshi, Wire mask assisted rolling as a cost-effective method for high-throughput surface micro-texturing, Journal of Micromechanics and Microengineering, 30, 7, 075010 (13pp) *https://doi.org/10.1088/1361-6439/ab8ebe* (Accepted for Publication, April 2020)

7. Reshma Siddiquie, Anvesh Gaddam, Amit Agrawal, Stefan Dimov, Suhas S. Joshi, Anti-biofouling properties of femtosecond laser-induced sub-micron topographies on elastomeric surfaces, Langmuir, 36, 19, pp. 5349–5358. https://doi.org/10.1021/acs.langmuir.0c00753

8. Anuj Sharma, Suhas S. Joshi, D. Datta and R. Balasubramaniam 'Modeling and Analysis of Tool Wear Mechanisms in Diamond Turning of Copper Beryllium Alloy', Journal of Manufacturing Processes, 56, Part A, (2020) pp. 439-450 https://doi.org/10.1016/j.jmapro.2020.04.053

9. Ankit Kumar, Rajneesh Bharadvaj and Suhas S. Joshi, A Finite-element heat Transfer Model for Orthogonal Cutting, Advances in Materials and Processing Technologies, 2020, https://doi.org/10.1080/2374068X.2020.1741059

10. Jithin, S., Bhandarkar, U.V. and Suhas S. Joshi, Finite Element Model for Topography Prediction of Electrical Discharge Textured Surfaces Considering Multi-Discharge Phenomenon International Journal of Mechanical Sciences, 177 (2020) 105604

11. Siddharam Mane, Shyamprasad Karagadde, S. G. Kapoor, Suhas S Joshi, Evaluation of an Adhesive Friction Coefficient Under Extreme Contact Conditions and its Application to the Machining Process, Tribology Tranactions, (DOI:10.1080/10402004.2020.1755757), 2020.

12. Avinash Khadtare, Alwin Varghese, Raju S. Pawade and Suhas S. Joshi, Micro-drilling of Straight and Inclined holes on Thermal Barrier Coated Inconel 718 for Turbine Blade Cooling, Materials and Manufacturing Processes, 55 (2020), pp. 254–267. DOI:10.1080/10426914.2020.1740253

13. Siddharam Mane, Shyamprasad Karagadde, S. G. Kapoor, Suhas S Joshi, Modeling of variable friction and heat partition ratio at the chip-tool interface during orthogonal cutting of Ti-6Al-4V,

Journal of Manufacturing Processes (Accepted for Publication March 2020)

14. Panchakshari Hiremath, Kishor Gajrani and Suhas S. Joshi, Effect of Composition, Microstructure and Hardness after Heat Treatment on Machinability of Steel Forgings, Journal of Materials Engineering and Performance, (2020) https://doi.org/10.1007/s11665-020-04702-3

15. Vijai Laxmi, Siddhartha Tripathi, Suhas S. Joshi, Amit Agrawal, Separation and enrichment of platelets from whole blood using PDMS based passive microdevice, Journal of Industrial and Engineering Chemistry Research (2020) https://doi.org/10.1021/acs.iecr.0c00502

16. Makarand M. Kane, S. V. Kulkarni, H. J. Bahirat, Suhas S. Joshi Experiments with Miniature Wire EDM for Silicon, Procedia CIRP, v, (2020), pp. – (Accepted for publication)

17. Makarand M. Kane, S. V. Kulkarni, H. J. Bahirat, Suhas S. Joshi Analysis of Electrical Forces in Multi-Wire EDM for Semiconductors, Procedia CIRP, v, (2020), pp. – (Accepted for publication)

18. Jithin, S., Bhandarkar, U.V. and Suhas S. Joshi, Multi-spark model for predicting surface roughness of electrical discharge textured surfaces, International Journal of Advanced Manufacturing Technology (2020) *https://doi.org/10.1007/s00170-019-04841-5*

19. Anuj Sharma, Suhas S. Joshi, D. Datta and R. Balasubramaniam, Investigation of tool and workpiece interaction on surface quality while diamond turning of copper beryllium alloy, Trans. of ASME, Journal of Manufacturing Science and Engineering, 142(2): 021011 (2020) DOI: *https://doi.org/10.1115/1.4045721*

20. Himani Sharma, Anvesh Gaddam, Amit Agrawal, Suhas S. Joshi, Stefan S. Dimov, Influence of texture shape and arrangement on thermo-hydraulic performance of the textured microchannels, International Journal of Thermal Sciences, vol. 147, n1, 106146 (2020). *https://doi.org/10.1016/j.ijthermalsci.2019.106146*

21. Ankit Kumar, Rajneesh Bharadvaj and Suhas S. Joshi, Thermal Modeling of Drilling Process in Titanium Alloy (Ti-6Al-4V), Machining Science and Technology, v24, n3, (2020) *https://doi.org/10.1080/10910344.2019.1698607*

22. Kamlesh Joshi, Pradeep Padhamnath, Upendra Bhandarkar and Suhas S. Joshi, Surface quality and contamination on Si wafer surfaces sliced using wire-EDM, Trans. ASME Journal of Engineering Materials Technology, vol. 141, n4, 041013 (2019) (15 pages) *https://doi.org/10.1115/1.4044374*

23. Himani Sharma, Anvesh Gaddam, Suhas S. Joshi and Amit Agrawal, Slip flow through microchannels with lubricant-infused bi-dimensional textured surfaces, Microfluidics and Nanofluidics, vol. 23, n2, pp (2019). *https://doi.org/10.1007/s10404-019-2197-y*

24. 24. Azher Thanedar, Ganesh Dongre, Suhas S. Joshi, Analytical Modelling of Temperature in Cylindrical Grinding to Predict Grinding Burns, International Journal of Precision Engineering and Manufacturing, vol. 20, n1, pp. 13-25 (2019),

https://doi.org/10.1007/s12541-019-00037-9

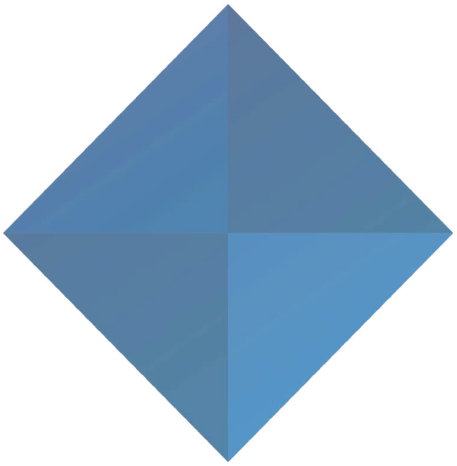
25. Ranjan Das, Harish Barshilia and Suhas S. Joshi, Analytical model of progression of flank wear land width in drilling, Transactions of ASME, Journal of Tribology, Vol. 141, n1, pp. 1-9, 011601 (2019) https://doi.org/10.1115/1.4040511

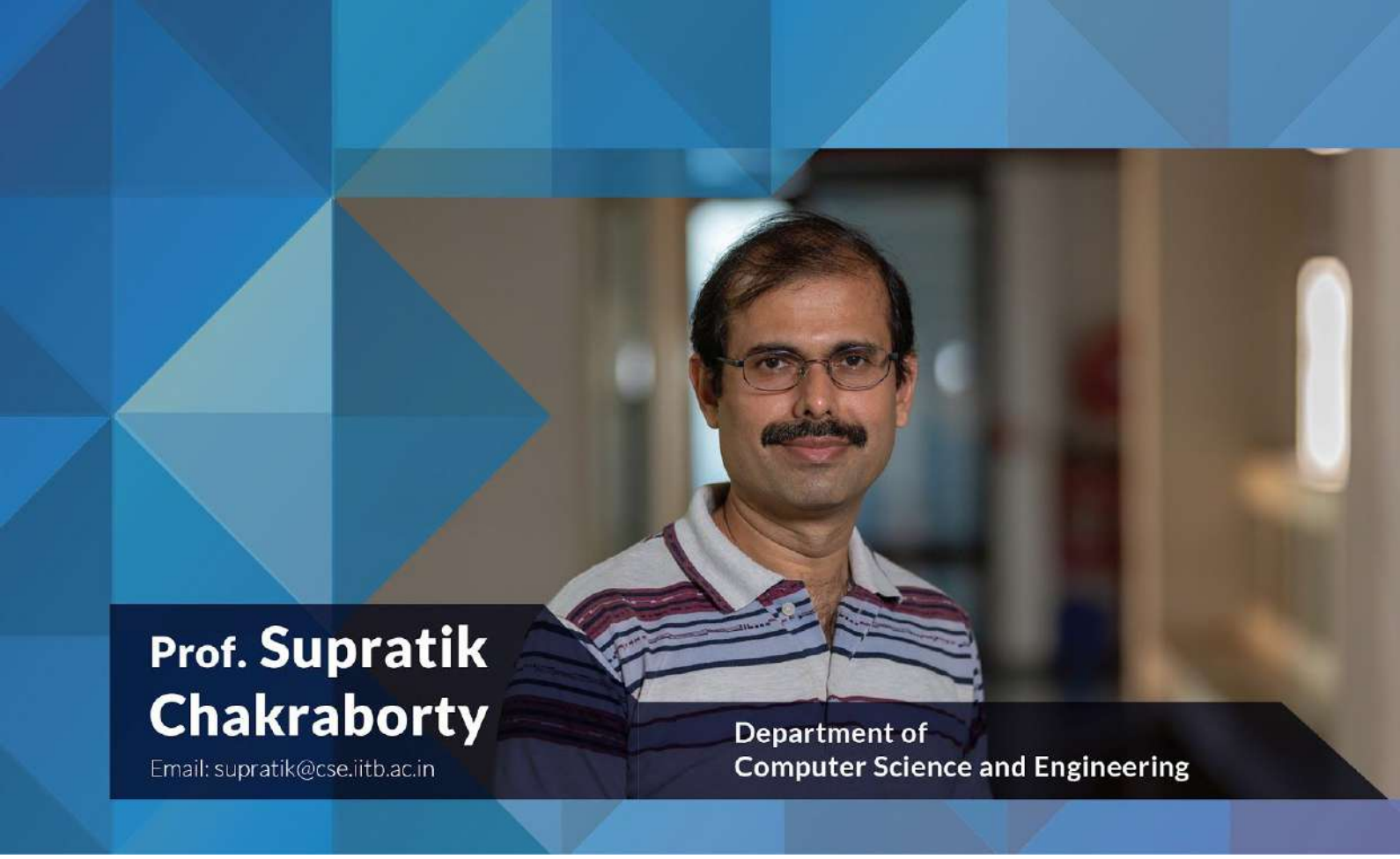
26. Ankit Rana Ganesh G. Dongre and Suhas S. Joshi, Analytical Modeling Exit Burr in Drilling of Ti6Al4V alloy, Sādhanā vol. 44: 133 (2019) https://doi.org/10.1007/s12046-019-1114-0

