



# Annual Report 2019-20



भारतीय विज्ञान शिक्षा एवं अनुसंधान संस्थान कोलकाता  
INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH KOLKATA  
An Autonomous Institution, Ministry of Education, Govt. of India



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## Director's Message

It is a matter of great pleasure and privilege to present the report on various activities and accomplishments of Indian Institute of Science Education and Research (IISER) Kolkata during the financial year 2019-2020. In the third year as the Director of IISER Kolkata, I note with gratitude the continued support of the Board of Governors, the Ministry of Human Resources Development, faculty, staff members and students enabling us to take the right initiatives towards the growth and development of the Institute.

Since the inception in 2006, IISER Kolkata has been established as a premier academic institution of International standard. IISER Kolkata has now become a major destination for bright minds striving to fulfill their academic dreams both as students and as faculty members. I am happy to share with you that our family has grown to 126 faculty members, distributed in five academic departments, and supported by a dedicated team of 92 administrative staff members. In addition, we have a few visiting, adjunct and honorary faculty of great distinction, who add to the vibrant teaching and research atmosphere at IISER Kolkata. Our combined student strength is at a record high comprising of 974 BS-MS, 146 Integrated-PhD (IPhD), 3 MS in space physics and 434 Doctoral students. We have now two new departments, namely, the department of humanities and social sciences and the department of computer science and application. These departments will allow us to develop the education of the students in a holistic manner.

IISER Kolkata is committed towards excellence in science and research and has shown exemplary performance in the year 2019-2020. Our faculty members have addressed the most relevant scientific problems and have been able to contribute significantly, resulting in about 450 publications in the reporting year. It is also gratifying to note that a few graduate students have independently published their research in peer-reviewed journals. There are also instances where graduate students of different research areas have collaborated and have successfully addressed important problems. Support to faculty members has been provided, ensuring that all can exercise the academic

freedom essential for good research. I am happy to state that the excellent performance of our students and faculty members are getting recognized both nationally and internationally in the form of prestigious awards, fellowships and distinctions.

IISER Kolkata has been consistently ranked high by NIRF rankings. In terms of important publications, IISER Kolkata has been ranked high by Nature Index (NI). Among the academic institutions, we were ranked as high as no. 5 by NI.

It is a matter of great satisfaction that our faculty members are attracting support from national and International funding agencies. 54 new sponsored research projects/schemes amounting 23 crores have been obtained by our faculty members during the financial year 2019-2020. The detailed facts and figures of our research accomplishment are presented in the relevant section of this report. Several members of IISER Kolkata community have delivered plenary and invited lectures on their research accomplishment in India and abroad during this reporting year. IISER Kolkata supports such endeavors not only for faculty members, but also for students to get an exposure to a broader research scenario. Moreover, in IISER Kolkata we hosted several conferences of international prominence and invited many eminent scientists to deliver lectures. Internationally renowned Scientists visited our Institute and delivered scientific lectures under the Global Initiative in Academic Networks (GIAN) initiated by the Ministry of Education recently. IISER Kolkata has also been honored for being selected for hosting a national leadership development program for the second time running in 2019-2020 designed to create and nurture top level leaders of Indian higher education organizations (LEAP). This time the LEAP program had two weeks of Indian training at Kolkata followed by a one week of foreign training component at NTU, Singapore.

Our initiative to foster translation in the form of incubation center is beginning to take shape. The incubation centre, named, Research, Innovation and Scientific Entrepreneurship (RISE) Foundation IISER, with the generous support of the Department of Science and Technology is at work on building an ecosystem of start-ups involving our scientists, students and other entrepreneurs of the country. In addition, we are working on several industry-oriented programmes, details of which are given in the report.

IISER Kolkata faculty members are committed to develop a perfect human resource for the future. It is our responsibility to consider research and teaching with equal importance and it is the most rewarding experience to witness our students graduating in the convocation ceremony. The 7th convocation ceremony was held on 11th June 2019 where 151 students were awarded the BS-MS degree. In addition to that, 16 IPHD with MS only, 7 IPHD, 3 MS by research and 31 PhD students were conferred their respective degrees. The details are provided

in the section on Academic Report. The number of graduating students is noteworthy and furthermore they are able to find appropriate academic positions advancing their research career. In this year, a large number of graduate students not only attended international/national conferences but have also obtained prizes for their presentations. A young group of BS-MS students participated in iGEM-2019 and have brought us a gold medal for the second time. The success of our students makes us immensely happy about our effort in training the future generation at IISER Kolkata.

I am very pleased to report that the IISER Kolkata campus is one of the most vibrant that I have seen. I am also very happy to report that the entire constructions of the first phase of IISER Kolkata have been completed this financial year. In particular, the auditorium, Biome facility and an animal house facility took the final shape in this period. IISER Kolkata is a predominantly residential campus and all students have access to faculty members beyond the class time. There are several social activities that bond students and faculty, in addition to their teacher-student interactions. Celebration of festivities, participation in sports and social awareness programmes are done with enormous enthusiasm. This year we celebrated the Vigilance Awareness, 150th Birth Anniversary of Mahatma Gandhi and Education Day, Legal Rights for Women and also awarded a few Swachh Bharat Summer Internships. IISER Kolkata celebrated National Science day with a mission to spread scientific awareness. The students affairs committee (SAC) at IISER Kolkata is very active and in association with SPIC-MACAY organized several classical music concerts in campus. The sports complex is always busy with activities and the readily built auditorium will open the possibility of arranging bigger cultural programmes. Various student-run clubs are running with the support of the institute administration for Arts, Music, Photography etc. to develop all-round and healthy young minds. A team of trained counselors and a psychiatrist in conjunction with faculty members ensure that no student is left behind in our celebration of the harmony in the campus. The student's initiative *Ek pehal* for social activities that include free education to the local children is running successfully and has set an example for all to emulate.

I take this opportunity to thank the Ministry of Education led by Honorable Minister, all the members of our statutory bodies, Board of Governors, Finance Committee, Building Works Committee and Academic Senate for their continuous support and invaluable suggestions for various academic and administrative decisions. I thank the members of our internal and statutory audit team for checking the credibility of accounts. My sincere thanks to all students, faculty and staff members for their tireless efforts and significant contributions towards the growth and development of IISER Kolkata. Finally, hearty congratulations to the members of the Annual Report committee for bringing this comprehensive report.

IISER KOLKATA



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INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH KOLKATA  
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# Faculty Affairs Report

## Overview

### Dean of Faculty Affairs:

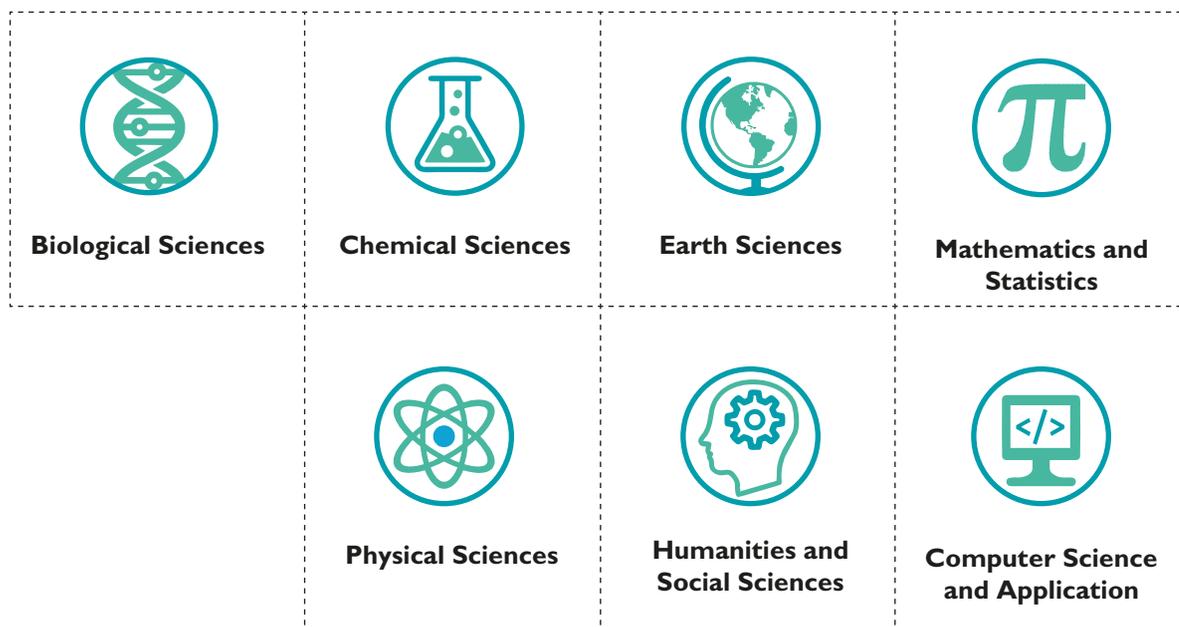
Prof. Narayan Banerjee  
Professor, Physical Sciences

The office of the Dean of Faculty Affairs is to facilitate routine service matters of the members of the faculty, recruitment of new faculty members and to look after the career advancement of the individual members and to promote their growth as a whole. This includes appointments, reappointments, tenure, promotion, service matters like leave, various certificates, pay fixation, service book, etc. Furthermore, the Dean of Faculty Affairs (DoFA) acts as a bridge between the members of the faculty and the administration. The Office represents the DoFA's priorities and provides administrative oversight for various Institutional faculty requirement, evaluations, review processes, policies and procedures under which the Institute operates.

The Institute is proud of its mainstay – the Faculty members, who form a vibrant and cohesive group of outstanding academicians. In thirteen years of its existence, IISER Kolkata has been able to attract talented and promising faculty members with large diversity, specialization and research experience from prestigious institutes in India and abroad. Our Faculty members have worked against various odds of a budding institute to establish state-of-the-art research facilities. Through their dedicated service, our faculty members have achieved excellence in teaching and research, enabling the Institute to realize its aim of providing high quality education in modern sciences, integrated with research. Faculty members have been able to attract large quantum of extramural funding and have published their research in journals of international repute. Research papers from IISER Kolkata have appeared in prestigious journals, eg. *Nature Chemistry*, *Journal of American Chemical Society*, *Angewandte Chemie International Edition*, *Physical Review Letters*, *Journal of Virology*, *Frontiers in Microbiology*, *Environmental Science and Technology*, *Journal of Geophysical Research*, *Journal of European Mathematical Society*, *Advances in Mathematics*, *Statistics and Probability Letters*, to name a few. Faculty members of IISER Kolkata have been recipient of prestigious awards and recognitions eg. Shanti Swarup Bhatnagar Award, Swarna Jayanti Fellowship, Fellowship of the National Academies and Third World Academy of Sciences, J.C. Bose National Fellowship, IEEE Fellowship, National Geoscience Award and Young Scientist Award.

The Institute has 7 departments and 5 academic centres as mentioned below:

### Academic Departments:



## Academic Centres:

Centre of Excellence in Space Sciences, India (CESSI)

Centre for Advanced Functional Materials (CAFM)

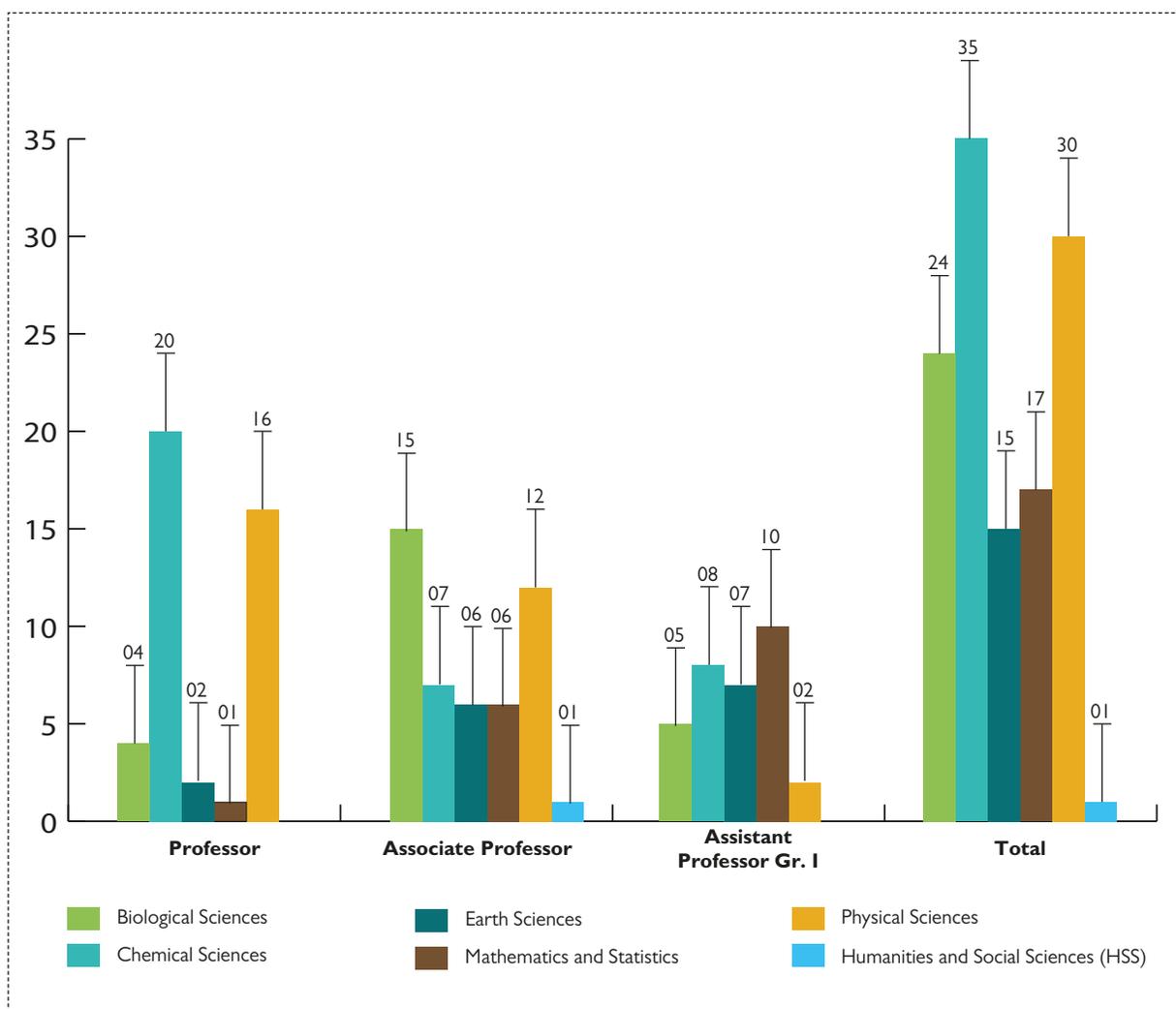
National Centre for High Pressure Studies (NCHPS)

Centre for Climate and Environmental Studies (CCES)

Center for Artificial Intelligence (CFAI)

As on 31.03.2020, the Institute has 122 faculty members (43 Professors, 47 Associate Professors, 32 Assistant Professors Gr. I). The details of faculty members, department wise are given in the table below:

Department	Professor	Associate Professor	Assistant Professor Gr. I	Total
Biological Sciences	4	15	5	24
Chemical Sciences	20	7	8	35
Earth Sciences	2	6	7	15
Mathematics and Statistics	1	6	10	17
Physical Sciences	16	12	2	30
Humanities and Social Sciences (HSS)	–	1	–	1
<b>Total</b>	<b>43</b>	<b>47</b>	<b>32</b>	<b>122</b>



Like every year, members of the faculty of this institute have received numerous awards, honours and distinctions, both in national and international forum, in recognition of their excellence in their research and development work. Those achievements are highlighted below:

<b>DEPARTMENT OF BIOLOGICAL SCIENCES (DBS)</b>	
Prof. Jayasri Das Sarma	Elected as a Fellow of West Bengal Academy of Science & Technology (WAST) for the year 2018.
Prof. Punyasloke Bhadury	Invited to contribute to the United Nations World Ocean Assessment Report under the aegis of Oceans and Law of the Sea, United Nations.
Dr. Babu Sudhamalla	Recipient of DBT Ramalingaswami Fellowship for the year 2018-2019.
Dr. Dipjyoti Das	Recipient of DBT Ramalingaswami Fellowship for the year 2018-2019.
<b>DEPARTMENT OF CHEMICAL SCIENCES (DCS)</b>	
Prof. Sourav Pal	Nominated to be on the first Executive Board of newly constituted Federation of Commonwealth Chemical Sciences.
Prof. Chilla Malla Reddy	Appointed as an Associate Editor for CrystEngComm published by Royal Society of Chemistry for a period of 3 years, starting from June 2019.
Prof. Raja Shunmugam	<ul style="list-style-type: none"> <li>Recognized in the 'Polymer Chemistry Pioneering Investigators 2019' from Royal Society of Chemistry.</li> <li>Selected for the "NASI - Reliance Industries Platinum Jubilee Award for Application Oriented Innovations in Physical Sciences" for the year 2019.</li> </ul>
Prof. Pradipta Purkayastha	Elected as Fellow of West Bengal Academy of Science & Technology.
Prof. Ashwani Kumar Tiwari	Received the CSRI Bronze Medal.
Dr. Dibyendu Das	Selected as an Associate of the Indian Academy of Sciences.
Dr. Rahul Banerjee	Research work of Dr. Banerjee has been highlighted in newspaper.
Dr. Susmita Roy	Selected for DBT-Har Govind Khorana-Innovative Young Biotechnologist Award
<b>DEPARTMENT OF EARTH SCIENCES (DES)</b>	
Prof. Supriyo Mitra	<ul style="list-style-type: none"> <li>Selected as a Visiting Professor at the Earthquake Research Institute, the University of Tokyo for a period of two months.</li> <li>Elected as Fellow of West Bengal Academy of Science &amp; Technology.</li> </ul>
Prof. Prasanta Sanyal	SERB has sanctioned an amount of Rs. 2.3 Crores for the project of Prof. Prasanta Sanyal on "Istotope enabled Organic Geochemistry" at IISER Kolkata.
<b>DEPARTMENT OF MATHEMATICS AND STATISTICS (DMS)</b>	
Dr. Anirvan Chakraborty	<ul style="list-style-type: none"> <li>Associate of the Indian Academy of Sciences, Bangalore for the period 2018-2021.</li> <li>Awarded the INSA Medal for Young Scientist (2019).</li> </ul>
<b>DEPARTMENT OF PHYSICAL SCIENCES (DPS)</b>	
Prof. Amit Ghosal	Received a grant under the SPARC programme for research collaboration with foreign experts.
Prof. Dibyendu Nandi	<ul style="list-style-type: none"> <li>Conferred with the Laxminarayana &amp; Nagalaxmi Modali Award 2018 of the Astronomical Society of India.</li> <li>Inducted into the Project Management Board of the National Large Solar Telescope (NLST).</li> <li>Awarded the Young Career Award of the "Asia Pacific Solar Physics Meeting".</li> <li>Lecture entitled "Solar Stellar Magnetic Field: Their Origin and impact" has been highlighted in the press.</li> </ul>
Prof. Dhananjay Nandi	Elected as an Executive Committee Member of "Indian Society of Atomic and Molecular Physics" for the period of two years starting from April 2019.

Activities: Selection Committee Meetings for faculty members under Rolling Advertisement were conducted on the following mentioned dates:

**Dept. of Mathematics and Statistics**

Assistant Professor Gr. I and Associate Professor : Dated 27-08-2019

**Dept. of Earth Sciences**

Assistant Professor Gr. I and Professor : Dated 28-08-2019

**Dept. of Biological Sciences**

Assistant professor Gr. I : Dated 11-07-2019 & 13-09-2019

Associate Professor : Dated 11-07-2019

**Dept. of Chemical Sciences**

Associate Professor and Professor : Dated 26-08-2019

**Dept. of Physical Sciences**

Assistant Professor Gr. I, Associate Professor and Professor : Dated 27-08-2019

**Dept. of Computer Science and Application**

Assistant Professor Gr. I and Gr. II : Dated 28-08-2019 & 25-11-2019

**Dept. of Humanities and Social Sciences**

Assistant Professor Gr. I and Associate Professor : Dated 13-09-2019

**Special Recruitment Drive:**

The Special Recruitment Drive for faculty recruitment is under process.



## List of Faculty Members:

### Department of Biological Sciences:

#### Professor

Jayasri Das Sarma  
Tapas Kumar Sengupta  
Sumana Annagiri  
Punyasloke Bhadury

#### Associate Professor

Mohit Prasad  
Rupak Datta  
Supratim Datta  
Partho Sarothi Ray  
Sankar Maiti  
Partha Pratim Datta  
Anuradha Bhat  
Robert John Chandran  
Rituparna Sinha Roy  
Malancha Ta  
Bidisha Sinha  
Anindita Bhadra  
Amirul Islam Mallick  
Neelanjana Sengupta (from 19-07-2019)  
Amit Kumar Mandal (from 12-07-2019)

#### Assistant Professor Grade – I

Rahul Das  
Arnab Gupta  
Babu Sudhamalla  
Sreeramaiah Gangappa  
Dipjyoti Das

### Department of Chemical Sciences:

#### Professor and Director

Sourav Pal

#### Professor

Swadhin K. Mandal  
Balaram Mukhopadhyay  
Debasish Haldar  
Chilla Malla Reddy  
Raja Shunmugam  
Subhajit Bandyopadhyay  
Pradipta Purkayastha  
Arindam Mukherjee  
Priyadarsi De  
V. Mahalingam (from 18-09-2019)  
Sanjio Shankarrao Zade (from 18-09-2019)  
Pradip K. Ghorai (from 18-09-2019)  
Prasun Kumar Mandal (from 18-09-2019)  
Ashwani Kumar Tiwari (from 18-09-2019)  
Debasis Koley (from 18-09-2019)  
Sayan Bhattacharyya (from 18-09-2019)  
Alakesh Bisai (from 20-05-2019)  
Amitava Das (from 03-01-2020)  
Soumyajit Roy (from 10-01-2020)

#### Associate Professor

Amlan Kusum Roy  
Sumit Khanra  
Sayam Sen Gupta  
Rahul Banerjee  
Debansu Chaudhuri  
Mousumi Das  
Suman De Sarkar (from 12-09-2019)

#### Assistant Professor Grade – I

Pradip Kumar Tarafdar  
Devrajulu Sureshkumar  
Ratheesh K. Vijayaraghavan  
Biplab Maji  
Supratim Banerjee  
Dibyendu Das  
Debabrata Mukherjee (from 04-06-2019)  
Susmita Roy (from 14-06-2019)

## Department of Earth Sciences:

### Professor

Supriyo Mitra  
Prasanta Sanyal

### Associate Professor

Tarun Kumar Dalai  
Devapriya Chattopadhyay [On Lien for a period of  
1 year w.e.f. 02-07-2019 (AN)]  
Kathakali Bhattacharyya  
Manoj Kumar Jaiswal  
Sujata Ray  
Sukanta De

### Assistant Professor Grade – I

Kajalijyoti Borah  
Gopala Krishna Darbha  
Sayantan Sarkar [On Lien for a period of  
1 year w.e.f. 04-02-2020 AN]]  
Tapabrato Sarkar  
Swastika Chatterjee  
Sanjay Kumar Mandal  
Gaurav Shukla (from 19-09-2019)

## Department of Mathematics and Statistics:

### Professor

Asok K. Nanda

### Associate Professor

Saugata Bandyopadhyay  
Subrata Shyam Roy  
Anirban Banerjee  
Koel Das (from 12-09-2019)  
Somnath Basu (from 12-09-2019)  
Shibananda Biswas (from 06-01-2020)

### Assistant Professor Grade – I

Satyaki Mazumder  
Swarnendu Datta  
Sushil Gorai  
Rajib Dutta  
Shirshendu Chowdhury  
Anirvan Chakraborty  
Soumya Bhattacharya  
Sayan Bagchi  
Md. Ali Zinna  
Soumalya Joardar (from 05-12-2019)

## Department of Physical Sciences:

### Professor (HAG Scale)

Prasanta K Panigrahi  
Narayan Banerjee  
Soumitro Banerjee

### Professor

Bipul Pal  
Chiranjib Mitra  
Rajesh Kumble Nayak  
Amit Ghosal  
Satyabrata Raj (from 18-09-2019)  
Goutam Dev Mukherjee  
Dibyendu Nandi  
Ayan Banerjee  
Nirmalya Ghosh  
Supratim Sengupta (from 18-09-2019)  
Dhananjay Nandi (from 18-09-2019)  
Biswarup Mukhopadhyaya (from 02-12-2019)  
Pradeep Kumar Mohanty (from 27-12-2019)

### Associate Professor

Ananda Dasgupta  
Subhasis Sinha  
Rangeet Bhattacharyya  
Bhavtosh Bansal  
Sourin Das  
Anandamohan Ghosh  
Golam Mortuza Hossain  
Ritesh Kumar Singh  
Arindam Kundargami  
Siddhartha Lal (from 12-09-2019)  
Rumi De (from 12-09-2019)  
Koushik Dutta (from 06-12-2019)

### Assistant Professor Grade – I

Partha Mitra  
N. Kamaraju

## Department of Humanities and Social Sciences:

### Associate Professor

Tushar Kanti Nandi (from 03-12-2019)



#### Professor Narayan Banerjee

Dean of Faculty Affairs and Professor, Physical Sciences and  
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#### Mr. Suraj Narayan Bordoloi

Assistant Registrar  
E-mail: ar\_fa [at] iiserkol.ac.in



#### Mr. Puskar Das

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Mr. Joydeep Sengupta  
Junior Assistant  
E-mail: joydeep2011 [at] iiserkol.ac.in

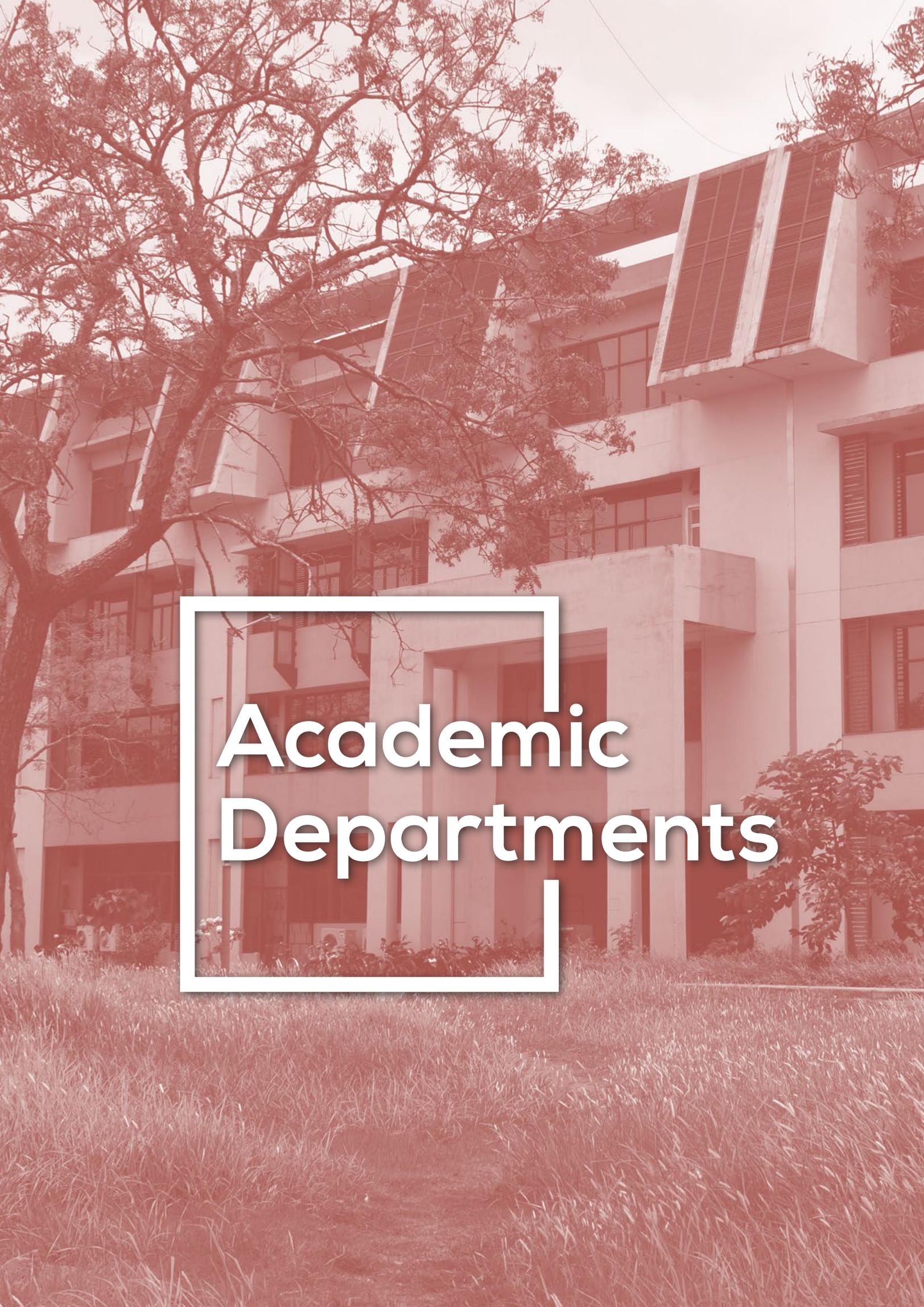


#### Mr. Supriya Gupta

Junior Assistant  
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# Academic Departments

## Department of Biological Sciences



### Teaching and Research

The Department of Biological Sciences (DBS) at IISER Kolkata is actively engaged in training the students and promoting research in diverse areas of biological sciences and interdisciplinary fields. The teaching courses in DBS for BS-MS, IPhD and PhD students have been designed to cater the need of understanding the basic concepts of Biological Sciences as well as to motivate students coming from multifaceted background. The courses offered by DBS provide a strong platform for fundamentals and motivate intellectual thinking.

The Department of Biological Sciences (DBS) has been conducting research in a broad spectrum of areas in biology and interdisciplinary fields. The diverse and collaborative research in the department address key questions on animal behaviour, biodiversity, cell and molecular biology, conservation biology, developmental biology, ecology, evolution, genetics, immunology, marine biology, microbiology, neurobiology, plant biology, physiology, population biology, structural biology, computational biology and biophysics.

With its present strength of twenty four faculty members, six Postdoctoral Fellows, eleven support staffs, eighty nine PhD and forty three Integrated PhD students with expertise in diverse areas, the ongoing research in DBS involve basic science and applied aspects of:

- Biomedical Sciences which covers Cellular/Molecular basis of disease, Host-pathogen interactions, Drug development and delivery
- Analytical and Regulatory Biology of Cell signalling and gene regulation, Cell mechanics and architecture, Protein engineering, Proteomics and Metabolomics.
- Energy Biosciences covering Metabolic Engineering and Synthetic Biology
- Biology at organism and molecular level involving Ecology, Behavioural Sciences, Agriculture, Conservation, Climate change and Bio-remediation,

DBS is equipped with instrumentation facilities that include Confocal-, ApoTome- and Epifluorescence microscopes with live cell imaging, Flow Cytometry, Real-time PCR systems, Genetic analyzer and Histopathology suite. The Department with the support of Institute has taken initiative to set up the Animal Facility so as to cater the growing need for undertaking biomedical related research. In addition, the Department has well equipped undergraduate

teaching laboratories that cater the needs of mainly BS-MS and IPHD students. Recently, proposal from DBS for DST-FIST funding got approved to house Isothermal Titration Calorimetry and Stopped-flow spectrophotometry facilities. The Department with the support of Institute has also taken initiative to set up the Animal Facility so as to cater the growing need for undertaking biomedical related research. Recently, a multi-institute project entitled 'Systems Medicine Cluster' (SyMeC) is funded by DBT where our department is actively engaged in research on oral and cervical cancer in animal model system. The past and ongoing research in DBS has already resulted in more than 150 publications in journals of international repute and generation of about Rs. 38 crores as external (national and international) research funds from agencies like CSIR, DST, ICMR, DBT, SERB, MoES, MS Society USA, NIH USA, Wellcome trust-DBT, Newton-Bhabha and DST-Max Planck.

Most of graduated students from the BS-MS program of DBS have joined the PhD program some of the top research institutions in India and abroad. Several students who completed their Ph.D. research from this Department have went on to undertake postdoctoral research in reputed institutions across India and globally.

## Outreach

1. Laboratory visit by Kumaun University (Nainital); 4th April, 2019
2. Laboratory visit by students of the Dept. of Environmental Sciences, Calcutta University; 10th May, 2019
3. NPTEL Workshop- Advance Biology Workshop, 8th to 13th July, 2019
4. Laboratory visit of Maulana Azad College, Kolkata on 17th December, 2019
5. IISER Kolkata iGEM 2019 team won the Gold in the main event "Giant Jamboree" at Boston, USA; Also the team was nominated for the best mathematical model and best bio-safety measures.

## Symposium

Frontiers in Modern Biology (FIMB)-2020, February 28-29, 2020

## Seminars

**March 11, 2020** -DBS student talk: Ms. Rubina Mondal; Talk Title: Beta diversity in freshwater fishes: drivers and mechanisms

**March 6, 2020** - DBS Seminar: Prof. Samudrala Gourinath, School of Life Sciences, Jawaharlal Nehru University; Talk Title: Structural and functional studies of Myosin IB: Understanding the role in phagocytic cup formation in *Entamoeba histolytica*

**February 27, 2020** - Pre-submission Open Seminar on 27th February, Spaker: Ms. Shritama Aich, IISER Kolkata; Talk Title: Towards efficient cellulolytic hydrolysis: Characterization and engineering of thermostable endoglucanases

**February 12, 2020** - Pre-submission Open Seminar on 27th February, Spaker: Mr. Aditya Ghoshal, IISER Kolkata; Talk Title: Male-female interactions and mating strategies in wild zebrafish (*Danio rerio*)

**February 3, 2020** - DBS Seminar: Dr. Shekhar Saha (University of Virginia School of Medicine Charlottesville, Virginia, USA); Talk Title: "A tumor suppressive long noncoding RNA DRAIC interacts with IKK and inhibits NF- $\kappa$ B"

**January 31, 2020** -DBS Seminar: Prof. Siddhartha Sankar Jana, IACS; Talk Title: "Nonmuscle Myosin II Activity Controls Membrane Protrusive Activities during cellular migration"

**January 31, 2020** -DBS Seminar: Dr. R. Swaminathan, Indian Inst. of Tech. Guwahati; Talk Title: "Charge Transfer Transitions in Naked Proteins"

**January 27, 2020** - Pre-submission viva voce: Mr. Debottam Bhattacharjee, DBS, IISER Kolkata; Talk Title: "Understanding the urban adaptations of free-ranging dogs in India"

**January 24, 2020** - DBS Seminar: Dr. Achira Roy (Center for Integrative Brain Research, Seattle Children's Research Institute, Seattle, USA); Talk Title: "Modelling human PI3K-related brain disorders – time, cause and therapy"

**January 16, 2020** - DBS Seminar: Sanchari Datta (Department of Cell Biology, University of Texas Southwestern Medical Center); Talk Title: "Spatial organization of lipid metabolism in health and disease"

**January 15, 2020** - DBS Seminar: Prof. Eric Wieschaus, Princeton University, USA Nobel Laureate, Physiology and Medicine, 1995; Talk Title: "Inputs, Outputs and Cell Signaling during Early Development"

**January 14, 2020** - DBS Seminar: Prof. Gertrud M. Schüpbach, Princeton University, USA; Talk Title: "The EGF Receptor Pathway Regulates Axis Establishment in *Drosophila* and Serves as Model for Disease in Humans"

**December 10, 2019** - DBS Seminar: Prof. Marlene Zuk, University of Minnesota; Talk Title: "Rapid evolution in silence: adaptive signal loss in the Pacific field cricket"

**November 6, 2019** - DBS Seminar: Dr. Neetu Gupta, Lerner Research Institute, Cleveland Clinic; Talk Title: "B cells, Ezrin and the importance of making connections"

**October 23, 2019** - DBS student talk: Mr. NIRBHAY KUMAR BHADANI; Talk Title: Trade-off between Hyperswarming motility and Biofilm formation in *Bacillus cereus*

**October 23, 2019** - PhD Viva voce on 23rd October, Spaker: Mr. Areen Sen, IISER Kolkata; Talk Title: Benthic Foraminifera from the Marginal Marine Environments of North-West Coast of Bay of Bengal

**October 22, 2019** - DBS Seminar: Dr. Debasisa Mohanty, National Institute of Immunology, Delhi (NII); Talk Title: "Genome mining for deciphering chemical structures of secondary metabolites from bacterial genomes & human microbiome"

**October 16, 2019** - PhD Viva voce on 16th October, Spaker: Mr. Mazharul Abbasi, IISER Kolkata; Talk Title: Identification and Characterization of a Novel  $\alpha$ -Carbonic Anhydrase from *Leishmania major* to Evaluate its Role in *Leishmania* Physiology

**October 15, 2019** - PhD Viva voce on 15th October, Spaker: Mr. Bishwarup Paul, IISER Kolkata; Talk Title: Facets of brood theft in a tropical ant

**September 25, 2019** - DBS student talk: Ms. Swagata Das; Talk Title: nPIST: A Novel Actin Binding Protein of trans-Golgi Network

**September 24, 2019** - DBS Seminar: Dr. Jitendra Thakur, NIPGR, Delhi; Talk Title: "Structure and Function of Plant Mediator Complex"

**September 23, 2019** - DBS Seminar: Dr. Manoj Prasad, NIPGR Delhi; Talk Title: "Role of epigenetics and proteasomal pathway gene(s) in combating virus infection in plants"

**September 23, 2019** - Pre-submission Open Seminar on 23rd September, Spaker: Ms. Ms Kannan Asha, IISER Kolkata; Talk Title: Isolation and characterization of novel secondary metabolites producing Actinobacterium from Sundarbans.

**September 11, 2019** - DBS Seminar: student talk\_ex-PhD : Gregor P Jose; Talk Title: "Proximity Labeling-based Identification of Membrane-associated Proteins (PLIMAP)"

**September 9, 2019** - DBS Seminar: Prof. Somdatta Sinha, IISER Mohali; Talk Title: "Compositional Complexity in Genomic Patterns and Classification"

**September 3, 2019** - DBS Seminar: Dr. Koushik Roy, University of California; Talk Title: "A step towards predicting the immune response"

**August 30, 2019** - DBS Seminar: Dr. Sudha Rajamani, IISER Pune; Talk Title: "How prebiotic selection pressures shape the evolution of protocells"

**August 26, 2019** - DBS Seminar: [student talk\_external] Shukla Sarkar (OIST Graduate University); Talk Title: "Transcriptional regulation of effector regulatory T cell function and homeostasis"

**August 23, 2019** - PhD Viva voce on 23th August, Spaker: Ms. Banhisikha Saha, IISER Kolkata, Talk Title: Understanding border cell fate specification and micropyle formation during *Drosophila* oogenesis

**August 7, 2019** - DBS Seminar: [student talk\_external] Shrabasti Bhattacharya (TIFR, Mumbai); Talk Title: "Tuning Flexibility and Dynamics in Ubiquitin Family Proteins"

**August 2, 2019** - DBS Seminar: Dr. Hemachander, ex-student of IISER Kolkata; Talk Title: "DNA Structure and Function: Frozen Accident or Evolutionary Optimum?"

**July 31, 2019** - DBS Seminar: Dr. Ananthalakshmy Sundararaman (School of Biochemistry, University of Bristol, United Kingdom); Talk Title: "Phenotypic Plasticity in Anchorage-independent Survival and Angiogenesis"

**July 19, 2019** - DBS Seminar: Prof. Maitrayee DasGupta, University of Calcutta; Talk Title: "Zooming into root nodule symbiosis through the gatekeeper lens of a receptor kinase"

**July 19, 2019** - Pre-submission open seminar: Ms. Arikta Biswas, Department of Biological Sciences, IISER Kolkata; Talk Title: "Interference based mapping of membrane fluctuations and mechanics in nucleated adherent cells"

**July 19, 2019** - Pre-submission open seminar: Ms. Banhisikha Saha, Department of Biological Sciences, IISER Kolkata; Talk Title: "Understanding border cell fate specification and micropyle formation in *Drosophila* oogenesis"

**July 12, 2019** - DBS Seminar: Dr. Mrinal Kanti Bhattacharyya, University of Hyderabad; Talk Title: "DNA Double-Strand Break Repair Mechanism: The Achilles Heel of Malaria Parasites"

**June 26, 2019** - DBS Seminar: Dr. Himadri K. Ganguly, University of Delaware, DE; Talk Title: "Stereolectronic effects of non-covalent interactions in protein conformations: Implications in Alzheimer's Disease and self-association"

**June 25, 2019** - DBS Seminar: Dr. Ritesh Ranjan Pal, The Hebrew University of Jerusalem, Israel; Talk Title: Menacing bacteria drain host cells with stealthy 'straw'

**June 25, 2019** - Pre-submission Open Seminar: Mr. Abhishek Guha, DBS, IISER Kolkata; Talk Title: "Investigating the Regulation and Function of RNA-binding Protein HuR under Genotoxic Stress"

**June 24, 2019** - DBS Seminar: Dr. Amitabha Nandi, IIT Bombay; Talk Title: "Kinetochore capture by spindle microtubules: a study in fission yeast"

**June 17, 2019** - DBS Seminar: Dr. Suman Mukhopadhyay, NCI at Frederick; Talk Title: "Exploiting cancer cell signaling and metabolism: Implications for therapeutic approach"

**June 17, 2019** - Pre-submission Open Seminar on 17th June, Spaker: Ms. Subhani Rath, IISER Kolkata; Talk Title: "Plant diversity in sacred forests in Odisha: A possible biodiversity conservation model"

**June 6, 2019** - DBS Seminar: Dr. Kiran K Bali, Heidelberg University, Germany; Talk Title: Non-coding RNA-mediated mechanisms and their future perspectives in chronic pain

**June 3, 2019** - DBS Seminar: Mr. Mazharul Abbasi, DBS, IISER Kolkata; Talk Title: "Identification and characterization of a novel  $\gamma$ -carbonic anhydrase from *Leishmania major* to evaluate its role in *Leishmania* physiology"

**May 23, 2019** - DBS Seminar: Prof. Roop Mallik, TIFR Mumbai; Talk Title: "Triglyceride Secretion from the Liver: New Mechanisms, New Questions"

**May 20, 2019** - DBS Seminar: Ms. Aditi Sharma, IISER Kolkata; Talk Title: Understanding collective cell movement by employing the model of border cell migration during *Drosophila* oogenesis

**May 15, 2019** - DBS Seminar: Dr. Urvashi Sharma, Univ. of Bath; Talk Title: Structure and functions of procollagen C-propeptides in chain trimerization and regulation of C-terminal processing.

**May 13, 2019** - PhD Viva voce on 13th May (through Skype), Spaker: Mr. Anoop Karunakaran, IISER Kolkata; Talk Title: Characterisation of recruitment during relocation in an Indian ant.

**May 9, 2019** - DBS Seminar: Dr. Krishnendu Mukherjee; Institute of Hygiene, University Hospital Muenster, Germany; Talk Title: Targeting host-pathogen interaction for drug discovery: insects to lead the way

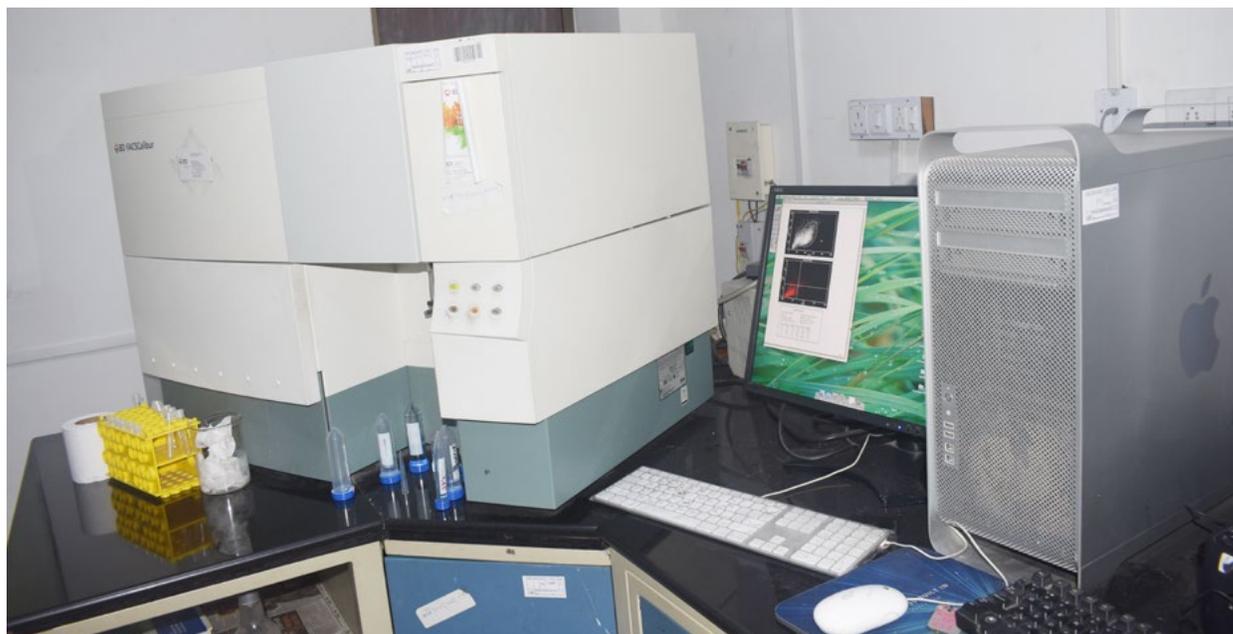
**May 8, 2019** - DBS Seminar: Dr. Sumita Chakraborty, InSTEM; Talk Title: A flightless fly: what do we learn about neuronal calcium homeostasis?

