

BRIEF NOTE ON OVERALL PROGRESS MADE UNDER THE IoE  
SCHEME UNDER DIFFERENT VERTICALS



Institute of Eminence Cell  
Indian Institute of Bombay

March 31, 2021

## Research related:

### WCRL

- Following World Class Research Labs are being setup and these under different stages of progress.

Lab Name	Budget allocated ₹ (Cr)	PR created (No)	Amount of PR ₹ (Cr)	PR approved (No)	Amount of PR approved ₹ (Cr)
Nano Science Nano Fabrication & Characterization	260	9	50.80	8	34.96
Manufacturing and Materials	30	24	35.43	16	15.52
Health Sciences and Engineering	35	11	27.87	11	27.87
Data and Information Science	50	9	31.30	4	9.28
Sustainable Chemical Sciences	50	11	24.86	9	11.47

Further process related to placement of Purchase Order (P O) is held up for want of GTE clearance from MoE for which action is under progress.

### Central Research Facilities

- Towards augmenting central research facilities, an amount of ₹122.42 Cr have been earmarked for infrastructure funding. High end research equipment are being procured under this scheme. As on date 45 projects are under various stages of completion. In this

direction 107 Purchase Requisitions worth ₹104.94Cr have been created and 49 Purchase Orders issued. Action under progress related to 58 PR.

#### Data Centre

- A central facility of Data Centre housing BYOH and HPC is under commissioning. Towards this purchase requisition worth ₹20 Cr is approved and RFP already floated.

#### Post-Doctoral Fellows

- 112 IPDFs joined during Jan-Mar 2021 taking the total number of IPDFs to 340. Approved to appoint IIT B PhD holders as Institute PDF to meet the increased research activities in various laboratories. This will substantially increase the number of PDFs, thus helping research activities.

#### Patents

- Number of patents filed during the year 2019-20 is 122. Number of patents filed during Apr 2020- Mar 2021 is 163. Total 262( Patents – 163, Trademarks – 88, design registration – 10) IP filed during 2020-21 and increased 68% from last year. 156 IP filed during 2019-20.

#### Programmes with Social impact.

- Due to the COVID 19 situation, there were Severe constraints for field work. Nonetheless, CTARA conducted various training programmes/workshop having social impact, IDP in climate studies and CSRE are doing research related to climate change and its mitigation, BSBE started study on bacterial infection after respiratory viral infection in collaboration with University of Liverpool, UK., Earth Science conducted research on clay minerals as alternative fertilizers, CUSE developed a low cost solution for improving water supply in India that will solve issues faced by Rural and Urban local bodies.

### Student related:

- IIT Bombay runs various academic and research programmes in the areas of management, design, economics, and policy etc., thus making the institute truly multi- and interdisciplinary.
- Multiple entry schemes already exist in the Institute.
- Number of foreign students – 77. Percentage of foreign students – 0.85%. Difficult to increase this number substantially in the current year due to COVID 19. IITB is working with government agencies such as Study in India (SII), ICCR, IIT Delhi (ASEAN PhD fellowships) in their outreach and admissions activities for recruiting international students at the master's and PhD levels.
- Student enrolment in various courses is 12005 as on 31 Mar 2021.
- Scholarships and financial support are being made available to all needy students. During the year 2019-20, 3209 students were provided with scholarship amount in Rs 82.77Cr and 106 students were awarded with Rs 10.31 Lakhs. In the last quarter Oct-Dec 2020 14.77 Cr worth scholarships awarded to students.

### MoUs with other Universities.

- We have entered MoU with various top ranked universities. Total number of MoU is 177. Three MoU signed with Technische Universität Ilmenau, Germany, Lehigh University, USA and Kyoto University, Japan during Oct-Dec 2020 and Four MoU signed during Jan-Mar 2021. Dean IR interfaces with external universities to set up MoUs and exchange programmes.

### Hostels

- Construction is ongoing for Hostel 17. Architect appointed for Hostel 19 and further process going on. Student Activity Centre (SAC) DPR completed and Purchase Requisitions under process.

### Faculty student ratio

- Recruited 14 numbers of faculty during the calendar year 2020. Total number of faculty as on 31.03.2021 is 686 out of which 98 are female faculty members. Current student faculty ratio is 1:17.5.