27. 27. Kamran Khan, Alwin Varghese, Pradeep Dixit, and Suhas S. Joshi, Effect of Tool Path Complexity on Top Burrs in Micromilling, Procedia Manufacturing, vol. 34 pp. 432-439 (2019) DOI: 10.1016/j.promfg.2019.06.188

28. Siddharam Mane, Syhamprasad Karagadde, Suhas S. Joshi, Study of cutting-edge radius effect on the cutting forces and temperature during machining of Ti6Al4V, Procedia Manufacturing, vol. 34, pp. 369-378 (2019). DOI information: 10.1016/j.promfg.2019.06.180

29. Kamlesh Joshi, Upendra Bhandarkar and Suhas S. Joshi, Surface integrity and wafer thickness variation analysis of ultra-thin silicon wafers sliced using wire-EDM, Advances in Materials and Processing Technologies vol. 5, n3, pp. 512-525 (2019) https://doi.org/10.1080/2374068X.2019.1633618





Bajaj Group Chair Professor

"I'd like to thank once again the generosity and far-sightedness of the Bajaj Group for instituting the Bajaj Group Chair Professor position at IIT Bombay. In addition to the recognition that the position provides, the financial support that comes with the position has significantly helped me in pushing the limits of what I could do in my research activities over the last year. In particular, the travel grant without strings attached, and the contingency funds made available through the Chair Professorship position have enabled me to support interns, take care of research-related expenses and also attend an additional conference during the last one year (I chaired/presented papers at three international conferences last year). All of these have eventually added up, in their own ways, to help strengthen my research programme. It has been a privilege occupying the Bajaj Group Chair Professor position for the last few years. Thanks a lot to the Bajaj Group."

Prof. Supratik Chakraborty

Teaching and Research Highlights

Over the last year, I, along with my colleagues in the Formal Methods group at IIT Bombay, have re-designed the set of formal methods-related elective courses offered in the Dept of Computer Science and Engineering at IIT Bombay. I took a lead role in this effort, and offered a new first-level foundations course on formal methods as a graduate-level elective during Autumn 2019. The new course has been greatly appreciated by the first batch of students who took the course. On the research front, we have continued our earlier work on Boolean functional synthesis, on analysis of array manipulating programs, on the analysis of gene regulatory networks using constraint solving techniques, and on sampling and counting techniques. Among significant outcomes of this research, we have been able to identify a normal form for representing Boolean specifications, called Synthesis Negation Normal Form, that guarantees polynomial-time

Skolem function synthesis. I, along with my students and colleagues, have also designed a new technique, called full-program induction, for reasoning about sequences programs with sequences of loops manipulating arrays. Our work is now a part of the VeriAbs tool developed at Tata Consultancy Services, and that has won the Gold in the annual Software Verification Competition (SVCOMP) 2020 in the Array Reachability category. We have developed a new tool for functional significance checking of implicated genes in a wetlab experiment, using domain knowledge (encoded as gene regulatory networks) and experimental observations (encoded as microarray readings). We have also found new symbolic techniques for computing the permanent of a 0-1 matrix, a fundamental problem with connections to bipartite graph matching. All of the above work has been published in peer-reviewed, top-rated venues as well. I am also happy to inform you that I was elected as a Fellow of the Indian National Academy of Engineers last year.

Service and Public Engagement

I continue to serve on the Executive Council of Association of Computing Machinery (India Chapter). As part of my responsibilities in this council, I oversee the student travel grants programme and also the ACM-India Doctoral Dissertation Award programme. I serve on the Core Engineering Committee of Science and Engineering Research Board (SERB) of DST. I also serve on the Technical Advisory Board of Microsoft Research India Pvt Ltd. I have also given several invited technical talks at events organized by different institutions/organizations during the past year.

Statement of Accounts

Rahul Bajaj Chair Professor

(01.04.2019 to 31.03.2020)

Particulars	Endowment	Interest
Opening Balance as on 01.04.2019	65,200,000.00	4,808,957.00
Interest earned during 2019-20		6,612,000.00
Transfer to Main accounts	-50,000,000.00	-5,700,000.00
Expenses		-1,305,860.52
Closing Balance as on 31.03.2020	15,200,000.00	4,415,096.48
Total Balance		19,615,096.48

Training of Highly Qualified People

	Master Students	Doctoral Students	Postdoctoral Students	Other (RA&TA)
Supervised	-	2	2	3
Co-Supervised	2	-	-	-
Graduated	1	-	-	-

List of Publications and Presentations

Edited volume: S. Chakraborty and J. A. Navas (editors), Proceedings of 11th International Conference on Verified Software: Theories, Tools and Experiments (VSTTE 2019), Lecture Notes in Computer Science (LNCS 12031), Springer [in press]

Journal articles:

S. Jaiswal, U. Khedker and S. Chakraborty, "Bidirectionality in Flow-Sensitive Demand-Driven Analysis", in Science of Computer Programming, Vol 190, pages 1-49, Jan 2020

S. Chakraborty and V. Varma, "Highlights of Software R&D in India", in Communications of the ACM, Vol 62, Issue 11, pages 88-91, Nov 2019

Peer-reviewed conferences:

S. Chakraborty, A. Gupta and D. Unadkat, "Verifying Array Manipulating Programs with Full-Program Induction", to appear in Proc. of International Conference on Tools and Algorithms for Construction and Analysis of Systems (TACAS), Apr 2020

M. Afzal, S. Chakraborty, A. Chauhan, B. Chimdyalwar, P. Darke, A. Gupta, S. Kumar,

Charles Babu M., D. Unadkat and R. Venkatesh, "VeriAbs: Verification by Abstraction and Test Generation (Competition Contribution)", to appear in Proc. of International Conference on Tools and Algorithms for Construction and Analysis of Systems (TACAS), Apr 2020

S. Akshay, J. Arora, S. Chakraborty, S. Krishna, D. Raghunathan and S. Shah, "Knowledge Compilation for Boolean Functional Synthesis", in Proc. of International Conference on Formal Methods in Computer-Aided Design (FMCAD), pages 161-169, Oct 2019

S. Chakraborty, A. Shrotri and M.Y. Vardi, "On Symbolic Approaches for Computing the Matrix Permanent", in Proc. of International Conference on Principles and Practice of Constraint Programming (CP), pages 71-90, Oct 2019

S. Akshay, S. Basu, S. Chakraborty, R. Sundararajan and P. Venkataraman, "Functional Significance Checking in Noisy Gene Regulatory Networks", in Proc. of International Conference on Principles and Practice of Constraint Programming (CP), pages 767-785, Oct 2019 Report

Jitendra K. & Meena J. Mehta Chair Professor

"I would like to thank Jitubhai and Minaben for establishing the JK & MJ Mehta Chair Professor of Structural Engineering. The chair professorship has been very useful in adding another dimension to my visibility to various national and international professional bodies and institutions. It has been also useful in attracting high impact industry-oriented projects."

Prof. Yogesh M Desai

Teaching and Research Highlights

We have been conducting research in the field of computational and composite mechanics. By making use of structural engineering concepts, we have been able to develop simplified and computationally efficient procedures for analysing composite structures. We have worked extensively in characterization of composite construction and also have been able to model composites having defects.

On the teaching front, I have been teaching Undergraduate and Graduate Level courses, using `inclusive' and `experiential' learning concepts. The students have appreciated my teaching efforts, as evident from high evaluations given by the students.

Service and Public Engagement

- I have been involved in several prestigious projects having societal impact like Bullet Train Terminus-cum-International Financial Service

Complex. Mumbai Metro, Refurbishment of several airports in India.

• Have scrutinized design and drawings of several bridges and industrial structures.

• Was co-ordinator for a course on Finite Element Methods offered to College Teachers and industry participants.

• Was co-ordinator for an ARPIT Course on Numerical Methods in Civil Engineering, which was registered by over 1400 college teachers across the country.

• Was involved in accreditation of several engineering institutes as Chairperson.

• Have delivered expert lectures at several places.

• Have served on various advisory committees of government organizations and educational institutes.

• Have been reviewers for several international journals.

• Have been PhD external Examiner at different IITs and NITs.