**April 24, 2019** - DBS Seminar: Dr. Mrityunjay Kar, Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany; Talk Title: Highly dilute uncharged polymers act as chemical RNA chaperones

**April 16, 2019** - DBS Seminar: Prof. L S Shashidhara; IISER Pune; Talk Title: "Specification of Organ size and shape during development."

**April 15, 2019** - DBS Seminar: Dr. Pabitra Parua; Talk Title: "A conserved Cdk9-PPI kinase-phosphatase switch regulates the elongation-termination transition of RNA polymerase II"

**April 10, 2019** - DBS Seminar: Dr. Sudipta Das, IICB Kolkata; Talk Title: "Ribosomal P proteins of *Plasmodium falciparum*: A plausible regulator of parasite nuclear division"



## Faculty Achievements

### Amirul Islam Mallick

#### Research Grants/Award and recognition:

- **Long term International Fellowship 2019** (ICMR-DHR International Fellow (ICMR-DHR IF) ICMR and DHR, Govt of India (36000USD for One year)
- Nominated as Associate member: International Veterinary Vaccinology Network (IVVN) <https://www.intvetvacnet.co.uk/users/amirul-mallick> October 2019

#### Student Achievements:

- **Ms. Ankita Singh** (14RS063) received best poster award (2nd Position) in Frontiers in Modern Biology, Organized by Dept. of Biological Sciences, IISER Kolkata February 27-28 2019

### Amit Kumar Mandal :

#### Talks delivered:

- Molecular architecture of glycated and glutathionylated hemoglobin probed by native mass spectrometry
- SINP school and symposium on Advances in Biomedical Mass Spectrometry 2019; 13th to 14th November 2019
- Saha Institute of Nuclear Physics, Kolkata (Invited Lecture) (P-35)

### Anindita Bhadra:

#### Student Achievements:

- Dr. Manabi Paul, the first PhD to graduate from the lab, received the DST-INSPIRE faculty fellowship and was appointed in the Dept. of Environmental Science, Calcutta Univ., on 28th March, 2019.
- Debottam Bhattacharjee:
  - Graduate Student Travel Grant, Animal Behavior Society, USA to attend Behaviour 2019 at the University of Illinois, Chicago, USA, in 2019.
  - Developing Nations Research Award from the Animal Behavior Society, USA, in 2019.
  - International Travel Grant, DST – SERB (Dept. of Science and Technology, Science and Engineering Research Board, Govt. of India) to attend Behaviour 2019 at the University of Illinois, Chicago, USA.
  - Marie Sklodowska Curie Individual Fellowship for post-doctoral studies, in February, 2020.
- Arunita Banerjee: Received a position in an all expenses covered SERB sponsored school in Evolutionary Biology, organized at Jawaharlal Nehru Center for Advanced Scientific Research, Bengaluru, sponsored by DST-SERB, Govt. of India.

#### Other honours/responsibilities:

- Elected as a member of the Executive Committee of the Global Young Academy, for a year in May 2019.
- Member, Program Organizing Committee of the Worldwide Meeting of Young Academies, Vietnam, July 2019.
- Chair, Local Organizing Committee of the Global Young Academy AGM 2020 to be held in India.
- Selected as a member of the Royal Society of Coordinator, Leadership for Academicians Program 2020, conducted by IISER Kolkata, funded by MHRD.

- Appointed as the Associate Dean of International Relations and Outreach, IISER Kolkata

#### Talks delivered:

- Are we the best friends of dogs? Invited talk at the 3rd Women in Science Without Borders conference, Cairo, Egypt, 13th March 2019.
- Street-smart: The ability of stray dogs to read humans. Member talk at the 9th GYA AGM in Halle, Germany. 3rd May 2019.
- Young and Responsible: The story of INYAS. Talk at the 4th WWMYA in Da Nang, Vietnam. 31st July 2019.
- Animal Watching – A Dog Story. Invited talk at 11th DST INSPIRE camp at Visva-Bharati, Santiniketan. 27th September 2019.
- The Life of A Dog on Indian Streets. Invited talk at 2nd NatFoS Meeting, Samode Bagh, Jaipur. 7th November 2019.
- Women in Indian academia – problems and the way forward. Panel discussion at the National Postdoc Symposium, IISER Pune, 11th December 2019.
- Surviving in the human jungle – A dog's perspective. Institute colloquium, Agarkar Research Institute, Pune, 12th December 2019.
- Animal watching – A dog story. INSA remote area lecture at Bongaon High School, 2nd March 2020.

#### Media coverage of research:

- Parinitha P and Spoorthy Raman. Beating their 'dog's life' by eating 'smart'. Research Matters. June 26, 2019.
- Spoorthy Raman. Speaking a million words in a single gaze. Research Matters. October 11, 2019.
- Stray Dogs Understand Human Cues: Communication Between Humans and Dogs Transcends Training. – News reports in over 20 different national and international news portals including National Geographic; BBC Science Focus Magazine; Scientific American podcast; Cosmos Magazine; Smithsonian Magazine; The Week; The Hindu; India Today; Outlook India; Anandabazar Digital, Daily Mail, UK, Belfast Telegraph.

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## Sumana Annagiri :

#### Student Achievements:

- Manish Kumar Pathak – PhD student. International grant from ICTP of Euro 750/- to attend the School on Collective Animal Behaviour, in Havana, Cuba. (Meeting was scheduled in March 2020 but has been postponed).
- Khushankur Bhattacharyya – Int PhD student. Selected to give an oral presentation at ANeT 2019 conference in Thailand.
- Snigdha Mukherjee – PhD student. Selected to give an oral presentation at ANeT 2019 conference in Thailand.

#### Talks delivered:

- Sumana Annagiri – July 2019, Invited talk. Bangalore, Chemical Ecology Workshop. Title of paper – Thinking of the young; challenges of transporting young.
- Sumana Annagiri – October 2019, Invited talk and Chairing a session, 1st Indian Society for Evolutionary Biology Meeting, Bangalore. Title of the paper – Challenges of relocation an ant's perspective.
- Sumana Annagiri – December 2019, Invited talk and Chairing a session, Indo-Swiss Meeting, Bangalore, Title of paper – Leading others to a new nest- role of tandem leaders in colony relocation.
- Sumana Annagiri – March 2020, Invited talk and Chairing a session, Ethological Society of India meeting, Ajmer, Title of paper – Challenges of relocation: an ant's perspective.

**Anuradha Bhat :****Research Grants:**

- Principal Investigator, Long Term Ecological Observation of Freshwater Fish, sanctioned by Climate Change Division of MoEFCC (Ministry of Environment, Forests & Climate Change), in February 2020, for 5 years, Rs. 33 lakhs

**Student Achievements:**

- Rubina Mondal attended and participated as a poster presentation on her research work in the Annual British Ecological Society Meeting held in December (12- 13) 2019 at Belfast, Ireland. She was also awarded an international travel grant of GBP 1000 by the Organisers for attending the conference.
- Aditya Ghoshal participated and presented an invited student talk at the International Meeting of the Indian Society for Evolutionary Biology held in December 2019, in Bangalore.
- Ishani Mukherjee presented a poster and participated in the Annual Meeting of the Indian Ethological Society held at Ajmer, Rajasthan in February 2020.
- Danita Daniel present a talk on her PhD research at the Annual Meeting of the Indian Ethological Society held at Ajmer, Rajasthan in February 2020.

**Talks delivered:**

1. Presented an invited talk at the Aquatic Ecosystems: Sustainability and Conservation conference held at IISER Pune in December (20-21) 2019.
2. Presented an invited talk at the first International Conference on Ecohealth and
3. Environmental Sustainability (ICEES 2020) held in Febraury (24-26) 2020 organised at Navrachana University Centre for Environment, Research and Innovation" (NUCERI) in partnership with the University of Calgary,

**Arnab Gupta****Research Grants:**

1. Early Career Research Grant of Department of Science & Technology, Govt. of India (2016-2019): Rs.40,00,000
2. Mechanistic studies on trafficking of human copper ATPase ATP7B
3. Wellcome Trust-DBT India Alliance Intermediate Fellowship (2016-021) To be activated, ~Rs.3.6 Crores (~Rs. 3,60,00,000)
4. Novel regulatory mechanisms of human copper transporters ATP7B and CTR1 IMPRINT grant from SERB (2019-2022): PI: Ayan Banerjee (Arnab Gupta as co-PI) Rs. 66,25,000
5. International Travel Grant (SERB-DST) to attend American Society for Cell Biology (Washington DC, USA)

**Student Achievements:**

1. Ruturaj (Integrated PhD student): International travel Grant (Dept. of Biotechnology, India) to attend American Society for Cell Biology (Washington DC, USA)

**Talks delivered:**

1. International Symposium on Cell Surface Macromolecules at IISER Pune, Jan 2020
2. Johns Hopkins University, Department of Cell Biology. Dec 2019
3. University of Maryland, Department of Animal and Avian Sciences, Dec 2019
4. Weill Cornell Medical College, Department of Cell Biology and Dept. of Ophthalmology, Dec 2019
5. Amity University, Nov 2019

**Babu Sudhamalla :****Research Grants:**

- Profiling of bromodomain specific interacting partners using unnatural amino acid mutagenesis. Ramalingaswami-Re-entry Fellowship grant/BT/RLF/Re-entry/56/2018 dated 30.08.2019, 5 years, Rs. 42.5 Lakhs.
- Identification of novel interacting partners of Bromodomain and PHD Finger (BRPF) proteins and investigating their role in various types of cancer. SERB-SRG//2019/000765 dated 20.11.2019, 2 years, 32.78 Lakhs.

**Bidisha Sinha :****Research Grants:**

- Intermediate Fellowship (IA/1/13/1/500885) (Wellcome Trust DBT India Alliance) – 2013-19 Understanding cell membrane homeostasis during cell stretch” [2013-19] (₹ 35269036.00)
- DST-SERB: CRG/2019/002458 “Role of membrane fluctuations and cell mechanics in myogenesis” [Feb 2020-23] (₹ 40, 72, 319)

**Student Achievements:**

- Tithi Mandal– *Soft Matter* Poster Prize for poster presentation at the International Symposium on Cell Surface Macromolecules, NCL & IISER Pune (17-21 Feb 2020)

**Talks delivered:**

1. Student talk for SPIE Student Chapter
2. Talk at IICB-Translational Research Unit of Excellence (Oct 2019)
3. FCS, Hyderabad (Invited Talk, Chairing of Session) (Dec 2019)
4. Unravelling cellular Processes, Coorg (Invited Talk) (Dec 2019)
5. Bangalore Microscopy Course (NCBS, Bangalore)( Invited Technical and Research Talk) (Sept 2019)
6. Frontiers in Biological Sciences (St Xaviers, Kolkata) [Invited Talk] (Sept 2019)
7. Basics of Confocal Microscopy and its Application”. DST Purse workshop ,Kalyani University [Invited Talk]

**Dipjyoti Das (DBS) :****Research Grants:**

- **DBT Ramalingaswami Fellowship:** “Computational modelling of collective cell motion to explore its mechanical features and roles in development”, Department of Biotechnology (DBT), No. BT/RLF/Re-entry/51/2018, 5 years, Rs. 42.50 lakh.
- **SERB Start-up Research Grant:** “Theoretical biophysics of molecular competition in gene expressions”, Science and Engineering Research Board (SERB), No. SRG/2019/001068, 2 years, Rs. 2.89 lakh.

## Jayasri Das Sarma

### Research Grants:

1. Impaired Quality control of Connexin43 and Decreased Astrocyte Gap junctional Communication in a Mouse Hepatitis Virus Induced Model of Human Neurological Disease: Multiple Sclerosis, CSIR-No. 27(0356)/19/EMR-II
2. Dr. Mahua Maulik, Lead Applicant, Wellcome Trust DBT India Alliance Early Career Award (01/01/2019 – 31/12/2023) on “Role of Connexin-47 in axon-myelin interaction during virus-induced demyelination of the central nervous system.”

### Student Achievements:

1. **Ms. Lucky Sarkar (SRF)**- International ‘**American Society for Virology (ASV)**’ travel award to present her work in a 5’ flash talk plus a poster in the Pathogenesis session at 39th Annual Meeting of the ‘American Society for Virology ASV, June 2020’, Colorado State University, Fort Collins, CO, USA (cancelled due to COVID-19 pandemic).
2. **Ms. Lucky Sarkar (SRF)**- her work ‘**Azadirachta indica A. Juss ameliorates Mouse Hepatitis virus-induced neuroinflammatory demyelination**’ was **highlighted and selected to present for a 5’ flash talk** plus **a poster** in the Pathogenesis session at 39th Annual Meeting of the ‘American Society for Virology ASV, June 2020’, Colorado State University, Fort Collins, CO, USA (cancelled due to COVID-19 pandemic).
3. **Mr. Soumya Kundu (SRF)**- received the **ASBMB travel award** to attend the Annual meeting of American Society for Biochemistry and Molecular Biology, 2020 at San Diego, California, USA (cancelled due to COVID-19 pandemic).
4. **Mr. Abhishek Bose (SRF)**- selected to deliver an **oral presentation** in the Society for Neuroimmune Pharmacology (SNIP 2020) international conference, April 2020 (cancelled due to COVID-19 pandemic).
5. **Mr. Abhishek Bose (SRF)**- **Best poster award** at ‘New Insights into the Inflammation, Immunity, and Pathobiology of Diseases, INDO-US Symposium’ organized by IUSSTF/IISER Kolkata, December 2019.
6. **Ms. Debanjana Chakravarty (SRF) and Mr. Soumya Kundu (SRF)**- got selected for the oral presentation at the ‘Indo-US Symposium on New Insights into the Inflammation, Immunity, and Pathobiology of Diseases’, 2019.
7. **Ms. Fareeha Saadi (SRF)**- received the Young scientist best oral presentation award at Neuroupdate 2019, organized by CSIR-IICB, Kolkata, India.
8. **Ms. Lucky Sarkar (SRF)**- selected under ‘**Dr. DM Kar**’ Prize category and presented her paper at ‘XXXVII Annual Meet of Indian Academy of Neurosciences (IAN 2019)-Neuron to Behavior’, AIIMS New Delhi, India, November 2019.
9. **Mr. Sourodip Sengupta (SRF)**- **Best poster presentation** on “Role of matrix metalloproteinases (MMPs) and tissue inhibitor of MMPs (TIMPs) in Mouse Hepatitis Virus (MHV) induced neuroinflammation” at IBRO-APRC School on Blood-Brain-Barrier, November 4-9, 2019.
10. **Mr. Abhishek Bose (SRF)**- International **SERB travel award** from Science and Engineering Research Board, India to present his work at ‘Society for Neuroscience SFN meeting (Neuroscience 2019)’ at Chicago, Illinois, USA.
11. **Ms. Debanjana Chakravarty (SRF)**- received the American Association of Immunologist Laboratory grant 2019 to attend international conference “IMMUNOLOGY 2019” at San Diego, California, USA.
12. **Mrs. Fareeha Saadi (SRF)**- received Department of Biotechnology, India travel grant to attend international conference “IMMUNOLOGY 2019” at San Diego, California, USA.
13. **Mr. Soumya Kundu (SRF)**- received best poster award at 43rd Indian Biophysical Society Meeting 2019, from 15-17th March 2019 at IISER Kolkata.
14. **Ms. Debanjana Chakravarty (SRF)**- received 3rd best poster award at DBS Departmental Day, 2019 at IISER Kolkata.

**Talks delivered:****Conference Talks (National and International Conferences)**

1. Selected for platform presentation on “CD4+ T cells crosstalk with microglia/macrophage provides protection against mouse hepatitis virus induced neuroinflammatory demyelination” at the **American Society for Virology 39th Annual Meeting**, June 13-17, 2020 at Colorado State University in Fort Collins, Colorado.
2. Selected for platform presentation on “Nexus between CNS resident microglia and migrating peripheral T cells pave the way for host immunity against neurotropic virus infection”, international conference **“IMMUNOLOGY 2020”**, Honolulu, HI.
3. “Functional regulation of gap junction intercellular communication in viral induced neuroinflammation”, 31st March- 6th April, 2020, 26th **Society of Neuroimmune Pharmacology (SNIP)**, Delhi, India (cancelled due to COVID-19 pandemic).
4. “Need of the hour to train minds and not the hands of women in science and education”- **“Women in Science Education”**, March 6-7, 2020, **NIMHANS**, Bangalore, India.
5. “Molecular and cellular pathogenesis of mouse hepatitis virus induced neuro-inflammatory demyelination”, **Neuroupdate 2019**, November 30, 2019 **CSIR-IICB**, Kolkata, India.
6. “International conference on Neurological disorders and Therapeutics (ICNDT) – 2019”, October 24-26, 2019, **NIPER**, Ahmadabad, India.
7. “A proline insertion-deletion in mouse hepatitis virus spike glycoprotein fusion peptide strongly alters neuropathogenesis”, 38th Annual Meeting July 20-24, 2019, **University of Minnesota, Minneapolis**.
8. “Regulatory role of Ifit2 in mouse hepatitis virus-induced neuroinflammation.” Conference: IMMUNOLOGY 2019, 9th May -13th May 2019, **San Diego, California, USA**.

**Invited Talks (National and International Institutes/Universities)**

1. “Regulatory role of Interferon-induced protein Ifit2 in developing host immunity against CNS viral infection”. ID Research in Progress Seminar, 3rd October, 2019, **School of Medicine, Division of Infectious Diseases, University of Colorado Anschutz Medical Campus**.
2. “Gap junction protein Connexin 43/47 axis in the perspective of mouse hepatitis virus induced demyelination” Wednesday, April 17, 2019, **Emory University School of Medicine**.
3. “Ifit2, an interferon-induced protein, attenuates neuropathy in coronavirus-infected mice by promoting microglial activation and leukocyte migration to the central nervous system”, **Lecture series on Infection and Immunity**, Department of inflammation and immunity, **Cleveland Clinic**, OH 44195, USA
4. “Interaction between CNS resident microglia and migrating peripheral T cells pave the way for host immunity against neurotropic virus infection”, February 3rd, 2020, **IISER-Mohali**, Mohali, India.
5. “Neuroinflammation: An amplifier of virus induced demyelination pathology”, at Department day, 2019, **IISER Kolkata**.

**Conferences organized:**

1. Organized ‘Indo-US Symposium on New Insights into the Inflammation, Immunity, and Pathobiology of Diseases’ from December 3-8, 2019 at Sinclairs Bayview, Portblair, Andaman Islands, India, in collaboration with IISc Bangalore, India, University of Colorado and University of Pennsylvania, USA.

**Malancha Ta:****Research Grants:**

- Efficacy of umbilical cord-derived mesenchymal stem cells under ischemia-like physiological stress conditions. SERB, DST, 3 years (2017-2020), 44.8 lakhs.

**Student Achievements:**

- Umesh Goyal: Abstract got selected for poster presentation at EMBL International Conference: Advances in Stem Cells and Regenerative Medicine, EMBL Heidelberg, Germany on the 15th of Jan., 2020.
- Ankita Sen: 1. Selected for poster presentation at the All India Cell Biology Conference (AICBC) held in IISER Mohali, India, in December, 2019.  
2. Presented poster and received third prize in Frontiers in Modern Biology (FIMB) conference at IISER Kolkata, held in February, 2020

**Talks delivered:**

1. Invited to speak at Molecular Diagnostics and Therapeutics, held at JNM hospital, Kalyani in association with ACBI, 21st-22nd June, 2019.
2. CSH-Asia Conference: Stem Cells, Aging & Rejuvenation, Sept 23-27th, 2019. Platform presentation and invited to chair a session.

**Mohit Prasad****Research Grants:**

- “Investigating the role of anti-inflammatory drugs on migrating border cell in Drosophila oogenesis: an excellent model for studying tumor metastasis.” STARS/APR2019/BS/591/FS (MHRD). Rs 49.91 Lakhs.

**Student Achievements:**

- Ms Banhisikha Saha was awarded the Malaria Research Program fellowship at NIH, USA under Professor Carolina Barillas (NIH).
- Ms Martina Felix was awarded the international travel grant to present a poster at the TGAC 2020 under the Genetics Society of America.

**Talks delivered:**

- Invited speaker at the Cell Migration 2020' conference at IBB, Pune University. Title of talk “Insights into Collective Cell Movement Employing the model of Border Cell Migration in Drosophila oogenesis”

**Neelanjana Sengupta :****Research Grants:**

- Diffusion of embedded proteins in cell membranes: a theoretical framework to guide computer simulations. SERB- MATRICS, MTR/2019/000786, 3 years, Rs. 6,60,000/-

**Awards:**

- 2020 Humboldt Research Fellowship for Experienced Researcher; Alexander von Humboldt Foundation, Germany. (Host: Prof. Dr. Martin Zacharias, Biophysics, Technical University Munich)

**Talks delivered:**

- TEDx talk on “Computational Biology”, January 18, 2019
- “Multiscale Simulation and Mathematical Modelling of Complex Biological Systems – MSMM2019”, January 30-February 1, 2019, Jawaharlal University, New Delhi
- “Dynamics at the Interface of Chemistry and Biology”, February 18-20, 2019; Indian Institute of Science, Bangalore
- “EMBO Conference – Intrinsically disordered proteins: from molecules to systems”, December 8-13, 2019; Indian Institute of Science, Bangalore
- “Molecular simulations of complex fluids and interfaces”, February 21-23, 2020; IIT Kanpur
- “International Conference on Smart Materials for Sustainable Technology (SMST)”, February 22-25, 2020; Goa (organized by IIT Delhi, IIT BHU, IIT Goa and SINP Kolkata)
- “National Conference on Stress Responses and Diseases”, March 6-7, 2020; Univ. of Kalyani, W. Bengal

**Partha Pratim Datta****Research Grant:**

- **MHRD STARS Grant:** File. No: STARS/APR2019/BS/581/FS Date: 31.12.2019. Title: ‘Structural studies on Mycobacterium Ribosome-CgtA complexes by cryo-EM towards identifying potential drug target(s)’. PI: Partha Pratim Datta. Amount Rs. 4949000.00

Organizer: International and National conference and workshop

**EMBO Practical Course**

- CEM3DIP 2020: Single particle cryoEM of macromolecular-assemblies and cellular tomography, 19 – 30 January 2020, IISER Kolkata, India (co-convener)  
Organized **Nobel Laureate Prof. Joachim Frank’s** (Columbia University, NY, USA) talk on cryo-EM
- Organized Institute colloquium of Prof. Grant Jensen (Caltech, CA, USA) on cryo-EM Tomography
- 43rd Indian Biophysical Society Meeting – 2019, IISER Kolkata (co-organizer)

**Invited talks (International and national):**

1. 10th RNA Group Meeting: 02-04, May 2019, RCGEB, Thiruvananthapuram
2. Regional Level Science Congress 2019, 14-19, Nov 2019, Kalyani
3. Indous-2019, New Insights into the Inflammation, Immunity, and Pathobiology of Diseases; 04-08, Dec 2019, Port Blair, **(International)**
4. EMBO Practical Course, CEM3DIP 2020: Single particle cryoEM of macromolecular-assemblies and cellular tomography, 19 – 30 January 2020, IISER Kolkata, **(International)**
5. FIMB 2020, IISER Kolkata

**Administration:**

- PGAC convener, DBS, (2017-2019), IISER Kolkata  
External PhD thesis interviewer in IIT-Delhi, 2020  
Grant reviewer (DBT)

**Students' Achievements:****Selected for Oral Presentation:**

- Soma Jana: National Conference on Stress Responses and Diseases (March 6 – 7, 2020), Kalyani
- Sagarika Das: National Conference on Stress Responses and Diseases (March 6 – 7, 2020), Kalyani
- Rahul K. Singh: National Conference on Stress Responses and Diseases (March 6 – 7, 2020), Kalyani

**Partho Sarothi Ray :****Research Grants:**

- “Investigating the Structural and Functional Basis of RNA Binding and Posttranscriptional Regulation of Gene Expression by Annexin A2 in Response to Genotoxic Stress” (DST)-SERB EMR Research grant, EMR/2016/003525, 2017-2020. Rs 3538000.00

**Patents:**

- Patent approved: Fluorescent Cyclometalated IR(III) complexes and formulations/compositions comprising the same. Patent No. 324974, 13.11.2019

**Talks delivered:**

- “The complex life of a microRNA: How miR-125b Regulates its Two Targets p53 and HuR and is Regulated in Return”. Talk delivered at 10th National RNA meeting, May 2019, Thiruvananthapuram, Kerala.
- “Signal Integration in Biological Systems: A Reiterative Computational and Experimental Approach to Understand the Translational Control of p53”. Talk delivered at Indian Biophysical Society Meeting, March 2019, IISER Kolkata.
- “Paracrine Signaling by Gelsolin Regulates Programmed Cell Death 4 Expression and a Density-dependent Phenotype in Macrophages”. Talk delivered at 8th International Translational Cancer Research Conference, BHU, Varanasi, February 2020.

**Punyasloke Bhadury****Research Grants:**

- Swarnajayanti Fellowship Award, Department of Science & Technology, Govt. of India [2019-2024], Amount: 1,74,49,480 INR
- Monitoring tiger habitat productivity in Sundarbans Biosphere Reserve using biological indicators for informed decision making by the protected area managers, WWF-India [2019-2020], Amount: 10,12,000 INR
- Augmenting the capacity of Sundarban Biosphere Reserve through establishing ecological observatory for tiger habitat management, WWF-India [2019-2020], Amount: 21,68,250 INR
- Fluorometric polymeric sensor for speedy formalin detection in commercial fishes, STARS, MHRD [2020-2023] [Co-PI], Amount: 49,43,000 INR

**Talks delivered:**

- Contributed talk in Future Oceans<sub>2</sub> IMBeR Open Science Conference, 17-21st June, 2019, France
- Invited lecture in 16th Annual Meeting of the Asia Oceania Geosciences Society, 28th July-2nd August 2019, Singapore
- Invited lecture in Mini-symposium on ‘Genetics and Evolution: Intertwined Strands’, Indian Academy of Sciences and Ashoka University, 30th September-1st October 2019, India
- Invited lecture in International Conference on Frontiers in Marine Science Challenges and Prospects, Cochin University of Science and Technology (CUSAT), 16-20th December 2019, India

- Invited lecture in Conflict and Cooperation in Cellular Populations 2020 (CCCP 2020), inSTEM Bangalore 3-5 February, 2020, India

#### **Other professional achievements**

- Associate Editor, Frontiers in Marine Science
- Editorial Board Member, Environmental Research Communications
- Contributing Author, Abyssal Biodiversity, World Ocean Assessment II, United Nations Member, Regional Advisory Committee, Asia Oceania Geosciences Society (AOGS) (by invitation only)

### **Rahul Das**

#### **Student Achievement:**

- Kaustav Ganguly: Best poster award, Indian Biophysical Society conference, IISER KOLKATA, 2019
- Kaustav Ganguly: ASBMB travel award for ASBMB annual conference, 2020

### **Rituparna Sinha Roy :**

#### **Student Achievements:**

1. Kasturee Chakraborty has received the best poster award in CAFM-SPD symposium 2020
2. Somnath Jan has received the best BS-MS thesis award from DBS, June 2019
3. Paramita Gayen has received poster award (4th prize) in “ 5th International Conference on Translational Research: Recent trends in Pretranslational to Translational Research” at NCCS Pune, 9th November, 2019.

#### **Faculty achievement:**

- Nominated as Editorial Advisory Board Member of ACS Applied Bio Materials, 2019

#### **Talks delivered:**

1. Invited talk at the Department of Biochemistry, College of Medicine and JNM Hospital, WBUHS at “Molecular Diagnostics and Therapeutics”. Date June 22nd, 2019.
2. Invited talk at Bangalore University at “Synthetic and Biological Peptides: Structures and Strategies for the Development of Drugs, Biologics and Materials”. Date March 14-15th, 2019.
3. Invited talk at National Centre for Biological Sciences at Biomolecular Interactions. Date: Feb 19, 2019

### **Robert J Chadran**

#### **Student Achievements:**

- One PhD student Ms. Subhani Rath, successfully defended her thesis.

### **Sankar Maiti**

#### **Research Grant:**

- Actin Cytoskeleton Mediated Regulation of Golgi Architecture and Vesicular Trafficking by trans-Golgi Associated Protein nPIST” (MHRD STARS Apr2019/548/BS/601995/Sankar Maiti), Amount: Rs. 45,09,000.00

## Supratim Datta

### Research Grants:

- Integrating metabolic and protein engineering for the production of sustainable biofuels, (MHRD-STARS/APR2019/CS/643/FS) (2020-2023)

### Student Achievements:

- Ms. Shritama Aich, SRF, received the Carl Storm International Diversity (CSID) fellowship from Gordon Research Conference (GRS) and a CSIR Travel grant for invited talk at the GRC Carbohydrate-Active Enzymes for Glycan Conversions 2019, Andover, NH, USA
- Mr. Sushant K. Sinha, CSIR SRF, received an SERB grant to present a poster at the GRC Carbohydrate-Active Enzymes for Glycan Conversions 2019, Andover, NH, USA
- Mr. Debjyoti Ghosh, 5th year BS-MS, 2nd Prize for Best Poster, Frontiers in Modern Biology, 2020, IISER Kolkata

### Talks delivered:

- Invited Lecture, 88th Annual Meeting of the Society of Biological Chemists of India, 2019, "Advances at the interface of Biology and Chemistry", BARC, Mumbai, Nov 1-Nov 3, 2019
- Invited Speaker, Two Days National Seminar on "Waste Management for Greener and Cleaner Environment", Dept of Ecological Studies and International Center for Ecological Engineering, University of Kalyani, Kalyani,

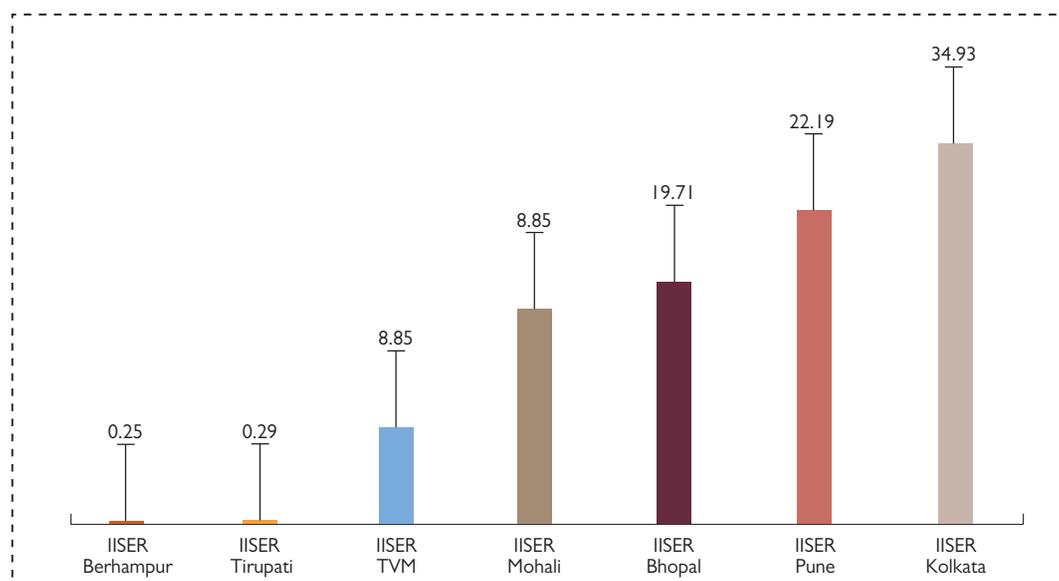


## Department of Chemical Sciences



### Research and Teaching

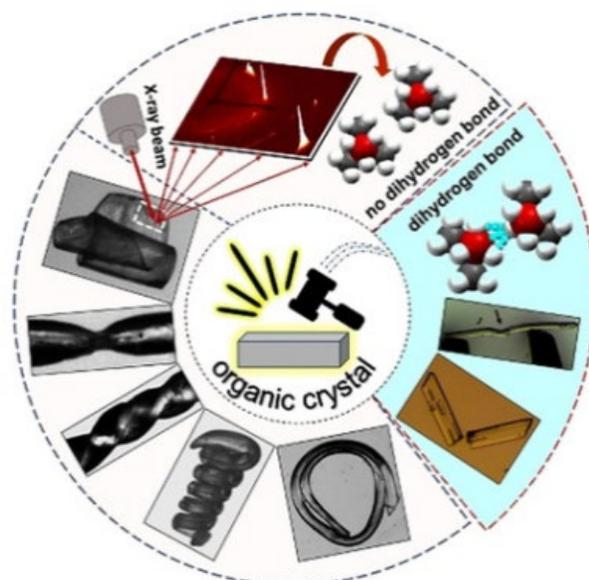
Department of Chemical Sciences (DCS) of IISER Kolkata is emerging arguably as one of the best centre of excellence in Chemical Sciences in the country. With nearly 200 publications in leading journals of repute, dedicated and cutting edge research programs in all conceivable areas of chemical science, editorial board membership in many leading journals, fellowship of various societies and academies, DCS is the crowning jewel of the institute. Not only in volume but in value the department has emerged as a leader with highest number of high quality publications (16) [journals like JACS, Angew. Chemie, Nature Commun. Etc.] as compared to any other IISER of the country. A comparative data is shown below. We further more archive achievements and important research activities of various faculties across various sub-disciplines of Chemical Sciences, viz., Organic, Physical, Theoretical and Inorganic Chemistry.



A comparative account of Share in Nature Index Journal articles published by IISER Kolkata.

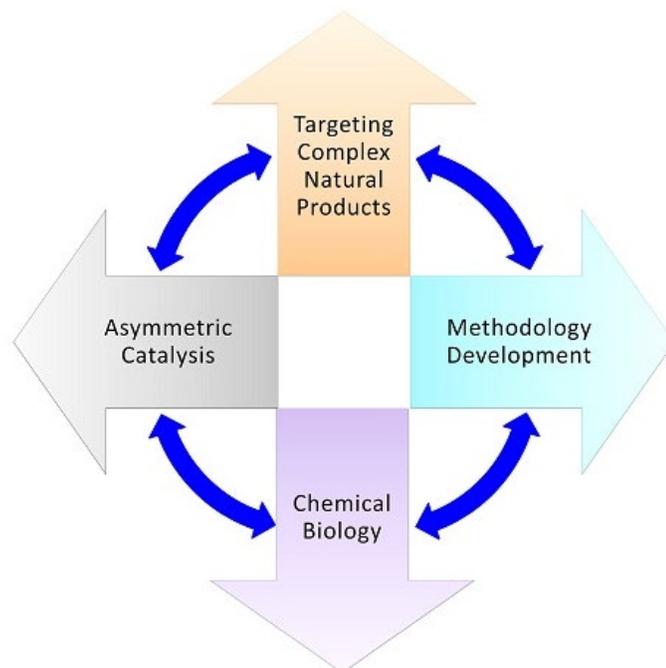
## Research Highlights

Prof. C. M. Reddy



**Slip slidin' away:** Aminoborane crystals prepared by Reddy's group can be deformed mechanically like metal wires, which is very unusual for organic crystals. Mechanically castable plastic crystals are appealing for applications such as ferroelectrics and soft robotics. For the representative publication see: *Angew. Chem.* 2020, 132, 2 – 12; <https://doi.org/10.1002/ange.202001060>

Prof. Alakesh Bisai



### Conferences Organized:

- Co-convenor of International Conference entitled "Organic Chemistry Symposium 2019 (OCS - 2019)" during Sept. 13-14, 2019 at Hyatt Regency, Lucknow
- Co-convenor of International Conference entitled "Chemical Science 2020 (CS - 2020)" during March 13-14, 2020 at DCS, IISER Kolkata

## Prof. Raja Shunmugam



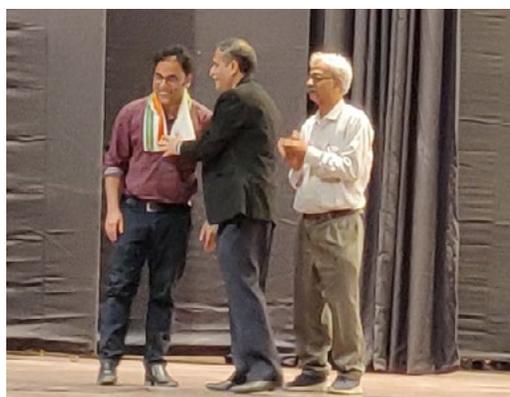
Prof. Raja Shunmugam was awarded NASI-Reliance Industries Platinum Jubilee Award 2019 for Application Oriented Innovations.

## Dr. Dibyendu Das

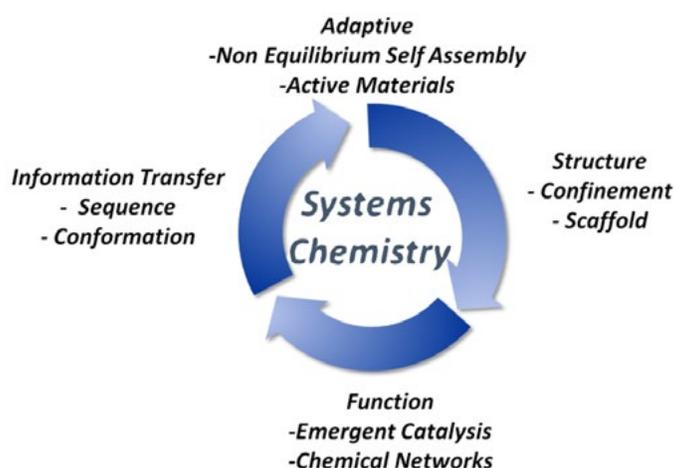


Dibyendu Das  
Associate of the Indian Academy of Sciences 2019

Dr. Dibyendu Das has been nominated as Young Associate of the Indian Academy of Sciences (IASc) 2019.

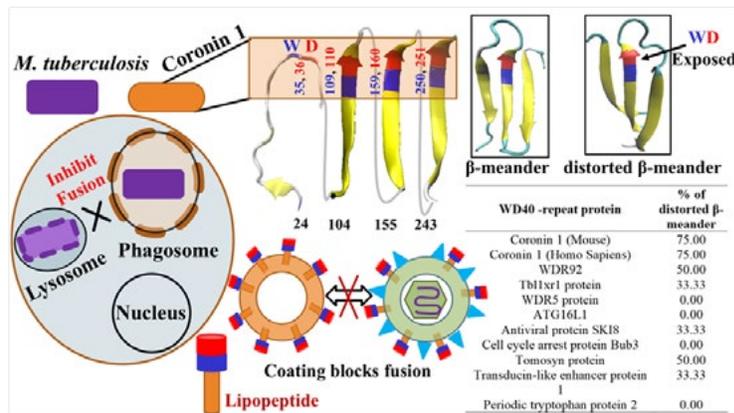


Dr. Dibyendu Das has further been felicitated at National Science Day organized by IISER Kolkata for his outstanding research Performance.



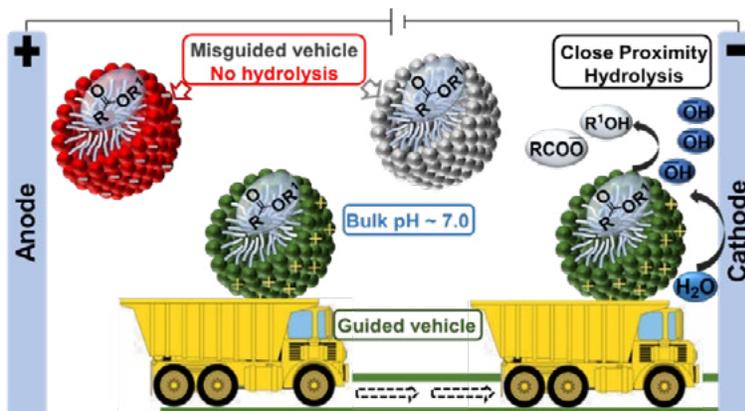
## Dr. Pradip Kumar Tarafder

**Mycobacterium survival strategy translated to develop a lipo-peptide based broad-spectrum fusion inhibitor to combat type I influenza virus (H1N1) infection.**



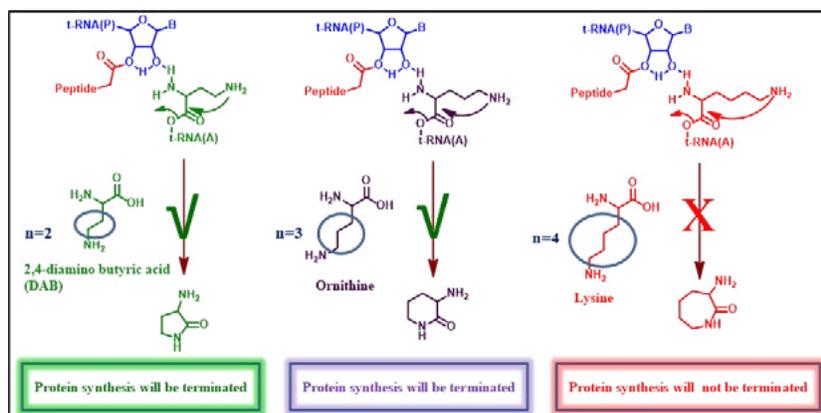
Phagosomal (*M. tuberculosis* infected) coat protein coronin I inhibit the fusion with lysosome. Coronin-I structure shows multiple trp-asp sequence (WD) are exposed and mostly reside at the edge of distorted  $\beta$ -meander motif (blue: trp, red: asp). A lipidated dipeptide coating was hypothesized to inhibit membrane fusion between liposomes and enveloped virus. Experimental observations suggest that the lipopeptide is able to combat influenza infection in MDCK cell lines.

### Membrane trafficking inspired reactions in water at physiological pH.



A positively charged micro-heterogeneous vehicles loaded with esters could be trafficked to cathode, where high local concentration of hydroxide ion will be generated by the electrochemical reduction of water. This elegant membrane-trafficking inspired approach allows hydrolysis of non-activated esters at physiological pH and may be extended to perform electron transfer reactions in green aqueous medium.

### Lysine's Natural Selection over Other Analogues



Intramolecular cyclization which would make the aminoacyl t-RNA of DAB and ornithine less stable compared to lysine, thereby would terminate the protein synthesis.

## Students Awards

- Antara Reja has been selected for the Best poster award in Chemical Science 2020 conference held at IISER Kolkata.
- Tapendu Samanta: Selected for the Best poster award, DSIR-PRISM workshop, 2019, IISER Kolkata.
- Piyali Mandal: Selected for the Best poster award, DCS Day, 2020, IISER Kolkata.

## New Facilities Created

1. Cary Eclipse Fluorescence Spectrophotometer



2. Waters High performance liquid chromatography (HPLC)



These new facilities were created in DCS by Dr. Dibyendu Das.

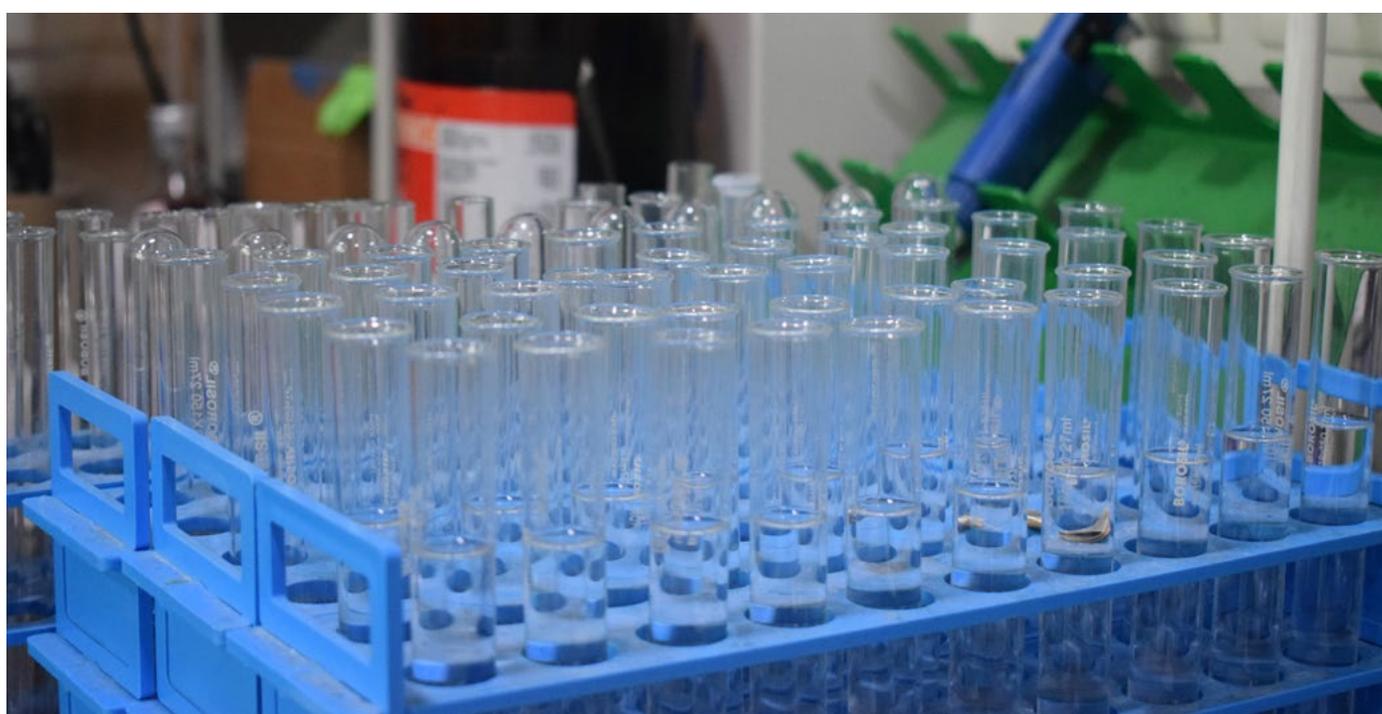
## Recognitions

1. Professor Sourav Pal for getting nominated for the first Executive Board of newly constituted Federation of Commonwealth Chemical Sciences.
2. Prof. Swadhin K. Mandal elected to the council of CRSI, India.
3. Prof. Prof. Raja Shunmugam was awarded NASI-Reliance Industries Platinum Jubilee Award 2019 for Application Oriented Innovations.
4. Dr. Dibyendu Das has been nominated as Young Associate of the Indian Academy of Sciences (IASc) 2019.
5. Dr. Susmita Roy of Dept. of Chemical Sciences has been selected for the prestigious "Har Govind Khorana-Innovative Young Scientist Award" from DBT, Ministry of Science & Technology, Govt. of India.
6. Prof. Pradipta Purkayastha has been elected as a Fellow of the West Bengal Academy of Science & Technology (WAST) in 2019

7. Prof. Ashwani Tiwari of Department of Chemical Sciences has been awarded CRSI-Bronze Medal. Congratulations Dr. Ashwani.
8. Prof. Debasish Halder has been elected as Editorial Board Member, 2019, Current Organic Chemistry, Bentham Science.
9. Prof. Soumyajit Roy has been elected as an Associate Editor of the journal Chemistry Africa (2019).