### Academic related:

- Multidisciplinary focus: A proposal for liberal education UG programme was approved in principle by senate in their meeting held on 27<sup>th</sup> Dec 2020. Final approval under progress.
- Interdisciplinary courses: Centre for Machine Intelligence and Data Science (C-MInDS) started in February 2020 to offer Minor in AI and Data Science and Inter Disciplinary Dual Degree Program (IDDP) in AI and Data Science.
- IDC programme in animation supported by I&B ministry approved.
- B S in Mathematics by Department of Mathematics, Dual degree (B. Tech+ M. Tech) in Environmental science and engineering by Environmental science and engineering department were started in 2018.
- M. Tech in Education Technology by Education technology department, Master in policy studies by Policy studies Centre, and Master in Urban design and engineering by Urban design and engineering Centre were started in 2019.
- M.S. By Research in Computer Science & Engg. By Computer science and engineering department, Dual degree (MA+ PhD) in Humanities & social Sciences by Humanities and social sciences department started in 2020.
- IDDDP MTech in AI&ML under CMInDS started.
- Number of interdisciplinary centers and school: BoG approval take for Centre for Machine Intelligence and Data Science (CMInDS) offering Minor in AI and Data Science and Inter Disciplinary Dual Degree Program (IDDP) in AI and Data Science setup in February 2020.
- New Department and Centers: Education technology department created and started to offer PG level courses. Urban design and engineering and policy studies are two centers created in 2019 and offering courses at the PG level.
- Senate's 247<sup>th</sup> meeting approved IDDDP in management and effective from academic year 2021-22.

### Library related:

- Number of books holding in our central library has increased to 2,49,100 and journals to 20,600 and thesis and dissertation to 25,00,000. During the year 2020, ₹14.2Cr used to purchased books, journals, and databases. 672 books purchased and 20,600 journals subscribed during Jan-Mar 2021.
- Peer Reviewed publications: Total number of peer reviewed publications are 796 during Jan-Mar 2021. Number of publications per faculty is 1.1. Number citation per faculty is 40.5 during Jan-Mar 2021.

### Overall:

- World Ranking: QS ranking – 172.

### Awards/recognition for IITB faculty members:

The following faculty members have been conferred with awards/recognition as under during the year 2020-21.

#### **Shanti Swarup Bhatnagar Prize for Science and Technology**

1. Prof. Rohit Srivastava Department of Biosciences and Bioengineering

#### **Fellow of Indian National Science Academy (FNA)**

1. Prof. Chandra Venkataraman, Department of Chemical Engineering
2. Prof. Dinesh Sharma, Department of Electrical Engineering
3. Prof. Roop Mallik, Department of Biosciences and Bioengineering
4. Prof. Vivek Agarwal, Department of Electrical Engineering
5. Prof. Souvik Mahapatra, Department of Electrical Engineering
6. Prof. M. Ravikanth, Department of Chemistry

#### **Fellow of Indian Academy of Sciences (FASc)**

1. Prof. Amit Agrawal, Department of Mechanical Engineering

2. Prof. Neela Nataraj, Department of Mathematics

#### **Fellow of the National Academy of Sciences (FNASc)**

1. Prof. Rinti Banerjee, Department of Biosciences and Bioengineering
2. Prof. Samir Maji, Department of Biosciences and Bioengineering
3. Prof. R. B. Sunoj, Department of Chemistry
4. Prof. Suhas Joshi, Department of Mechanical Engineering

#### **Fellow of the Indian National Academy of Engineering (FNAE)**

1. Prof. Rohit Srivastava, Department of Biosciences and Bioengineering
2. Prof. Suparna Mukherji, Environmental Science & Engineering Department
3. Prof. Saurabh Lodha, Department of Electrical Engineering
4. Prof. Ravindra Gudi, Department of Chemical Engineering
5. Prof. Atul Sharma, Department of Mechanical Engineering

#### **Swarnajayanti Fellowship**

1. Prof. Chandramouli. Subramaniam, Department of Chemistry
2. Prof. Amartya Mukhopadhyay, Department of Metallurgical Engineering and Materials Science (MEMS)

#### **J C Bose Fellowship**

1. Prof. R Murugavel, (Department of Chemistry)
2. Prof. Dipendra Prasad, (Mathematics Department)

#### **SERB Women Excellence Award-2021**

1. Prof. Shobhna Kapoor (Department of Chemistry)

#### **SERB-POWER (Promoting Opportunities for Women in Exploratory Research) Fellowship**

1. Prof. Dipti Gupta, (Department of Metallurgical Engineering and Materials Science)
2. Prof. Neela Nataraj (Department of Mathematics)