Statement of Accounts

Jitendra K. & Meena J. Mehta
Chair Professor

(01.04.2019 to 31.03.2020)		
Particulars	**Endowment**	**Interest**
Opening Balance as on 01.04.2019	7,608,428.00	448,865.64
Interest for the period 2019-20		456,505.68
Expenses		-360,000.00
Closing Balance as on 31.03.2020	7,608,428.00	545,371.32
Total Balance		8,153,799.32

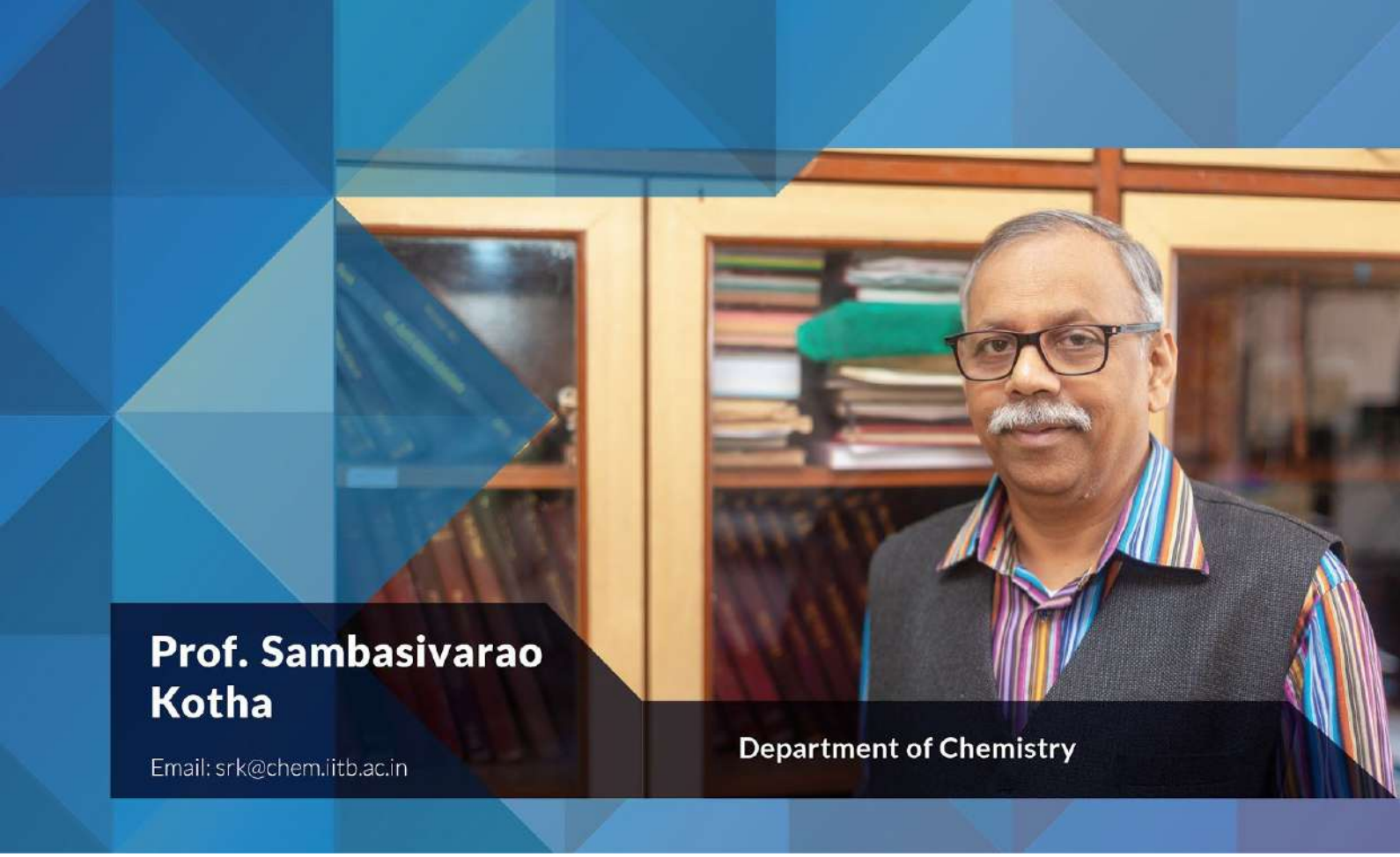
Training of Highly Qualified People

	Master Students	Doctoral Students	Postdoctoral Students	Other (RA&TA)
Supervised	31	21	-	44
Co-Supervised	-	4	-	-
Graduated	29	14	-	-

List of Publications and Presentations

Sawhney, H., Pakhare, K. S., Shimpi, R.P., Guruprasad, P.J Desai, Y. M. :Single variable new first-order shear deformation plate theory: Numerical solutions of Levy-type plates using fourth-order Runge-Kutta technique, 7th International Congress on Computational Mechanics and Simulation, 11-13 December 2019, IIT Mandi, India.

Chakravarthy, B. K, Desai, Y.M., Ajugia, M. K., Bhagat, A. V., Srambical, P., Kumar, V. Jain, K., Pundir, A., Iqbal, R., Khanzode, V., Maulik, S. *Patent filed for Novel Design of Palanquin to carry divotees to Vaishano Devi Shrine. (Patent filed in June 2019).*



Pramod Chaudhari Chair Professor for Green Chemistry and Industrial Biotechnology

"It is with great pleasure we thank Praj industries for establishing the Chair Professor in the Green Chemistry area. We got benefited by their support and encouragement. Moreover, travel money from this scheme can be used without airline restrictions, which is a very important point for an academician whereas all other government organisations has Indian Airline travel restriction."

Prof. Sambasivarao Kotha

Teaching and Research Highlights

Taught two courses on Physical organic Chemistry and methods in organic synthesis. Emphasized the importance of Green Chemistry during the lectures. Also included some relevant examples from industrial point of view. Increased the awareness of Green Chemistry for sustainable development of human progress. Our research work involves development of new synthetic methodologies. More specifically, we are working on metathesis, Suzuki coupling, [2+2+2] cycloaddition and rongalite. We are using transition metal catalysed transformations, which avoid waste, and they are catalytic in nature. These processes are of Green in nature. We also developed useful methods based on rongalite, which is produced in India on tonne scale and extensively used in textile industry as a decolorizing agent. Rongalite is considered as a Green reagent.

Research Interests: *Organic Synthesis - Development of New Synthetic Methods*: Unusual amino acids, Peptide Modification, Suzuki coupling, Metathesis, [2+2+2] cycloaddition, Chemistry of benzocylobutene, and theoretically interesting molecules.

Service and Public Engagement

Delivered seminars at various colleges, acted as resource person for conducting symposia.

Selection committee member in various universities, IIT's and research labs around the country. Examined M.Sc. and Ph.D. thesis from various universities. Refreed papers from various Journals (National and International.) Evaluated proposals from various funding agencies. Member of Editorial board for various journals (National and International). Expert member for selection faculty member at IIT Patna and IIT Jammu., IIT Delhi and JNC (Bangalore).

Statement of Accounts

Pramod Chaudhari Chair Professor for Green Chemistry and Industrial Biotechnology

(01.04.2019 TO 31.03.2020)		
Particulars	**Endowment**	**Interest**
Opening Balance as on 01.04.2019	3,900,000.00	1,372,475.00
Interest for the period 2019-2020		234,000.00
Expenses		-880,000.00
Closing Balance as on 31.03.2020	3,900,000.00	726,475.00
Total Balance		4,626,475.00

Training of Highly Qualified People

	Master Students	Doctoral Students	Postdoctoral Students	Other (RA&TA)	Total
Supervised	42	48	23	30	143
Co-Supervised	--	--	--	--	--
Graduated	40	35	20	30	125

List of Publications and Presentations

[2020 Publications]

[30] S. Kotha, S. R. Cheekatla Synthesis of cis-syn-cis and cis-anti-cis linear triquinanes via photo-thermal metathesis Indian J Chem. 59B, 000, 2020 (0.509)

[29] S Kotha and S R Cheekatla Design and synthesis of pentacycloundecane derivative containing oxazole moiety. Heterocycles, 100, 1623, 2020. (0.878)

[28] S. Kotha, N. Gupta Facile synthetic route to [3.n] thiacyclophanes through ring-closing metathesis and their structural studies. Eur. J. Org. Chem (doi.org/10.1002/ejoc.202000697) (3.029)

[27] S Kotha and S R Cheekatla A new skeletal rearrangement of 1,7-dimethylCookson's cage dione catalyzed by a Lewis acid Org. Biol. Chem. 18, 1377, 2020 (3.490)

[26] S. Kotha, A. Fatma Construction of [5/7/5] fused tricyclic sulfones via ring-rearrangement metathesis. ChemistrySelect, 5, 1929, 2020 (1.716)

[25] S. Kotha, S. R. Cheekatla Synthesis of cage heterocycles containing tetrahydrofuran and pyran ring systems via Grignard addition and ring-closing metathesis Indian J Chem. 59B, 75, 2020 (0.509)

[24] S. Kotha, S. R. Cheekatla Design, synthesis, and rearrangement studies of gem-dimethyl containing cage systems Tetrahedron, 76, 130898, 2020 (2.379)

[23] S. Kotha, S. Ansari, S. R. Cheekatla, M. K. Dipak Synthesis of oxa-cage compounds by ketalization and ring-closing metathesis Tetrahedron, 76, 130856, 2020 (2.379)

[22] S. Kotha, R. R. Keesari, A. Fatma, R. Gunta Synthetic strategies to diverse polyquinanes via olefin metathesis:Access to the basic core of crinipellin, presilphiperfolanol, and cucumin J. Org. Chem., 82, 851, 2020. (4.745)

[21] S. Kotha, S. Pulletikurti Lewis acid mediated synthesis of indolizidine derivatives Heterocycles 101, 717, 2020. (0.878) [2019 Publications]

[20] S. Kotha, D. Bansal, A. S. Chavan Diversity-oriented approaches to polycycles and heterocycles via enyne metathesis and Diels–Alder reaction as key steps ACS Omega,4, 22261, 2019 (2.584)

[19] S Kotha and S R Cheekatla Synthesis and acid-catalyzed rearrangement of cage propellanes ChemistrySelect 4, 13440, 2019 (1.716)