## List of Seminars

DCS Speakers and Affiliations	Date	Title
Professor Sumit Bhaduri, IIT Bombay	4/9/19	Chemistry in innovations and sustainability
Dr. Monideepa Roy, Akamara Therapeutics	1/10/19	Differential Regulation of Signaling pathways in a Novel Colorectal Carcinoma Cell Line
Prof. Alan Goldman, The State University of Rutgers.	10/12/19	Catalytic Activation and Functionalization of C-H Bonds by Transition Metal Complexes
Prof. Christopher C Cummins, MIT, USA	16/1/20	Phosphorus-Element Bond-Forming Reactions
Prof Bill Jones, University of Cambridge	20/2/20	"Mechanochemistry: Aspects of cocrystal solid forms"
Prof. Marisa Kozlowski, University of Pennsylvania	12/3/20	Oxygen Driven Fragment Coupling by Activation of C-H, N-H, and O-H Bonds
Prof. Lukas Goossen, Ruhr-Universität Bochum	6/3/20	Inventing Reactions – Catalytic activation of C-C, C-O, C-N, and C-H bonds
Prof. Matthias Driess, Technische Universität Berlin	5/3/20	Striking Features of Low-Valent Silicon Compounds in Stoichiometric and Catalytic Transformations
Prof. Dr. Daniel B. Werz, Technische Universität Braunschweig	7/1/20	Gain by Strain: Donor-Acceptor Cyclopropanes to Access Carbo- and Heterocyclic Compounds & Fluorescent Dyes by Rational Design and Serendipitous Discoveries
Prof. Nitin Chattopadhyay, JU	9/5/19	Tackling Efficiency and Toxicity of Drugs: Delivery and Excretion
Prof. Richard N Zare, Stanford University	16/9/19	Mircrodroplet Chemistry
Prof. Mark Hoffmann, University of North Dakota	28/2/20	Parallel versions of Hybrid Variational-Perturbation Multireference Theories



## Department of Earth Sciences



### Departmental Activities

Indian Institute of Science Education & Research, Kolkata is the first among five IISERs, to have established a Department of Earth Sciences. The department started its journey in 2007, a year after IISER Kolkata was established. The Department of Earth Sciences has fifteen regular faculty members: two professors, six associate professors, seven assistant professors. Additionally, the Department has one visiting professor and one DST-INSPIRE faculty. The department has 99 BS-MS students, 15 IPhD students, 43 PhD students, 3 Post-Doctoral Fellows. During the FY2019-20, five students have been awarded PhD degree. The research focus of earth sciences faculty members includes Isotope geochemistry, Solid earth studies in the past, Atmospheric science, Paleoclimate and ecological studies in the modern system. At present, the department has 13 projects, funded by DST, CSIR, MoES, NERC UK, NERC IOF, and IAEA.

### Studies on the Environment and Climate:

This group strives to provide a better and integrated understanding of biogeochemical and anthropogenic processes influencing modern environmental systems and climate. It aims to address a range of issues related to the contamination of environmental spheres, the consequent effects on biota, and potential remediation approaches. Research in this area focuses on studies of heavy metal transport from rivers and estuaries to oceans, factors affecting molluscan diversity along coastlines, human exposure to pesticides and sustainable use, fate and transport of contaminants (plastics, perfluoro organic compounds, nanoparticles etc.) in the environment, and application of eco-friendly materials for contaminant remediation. The group also investigates regional climate change in terms of perturbations to the atmospheric system and resultant feedbacks, with a special focus on the effects of aerosols, trace gases and other factors on climate forcing and the Indian summer monsoon. Researchers of this group use an array of observational, experimental and modelling approaches to investigate processes ranging from nano to macro/synoptic scales. The diversity of research interests within this group reflects the interdisciplinary character of the field of Environmental Sciences.

## Solid Earth Studies:

Members of this research group study the crust and upper mantle structure of the Earth, its relation to tectonic deformation, and structural and kinematic evolution of mountain belts at different scales. Tectonic evolution of the continental crust through geological time is studied by integrating and correlating field, structural, petrological, geochemical and geochronological data. The timing of juvenile crustal addition and crustal reworking events in the Archaean cratons, their linkage with supercontinent cycle, and secular change in the mechanism of continental crust formation and crust-mantle interaction are also investigated. Complementing datasets are analyzed to understand earthquake faulting, seismic velocity structure (isotropic and anisotropic cases), crust and upper mantle attenuation characteristics, convergence-related multi-scale strain partitioning in fold thrust belts (with a focus on the Himalaya) and examine how lateral variation in structural architecture controls kinematic evolution of orogenic belts. A few faculty members focus their research on petrological, geochemical and geochronological studies of Precambrian cratons and mobile belts in order to understand geodynamics, crust-mantle evolution, orogenic activity and supercontinent cycles. Faculties working on the mineral physics discipline study electronic, magnetic, structural, and elastic properties of minerals under high pressure and temperature, and simulate dynamical processes in minerals (both equilibrium and out of equilibrium).

## Studies on Earth surface process:

The primary focus of this group is to investigate processes operating in the near-surface environment. Such processes encompass the interaction between the lithosphere, biosphere, hydrosphere and atmosphere during Recent and deep time. The members of this group try to understand and reconstruct the processes such as weathering and erosion, sediment deposition, ocean circulation, climatic and tectonic perturbation by combining field and lab-based observations, geochemical and geochronological tools. The group also evaluates the effect of the above processes on the ecology and evolution of marine and terrestrial fauna and ocean composition using a combination of experimental, neontological and paleontological approach.

## Department Day

The Department organized its 8th Annual Department Day, Convergence, on 25th February, where distinguished Geoscientists, from various Institutes of India, presented their research work and interacted with students. The Ph.D. and BS-MS students also presented their work in a poster session.

## Outreach activities

- National science exhibition 27-29th September, 2019
- Vijyoshi 9th Dec 2019
- Sunderban Kristi Meala O Loko Sanskriti Utsab 2019 21-22nd December 2019
- Institute open day 27th Feb, 2020

## Organizing colloquium

The department took lead in arranging an institute colloquium by Dr. Jibamitra Ganguly, Professor Emeritus, University of Arizona on the topic "Water in Earth: Primary Storage, Origin and Its Role in the Creation of Pacific Ring of Fire".

▽ S-wave RF

Z andl et al.(1985) GRL, v12, 9,-568

◇ Modeling active seismic travel time observation

Green et al. (1968) BSSA, v58, 1, 267-289

Mereu et al (1968) BSSA, v59, 1,147-165

Hales et al (1969) EPSL, v7, 44-46

Dgr et al. (1969) JGR, v74, 17

## Achievements

### Environment & Ecological studies in modern and ancient systems

#### Dr. Gopala K Darbha

- Mr. Nitin Kumar Khandelwal (IPhD) has been awarded the competitive WARI internship to work for four months in University of Nebraska, USA in Jan 2020
  - Ms. Nisha Singh (PhD) has been awarded the prestigious Newton-Bhabha fellowship to work in collaboration with Plymouth Marine Laboratory, U.K. by the Department of Biotechnology in Jan 2020
  - Mr. Nitin Kumar Khandelwal (IPhD) has received best oral presentation and student travel award at NEC-2019 conference, IIT-Bombay.
  - Recent publication by Ekta Tiwari (PhD), Mithu Mondal, Nisha Singh, Nitin Khandelwal, Fazel Abdolapur Monikh, Gopala Krishna Darbha, (2020). Effect of irrigation water type and other environmental parameters on CeO<sub>2</sub> nanopesticide-clay colloid interactions, Environ. Sci.: Processes Impacts, 11, 1 has been selected as a cover page article.
  - The project entitled “Modified Hydroxyapatite based adsorbents for permanent removal of Cr(VI) and other toxic metals from contaminated groundwater samples: Illustration using designed prototype barrier unit” is funded by Physical Research Laboratory Ahmadabad under VISION-2019, for a period of 6 months. (Total funding is 3 lakhs) (Awarded to Mr. Nitin Khandelwal and Mr. Jai Kishan Rajak).
  - Mr. Nitin Kumar Khandelwal (IPhD) has received an appreciation award at NWMC-2019 workshop conducted by SMC-BRNS at MUJ, Jaipur.
  - Ms. Nisha Singh (PhD) has been awarded the prestigious Raman-Charpak fellowship to work for five months in collaboration with a university in France, November-2019.
  - Ms. Nisha's (PhD) publication in the reputed journal Environmental Science Nano on “Understanding the stability of nanoplastics in aqueous environments: effect of ionic strength, temperature, dissolved organic matter, clay, and heavy metals” Nisha Singh, Ekta Tiwari, Nitin Khandelwal, Gopala Krishna Darbha, Environmental Science: Nano, 2019,6, 2968-2976 has been selected as cover page article by the publication agency The Royal Society of Chemistry
  - Ms. Ekta's (PhD) publication in the reputed journal Environmental Science Processes and impacts on “Effect of irrigation water type and other environmental parameters on CeO<sub>2</sub> nanopesticide-clay colloid interactions”, Ekta Tiwari, Mithu Mondal, Nisha Singh, Nitin Khandelwal, Fazel Abdolapur Monikh, Gopala Krishna Darbha, Environ. Sci.: Processes Impacts, 2020, DOI: 10.1039/C9EM00428A has been recently selected as a cover page article by the publication agency The Royal Society of Chemistry.
  - Mr. Nitin Khandelwal (IPhD) visited Dr. Remi Mersac's laboratory in UMR CNRS, France, for one month (31st Jan to 30th Feb 2020) as an exchange student to work on Geochemical modeling. He received partial funding from either of the research groups.
  - The publication by Nisha Singh, Ekta Tiwari, Nitin Khandelwal, Gopala Krishna Darbha, (2019) on Understanding the stability of nanoplastics in aqueous environments: effect of ionic strength, temperature, dissolved organic matter, clay, and heavy metals, Environmental Science: Nano, 6, 2968-2976 has been selected as a cover page article.
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## Dr. Sayantan Sarkar

- Dr. Sayantan Sarkar (PI) and Ms. Archita Rana (I PhD) **participated in Batches III and IV of the Indian Arctic Expedition during July-October 2019**. These field visits were for a project “**Brown carbon and HULIS in the Arctic**” funded by the National Centre for Polar and Ocean Research (NCPOR), Ministry of Earth Sciences, Government of India.
- Received funding from SERB, DST under the Start-up Research Grant (SRG) Scheme for a project “**Chemical speciation and airway deposition modeling of bulk and size-segregated aerosols in residential microenvironments from three northeast Indian states: implications for human exposure.**” The funding amount is Rs. ~30 lacs.
- A student, Mr. Bijay Sharma (PhD), participated with full funding in the **International Workshop on Advanced Machine Learning Techniques for Climate Informatics**, organized by the **Geoscience and Remote Sensing Society, and the Center for Soft Computing Research, ISI Kolkata**, November 2019.
- A student, Ms. Archita Rana (I PhD), received **GeoHost support** to present her work on optical properties of brown carbon at the **36th International Geological Congress (IGC)** in New Delhi, India.
- A student, Ms. Supriya Dey (PhD), received the **Roland Schlich Early Career Scientist Travel Support** to present her work on the optical and chemical properties of wintertime light-absorbing aerosols at the **European Geosciences Union (EGU) General Assembly** in Vienna, Austria.
- A student, Ms. Archita Rana (I PhD), visited Prof. Neil Rose’s research group at **University College - London (UCL)** as an exchange student for 2 weeks to work on SCP profiles of lake sediments. She received full funding from the **Global Engagement Fund (GEF) of UCL** for this visit.

## Dr. Sujata Ray

- A proposal by Dr. Sujata Ray to conduct a course on “**Astrobiology and Science Communication: The Search for Life beyond Earth**” was approved under Global Initiative on Academic Network (GIAN), Govt. of India.

## Solid Earth Studies

### Dr. Sanjay Kr. Mandal

- Dr. Sanjay Kr. Mandal have received a **start-up research grant** of Rs. 30 lakhs from SERB. The title of the project is “Tracing the impact of Late Cenozoic climatic transitions on the erosion rates of Himalaya”.

### Dr. Tapabrato Sarkar

- Received a funding of Rs. 61 lakhs for 4 years from **Ministry of Earth Sciences (MoES) for a project** entitled “Crustal evolution of the Eastern Madurai Domain of Granulite Terrane of South India: A petrochronological study on granulite-facies rocks from the western part of the domain.”
- Chintaparathi Venkateswar Reddy (I PhD) selected for S N Bose Scholars Program 2019 at Case Western Reserve University, USA.
- A student, Ms. Padmaja J. K. (PhD), received **GeoHost support** to present her work on the petrological evolution of rocks from the Eastern Ghats Belt at the **36th International Geological Congress (IGC)** in New Delhi, India.

### Dr. Kajaljyoti Borah

- Received funding from SERB, DST under the **Mathematical Research Impact Centric Support (MATRICS)** scheme for a project title “Seismic Imaging using Inversion Modeling”.
- Ms. Pousali Mukherjee (BS-MS student) got the **best Master Thesis award** from the Department of Earth Sciences, in June 2019.
- Aakash Anand (PhD student) received the **CSIR travel grant** to present his work at the Asia Oceania Geosciences Society (AOGS) 2019 in Singapore.

### Dr. Kathakali Bhattacharyya

- Dr. Kathakali Bhattacharyya serving as a member of the Geological Society of London Books Editorial Committee as a Society Books Advisor.
- Chirantan Parui (IPhD) received the CSIR international travel grant to attend the American Geophysical Union (AGU) Fall Meeting 2019.
- Chirantan Parui (IPhD) received the AGU Fall Meeting General Student Travel Grant to attend the AGU Fall Meeting 2019.
- Chirantan Parui (IPhD) received the Roland Schlich Early Career Scientist’s travel support to attend the European Geosciences Union (EGU) General assembly 2019.
- Mr. Chirantan Parui (IPhD) received GeoHost support to present his work on investigating strain partitioning, at multiple scales, during mountain-building at the 36th International Geological Congress (IGC) in New Delhi, India
- Mr. Jyoti Prasad Das (PhD) received GeoHost support to present his work on investigating deformation fabric development in gneissic rocks from eastern Himalaya at the 36th International Geological Congress (IGC) in New Delhi, India.

### Dr. Sukanta Dey

- Edited a volume of the Geological Society London Special Publications titled “Archean Granitoids of India: Windows into Early Earth Tectonics” (no. SP489) containing papers by authors from across the world (France, UK, Poland, Germany, Japan, China, Australia, Russia, Mexico and India).
- A proposal of editing a special issue of the journal “Precambrian Research” (Elsevier) on the theme “Hadean to Proterozoic evolution of Singhbhum Craton and North Singhbhum Mobile Belt, Eastern India” is accepted. A number of researchers from different countries (Australia, South Africa, USA, China, Japan, Oman, UK and India) have promised to contribute and the volume already started receiving manuscripts.
- Reviewed funding applications for new project proposals from Ministry of Earth Sciences (MoES), Science and Engineering Research Board (SERB), and STARS Program, Ministry of Human Resource Development.

### Prof. Supriyo Mitra

- Elected Fellow (2019) of the West Bengal Academy of Science and Technology (FWAST).
- Visiting Professor (2019) of The Earthquake Research Institute, University of Tokyo, Japan.
- Member of the MHRD Scheme for Transformational and Advanced Research in Sciences (STARS) Committee of Earth Sciences.

## Isotope Geochemistry & Biogeochemical studies

### Dr. Manoj Kumar Jaiswal

- Mahadev (PhD) has been selected for the 6th International Paleoflood Conference, Massey University, New Zealand. He has also been awarded the International Support Grant from SERB.
- Arnab Majumdar received Scientific Committee on Oceanic Research travel grant to attend the Goldschmidt 2019 conference, Barcelona.
- Atul Kumar Singh selected as Scientist-B in Inter University Accelerator Centre, New Delhi. Atul Kumar Singh received travel grant from International Union for Quaternary Research to present work in Dublin.

### Prof. Prasanta Sanyal

- Prof. Sanyal delivered was invited as “Chief Guest” to deliver the Science Day Lecture at CSIR-Central Institute of Mining and Fuel Research on National Science Day, 2020.
- Deepak Kumar Jha (I PhD) received the Special Registration Support Program (SRSP € 300) for the 36th International Geological Congress (IGC), Delhi, India, 2020.
- Deepak Kumar Jha (I PhD) received the INQUA Bursary (€ 1000) to attend the INQUA 2019, Dublin, Ireland, 2019.
- Deepak Kumar Jha (I PhD) selected as a Regional Representative of Early Career Network (ECN) of Past Global Changes (PAGES), 2019-2021.
- Vijayananda Sarangi (PhD) received the AGU Fall Meeting General Student Travel Grant (1000 USD) to attend the AGU Fall Meeting 2019, San Francisco, USA, 2019.
- Vijayananda Sarangi (PhD) received the CSIR international travel grant to attend the AGU Fall Meeting 2019, San Francisco, USA, 2019.
- Vijayananda Sarangi (PhD) received the YES Congress student travel grant (€ 500) to attend the YES Congress, Berlin, Germany, 2019.
- Vijayananda Sarangi (PhD) received the INQUA Bursary (€ 900) to attend the INQUA 2019, Dublin, Ireland, 2019.
- Biswajit Roy (I PhD) received full support to attend the 36th International Geological Congress 2020 at New Delhi, India.
- Biswajit Roy (I PhD) received full support for presenting a talk in International Union for Quaternary Research



2019 (INQUA) (Funded by INQUA) at Dublin, Ireland.

- Biswajit Roy (IPhD) received travel support for presenting a talk in Japan Geoscience Union 2019 at Chiba, Japan.
- Biswajit Roy (IPhD) received full support for presenting a talk in European Geosciences Union 2019 (Funded by JpGU) at Vienna, Austria.
- Sohom Roy (PhD) received partial support to attend the 36th International Geological Congress 2020 at New Delhi, India.
- Sohom Roy (PhD) received travel support for presenting poster in Japan Geoscience Union 2019 at Chiba, Japan.
- Sambit Ghosh (RA) received SERB travel grant to attend EGU 2019.
- Sambit Ghosh (RA) received a postdoctoral fellowship at Seoul National University, South Korea.
- Akanksha Rai (BS MS) received partial support from Alfred Wegener Institute, Bremerhaven, Germany to pursue a summer internship in 2019.
- Akanksha Rai (BS MS) received the AGU Fall Meeting Student Travel grant to attend AGU Fall Meet 2019 held in San Francisco, USA.
- Anurag Kumar (PhD) received travel support to attend Japan Geoscience Union 2019 (JPGU) at Chiba, Japan.
- Anurag Kumar (PhD) received the AGU Fall Meeting General Student Travel Grant (1000 USD) to attend the AGU Fall Meeting 2019, San Francisco, USA.
- Anurag Kumar (PhD) received the CSIR international travel grant to attend the AGU Fall Meeting 2019, San Francisco, USA.
- Ajay (IPhD) received participation support award to attend SPATIAL stable isotope short course 2019, Salt Lake City, USA.
- Bibhasvata Dasgupta (PhD) received participation support award to attend SPATIAL stable isotope short course 2020, Salt Lake City, USA.
- Bikash Ranjan Sahu (BS MS) received the AGU Fall Meeting General Student Travel Grant (1000 USD) to attend the AGU Fall Meeting 2019, San Francisco, USA, 2019.
- Asiya BS (BS MS) received Roland Schlich travel support to attend EGU 2020, Vienna, 2020.
- Rahul Samrat (BS MS) received Roland Schlich travel support to attend EGU 2019, Vienna, 2019. Rahul Samrat (BS MS) received NAMASTE+ incoming student mobility scholarship for 6 month internship at University of Göttingen, Germany, 2019.

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## Other student's achievements

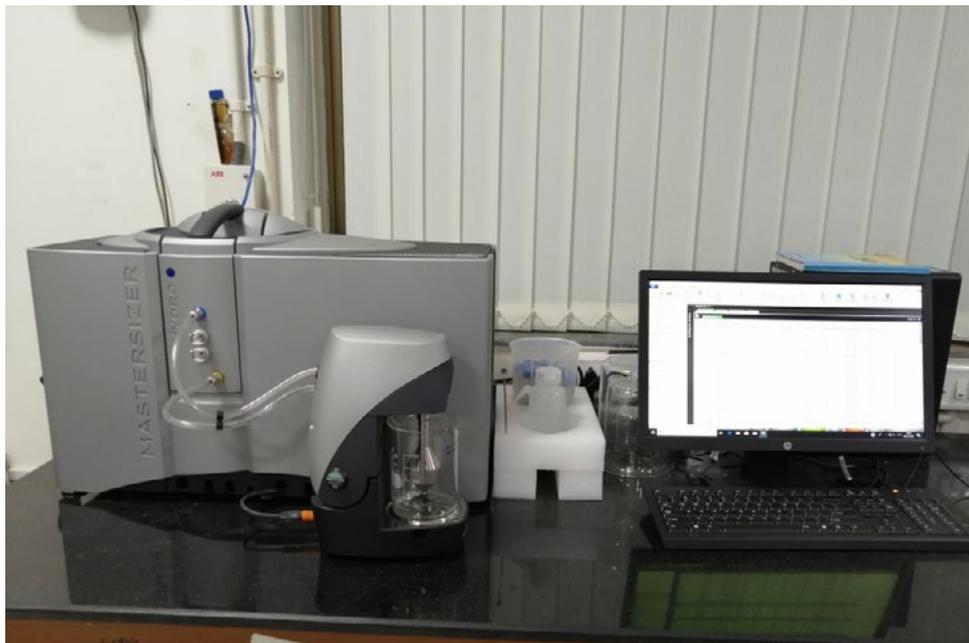
- Rahul Subbaraman, a DES 3rd Year BS-MS student, selected for the 2020 Future Research Talent program offered by Australian National University.

## New facilities created

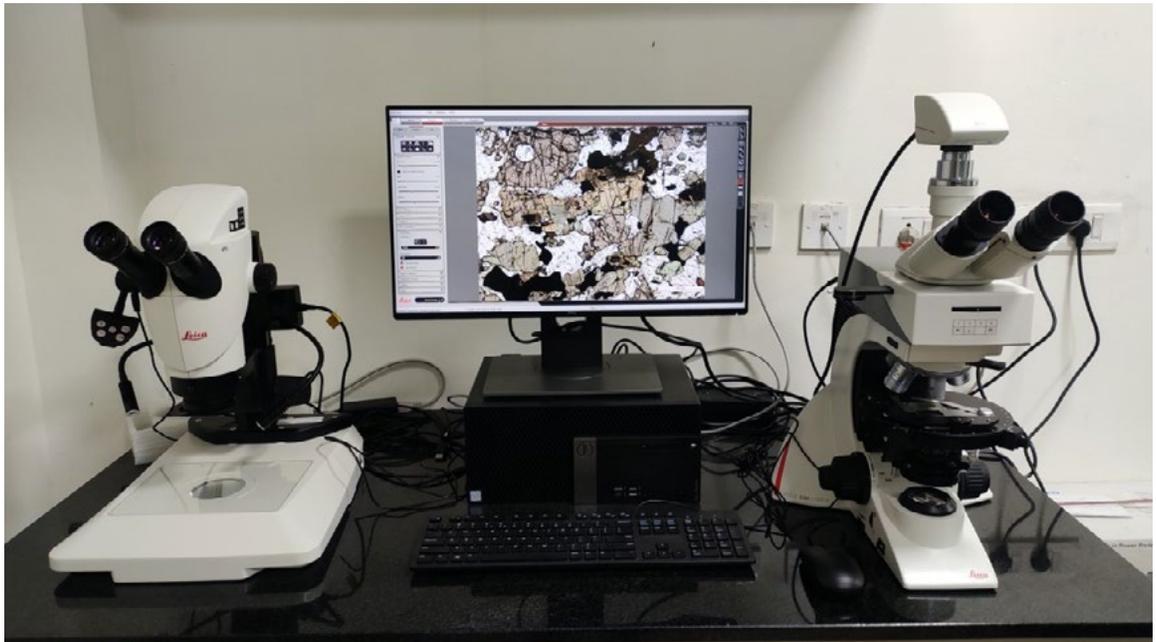
- Stable Isotope ratio mass spectrometer Delta V PLUS was installed



- Particle Size analyser (0.01 mm to 3500 mm) was installed

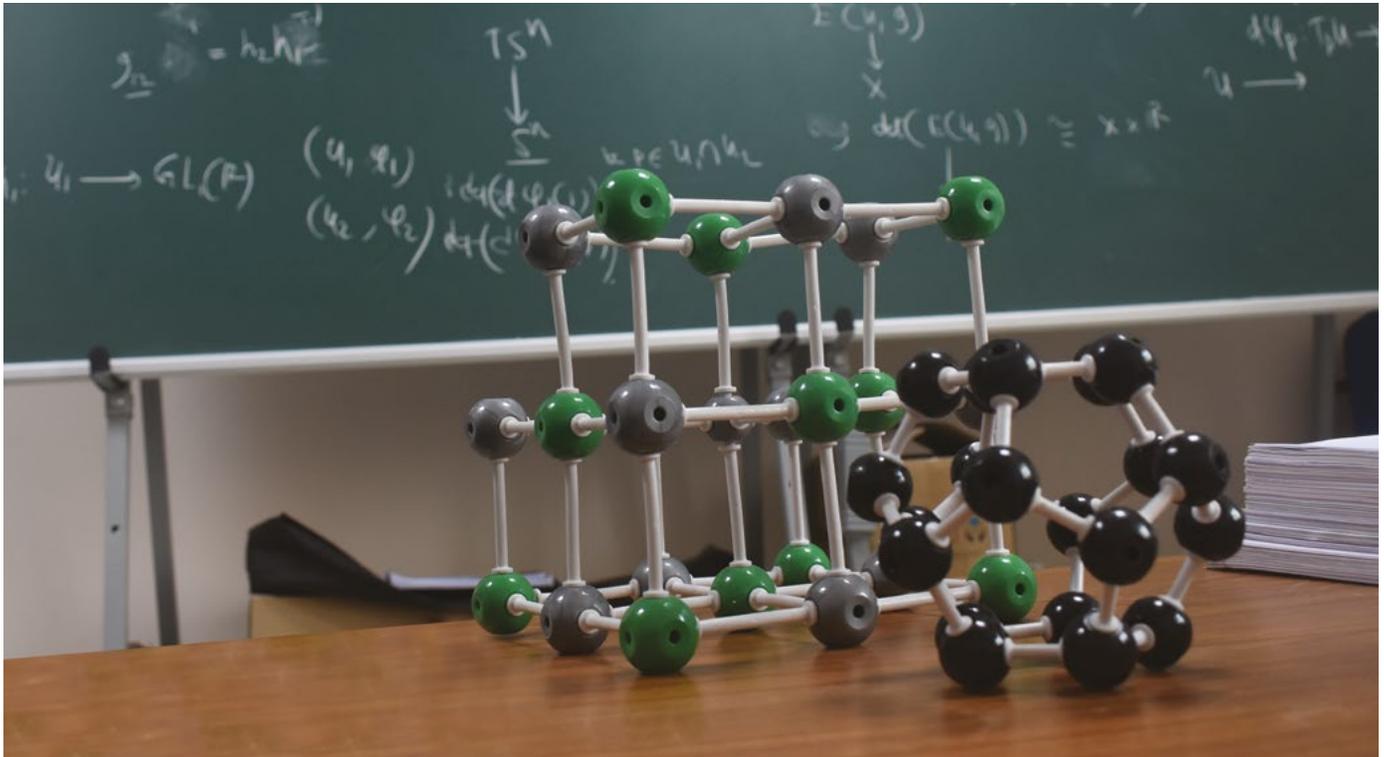


- A new mineral separation facility for the cosmogenic nuclide geochemistry has been set up. The following instruments have been procured for this lab:
  - Retsch vibratory sieve shaker
  - Elmasonic sieve cleaning module
  - Thermo drying oven
  - Edmund Bühler universal shaker
- Construction of an ISO-7 clean laboratory for the cosmogenic nuclide laboratory is under way.
- A digital rebound hammer (for in situ measurements of rebound values) has been procured.
- The petrology research lab has been set up with two new microscopes in the last financial year.
  - Leica DM 2700-P: Polarizing Petrological microscope
  - Leica S29i: Stereo zoom microscope



- Six seismographs have been procured to monitor earthquake and imaging Earth's structure.

## Department of Mathematics and Statistics



The Department of Mathematics and Statistics has continued to flourish in different avenues. Currently, we have seventeen faculty members, forty-seven Integrated MS, nine Integrated Ph.D. students, ten Ph.D. students, three post-doctoral fellows, and two supporting staff members.

In December 2019 Dr. Soumalya Joarder joined the department as an assistant professor. Soumalya is working on operator algebra, non-commutative geometry, and quantum groups. His presence has strengthened the research and teaching of the department.

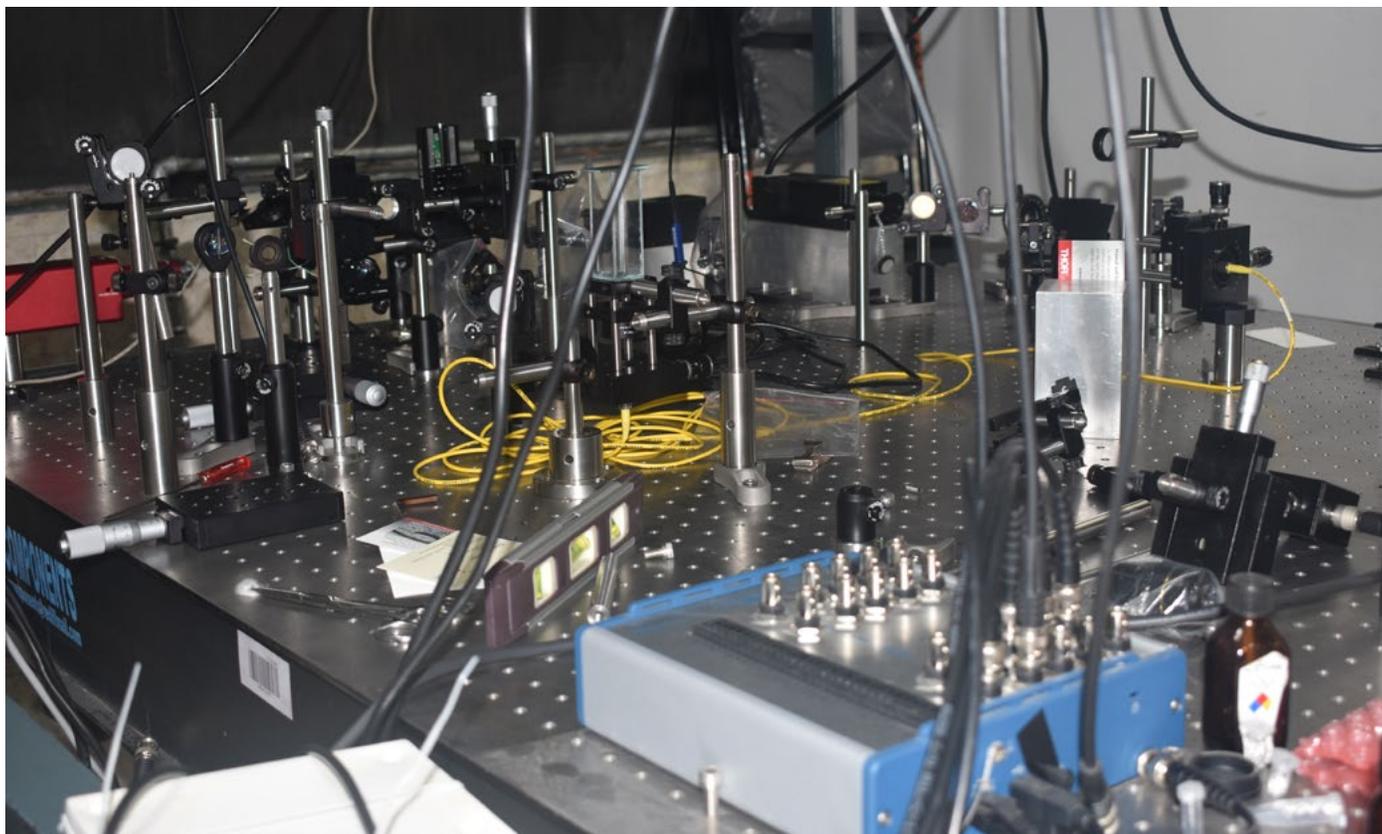
Our faculty members have continued their excellence in research and teaching. Quite a few high-quality research articles have been published.

In addition to the individual research grant, the department has been awarded 44 Lakh by the FIST program of Department of Science & Technology (DST), Government of India to strengthen its teaching infrastructures.

### Teaching and Research

- The department has maintained the tradition of its weekly seminar series and thirty-two seminars took place last year.
- A lecture series "*Recent Developments in the Study of Single-Index Type Models*" was delivered by Professor Moulinath Banerjee from the University of Michigan, USA.
- An MTTTS (Mathematics Training and Talent Search), the most popular undergraduate/graduate training program in Mathematics running in India, Level O Programme has been organized during May 27 - June 22, 2019, where thirty-four undergraduate mathematics students from different parts of India were nurtured by six renowned mathematicians to inculcate mathematical thinking process into the young minds and to build up the mathematical basis of the participants, starting from the grass-root level.
- A discussion meeting on the current trend of harmonic analysis has been organized with selected eleven young experts of this field in the country from October 10 - 12, 2019.
- The department organized its annual DMS Symposium 2020. Apart from talks by our Ph.D. students and faculty, there were invited lectures by eminent mathematicians Prof. Alok Goswami from IACS, Kolkata, and Dr. Apurva Khare from IISc, Bangalore.
- The department took active participation in Vijyoshi Camp and Institute Open Day as its outreach activities.
- Last year two Ph.D. students graduated from the department. Both of them become assistant professors, one in NIT Sikkim and another in Banasthali University, Rajasthan. Fourteen students of the department have completed the Masters in Mathematical Sciences. All of them are pursuing their careers in premier places.

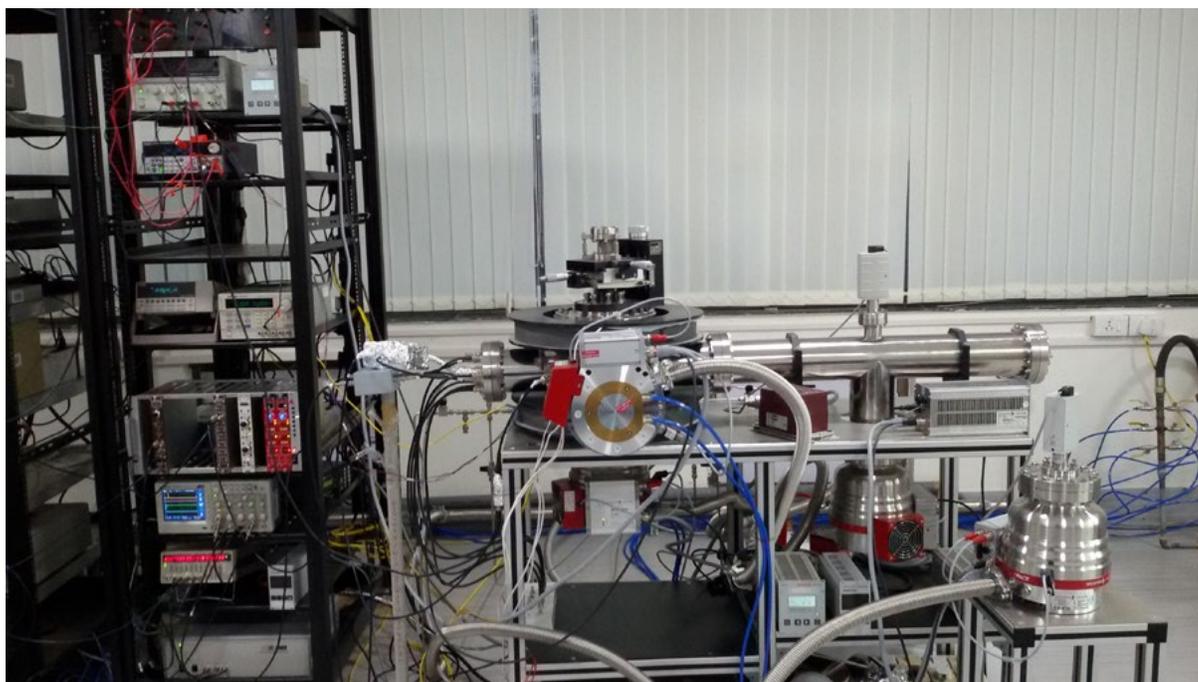
## Department of Physical Sciences



### Teaching and Research

The Department of Physical Sciences (DPS) at the Indian Institute of Science Education and Research (IISER) Kolkata began its journey in 2006, and has established high standards of excellence in research and teaching among the community within India and abroad. The teaching program at DPS strives to provide quality education through lecture and laboratory courses spanning a large number of branches of the Physical sciences. Every effort is made in maintaining a balance between a broad base of basic courses and a substantial variety of advanced courses. At the same time, the research conducted by members of DPS spans an impressive variety of topics on experimental and theoretical fronts. The topics currently covered include condensed matter physics and material science, biophysics, soft matter physics, complex systems, light-matter interaction, astrophysics, space science, gravitation and cosmology, high energy physics, atomic and molecular physics, non - linear dynamics, quantum information processing, quantum computation and mathematical physics. At present, DPS has 30 faculty members (with three new colleagues joining us this year), 37 integrated Ph.D (I.Ph.D ) students, and 72 regular Ph.D students.

DPS hosts several high-end instruments and facilities such as Micro-Raman Spectrometer, SQUID, custom design velocity map Imaging Spectrometer, multimodal spectroscopy and imaging system, Femtosecond oscillator, Femtosecond amplifier, Atomic Force Microscopy and many others. Additionally, the National Centre for High-Pressure Studies (NCHPS) is a specialised facility that operates under the umbrella of DPS. This recently created centre has facilities that allow achieving megabar pressures and very high temperatures using laser-heated diamond anvil cell (LHDAC) and to study the changes in physical properties of materials in situ using Raman Spectroscopy and electrical transport studies. Over the years, DPS faculties have also contributed to the creation of two other centres of excellence. These include the Centre of Excellence in Space Sciences, India (CESSI) and the National Network for Mathematical and Computational Biology. DPS has recently also inducted a high-performance computational facility for its members.



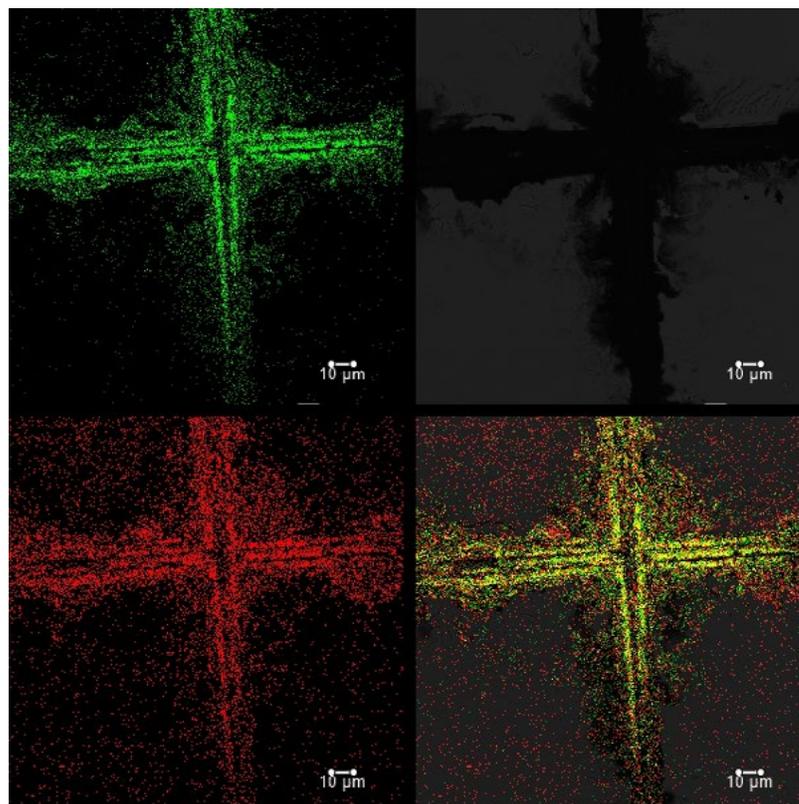
Experimental setup for absolute dissociative electron attachment cross section measurements in electron collisions with gas phase molecules of interest

As always, DPS faculty members have been actively involved in organizing conferences, symposia and workshops on the IISER campus. This includes the Contemporary Trends in Optics 2019 conference organised by Ayan Banerjee and Nirmalya Ghosh and the Summer School of Quantum Information and Quantum Technology (QIQT) 2019 at IISER Kolkata co-organised by Prasanta K. Panigrahi, Sourin Das, N. Ghosh, C. Mitra, and a couple of 2-day national workshops on “Two-dimensional electronic systems in Magnetic fields” during Dec. 2019 and January 2020 at IISER Kolkata that were organised by Amit Ghosal. We’ve had a good number of national as well as international visitors over the year, several of whom gave lecture series to our students and faculty members on a wide variety of topics. For instance, Nirmalya Ghosh organized Optical Society of America (OSA) Traveling Lectures as faculty mentor of the OSA student chapter of IISER Kolkata by Prof. Valery Tuchin, Chair of Optics at Saratov State University, Russia and Prof. Chennupati Jagadish, Department of Electronic Materials Engineering, Australian National University. Another Amit Ghosal hosted Prof. Hitesh Changlani, NHMFL, Florida State University, USA, for a monthlong visit to IISER kolkata (15 November to 17 December, 2019) as a part of the SPARC collaborative proposal. During his visit, Prof. Changlani delivered a lecture series (consisting of 10 lectures) on electronic system under orbital magnetic field.

We are proud to highlight the research achievements of our PhD and IPh D students. Even as some of them have published single-author papers in respected international journals, several others have delivered presentations at international conferences as well as received offers of post-doctoral fellowships in respected institutions within India and abroad upon the completion of their doctoral research. Other notable achievements of DPS faculty members include Dibyendu Nandi being awarded the Asia-Pacific Young Career Award in Solar Physics at the 5th Asia-Pacific Solar Physics Meeting, Sourin Das receiving the Institute of Advanced Study Residential Fellowship at the Institute of Advanced Study, University of Warwick, and P K Mohanty being selected as a Teacher Developer by the Royal Society of Chemistry, Yusuf Hamied Inspirational Science Programme. Several DPS faculty received extramural funding this year, including MATRICS grants from SERB for Anandamohan Ghosh, Sourin Das and Koushik Datta and SERB grants for Dhananjay Nandi, Nirmalya Ghosh and Chiranjib Mitra.