3. Prof. Archana Pai, (Department of Physics)

### **Other Fellowships**

1. Prof. Debasis Chakraborty, (Department of Aerospace Engineering) has been elected as a Fellow of West Bengal Academy of Science and Technology (WAST).
2. Prof. Subhananda Chakrabarti, (Department of Electrical Engineering) has been admitted as a Fellow of SPIE (The International Society for Optics and Photonics), USA.
3. Prof. Santosh Gharpure (Department of Chemistry) has been invited to become a 'Fellow of the Royal Society of Chemistry' through their *Leaders in the Field Scheme*.
4. Prof. Suryakant Waghmore, (Humanities and Social Sciences) has been selected to receive the New India Foundation Fellowship for the year 2021.
5. Prof. Srinivasan Ramakrishnan, (Department of Chemistry) has been awarded Ramanujan Fellowship.
6. Prof. Sudarshan Kumar, (Department of Aerospace Engineering) has been selected as an Associate Fellow-Class of 2022 in the American Institute of Aeronautics and Astronautics (AIAA).
7. Prof. S Sudarshan, Department of Computer Science and Engineering has been selected as a Fellow of IEEE, USA.
8. Prof. Ranjith Padinhateeri, (Department of Biosciences and Bioengineering) has been awarded Fulbright-Nehru Academic and Professional Excellence Fellowship (2022-2023).

### **Awards**

1. A film "*Saakshatkaaram*" by Prof. Sudesh Balan, (IDC School of Design) and his team bagged two awards at the 14th Edition of SIGNS film festival organized by Kerala Region of Federation of Film Societies of India.
2. Prof. Nina Sabnani, (IDC, School of Design) -The Legend of Indian Animation award for the year 2021.
3. Late Prof. Rinti Banerjee, (Department of Biosciences and Bioengineering) has been selected as Women Achievers in STEM from all over India in both academia and industry by Confederation of Indian Industry (CII).
4. Prof. Maryam Shojaei, (Department of Electrical Engineering) has been selected as Women Achievers in STEM from all over India in both academia and industry by Confederation of Indian Industry (CII).
5. Prof. Suparna Mukherjee, (Department of Environmental Science and Engineering) has been selected as Women Achievers in STEM from all over India in both academia and industry by Confederation of Indian Industry (CII)



6. Prof. Malhar Kulkarni, Department of Humanities and Social Sciences has received the Mahakavi Kalidas Sanskrit Sadhana Puraskar (महाकवी कालिदास संस्कृत साधना पुरस्कार) for the year 2020 from the Government of Maharashtra in recognition of his work as a Teacher of Sanskrit.
7. Prof. Debabrata Maiti, (Department of Chemistry) has been selected to receive the Chemical Research Society of India (CRSI) Bronze Medal for the year 2022.
8. Prof. Gopalan Rajaraman, (Department of Chemistry) has been selected to receive the Chemical Research Society of India (CRSI) Bronze Medal for the year 2022.
9. Prof. Abir De, (Department of Computer Science and Engineering) has received the INAE Young Engineer Award 2021.
10. Prof. Achintya Dutta, (Department of Chemistry), has been chosen for NASI-Young Scientist Platinum Jubilee Award 2021 in the field of Chemical Sciences.
11. Prof. Anshuman Kumar, (Department of Physics), has been chosen for NASI-Young Scientist Platinum Jubilee Award 2021 in the field of Earth Sciences, Mathematics and Physics.
12. Prof. Samir K. Maji, (Department of Biosciences and Bioengineering) has received the P. B. Rama Rao Memorial Award for the year 2021 for his contributions in the field of Biochemistry and Allied Sciences from the Society of Biological Chemists (India)
13. Prof. Chandra M. R. Volla, (Department of Chemistry) has been selected for Organisation of Pharmaceutical Producers of India (OPPI) Young Scientist Award 2021.
14. Prof. Prakriti Tayaliya, Department of Bioscience & Bioengineering and Prof. Chandra M. R. Volla, Department of Chemistry has been chosen for the Merck Young Scientist Award-2021 in the Biological Sciences category.
15. Prof. Eswar Rajasekaran, (Department of Civil Engineering) has been selected for the Prof. K.K. Nageswara Rao Young Achiever Award-2021 given by the Indian Society of Geomatics for his significant contributions in the field of Geomatics
16. Prof. Gulab Singh, (Centre of Studies in Resources Engineering (CSRE) has been awarded the "National Geomatics Award for Excellence" by the Indian Society of Geomatics (IGS) during National Symposium on i-GEOMATICS and Annual Convention of ISRS and ISG 2021
17. Prof. K Ramasubramanian, (Humanities and Social Sciences) has been awarded "Mahakavi Kalidas Sanskrit-Vrati National Award 2021" by Kavikulaguru Kalidas Sanskrit University.
18. Prof. Jayesh Pillai along with Mr. Abhishek Verma, an alumnus of IDC School and Manhole Collective, (IDC School of Design) have won an award for their film 'Manhole', a 3D animated short film, in Unreal Engine's Shorts India Program.
19. Prof. Subhasis Chaudhuri, Director IIT Bombay, (Department of Electrical Engineering) has received the Advanced Computing and Communications Society (ACCS) Award for the year 2021.