[18] S. Kotha, M. Meshram Development of new synthetic strategies, tactics and their applications Chemical Record, 19, 2480, 2019. (5.387)

[17] S. Kotha, M. Meshram, V. R. Aswar Application of ring-rearrangement metathesis in organic synthesis: A grand design Tetrahedron Lett. (Digest). 60, 151337, 2019 (2.259)

[16] S. Kotha S. Kotha, G. Sreevani, L. U. Dzhemileva, M. M. Yunusbaeva, U. M. Dzhemilev, V. A. D'yakonov Diversity-oriented synthesis of spirothiazolidinediones and their biological evaluation. Beilstein J. Org. Chem. 15, 2774, 2019 (2.595)

[15] S. Kotha, S. R. Cheekatla, M. Meshram, B. Vijayalakshmi, S. Vittal Realization of photo-thermal metathesis under microwave irradiation conditions: An entry to triquinane frameworks Asian JOC. 8, 2097, 2019. (2.496)

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[12] S. Kotha, R. R. Keesari, S. Ansari Synthesis of aza-polyquinanes via fischer indolization and ring-rearrangement metathesis as key steps Synthesis, 51, 3989, 2019 (2.867)

[11] S. Kotha, N. K. Gupta, V. R. Aswar Multicomponent approach to hydantoins and thiohydantoins involving a deep eutectic solvent. Chem. Asian J. 14, 3188, 2019. (3.698)

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[09] S. Kotha, M. Meshram, N. R. Panguluri, V. Shah, T. Saidulu, M. E. Shirbhate Synthetic approaches to star-shaped molecules with 1,3,5-trisubstituted aromatic cores Chem. Asian J., 14, 1356, 2019. (3.698)

[08] S Kotha, M. Meshram, N. R. Panguluri Advanced approaches to post-assembly modification of peptides by transition-metal-catalyzed reactions Synthesis 51, 1913, 2019. (2.867)

[07] S. Kotha, R. Gunta Synthesis of alkenyl sulfones containing norbornene moiety Heterocycles 98, 271, 2019. (0.878)

[06] S. Kotha, S. Ansari, V. R. Aswar Selectivity in ring-closing metathesis: Synthesis of propellanes and angular aza-triycles Adv. Synth. Catal. 361, 1376, 2019. (5.451)

[05] S. Kotha, T. Saidulu Synthesis of C3-symmetric star-shaped molecules containing 1,3-azoles via hetero-aryl Heck coupling Tetrahedron 75, 1359, 2019 (2.379)

[04] S Kotha, T. Saidulu Synthesis of C3-symmetric star-shaped molecules containing α-amino acids and dipeptides via Negishi coupling as a key step Beilstein J. Org. Chem. 15, 371, 2019 (2.595)

[03] S. Kotha, P. Khedkar, Y. Dommaraju Synthetic application of rongalite: A green tool in the service of Diels–Alder chemistry and beyond Tetrahedron Lett. (Digest) 60, 631, 2019 (2.259)

[02] S. Kotha, Y. Dommaraju, S. Pulletikurti Ring-opening metathesis of n-alkenyl β-lactams Heterocycles 98, 79, 2019. (0.878)

[01] S. Kotha, S. R. Cheekatla Synthesis of functionalized cage propellanes and D3-Trishomocubanes via the ring-closing metathesis and acid-promoted rearrangement Tetrahedron. 75, 84, 2019. (2.379)

List of Presentation

1. Ring-Rearrangement Metathesis approach to carbocycles and heterocycles: A Grand Design. IIT Kanpur, January 16-17, 2019.

2. Synthesis in action, Prof. Sethna Memorial Lecture Award Department of Chemistry, M. S. University Baroda, February 1, 2019.

3. Ring-Rearrangement Metathesis Approach to Carbocycles and Heterocycles: A Grand Design, Prof. Sethna Memorial Lecture Award Department of Chemistry, M. S. University Baroda, February 1, 2019.

4. Development of New Synthetic Strategies and Tactics: Their Impact, Implications and Applications. UGC-SAP-DRS-II Sponsored National Conference on Sustainable Chemistry: Frontiers & Challenges NCSCFC-2019, Department of Chemistry, Veer Narmad South Gujarat University Udhna-Magdalla Road, Surat, Gujarat, March 12, 2019

5. Advanced Approaches to Post-Assembly Modification of Peptide by Transition Metal-Catalyzed Reactions. National Conference on "Synthetic and Biological Peptides: Structures and Strategies for the Development of Drugs, Biologics and

Materials", Department of Studies in Chemistry, Bangalore University, March 14-15, 2019.

6. Development of New Synthetic Strategies and Tactics: Their Impact, Implications and Applications. Department of Chemistry, IIT Hyderabad March 28, 2019

7. Recent advances in Green Chemistry in our Labs, National Seminar on "Recent Advances in Green and Sustainable Chemistry" Department of Chemistry, AV College of Arts, Science & Commerce, Hyderabad, March 30, 2019

8. Development of New Synthetic Strategies and Tactics: Their Impact, Implications and Applications. Department of Chemistry, Central University of Rajasthan Jaipur, April 1-2, 2019

9. Application of Ring-Rearrangement Metathesis Approach to Carbocycles and Heterocycles: A Grand Design, CP Rao Superannuation Program, Department of Chemistry, IIT Bombay, June 28, 2019

10. Application of Olefin Metathesis in Organic Synthesis. ISOM23, Barcelona, Spain, June 30-July 3, 2019

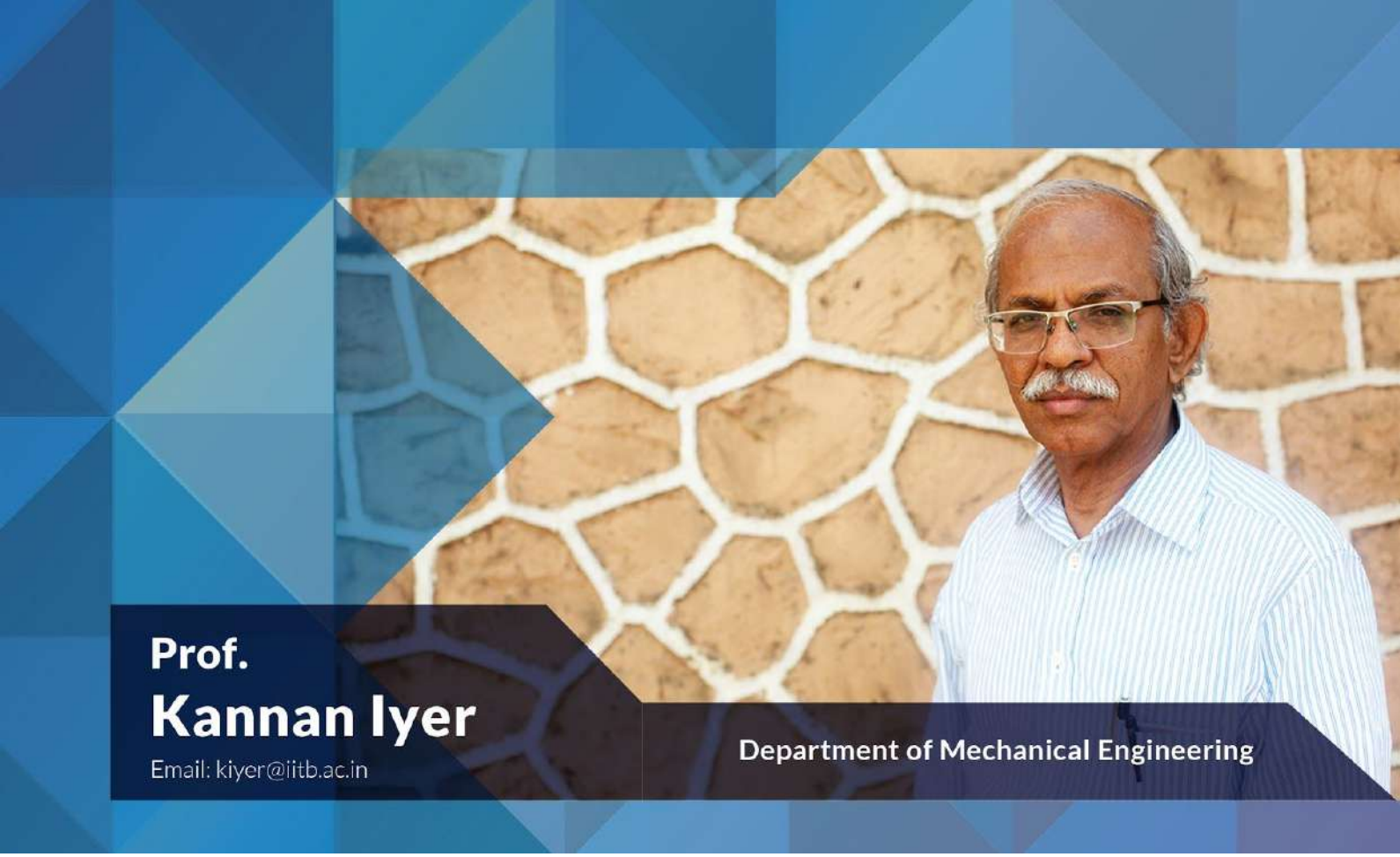
11. Application of Rongalite as a Green Reagent in the Service of DielsAlder Chemistry" World Congress on Chemistry" Kula Lumpur, Malaysia, August 19-20, 2019

12. Synthesis of potential high energy density fuels: An alternative to JP-10 fuel for air-breathing missiles, IIT Hyderabad, October 21, 2019

13. Development of New Synthetic Strategies, Tactics and their Applications, IISc Bangalore, November 13, 2019

14. Design and Synthesis of Biologically Active Hydantoins, Thiohydantoins, Amino acids and Thiazolidine diones, IIT Bombay-GRC-TIGP Academia Sinica Symposium, IIT Bombay December 16-17, 2019

15. Development of new synthetic strategies and tactics and their application, National Conference on Organic Synthesis (N-COS) PG Department of Chemistry, Berhampur University, Odisha. March 2-3, 2020



Prof. Kannan Iyer

Email: kiyer@iitb.ac.in

Department of Mechanical Engineering

L&T Chair Professor

"This fellowship has been helpful in increasing my participation in energy related conferences. I attended ASTFE Conference during April 2019 and it was useful in identifying people with whom we can collaborate. Some Connections were made with Kansas State University and Oak Ridge National Laboratory".