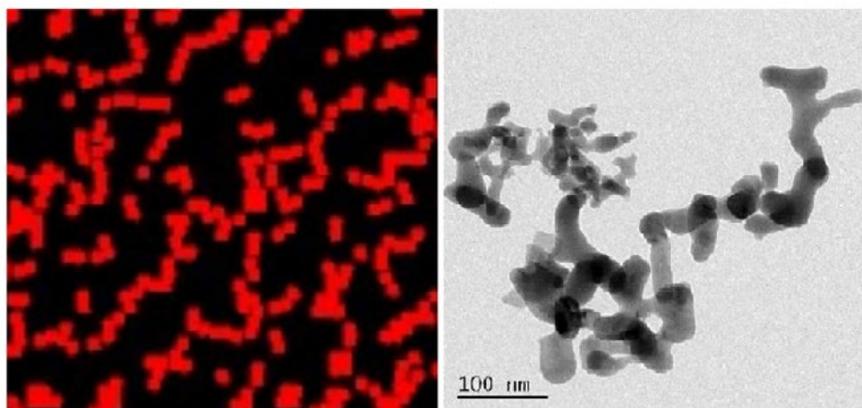
## Research Highlights:

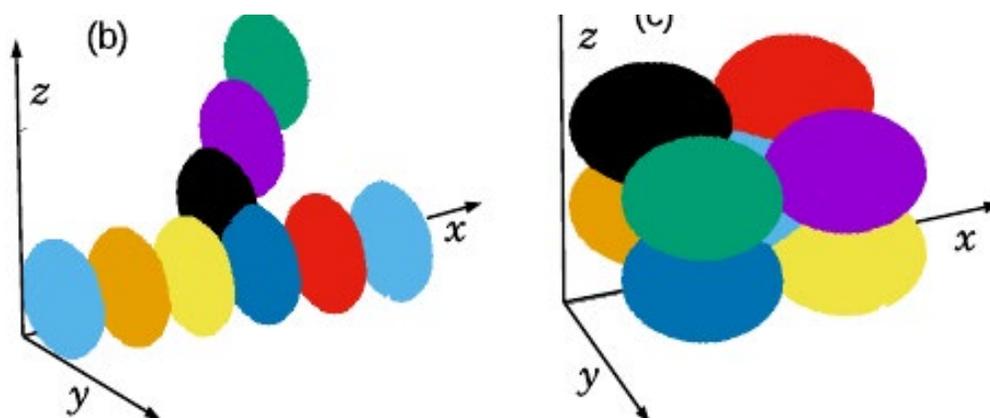
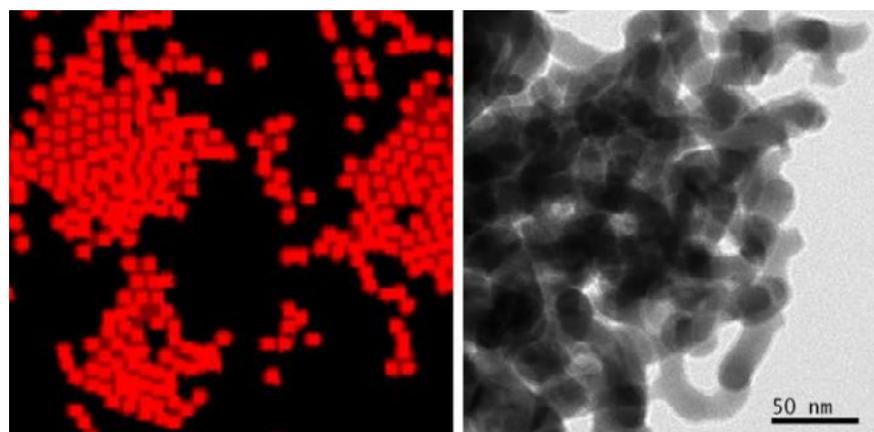
- I. In Ayan Banerjee’s IMPRINT project on microlithography using microbubbles trapped and manipulated using thermos-optical tweezers, we have managed to pattern a representative protein, Green Fluorescent Protein (GFP) on a pre-existing pattern of ammonium heptamolybdate, and in order to confirm the activity of the attached this protein we performed the standard antigen-antibody binding reaction (ELISA - enzyme linked immunosorbent assay) on the pattern surface. We observed that the primary GFP antigen had been bound with its corresponding antibody (anti-GFP) and finally with the secondary antibody (secondary GFP antibody) respectively on the pattern surface.



## 2. Ayan Banerjee's research highlighted in media:

- Force that helps geckos stick to walls measured using laser tweezers, Outlook, Business Standard, September 26, (<https://www.outlookindia.com/newscroll/force-that-helps-geckos-stick-to-walls-measured-using-laser-tweezers/1627762>, [https://www.business-standard.com/article/pti-stories/indian-scientists-measure-van-der-waals-force-using-lasers-119092700344\\_1.html](https://www.business-standard.com/article/pti-stories/indian-scientists-measure-van-der-waals-force-using-lasers-119092700344_1.html))
  - Indian scientists measure Van der Waals force using lasers, September 30, 2019, The Week, Republic World (<https://www.theweek.in/news/sci-tech/2019/09/30/Indian-scientists-measure-Van-der-Waals-force-using-lasers.html>, <https://www.republicworld.com/technology-news/science/indian-scientists-measure-van-der-waals-force-use-laser.html>)
  - Technique to measure tiny forces between particles, cells, Nature Asia (<https://www.natureasia.com/en/nindia/article/10.1038/nindia.2019.132>)
3. An investigation led by Dr. P K Mohanty showed that when nanoparticles are dried in presence of organic liquids they self assemble to form interesting nano-structures. We observe 'drying-mediated self-assembly' in  $\text{BiFeO}_3$  nanoparticles (20-40 nm) and explain their formation from a microscopic model [compare the left(experiment) and right (simulation) panels in (a) and (d) ]. These magnetic nanoparticles exhibit strikingly different magnetic properties. We propose that the organic liquid may pin some of the spins on the surface leading to the surprisingly large exchange bias observed. A theoretical model of surface-spin-pinning on different nanostructures, like in (b) and (c) confirms this.





## Faculty achievements

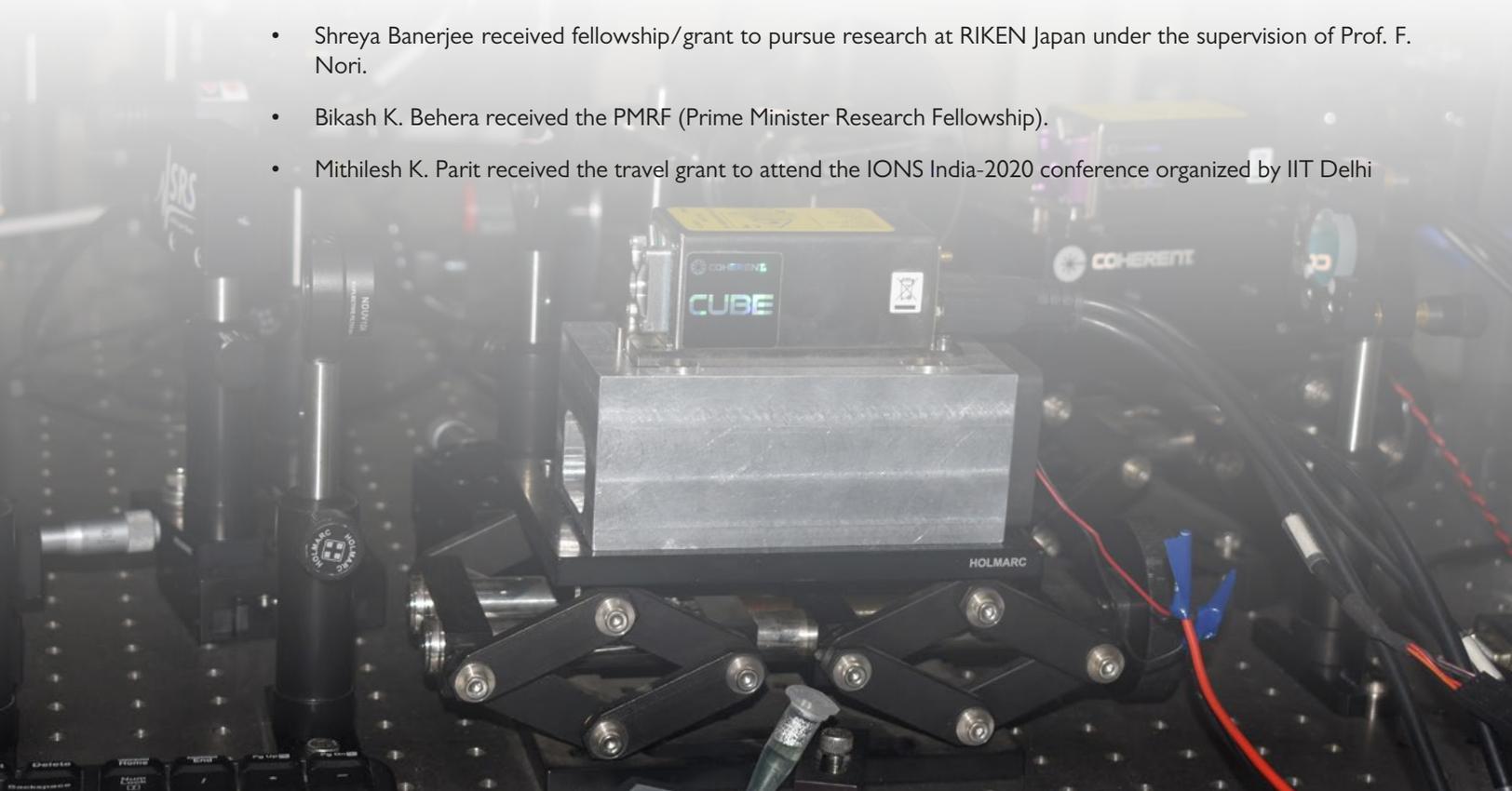
- Dibyendu Nandi was awarded the Asia-Pacific Young Career Award in Solar Physics at the 5th Asia-Pacific Solar Physics Meeting, 2019
- Sourin Das was awarded the Institute of Advanced Study Residential Fellowship at the Institute of Advanced Study, University of Warwick, Coventry CV4 8UW UK (June 2019)
- P K Mohanty was selected as a Teacher Developer by the Royal Society of Chemistry, Yusuf Hamied Inspirational Science Programme.

## Grants and Extramural Funding

- MATRICS Grants from SERB for Anandamohan Ghosh, Sourin Das and Koushik Datta.
- Dhananjay Nandi received an SERB grant for "Electron attachment reactions in isolated biomolecules and clusters".
- Nirmalya Ghosh received an SERB grant for "Polarization Mueller matrix spectroscopy and weak measurements in plasmonic metamaterials".
- Chiranjib Mitra received a grant from DST for "Fabrication and Implementation of spin qubit based quantum gates for quantum information processing in solid state systems."

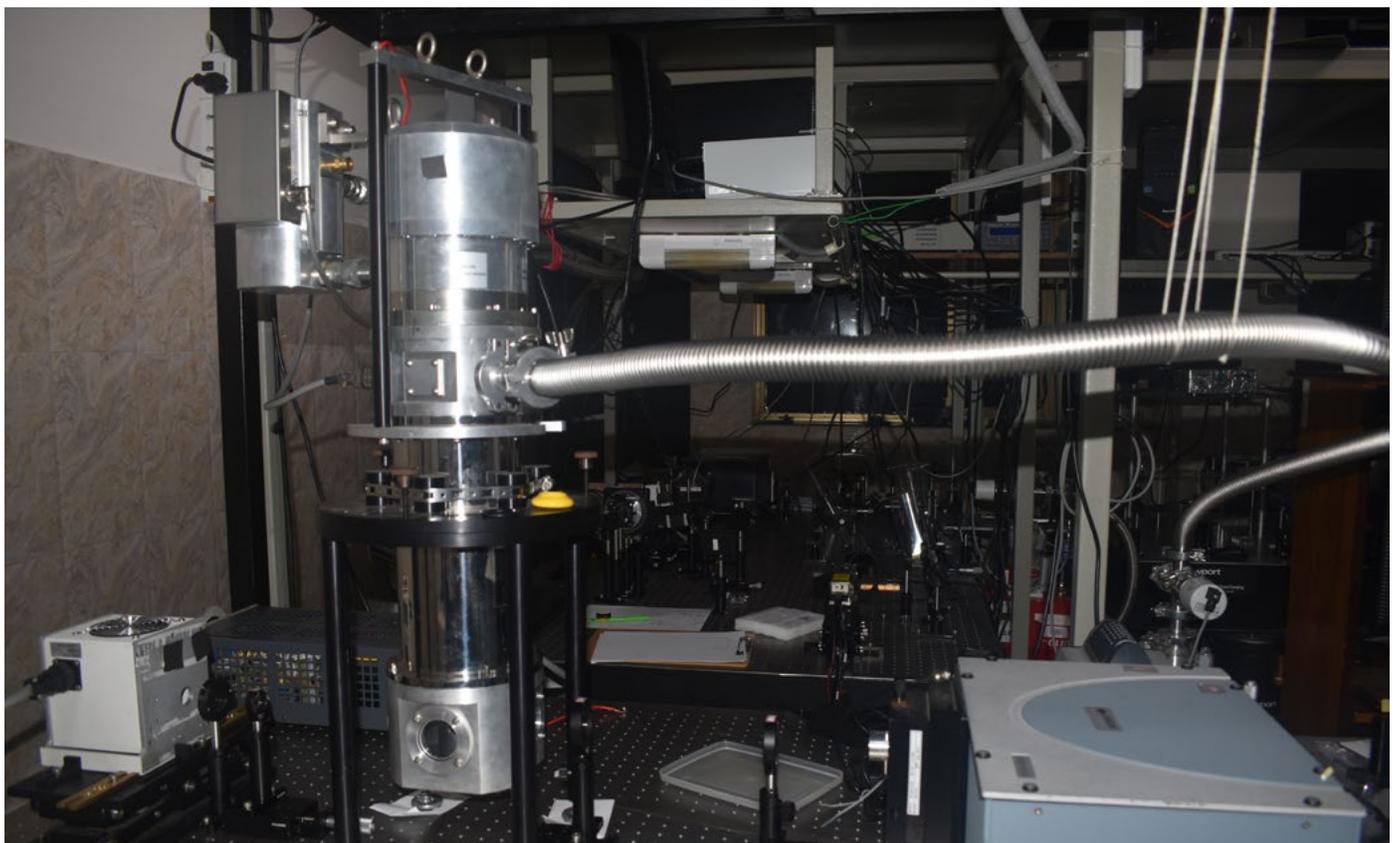
## Student Achievements

- Dr. Dipayan Chakraborty (Viva Voce (23/09/2019)) : Post-doc position at University of Norte Dame, USA
- Dr. Irina Jana (Viva Voce (10/01/2020)) : Received Post-doc position at Sandia National Laboratory, California, USA
- Dr. Shuvojit Paul defended his thesis and won a post-doctoral position at the University of Konstanz, Germany.
- Mr. Avijit Kundu won the DUO India Exchange programme scholarship for a visit to the University of Muenster, Germany.
- Arnab Chakrabarti joined Weizmann Institute of Science, Israel as a post-doctoral fellow in March 2019 (not reported in the last annual report).
- Ipsita Chakraborty joined Bose Institute, Kolkata as a post-doctoral fellow in February 2019 (not reported in the last annual report).
- Debangana Mukhopadhyay received an international travel grant from SERB to attend the 17th International Conference on Computational Methods in Systems Biology, September 18 - 20, 2019 in Trieste, Italy.
- Debangana Mukhopadhyay received an international travel grant from CSIR to attend the 64th Annual Meeting of the Biophysical Society, February 15 – 19, 2020, in San Diego, USA
- Subhajit Barman has received the offer of Institute Post Doctoral Fellowship (IPDF) from the Indian Institute of Technology Guwahati in March 2020.
- Anurag Banerjee received a postdoctoral position at Saclay, France in 2019.
- Anushree Datta received a postdoctoral position in Barcelona (Spain) from March, 2020 – however, the outbreak of COVID-19 has delayed her plans temporarily.
- Jit Sarkar received a postdoctoral position at City University of New York, USA with Prof. Mathew Sfeir.
- Rafiqul Rahaman received a postdoctoral position in Harishchandra Research Institute, Allahabad in March 2020.
- Prateek Verma was awarded a post-doctoral fellowship in the Department of Evolutionary Theory, Max Planck Institute for Evolutionary Biology, August Thienemann Strasse 2, 24306 Plon, Germany.
- Sumit Mukherjee was awarded the prestigious PBC fellowship for outstanding post-doctoral researchers by the Govt. of Israel and is currently holding that fellowship at Bar-Ilan University, Israel.
- Shreya Banerjee received fellowship/grant to pursue research at RIKEN Japan under the supervision of Prof. F. Nori.
- Bikash K. Behera received the PMRF (Prime Minister Research Fellowship).
- Mithilesh K. Parit received the travel grant to attend the IONS India-2020 conference organized by IIT Delhi



## Conferences & Workshops & Lectures Organised by DPS Faculty

1. Contemporary Trends in Optics 2019: IISER Kolkata, between May 20-23, 2020. Consisted of a total of 22 invited speakers including 1 international speaker, and several student presentations and poster sessions. (Organised by A. Banerjee, N. Ghosh)
2. Co-organised by Sourin Das: Quantum transport, Majorana fermions and other exotic excitations in condensed matter systems (workshop at University of Warwick, Coventry CV4 8UW UK, 2019)
3. Co-organised by P. K. Panigrahi, Sourin Das, N. Ghosh, C. Mitra: Summer School of Quantum Information and Quantum Technology (QIQT) 2019 held at IISER Kolkata.
4. Golam M. Hossain acted as a *Member* of the *Scientific Organizing Committee (SOC)* for the “9th International Conference on Gravitation and Cosmology (ICGC 2019)”, held at IISER Mohali during December 10-13, 2019.
5. Nirmalya Ghosh **organized Optical Society of America (OSA) Traveling Lectures as faculty mentor of the OSA student chapter of IISER Kolkata by (i)** Prof. Valery Tuchin, Chair of Optics at Saratov State University, Russia and **(ii)** Prof. Chennupati Jagadish, Department of Electronic Materials Engineering, Australian National University.
6. Amit Ghosal organised two 2-day national workshops on “Two-dimensional electronic systems in Magnetic fields” during Dec. 2019 and January 2020 at IISER Kolkata.
7. Amit Ghosal hosted Prof. Hitesh Changlani, NHMFL, Florida State University, USA, for a monthlong visit to IISER kolkata (15 November to 17 December, 2019) as a part of the SPARC collaborative proposal. During his visit, Prof. Changlani delivered a lecture series (consisting of 10 lectures) on electronic system under orbital magnetic field.
8. Kamaraju Natarajan hosted a 1-day visit and organised a talk by Prof. Vasudeva Rao Aravind from Clarion University, USA.
9. Supratim Sengupta hosted Dr. Julien Derr (University of Paris Diderot) and Dr. Sudha Rajamani (IISER Pune) for collaborative work on models of origin of life. During their visit, Dr. Derr and Dr. Rajamani gave seminars on their recent work.





# Centres for Interdisciplinary Science

## Centre for Advanced Functional Materials (CAFM)



### About the Centre

The Centre for Advanced Functional Materials (CAFM) at IISER Kolkata was established on 01 August 2016 and has a special mission to foster collaborative, interdisciplinary research and education in the science and technological applications of advanced solid state and soft materials. With an emphasis on nanoscience and nanotechnology, the research areas of CAFM include hybrid solar cells; fuel cells; strongly correlated materials; polymer and supramolecular delivery vehicles; materials for environmental remediation. CAFM coordinates to foster advanced research towards synthesis of smart materials, structure-property elucidation, device fabrication and cutting-edge applications. Apart from establishing collaboration between researchers within and outside IISER Kolkata, CAFM promotes technology transfer of developed materials and devices. The faculty members of CAFM provide research training to BS-MS, IPhD students, PhD scholars and postdoctoral fellows, and conduct interdisciplinary courses on advanced functional materials.

### Events

#### **07 March 2020: One Day Discussion Meeting on Spectroscopy, Photonics & Dynamics (SPD-2020)**

CAFM organized the “One Day Discussion Meeting on Spectroscopy, Photonics & Dynamics (SPD-2020)” on 07 March 2020 (Saturday). Spectroscopy forms an integral part of Materials research and therefore the scope of the meeting was broad and incorporated various areas of spectroscopy under one umbrella. There was intense discussion on the subject areas of current research in spectroscopy, photonics and dynamics and hence had a tremendous assemblage of intellectual minds both as speakers and session chairs in this single day affair. The meeting brought together Biologists, Chemists and Physicists in this area of research.

#### **05-06 July 2019: Symposium on Polymer Science : SPS-2019 Conference**

SPS-2019 was organized to promote the recent fundamental understanding and technological advancement in the area of Polymer Science and Technology, “Symposium on Polymer Science”. The Society for Polymer Science (SPS), India, organizes MACRO conferences in every two years at different parts of India. The specific focus of this meeting was to advance the vibrant Kolkata Chapter in SPS and polymer science in general.

## Seminars

1. **Prof. Chirag Kalelkar**, IIT Kharagpur, India  
CAFAM Popular Lecture on 09 May 2019  
**Title:** Tabletop Experiments in Fluid Dynamics
2. **Prof. Somabrata Acharya**, IACS Kolkata, India  
CAFAM Seminar on 16 May 2019  
**Title:** Exploring for Nanomaterials and Molecules at the Air-Water Interface
3. **Prof. Dilip K. Sarkar**, University of Quebec at Chicoutimi (UQAC), Canada  
CAFAM Seminar on 18 July 2019  
**Title:** Nanostructured Superhydrophobic Thin Films Surfaces: Fundamentals and Applications
4. **Dr. Sujoy Roy**, Lawrence Berkeley National Laboratory, USA  
CAFAM Visitor's Seminar on 13 August 2019  
**Title:** Shining X-rays on Topological Magnetic Texture: Insight into Static and Fluctuating Properties of Skyrmions
5. **Prof. Tewodros Asefa**, Rutgers University, USA  
CAFAM Visitor's Seminar on 23 January 2020  
**Title:** Where the Whole is More than the Sum of its Parts: Design and Synthesis of Multifunctional Nanomaterials for Catalysis, Energy and Nanomedicine
6. **Prof. Amitava Patra**, IACS Kolkata, India  
CAFAM Seminar on 17 February 2020  
**Title:** Challenges and Opportunities for Nanomaterials Based Light Harvesting Systems
7. **Prof. Arnab Mukherjee**, IISER Pune, India  
CAFAM Seminar on 26 February 2020  
**Title:** Accurate Prediction of B-form/A-form DNA Conformation from Primary Sequence: A Machine Learning and Free energy Handshake

## Externally Funded Projects

**Title:** Fluorometric Polymeric Sensor for Speedy Formalin Detection in Commercial Fishes  
**PI:** Prof. Priyadarsi De (PI) & Prof. Punyasloke Bhadury (Co-PI)  
**Funding Agency:** MHRD-STARs  
**Funding Amount:** Rs. 48,00,000.00  
**Reference Number:** 122  
**Status:** 2020 - Present

N-PDF of Dr. Arghya Bandyopadhyay  
**PI:** Dr. Supratim Datta  
**Funding Agency:** DST-SERB  
**Funding Amount:** Rs. 6,00,000.00  
**Reference Number:** PF. No. 395  
**Status:** June 2019 – June 2021

## Ph.D. Students Associated with CAFM

CAFAM conducts its own Ph.D. interviews to attract students from broader disciplines of biology, chemistry and physics to perform scientific research in interdisciplinary areas beyond traditional boundaries. The selected students are enrolled in the Ph.D. programme of IISER Kolkata under the parent department of their supervisor.

### Ph.D. Student (Spring 2019)

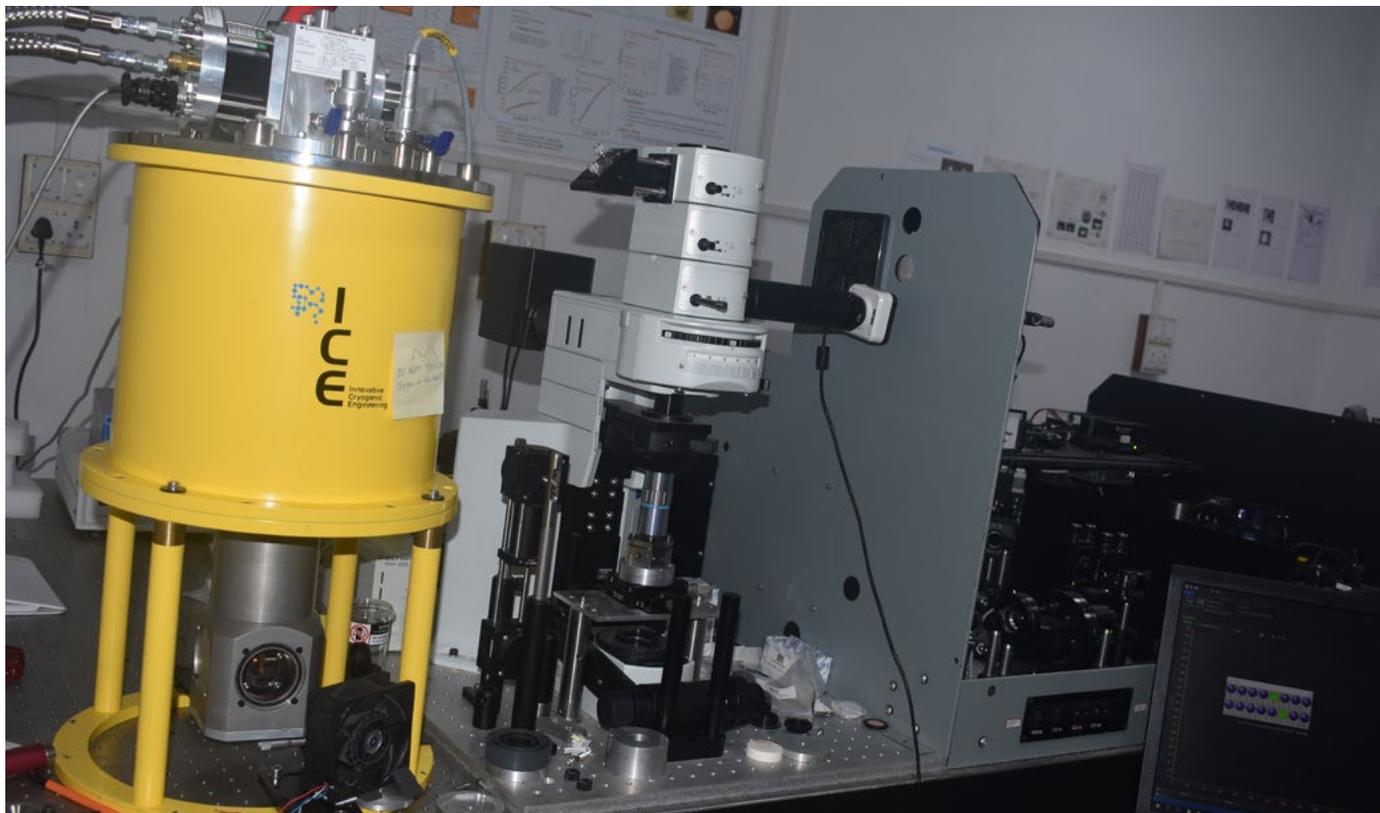
- 18RS088 Archana Tripathi  
(Supervisor: Dr. Rituparna Sinha Roy)
- 18RS089 Souradeep Ghosh  
(Supervisor: Dr. Arindam Kundagrami)

### Ph.D. Student (Autumn 2019)

- 19RS007 Asmita Dey  
(Supervisor: Prof. Priyadarsi De)
- 19RS010 Santanu Mal  
(Supervisor: Prof. Sayan Bhattacharyya)



## Centre for Climate and Environmental Studies (CCES)



### Activities and Achievements

Centre for Climate and Environmental Studies (CCES) is one of the youngest Centres of IISER Kolkata and brings together faculty members from Departments of Biological Sciences (DBS), Chemical Sciences (DCS) and Earth Sciences (DES) in order to strengthen collaborative and interdisciplinary research in the areas of Geological and Environmental Sciences with a strong focus on societal relevance including human health. The current themes of research encompass environmental issues such as arsenic and fluoride removal from groundwater, clean energy, microbial intervention for cost effective wastewater treatment, pollutants in environment and effect on human health, climate change and its effects on the environment, hydrology as well as geohazards. Based on the current research themes colleagues in CCES have attracted funding of several interdisciplinary projects. Many of these projects are supported by Ministry of Earth Sciences (MoES), Department of Biotechnology (DBT), Department of Science and Technology (DST), World Wide Fund for Nature-India (WWF-India), The Royal Society UK International Atomic Energy Agency (IAEA), among others. Moreover, CCES has been actively involved in organizing regular lecture series on the broad themes of the Centre as well as organizing workshops and training programs for capacity building nationally and internationally including Water, Water Purification and Sustainability Workshop (WWPS) and International Capacity Building Workshop on Ocean Acidification (ICBWOA). Many of the workshops are supported by different agencies including Council for Scientific and Industrial Research-India (CSIR-India), International Atomic Energy Agency (IAEA) and Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO). Many colleagues in CCES have received recognition and honours which includes Elected Fellow (2019) of the West Bengal Academy of Science and Technology (FWAST), Visiting Professorship of The Earthquake Research Institute (University of Tokyo, Japan), Member of the MHRD Scheme for Transformational and Advanced Research in Sciences (STARS) Committee of Earth Sciences, Two Patents in the area of water purification, Editorial Advisory Board Membership (ACS Applied Biomaterials), Editorial Board Membership (Environmental Research Letters) and Associate Editor (Frontiers in Marine Science) among others. Many young researchers have received numerous awards including best poster awards in different conferences and symposiums such as CAFM-SPD symposium 2020, NEC-2019 conference and NWMC-2019 workshop. Also, a number of young researchers have received prestigious fellowships and awards namely, WARI Internship, Newton-Bhabha Fellowship 2020 and Raman-Charpak Fellowship. Several colleagues in CCES have undertaken extensive outreach activities by delivering lectures in a number of institutions across the country and invited lectures in numerous workshops and conferences. CCES is presently embarking on water testing initiative of shallow and deep tubewells in nearby towns and villages adjacent to the Institute to develop a holistic framework of drinking water quality and implications in terms of human health.

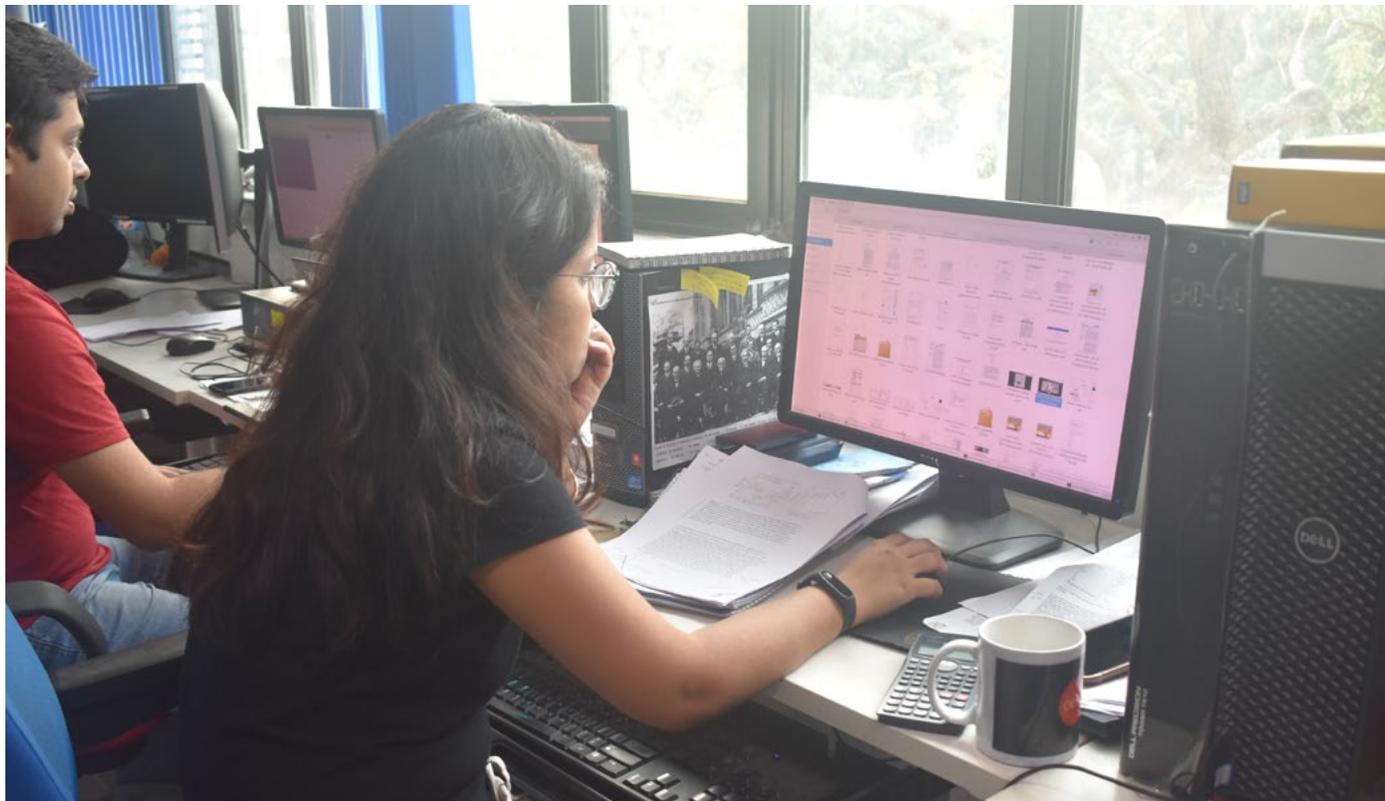


## Facilities developed through CCES

To understand geohazards in the region, Broadband Seismograph System to be established as field monitoring station in coastal West Bengal as one of the instrumentation facilities of CCES. Besides, Total Organic Carbon (TOC) analyzer (multi N/C 2100S, Analytik Jena) is made operational to measure carbon in soil, sediment, water and wastewater. A high resolution spectroscopy facility, Optical Emission Spectroscopy (Thermo iCAP 7400) is also operational as part of CCES.



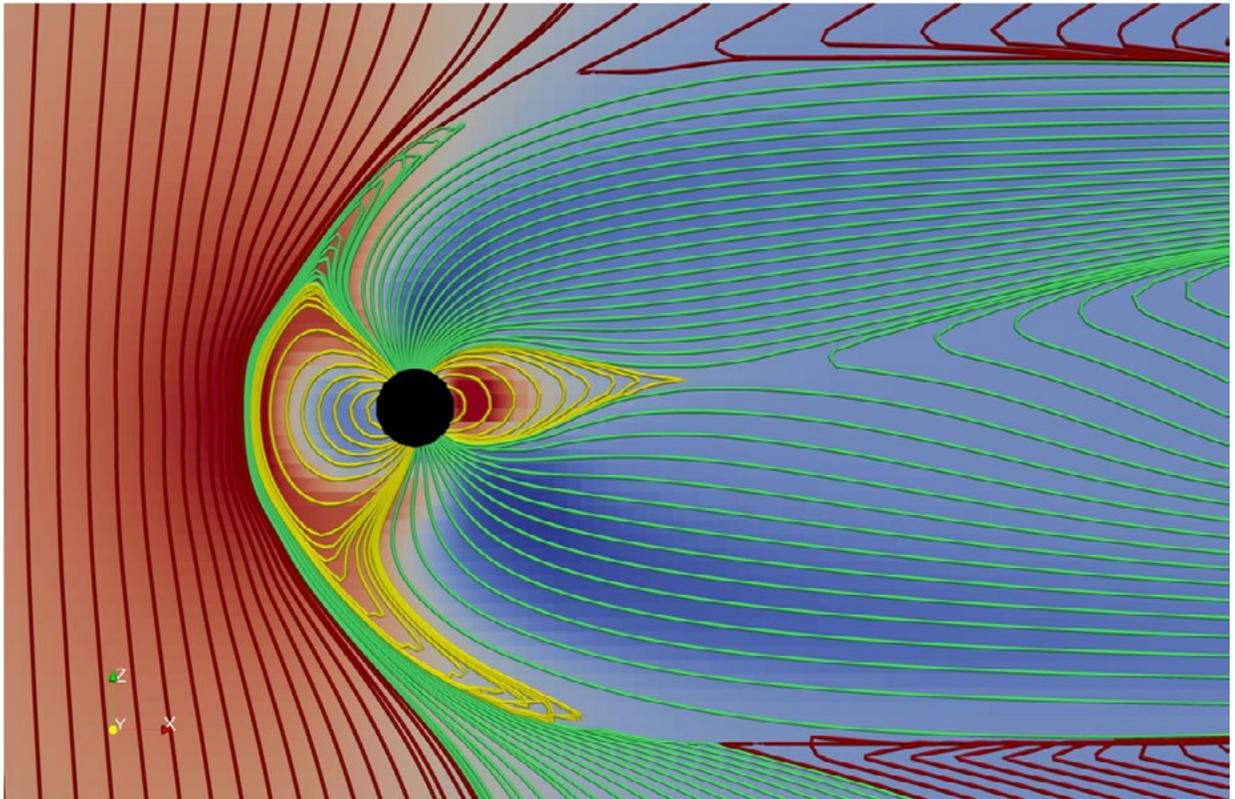
## Center of Excellence in Space Sciences India (CESSI)



### SUMMARY OF ACTIVITIES

The Center of Excellence in Space Sciences India (CESSI) is a multi-institutional Center at IISER Kolkata which was established by the Ministry of Human Resource Development, Government of India. CESSI's aims are to explore the Sun's activity and understand its influence on planetary systems such as the Earth, facilitate the development of national space weather forecasting capabilities, hunt for astrophysical gravitational waves, support national space science initiatives and the LIGO India mega-project, catalyze international and national capacity building activities and pursue public-private partnerships in the space sciences. This year CESSI published 44 peer-reviewed research papers, 2 non-peer reviewed research notes, and 5 popular science articles. The high quality of our students' research activities were recognized in the community by multiple awards and recognitions at national and international forums this year. Highlights of our 2019-2020 activities follow.

## RESEARCH HIGHLIGHTS



*Capion: A 3D global magnetohydrodynamic simulation of the interaction of the solar plasma wind with the Earth's magnetosphere performed with CESSI's Star-Planet Interaction model illuminates how the solar plasma wind structures the Earth's magnetosphere with the formation of a bow shock in the day-side and a magnetotail in the night-side. Earth is depicted by the solid black circle.*

One of the major goals of CESSI is to facilitate IISER Kolkata's involvement in the international LIGO collaboration. CESSI personnel play critical roles in this collaboration in devising methodologies for gravitational wave data analysis and in testing Einstein's general theory of relativity. This year, among the many contributions in this domain, two stand out. The first, published in the *Physical Review Letters*, utilized the LIGO discovered merger of a binary neutron star system to extract bounds on modified dispersion of gravitational waves, effects of large extra dimensions, and polarization content in the waves to conclude that these constraints are explained well by general relativity. The second, published in the *Astrophysical Journal Letters*, presented the first measurement of the Hubble's constant based on a dark siren – namely a binary black hole merger event. The Hubble's constant is a fundamental parameter in cosmology that measures how fast the Universe is expanding at different distances from the observer. This work highlights the exciting new opportunities opened up by multi-messenger astronomy – wherein, gravitational wave observations were combined with photometric redshift measurements from the Dark Energy Survey to provide an independent measurement of the Hubble's constant.

CESSI personnel were involved in a second successful prediction of the Sun's corona for the 2 July 2019 solar eclipse – which provides an opportunity for testing computational models of the magnetic field structure of the solar outer atmosphere. This study, published in the *Astrophysical Journal*, is significant because a methodology for forward modelling the polarization characteristics of the solar corona was presented. This would be useful in interpreting coronal magnetometry-based inferences of the Sun's coronal magnetic field from India's Aditya-L1 solar mission – scheduled for launch next year. Another significant development this year was the first publication from the Star-Planet Interaction Model developed at CESSI in the *Astrophysical Journal* – making CESSI one of the few groups in the world with the capability to simulate the interaction of stellar magnetized winds with planetary atmospheres, with or without a protective magnetosphere. This model enables characterization of the space environment of satellites in the vicinity of solar system planets, atmospheric mass loss and seeding of interplanetary ions in the atmospheres of planets and exoplanets – which have critical consequences for habitability.

## CESSI OUTREACH AND CAPACITY BUILDING ACTIVITIES



Caption: Prof. Rajesh Nayak and Prof. Tarun Souradeep in the LIGO India demonstration space at the Indian mega-science fair Vigyan Samagam, which was held in Science City, Kolkata in 2019.

CESSI personnel contributed to the organization of the national mega-science fair, Vigyan Samagam, which was held in Science City, Kolkata in the month of November, 2019. The fair, which showcased India's involvement in major international high profile science projects, saw active participation from CESSI faculty and students, particularly in showcasing the LIGO India project in which CESSI is intimately involved. CESSI Promote Science initiative organized a sky watching party this year at the Paschim Banga Bigyan Mancha science fair near campus, in which, students from few local schools and their guardians enthusiastically participated. CESSI students also participated in the 7th Indian National Exhibition and Fair organised by the Bengal Human Resource Development Foundation in 2019. Along with IUCAA, CESSI personnel contributed to the solar eclipse workshop and science outreach that was held at St. Mary's College, Wayanad, Kerala, in conjunction with the 26 December, 2019 annular solar eclipse that was visible across South India. Continuing our string tradition of communicating science through various forums, CESSI faculty and students published 5 popular science articles this year in various national and international forums.

## AWARDS & ACHIEVEMENTS

This was an extraordinary year for CESSI students who received wide recognition for their research activities.

**Award Name:** Parvez Guzdar Memorial Award  
**Awarding Agency:** 3rd National Seminar on Nonlinear and Complex Phenomena  
**Place & Date:** Jadavpur, 18-19 February 2020  
**Awardee:** Arghya Mukherjee (Post Doctoral Fellow)

**Award Name:** K D Abhyankar Best Thesis Presentation Award  
**Awarding Agency:** Astronomical Society of India (ASI)  
**Place & Date:** Tirupati, 13 – 17 February, 2020  
**Awardee:** Avyarthana Ghosh (Graduated in 2019)

**Award Name:** Best Poster Award  
**Awarding Agency:** Astronomical Society of India (ASI)  
**Place & Date:** Tirupati, 13 – 17 February, 2020  
**Awardee:** Sajal Gupta (15MS084)

**Award Name:** Asia Pacific Solar Physics Meeting Best Paper Award  
**Awarding Agency:** Research in Astronomy and Astrophysics Journal  
**Place & Date:** Pune, 3- 7 February 2020  
**Awardee:** Lekshmi B (15RS016)

**Award Name:** Young Scientist Best Paper Award at Asia Pacific Solar Physics Meet  
**Awarding Agency:** Solar Physics Journal by Springer  
**Place & Date:** Pune, 3 - 7 February 2020  
**Awardee:** Sanchita Pal (15RS036)

**Award Name:** Student Travel Grant to Attend Dynamics of the Sun & Stars Workshop  
**Awarding Agency :** High Altitude Observatory, Boulder  
**Place & Date:** Boulder, 24 - 26 September 2019  
**Awardee:** Lekshmi B (15RS016)

**Award Name:** Travel Grant for Frontiers of Optics Conference and Leadership Workshop  
**Awarding Agency:** Optical Society of America (OSA)  
**Place & Date:** Washington D C, September 2019  
**Awardee:** Athira B S (16RS013)

**Award Name:** Travel Grant to Attend the Masterclass in Relativistic Fluid  
**Awarding Agency:** Masterclass in Relativistic Fluid Dynamics  
**Place & Date:** Southampton, 16 - 19 July 2019.  
**Awardee:** Maitraya Bhattacharyya (14IP002)

## Faculty Profile

### Rajesh Kumble Nayak,

IISER Kolkata, Head

**Research Area:** General Theory of Relativity, Gravitational Waves, Computational Modelling and Data Analysis

### Ayan Banerjee,

IISER Kolkata

**Research Area:** Optics, Precision Spectroscopy, Instrumentation

### Dipankar Banerjee,

IIA Bangalore

**Research Area:** Solar Observations, Space Science, Satellite Data Analysis

### Nirmalya Ghosh,

IISER Kolkata

**Research Area:** Optics, Polarimetry, Instrumentation

### Dibyendu Nandi,

IISER Kolkata, PI

**Research Area:** Solar Astrophysics, Space Science, Sun-Earth System Science, Computational Modelling and Data Analysis

### A.N. Ramprakash,

IUCAA Pune

**Research Area:** Astronomical Observations, Instrumentation

### K. Sankarasubramanian,

ISRO Bengaluru

**Research Area:** Solar Observations, Space Science, Instrumentation

### Tarun Souradeep,

IUCAA Pune

**Research Area:** Cosmology, General Theory of Relativity, Gravitational Waves, Computational Modelling and Data Analysis

### Nandita Srivastava,

Udaipur Solar Observatory, PRL

**Research Area:** Solar Observations, Sun-Earth System Science, Satellite Data Analysis

### Prasad Subramanian,

IISER Pune

**Research Area:** Solar Astrophysics, Sun-Earth System Science, Computational Modelling and Data Analysis

### Durgesh Tripathi,

IUCAA Pune

**Research Area:** Solar Observations, Space Science, Computational Data Analysis

### Bhargav Vaidya,

IIT Indore

**Research Area:** Computational Astrophysics, Astrophysical Plasma Flows





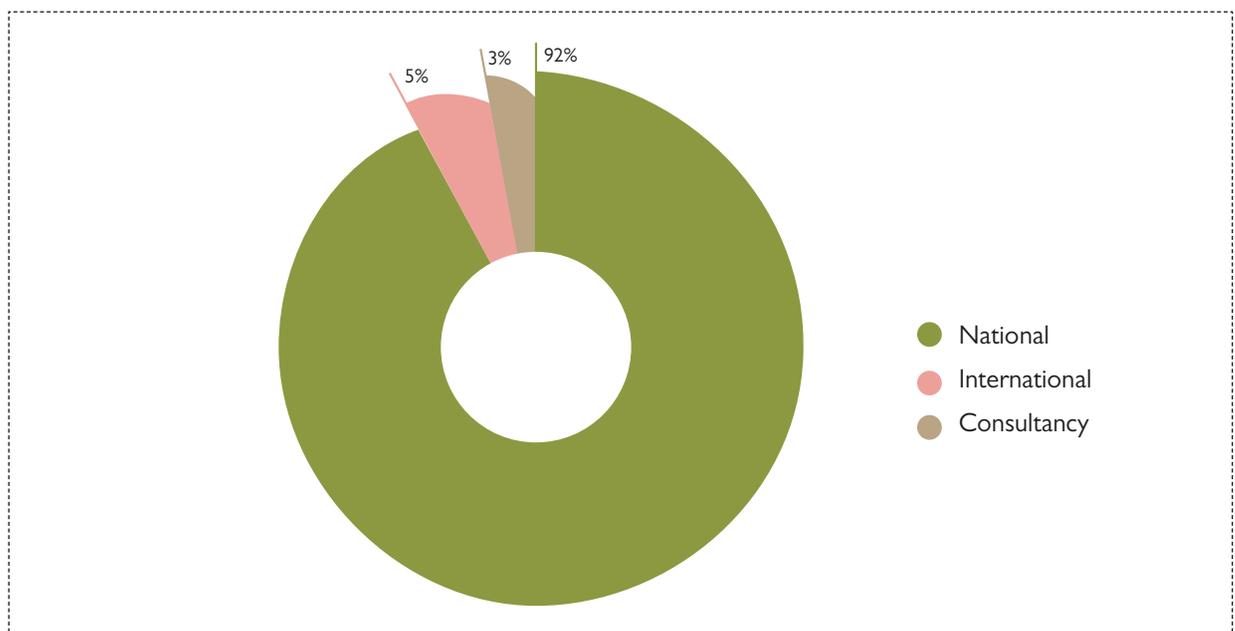
# Research and Development Report

IISER Kolkata aspires to be among the leading Institutes for education and research in the country through its contribution at the highest level of scientific and industrial endeavour. The vision of IISER Kolkata is to provide quality science education and to carry out research in basic and frontier areas of science involving both undergraduate and postgraduate student. The Institute has laid major emphasis on the pursuit of the emerging areas of research, as well as on the translational research for industrial and social benefit.