## Other Recognitions

1. Prof. Santosh J. Gharpure (Department of Chemistry) has been selected as a member of India-UK Innovation and Sustainability Chemistry Consortium (ISCC) formed by scientists from India and UK and approved by the British High Commission.
2. Prof. Sahana Murthy (IDP in Education Technology) (ET) has been elected to the Board of Directors of International Society for Learning Sciences for a six year term 2021-2027.
3. Prof. K. Ramasubramanian (Department of Humanities and Social Sciences) (HSS) has been invited to give a distinguished lecture at the International Congress of Mathematicians (ICM) 2022.
4. Prof. Chetan Singh Solanki (Department of Energy Science and Engineering) has been appointed as Brand Ambassador of Solar Energy for Madhya Pradesh till 2023.
5. Prof. Abhijit Majumder, (Department of Chemical Engineering) has been elected as the Executive Committee member of Global Young Academy (GYA) for 2021-22.
6. Prof. B.N. Jagatap, (Department of Physics) has been elected as a Chairman, Steering Committee of the National Initiative on Communicating India's Scientifically Validated Traditional Knowledge to the Society.
7. Prof. Dulal Panda, (Department of Biosciences and Bioengineering) has been appointed as Director of NIPER Mohali.
8. Prof. B.N. Jagatap, (Department of Physics) has been elected as a Chairman, Research Council of National Institute of Science Communication and Policy Research (CSIR), New Delhi.
9. The work of Prof. Nutan Limaye, Department of Computer Science and Engineering has been accepted to be published at the prestigious conference Annual Symposium on Foundations of Computer Science (FOCS 2021).
10. Prof. Srikanth Srinivasan, Department of Mathematics (currently at Aarhus University, Denmark) work has been accepted to be published at the prestigious conference Annual Symposium on Foundations of Computer Science (FOCS 2021).
11. Prof. Pushpak Bhattacharyya, (Department of Computer Science and Engineering) was invited by CERN, the European Organization for Nuclear Research, at Geneva to the first edition of Sparks! to discuss the future of AI.
12. Prof. Ruchi Anand, (Department of Chemistry), has been inducted as an Associate Member in the IUPAC Standing Committee on Chemical Research Applied to World Needs (CHEMRAWN) for the term 2022-23
13. Prof. Maryam Shojaei Baghini, (Department of Electrical Engineering) has been appointed as Distinguished Lecturer of the IEEE Sensors Council for the period 2022-2024.

14. Prof. Parinda Vasa, (Department of Physics) has been elected as an Officer (Secretary) for IUPAP Commission 17 (C17) for Laser Physics and Photonics for the next triennial (2022-2024).
15. Prof. Supratik Chakraborty, (Department of Computer Science and Engineering) has been recognized as a Distinguished Member of the ACM (Association of Computing Machinery) for "Outstanding Scientific Contributions to Computing".