Prof. Kannan Iyer

Teaching and Research Highlights

1. Computational Fluid Mechanics and Heat Transfer: This was the second year I taught this course. The assignments were redesigned for effective learning and this was very much appreciated by the students. The course got 92.7% approval rating.

2. **Thermodynamics (Minor)**: This course had 91% approval rating.

3. Introduction to Nuclear Engineering: This was also taught as usual and it got 85,9% approval rating.

4. **Material Property Modelling:** Talks were initiated with L&T Hazira to collaborate with them on the heat treatment of Turbine shafts. A team of faculty members from Mechanical, and Metallurgy and Material Sciences Department and together with L&T a proposal was evolved.

Service and Public Engagement

1. Two Invited Lectures on (i) Modeling of boiling and two phase flows and (ii) Steam surface condensation at the Workshop on "Application of Numerical Heat transfer to Industrial Problems" Conducted by Indian Nuclear Society during September 16-19, 2019 at INS Lecture hall, Anushakti Nagar, Mumbai.

2. Invited Lecture delivered at Kansas State University, USA, on Nuclear Power in India and

Associated R&D Activities at IIT Bombay on April 24, 2019

3. Invited Lecture delivered at Oak Ridge National Laboratory, USA, on Nuclear Power in India and Associated R&D Activities at IIT Bombay on April 26, 2019

List of Publications and Presentations

1. Sreenivasan A.R. and K. Iyer, "Enhanced wall turbulence model for flow over cylinder at high Reynolds number", AIP Advances 9, 095012 (2019); doi: 10.1063/1.5118421 2. Kasar, S and K. Iyer, "Thermal hydraulic studies on cold start-up in a multichannel natural circulation system", Nuclear Engineering and Design 341 (2019) 269–83. 3. Joseph R., K. Iyer, "One dimensional vapour bubble growth for steady and unsteady pressure fields", Proceedings of ASTFE Thermal and Fluids Engineering Conference, TFEC 2019, 14–17 April , Las Vegas, NV, USA. DOI: 0.1615/TFEC2019. mph.028046 pages 1431-1438.

Statement of Accounts

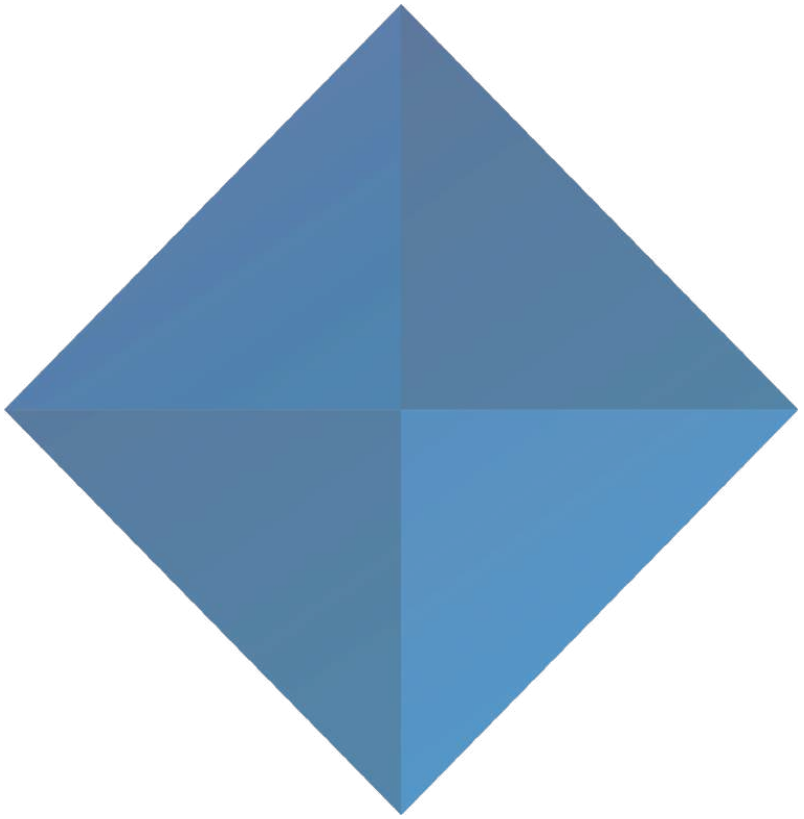
L&T Chair Professor

(01.04.2019 to 31.03.2020)

Particulars	Endowment	Interest
Opening Balance as on 01.04.2019	3,811,000.00	1,381,932.00
Interest for the period 2019-20		228,660.00
Expenses		-502,421.00
Closing Balance as on 31.03.2020	3,811,000.00	1,108,171.00

Training of Highly Qualified People

	Master Students	Doctoral Students	Postdoctoral Students	Other (RA&TA)
Supervised	2	5	-	-
Co-Supervised	2	1	-	-
Graduated	2	2	-	-



Dr. P. K. Kelkar Chair Professor for Excellence in Nanotechnology

"It has been an honour for me to have been selected as the 1st Batch Dr. P.K. Kelkar Chair for Excellence in Nano Technology. It is not only an opportunity to carry out work in the area of Nano Technology more effectively, but also to take pride in carrying this title. It is only because of the gracious gesture of the 1st batch and the high regard that they have for Prof. Kelkar, that such a prestigious chair got initiated in IIT Bombay and I am of course very proud to have got selected during the 2017-2019 duration. I would once again like to sincerely thank the 1st Batch for this great initiative. "

Prof. Rajiv O. Dusane

Teaching and Research Highlights

The following courses have been taught A. Science & Technology of Thin Films (Evaluation): 94.4 B. Materials and Processes for Semiconductor Device Fabrication: (evaluation): 93.2 C. Communication skills D. Set up a New Thin Film Teaching Lab. E. Organised a Summer School on Plasma

Materials Processing Research

- The Silicon Heterojunction (SHJ) solar cell DST Sponsored project under CERI: Rs. 2,85,76,800/-

- Silicon Nanowires and their Application DST Sponsored project under CERI: Rs.1,95,05,600.00

- Development of 3D solid state neutron detector DST and DAE Sponsored projects under SERB and TDP: Rs.1,20,00,000.00

Service and Public Engagement

1. Evaluation of Ph.D. theses of students from different Institutions

2. Reviewing journal papers for various international journals.

3. I am also a member of the PAC committee of SERI, DST and Review committee in CSIR-FTT/FTC Proposals 3rd Tranche under Mining, Minerals, Metals and Materials Theme

4. I am the Chancellors' nominee for all faculty selections in the Pune and Jalgaon University.

5. Faculty selection expert for DIT Pune, IIT Madras, IIT Bhubaneshwar, IIT Kharagpur

6. Member Advisory Council, Indo Canada Shastri foundation

7. Coordinator (IITB), BRICS Universities Programme, MHRD, Gov. of India

8. My group also participated in the Tech Fest where we had a stall to demonstrate our activities to visitors from various schools and colleges.

List of Publications and Presentations

Publications

1. Pulsed laser annealing of spray casted Cu(In,Ga)Se2 nanocrystal thin films for solar cell application Badgujar, A.C., Dusane, R.O., Dhage, S.R. Solar Energy (2020) 47-54

2. Development of paper-based flexible supercapacitor: Bismuth ferrite/graphene nanocomposite as an active electrode material Ankur Soam, Rahul Kumar Mahender C, Mamraj Singh, Dhirendranath Thatoi, Rajiv O. Dusane Journal of Alloys and Compounds, 813 (2020) 152145

3. Silicon-MnO2 core-shell nanowires as electrodes for micro-supercapacitor application Ankur Soam, Kaushik Parida, Rahul Kumar, Pravin Kavle, Rajiv O. Dusane Ceramics International, 45 (2019) 18914-18923

Presentations

1. Low temp processing of Nanomaterials: case of graphene and silicon nanowires, "Nano Express", Mumbai University, 2019

Training of Highly Qualified People

	Master Students	Doctoral Students	Postdoctoral Students	Other (RA&TA)
Supervised	2	10	-	-
Co-Supervised	-	3	-	-
Graduated	2	1	-	-

The India Value Fund Chair Professor

"The India Value Fund Chair Professorship has the objective to support a faculty member who brings a "broad and interdisciplinary perspective in the fields of humanities and social sciences particularly in the context of engineering and technology education." Holding this Chair, I have been able to collaborate and contribute significantly to strategic knowledge in the areas of climate studies and policy studies at IIT Bombay. It has given me invaluable recognition in India and abroad that has led to significant cross-disciplinary collaborations on topics related to ocean sustainability, coastal transformation, and transformation to sustainability. Apart from requests for trans-disciplinary teams for research collaboration, and requests from Indian and foreign media for insights in climate vulnerability and adaptation, I have also been approached to support capacity building and training needs in these areas by state government, central government, corporate and academic institutions in India. I am very grateful for the visibility, respect and honour that has been bestowed on me because of holding this Chair."