Research and Development activities at the Institute is growing steadily over the years. Sanction of new R&D projects / schemes during the financial year 2019-20 is ₹ 2130.00 lakhs and total sanctioned amount of R&D projects / schemes executed during the year 2019-20 is ₹ 8544.67 lakhs.

## Overview

During the year 2019-20, the Institute received sanction for 41 new sponsored projects/schemes with a total sanctioned amount of ₹1666.74 lakhs, 5 new faculty fellowship / award projects with a sanctioned amount of ₹ 340.00 lakhs, 4 new faculty consultancy projects with a sanctioned amount of ₹ 123.10 lakhs. As on 31st March 2020, the number of externally funded ongoing projects / schemes has reached to 121 with a total sanctioned amount of ₹6146.50 lakhs, the cumulative count of ongoing faculty fellowship / award projects is 20 with a sanctioned amount of ₹2095.02 lakhs and the number of ongoing consultancy projects has reached to 6 with a total sanctioned amount of ₹179.17 lakhs. The Institute has performed better than the year 2018-19 in respect of receiving new projects / schemes and overall execution of projects / schemes in monetary terms.



Sanctioned amount of ongoing Projects/Schemes funded by National, International entities and Consultancies

## Funding from major sponsoring agencies:

The R&D projects have been sponsored by different Ministries and Departments of the Government of India with major support received from the Ministry of Earth Sciences (MoES), Departments of Science and Technology (DST), Science and Engineering Research Board (SERB), Department of Biotechnology (DBT), Department of Atomic Energy (DAE), Council of Scientific and Industrial Research (CSIR). Indian Council for Medical Research (ICMR), Indian Council for Agricultural Research (ICAR). Extramural projects have been received from departments of Government of Madhya Pradesh and West Bengal. Moreover, the Institute has garnered significant numbers of internationally supported research projects from funding agencies across the globe. Major international funding has been received from the agencies like International Atomic Energy Agency (IAEA), Royal Society UK. In addition, this Institute has also received Extramural Projects from Indo-US Science and Technology Forum (IUSSTF), Indo-German Science and Technology Forum (IGSTF) and DST-RFBR (Department of Science and Technology (GoI)–Russian Foundation of Basic Research).

Consultancy projects have been funded by ADO Additives Mfg. Pvt. Ltd., Akamara Biomedicine Private Limited, CIPLA, Tata Steel, King Abdullah University of Science and Technology, Unilever Industries Pvt. Ltd., etc.

## Multi Institutional Projects/ Schemes:

IISER Kolkata has become a part of the multi-institutional project entitled 'Multi-dimensional Research to Enable Systems Medicine: Acceleration Using a Cluster Approach' funded by Ministry of Science & Technology, Department of Biotechnology DBT, Govt. of India. The major goal of this project is to develop inter-institutional cross-talk on components of Systems Medicine. IISER Kolkata's role is set to develop a state-of-the-art 'Animal Facility' in our campus towards 'development of shared infrastructure for the generation of basic and translational research'. For this project, an amount of ₹10.46 Crores has been sanctioned to IISER Kolkata for procurement of instruments and laboratory set up.

In addition, Extramural Projects have been received where the Institute will work with Bose Institute Kolkata, Institute of Life Sciences, IIT Guwahati, West Bengal University of Animal and Fishery Sciences and R.G. Kar Medical College & Hospital.

## List of major research projects/schemes sanctioned during the year 2019-20:

The list of major research projects/schemes sanctioned with a sanctioned amount of ₹ 50.00 lakhs and above is as follows.

Project/ Scheme Title	Department/ Centre	Funding Agency	Sanctioned Amount ₹ in lakhs)
Quantum Information Technologies with Photonic Devices	Dept. of Physical Sciences	DST	144.74
Targeted delivery of Lysosomal enzyme using mannose-6 phosphate modifies nanocarriers for treatment of lysosomal storage diseases	Dept. of Chemical Sciences	DST	69.82
Hierarchical Porous Covalent Organic Nanosheets and Nanosheets Based Hybrid Membranes for Carbon Capture and Separation of CO <sub>2</sub>	Dept. of Chemical Sciences	DST	56.32
Genome-enabled environmental genomics and expression profiling of marine diatoms in a high CO <sub>2</sub> World "Swarnajayanti Fellowship"	Centre for Climate and Environmental Studies (CCES)	DST	174.49
Crustal evolution of the Eastern Madurai Domain of Granulite Terrane of South India: A petrochronological study on granulite-facies rocks from the western part of the domain	Dept. of Earth Sciences	MoES	61.82
Development of New Chemistry for Design and Synthesis of Robust Porous covalent Organic Framework Materials for the Application of Water Desalination and Gas Separations	King Abdullah University of Science and Technology	King Abdullah University of Science and Technology	70.00
Development of 3D Printed Porous Covalent Organic Framework (COF) based Hybrid Foam Like Nano Structures for the Visible Light-driven Watersplitting and Carbon Dioxide Reduction	Dept. of Chemical Sciences	DST	70.11
Catalytic Reduction of CO <sub>2</sub> under Ambient Condition: A Metal-free Approach using Organic Radicals	Dept. of Chemical Sciences	MHRD-STARS	89.79
Ultra sensitive Single Particle Photon Correlation and Ultrafast Dynamics in Doped Perovskite Quantum Dots	Dept. of Chemical Sciences	SERB	62.29
Electron attachment reactions in isolated biomolecules and clusters	Dept. of Physical Sciences	SERB	59.62
Photoredox/Transition-Metal Dual Catalysis: Applications in Visible-Light-Mediated Carbon-Carbon Bond Formations and Asymmetric Transformations	Dept. of Chemical Sciences	SERB	58.96
Polarization Mueller matrix spectroscopy and weak measurements on plasmonic metamaterials	Dept. of Physical Sciences	SERB	59.98
Design and Synthesis of Porous Crystalline Covalent Organic Framework Foams for Micropollutant Removal	Dept. of Chemical Sciences	SERB	89.08

## Centres at IISER Kolkata:

Five inter-disciplinary research centres, namely Centre of Excellence in Space Sciences India (CESSI), National Centre for High Pressure Studies (NCHPS), Centre for Advanced Functional Materials (CAFM), Centre for Climate and Environmental Studies (CCES) and Center for Artificial Intelligence (CFAI) are functioning in Institute. Out of these 5 centres, CESSI is mainly funded by MHRD-FAST, NCHPS is funded by MoES and other 3 centres are funded by the Institute. These centres are instrumental in securing extramural project funds and promoting interdisciplinary research.

## Institute support for research activities:

Institute has supported generously the research activities over the years. This year, apart from funding procurement and establishment of state-of-the-art equipments and research facilities, the Institute has provided fund towards Central Gas and Cryogen (total sanctioned amount ₹100.00 lakhs) Maintenance of Equipment (total sanctioned amount ₹ 210.00 lakhs), Relocation/ Reinstallation expenses (total sanctioned amount ₹15.00 lakhs) etc.

### **GRANT FOR CREATION OF RESEARCH FACILITY:**

This grant has been provided to new faculty members immediately after they join the institute as a start-up grant to enable them to kick start the research activities by establishing in the research facility at the earliest.

### **MATCHING GRANT:**

Matching grants have been provided to faculty members to supplement funding from External Funding Agencies, in case of any shortfall of fund towards procurement of equipments under Non-Recurring Grant. This also helps in encouraging faculty members for securing External Funding.

### **PERFORMANCE GRANT:**

Institute provides grant for 2 years to faculty members who are Swarnajayanti, INSA, IASc, NASI or TWAS Fellows or have received S S Bhatnagar and B M Birla awards. This policy was adopted to encourage faculty members to perform at the highest level and to remain competitive.

Besides these, the Institute has also provided fund to the five departments to enable faculty members in conducting cutting-edge research and teaching.

### **MAJOR RESEARCH FACILITIES:**

Considering the existing NMR facilities are 10 years old, IISER Kolkata has procured a new 500 MHz NMR Spectrometer along with all necessary Softwares, Computers, UPS, Compressor and all standard accessories. The 500 MHz high resolution 2 Channel FT-NMR Spectrometer has been supplied and installed in the existing NMR Room located at J.C. Bose Research Complex. There are two broadband channels RF systems for  $^1\text{H}$ ,  $^{13}\text{C}$ ,  $^{15}\text{N}$ ,  $^{31}\text{P}$ ,  $^{19}\text{F}$  and other active nuclei with automatic high performance gradient shimming for 1D and 2D along with a lock, spin and insert/eject and appropriate amplifiers/preamplifiers for each channel for observation or decoupling of  $^1\text{H}$  or  $^{19}\text{F}$  (at least 80 W) and in the range  $^{31}\text{P}$  to  $^{15}\text{N}$  (at least 450 W)/ $^{109}\text{Ag}$  for routine  $^1\text{H}$  detected HSQC/HMBC experiments. The Spectrometer has multinuclear Z-gradient based broadband probe (5 mm) with automatic tuning and matching facility for observation of  $^1\text{H}$  nuclei with  $^{19}\text{F}$  decoupling or  $^{19}\text{F}$  observed with  $^1\text{H}$  decoupling and for observation of nuclei in the range of  $^{31}\text{P}$  Components for both High (+150 °C) and Low (-150 °C) temperature.

The Spectrometer will act as Central Facility and cater to the needs of all the concerned faculty members and students across all departments. The addition of this new equipment is expected to enhance the research capabilities. Also, being a unique facility in this region, this will cater to the need of the other local academic institutions and universities.



*Advance Neo 500 MHz Spectrometer at IISER Kolkata*

Some of the major equipments added or about to be added (Purchase Orders issued) from Institute and project funds are:

- Single Crystal Diffractometer System.
- Four Port Glove Box
- Miniseq System.
- Optical Microscope and Accessories for Optical Tweezers System.
- Steady State Fluorescence Spectrometer with associated accessories.

## Intellectual Property (IP) Protection Activities

Till 31st March 2020, total 13 numbers of Patents have been filed and the details are given below.

Sl. No	Patent filed by	Department/ Centre	Title of Patent	Patent Application No
1	Prof. Swadhin K Mandal	Dept. of Chemical Sciences	METHOD OF SYNTHESIS MOLECULES USING CATALYST AND COMPOSITES THEREOF	463/KOL/2013
2	Prof. Swadhin K Mandal	Dept. of Chemical Sciences	METHOD OF SYNTHESIS AND COMPOSITE THEREOF	464/KOL/2013
3	Dr. Sanjio S Zade	Dept. of Chemical Sciences	METAL-ORGANIC COMPLEXES FOR EFFICIENT FIELD EFFECT TRANSISTORS Revised Name: METAL-ORGANIC COMPLEX, DEVICE AND METHOD THEROF	1066/KOL/2013
4	Prof. Raja Shunmugam	Dept. of Chemical Sciences	SENSOR AND METHOD THEREOF Revised Name : SENSOR AND METHOD THEREOF	PCT/IB2014/066077
5	Prof. Raja Shunmugam	Dept. of Chemical Sciences	MOLECULE, AND CADMIUM SENSOR AND METHOD THEREOF	219/KOL/2014
6	Prof. Raja Shunmugam	Dept. of Chemical Sciences	SENSOR AND METHOD THEREOF - ARSENIC Revised Name: SENSOR AND METHOD THEREOF	1310/KOL/2013
7	Prof. Debasish Haldar	Dept. of Chemical Sciences	POSS - APPENDED DIPHENYLALANINE: POLLUTION-PROTECTIVE, AND FIRE- RETARDANT HYBRID MOLECULAR MATERIAL	201831011645 (TEMP/E-1/12251 / 2018- KOL)

Sl. No	Patent filed by	Department/ Centre	Title of Patent	Patent Application No
8	Prof. Swadhin K Mandal	Dept. of Chemical Sciences	PROCESS FOR PREPARING METHANOL FROM CARBON DIOXIDE	PCT/IB2017/056698
9	Prof. Swadhin K Mandal	Dept. of Chemical Sciences	CATALYTIC CONVERSION OF CARBON DIOXIDE TO METHANOL	201631037090
10	Prof. Swadhin K Mandal	Dept. of Chemical Sciences	ABNORMAL N-HETEROCYCLIC CARBENE COPPER (I) COMPLEXES, SYNTHESIS AND APPLICATIONS THEREOF	1042/KOL/2013
11	Dr. Soumyajit Roy	Dept. of Chemical Sciences	REDUCTION OF CARBON DIOXIDE COUPLED WITH OXIDATION OF WATER USING CATALYSTSPRODYVIDHI REF.SRK.0016.IN	530/KOL/2015
12	Dr. Rituparna Sinha Roy	Dept. of Biological Sciences	CATIONIC LIPOPEPTIDE BASED NANOSCALE MATERIALS FOR siRNA DELIVERY	201731040460
13	Dr. Rituparna Sinha Roy	Dept. of Biological Sciences	SELF-ASSEMBLED LD-8 PEPTIDES FOR DRUG DELIVERY AND CANCER NANOTHERAPEUTICS	201731046166

## Industry Academia interaction

From its time of inception, faculties of this Institute have pursued Extramural Projects/Consultancies/Schemes from various Non-Government Organizations/Industries like WWF-India, GE Global Research, Bangalore, Gunnebo India Private Limited, Unilever, Invictus Oncology, CDA-ICZMP, Hi-Media, Stone India Limited, WJ Décor, ADO Additives Mfg. Pvt. Ltd., Tata Steel etc. Apart from the projects that are being pursued in collaboration or being sponsored by Industries, many fundamental grant-in-aid projects also have strong translational components and this is reflected in the healthy list of patents for the year 2019-2020. This is also helping in establishing a more conducive environment for an Industry-Academia interaction, which will be the catalyst for the implementation of future translational research.

IISER Kolkata recently initiated the process of setting-up of an incubation to strongly encourage faculty and student members of the Institute to do translational research. This would give them an right platform to pursue translational research. RISE (Research Innovation and Scientific Entrepreneurship) Foundation IISER, a non-profit non-loss Section 8 company, is all set to commence operation very soon at IISER Kolkata. The renovation design has been completed and the renovation work at Prefab-I will commence shortly.

Agreements/ Memorandum of Understandings (MoU) have been signed with prominent Industrial entities which will be beneficial for research fraternity of the Institute as well as will strengthen the research infrastructure of the Institute. In this year, Agreements/MoUs have signed with various prominent Industrial entities like Gas Authority of India Limited, Tata Steel Limited, Cipla Limited, Tata Medical Center to name a few.

## Sponsored Research

Department/ Centre	Total Sanctioned Amount (₹)
Department of Biological Sciences	28,87,26,763.00
Department of Chemical Sciences	31,40,26,599.00
Department of Earth Sciences	8,53,69,329.00
Department of Mathematics and Statistics	3,51,23,246.00
Department of Physical Sciences	7,10,27,636.00
Centre for Advanced Functional Materials (CAFM)	1,48,52,720.00
Centre for Climate and Environmental Studies (CCES)	4,53,40,820.00
<b>Total (₹)</b>	<b>85,44,67,113.00</b>

## Department of Biological Sciences

### Project Funded by National Agencies:

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (₹)
1.	Studying the mechanism of host adaptation by <i>Campylobacter jejuni</i> and developing strategies to control enteric commensalism in chicken	Dr. Amirul Islam Mallick	DBT	13-02-2018 to 12-02-2021	33,72,400.00
2.	Social tendencies of Free- Ranging dogs in different human habitats – Testing the domestication Hypothesis	Dr. Anindita Bhadra	SERB	30-03-2017 to 29-03-2020	40,68,600.00
3.	Fish community structure and patterns of diversity along impacted and un-impacted streams of Vindhya and Satpura hill ranges, Central India	Dr. Anuradha Bhat	MoEF	30-06-2016 to 29-06-2019	26,41,540.00
4.	Neuroprotective function of CD40 in Mouse Hepatitis Virus induced central nervous system infection	Prof. Jayasri Das Sarma	DBT	13-07-2017 to 12-07-2020	58,00,000.00
5.	Neuroprotective function of CD40 in Mouse Hepatitis Virus induced central nervous system infection	Prof. Jayasri Das Sarma	DBT	13-07-2017 to 12-07-2020	58,00,000.00
6.	Efficacy of umbilical cord- derived mesenchymal stem cells under ischemia-like physiological stress conditions	Dr. Malancha Ta	SERB	20-10-2017 to 19-10-2020	44,88,010.00
7.	Investigating the role of Insulin signaling in collective cell movement using the model of Border cell Migration In <i>Drosophila oogenesis</i>	Dr. Mohit Prasad	SERB	22-03-2017 to 21-03-2020	50,22,000.00
8.	Understanding the Role of Regulatory particle non-ATPase 3 (Rpn3) in collective cell migration: in vivo studies using border cells in <i>Drosophila oogenesis</i>	Dr. Mohit Prasad	DBT	03-01-2018 to 02-01-2021	44,24,000.00
9.	Thermal Stability, Temperature Induces Conformational Switching and Self- Assembly in Protein Libraries	Dr. Neelanjana Sengupta	SERB	23-12-2016 to 22-12-2019	79,21,100.00
10.	Studies on the mechanisms of action an essential ribosome-associated bacterial GTPase protein CgtA	Dr. Partha Pratim Datta	SERB	26-07-2016 to 25-07-2019	36,55,800.00
11.	Investigating the Structural and Functional Basis of RNA Binding and Post-transcriptional Regulation of Gene Expression by Annexin A2 in Response to Genotoxic Stress	Dr. Partho Sarothi Ray	SERB	27-09-2017 to 26-09-2020	28,36,000.00
12.	Monitoring Harmful Algal Bloom(HAB) along the coasts of West Bengal	Prof. Punyasloke Bhadury	MoES	23-12-2014 to 22-12-2019	55,00,000.00
13.	Shallow water benthic communities and food- web dynamic: A case for Kakinada Bay and Coastal Andhra Pradesh	Prof. Punyasloke Bhadury	MoES	12-08-2015 to 11-08-2019	15,18,500.00
14.	Potential application of cyanobacteria to reduce bioavailability of arsenic in rice field: a step ahead for safe rice grain	Prof. Punyasloke Bhadury	WBDBT	31-01-2018 to 30-01-2020	24,47,680.00
15.	Assessment on niche specific oxygenic photoautotrophic organisms for evaluation of Bhagirathi-Hooghly river basin water quality: a biotic index based management proposal	Prof. Punyasloke Bhadury	DST	31-03-2018 to 30-03-2020	43,03,800.00
16.	Understanding the Role of myo- Inositol Hexakisphosphate (IP6) in the Regulation of Bruton's Tyrosine Kinase in B- cell Signaling	Dr. Rahul Das	SERB	12-07-2016 to 11-07-2019	48,55,800.00
17.	Harnessing physically diverse nano scale materials for siRNA delivery to overcome cancer Resistance	Dr. Rituparna Sinha Roy	SERB	22-03-2017 to 21-03-2020	46,00,000.00
18.	Engineering improved siRNA based combinatorial nanotherapeutics for managing metastasis and adaptive resistance in breast cancer treatment.	Dr. Rituparna Sinha Roy	DBT	23-02-2018 to 22-02-2021	91,59,800.00

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (₹)
19.	Understanding the degradation and loss of primary forest in the Teesta valley of the Sikkim Himalaya: A framework for recovery and management of biodiversity and bio resources	Dr. Robert John Chandran	NMHS	24-05-2016 to 23-05-2019	23,11,200.00
20.	Life -history constraints in grassland plant species of the eastern terai in India: Are trade-offs associated with competition, growth and defense important for community Structure?"	Dr. Robert John Chandran	SERB	30-03-2019 To 29-03-2022	35,60,577.00
21.	Population and species survival assessment of red panda ( <i>Ailurus fulgens</i> ) in Singhalila National Park, West Bengal: potential trajectory following re-stocking of the population under the captive breeding programme	Dr. Robert John Chandran	WBZA	22-01-2019 to 21.01.2020	23,37,000.00
22.	Biochemical and functional characterization of alpha carbonic anhydrase from <i>Leishmania major</i>	Dr. Rupak Datta	DBT	08-06-2017 to 07-06-2020	40,13,000.00
23.	Molecular characterization of leishmania major bicarbonate transporter and studying its role in parasite physiology	Dr. Rupak Datta	SERB	11-10-2018 to 10-10-2021	26,90,000.00
24.	Investigation of autophagosome-lysosome fusion defect in a <i>Drosophila</i> model of MPS VII to identify potential drug targets and druggable molecules	Dr. Rupak Datta	MHRD-STARS	05-02-2020 to 04-02-2023	49,58,000.00
25.	Characterization and engineering of enzymes to reduce biomass recalcitrance	Dr. Supratim Datta	SERB	24-03-2017 to 23-03-2020	52,96,800.00
26.	Biochemical and functional characterization of two forms of <i>Leishmania major</i> and their role in infectivity of the parasite	Dr. Sankar Maiti	DBT	20-04-2018 to 19-04-2021	44,45,520.00
27.	Actin Cytoskeleton Mediated Regulation of Golgi Architecture and Vesicular Trafficking by trans-Golgi Associated Protein nPIST	Dr. Sankar Maiti	MHRD-STARS	05-02-2020 to 04-02-2023	45,09,000.00
28.	Functional Characterization of the Novel Actin-Interacting Protein Kaptin and Its Regulation of Cytoskeleton Dynamics in Neurons	Dr. Sankar Maiti	SERB	19-02-2020 to 18-02-2023	27,22,500.00
29.	Decision making in the context of relocation in an Indian ant: Small brains and big feats?	Prof. Sumana Annagiri	SERB	19-12-2018 to 18-12-2021	43,87,800.00
30.	The Development and implementation of sensors and treatment technologies for fresh water systems in India	Prof. Tapas K. Sengupta	DST	28-03-2018 to 27-03-2021	33,73,300.00
31.	Developing an in vitro neural cell-culture model to understand the mechanism of neuronal cell death in Systemic Lupus Erythematosus SLE	Prof. Jayasri Das Sarma	DBT	05-06-2018 To 04-06-2021	39,82,100.00
32.	Impaired Quality Control of Connexin43 and Decreased Astrocyte Gap Junctional Communication in a Mouse Hepatitis Virus Induced Model of Human Neurological Disease: Multiple Sclerosis	Prof. Jayasri Das Sarma	CSIR	04-11-2019 To 03-09-2021	14,47,833.00
33.	Deciphering the complex cross-talk between micro-RNAs, competitive endogenous RNAs and RNA binding proteins and its effect on turnover/translation to target mRNAs in human breast cancer	Dr. Kamalika Sen	DST	01-11-2019 To 31-10-2022	36,60,200.00
34.	Theoretical biophysics of molecular competition in gene expressions	Dr. Dipjyoti Das	SERB	22-11-2019 To 21-11-2021	28,95,816.00
35.	Identification of novel interacting partners of Bromodomain and PHD Finger (BRPF) proteins and investigating their role in various types of cancer	Dr. Babu Sudhamalla	SERB	28-11-2019 To 27-11-2021	32,78,000.00
36.	Unravelling the role of LIGHT-RESPONSEBRIC-A BRACK/TRAMTRACK/ BROAD (LRB) E3 ubiquitin ligases in temperature-mediated regulation of growth and reproduction in <i>Arabidopsis thaliana</i>	Dr. Sreeramaiah N. Gangappa	SERB	20-11-2019 To 19-11-2021	27,37,366.00
37.	Diffusion of Embedded Proteins in Cell Membranes: A Theoretical Framework to Guide Computer Simulations	Dr. Neelanjana Sengupta	SERB	17-02-2020 To 16-02-2023	6,60,000.00

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (₹)
38.	Role of Membrane Fluctuations and Cell Mechanics in myogenesis	Dr. Bidisha Sinha	SERB	06-03-2020 To 05-03-2023	40,72,319.00
38.	Investigating the role of anti-inflammatory drugs on migrating border cell in Drosophila oogenesis: an excellent model for studying tumor metastasis	Dr. Mohit Prasad	MHRD-STARS	24-02-2020 to 23-02-2023	49,91,000.00

### System Medicine Cluster (SyMeC):

Sl. No.	Title	Sponsoring Agency/ Department	Duration	Sanctioned Amount (₹)
1.	"Multi-dimensional Research to Enable System Medicine: Accelerating using a Cluster Approach' at Kalyani, West Bengal" (SyMeC)	DBT Department of Biological Sciences	04-04-2017 to 03-04-2021	10,45,65,000.00

### Project Funded by National Agencies transferred from other Institute:

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (₹)
1.	Mechanistic Studies on Trafficking of human copper ATPase ATP7B	Dr. Arnab Gupta	SERB	12-08-2016 to 11-08-2019	38,72,000.00

### Project Funded by International Agencies:

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (₹)
1.	Nitrogen Pollution in Large River System: A Case Study in the River Ganga, India	Prof. Punyasloke Bhadury (Co-PI: Prof. Prasanta Sanyal)	IAEA (International Atomic Energy Agency)	15-04-2016 to 14-04-2019	2,90,710.00

### Project under Fellowships/ Awards:

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (₹)
1.	Ramalingaswami Fellowship	Dr. Rahul Das	DBT	25-05-2016 To 24-05-2021	32,50,000.00
2.	Novel regulatory mechanisms of human copper transporters ATP7B and CTR1	Dr. Arnab Gupta	WT DBT	01-05-2017 to 30-04-2022	32,50,000.00
3.	Role of Connexin-47 in axon-myelin interaction during virus-induced demyelination of the central nervous system	Dr. Mahua Maulik	WT DBT	01-01-2019 to 31-12-2023	1,70,18,602.00
4.	Computational modeling of collective cell motion to explore its mechanical features and roles in development	Dr. Dipjyoti Das	DBT	01-07-2019 to 30-06-2024	42,50,000.00
5.	Unravelling the mechanisms of temperature-mediated regulation of growth and development in plants	Dr. Sreeramaiah N. Gangappa	DBT	01-08-2019 to 31-07-2024	42,50,000.00
6.	Profiling of bromodomain specific interacting partners using unnatural amino acid mutagenesis	Dr. Babu Sudhamalla	DBT	01-07-2019 to 30-06-2024	42,50,000.00

## Department of Chemical Sciences

### Project Funded by National Agencies:

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (₹)
1.	Metal complexes of $\beta$ -Lactams: Investigation of the combination of cholesterol depletion and DNA cross-linking to develop new anticancer agents	Prof. Arindam Mukherjee	CSIR	21-05-2018 to 20-05-2021	8,75,000.00
2.	Metal complexes of ligands designed to act as antiangiogenic and antimetastatic agents against cancer: Synthesis, characterization, stability and cytotoxicity studies	Prof. Arindam Mukherjee	SERB	21-05-2018 to 20-05-2021	41,80,000.00
3.	Development of First- Row- Transition Metal Catalysts for Catalytic Asymmetric Reductive Fictionalization Reactions	Dr. Biplab Maji	SERB	10-03-2017 to 09-03-2020	28,69,000.00
4.	Synthesis of the oligosaccharides related to the o-antigens from E. coli O74, O145 and O156 with scope for Futher Glycol-cunjugates and vaccine designing	Prof. Balaram Mukhopadhyay	SERB	19-12-2018 to 18-12-2021	37,34,500.00
5.	Stabilizing Sensitive Organic and Catalysts in Solid State by Crystal Engineering Approach	Prof. C. Malla Reddy	SERB	24-09-2018 To 23-09-2021	42,90,000.00
6.	Rational development of regioselective difunctionalizations of arenes using carboxylates as deciduous groups under Indo-Germany Joint project	Prof. Debasis Koley	DST (International Bilateral Cooperation Division)	30-10-2017 to 29-10-2020	30,49,000.00
7.	Self-Propagating Minimal Catalysts: Functional Amyloid Nanostructures for Chemical Evolution	Dr. Dibyendu Das	DST-Nanomission	12-12-2017 to 11-12-2020	52,97,560.00
8.	Dissipative Microphases Regulated by Emergence of Catalytic Behaviour in Supramolecular Peptide Assemblies	Dr. Dibyendu Das	SERB	10-12-2018 To 09-12-2021	49,06,704.00
9.	Synthesis of Functionalized Lipids and Exploration of Proteins- Lipid Cross talk during Flavivirus Infection	Dr. Pradip Kumar Tarafdar	SERB	10-03-2017 to 09-03-2020	46,14,000.00
10.	Study on Photoinduced Electron Transfer Between Pristine and Cyclodextrin Modified Carbon Dots and DNA Duplex	Prof. Pradipta Purkayastha	CSIR	01-05-2018 To 30-04-2021	5,83,333.00
11.	Synthesis, Photo physics and Ultrafast fluorecence dynamics of Fluorescent Protein Chromophore Analogues	Prof. Prasun Kumar Mandal	CSIR	06-07-2016 to 05-07-2019	16,96,000.00
12.	Polymerization induced Nanostructure materials from fatty acid based renewable resources	Prof. Priyadarsi De	CSIR	24-02-2017 to 23-02-2020	21,46,000.00
13.	Bile Acid Containing Amino Acid Based Cationic Polymeric Architectures For Enhanced Actin Polymerization	Prof. Priyadarsi De	SERB	13-03-2018 to 12-03-2021	57,19,560.00
14.	Well- defined Amphiphilic Block Copolymers for Pharmaceutical Applications under Indo-Belarus joint project	Prof. Priyadarsi De	DST (International Division)	24-03-2017 to 23-03-2020	19,03,500.00
15.	Light driven switching of acidity and control of catalytic activity	Prof. Subhajit Bandyopadhyay	SERB	16-01-2019 to 15-01-2021	44,66,704.00
16.	Development of a smartphone app for low cost in field monitoring of water quality via colour and turbidity analysis	Prof. Subhajit Bandyopadhyay	MHRD	22-01-2018 to 21-01-2021	34,84,800.00
17.	Transition Metal Catalyzed Transfer Hydrogenation and Metal- Organo Co- operative Catalysis: Versatile Routes to Valuable Molecular Scaffolds	Dr. Suman De Sarkar	SERB	14-07-2016 to 13-07-2019	32,40,000.00
18.	Design of Host-Guest Supramolecular Polymers in Aqueous Media: Adaptive Materials with self-healing and Stimuli-responsive Properties	Dr. Supratim Banerjee	SERB	05-10-2017 to 04-10-2020	51,37,000.00

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (₹)
19.	Catalytic Asymmetric Fluorination Trifluoromethylation by C-H Activation	Dr. Sureshkumar Devarajulu	SERB	28-09-2017 to 27-09-2020	37,92,000.00
20.	Boron and Gadolinium Nanoparticles for Cancer Diagnosis and Therapy	Prof. Swadhin K. Mandal	DST-BRICS	21-03-2018 to 20-03-2021	36,13,712.00
21.	Development of Layered transition metal dichalcogenides for efficient energy storage: Synthesis and supercapacitor applications	Prof. Venkataramanan Mahalingam	DST	08-02-2018 to 07-02-2021	61,46,800.00
22.	Development of Fe-Complex for catalytic C-H Bond Hydroxylation in Natural products using only O <sub>2</sub> as the oxidant	Dr. Sayam Sen Gupta	SERB	03-11-2018 to 02-11-2021	4,07,000.00
23.	Renewable and Sustainable Energy Storage and Production: Conversion of CO <sub>2</sub> into Formic Acid and Methanol Using Non-Precious Transition Metal Catalysed Hydrogenation	Prof. Sourav Pal	SERB	26-03-2019 to 25-03-2022	2,32,39,600.00
24.	Studies on method to slow down the excited state dynamics of metal nanoclusters to enhance fluorescence quantum yield	Prof. Pradipta Purkayastha	SERB	30-03-2019 to 29-03-2022	29,18,695.00
25.	Thiophene-based conjugated porous polymer thin films	Prof. Sanjio Zade	SERB	16-05-2019 to 15-05-2022	30,84,450.00
26.	Targeted delivery of Lysosomal enzyme using mannose-6 phosphate modifies nanocarriers for treatment of lysosomal storage diseases	Dr. Sayam Sen gupta	DST	29-06-2019 to 28-06-2022	69,82,710.00
27.	Information theoretic measures and complexity under free and confinement situations within DFT: some model and many electron system	Dr. Amlan K Roy	BRNS DAE	11-07-2019 to 10-07-2022	17,87,850.00
28.	Targeting Alzheimer's selective detection with GMI oligosaccharide decorated porphyrin dendrimers	Dr. Rituparna Das	DST	01-10-2019 to 30-09-2022	37,05,200.00
29.	Hierarchical Porous Covalent Organic Nanosheets and Nanosheets Based Hybrid Membranes for Carbon Capture and Separation of CO <sub>2</sub>	Dr. Rahul Banerjee	DST	15-10-2019 to 14-10-2022	56,32,000.00
30.	Development of 3D Printed Porous Covalent Organic Framework (COF) based Hybrid Foam Like Nano Structures for the Visible Light-driven Watersplitting and Carbon Dioxide Reduction	Dr. Rahul Banerjee	DST	30-12-2019 to 29-12-2022	70,11,792.00
31.	Molecular calcium hydrides supported by indenyl and fluorenyl ligands with a pendant N-heterocyclic donor for the olefin hydrogenation catalysis	Dr. Debabrata Mukherjee	SERB	01-09-2019 to 31-10-2021	29,81,000.00
32.	Computational investigations of transition-metal catalyzed Chan-Lam coupling and other relevant stereoselective C-N bond formation reactions	Dr. Debasis Koley	SERB	06-02-2020 to 05-02-2023	33,22,000.00
33.	Design of appropriate DFT method to mimic pressure effect on atoms and molecules confined in various environment	Dr. Amlan Kusum Roy	SERB	06-02-2020 to 05-02-2023	35,05,390.00
34.	Catalytic Reduction of CO <sub>2</sub> under Ambient Condition: A Metal-free Approach using Organic Radicals	Prof. Swadhin K. Mandal	MHRD-STARS	05-02-2020 to 04-02-2023	89,79,000.00
35.	Fluorometric polymeric sensor for speedy formalin detection in commercial fishes	Prof. Priyadarsi De	MHRD-STARS	13-02-2020 to 12-02-2023	49,73,000.00
36.	Ultra sensitive Single Particle Photon Correlation and Ultrafast Dynamics in Doped Perovskite Quantum Dots	Prof. Prasun K. Mandal	SERB	11-02-2020 to 10-02-2023	62,29,695.00
37.	Photoredox/Transition-Metal Dual Catalysis: Applications in Visible-Light-Mediated Carbon-Carbon Bond Formations and Asymmetric Transformations	Dr. Biplab Maji	SERB	17-02-2020 to 16-02-2023	58,96,000.00

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (₹)
38.	Information entropy in free and confined non-central potentials	Dr. Amlan Kusum Roy	SERB	19-02-2020 to 18-02-2023	6,60,000.00
39.	Design and Synthesis of Porous Crystalline Covalent Organic Framework Foams for Micropollutant Removal	Dr. Rahul Banerjee	SERB	30-03-2020 to 29-03-2023	89,08,590.00

### Project Funded by International Agencies:

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (₹)
1.	Roll-to-roll printed electronic labels for temperature, humidity and tampering detections	Dr. Debansu Chaudhuri	Indo-German	15-03-2019 to 14-03-2022	1,60,60,320.00
2.	Engineering Applications of Designer Nano Particle Assembles	Dr. Sayam Sen Gupta	IUSTTF	15-04-2018 to 14-04-2020	40,46,599.00
3.	Silicon Valley	Prof. Sourav Pal	Silicon Valley Community Foundation	03-07-2019 to 02-07-2022	6,80,506.00

### Project under Fellowships/ Awards:

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (₹)
1.	Inspire Faculty Award	Dr. Biplab Maji	DST	16-08-2016 to 15-08-2021	35,00,000.00
2.	Swarnajayanti Fellowship	Prof. C. Malla Reddy	SERB	02-03-2016 to 01-03-2021	2,41,21,200.00
3.	Inspire Faculty Award	Dr. Pradip Kumar Tarafdar	DST	25-08-2014 to 24-08-2019	86,27,428.00
4.	Interfacial crystallization of colvent organic frameworks and colavent organic frmaework membranes with ultrahigh surface area for molecular separation and methane storage	Dr. Rahul Banerjee	SERB	16-08-2018 to 15-08-2023	1,92,00,000.00
5.	Ramanujan Fellowship	Dr. Sureshkumar Devarajulu	DST	08-02-2016 to 07-02-2021	89,00,000.00
6.	Designing liposomal drug/gene delivery systems for targeted cancer therapy and in vivo dendritic cell targeted DNA vaccination	Dr. Arabinda Chaudhuri	DAE	04-09-2018 to 03-09-2021	51,93,381.00
7.	Ramanujan Fellowship	Dr. Debabrata Mukherjee	SERB	01-03-2018 to 29-02-2024	38,00,000.00

### Fellowships/ Awards transferred from other Institute:

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (₹)
1.	J C Bose Fellowship	Prof. Sourav Pal	SERB	21-07-2008 to 21-07-2023	63,19,996.00

**Consultancy Projects:**

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (₹)
1.	Development of novel stimuli- responsive gel forming polymers as non- aluminum antiperspirant	Prof. Priyadarsi De	Unilever	29-10-2016 to 28-10-2019	39,33,075.00
2.	Development of Norbornene based Polymers as multi-functional materials in the construction application	Prof. Raja Shunmugam	ADO Additives Mfg Pvt. Ltd.	01-07-2015 to 30-06-2016 (Ext.by30-06-2020)	34,92,500.00
3.	Akamara Biomedicine	Prof. Swadhin K. Mandal	Akamara Biomedicine Private Limited	01-06-2019 to 31-05-2021	35,20,500.00
4.	Cipla Consultancy	Prof. C. Malla Reddy	CIPLA	24-06-2019 to 23-06-2020	5,40,000.00
5.	Porous Covalent Organic frameworks with Exceptional Chemical Stability for Co2 Capture	Dr. Rahul Banerjee	Tata Steel	09-10-2019 to 08-10-2020	7,50,000.00
6.	Chloride ion Scavenging macromolecules for waste water treatment	Prof. Raja Shunmugam	Tata Steel	09-10-2019 to 08-10-2020	5,00,000.00
7.	Development of New Chemistry for Design and Synthesis of Robust Porous covalent Organic Framework Materials for the Application of Water Desalination and Gas Separations	Dr. Rahul Banerjee	King Abdullah University of Science and Technology	01-07-2019 to 03-06-2020	70,00,000.00

**Department of Earth Sciences****Project Funded by National Agencies:**

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (₹)
1.	Luminescence Chronology of Pale flood and Aeolian dunes deposit in Kaveri Basin: Implication to Holocene climate reconstruction	Dr. Manoj Kumar Jaiswal	MoES	19-02-2015 to 18-02-2020	96,85,200.00
2.	Tracking pesticide concentration in Urban concrete surface	Dr. Sujata Ray	SERB	28-03-2016 to 27-03-2019	19,00,000.00
3.	Arsenic release and movement from arsenic elevated paddy soil in Bengal Delta region of India during monsoonal flooding	Dr. Manoj Kumar Jaiswal & Dr. Sutapa Bose	MoES	14-03-2016 to 13-03-2019	44,98,000.00
4.	Stability and transport properties of nanopesticides in the soil environment: Understanding the safety of applying nanotechnology to the agricultural sector	Dr. Gopala Krishna Darbha	SERB	18-08-2017 to 17-08-2020	48,46,000.00
5.	Decoding the late Quaternary track of Indian monsoon in the Gangetic plain and its control on the vegetation and fluvial patterns: a multi-proxy approach	Prof. Prasanta Sanyal	SERB	28-01-2019 to 27-01-2022	2,30,16,800.00
6.	The nature of biotic interaction and community structure of marine molluscs as a response to regional environmental triggers in a tropical island ecosystem	Dr. Devapriya Chattopadhyay	SERB	19-03-2019 to 18-03-2022	40,50,400.00
7.	Late Quaternary Geomorphic Evaluation of alluvial fans in Himalayas: Implication to past climate reconstruction and Tectonic activity	Dr. Manoj Kumar Jaiswal	ISRO	29-09-2018 to 28-09-2021	34,51,000.00
8.	Crustal evolution of the Eastern Madurai Domain of Granulite Terrane of South India: A petrochronological study on granulite-facies rocks from the western part of the domain	Dr. Tapabrato Sarkar	MoES	25-10-2019 to 24-10-2023	61,28,320.00

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (₹)
9.	Chemical speciation and airway deposition modeling of bulk and size-segregated aerosols in residential microenvironments from three northeast Indian states: implications for human exposure	Dr. Sayanatan Sarkar	SERB	15-11-2019 to 14-11-2021	29,32,560.00
10	Tracing the impact of Late Cenozoic climatic transitions on the erosion rates of Himalaya	Dr. Sanjay Kumar Mandal	SERB	20-11-2019 to 19-11-2021	29,59,280.00
11.	Seismic Imaging using Inversion Modeling	Dr. Kajaljyoti Borah	SERB	10-02-2020 to 09-02-2023	6,60,000.00

### Project Funded by International Agencies

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (₹)
1.	Application and development of Isotope techniques to evaluate human impact on water balance and nutrient dynamics of Large River Basins	Prof. Prasanta Sanyal	IAEA (International Atomic Energy Agency)	29-05-2014 to 28-05-2018	7,16,836.00
2.	Sustainable water management in urbanised Lower Bengal: novel isotope tracers of the release of heavy metals in the Ganga (Hooghly) River Estuary	Dr. Tarun Kumar Dalai	GCRF	01-02-2019 to 31-07-2019	19,43,510.00

### Project under Fellowships/ Awards

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (₹)
1.	Inspire Faculty Award	Dr. Adrita Choudhuri	DST	23-04-2018 to 22-04-2023	1,09,63,533.00

### Fellowships/ Awards/EMR Project transferred from other Institute/International

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (₹)
1.	Ramanujan Fellowship	Dr. Gopala Krishna Darbha	DST	20-05-2016 to 19-05-2021	89,00,000.00
2.	Origin and evolution of crust in the NE part of the Singhbhum craton: constraints from geochemistry and geochronology of granitoids	Dr. Sukanta dey	MoES	20-08-2015 to 19-08-2019	29,59,200.00
3.	Possible Hadean to Archaean crustal evolution in the Singhbhum craton: an investigation into the detrital zircon archive	Dr. Sukanta dey	SERB	13-09-2017 to 12-09-2020	41,00,200.00

## Department of Mathematics and Statistics

### Project Funded by National Agencies

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (₹)
1.	Tensor-valued wavelet analysis and application to solution of differential equations	Dr. Ratikanta Behera	SERB	07-02-2018 to 06-02-2021	18,74,000.00

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (₹)
2.	On the Equation $(\nabla u)_t = \nabla u = G$ & its Linearization, & Applications to Calculus of Variations	Dr. Saugata Bandyopadhyay	SERB	21-06-2018 to 20-06-2021	6,60,000.00
3.	A Dynamically Adaptive Wavelet Algorithm for Solution of Evolution Equations with Localized Structures	Dr. Ratikanta Behera	SERB	13-06-2018 to 12-06-2021	6,60,000.00
4.	Combinatorial Aspects of Maps Between Homotopy Associative Spaces	Dr. Somnath Basu	SERB	13-06-2018 to 12-06-2021	6,60,000.00
5.	Polynomial convexity of the finite union of Lagrangians in $\mathbb{C}^n$	Dr. Sushil Gorai	SERB	13-06-2018 to 12-06-2021	6,60,000.00
6.	Realization and Classification of Homogeneous Operators via Quotient Modules	Dr. Shibananda Biswas	SERB	13-06-2018 to 12-06-2021	6,60,000.00
7.	Study of Different Spectral Properties of Nonuniform Hypergraphs	Dr. Anirban Banerjee	SERB	13-06-2018 to 12-06-2021	6,60,000.00

### Project under Fellowships/ Awards

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (₹)
1.	Inspire Faculty Award	Dr. Rajib Dutta	DST	23-09-2016 to 22-09-2021	35,00,000.00
2.	Inspire Faculty Award	Dr. Shirshendu Chowdhury	DST	28-04-2015 to 27-04-2020	86,27,428.00
3.	Inspire Faculty Award	Dr. Shibananda Biswas	DST	16-07-2012 To 15-07-2018	86,27,428.00
4.	Inspire Faculty Award	Dr. Soumya Bhattacharyya	DST	04-10-2017 to 03-10-2022	86,27,428.00
5.	Inspire Faculty Award	Dr. Md Ali Zinna	DST	17-01-2017 to 16-01-2022	85,94,390.00