### **Editorial Boards**

1. Prof. E. Chandrasekhar (Department of Earth Sciences) has been invited to join the Editorial board of Arabian Journal of Geosciences as an Associate Editor.
2. Prof. Pradeep Dixit (Department of Mechanical Engineering) has been invited to serve as the Associate Editor of Microsystem Technologies by Springer Publications for a period of 3 years.
3. Prof. Anurag Garg (Department of Environmental Science and Engineering) has been invited to join as Associate Editor on the Editorial board of Frontiers in Sustainability Journal (Sustainable Chemical Process Design Section).
4. Prof. Kantimay Das Gupta (Department of Physics), has been invited to join the Editorial Board of Superconductor Science and Technology, a journal published by IOP.
5. Prof. Harsha Hutridurga (Department of Mathematics) has been invited to join the Editorial Board of the Royal Society Journal Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences.
6. Prof. Nand Kishore (Department of Chemistry) has been appointed as the Editor of the Journal of Chemical Thermodynamics (an Elsevier Journal).
7. Prof. Kiran Kondabagil (Department of Biosciences and Bioengineering) has been invited to join the Mary Ann Liebert Journal PHAGE: Therapy, Applications and Research as an Associate Editor.
8. Prof. Suvarn S. Kulkarni (Department of Chemistry) has been appointed as Guest Editor of a special collection on Carbohydrate Chemistry, to be published jointly by European Journal of Organic Chemistry and ChemCatChem.
9. Prof. Nandita Madhavan (Department of Chemistry) has been invited to join the Editorial Advisory Board of the Journal of Physical Organic Chemistry (Wiley).
10. Prof. Bhaskaran Muralidharan (Department of Electrical Engineering), has been invited to join the Editorial Board of Nanoelectronics as a review editor. He will be also a co-topic editor in the field of superconductivity in topological materials edition.
11. Prof. Neela Nataraj (Department of Mathematics) has been invited to become an Associate Editor of ESAIM: Mathematical Modeling and Numerical Analysis (ESAIM: M2AN).

12. Prof. Hetu Sheth (Department of Earth Sciences) has been invited to become a member of the Editorial Board of Geosciences (published by MDPI, Switzerland) and Editorial Advisory Board of Journal of Petrology (published by Oxford University Press, UK).
13. Prof. Shobha Shukla (Department of Metallurgical Engineering and Materials Science), has been invited to become a member of the Editorial Board of Journal of Physics-Photonics, published by IoP publishing.
14. Prof. R. B. Sunoj (Department of Chemistry) has been invited to join the Editorial Board of Chemical Society Reviews for a period of 3 years.
15. Prof. Chandra M. Volla (Department of Chemistry) has been chosen by editorial boards of Synlett, Synthesis and Synfacts as one of the Thieme Chemistry Journal Awardees in 2021.
16. Prof. Debasattam Pal, (Department of Electrical Engineering) has been invited to join the Editorial Board of the Journal- Mathematics of Control, Signals and Systems.
17. Prof. Parinda Vasa, (Department of Physics) has been invited to join the Editorial Board of Journal of Optics (Institute of Physics Publishing, UK) as a member for two years.
18. Prof. S. Bhargava, (Shailesh J. Mehta School of Management) has been invited to join the panel of Associate Editors of IIMB Management Review (Elsevier).
19. Prof. Dharamveer Singh, (Department of Civil Engineering) has been appointed as an Associate Editor of International Journal of Pavement Research and Technology (IJPRT), Springer.
20. Prof. Jayadipta Ghosh, (Department of Civil Engineering) has been invited to join the prestigious ASCE Journal of Bridge Engineering (ISSN: 1084-0702) as an Associate Editor.
21. Prof. Bhaskaran Muralidharan, (Department of Electrical Engineering) has been appointed as Associate Editor in the IEEE Transactions on Nanotechnology starting with July 2021.
22. Prof. Rohit Srivastava, (Department of Biosciences and Bioengineering) has been invited to join the editorial board of Imaging and Diagnostics, a section within Frontiers in Biomaterials Science, as an Associate Editor.
23. Prof. Shobhna Kapoor, (Department of Chemistry) has been invited to join the Early Career Advisory Board (ECAB) member of Chemistry- An Asian Journal from 2022 onwards.
24. Prof. Suvarn Kulkarni, (Department of Chemistry) has been invited to join the Editorial Advisory Board of ChemistrySelect.
25. Prof. Nandita Madhavan, (Department of Chemistry) has been invited to join the Editorial Advisory Board of ChemistrySelect.
26. Prof. Samir Maji, (Department of Biosciences and Bioengineering) has been invited to join the Editorial Advisory Board of American Chemical Society Journal "ACS Bio & Med Chem" for the term of three years.

27. Prof. Riddhi Singh, (Department of Civil Engineering) has been appointed as "Associate Editor" of Journal of Hydrology, Elsevier, for a period of two years starting from Jan 2022.