Prof. D Parthasarathy

Teaching and Research Highlights

My teaching activities in the Dept of Humanities and Social Sciences and in the IDP in Climate Studies has benefited from my inter- and multi-disciplinary research. Drawing on research projects in the areas of climate vulnerability, disaster governance, coastal transformation, and sustainable development, I have made teaching activities at UG and PG levels more policy and action focused, and transdisciplinary.

I have continued to involve in teacher training, summer schools and continuing education programmes for professionals in areas related to climate studies and disaster governance

Over the last five years my research has expanded into theoretical and empirical work issues related to climate policy, disaster risk governance, ocean sustainability and coastal vulnerability. Publications arising from research projects in these areas have gained recognition from policy makers and media, as well as corporate sector and think tanks. These have led to enhanced collaboration between my research groups and academic units in IIT Bombay and external institutions in academia, industry, and government.

Two new collaborations on climate action and policy with the state governments of Maharashtra and Rajasthan have begun. This work is of strategic importance in terms of adaptation to climate risks and reduction of vulnerability in diverse sectors. Two international projects are funded through the highly competitive Belmont forum. I have been nominated to lead the new phase of the UGC-DAAD Indo-German Partnership Program in Higher Education as Professor in Charge. I will lead this partnership - involving IIT Bombay, IIT Kanpur. And Technical University Munich - for the next four years.

Recognition has come in the form of requests to review book manuscripts, project proposals, and journal articles in areas related to environment and climate studies that are written from an inter- or transdisciplinary perspective, acknowledging my work and expertise using these approaches.

I have also been invited to write a number of policy blogs and media articles, and give talks on pandemic management in the last six months, recognizing my published work in disaster governance.

Service and Public Engagement

Together with civil society organizations and NGOs, other academics and activists in Mumbai, and a few of our Ph.D students, I have been involved in data and evidence based support to marginzalized groups most affected by the Covid 19 related lockdown in Mumbai. We have especially coordinated and provided food, medical, sanitation and other products and relief material in coastal villages in Mumbai and Palghar districts.

As Head of the Climate Studies Program at IIT Bombay, I have continued to lead projects and programmes to support government, private, sector, and civil society initiatives on capacity building, strategic research and action plans for adaptation. At IIT Bombay, I have been contributing through teaching, research supervision and administrative support to new multi-disciplinary centres the Centre for Urban Science and Engineering, Centre for Policy Studies, and IDP in Climate Studies. I am the current Convener for Climate Studies.

I have been part of two teams to produce strategic knowledge to the Government of India on climate action and policies – the National Communication to UNFCCC report on coastal vulnerability (Ministry of Environment and Forests), and the National Mission on Strategic Knowledge for Climate Change (Dept of Science and Technology, Govt of India) on cross-scale climate policies, and climate policy for transformation.

I have served in an advisory capacity for knowledge awareness, capacity building, and science based decision making for

several civil society, corporate, and NGO initiatives including the Indo-German Chamber of Commerce, Watavaran Foundation, Ministry of Environment, Forests and Climate Change (Govt of India), Save Aarey Campaign, Tata Institute of Social Sciences, India Climate Collaborative (Tata Trusts), Metal Container Manufacturers Association, Institute of Packaging Machinery Manufacturers of India, Bangalore Sustainability Forum, The Nature Conservancy, and Climate Bonds Initiative.

Last year I lead a team from IIT Bombay tasked by Bombay High Court to carry out research for a court case related to housing pollution in the Mahul area of Mumbai that was adversely affecting several thousand people in the area.

Training of Highly Qualified People

	Master Students	Doctoral Students	Postdoctoral Students	Other (RA&TA)
Supervised	2	15	1	--
Co-Supervised	--	2	1	--
Graduated	3	3	1	--

List of Publications and Presentations

Publications

1. Swami, D. and Parthasarathy, D, "A multidimensional perspective to farmers' decision making determines the adaptation of the farming community. Journal of Environmental Management", *Journal of Environmental Management*, 264
2. D. Parthasarathy, Hemantkumar A. Chouhan, "New coastal claims and socio-legal contestations in Mumbai", in Reframing the Environment: Resources, Risk and Resistance in Neoliberal India, Edited By Manisha Rao, Routledge / Taylor and Francis, 2020
3. Ramchandran, Pushkala, Nikita Patel, Harini Swaminathan, Alka Jadhav, Priyanka Shinde, Prachi Karnik, D Parthasarathy, and Narendra G Shah, "Efficacy of Micronutrient Fortified Supplementary Foods (Ready to Cook and Ready to Eat) and Take-Home Ration (THR) in children with Moderate Acute Malnutrition (MAM) using Community Based Approach", *Pediatric Oncall Journal*, January-March, 17, 1, 2020: 1-7
4. Haque, Sarmistha Pattanaik, and D.Parthasarathy, "Cityscape Transformation and the Temporal Metamorphosis of East Kolkata Wetlands: A Political Ecology Perspective", *Sociological Bulletin*, 2020
5. Deepmala Baghel and D.Parthasarathy, "Knowledge Generation for Innovation in Ayurvedic Cosmetics MSMEs: Investigating Entrepreneur's Cultural and Symbolic Capital", *Science, Technology, and Society*, 24, 1, 2019: 101-121
6. D. Parthasarathy, "Inequality, uncertainty, and vulnerability: Rethinking governance from a disaster justice perspective", *Environment and Planning E: Nature and Space*, 1 (3), 2018, 422-442 (came out in 2019)
7. D.Parthasarathy and Binti Singh, "Introduction: Culture, Place and Ecology", Introduction to Special Issue of the Indian Anthropologist on Culture, Place, and Ecology, Guest Edited by D.Parthasarathy

and Binti Singh, 48, 2, 2018, 1-6 (came out in 2019)

8. Shibaji Bose, Upasona Ghosh, Hemantkumar Chouhan, N.C.Narayanan, and D.Parthasarathy, "Uncertainties and Vulnerabilites among the *Koli* fishers in Mumbai: A Photovoice Study", Special Issue of the Indian Anthropologist on Culture, Place, and Ecology, Guest Edited by D.Parthasarathy and Binti Singh, 48, 2, 2018, 65-80 (came out in 2019)

9. Parthasarathy, D., Yash Shethia, and N. C. Narayanan. "Cross-scale institutional linkages in climate change responses: An Indian perspective." In *Climate Change Signals and Response*, pp. 255-271. Springer, Singapore, 2019.

10. Chouhan, H.A., D.Parthasarathy, and Sarmistha Pattanaik, "Coastal Environmental Vulnerability: Sustainability and fisher livelihoods in Mumbai, India, in C.Patrick Heidkamp and John Morrissey eds, *Towards Coastal Resilience and Sustainability,* Routledge, London and New York, 2019

11. K.Narayanan, D.Parthasarathy, Arun B. Inamdar and Santosh Kumar Sahu, "Climate Change and the Vulnerable Indian Coast", in R.Ramesh and J.R.Bhatt Eds. Climate Change and the Vulnerable Indian Coast, Ministry of Environment, Forest and Climate Change, New Delhi, 2018 (came out in 2019)

Presentations

1. D.Parthasarathy, N.C.Narayanan, Lalatendu Keshari Das, Ketaki Tare, Jay Bhadgaonkar, "Co-producing the linked futures of fisherfolk and the city: Transforming in and with Mumbai", The third biennial conference of the Political Ecology Network, IDS Sussex, Brighton UK (online conference)

2. D.Parthasarathy, "Social Background of (Contemporary) Indian (anti)Nationalism", Paper presented at the University of Mumbai - Department of Sociology National Seminar 2020: A Century of the Discipline: Sociology in India Thursday & Friday (12 & 13 March 2020)

3. D.Parthasarathy, "Interrogating the history of drought research in the time of climate variability", paper presented at the Indo-US bilateral symposium on "The study of decadal scale droughts and mega-droughts in semi-arid tracts of India and North America", Indian Institute of Science Education and Research Mohali, 2-4 Jan 2020

4. D. Parthasarathy, "Anthropo-Sea: Reassessing Ocean Grab and Coastal Squeeze in the context of Climate Change - Perspectives from Asia", Keynote address at the 10th MARE Conference on People and the Sea: Learning from the Past, Imagining the Future, University of Amsterdam, 24-28 June 2019

5. D. Parthasarathy and Dwiparna Chatterjee, "Theorizing Gentrification from the South or Globalizing Gentrification Theory? A perspective from Mumbai, India", paper presented at the Comparative Urbanism: Global Perspective Conference, March 7-8, 2019 Urban Studies Institute | Georgia State University

6. Panel presentation on "Air Quality, Climate and Health:

Making the Scientific Case", in the National Seminar on "Right to Clean Air",

Tata Institute of Social Sciences, Mumbai, 30th July 2019.

7. Delivered a talk on "Climate change and its impact on India and Mumbai", Monash University Global Immersion Guarantee Program in India, 26 Nov 2019
8. Valedictory Address delivered on "The University as a Gendered (Semi-Autonomous) Social Field: Sexualized Discrimination and Discursive Practices of Violence" at the Short Term Certificate Course on Gender Discrimination in the Academia HRDC for College and University Teachers, University of Mumbai, 21 Nov 2019
9. Delivered a talk on "Assessing and Monitoring Curricular and Pedagogic Transactions in School: Teaching-Learning the Significance of the Social Sciences", 3 Day Workshop for Principals on "Instructional Leadership" , Zonal Institute for Education and Training, Kendriya Vidyalaya Sanghatan, Mumbai, 23 Nov 2019
10. Delivered a talk on "India's Emerging Risk Urbanism: Cities, Commons, and Neo-liberal Transformation", Department of Sociology, Savitribai Phule Pune University, 15 Oct 2019
11. Delivered two lectures on "Introduction to Subaltern Studies", and "Neo-liberalism" to students of the MA in Sociology Programme, Department of Sociology, Savitribai Phule Pune University, 14 and 16 Oct 2019

Delivered a lecture on 'India's emerging risk urbanism: cities, Commons and the neo-liberal transformation', at the Refresher Course on 'Democracy, Development and the Digital Age' organized by the HRDC, University of Mumbai, 10 June 2019.