## Department of Physical Sciences

### Project Funded by National Agencies

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (₹)
1.	Studies of Spin Orbit Interaction of Light in Optical Tweezers	Prof. Ayan Banerjee	SERB	06-08-2018 to 05-09-2021	40,97,500.00
2.	Entanglement Dynamics and Quantum Information Processing in Spin Systems	Prof. Chiranjib Mitra	SERB	24-09-2018 to 23-09-2021	49,47,085.00
3.	The Role of polarization observables at LHC/ILC and search for exotic long-lived coloured scalars at LHC	Dr. Ritesh Kumar Singh	SERB	26-10-2018 to 25-10-2021	24,59,600.00

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (₹)
4.	Development of diverse lab-on-a-chip platform for plastic electronics, microcatalysis and biosensing applications using microlithography by directed self-assembly driven by laser induced microbubbles	Prof. Ayan Banerjee	SERB	15-01-2019 to 14-01-2022	1,00,61,704.00
5.	Quantum Information Technologies with Photonic Devices	Prof. Prasanta Panigrahi	DST	24-04-2019 to 23-04-2022	1,44,74,000.00
6.	Effects of Quantum Confinement, correlation and disorder on the light emitting states of semiconductors and other nanostructures studied through low temperature photoluminescence spectroscopy in magnetic fields up to 35 tesla	Dr. Bhavtosh Bansal	SERB	17-05-2019 to 16-05-2022	49,88,896.00
7.	Vortex Lattice in Strongly Correlated unconventional superconductors	Prof. Amit Ghosal	SPARC	13-06-2019 to 12-06-2021	49,13,108.00
8.	Electron attachment reactions in isolated biomolecules and clusters	Dr. Dhananjay Nandi	SERB	11-02-2020 to 10-02-2023	59,62,000.00
9.	Polarization Mueller matrix spectroscopy and weak measurements on plasmonic metamaterials	Dr. Nirmalya Ghosh	SERB	19-02-2020 to 18-02-2023	59,98,243.00
10.	Topological insulators and superconductors	Dr. Sourin Das	SERB	19-02-2020 to 18-02-2023	6,60,000.00
11.	Dynamical signatures of transcriptional noise sources	Dr. Anandamohan Ghosh	SERB	21-02-2020 to 20-02-2023	6,60,000.00

### Project under Fellowships/ Awards

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (₹)
1.	J C Bose Fellowship	Prof. Soumitro Banerjee	SERB	07-01-2016 to 06-01-2021	91,40,000.00
2.	Study of Black hole thermodynamics in modified and quantum theories of gravity	Dr. Bhramar Chatterjee	DST	28-09-2018 To 27-09-2021	24,01,500.00

### Centre for Advanced Functional Materials (CAFM)

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (₹)
1.	Bulk Synthesis & discovery of COF material with remarkable chemical stability for Methane Storage	Dr. Rahul Banerjee	GAIL	26-10-2018 to 25-10-2020	1,18,00,000.00
2.	Effect of Ion Specificity of Nano-Structuring in Ion-containing Polymer Systems Caused by ION Association in Organic and Aqueous Media: Complex Experimental and Theoretical Study	Prof. Priyadarsi de	DST-RFBR	05-02-2019 to 04-02-2021	30,52,720.00

## Centre for Climate and Environmental Studies (CCES)

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (₹)
1.	Role of Himalayan glaciers in the Ganga river system: A study based on stable Isotope.	Prof. Prasanta Sanyal	NCAOR	28-03-2018 to 27-03-2021	46,70,000.00
2.	Monitoring Nitrogen isotopes in precipitation from two urban areas(Delhi and Kolkata in India	Dr. Sayantan Sarkar	IAEA (International Atomic Energy Agency)	25-10-2018 To 24-10-2021	12,34,000.00
3.	Estimation of evaporation loss in domestic water supply and evaluation of urbanization of hydrology: A case study from New delhi,India	Prof. Prasanta Sanyal	IAEA (International Atomic Energy Agency)	29-05-2018 To 28-05-2021	15,50,000.00
4.	Increasing Resilience to Earthquake in North India	Prof. Supriyo Mitra	The Royal Society UK	01-12-2018 To 30-11-2021	56,74,180.00
5.	Monitoring Tiger Habitat Productivity in Sundarbans Biosphere Reserve Using Biological Indicators for Informed Decision Making by Protected Area Mangers	Prof. Punyasloke Bhadury	WWF INDIA	23-04-2019 To 22-04-2020	10,12,000.00
6.	Attenuation Structure of J&K Himalaya Using Coda-Q tomography	Prof. Supriyo Mitra	MoES	26-06-2019 To 25-06-2022	31,41,000.00
7.	Genome-enabled environmental genomics and expression profiling of marine diatoms in a high Co2 World "Swarnajayanti Fellowship"	Prof. Punyasloke Bhadury	DST	15-10-2019 To 14-10-2024	1,74,49,480.00

## Office of Research and Development

### Professor Amitava Das

Professor, Dept. of Chemical Sciences and Dean of Research and Development

### Mr. Biswajit Das,

Deputy Registrar

### Mrs. Mitali Pal,

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### Mr. Nitin Kumar Mall,

Office Assistant (Multi Skill)

### Mr. Soumyendra N. C. Choudhury,

Accountant

### Mr. Soumya Kanti Samanta,

Junior Assistant



# Publications

## Department of Biological Sciences

### Journal Articles

1. Chandan Gorain, Ankita Singh, Sudipta Bhattacharyya, Anirban Kundu, Aritraa Lahiri, and Amirul I. Mallick. 2020. Mucosal delivery of live *Lactococcus lactis* expressing functionally active JlpA antigen induces potent local immune response and prevent enteric colonization of *Campylobacter jejuni* in chickens. *Vaccine*, 2020 Feb 11; 38(7):1630-1642

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2. Ankita Singh, Khairun Nissa Sudipta Bhattacharya and Amirul Mallick (2019). Immunogenicity and protective efficacy of mucosal delivery of recombinant hcp of *Campylobacter jejuni* Type VI secretion system (T6SS) in chickens. *Mol. Immunology*, Volume 111, July 2019, Pages 182-197

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3. Aritraa Lahiri, Shayan Sharif and Amirul I. Mallick. (2019). Intra-gastric delivery of recombinant *Lactococcus lactis* displaying ectodomain of influenza matrix protein 2 (M2e) and neuraminidase (NA) induced focused mucosal and systemic immune responses in chickens. *Molecular Immunology*, Volume 114, October 2019, Pages 497-512

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4. Aruna Pal, Abantika Pal, Amirul I. Mallick, Paresh Nath Chatterjee, Purnendu Biswas (2019). Molecular Characterization of Bu-I and TLR2 gene in Haringhata Black Chicken. *Genomics (ELSEVIER)* doi: <https://doi.org/10.1016/j.ygeno.2019.03.010>

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6. Arunita Banerjee and Anindita Bhadra (2019). The more the merrier: Dogs can assess quantities in food-choice tasks. *Curr Sc.* 117 (6): 1095 – 1100. doi: 10.18520/cs/v117/i6/1095-1100

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7. Lauren Brubaker, Debottam Bhattacharjee, Prayas Ghaste, Daisy Babu, Piuli Shit, Anindita Bhadra, Monique A. R. Udell (2019). The effects of human attentional state on canine gazing behaviour: a comparison of free-ranging, shelter, and pet dogs. *Animal Cognition*. 22 (6): 1129 – 1139. doi:10.1007/s10071-019-01305-x

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8. Debottam Bhattacharjee, Sarab Mandal, Piuli Shit, Mebin G. Varghese, Aayushi Vishnoi and Anindita Bhadra (2020). Free-ranging dogs are capable of utilising complex human pointing cues. *Front. Psychol.*, 10: 2818. doi: 10.3389/fpsyg.2019.02818

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9. Debottam Bhattacharjee, Shubhra Sau and Anindita Bhadra (2020). 'Bolder' together — response to human social cues in groups of free-ranging dogs. *Behaviour*. 157 (3-4): 363-384. doi: 10.1163/1568539X-bja10005

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10. Bhattacharya K. and Annagiri (2019) Characterization of nest architecture of an Indian ant. *Journal of Insect Science*, 19 (6), 1-8.

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12. Deacon, A. E., Ghosh, S. K., Bhat, A., & Magurran, A. E. (2019). Predatory behaviour of female guppies (*Poecilia reticulata*) in a mosquito control context: the importance of social and habitat factors. *Aquatic Invasions*, 14(3), 478-489.

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13. Ghoshal, A., Daniel, D. K., & Bhat, A. (2019). Temporal patterns and sex differences in dyadic interactions in a wild zebrafish population. *Behavioural processes*, 166, 103896.

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26. Manmeet Singh, Abhinoy Kishore, Dibyajyoti Maity, Punnapalli Sunanda, Bankala Krishnarjuna, Sreeparna Vappala, Srinivasarao Raghobhama, Lawrence C. Kenyon, Debnath Pal\*, and Jayasri Das Sarma "A proline insertion-deletion in the spike glycoprotein fusion peptide of mouse hepatitis virus strongly alters neuropathology" *Journal of Biological Chemistry*, May 2019, doi: 10.1074/jbc.RA118.004418
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38. Mukherjee S, Naha S, Bhadury P, Dutta B, Dutta M, Basu S (2020) Emergence of OXA-232-producing hypervirulent *Klebsiella pneumoniae* ST23 causing neonatal sepsis. *Journal of Antimicrobial Chemotherapy* DOI: <https://doi.org/10.1093/jac/dkaa080>
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40. Bhadury P and Sen A (2020) Understanding Impact of seasonal nutrient influx on sedimentary organic carbon and its relationship with *Ammonia* spp. in a coastal lagoon. *Frontiers in Marine Science* DOI: <https://doi.org/10.3389/fmars.2020.00177>
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42. Das, D., S. Banerjee, and R. John. 2019. Predicting the distribution and abundance of invasive plant species in a subtropical woodland-grassland ecosystem in northeastern India. *Plant Ecology* 220:935–950.
43. Rath, S., S. Banerjee, and R. John. 2020. Greater tree community structure complexity in sacred forest compared to reserve forest land tenure systems in eastern India. *Environmental Conservation* 47:52–59.
44. Zhang, H, R. John, K. Liu, W. Qi, W. Long. (2019). Using functional trait diversity patterns to disentangle the processes influencing the recovery of subalpine grasslands following abandonment of agricultural use. *Frontiers in Ecology and Evolution* 7:128. DOI: 10.3389/fevo.2019.00128.
45. Dutta P, Jijumon AS, Mazumder M, Dileep D, Mukhopadhyay AK, Gourinath S and Maiti S. (2019) Presence of actin binding motif in VgrG-I toxin of *Vibrio cholerae* reveals the molecular mechanism of actin cross-linking. *International Journal of Biological Macromolecules* 133:775–785
46. Konar, S; Sinha, S K; Datta, S; Ghorai, P K "Probing the effect of glucose on the activity and stability of a  $\beta$ -glucosidase: An All Atom Molecular Dynamic Simulation Investigation" *ACS Omega*, 2019, 4, 11189–11196 DOI: 10.1021/acsomega.9b00509
47. Sinha, SK; Reddy, K. Prakash; Datta, S "Understanding the glucose tolerance behavior of an archaeon  $\beta$ -glucosidase from *Thermococcus* sp." *Carbohydrate Research*, 2019, 486:107835 DOI: 10.1016/j.carres.2019.107835

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- Sarkar, M.S., Niyogi, R., Hazra, P., & John, R. (2019). *Panna Landscape Corridor Connections: Fine scale assessment of tiger (Panthera tigris) connectivity networks in the Panna landscape, Madhya Pradesh*. Publisher: Madhya Pradesh State Biodiversity Board, Bhopal, India. ISBN: 9788194194811. Pp: 100

## Book Chapters

- Annagiri S. (2019) *Diacamma*. In: Starr C. (eds) *Encyclopedia of Social Insects*. Springer, Cham. [https://doi.org/10.1007/978-3-319-90306-4\\_35-1](https://doi.org/10.1007/978-3-319-90306-4_35-1)
- Mallick A.M. ... Sinha Roy Rituparna (2019) *Emerging Peptide-Based Technologies in Cancer Therapy*. In: Bose K., Chaudhari P. (eds) *Unravelling Cancer Signaling Pathways: A Multidisciplinary Approach*. Springer, Singapore. [https://doi.org/10.1007/978-981-32-9816-3\\_2](https://doi.org/10.1007/978-981-32-9816-3_2)
- Mandal A.K., Mitra A., Das R. (2020) *Sickle Cell Hemoglobin*. In: Hoeger U., Harris J. (eds) *Vertebrate and Invertebrate Respiratory Proteins, Lipoproteins and other Body Fluid Proteins*. *Subcellular Biochemistry*, vol 94. Springer, Cham. [https://doi.org/10.1007/978-3-030-41769-7\\_12](https://doi.org/10.1007/978-3-030-41769-7_12)

## Other Publications

- Anindita Bhadra (2019). Editorial. *GYA Connections*, 7.
- Anindita Bhadra (2019). Have we scientists failed our society? *Confluence*.
- Anindita Bhadra (2019). An African Tale of Two Species. *Resonance*, 24 (5), 547-559.
- Uttam Babu Shrestha and Anindita Bhadra (2019). Science in South Asia, *Science*, 364 (6447), 1211. DOI: 10.1126/science.aay4475
- Anindita Bhadra. Bigyaniraa ki kore bibawrtawn shawmporke nischit holen? An article on Why evolution is true. *Bigyan*, 1st March 2019.
- Anindita Bhadra. Meye taai kamalr PhD aabedawn khaari krechhilen C V Raman! An article on Women in Science. *Anandabazar Patrika Digital*. 8th March 2020. <https://www.anandabazar.com/others/science/international-women-s-day-2020-status-of-women-upgraded-in-stem-in-india-dgtxl-1.1119352#.XmjXMfIKCBI.link>

# Department of Chemical Sciences

## Journal Articles

- Acharya, Sourav; Maji, Moumita; Raturaj; Purkait, Kallol; Gupta, Arnab and Mukherjee, Arindam. 2019, Synthesis, Structure, Stability, and Inhibition of Tubulin Polymerization by Rull-p-Cymene Complexes of Trimethoxyaniline-Based Schiff Bases. *Inorg. Chem.*, 58, 9213-9224.\*
- Adak, Anirban and Mukhopadhyay, Balaram. 2019. "Chemical synthesis of the 4-amino-4,6-dideoxy-D-glucose containing pentasaccharide repeating unit of the O-specific polysaccharide from *Aeromonas hydrophila* strain K691 in the form of its 2-aminoethyl glycoside" *Carbohydr. Res.*, 476, 1-7.
- Adusumalli, N. K. B. Venkata; Koppiseti, V. S. R. M. Heramba; Madhukar, Nikita and Mahalingam, Venkataramanan. 2019, 4-Mercaptobenzoic Acid Capped Tb<sup>3+</sup>-doped CaF<sub>2</sub> Nanocrystals: A Fluorescent Probe for the Detection of Nitroaromatic Pollutants, *Microchim Acta*, 186, 389.
- Afrose, Syed Pavel; Bal, Subhajit; Chatterjee, Ayan; Das, Krishnendu and Das, Dibyendu. 2019. "Designed negative feedback from transiently formed catalytic nanostructures." *Angew. Chem., Int. Ed.* 58, 15783-15787.
- Ahmed, Jasimuddin; Swain, Asim Kumar; Govindarajan, R.; Bhunia, Mrinal and Mandal, Swadhin K. 2019. Transition metal free catalytic terminal alkyne functionalization across the C-X triple bond (X = CH, N): E-Selective dimerization under ambient conditions. *Chem. Commun.*, 55, 13860- 13863.
- Ahmed, Sahnawaz; Chatterjee, Ayan; Das, Krishnendu and Das, Dibyendu. 2019. "Fatty acid based transient nanostructures for temporal regulation of artificial peroxidase activity." *Chem. Sci.*, 10, 7574-7578.
- Anbharasi, L; Rekha, Bhanu; Rahul, R. V; Roy, B; Gunaseelan, M.; Yamini, S; Venkata Adusumalli, N. K. B. Venkata; Sarkar, Debashrita; Mahalingam Venkataramanan and Senthilselvan, Jayaraman, 2020, Tunable Emission and Optical Trapping of Upconverting LiYF<sub>4</sub>:Yb,Er Nanocrystal, *Opt. Laser Technol.*, 126, 106109.
- Arabiani, Mohsin R; K, Bal Raju; Bhunia, Surojit; Teja, Pyla Kranthi; Lodagekar, Anurag; Chavan, Rahul B; Shastri, Nalini R; Reddy, C Malla; Shelat, Pragna and Dave, Divyang. 2019. "Brexipirazole-catechol cocrystal: structure elucidation, excipient compatibility and stability." *CrystEngComm*, 21, 6703-6708.
- Bal, S, Ghosh. C, Ghosh. T, Vijayaraghavan. R, Das.D., (2020), Non-Equilibrium Polymerization of Cross-β Amyloid for Temporal Control of Electronic Properties, *Angew. Chem, Int. Ed.* [doi.org/10.1002/anie.202003721](https://doi.org/10.1002/anie.202003721).
- Bandyopadhyay, A.; Yadav, P.; Sarkar, K.; Bhattacharyya, S. The Destructive Spontaneous Ingression of Tunable Silica Nanosheets through Cancer Cell Membrane. *Chem. Sci.* 2019, 10, 6184-6192.
- Banerjee, Rajashree, Sinha, Riya and Purkayastha, Pradipta, 2019, β-Cyclodextrin encapsulated coumarin 6 on graphene oxide nanosheets: impact on ground-state electron transfer and excited-state energy transfer, *ACS Omega*, 4, 16153.

12. Banerjee, Supratim. 2020. "Room Temperature Phosphorescence from Organic Luminogens in "Non-Crystalline" State" *Supramolecular Chemistry*, DOI: 10.1080/10610278.2020.1730840.

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15. Bera, Madhumita and Mukhopadhyay, Balam. 2020. "Synthesis of the tetrasaccharide repeating unit of the O-antigen from *Pseudomonas putida* BIM B-1100 having rare D-Quip3NAc" *Carbohydr. Res.*, 107955.

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19. Bhattacharya, Biswajit; Das, Susobhan; Lal, Garima; Soni, Saundray Raj; Ghosh, Animesh; Reddy, C Malla and Ghosh, Soumyajit. 2019. "Screening, crystal structures and solubility studies of a series of multidrug salt hydrates and cocrystals of fenamic acids with trimethoprim and sulfamethazine." *Journal of Molecular Structure*, 1199, 127028.

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24. Bhunia, Mrinal; Sahoo, Sumeet Ranjan; Shaw, Bikash Kumar; Pariyar, Anand; Vijaykumar, Gonela; Vaidya, Shefali, Adhikari, Debasish and Mandal, Swadhin K. 2019, Storing redox equivalent in the phenalenyl backbone towards catalytic multi-electron reduction. *Chemical Science*, 10, 7433-7441.

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30. Chakraborty, Mohua; Ghosh, Sourav and Mahalingam, Venkataramanan. 2020, Fe and W doped Bi<sub>2</sub>MoO<sub>6</sub> nanoflakes: Promising material for efficient solar water splitting. *Sustainable Energy Fuels*, 4, 1507.

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31. Chandrashekar, H.; Maji, A.; Halder, G.; Banerjee, S.; Bhattacharyya, S.; Maiti, D. Photocatalyzed Borylation Using Water Soluble Quantum Dots. *Chem. Commun.* 2019, 55, 6201-6204.

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# Centre for Advanced Functional Materials (CAFM)

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32. "Search for Substellar Mass Ultracompact Binaries in Advanced LIGO's Second Observing Run, 2019", B. P. Abbott et al. (LIGO Scientific Collaboration and Virgo Collaboration) (including Nayak, R. K), Physical Review Letters, Volume 123, Issue 16.
33. "All-sky search for continuous gravitational waves from isolated neutron stars using Advanced LIGO O2 data", 2019, B. P. Abbott et al. (LIGO Scientific Collaboration and Virgo Collaboration) (including Nayak, R. K), Physical Review D, Volume 100, Issue 2, id.024004
34. "Binary Black Hole Population Properties Inferred from the First and Second Observing Runs of Advanced LIGO and Advanced Virgo", , 2019, B. P. Abbott et al. (LIGO Scientific Collaboration and Virgo Collaboration) (including Nayak, R. K), The Astrophysical Journal Letters, Volume 882, Series 2, Pages L24.
35. "Search for Gravitational-wave Signals Associated with Gamma-Ray Bursts during the Second Observing Run of Advanced LIGO and Advanced Virgo", 2019, B. P. Abbott et al. (LIGO Scientific Collaboration and Virgo Collaboration) (including Nayak, R. K), The Astrophysical Journal, Volume 886, article id. 75, 15 pp.
36. "Tests of general relativity with the binary black hole signals from the LIGO-Virgo catalog GWTC-1", 2019, B. P. Abbott et al. (LIGO Scientific Collaboration and Virgo Collaboration) (including Nayak, R. K), Physical Review D, Volume 100, Issue 10, id.104036.
37. "Search for gravitational waves from Scorpius X-1 in the second Advanced LIGO observing run with an improved hidden Markov model", 2019, B. P. Abbott et al. (LIGO Scientific Collaboration and Virgo Collaboration) (including Nayak, R. K), Physical Review D, Volume 100, Issue 12, id.122002.
38. "Model comparison from LIGO-Virgo data on GW170817's binary components and consequences for the merger remnant", 2020, B. P. Abbott et al. (LIGO Scientific Collaboration and Virgo Collaboration) (including Nayak, R. K), Classical and Quantum Gravity, Volume 37, Issue 4, id.045006
39. "GW190425: Observation of a Compact Binary Coalescence with Total Mass  $\sim 3.4 M_{\odot}$ ", 2020, B. P. Abbott et al. (LIGO Scientific Collaboration and Virgo Collaboration) (including Nayak, R. K), The Astrophysical Journal Letters, Volume 892, Issue 1, id.L3.
40. "A guide to LIGO-Virgo detector noise and extraction of transient gravitational-wave signals", 2020, B. P. Abbott et al. (LIGO Scientific Collaboration and Virgo Collaboration) (including Nayak, R. K), Classical and Quantum Gravity, Volume 37, Issue 5, id.055002.
41. "A Joint Fermi-GBM and LIGO/Virgo Analysis of Compact Binary Mergers from the First and Second Gravitational-wave Observing Runs", 2020, Hamburg, R et al. (including Nayak, R. K), The Astrophysical Journal, Volume 893, Issue 2, id.100.

## Non-Peer-Reviewed Communications

1. "Prediction of the Sun's Corona for the Total Solar Eclipse on 2019 July 2", 2019, Dash, Soumyaranjan., Bhowmik, Prantika., Nandy, Dibyendu., Research Notes of the American Astronomical Society, Volume 3, Issue 6, article id. 86.
2. "Sunspot Cycle 25 is Brewing: Early Signs Herald its Onset", 2020, Nandy, Dibyendu., Bhatnagar, Aditi., Pal, Sanchita., Research Notes of the AAS, Volume 4, Issue 2, id.30.

## Popular Science Articles

1. "The Hunt for Super Flares from the Sun", Nandy, Dibyendu, The Life of Science, June 2019 [<https://thelifeofscience.com/2019/06/18/the-hunt-for-superflares-from-the-sun/>]
2. "An Indian Contribution to Parker Solar Probe", Nandy, Dibyendu, Anandabazar Patrika Online Newspaper (Bengali) [<https://www.anandabazar.com/others/science/without-an-indian-parker-solar-probe-would-not-have-been-possible-dgtl-1.846036>]
3. "Parker Solar Probe's Journey of Discovery to the Sun", Nandy, Dibyendu, Deccan Herald Newspaper (Science and Environment Section), December 14, 2019 [<https://www.deccanherald.com/science-and-environment/parker-solar-probe-s-journey-of-discovery-to-the-sun-785252.html>]
4. "Hemispherical Asymmetry in the Solar Meridional Flow", Lekshmi, B., Nandy, Dibyendu, & Antia, H.M. 2019, NASA HMI Science Nuggets, Article Number 133, [<http://hmi.stanford.edu/hminuggets/?p=3125>]
5. "Comparison between the magnetic properties of magnetic clouds and those of associated coronal flux ropes", Sanchita Pal, May 2019, VarSITI Newsletter, Volume 21, [[http://newserver.stil.bas.bg/var siti/newsL/VarSITI\\_Newsletter\\_Vol21.pdf](http://newserver.stil.bas.bg/var siti/newsL/VarSITI_Newsletter_Vol21.pdf)]

The background image shows a courtyard between modern, multi-story buildings. The ground is paved with a grid of square tiles, some of which are recessed and contain small plants. A white rectangular frame is superimposed over the center of the image, containing the text 'Academic Report'.

# Academic Report

## Academic Cell

IISER Kolkata (IISER-K) is an autonomous institute recognized by the Government of India under the sub-section (I) of section 26 of the National Institutes of Technology Science Education and Research Act, 2007. The following academic programmes offered by the IISER-K:



The office of the Dean of Academic Affairs (DoAA)—the Academic Cell—takes care of all academic matters of undergraduate and postgraduate studies, from the admissions to the award of final degrees. The major activities of the Academic Cell include course formulation, periodic review of course structures, recording students' feedback and implementing decisions of the Senate. The Office of Academic Affairs, through its dynamic endeavours, has been providing support to IISER Kolkata to realize its vision to be the leading centre for research and education in basic sciences.

The academic programmes of IISER Kolkata stresses on a holistic development of the students. 5-Year Dual Degree BS-MS Programme is a unique training programme offered to students through a balanced schedule of class room lessons, project and research works. While the Institute aims to comprehensively train the students in each of the major subjects, much attention is also directed to the development of the inter-disciplinary skills. Courses on Humanities and Social Sciences are also offered to improve the communication skills and to inculcate a sense of social sensitivity.

The PhD programme of IISER Kolkata is an introduction to cutting edge research. IISER Kolkata offers Doctorate degree in Biological, Chemical, Physical, Geological, Mathematical and Space Sciences. This programme caters to the students who have completed BS-MS degree from different IISERs and Master degrees from elsewhere throughout the globe. Along with rigorous research work on frontier areas of science these students successfully complete course work of a minimum of 16 credits as prescribed by the concerned department as a part of their academic training. IISER Kolkata strives to provide world class training in modern science to its students.

Currently, IISER Kolkata has **930 BS-MS, 153 IPHD, 03 MS by Research, and 394 PhD (Total: 1480)** registered students.

So far, a total of **774 BS-MS, 11 MS-by-Research, 61 IPHD (with MS), 26 IPHD(PhD) and 167 PhD** students have graduated from IISER Kolkata, over seven Convocations.

The 7th Convocation of IISER Kolkata initiated white-coloured Indian ethnic wear of any region with colour-coded felicitation scarves as the dress code for graduating students and the Senate members. IISER Kolkata is following a Memorandum of Understanding (MoU) with the National Securities Depository Limited (NSDL), Mumbai, under the National Academic Depository (NAD) initiative of the Government of India. As part of this MoU, IISER Kolkata has securely lodged the details of all academic certificates issued to its graduated students till date. All the degree certificates, transcripts, gold medal certificates and best thesis certificates of the graduating students in the 7th Convocation were digitally signed and successfully uploaded by the Office of Academic Affairs. This has enabled the students to view and download their respective certificates. It has also enabled the external agencies to verify a student's certificate.

IISER Kolkata is now an active participant of the "Study in India" programme which is an MHRD initiative for attracting international students. In Academic Session 2019-20, one foreign student has joined in the BS-MS Programme at IISER Kolkata. In 2019 three international students have joined this programme.

The IISER Aptitude Test (IAT) conducted by the Joint Admissions Committee (JAC) of the IISERs for BS-MS admissions in Academic Session 2019-20 was held on 6th June 2019. This year, IISER Aptitude Test was executed by IISER Bhopal and conducted online by TCS for the first time. IISER Kolkata faculty and staff members served as Test Center Observers in 21 centers. As per MHRD mandate, EWS candidates have been admitted this year in all programmes of the Institute.

This year too, IISER Kolkata hosted VIJYOSHI 2019 National Science Camp, in collaboration with KVPY, Bangalore, from **8th to 10th December 2019**. The camp was attended by **500** students from all over India.

An exercise for revision of syllabi for the 5-Year Dual Degree BS-MS Programme and Integrated PhD Programme was carried out during the Academic Session 2019-2020.

IISER Kolkata has a system in place for mentoring for students having poor academic performance. Counseling services are provided to those who need psychological support. Also, Persons with Disability (PD) are provided writers on request, during examination.

## New courses for Academic Session 2019-2020:

Department	Course Name	Instructor	Course Category	Course Code
Humanities and Social Sciences	Introduction to Philosophy	Adjunct Faculty / Guest Lecturer	Core	HUI102/ HUI202
Chemical Sciences	Frontiers at the Chemistry/Biology Interface	Prof. Arabinda Chaudhuri	Elective	ID41XX
	Organic Functional Materials	Dr. Supratim Banerjee Dr. Ratheesh K. Vijayaraghavan	Elective	CH41XX
Mathematics and Statistics	Machine Learning and Network Analysis	Anirban Banerjee, Koel Das	Elective	MA4207

### Introduction of 1-credit courses in specialized areas:

1-credit courses having 12 lectures (+tutorials) and one exam are being offered from July 2019. These are advanced-level courses offered by the faculty of the Institute as well as by the Adjunct and Honorary faculty who are invited for a couple of weeks to offer such courses. The courses are mainly meant for 5th year BS-MS students, IP students (3rd year onward), and PhD students. Non-disciplinary subjects like science journalism, web-design, art appreciation, etc., may also be offered using specialists in these areas visiting for short periods or weekends. These courses, along with the grades obtained, will be reflected in the transcript as 'additional courses' and will not contribute to one's CGPA.

### NPTEL courses as Elective:

The 4th or 5th level students of the BS-MS programme are allowed to choose elective courses from those offered by NPTEL / SWAYAM online courses. These courses have to be in areas where courses are not offered by IISER Kolkata. The same will be offered from Academic Session 2020-21.

### 'Minor' degree in a discipline:

Starting from the 7th Convocation (2019), IISER Kolkata has started awarding 'Minor' degrees to graduating students who have earned a minimum of 12 credits at the 3rd-5th levels in a discipline other than one's major discipline.

### C.N.R Rao Education Foundation Prize:

The best performing student during the first year (in both the first and second semesters) of the BS-MS programme is awarded the CNR Rao Education Foundation prize.

The recipients of this prize in the year 2019-20 are:

1. Mr. Suprabha Mukhopadhyay (18MS095): Spring Semester of Academic Year 2018-2019
2. Mr. Sohom Gupta (19MS141): Autumn Semester of Academic Year 2019-2020.

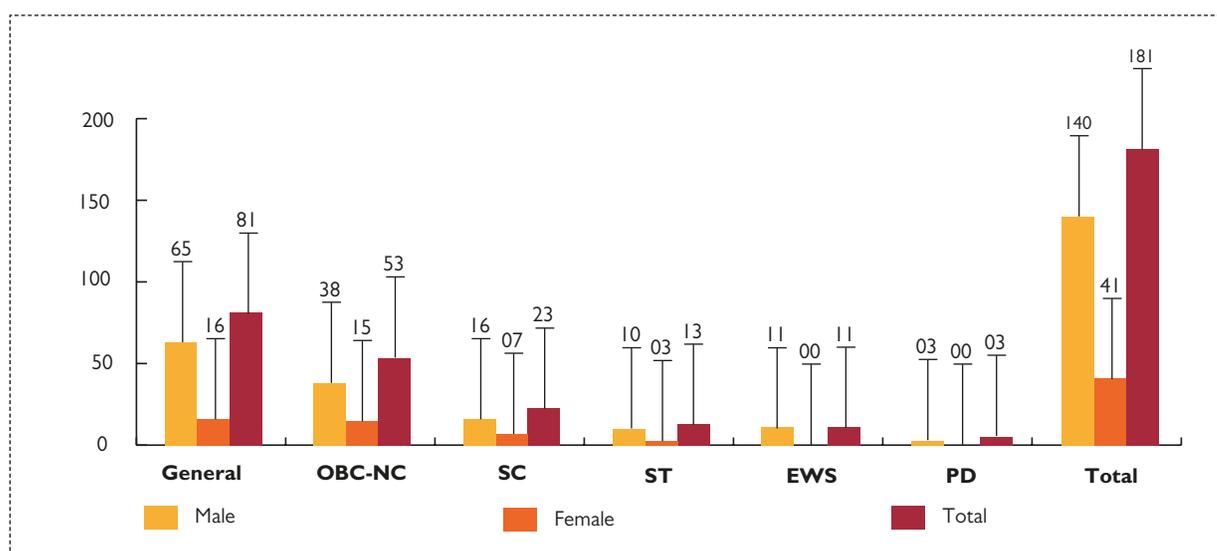
## Student strength

A total of 181 students were admitted to the BS-MS Programme during Academic Session 2019-20

### Category and gender-wise

Gender	General	OBC-NC	SC	ST	EWS	PD	Total
<b>Male</b>	65*	38	16	10	11	3	<b>140</b>
<b>Female</b>	16	15	7	3	-	-	<b>41</b>
<b>Total</b>	81	53	23	13	11	3	<b>181</b>

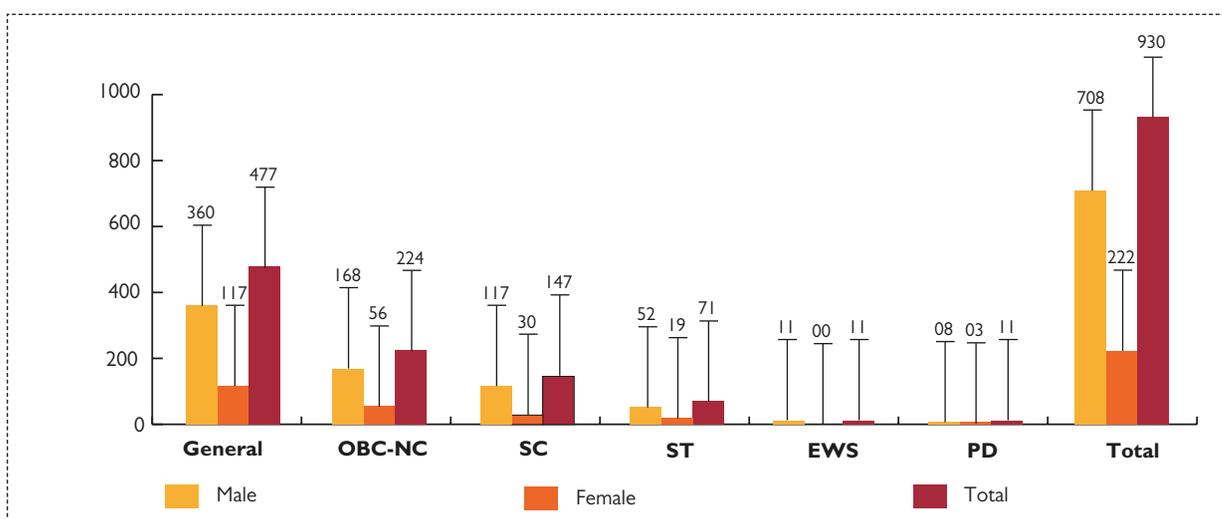
\*includes 1 international student through 'Study in India'



A total of 930 students are registered in the BS-MS Programme as on 31 March 2020

### Category and gender-wise

Gender	General	OBC-NC	SC	ST	EWS	PD	Total
<b>Male</b>	360	168	117	52	11	8	<b>708</b>
<b>Female</b>	117	56	30	19	-	3	<b>222</b>
<b>Total</b>	477	224	147	71	11	11	<b>930</b>

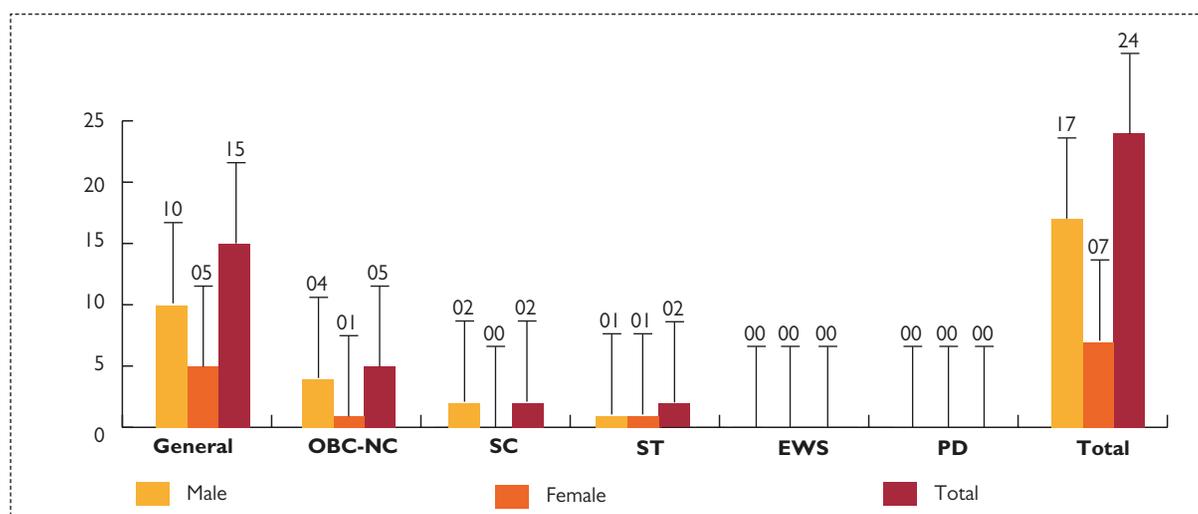


## IPhD Programme

A total of 24 students were admitted to the IPhD Programme during Academic Session 2019-20

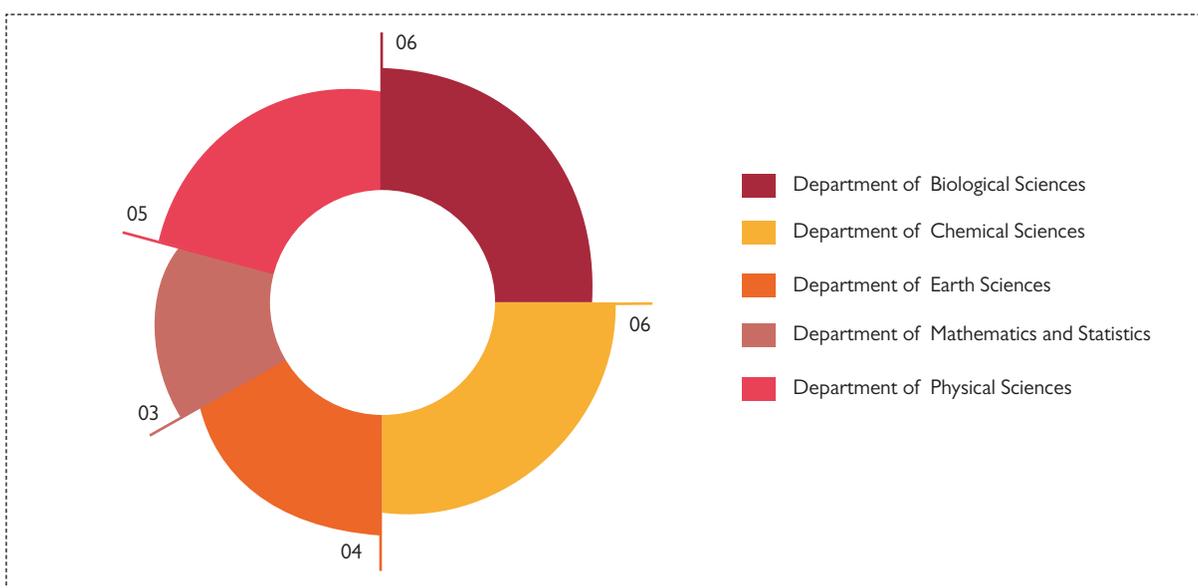
### a) Category and gender-wise

Gender	General	OBC-NC	SC	ST	EWS	PD	Total
<b>Male</b>	10	4	2	1	0	0	<b>17</b>
<b>Female</b>	5	1	0	1	0	0	<b>7</b>
<b>Total</b>	15	5	2	2	0	0	<b>24</b>



### b) Department-wise

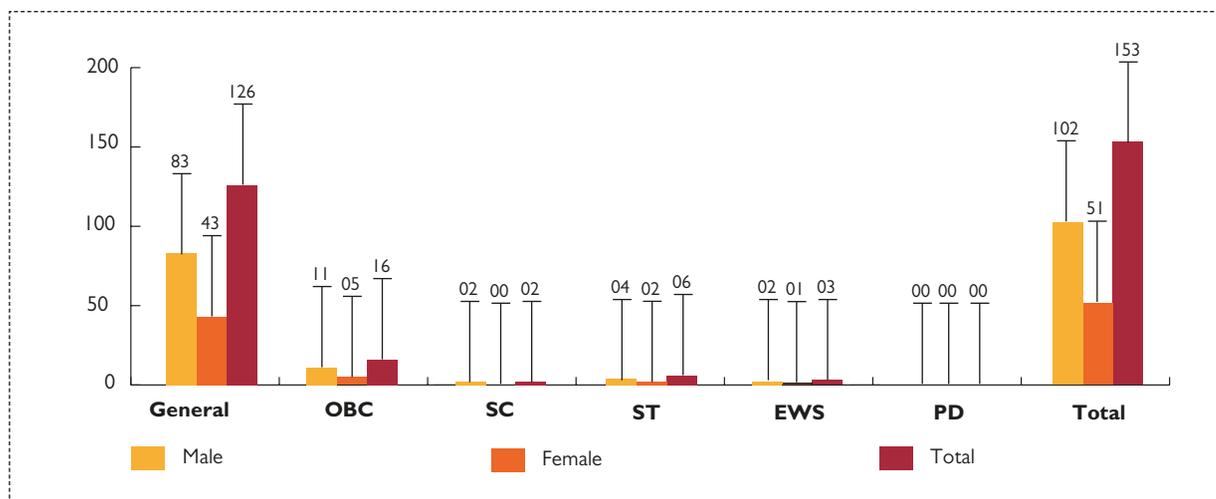
Department of Biological Sciences	6
Department of Chemical Sciences	6
Department of Earth Sciences	4
Department of Mathematics and Statistics	3
Department of Physical Sciences	5
<b>Total</b>	<b>24</b>



## 2. A total of 153 students are registered in the IPhD Programme as on 31 March 2020

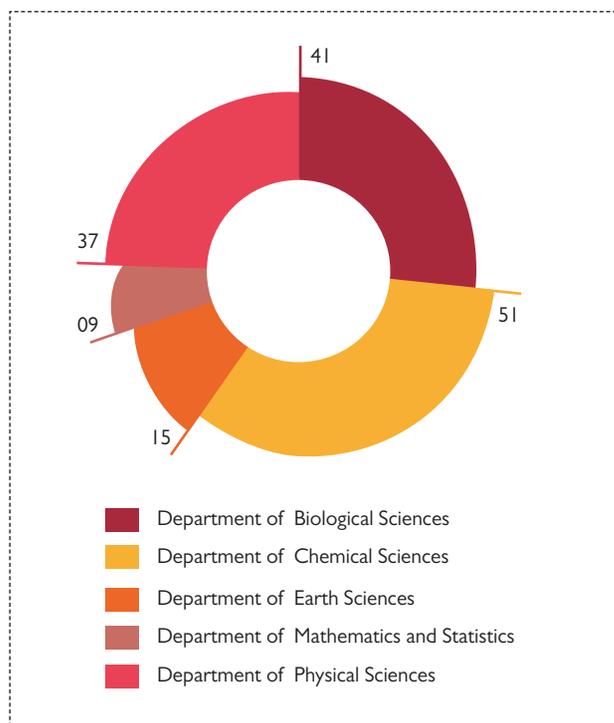
### a) Category and gender-wise

Gender	General	OBC	EWS	SC	ST	PD	Total
<b>Male</b>	83	11	2	4	2	0	<b>102</b>
<b>Female</b>	43	5	0	2	1	0	<b>51</b>
<b>Total</b>	126	16	2	6	3	0	<b>153</b>



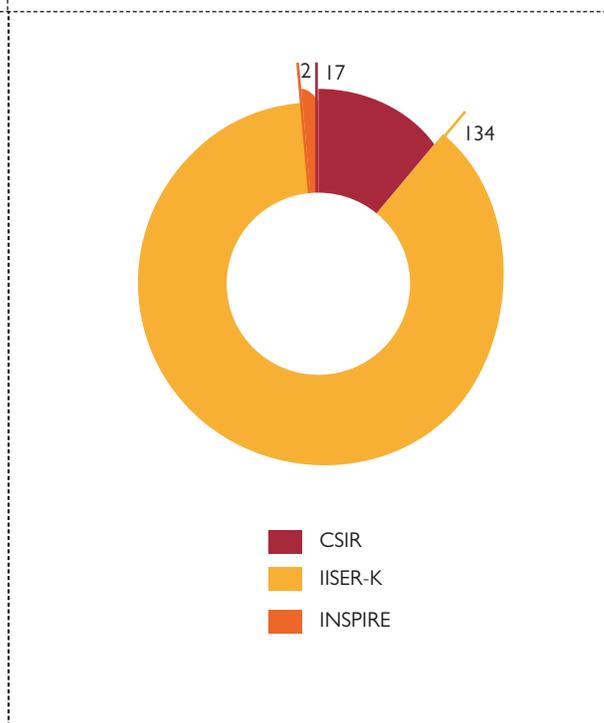
### b) Department-wise

Department of Biological Sciences	41
Department of Chemical Sciences	51
Department of Earth Sciences	15
Department of Mathematics and Statistics	9
Department of Physical Sciences	37
<b>Total</b>	<b>153</b>



### c) Fellowship-wise

CSIR	17
IISER-K	134
INSPIRE	2
<b>Total</b>	<b>153</b>

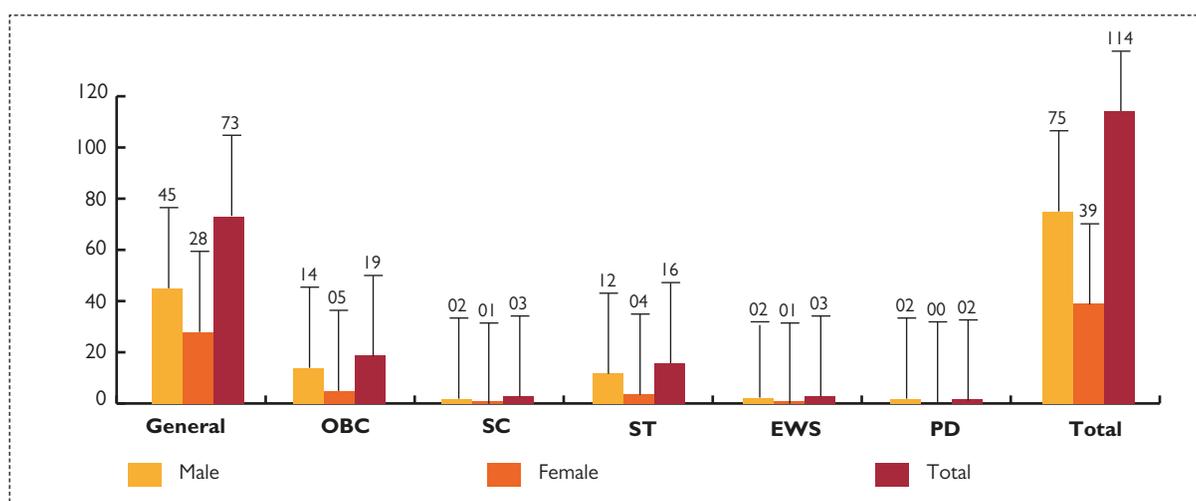


# PhD Programme

1. A total of 114 students were admitted to the PhD Programme during Academic Session 2019-20. [August 2019 (Autumn) and January 2020 (Spring)]

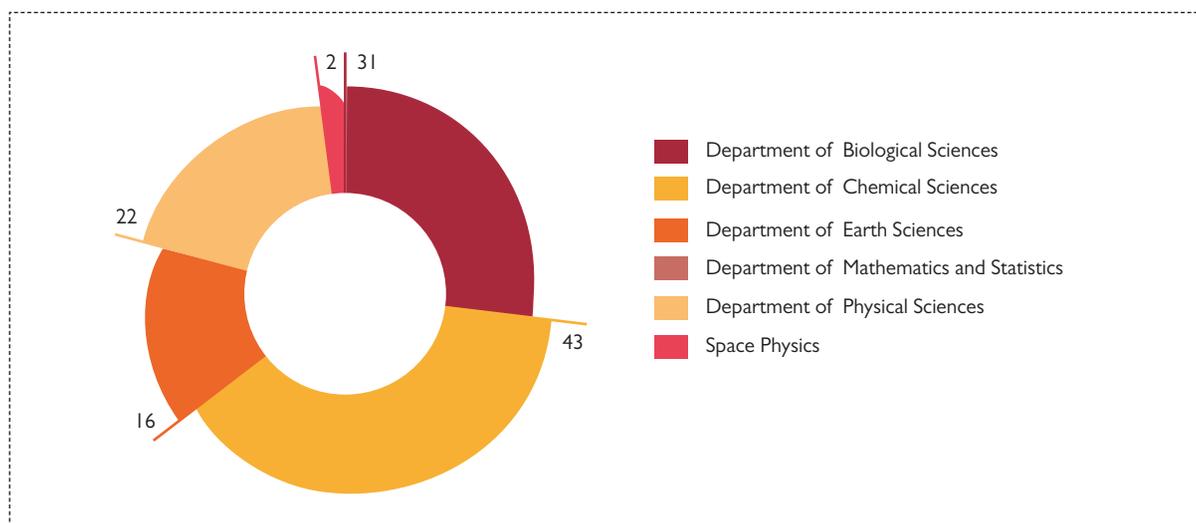
### a) Category and gender-wise

Gender	General	OBC	EWS	SC	ST	PD	Total
<b>Male</b>	45	14	2	12	2	2	<b>75</b>
<b>Female</b>	28	5	1	4	1		<b>39</b>
<b>Total</b>	73	19	3	16	3	2	<b>114</b>



### b) Department-wise

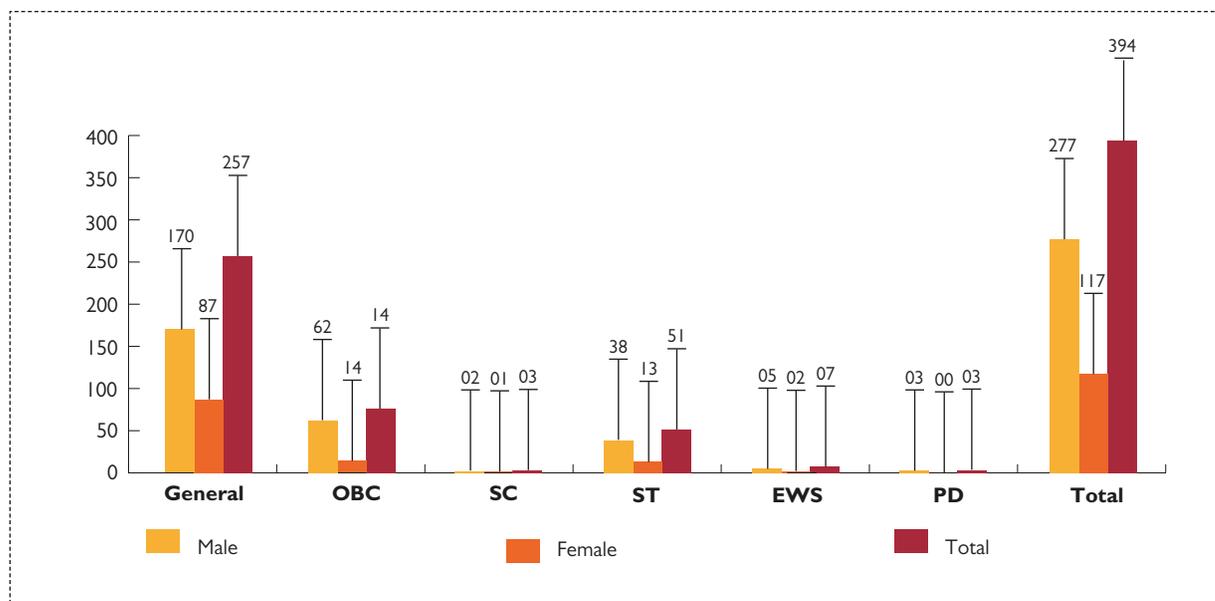
Department of Biological Sciences	31
Department of Chemical Sciences	43
Department of Earth Sciences	16
Department of Mathematics and Statistics	0
Department of Physical Sciences	22
Space Physics	2
<b>Total</b>	<b>114</b>



## 2. A total of 394 students are registered in the PhD Programme as on 1 March 2020

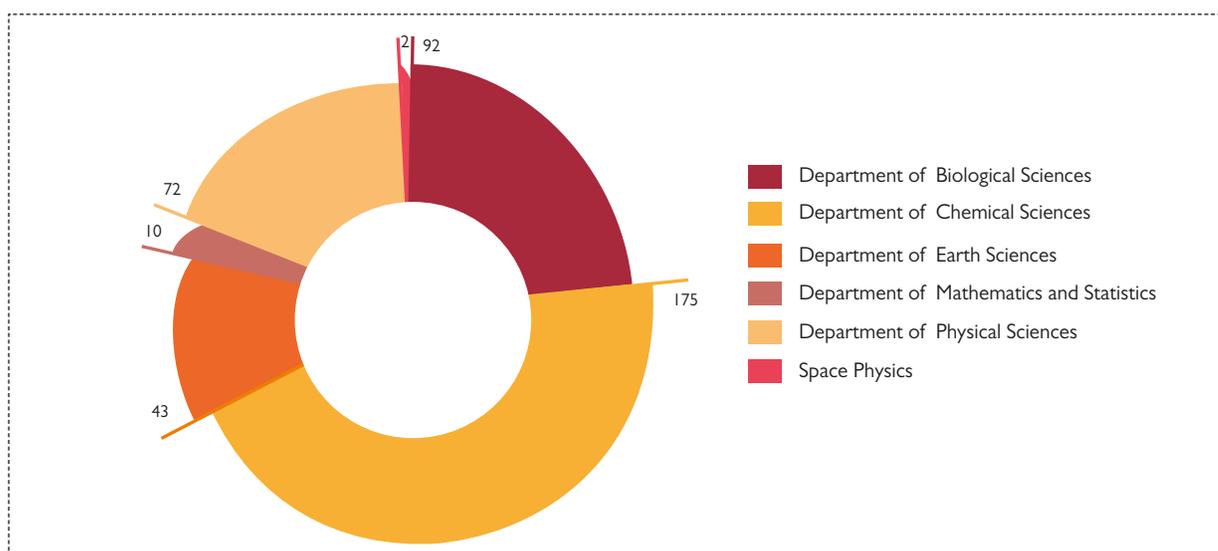
### a) Category and gender-wise

Gender	General	OBC	EWS	SC	ST	PD	Total
<b>Male</b>	170	62	2	38	5	3	<b>277</b>
<b>Female</b>	87	14	1	13	2	0	<b>117</b>
<b>Total</b>	257	76	3	51	7	3	<b>394</b>



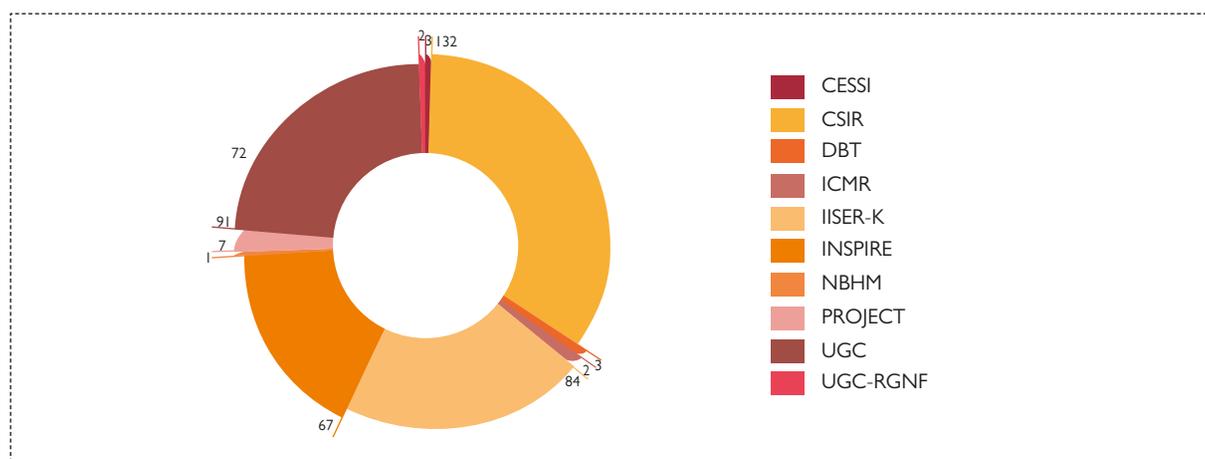
### b) Department-wise

Department of Biological Sciences	92
Department of Chemical Sciences	175
Department of Earth Sciences	43
Department of Mathematics and Statistics	10
Department of Physical Sciences	72
Space Physics	2
<b>Total</b>	<b>394</b>



### c) Fellowship-wise

CESSI	3
CSIR	132
DBT	3
ICMR	4
IISER-K	84
INSPIRE	67
NBHM	1
PROJECT	7
UGC	91
UGC-RGNF	2
<b>Total</b>	<b>394</b>

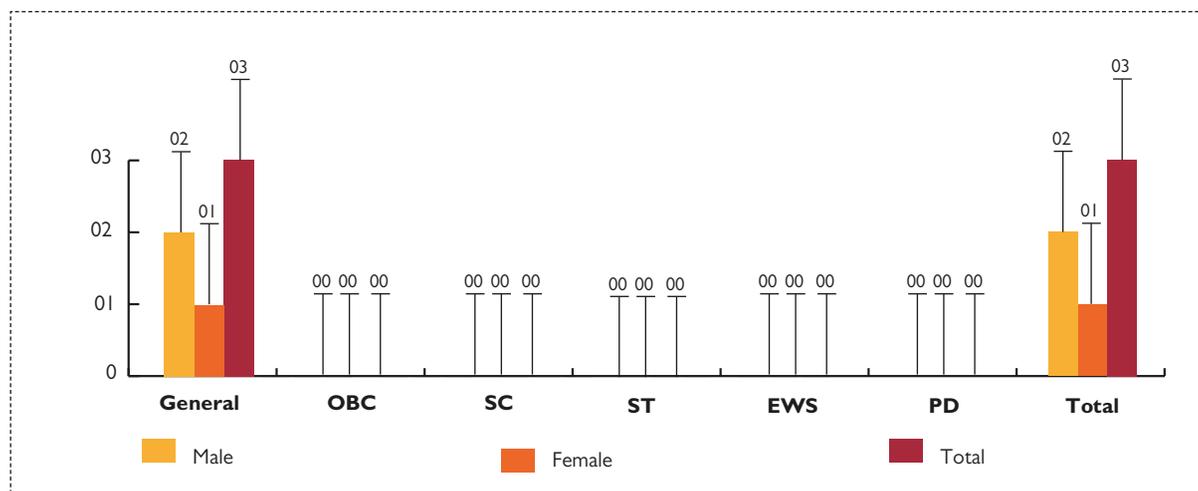


## MS By Research Programme

A total of 3 students were admitted to the MS By Research Programme during Academic Session 2019-20

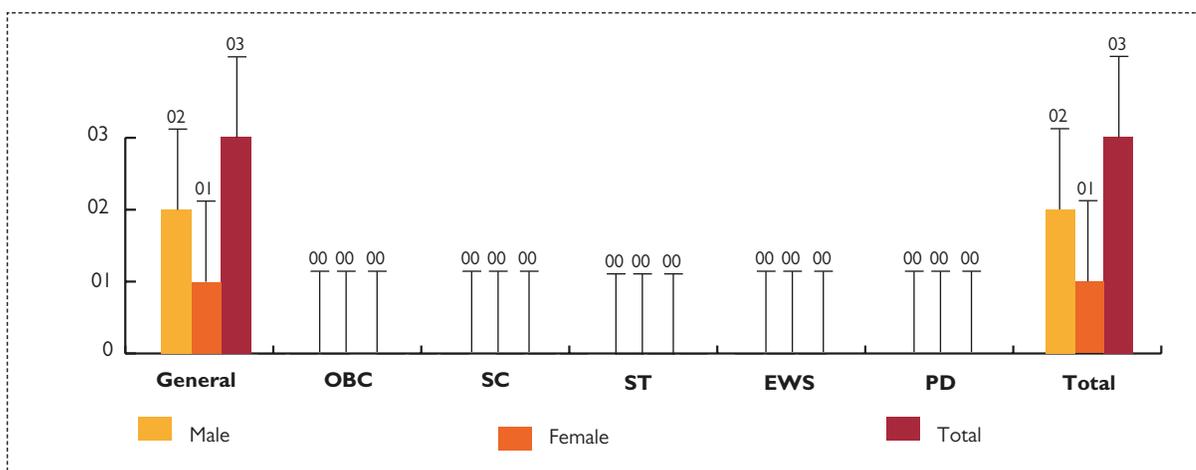
### a) Category and gender-wise

Gender	General	OBC	EWS	SC	ST	PD	Total
<b>Male</b>	2	0	0	0	0	0	<b>2</b>
<b>Female</b>	1	0	0	0	0	0	<b>1</b>
<b>Total</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>



2. A total of 3 students are registered in the MS By Research Programme as on 31 March 2020

Gender	General	OBC	EWS	SC	ST	PD	Total
Male	2	0	0	0	0	0	2
Female	1	0	0	0	0	0	1
Total	3	0	0	0	0	0	3



## Members of the Office of Academic Affairs :

**Prof. Soumitro Banerjee,**  
Dean of Academic Affairs

**Prof. Subhajit Bandyopadhyay,**  
Associate Dean of Academic Affairs

**Dr. Sushmita Bhattacharjee,**  
Assistant Registrar, Academics

### Section of Under Graduate Studies:

**Ms. Saberi Sen,**  
Office Superintendent

**Mr. Zeeshan**  
Akhtar, Junior Assistant

### Section of Post Graduate Studies:

**Dr. Surashree Dutta,**  
Jr. Translation Officer (OL)

**Mr. Arun Dutta,**  
Junior Assistant





# Students' Achievements

## Students' Achievements



### Sanchita Pal and Lekshmi B

Sanchita Pal and Lekshmi B, final year Ph.D. students working under the supervision Prof. Dibyendu Nandi, received the "Young Scientist Best Paper Award" and the "Asia Pacific Solar Physics Meeting Best Paper Award" respectively for their talks during "5th Asia Pacific Solar Physics Meeting" held from 3-7 February at IUCAA, Pune.



### Bikash K. Behera (18RS025)

Research Scholar of Dept. of Physical Sciences has been awarded the prestigious Prime Minister's Fellowship for Doctoral Research by the SERB, Govt. of India.



### Sumeet Ranjan Sahoo (14MS010)

Student of Dept. of Chemical Sciences, working under the guidance of Dr. Swadhin Mandal, has published 2 papers in the journal "Chemical Science", one as joint first author, and one as second author, during his time as a BS-MS student here in IISER Kolkata. "Chemical Science" is a top-tier.



### Nisha Singh

Research Scholar under the supervision of Dr. Gopala Krishna Darbha of Dept. of Earth Sciences, has received the prestigious Newton-Bhabha 2019-20 short term fellowship funded by the UK Department of Business, Energy and Industrial Strategy (BEIS) and Department of Biotechnology (DBT) offering an opportunity to work with Dr. Matthew Cole in Plymouth Marine Laboratory, UK for three months.



### Sourav Banerjee (15RS046)

Senior Research Fellow working under the supervision of Dr. Rupak Datta, in the Department of Biological Sciences, has been selected for Newton-Bhabha Ph.D. placement program. He will be joining Dr. Mark Carrington's lab, Department of Biochemistry, University of Cambridge, for four months. His visit will be funded by the UK Department of Business, Energy and Industrial Strategy (BEIS), and the Department of Science & Technology (DST), Govt. of India, under the Newton Bhabha Fund.



### Jami Prashanti

Research scholar of 17RS batch working under the supervision of Dr. Amit Ghosal, had participated in the SERB school on nonlinear dynamics (held from 2-3 1st Dec) at IIT Patna. There was an oral presentation competition. Five participants got the best oral presentation award, and she was one of the recipients.



### Mr. Mahadev

Mr. Mahadev (14RS052, DES) from the OSL-TL lab of Dr. Manoj Kumar Jaiswal has been selected for the 6th International Palaeoflood Conference to be held in Massey University, New Zealand from 27 January 2020 to 31 January 2020. He has also been awarded the International Support Grant from Science & Education Research Board (SERB), Govt. of India, to attend the same.



### Mr. Susobhan Das

A Ph.D. student from the research group of Prof. C Malla Reddy, DCS, has received the "Young Scientist Award" by the International Union of Crystallography, which enabled him to attend the Asian Crystallographic Association (AsCA) Conference in Singapore during 17-20 Dec 2019.



### Mr. Avijit Kundu

Mr. Avijit Kundu from the Light-matter Lab of Dept. of Physical Sciences, working under Prof. Ayan Banerjee, has won the 2020 DUO-INDIA STUDENT FELLOWSHIP AWARD along with 15 other members across the country.



### Mr. Sabyasachi Mukhopadhyay

Mr. Sabyasachi Mukhopadhyay has been awarded the 'Most Inspiring Facebook Developer Circle Lead' by Facebook at 2019 India Leads Summit for creating global impacts through tech leaderships on 24th November 2019.



### Sourodip Sengupta

Sourodip Sengupta, a research scholar in Prof. Jayasri Das Sarma's group, was among the 22 participants selected across Asia-Pacific to attend the IBRO-APRC ASSOCIATE SCHOOL ON BLOOD-BRAIN-BARRIER: FROM BASIC PHYSIOLOGY TO NEUROLOGICAL DISORDERS held at Punjab University, Chandigarh from November 04-09, 2019. He had received their travel grant along with the Best Poster Presentation award at the recently concluded school.

**Archita Rana**

Archita Rana (17IP020), an Integrated PhD scholar in the Department of Earth Sciences working under the supervision of Dr. Sayantan Sarkar, has been selected for the Global Engagement Fund award of University College London (UCL). As part of this award, she will undertake collaborative research at UCL during 18th January to 2nd February 2020 with Professor Neil Rose on reconstructing historical pollutant deposition profiles using lake sediment archives. The entire research stay and associated expenses will be covered by UCL. award at the recently concluded school.

**Rituparno Chowdhury**

Rituparno Chowdhury (15MS028, DCS) has secured the Young scientist award for the best poster in the recently held India-International Science festival (IISF) conducted in Kolkata. His poster was adjudged as the best out of nearly 1000 posters presented by PhD from various fields of science and technology from all across India.

**iGEM IISER Kolkata team 2019 won Gold medals. This is the consecutive two years of winning Gold. Also, this time IISER Kolkata is nominated for best mathematical model.**

**Atul K. Singh**

Atul K. Singh, a Ph.D. student of Dr. Manoj Jaiswal of the Department of Earth Sciences has been selected as a Scientist-B in Inter-University Accelerator Centre, New Delhi in Geochronology division and he joined on August 5, 2019. Mr. Atul has also received the Travel Support from International Union for Quaternary Research (INQUA) to present his work at Dublin, Ireland.

**Rahul Pratap Singh**

Rahul Pratap Singh, a 4th year BS-MS student (DPS) with two students from IIT-KGP (Team name: rainy\_day\_hackers) participated in IBM Quantum Hackathon organized by IBMQ and Angel Hack. They have been ranked among the top ten teams in the world.

**Dhrubajyoti Mondal**

Dhrubajyoti Mondal, a former PhD student under the supervision of Prof. Soumitro Banerjee, who graduated IISER Kolkata in 2018 has recently joined BITS Pilani K.K. Birla Goa Campus as an Assistant Professor in the Department of Mathematics.

**Mrinal Bhunia**

Mrinal Bhunia, a research scholar working under the supervision of Prof. Swadhin Mondal in the Department of Chemical Sciences, has been offered a postdoctoral position in well-renowned scientist Prof. Daniel Mindiola's group in the University of Pennsylvania, USA (an Ivy league school).

**Pradip Hota**

Pradip Hota, a research scholar working under the supervision of Prof. Swadhin Mondal in the Department of Chemical Sciences, has been offered a postdoctoral position in well-renowned scientist Prof. Ken D. Karlin's group in Johns Hopkins University, USA.

**Rituparno Chowdhury (15MS02)**

EPSRC Visiting Student, jointly at the Department of Chemistry and Cavendish Laboratory, University of Cambridge, under the guidance of Prof. Daan Frenkel (Trinity College) and Dr. Alpha Lee (Cavendish Laboratory).

**Jeebak Deoghuria (15MS013, DBS)**

Sanger-Lab Visiting Student, Department of Biochemistry, University of Cambridge, under the guidance of Prof. Ben Luisi.

**Arnab Majumdar (18RS024, DES)**

Has been selected for the Goldschmidt 2019 International Conference in Barcelona, Spain.

**Debottam Bhattacharjee (14RS053, DBS)**

Has been awarded the prestigious Developing Nations Research Award, 2019 from the Animal Behavior Society (ABS), Glenview, Illinois, USA.

**Subhajit Bhattacharjee (14MS167, DCS)**

Awarded the prestigious 'His Royal Highness The Prince of Wales Commonwealth Scholarship' by the Cambridge Trust for pursuing doctoral studies at the Department of Chemistry, University of Cambridge, UK.

**Rohan Dahale (17MS194), Hitesh Rattan (17MS049), Nitin Kumar Khandelwal (17IP016, DES) and Jai Kishan Rajak (15MS162, DES)**

Teams of "Rohan Dahale, Hitesh Rattan and Umang Srivastava under the guidance of Prof. Ayan Banerjee" and "Nitin Kumar Khandelwal and Jai Kishan Rajak under the guidance of Dr. Gopala Krishna Darbha" has been selected for VISION 2019, a competition hosted by the Physical Research Laboratory, Ahmedabad

**Sounak Mukherjee (15MS139, DPS)**

Selected for the Siegman International Summer School on Lasers. He has also received the OSA Foundation grant for attending this school.

**Varun Ramaprasad (14MS051, DPS)**

Offered a "Physics Excellence Award" by the University of California, San Diego to start his PhD program in the department of Physics.

**Debanjana Chakravarty (14IP035, DBS) and Fareeha Saadi (14IP005, DBS)**

Selected to present their work at the 103rd International Conference of the American Association of Immunologists (AAI) - "IMMUNOLOGY 2019" held in San Diego, California during 9-13th May, 2019. Prof. Jayasri Das Sarma and Debanjana received the American Association of Immunologists (AAI) Laboratory travel grant 2019 and Fareeha received the Department of Biotechnology travel award to attend the conference.

**Shubham Chandel (14RS013, DPS)**

Awarded the Teddi Laurin Scholarship 2019 from SPIE in partnership with Photonics Media, in the amount of \$5000. This scholarship is in memory of Laurin Publishing and Photonics Media founder, Teddi Laurin. It is a part of one of the five top named fellowship provided by SPIE in a year. This award is intended to assist Shubham with research expenses as he pursues his educational and career goals in optics and photonics.

**Aakash Anand (15RS003, DES)**

He has been sanctioned the CSIR Foreign Travel grant to enable him to attend and present his paper at the Asia Oceania Geosciences Society (AOGS) 16th Annual Meeting, Singapore during 28th July to 2nd August, 2019. He has also been selected for the AOGS Student Volunteer Fee Waive Scheme for the conference, which provides him a fully waived registration fee among other benefits.

**Shubham Chandel (14RS013, DPS) and Anchita Addhya (14MS049, DPS)**

The members of BioNaP (headed by Prof. Nirmalya Ghosh) Shubham Chandel (14RS013, DPS) and Anchita Addhya (14MS049, DPS) have been selected for the distinguished Siegman International School of Lasers (USA). Shubham Chandel has also been awarded the OSAF grant for attending the school. Anchita Addhya has been awarded the Zuegel Family Scholarship 2019 besides getting selected for the aforementioned school.

**Sounak Mukherjee (15MS139) and Suprovo Ghosh (14MS153) of Dept. of Physical Sciences**

Selected for the prestigious and once in a life time opportunity to attend "LINDAU NOBEL LAUREATE MEETING" 2019.

**Iqra Shahzad (15MS153) and Sayanur Rahaman (15MS007) of Dept. of Biological Sciences**

Selected for Summer International Fellowship at Yale University, Connecticut and National Institute on Aging, NIH, Baltimore respectively. Both Iqra and Sayanur are selected for Khorana Program Scholars 2019, is a highly selective, well renowned and prestigious fellowship program funded by the Department of Biotechnology (DBT), Govt. of India, Indo-U.S. Science and Technology Forum (IUSSTF) and WINStep Forward. It provides Indian students with fully funded summer research opportunities in United State of America, especially University of Wisconsin-Madison (UW) and partner universities.



# Students' Affairs Report

## Overview

The basic responsibility of the Student's Affairs Office is to ensure the mental and physical wellbeing of the Students in campus so that they can achieve the best possible education. We are committed to provide a healthy learning environment to the students from all categories by building friendly relationship with them and addressing their problems as much as possible.

We have a strong Student's Affairs Council (SAC) run by the students. They are responsible for organization of various Cultural and intellectual events throughout the year involving both in house students and external artists/intellecets. They also maintain various clubs for sports and cultural activities to nurture the talents of our students. Last but not the least; the SAC keeps the important connection of the student community and Administration of the Institute through Student's Affairs Office.

The Students' Affairs Office is run by a group of enthusiastic and friendly individuals who love to work for the students and with the students. We are proud to present the report on the activities of the students in last one year.

Some of our major activities and initiatives include the followings:

### Inter IISER Sports Meet 2019

The Eighth edition of IISM 2019 was held in IISER Pune during 9th December, 2019 to 14th December, 2019. IISER Kolkata hold over all 3rd position in the IISM 2019. There were 155 students (Boys: 121 & Girls: 34) from IISER Kolkata participated in the various events. Initially only IISERs were part of it. NISER, IISc and Centre for Excellence in Basic Sciences, Bombay (CEBS) also becomes the part IISM in its later versions. This year altogether ten teams participated including IISER Kolkata. IISER Bhopal won the overall championship trophy. Although stood at the third position, IISER Kolkata contingent bagged 7 Gold, March Fast: IISER Kolkata won the Gold, Kabaddi won the Gold, Football Girls won the Gold, Table Tennis Boy Team Event s won the Gold, Table Tennis Girls Team event won the Gold, Table Tennis Mixed Double bag the Gold, Table Tennis Single Girls bag the Gold, Table Tennis Single girls bag the bronze, Table Tennis Mixed Double bag the Silver, Lawn Tennis Boys Team event Silver, Volleyball Girls Team event Silver. In Athletics Event Athletics Men 100mts event silver and bronze, 200mts Event Silver, Javelin throw Silver and Bronze, Long Jump event Silver, 4x100 Men Team event Bronze.

### Inter-IISER Cultural Meet

IISER Kolkata hosted the first ever Inter-IISER Cultural Meet, IICM during 21st-23rd December, 2018. This was the first cultural fest-cum-competition amongst the leading research institutes across the country and was held in its main campus in Mohanpur, Kalyani. In this grand event, approximately 500 students from seven different IISERs (Kolkata, Pune, Mohali, Thiruvananthapuram, Bhopal, Tirupati and Berhampur) and IISc Bangalore represented their respective institutes in several competitions on arts, music, dance, theatre, film making, literature, and photography which mesmerized all over a span of three days. IISER Kolkata took the initiative to host the first IICM with the vision of promoting and unifying the young talents of this diversified country. The event list of IICM covers a wide spectrum of cultural activities aimed to bring out the depth of out of the box imagination and creativity of the 'Students of Science'. It enlists 'Dvaita', a solo/duet music competition on the theme 'Give peace a chance'; 'Battle of Balindi' the band competition; 'Footloose', the dance face-off and 'Twist in the Tale', a

theme-based group dance competition. 'Sand Art' and 'Fashionista: the costume designing event' were the two competitions designed to challenge creative minds to find expression through art and craft; 'J-A-M', 'The Spanish-In-Quiz-Ition' (The general inter-IISER quiz) and 'Rationale: The debate'- the competitive literary events held during IICM. Apart from these, there was 'Rangmanch', the drama competition and a few non-competitive events like 'Come Together', a musical jamming session and a poetry slam, where all participants of IICM were allowed to take part and share some memorable light moments of friendship and bonding. Apart from it, the short filmmaking competition 'Chalachitra' and theme based photography events 'Capture the Moment' and 'Stories in Clicks' were some competitions where the participating institutes have submitted their entries beforehand and the entries were shown and judged during IICM, and the best photographs was auctioned during IICM through an exhibition.

To mark this flagship event on a high note, IISER Kolkata invited Baul Samrat Purnadas Baul who was the Chief Guest in the inaugural session of IICM-2018 on 21st December and national award-winning singer and music director Anupam Roy graced the valedictory of this nationwide cultural fest on 23rd December. Famous quiz master Thejaswi Udapa hosted the 'Spanish-In-Quiz-Ition' on 22nd December. Also students from local colleges in Kolkata and Kalyani were invited to attend this grand fest along with the two special performances at the IISER Kolkata main campus. This gave them the opportunity to mingle with fellow students from across the nation and share their outlooks and thought in both the fields of academia and culture. As the rule of all competition stands, at the end all the participants are praised and the better performances are awarded, IICM 2018 too ended on a high note with the prize distribution ceremony. This mega event witnessed a high level of competition and students from all the institutes have bagged many laurels and in overall points tally- IISER

Kolkata stood first followed by IISc and then IISER-TVM.

As the first ever IICM promised the continued pursuit of glory in the field of arts among the students of IISERs and IISc, the 2nd edition was held soon at the majestic campus of IISER-TVM from 20-22 December 2019. IISER Kolkata participated in this event as the travelling contingent; where about 70 enthusiastic participants of IISER-K went to the campus of IISER-TVM for the second edition as the defending champions. This edition also provided an elevated level of euphoria and was marked with a higher level of competitions. IISER Kolkata as usual showed the strength and depth of their cultural community. On the conclusion of the very well organized and very competitive program, IISc bagged the overall champions trophy and IISER Kolkata bagged the 2nd prize trailing from the former just by a mere 100 points. And thus the wonderful journey of the IISER-K contingents ended with a promise to come back stronger for the next edition to re-claim its top spot.

## SPICMACAY

### SAARANG 2019



Indian Classical Concert by Padmashri A. Kanyakumari (Carnatic Violin) and Sambuddha Chatterjee (Hindustani Vocal)



## Ek Bharat Shrestha Bharat (EBSB):

IISER Kolkata student affairs organized multiple events under the theme of Ek Bharat Shrestha Bharat this year. Instead of organizing one special event for such theme, the Student Affairs Council had decided to organize multiple such events looking at particular occasion during 2018-19. Student affairs council (SAC) of IISER Kolkata under guidance of Students Affairs Section in collaboration with various clubs representing particular art forms organized various activities in above mentioned period which included General quiz, poster making also the theme was incorporated into the regular public speaking sessions organized by Literary club of IISER Kolkata. Some major events like Makar Sankranti, Basant Panchami, Utkal Divas and etc. had been organized by students' body of the institute which had major implications on the cultural integration. Some other events in which theme was incorporated – like Quiz session on the cultural aspects of the India, regular public speaking sessions organized by Literary Club, screenings of movies in various language of the India like Hindi, Marathi, Bengali, Telugu and documentaries. IISER Kolkata Students under guidance of Students Affairs Section organizes such programs throughout the year which promotes cultural integration and sense of unity in students from the various parts of the country. All students are brought to a same platform and are tied by a common thread of harmony and unity by these plethora of colourful and heartwarming as well as informative events of IISER Kolkata, The SAC and IISER Kolkata family in whole, takes immense pride in hosting and co-ordinating this type of events throughout the year, where students from all sides come together and share memorable moments, smiles and a sense of brotherhood, and this is what has engraved the campus and atmosphere of IISER Kolkata in the hearts of all the ex and present members of IISER -K family. And this will be followed for the times lying ahead and will serve the same purpose of maintaining and cherishing the diverse and the unique colourful social fabric of the nation.

## INQUIVESTA:

"Inquivesta is the annual science, social and cultural festival of IISER Kolkata. Inquivesta is India's first and largest science festival hosted by the students of IISER Kolkata. This fest receives participation from more than a 100 schools and colleges and more than 1000 participants showcase their science and cultural talents in the events.. There are many exciting events that cater to the interests of all students across the country. This is one of the awaited tech and cultural fest in the eastern part of the country. This has reached new milestones, which featured a live concert by the renowned & Standup Comedy show by famous comedian. Inquivesta witnesses a huge participants and visitors from various parts of the county. Hence, the 10th edition of this great awaited fest supposed to be held in the month of March 2020 has been cancelled for the first time since inception (2006) of IISER Kolkata due the covid19/ coronavirus pandemic.

## Teachers' Day Celebration:

Like every year, the students of BS-MS 2nd year organised a cultural evening to pay respect to the teachers on September 5, 2019.



## Agomoni 2019

The third edition of 'Agomoni 2019' was organized during 26th September – 28th September 2019. Agomoni moulding craft workshop Painting Workshop were organized in collaboration with Pidilite Industries Ltd. and Arts Club IISER Kolkata. Such initiatives was not only project our ideas of nurturing hidden artistic skills of our students but also unleash their creativity and at the same time it will encouraged them to take part in similar workshops in campus and other Institute/ Organization of repute. Agomoni Lunch was organized in the Students' Monitored Canteen. Around 1200 people turned up for the event. No event can come to a completion without a cultural event. "Agomoni Shondhya" ("Agomoni" Cultural Night) was organized to showcase the cultural talents of our student community. The students showcased their skills and enthusiasm at exquisite games like Rabindra Sangeet Presentation, Contemporary Music Presentation, Sankh Bajano, Shruti Natok, Musical Medley and many more. Students from various part of the country experience the true and varied colours of the festivity.

## 4th Session of Annual Voluntary Blood Donation Camp

Students' community of IISER Kolkata took initiative for conducting a voluntary blood donation camp at the Institute Campus on 29th March 2019 with the help of Association of Voluntary Blood Donors (AVBD), West Bengal and under supervision of the Dean of Students Affairs Section. This noble initiative will be continued every year with the intension of contributing for the social benefit of those in need of blood.

## International Yoga Day Celebration

As per MHRD mandate IISER Kolkata has observed three weeks yoga programme for the celebration of International Day of Yoga 21st June, 2019. Keeping in mind the importance of the programme and enhance the active participation for the same, the institute has invited a trained yoga teacher/team. To mark the "50 days to IDY 2019 Students, teaching and non-teaching staff members and their family have enthusiastically participated in the various sessions on benefits of yoga.

## 73rd Independence Day Celebration

The 73rd Independence Day of the Nation was celebrated in the Institute on 15th August 2018. The program was started with flag hoisting ceremony. The Literary Club and the students also conducted a cultural program for the same.



## Smarane Rabindranath

The Students' Activity Council has inspired a tradition to celebrate the life and works of Rabindranath Tagore on his death anniversary every year. A melodious evening of cultural programs was organized based on the works and thoughts of the 'Gurudev'. The event was organized on 8th August 2019. This was organised by the Students Community in association of Students Affairs Section, turned out to be the most successful programme in the history of IISER Kolkata with maximum students and faculty turning up as audience.

## Students Activity Centre (SAC)

The essence of the success story of any educational institute lies in the success of its students. An enthusiastic student fraternity coupled with an able student administration forms the base for scaling great heights. We at the Student Affairs Council of IISER-Kolkata look to channelize the energy and vigour of our student community and give voice to their opinion. Our vision is to set up a student administration system, guided by the principles laid down in the Constitution of SAC, which will serve as the one stop for all student activities in the institute. It is our endeavour to faithfully represent the best interests of the student community and strive to create a vibrant atmosphere which will give rise to not only better academicians but also to better, well-rounded personalities.



There are many more programs/events organized by the various clubs/Students which are enlisted below:

SI No.	Event Name	Club Name	Date
1	Photo Walk to Krishnanagar - Sammya Brata Mullick	Photography Club	04.08.2019
2	Photography adda - Sammyabrata Mullick	Photography Club	05.08.2019
3	Word Play	Literary Club	07.08.2019
4	Nature Walk	Nature Club	10.08.2019
5	Jashn-E-Qalam	Aarshi & Lit	11.08.2019
6	Photography Adda with Lopamudra Talukdar	Photography Club	12.08.2019
7	Hiraeth	Music Club	14.08.2019
8	One Day Rad@Home Astronomy Workshop	Science Club	17.08.2019
9	Komorebi	SDYC Club	28.08.2019
11	Rediscovering Kurick	Movie Club	01.09.2019
12	DJ-Night	Dance Club	06.09.2019
13	From the heart of Ganga	Arts Club	25.09.2019
14	Inquibytes 2019	INQUIVESTA	28.09.2019
15	Pictionary	Literary Club	30.09.2019
16	Organizing Dance Workshop	Dance Club	01.10.2019 to 3.10.2019
17	Cambuzz	Ecell	02.10.2019
18	Abhivyakti	Aarshi	20.10.2019
19	Rampage	Music Club	23.10.2019
20	Spooktacular Halloween evnt	Arts Club with Lit. Club	25.10.2019
21	Juxtaposition	Literary Club	26.10.2019
22	Indian Classical Dance (Odissi) Workshop	Dance Club	31.10.2019 to 2.11.2019
23	Photography Adda chai pe charcha by Raju Ghosh	Photography Club	03.11.2019
24	SPICMACAY Evening concert of Indian classical Music	SPICMACAY	05.11.2019
25	SONGS OF FREEDOM	Music Club	07.11.2019
26	Hackathon	E-cell	08.11.2019
27	Talk by Mr. Ramveer Tanwar &Hult prize competetion	E-cell	09.11.2019
28	Trip to Kolkata International Film Festival	Movie Club	09.11.2019
29	Kolkata Quiz Festival	Quiz Club	12.01.2020
30	One day training camp of SDYC	SDYC Club	12.01.2020
31	Poetry in troubled times	Music Club	16.01.2020
32	Transport to AKLF	Literary Club	18.01.2020
33	Photography adda with Joydeep Mukherjee	Photography Club	18.01.2020
34	Compatibility Mater	Literary Club	23.01.2020
35	I day Art Workshop with Ek pehal	Arts Club	26.01.2020
35	Daisy Blue	Aarshi	28.01.2020
36	Inquibytes 2.0	INQUIVESTA	08.02.2020 09.02.2020
37	Secret Valentine's	Literary Club	14.02.2020



# International Relations and Outreach Report

## Mission & Vision

- To lead the Institute's efforts in establishing International Relations with Institutions in India and abroad for Academic and Research Collaborations
- To carry out Institute's outreach activities and implement various programs mandated by the Ministry of Human Resource Development
- To coordinate faculty / delegates' visit to the campus from countries across the globe

## Activities carried out in the financial year 2019-2020

### 1. MoU with the following Institute/ Organization have been signed

Institute	Country	Period	Signed on	Valid up to
Inter – University Centre for Astronomy and Astrophysics (IUCAA), Pune	India	5 Years	20.3.2019	19.3.24
Muscular Dystrophy Patients' Welfare Society, Gayeshpur, Kalyani, Nadia, W.B, India	India	3 Years	17.09.2019	16.09.22
All India Council for Technical Education, New Delh	India	1 Year	26.11.19	25.11.20
Hubei University	PR China	5 Years	24.05.19	23.05.24
Tripartite MoU (University of Cambridge, Shri Mata Vaishno Devi University, IISER Kolkata)	UK, India	5 Years	30.01.2019	29.01.24

### 2. Distinguished visitors to IISER Kolkata for an Institute Colloquium

Name	Country	Date of the colloquium	Title of the talk
Prof. Leahy Martin <i>Chair, NUI Galway</i>	Ireland	08.01.2019	“STARSTEM: Reaching for the stars to drive stem cell therapy
Mr. Dhritiman Mukherjee <i>Renowned wildlife photographer</i>	India	12.01.19	“Portraying behavior through Photography”
Prof. Sharon Gusky <i>2018 ASM-IUSSTF Indo-US Teaching Professor</i>	USA	3.01.19 - 10.01.19	The prevalence of antibiotic resistance in the environment
Prof. B.M. Deb Indian National Science Academy, New Delhi	India	27.03.2019	The Jewel of the Serpent: Glimpses of Mathematics in Ancient and Medieval India
Prof. M. Lakshmanan Centre for Nonlinear Dynamics School of Physics Bharathidasan University	India	22.04.2019	Nonlinear PT-Symmetric Systems and Some of their Implications in Optics
Dr. Shekhar C Mande, Secretary, DSIR and DG CSIR	India	16.08.19	Technology and Innovation
Prof. Dr. T. Ramasami DST, GOI	India	07.05.19	Towards solution design: A chemists travelogue
Prof. Shashidhara L.S. Department of Biology, IISER Pune	India	15.04.19	Science, Technology, Engineering and Medicine in India: past, present and future prospects
Dr. Meenakshi Munshi Adviser/Scientist G, Ministry of Science & Technology, DST	India	16.04.2019	Recent research initiatives of the Department of Biotechnology
Prof. Ashok Banerjee Professor of Finance and Control, IIM Kolkata	India	16.04.2019	Converting idea into enterprise
Prof. V. Chandrasekhar Centre Director, TIFR Centre for Interdisciplinary Sciences, Hyderabad	India	06.03.2019	Periodic Table @ 150: some stories

Name	Country	Date of the colloquium	Title of the talk
Mr. Tony Joseph	India	20.08.19	Peeling the layers of Indian demography using a multidisciplinary approach
Prof. Richard N Zare Stanford University	USA	17.09.19	Water, so common, so Mysterious
Mr. Partha Chakraborty Chief scientific officer, Arogyam Medisoft solution & vice President, CliniOps	India	23.1.19	Lab to Market - A knowledge sharing session
Prof. Jibamitra Ganguly University of Arizona	USA	13.11.19	Water in Earth Primary Storage, Origin and its Role in the Creation of Pacific Ring of Fire
Prof. A. Ravi P.Rau Louisiana State University	USA	03.12.19	Combinatorics of fifteen schoolgirls, a pair of qubits, a rainbow of four colours: common patterns and an Indian connection.
Prof. Rajesh Gopakumar, Centre Director, ICTS-TIFR	India	14.08.19	Stephen Hawking's Legacy in Fundamental Physics
Prof. Vinod K. Singh IIT Kanpur	India	08.01.20	"Can IISERs create Global impact on Indian Higher Education System?"
Prof. Christopher Colin Cummins Massachusetts Institute of Technology, USA	USA	13.01.2020	"Phosphorus: from the Stars to Land & Sea"
Prof. Eric Wieschaus Princeton University	USA	15.01.20	"Inputs, Outputs and Cell Signaling during Early Development"
Prof. Grant Jensen Caltech	USA	28.01.2020	"Progress and potential of electron cryotomography"
Prof. Joachim Frank Columbia University, New York, USA	USA	19.01.2020	Single-Particle methods in electron microscopy: past, present and future
Prof. Richard MacKenzie	Canada	27.01.2020	Symmetry and Solitons: from kinks to monopoles

## Institute Outreach Activities

### 1. RAA (Rashtriya Avishkar Abhiyan) for teacher training

IISER Kolkata is one of the mentoring institutes of RAA. IISER Kolkata is working in association with Sarva Shiksha Mission and West Bengal State Education Department, Govt. of West Bengal.