Halepete Chair Professor

"We are grateful to the Halepete family for their recognition and generous support of our research program. Our group has already benefited from generous GPU gifts from Nvidia since 2016. We expect such continued support to make it easier for us to attract talent and deliver publishable and useful research in natural language understanding, knowledge representation, extraction, and inference."

Prof. Soumen Chakrabarti

Teaching and Research Highlights

In 2020, we focused on the following problems.

Open information extraction (OpenIE)
The OpenIE task is to extract (subject, relation, object) in the form of uncanonicalized text fields from unstructured corpora, which can assist knowledge acquisition and question answering. We modeled OpenIE as a 2d iterative grid labeling problem with complex posterior constraints coupling multiple extractions from a sentence. In our first approach (published in ACL 2020) we used a recurrent encoder-decoder architecture which gave high accuracy but was slow. In our second approach (accepted to EMNLP 2020) we replaced the recurrent architecture with a BERT-like transformer architecture, which improved both speed and accuracy.

Temporal knowledge base completion (TKBC)

Some facts in knowledge bases are not just (subject, relation, object) triples but are associated with time/s of occurrence or validity, which might look like (India, won, cricket world cup, 1983) or (Obama, president of, USA, 2009-2016). The knowledge base completion (KBC) task is to extend a KB by inferring new facts. Most KBC systems did not handle time well. Even the ones that did, cannot avoid absurd inferences (death before birth, graduating from college at age 6, etc.). We designed a deep KB representation where time is also embedded, and time gap signals between pairs of relations and repetitions of a relation are incorporated into inference. We also showed that existing TKBC evaluation measures had limitations and proposed two significant fixes. The work has been accepted to EMNLP 2020.

Neural graph search

In question answering, image search, or molecule database search, we have a small query graph that we want to approximately match against a very large number of moderately larger corpus graphs, and rank the best-matching corpus graphs at the top. We designed a new trainable neural graph comparison module that detects a nontrivial approximately shared subgraph between the query and a corpus graph. Scoring the extent of sharing is achieved via a random walk on the product graph formed between the query and corpus graphs. On question answering and image search tasks, our method performs better than recent graph neural network approaches. The work was presented at SIGIR 2020.

Social network evolution

For two decades, social network researchers have proposed generative models that explain the natural evolution of social networks such as bibliometric databases with papers and citation links, or Twitter follower links, etc. Typically, a model will explain one aspect or measurements on real graphs, but not others. As researchers became interested in many salient properties such as degree distribution, graph diameter, clustering coefficient, densification, number of triangles, etc., a series of updates and fixes were proposed. The "forest fire" model is among the better known, but was not amenable to theoretical analysis. We propose a new generative model that can be analyzed formally for some of the above properties, and it matches real data better than forest fire. This work appears in the Journal of Infometrics.

Social media evolution without graph information

Many social media analysis tools, such as those that analyze the popularity of tweets, depend on accurate knowledge of follower-followee networks. But in some cases, the social network is latent (Reddit readers influenced by online news) or privacy-protected (private friend links), and we get to observe other forms of activities (such as posts made on Reddit or Facebook). We developed ChatterNet, a new technique to monitor and predict user engagement intensity without knowledge of the underlying social network. This was achieved by inventing a new time-adaptive recurrent network. This work appeared in KDD 2020.

Service and Public Engagement

- Jury member, IEEE John von Neumann Medal, 2020-2021.
- Reviewer for NeurIPS 2020, IJCAI 2020, ICML 2020, EMNLP 2020, AAAI 2020.

- Area Chair, Information Retrieval and Text Mining, ACL 2020.

- Senior PC member, WSDM 2021.

- Systems provisioning and planning committee, CSE, IITB.

Member, Computer Center Services committee, IITB, 2020-.

Statement of Accounts

Halepete Chair Professor

(01.04.2019 to 31.03.2020)		
Particulars	**Endowment**	**Interest**
Opening Balance as on 01.04.2019	11,750,669.76	
Donation received during the current year	68,698.00	
20 % transfer to Institute chair (As per MOU)	-2,300,000.00	
Interest for the period 2019-20		569,101.13
Expenses		-248,710.00
Balance as on 31.03.2020	9,519,367.76	320,391.13
Total Balance Available		**9,839,758.89**

Training of Highly Qualified People

	Master Students	Doctoral Students	Postdoctoral Students	Other (RA&TA)
Supervised	--	--	--	1
Co-Supervised	3	4	--	--
Graduated	2	--	--	--

List of Publications and Presentations

- Temporal Knowledge Base Completion: New Algorithms and Evaluation Protocols. With Prachi Jain, Sushant Rathi, and Mausam. EMNLP 2020. (Code.)

- OpenIE6: Iterative Grid Labeling and Coordination Analysis for Open Information Extraction. With Keshav Kolluru, Vaibhav Adlakha, Samarth Aggarwal and Mausam. EMNLP 2020.

- NLP Service APIs and Models for Efficient Registration of New Clients. With Sahil Shah, Vihari Piratla, and Sunita Sarawagi. EMNLP Findings 2020.

- Deep Exogenous and Endogenous Influence Combination for Social Chatter Intensity Prediction. With Subhabrata Dutta, Sarah Masud and Tanmoy Chakraborty. SIGKDD 2020.

- Deep Neural Matching Models for Graph Retrieval. With Utkarsh Gupta, Kunal Goyal, and Abir De. SIGIR 2020.

- IMOJIE: Iterative Memory-Based Joint Open Information Extraction. With Keshav Kolluru, Samarth Aggarwal, Vipul Rathore, and Mausam. ACL 2020. Demo.

- Neural Architecture for Question Answering Using a Knowledge Graph and Web Corpus. With Uma Sawant, Saurabh Garg, and Ganesh Ramakrishnan. Information Retrieval Journal, 2019. Presented at ECIR 2020.

- Analysis of reference and citation copying in evolving bibliographic networks. With Pradumn Kumar Pandey, Mayank Singh, Pawan Goyal and Animesh Mukherjee. Journal of Informetrics, 2020.

- On Computing Entity Relatedness in Wikipedia, with Applications. With Marco Ponzaa and Paolo Ferragina. Knowledge-Based Systems, 2020.

- Learning Linear Influence Models in Social Networks from Transient Opinion Dynamics. With Abir De, Sourangshu Bhattacharya, Parantapa Bhattacharya, and Niloy Ganguly. ACM TWEB 2019

Adil Zainulbhai Chair Professor

"I wish to express my deep sense of gratitude to the donors Adil Zainulbhai for instituting this chair position in the very important area of AI & ML. The chair professorship has enabled an enhanced focus on research that extends the AI & ML theory to deep tech applications in the broad spectrum beginning at product discovery, spanning across development and demonstration, and eventually culminating in successful deployment and decision support. I have been making efforts to spotlight and develop these areas."

Prof. Ravindra D Gudi

Teaching and Research Highlights

Expanding the paradigms of artificial intelligence and machine learning to **augmented intelligence and learning,** that enables bringing in the domain knowledge to be elegantly represented along with data based correlations. Such new paradigms enable higher and contextual levels of learning from data, and expand the scope of applications to address several problems where fusion of data as well as first principles physics-based knowledge together, improve the interpretations and decision making process.

Service and Public Engagement

- Have served in the core team of faculty who conceptualized and established the new **C**entre for **M**achine **I**ntelligence a**n**d **D**ata **S**ciences (C-Minds) at IIT Bombay

- Continue to serve on the policy committee of C-Minds

- Presented several webinars on the AI & ML (Manipal University, Mumbai University, NIT-Jullundur, Centre of Excellence in Oil and Gas forum)

- Closely nurturing an industry development on AI & ML for applications in Chemical Engineering as a consultant. Jointly doing business development in the areas of petroleum processing and biopharma.

Statement of Accounts

Adil Zainulbhai Chair Professor

(01.04.2019 to 31.03.2020)		
Particulars	**Endowment**	**Amount**
Opening Balance as on 01.04.2019	10,242,341.00	547,687.17
20% tranfer to Institute Chair (As per MOU)	-2,100,000.00	
Interest for the period 2019-20		488,540.46
Expenses		-360,000.00
Closing Balance as on 31.03.2020	8,142,341.00	676,227.63
Total Balance	8,818,568.63	

Training of Highly Qualified People

	Master Students	Doctoral Students	Postdoctoral Students	Other (RA&TA)
Supervised	3	2	1	1
Co-Supervised	--	--	--	--
Graduated	--	--	--	--

List of Publications and Presentations

1. Misra, S., Gudi, R.D., Kapadi, M.D., "A Multi Grid Discrete Time Based Framework for Maritime Distribution Logistics & Inventory Planning for Refinery Products", (In final acceptance in Computers and Industrial Engineering) (2020).

2. Maheshwari, A., Misra, S., Gudi, R.D., and Subbiah, S., "A Short-term Planning Framework for the Operation of Tanker based Water Distribution System in Urban Areas", (in final acceptance in Industrial and Engineering Chemistry Research) (2020).
3. Dwivedi A., Gudi, R.D., Biswas, P., "An Oxy-fuel Combustion Based Tri-Reforming Coupled Methanol Production Process with Improved Hydrogen Utilization", Accepted for publication in International Journal of Greenhouse Gas Control, (2020)

4. Pravin PS, Misra S., Gudi, R D, Bhartiya S., "A reactive scheduling and control framework for integration of renewable energy sources with a reformer-based fuel cell system and an energy storage device", Accepted for publication in Journal of Process Control (2020)

5. Maheshwari A., Abokifa A., Biswas P., Gudi, R.D., "Framework for Evaluating the Impact of Water Chemistry Changes in Full-Scale Drinking Water Distribution Networks on Lead Concentrations at the Tap", Accepted for publication in Journal of Environmental Engineering, (2020).

6. Abokifa, A.A., Maheshwari, A., Gudi, R.D., Biswas, P., "Influence of Dead-End Sections of Drinking Water Distribution Networks on

Optimization of Booster Chlorination Systems “, Journal of Water Resources Planning and Management, 145(12), (2019).

7. Maheshwari, A., Prasad, V., Gudi, R.D., Biswas, P., “Systems engineering based advanced optimization for sustainable water management in refineries, Journal of Cleaner Production, 224, pp. 661-676, (2019).

8. Pravin, P.S., Bhartiya, S., Gudi, R.D., “Modeling and predictive control of an integrated reformer-membrane-fuel cell-battery hybrid dynamic system”, Industrial and Engineering Chemistry Research, 58(26), pp. 11392-11406, (2019).

9. Misra, S., Kapadi, M. Gudi, R.D., Saxena, D., “Resource Optimization and Inventory Routing of the Packaged Liquefied Gas Supply Chain”, Industrial and Engineering Chemistry Research, 58(18), pp. 7579-7592, (2019).

10. Gudi, R.D., Thaokar, R.M., Bandopadhyaya, R., “Introduction to the Professor V. A. Juvekar Festschrift”, Industrial and Engineering Chemistry Research, Vol 58, pp. 7419-7420, (2019).

11. Misra, S., Saxena, D., Kapadi, M., Gudi, R.D., Srihari, R., “Short-Term Planning Framework for Enterprise-wide Production and Distribution Network of a Cryogenic Air Separation Industry”, Industrial and Engineering Chemistry Research, 57(49), pp. 16841-16861, (2019).

G.K.Devarajulu

Chair Professor

Prof. Asim Tewari

Teaching and Research Highlights

Asim Tewari has been involved in research, teaching, and industry outreach in the area of multi-scale structure-property correlation in advanced manufacturing and application of machine learning and IoT in smart manufacturing. He has over 100 international journal & conference publications and ten international patents. His pioneering work in 3D microscopy imaging has been widely cited, including reproduction in handbooks. He is on the editorial board of several international Journals, including Metallurgical and Materials Transactions and Image Analysis & Stereology. He is an advisory committee member for various national & international research boards and has won several awards and recognition for his research and teaching.

Service and Public Engagement

At IIT Bombay, he has been instrumental in setting up the National Center for Aerospace Innovation & Research and Center for Technical Textiles. He has also been co-investigator in Biomedical Engineering and Technology (Incubation) Centre and Center for Excellence in Steel technology. He has

established several advanced state-of-the-art facilities, including advanced machining excellence cell, fiber composite research laboratory, 4D x-ray microscopy laboratory with capabilities of in-situ thermo-mechanical deformation, an experimental lab for thermo-mechanical simulation and Nano-characterization texture laboratory.

A few years back, he established a Cyber-Physical Systems and Data analytics research group at IIT Bombay. The group works in smart manufacturing, machine-learning, data-analytics, and IoT for various sectors, including manufacturing, transportation, and defense. The group has developed end-to-end solutions for digital factories with indigenous industrial IoT devices along with the cloud networking and Data Analytics backend. The group is also involved in video comprehension based on Deep learning for inference and surveillance.

The following is a partial list of achievements of Asim Tewari, after becoming G.K.Devarajulu Chair Professor in at IIT Bombay.

List of Publications and Presentations

- Barnwal, V.K., Chakrabarty, S., Tewari, A., Narasimhan, K., Mishra, S.K., Influence of Single-Point Incremental Force Process Parameters on Forming Characteristics and Microstructure Evolution of AA-6061 Alloy Sheet, Journal of Materials Engineering and Performance, 2019

- J Vasavada, HK Narula, S Mishra, TK Nandy, A Tewari, Development of novel Moving Wave Front image processing algorithm and microstructural quantification of Tungsten Heavy Alloy, Computational Materials Science 170, 109181, 2019

- JS Jha, S Dhala, SP Toppo, R Singh, A Tewari, SK Mishra, B Jayabalan, Effect of strain amplitude on low cycle fatigue and microstructure evolution in Ti-6Al-4V: A TKD and TEM characterization, Materials Characterization 155, 109829, 2019

- S Dhala, S Mishra, A Tewari, A Alankar, Analyses of orientation dependent nanoindentation response of pseudoelastic NiTi alloy using a crystal plasticity model, Mechanics of Materials 135, 1-12 1, 2019

- JS Jha, SP Toppo, R Singh, A Tewari, SK Mishra, Flow stress constitutive relationship between lamellar and equiaxed microstructure during hot deformation of Ti-6Al-4V, Journal of Materials Processing Technology 270, 216-227 6, 2019

- Jha, J.S., Toppo, S.P., Singh, R., Tewari, A., Mishra, S.K., Understanding Flow Behavior and Microstructure Evolution during Thermomechanical Processing of Mill-Annealed Ti-6Al-4V Titanium Alloy, Materials Performance and Characterization 8 (5) 1, 2019

- S Dhala, S Mishra, A Tewari, A Alankar, Modeling of finite deformation of pseudoelastic NiTi shape memory alloy considering various inelasticity mechanisms, International Journal of Plasticity 115, 216-237 4, 2019

- CP Hiremath, K Senthilnathan, NK Naik, A Guha, A Tewari, Mechanistic model for fiber crack density prediction in cyclically loaded carbon fiber-reinforced polymer during the damage initiation phase, Journal of Composite Materials 53 (8), 993-1004 1, 2019

- JS Jha, B Jayabalan, SP Toppo, R Singh, A Tewari, SK Mishra, Hot deformation behaviour of Ti-6Al-4V alloy with a transformed microstructure: a multimodal characterization, Philosophical Magazine 99 (12), 1429-1459 3, 2019

- V Sonkamble, P Dhondapure, K Narasimhan, A Tewari, Experimental investigation of shear band and shear strain field evolution during blanking of AA6082 sheet, The Journal of Strain Analysis for Engineering Design 54 (2), 149-158, 2019

- Bhargava, M., Chakrabarty, S., Barnwal, V.K., Tewari, A. and Mishra, S.K., Effect of microstructure evolution during plastic deformation on the formability of Transformation Induced Plasticity and Quenched & Partitioned AHSS. Materials & Design, 152, 65-77,2018

- Chandrashekhar Hiremath, K.Senthilnathan, N.K.Naik, AnirbanGuha, AsimTewari, Numerical study and experimental validation of effect of varying fiber crack density on stiffness reduction in CFRP composites" accepted for publication in the Journal of Materials Engineering and Performance, 2018

- Chandrashekhar Hiremath, K.Senthilnathan, N.K.Naik, AnirbanGuha, AsimTewari, Microstructural damage-based micromechanics model to predict stiffness reduction in damaged unidirectional composites, accepted for publication in the Journal of Reinforced Plastics and Composites, 2018

- Sharma, R.K., Bind, A.K., Avinash, G., Singh, R.N., Tewari, A., Kashyap, B.P, Effect of radial hydride fraction on fracture toughness of CWSR Zr-2.5%Nb pressure tube material between ambient and 300 °C temperatures, Journal of Nuclear Materials Volume 508, September 2018, Pages 546-555

- Rishi Sharma, R.N. Singh, Asim Tewari, Optimum Shape and Orientation of δ-Hydride Precipitate in α-Zirconium Matrix for different Temperatures, Journal of Alloys and Compounds, 742, pp 804-813, 2018.

- Chandrashekhar Hiremath, K.Senthilnathan, N.K.Naik, AnirbanGuha, AsimTewari, Microstructural damage based modeling of thermal conductivity of cyclically loaded CFRP, Composites Science and Technology Volume 154, 18 January 2018, Pages 37-44

- Vivek Kumar Barnwal, Shanta ChakrabartyAsim Tewari, K.

Narasimhan, Sushil K. Mishra, Forming behavior and microstructural evolution during single point incremental forming process of AA-6061 aluminum alloy sheet, Int J Adv Manuf Technol (2017), 95(1–4), pp 921–935, 2018.

- Kundalkar, D., Singh, R. & Tewari, A., Effect of Friction Models and Parameters on the Lagrangian Flow Fields in High-Temperature Compression Testing, J. of Materi Eng and Perform (2017) 26: 4867-4875

- K. Senthilnathan, Chandrashekhar P. Hiremath, N.K. Naik, Anirban Guha, Asim Tewari, Microstructural damage dependent stiffness prediction of unidirectional CFRP composite under cyclic loading, Composites: Part A 100 (2017) 118–127.

- DK Sahoo, P Dewan, P Srivastava, AK Kohli, IPS Sandhu, Rajesh Kumari, DR Saroha, Anirban Guha, Asim Tewari, RK Singh, Performance of Gamma Chamber under blast loading, Annals of Nuclear Energy 105, 240-248, 2017

- Rishi Sharma, R.N. Singh and Asim Tewari, Influence of hydride orientation on fracture toughness of CWSR Zr-2.5%Nb pressure tube material between RT and 300 °C, Journal of Nuclear Materials, 2017 Volume 488, May 2017, Pages 231-244.

- VK Barnwal, R Raghavan, A Tewari, K Narasimhan, SK Mishra, Effect of microstructure and texture on forming behaviour of AA-6061 aluminium alloy sheet, Materials Science and Engineering: A 679, 56-65, 2017.

Training of Highly Qualified People

	Master Students	Doctoral Students	Postdoctoral Students	Other (RA&TA)
Supervised	21	8	--	--
Co-Supervised	--	--	--	--
Graduated	--	--	--	--