### 2. Students Solar Ambassador Workshop

Students Solar Ambassador Workshop was held at IISER Kolkata on 2nd October to mark the 150th birth anniversary of Mahatma Gandhi. In this workshop master trainers were BS-MS students of the Institute and participants/trainees were the 66 numbers of local school children. This workshop was a practical training to the school children to assemble their own solar study lamp. This programme was in association with IIT Bombay

### 3. IISER Kolkata as Nodal Centre of IIRS/ISRO Outreach Network

IISER Kolkata has been listed as one of the Nodal center to conduct online courses offered by IIRS-ISRO Dehradun.

#### Course Conducted:

Course 50 (IIRS Outreach Programme on Basic of RS, GIS & GNSS) and Course 51 (IIRS Outreach Programme on Remote Sensing & Digital Image Analysis).

## 4. Institute's Innovation Council (IIC) under umbrella of MHRD – Innovation Cell (MIC)

Registered this year & fostering innovation ecosystem in campus and preparing for Smart India Hackathon (SIH) 2020

To recognize and spread the importance of innovative ideas, Institute, on the occasion of National Science Day, invited innovative ideas from students, as an individual or as a team, conducted essay writing competition to recognize the path breaking innovations and also encouraged to spread the importance of innovative ideas through Songs, poems etc.

### i. Industry Visit (WEBFIL LIMITED)

Institution's Innovation Council (IIC) under MHRD's Innovation Cell (MIC) with an objective of giving the students an insight of how a business can be started and the challenges an individual face while running their own business and also providing the students an exposure to current work practices in industry vis-à-vis the theoretical knowledge being imparted in classrooms, carried out an Industrial visit to one of the local electric bulb factory, WEBFIL LIMITED, located at Gayeshpur, Kalyani, Nadia, W.B.

The students observed the challenges faced by the Industry in carrying out such business and deliberated on such solutions in their undertaking as an entrepreneur in future.

### ii. Picnic in IISERK adopted villages

Institution's Innovation Council (IIC) under its self driven activity, had a Picnic in one of IISERK adopted village (under UBA). The key aim of this activity was to encourage the Students to visit households and identify the types of problem faced by them in regard to: Education, Health, Energy conservation, Water conservation, Nutrition, Sanitation, Agriculture, and Livestock etc.

## 5. Plantation

2900 Tree Plantation have been done in the year 2019-2020

## 6. Students Mobility

4 students have been successful in securing a place at the Australian National University (ANU) as a 2020 Future Research Talent (FRT) scholar.

1 student has been selected for the DUO-India Fellowship Programme 2020.

## 7. Staff Mobility

Mr. Shahid Ali Farooqui – Mr. Shahid Ali Farooqui was invited by open innovation team, Mozilla Foundation to attend the "All Hands" held in Whistler, during 17-22 June 2019 & in Berlin, Germany during 27 Jan to 1 Feb 2020, for his contributions in Mozilla Repps Council, Open Source Community, Open Standard and Healthy Internet. The entire trip was fully funded by the organizer of the event.

## 8. Summer School on Quantum Information and Quantum Technology

The academy sponsored School on "Quantum Information and Quantum Technology" was conducted for a period of six weeks (13.06.19 to 23.07.19). It aimed at bringing the emerging science of quantum information and quantum technology to students, with both experimental and theoretical components. We had approximately 150 students who attended the conference, which was lectured by 80 resource persons from India and abroad.

## 9. Grant for REDX artificial intelligence center

IISER Kolkata has been awarded a grant of \$10,000.00 from the Raskar Fund, an advised fund of Silicon Valley Community Foundation, to support the creation of REDX artificial intelligence center at IISER Kolkata (BoG approved)

## 10. Agomoni Pidilite Painting workshop as a part of IISER-K outreach activities

Agomoni and Arts club conducted a Pidilite Painting workshop and Teacher's training program as part of the IISER Kolkata outreach program for the family members of local housekeeping staff of IISER Kolkata.

## 11. National Science Day Celebration

National Science Day in IISER Kolkata was observed by felicitating Faculty, students and staffs for their scientific contributions. It was also graced by two plenary lectures, one each by Prof. Urbasi Sinha (RRI) and Prof. Sabyasachi Bhattacharya (Ashoka University).

## 12. Sundarban Kristi Mela-O-Loko Sanskrit Utsab

IISER Kolkata participated in the Sundarban Kristi Mela-O-Loko Sanskrit Utsab, which was held between 20 and 29 Dec 2019 at Kultali, 24 Pgrs (S), WB.

Students/scholars led by Faculty represented the Institute and exhibited the progress of basic sciences and interacted with the interested student community.

## 13. Innovation Ambassador Training Workshop

IISER Kolkata hosted the IIC Innovation Ambassador Training, organised by MHRD's Innovation Cell, during March 6-7, 2020. Participants were the Faculties of HEI's.

Prof. Anil Sahasrabudhe, Chairman of the All India Council for Technical Education inaugurated the program.

## 14. MHRD Mandated Activities:

### i. Unnat Bharat Abhiyan

Villages adopted by IISER Kolkata for developmental, health and sanitation activities under UBA (Unnat Bharat Abhiyan) are Ayespur, Balindi, Birohi, Hati Kanda, Narayanpur.

Water samplings for detection of Arsenic above consumption level have been completed in two villages.

Setting up of Safe drinking water in two villages is under process.

### ii. Swachata Mission

Visit of Orphanage and Old age home

### iii. Swachh Bharat

IISER Kolkata is awarded as Swachh Campus for in campus and community services in UBA adopted villages.

### iv. Renewable energy conservation

Installation of Biogas from the kitchen waste

### v. Organic Farming

Composting from kitchen waste and biodegradables and farming in unused land.

Compost generated from kitchen waste: 245 kg in every 45 days.

## 15. Ek Pehhal

Ek Pehal is a student lead initiative of IISER Kolkata which imparts free education to the underprivileged children of proximal villages. It also carries out various outreach activities in UBA adopted villages, supported by the staffs of DoIRO office.

Following are the reports from the Volunteers of EK Pehal.

## Academic Programme:

We have been conducting classes throughout the week. We have Maths, English and Science on Tuesday, Wednesday and Thursday for the students from Mohanpur, Dalaipur and I6No Gate, all Bengali medium. We send cabs to the 3 localities for the same. For 7No Gate students we have classes separately for Bengali and Hindi medium students. In the weekends, we conduct a Computer Science class for selected good students. We have a total of about 120 registered students of which 20 students from Mohanpur, 25 students from 7No, 20 from Dalaipur and 12 from I6NO are regular. These students belong to Class 4 to Class 10 in their formal education.

## Outreach Activities

### i. Clothes Distribution

On 11th of August 2019, volunteers of Ek Pehal distributed the collection of old clothes from the IISER Kolkata fraternity to nearby villages named Dalaipur and Katalatalapara. Old warm clothes and blankets prior to the approach of winter were distributed to the needy to protect them from chilly weather in winter.



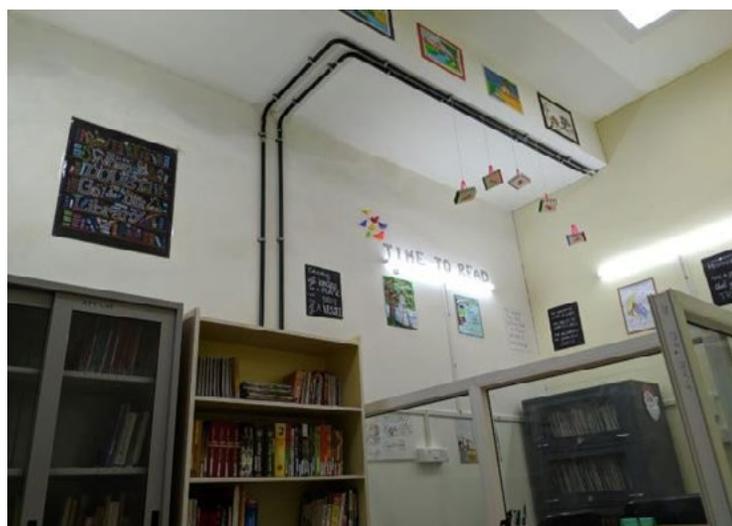
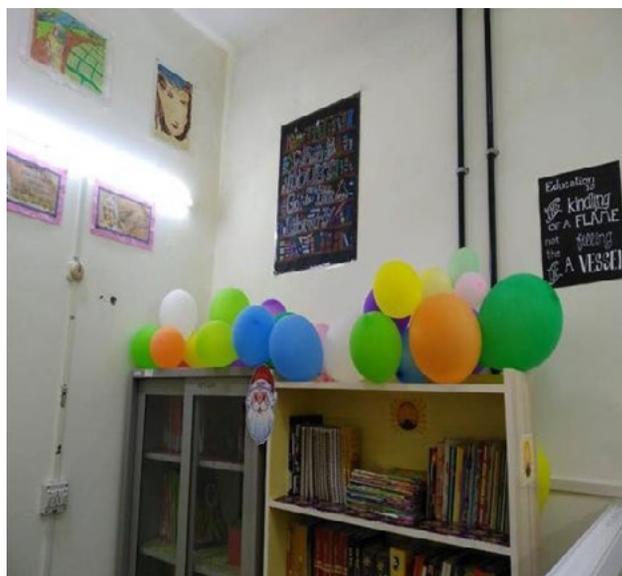
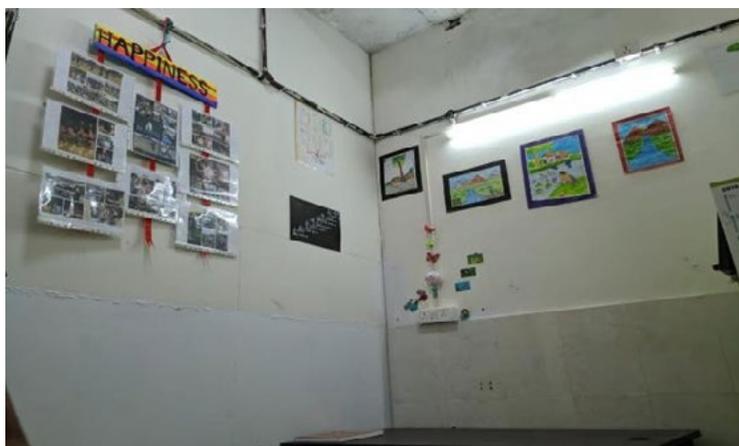
## ii. Drawing Competition:

We organize drawing and painting competitions to give kids a break from studies and help them with imagination and creativity. We provide them with necessary stationary items and in return we get a collection of art work varying in imagination, complexity and drawing skills. Drawings and paintings were graded based on three different categories and 3 prizes were decided in each. These kids were awarded on the annual day by our ADOIRO Dr. Anindita Bhadra. This session happened on January 26th 2020.



### iii. Ek Pehal Library Inauguration:

The new Ek Pehal Library, having been set up in IISER Kolkata's Lecture Hall Complex (LHC) as a part of "First step towards literacy" Programme, was inaugurated with great pomp and enthusiasm on 19.08.2019 by the director of the institute, Prof. Sourav Pal. The library has a diverse range of books and will provide comfortable reading facilities to those children who do not otherwise have access to the same. Ek Pehal looks forward to educate and promote literacy and inculcate a reading habit among these young, impressionable children, enabling them to take their first step towards a better life.



#### iv. Ration Distribution During Lockdown:

With the support of the students, faculties and staffs of IISERK and other friends, volunteers of Ek Pehal conducted a ration distribution drive to support needy families in the neighboring areas. The package contained **5kg Rice, 5kg wheat flour, 1.5kg pulses, 2.5kg potato, 1L oil, 500g sugar, 500g puffed rice, 250g soyabean, 1 soap and milk powder** (only if families have small children) for each family. The drive is being conducted since **5th April, 2020** and the team has reached **more than 650 families** as on **5th May, 2020**.



## Outreach Activities by the Departments:

Name of the Department	Faculty members/ students conducting outreach	Outreach event conducted	Date	Place	No. of Participants	Level at which targeted
Department of Earth Sciences	Dr. Gopala Krishna Darbha, Mr. Ashish Kumar Tiwari	National science exhibition	27.09.19 – 29.09.19			
Department of Earth Sciences	Dr. Gopala Krishna Darbha, Mr. Ashish Kumar Tiwari	Vijyoshi	09.12.19	IISER Kolkata		
Department of Earth Sciences	Dr. Gopala Krishna Darbha, Mr. Ashish Kumar Tiwari	Sunderban Kristi Meala O Loko Sanskriti Utsab 2019	21.12.19 – 22.12.19	Kultali, 24 Pgrs (S), WB		
Department of Earth Sciences	Dr. Gopala Krishna Darbha, Mr. Ashish Kumar Tiwari	Institute open day	27.02.2020	IISER Kolkata		
Department of Mathematics and Statistics	Dr. Swarnendu Datta, Dr. Sayan Bagchi with about 10 students	Institute open day	27.02.2020	IISER Kolkata	About 50	
Department of Mathematics and Statistics	Dr. Somenath Basu	Vijyoshi	09.12.2020	IISER Kolkata		
Department of Biological Sciences	Dr. Anindiata Bhadra, Dr. Amirul Islam Mallick, Dr. S. Gangappa, Mr. Debabrata Sutradhar (Staff), Manmeet Singh (Student)	Lab visit by students of the Kumaun University, Nainital	04.04.19	IISER Kolkata	~23	
Department of Biological Sciences	Dr. Anindiata Bhadra, Dr. Amirul Islam Mallick, Dr. S. Gangappa, Mr. Debabrata Sutradhar (Staff)	Lab visit by students of the Dept. of Environmental Sciences, Calcutta University	10.05.19	IISER Kolkata	~15	
Department of Biological Sciences	Dr. Anindiata Bhadra, Dr. Amirul Islam Mallick, Dr. Dipjyoti Das, Dr. S. Gangappa, Mr. Debabrata Sutradhar	Tour by Maulana Azad College team	17.12.19	IISER Kolkata	~37 (For DBS)	
Department of Biological Sciences	Dr. Anindiata Bhadra, Dr. Amirul Islam Mallick, Dr. Dipjyoti Das, Dr. S. Gangappa, Mr. Debabrata Sutradhar	Institute open day	27.12.19	IISER Kolkata	~150 (For DBS)	
Department of Chemical Sciences	Dr. Debasish Haldar	Vijyoshi	09.12.19	IISER Kolkata		
Department of Chemical Sciences	Dr. Debasish Haldar	Sunderban Kristi Meala O Loko Sanskriti Utsab 2019	23.12.19 – 24.12.19	Kultali, 24 Pgrs (S), WB		
Department of Chemical Sciences	Dr. Debasish Haldar	Institute open day	27.02.2020	IISER Kolkata	150	
Department of Chemical Sciences	Dr. Debasish Haldar	<b>Innovation &amp; Entrepreneurship with DSIR-TOCIC</b>	14.08.19	IISER Kolkata	100 IISER K, MAKAUT, KU	
Department of Chemical Sciences	Dr. Debasish Haldar	IYPT 2019	02.11.2020 – 03.11.2020	Midnapore City college	30	
Department of Biological Sciences	Dr. Anindita Bhadra	INSA Remote area lecture at Bongaon High School	02.03.2020	Bongaon High School	160	Class VIII to X
Department of Biological Sciences	Dr. Anindita Bhadra	Draw a Scientist contest	30.07.2019	WorldWide Meeting of Young Academies, Vietnam	200	High School
Department of Biological Sciences	Dr. Anindita Bhadra	Vijyoshi	09.12.19	IISER Kolkata		

Name of the Department	Faculty members/ students conducting outreach	Outreach event conducted	Date	Place	No. of Participants	Level at which targeted
Department of Biological Sciences	Dr. Anindita Bhadra	Organizer for Institute Open Day and #WIISER initiative	27.02.2020 and 08.03.2020	IISER Kolkata		
Department of Biological Sciences	Dr. Anindita Bhadra	LEAP	27.02.2020 and 08.03.2020	IISER Kolkata		

Dr. Anindita Bhadra conducted a remote area lecture at the Bongaon High School, Bongaon, and West Bengal on 3rd March 2020. The school has an illustrious history, having been founded in 1864, and nurtured many of the luminaries of Bengal ([https://en.wikipedia.org/wiki/Bongaon\\_High\\_School](https://en.wikipedia.org/wiki/Bongaon_High_School)). This is a state funded school for boys, and is located very close to the Bangladesh border. The school has recently been renovated with state grants and now has a small auditorium in the old building, which also houses a small museum in its first floor.

The lecture was on the general theme of animal behaviour research, with Dr. Bhadra's research on free-ranging dogs as an example. The idea was to excite the students and enthuse them to ask questions, and the lecture was mostly an interactive session. They were encouraged to ask questions about their surroundings, and the response was quite overwhelming. Once encouraged, the students asked varied questions, ranging from "Why should we be worried about the Coronavirus?" to "Which is the tallest breed of dogs in the world?" The session was attended by a total of 160 students from classes VIII to X, and included a "Draw a scientist" contest, run as a project under the Global Young Academy. The session spanned 4 hours, including a short break of 30 minutes, during which the students were provided a light snack.

The Draw A Scientist contest was conducted by Dr. Anindita Bhadra among over 200 high school students at the Worldwide Meeting of Young Academies held in Da Nang, Vietnam. The students were asked to draw what they think a scientist looks like. This is a social experiment for collecting data on existing biases about scientists among young people across the world. Prof. Soumitra Banerjee (DoAA) participated in the second edition of the "Knowledge Summit", a high-level Franco-Indian summit dedicated to higher education, research, and innovation on 17 and 18 October 2019 in Lyon, France.

It was to deepen our scientific and academic cooperation and launch concrete initiatives in the areas identified as priorities by our two countries such as artificial intelligence & mathematics, smart cities, renewable energies, aeronautics & space, agriculture & food processing, marine sciences, valorization of natural resources from plants, and strengthening employability and entrepreneurship.

## Electronic Media Outreach

We have been publishing the news highlight and outreach activities on following institute official social media pages.

Facebook: <https://www.facebook.com/www.iiserkol.ac.in>

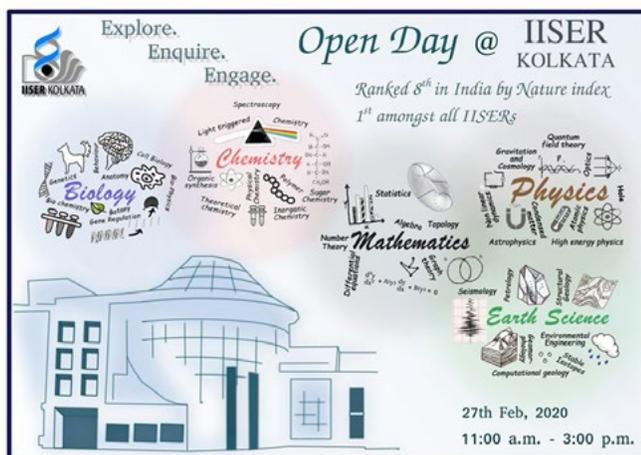
Twitter: <https://twitter.com/iiserkol/>

### Launch of #WISER in facebook

The image displays two related pieces of content. On the left is a flyer titled "Women in Science IISER Kolkata". It features a silhouette of a woman's head with neural connections and text explaining the initiative: "Carrying forward the theme for National Science Day 2020 - 'Women in Science', IISER Kolkata is launching #WISER - to recognise and appreciate the women scientists at IISER Kolkata. Captus, the science communication magazine of the institute, is happy to coordinate and facilitate the publication of this website. This will be a series of interviews of the women scientists in our institute, published at regular intervals throughout the year. These interviews, conducted by a small team of students from our institute, will be released in order of seniority, on the official website of Captus. The low representation of women at advanced levels of academia and other fields, has been a topic of discussion for very long now. While there is a well-posed acknowledgement of the situation by all, initiatives to attain a balance are few. #WISER is a celebration of the contributions of women scientists to scientific research and an initiative to amplify their voices. Captus' Tm thought capsule, is proud to host this showcase of amazing women, working in various STEM fields in IISER Kolkata. Follow us on @iiserkol for regular updates on #WISER." Below the text are several small portraits of women scientists, categorized by department: Department of Biological Sciences, Department of Molecular Sciences, Department of Physical Sciences, and Department of Earth Sciences. On the right is a screenshot of a Facebook post from the Indian Institute of Science Education and Research Kolkata, dated 8 March. The post text reads: "Carrying forward the theme for National Science Day 2020 - 'Women in Science', IISER Kolkata is launching #WISER - to recognise and appreciate the women scientists at IISER Kolkata. <https://scicomm.iiserkol.ac.in/docs/pages/1/wiiser.html>". The post shows 154 reactions and 6 shares.

 **Anindita Bhadra**  
18 February · 🌐

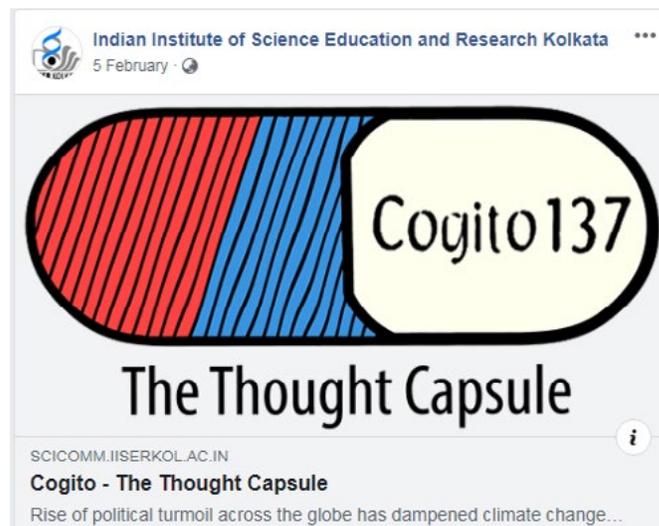
IISER Kolkata is opening up its labs for college students next week - Join us for the first Open Day at IISER Kolkata on 27th February. Explore, Enquire, Engage! Please help us spread the word. — with Malabika Bhattacharjee, Spoorthy Raman, Manabi Paul and 14 others.



## Launch of Science Communication Magazine – Cogito 137

The Thought Capsule

This is the link to our website - <https://scicomm.iiserkol.ac.in/>



## Members of Institute's International Relations and Outreach Office

**Prof. P.K. Panigrahi**

Dean of International Relations and Outreach (DoIRO):

**Dr. Anindita Bhadra**

Associate Dean of International Relations and Outreach (ADoIRO):

### Institute Outreach Activities Committee:

**Dr. Soumyajit Roy**

Convener

**Dr. Amirul Islam Mallick**

**Mr. Santanu Das Mahapatra**

(AR), in charge MHRD Mandated Activities

**Mr. Sonatan Soren**

Junior Assistant



# Library

## Overview

As through the years from the foundation of the institute, the library continued playing the role of the information dissemination point for the whole institute. During this period, like previous ones, the library continued to play the important role of supporting the teaching and research requirements of the IISER Kolkata Community.

During this period, the library continued subscribing important journals, both online and print, online full-text and bibliographic databases and e-books. One of the most important aspects of this years' subscription is the augmentation of the required resources. The Library Committee went through the list of resources subscribed by the library so far and decided on the resources for continued subscription as per the present requirements of the institute. It is done in such a way so as to align it with the current trend of researches undertaken at the institute. In addition, the library decided to procure Springer mathematics and statistics e-books for selected year during the period under report.

Among the new resources decided for subscription for the calendar year 2020 is the complete Brill biology journals' collection. This was subscribed as per the negotiation done by EShodhSindhu (an MHRD initiative)

and the publisher's exclusive India representative. Decision was also taken to start the subscription of several plant science journals to support the research activities of the newly joined faculty members from this area. The Committee also decided purchasing the print books from two book series published by American Mathematical Society on a standing order basis.

The Library added 852 printed books to its collection during the reported period. Apart from that, the library received 92 printed documents as gratis. The online institute repository contains about 980 theses and dissertations. During this period, the library started a new project of uploading the question papers to the institute repository.

Approximately 36,575 transactions (for printed books and audio-video materials) took place at the circulation desk during this period. As part of document delivery service, the library supplied 24 papers and book chapters to its own community. On account of ILL, the library provided 24 papers to other academic institutions. The library provided around 9,963 scanned pages/ photocopies/printouts to its users.

### To continuously serve its users, the library took endeavours to continue to subscribe to resources from the following eminent scholarly societies:

1. American Chemical Society - journals with their archive
2. American Geophysical Union – complete journal collection with their archive
3. American Institute of Mathematical Sciences
4. American Mathematical Society
5. GeoScienceWorld with GeoRef database
6. Institute of Mathematical Statistics – Complete journal collection
7. Institute of Physics journals package
8. Optics Infobase database of Optical Society of America
9. Royal Society Science collection
10. Royal Society of Chemistry – journals with their archive
11. Society for Industrial and Applied Mathematics (SIAM) - Complete journal collection and archive

Apart from these, the institute receives access to the following resources as a member of the *e-Shodh Sindhu: Consortium for Higher Education Electronics Resources* of MHRD:

- |  |  |
|--|--|
| 1. ACM Digital Library   | 7. JGate Plus (JCCC)                               |
| 2. American Institute of Physics                                   | 8. JSTOR   |
| 3. American Physical Society                                       | 9. MathSciNet                                      |
| 4. Annual Reviews  | 10. Oxford University Press                        |
| 5. Economic & Political Weekly                                     | 11. Springer Link 1700 Collection + Nature Journal |
| 6. Institute for Studies in Industrial Development (ISID) Database | 12. Web of Science                                 |

Besides, the library also subscribes the SciFinder database to help its chemistry user community in their bibliographic search.

## Writing Support Service

As part of providing writing support service to our users in their writing, the library started to subscribe to the *Grammarly* tool from this financial year.

## Originality Checking Service

Library subscribed online tool *Turnitin* assists our users to prevent any inadvertent mistake in acknowledging the resources they used while preparing their term papers, dissertations or theses.

## Library Hours (2019-2020):

Monday through Sunday: 24 hours

The library is open on all the seven days of the week except institute holidays. However, during examinations (7 days prior to and until the completion), the library is open for all days irrespective of any holiday(s) in between.





# Computer Centre

## Computing Facilities

The Computer Center at IISER Kolkata maintains a wide variety of state-of-the-art computing facilities to cater the needs for performing the cutting-edge research as well as to maintain a very high-standard of academic activities.

All buildings in the campus are connected through high speed Optical Fiber Cable Network which provided gigabit ethernet connections to the end-users. Further, the entire campus of the institute is wifi enabled through a combination of 2.4 and 5 GHz channel. The institute at present is connected to the internet through a combination of 1 Gbps leased-line from National Knowledge Network (NKN) and a gigabit broadband connection from Alliance Broadband. The campus network is made secured against ever-increasing cyber-attacks by installing multiple state-of-the-art open-source Endian firewalls which also provide automatic switchover of internet uplinks to maintain an uninterrupted internet connectivity.

The institute has a well equipped Virtual Classroom to conduct and participate in e-classes offered by the institutions across India. It also has two well equipped Computer Centers with the sitting capacity of 75 users.

All the entry gates, buildings of the Institute and other strategic locations are monitored through IP Camera based Surveillance System. All institute offices, laboratories, entrance gates and security checkpoints are equipped with IP based VoIP phones.

The high-performance scientific computational needs of the institute are catered through the existing Ramanujan Cluster and the Dirac Supercomputer. The Ramanujan cluster has 216 cores along with 48 GB of RAM per node. It also has several terabytes of connected storage. The Dirac Supercomputer has the speed of 78.8 Teraflops [60 Teraflops (CPU) + 4×4.7 Teraflops (GPU)]. The Dirac Supercomputer has 100 GBPS Infiniband connectivity and a Storage of 130 TB on RAID-5 NAS Storage with 20 GBPS network for Backup. Additionally, the computing needs of the institute are also augmented through multiple high-end workstations that are installed in every departments.

The Computer Center maintains following services in the campus network.

Mail, Web, LDAP, DNS, Gateway, Firewall, NFS, VPN, Data Storage & Backup Solution, Institute ERP, in-house developed Academic ERP, Moodle based Course Management System, Intranet, Internet, WiFi etc.

Institute is committed and is closely working to have a paperless administrative environment on the campus.

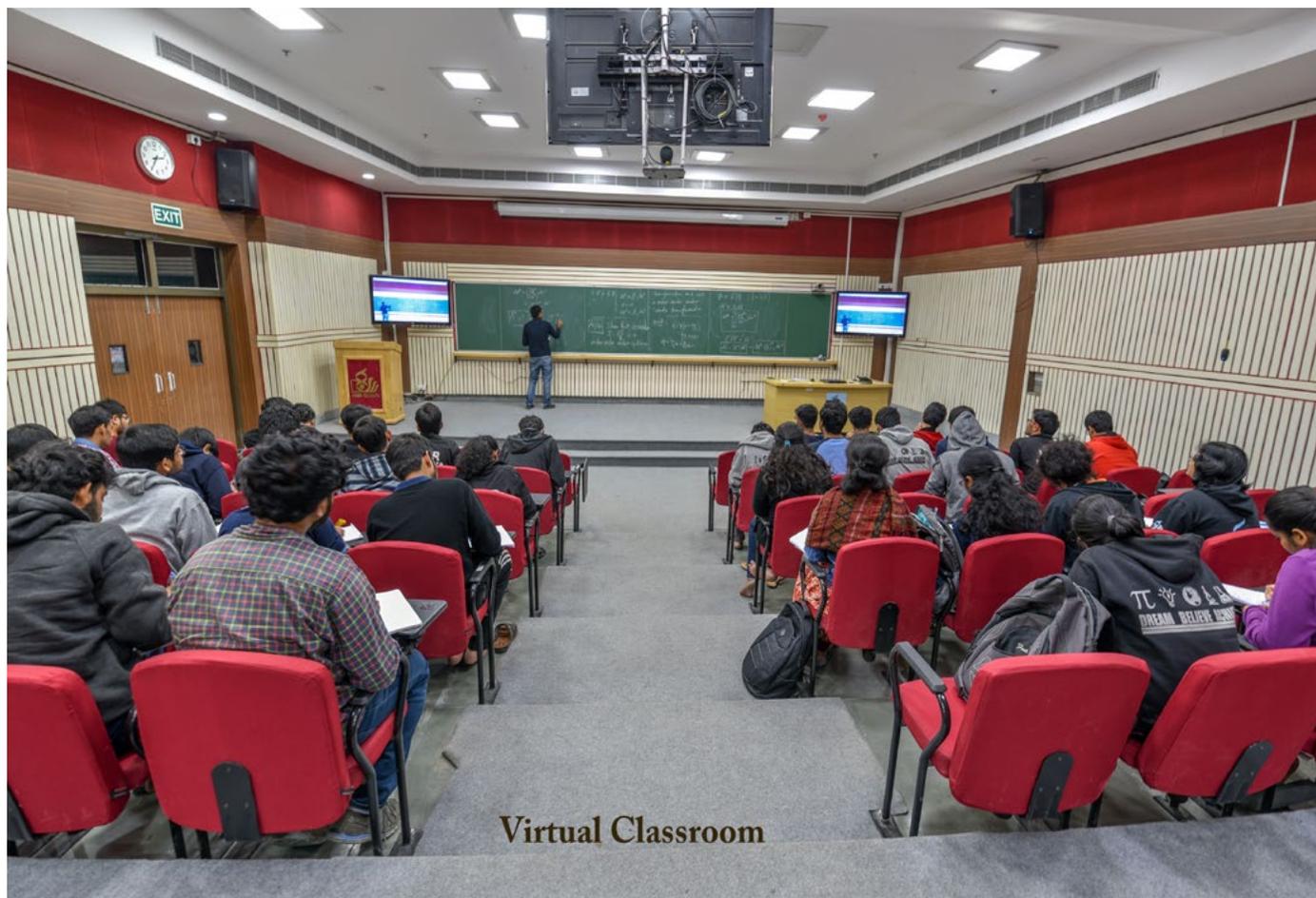
During the financial year 2019-20, the following computational systems were newly installed or upgraded:



Dirac Supercomputer



Server Room



### Biometric attendance system

During the current financial year, the biometric class attendance system is extended for the third and the fourth year courses. An automated attendance record syncing mechanism with the existing course management system, WeLearn, have also been put in place. It allows instructors, students and academic cell members to monitor the attendance records on a daily basis through WeLearn portal.

### Dual-band Wireless Access Points

In order to meet the growing internet requirements in the existing hostels, during the current financial year, the old wireless access points were upgraded with the state-of-the-art dual-band high-throughput access points.

### Eduroam

During the current financial year, Institute joined the 'eduroam' system which is a global service that enables users from participating institutions to obtain Internet connectivity across campus when visiting other participating institutions by simply opening their laptop or activating their smartphone or other portable device through wifi.

### Creation of an additional Computer Center (CC-2)

During the current financial year, the institute has started an additional computer center (CC-2). The objective of this facility is to provide space for research scholars and final year BS-MS students to read and write research papers, and for non-intensive computational work using their own laptops. The CC-2 is equipped with WiFi facilities, large number of LAN ports, 20 nos. of high-end desktops, 24x7 IP Cameras for surveillance, Projector etc.

## List of members of computer center with their designation

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**Shahid Ali Farooqui**

System Administrator

**Rana Bhadra**

Technical Officer

**Arnab Kumar Sadhukhan**

Technical Officer

**Sanjib Das**

Technical/Scientific Assistant

**Saikat Bhattacharyya**

Software Assistant

**Sujit Sarkar**

Attendant - Multi Skill





# Administrative Report

## Major administrative activities/events of the Institute during the year 2019-20

1. **Meetings:**
  - (i) Three meetings of the **Board of Governors** were held on 11.06.2019, 18.09.2019 and 31.12.2019, respectively.
  - (ii) Three meetings of the **Finance Committee** were held on 11.06.2019, 18.09.2019 and 31.12.2019, respectively.
  - (iii) Four meetings of the **Senate** were held on 22.07.2019, 24.10.2019, 19.12.2019 and 16.03.2020 respectively.
  - (iv) One meeting of the **Building and Works Committee** was held on 03.06.2019.
2. The **Seventh Convocation of the Institute** was held on 11.06.2018 at the permanent campus of IISER Kolkata. **Prof. Ramakrishna Ramaswamy**, Former President of Indian Academy of Sciences, Former Vice Chancellor of the University of Hyderabad was the Chief Guest. Prof. Arvind A. Natu, Chairperson, Board of Governors, IISER Kolkata presided over the occasion. A total of 208 students – 151 BS-MS; 3 - MS by Research; 16 - IPhD (with MS), 7 - IPhD and 31 PhD students – received their degrees in the 7th Convocation of IISER Kolkata.
3. The **SPICMACAY chapter of IISER Kolkata** organized an in-house concert **Hindol** on 18.04.2019, where promising budding artists from IISER-K performed. They were joined by Prof. Soumitro Bannerjee on violin.
4. **Special Talk Series** by Dr. T. Ramasami, DST, GOI was organized from 07.05.2019 to 09.05.2019.
5. **Jagadis Bose National Science Talent Search (JBNSTS)**, a nurturing workshop for young talented students of all over West Bengal was organized in collaboration with IISER Kolkata between 17.06.2019 and 21.06.2019
6. IISER Kolkata hosted the **Quantum Information and Quantum Technology (QIQT)** Summer School from 22.06.2019 to 23.07.2019
7. IISER Kolkata held the **GIAN Programme on Astrobiology and Science Communication** from 22.07.2019 to 26.07.2019
8. A programme remembering the great poet on his Death anniversary, **'Smarane Rabindranath'** was organised by the students with a collage of cultural programs based on the works and thoughts of **'Gurudev' Rabindranath Tagore on 08.08.2019**
9. **Jashn-E-Qalam**, a Mumbai-based collective of professional Stage & Screen Actors, who celebrate the beauty & brilliance of Hindustani Literature with Solo Performances of Short Stories – was hosted by the Literary Club and Dramatics Club of IISER Kolkata on 11.08.2019.
10. IISER Kolkata – **Photography Club organized a workshop session** on 12.08.2019 with renowned photographer Ms Lopamudra Talukdar to a discussion on skills and techniques of photography and basic photography
11. All members of IISER Kolkata celebrated the **73rd Independence Day** with a host of programmes including the 'Freedom Run' on 15.08.2019
12. **Institute Foundation Day** was observed on 16.08.2019 where a Foundation Day talk for 2019 was delivered by Dr. Shekhar C Mande, Director General CSIR and Secretary DSIR.
13. IISER Kolkata celebrated **Teachers Day** on 05.09.2019 by acknowledging the unparalleled contribution and dedication of all teachers.
14. **A Public Lecture by Ann Devereaux** was organized by IISER Kolkata – CESSI and NASA Jet Propulsion Laboratory) titled Journey into Space on 25.09.2019.
15. **Chemical Science Young Investigator Symposium** sponsored by the Royal Society of Chemistry's flagship journal Chemical Science was organized between 18.10.2019 – 20.10.2019.
16. Observance of **Vigilance Awareness Week 2019** based on the Theme: 'Integrity: way of Life' (28.10.2019 – 02.11.2019) and pledge-taking ceremony on 28.10.2019, in presence of the Director, Chief Vigilance Officer and other senior members.
17. A talk on the Nobel Prize in Economics by Dr Tushar Kanti Nandi, CTRPFP, Centre for Studies in Social Sciences, Calcutta was organized on 30.10.2019
18. **Rashtriya Ekta Diwas (National Unity Day)** was celebrated 31.10.2019 on the occasion of birth anniversary of Sardar Vallabhbhai Patel through a Unity pledge-taking ceremony followed by **"Run for Unity"**.
19. **Vigyan Samagam – The First Mega Science Exhibition in India** at Science City, Kolkata was held from 04.11.2019 – 31.12.2019 where one of the mega projects highlighted was LIGO in which Prof. Rajesh Kumble Nayek (DPS) of IISER Kolkata and his students were actively involved

20. IISER Kolkata celebrated the **250th birthday of Alexander Von Humboldt** on 06.11.2019 where Dr Michael Feiner, Consul General of German Consulate in Kolkata, and Professor Pulak Sengupta, Jadavpur University attended and spoke during this occasion.
21. **SPICMACAY chapter of IISER-Kolkata** organized a Classical music concert -Carnatic Violin and Hindustani Vocal on 05.11.2019 which had Padmashri Vidushi A. Kanyakumari on Violin and Shri. Sambuddha Chatterjee (Vocal)
22. **“National Education Day”** was observed on 11.11.2019 at IISER Kolkata to commemorate the birth anniversary of Maulana Abul Kalam Azad, the first education minister of independent India, who served from 15 August 1947 until 2 February 1958
23. IISER Kolkata has been recognized as a **“Swachh Campus” by MHRD** on 06.12.2020. Representative from MHRD visited and toured the IISER Kolkata campus and later visited our adopted villages.
24. **VIJYOSHI 2019** was held between 8.12.2019 - 10.12.2019, National Science Camp funded by Department of Science and Technology, Government of India. Over 380 students attended the event organized by KVPY, IISc, Bangalore and hosted by IISER Kolkata. Talks were delivered by distinguished scientists from across the globe as well as by faculty members of IISER Kolkata. A session on scientific demonstrations and a cultural programme on scientific temperament were also organized for the participants.
25. **The 37th meeting of the Senate** of IISER Kolkata was held on 19.12.2019 at Ramanujan Lecture Theatre, APC Roy Lecture Hall Complex, IISER Kolkata.
26. **The 4th IISER Kolkata Alumni Meet** was held from 07.01.2020 – 08.01.2020 in which 37 alumni members confirmed their participation.
27. **District level Self Defense Boot Camp 2020** was organized by Self Defense and Yoga Camp, IISER Kolkata on 12.01.2020 under the Fit India Initiative of MHRD. 150 students from in and around Nadia district participated.
28. **An International Conference was organized** from 19.01.2020 – 30.01.2020 on EMBO Practical Course: CEM3DIP 2020: Single particle cryoEM of macromolecular assemblies and cellular tomography and was inaugurated by Prof. Sourav Pal, Director, IISER Kolkata.
29. Viewing of the event - **‘Pariksha Pe Charcha 2020’** with Prime Minister Shri Narendra Modi was arranged for students of IISER Kolkata on 20.01.2020.
30. **Public Lecture at IISER Kolkata**, organized by Indian Academy of Sciences, Bangalore, speaker - Dr. Andrew Peterson Chief Scientific Officer, MedGenome, Foster City, USA
31. IISER Kolkata Celebrated the **71st Republic Day of the Nation** on 26.01.2020. It was marked by flag hoisting by the Director, followed by the National Anthem.
32. Official launch event of **Cogito137 - The thought capsule** took place on 05.02.2020 It is a web-based science communication bi-monthly (once in two months), to be published on the IISER Kolkata website and will be available as a wall magazine at five selected locations on campus.
33. **OSA travelling lecture** was organized by the IISER-K Optical Society (OSA) Student Chapter on 28.02.2020.
34. Celebration of **National Science Day** on 28.02.2020 was marked by Plenary Lectures by Prof. Urbasi Sinha, Raman Research Institute (RRI) and Prof. Sabyasachi Bhattacharya, C.V. Raman University Professor, Ashoka University, followed by felicitation of faculty, students and staff of IISER Kolkata for their research and innovation.
35. **FIMB 2020** - Frontiers in Modern Biology 2020 was held from 28-29 February 2020 at IISER Kolkata.
36. **IIC- Innovation Ambassador Training Programme** was organised by Institute Innovation Council – IISER Kolkata and MHRD from 06.03.2020 – 07.03.2020.



# Administrative Staff List

## Non-Teaching Staff

### Group A

#### Joydeep Sil

Registrar, Administration

#### Vijay Raghav Tiwari

Librarian, Library

#### D. Kasi Viswanatha Reddy

Superintending Engineer, IWD

#### D.Govinda Rao

Deputy Registrar (F&A), Finance & Accounts

#### Biswajit Das

Deputy Registrar (R&D), Research & Development

#### Gudla Bhavani Sankar

Deputy Registrar (Admin), Administration

#### Shahid Ali Farooqui

System Administrator, Computer Centre

#### Kambalapalli Srikant

Sr. Scientific Officer, Chemical Sciences

#### Sanad Kumar Shukla

Assistant Registrar, Establishment

#### Sushmita Bhattacharjee

Assistant Registrar, Academic Cell

#### Santanu Das Mahapatra

Assistant Registrar, IRO

#### Suraj Narayan Bordoloi

Assistant Registrar, Faculty Affairs

#### Dibyendu Debnath

Assistant Registrar, Student Affairs

#### Chinmay Sarkar

Assistant Registrar, F&A and Stores & Purchase

#### Siladitya Jana

Assistant Librarian, Library

#### Rana Bhadra

Technical Officer, Computer Centre

#### Kaushal kumar Sharma

Chief Security Officer, Administration

#### Arnab Kumar Sadhukhan

Technical Officer, Computer Centre

#### Sunita Bhattacharjee

Technical Officer (Civil), IWD

#### Partha Banerjee

Technical Officer (Electrical), IWD

#### Parna Gupta

Scientific Officer, Chemical Sciences

#### Indrajit Chatterjee

Scientific Officer, Physical Sciences

#### Pradip Khatua

Scientific Officer, DPS

#### G. Lekha

Scientific Officer, DBS

#### Dr. Mayukh Pal

Medical Officer, Medical Unit

#### Dr. Priya Dey

Medical Officer, Medical Unit

### Group B

#### Debabrata Mazumder

Asst. Engineer (Electrical), IWD

#### Shibajee Das

Asst. Engineer (Civil), IWD

#### Saberi Sen

Office Superintendent, Academic Cell

#### Shibnarayan Paul

Office Superintendent, Purchase Section

#### Bipul Kumar Bora

Office Superintendent, Student Affairs

#### Arnab Chattopadhyay

Tech/Scientific Assistant, Chemical Sciences

#### Sanjib Das

Tech/Scientific Assistant, Computer Centre

#### Rajni Marick

Tech/Scientific Assistant, Physical Sciences

#### Mettu Vasudev

Physical Education Instructor, Student Affairs

#### Sushanta Kumar Roy

Library Information Assistant, Library

#### Pitambar Naskar

Library Information Assistant, Library

#### Mitali Pal

Personal Assistant, Research & Development

#### Joy Chakraborty

Personal Assistant, Establishment

#### Manoj Dutta

Junior Engineer (Electrical), IWD

#### Subhankar Das

Technical Assistant (Civil), IWD

#### Gopal Shankar Mukherjee

Technical Assistant, (Electrical), IWD

#### Anirban Howlader

Technical Assistant, IWD

**Santosh Ch. Das**

Scientific Assistant, Earth Sciences

**Ritabrata Ghosh**

Scientific Assistant, Biological Sciences

**Dipesh Dutta**

Scientific Assistant, DBS

**Surashree Dutta**

Junior Translator, OL Academic Cell

**Himanshu Ghosh**

Junior Superintendent, Purchase Section

**Ganga Ram Roy**

Accountant, Finance &amp; Accounts

**Ashok Das**

Accountant, Finance &amp; Accounts

**Raju Sethi**

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**Soumyendra N.C.Choudhury**

Accountant, Research &amp; Development

**Saikat Bhattacharyya**

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**Group C****Puskar Das**

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**Prasanta K Bhui**

Office Assistant (MS), Finance &amp; Accounts

**Sukhendu Chatterjee**

Office Assistant (MS), Finance &amp; Accounts

**Sharmistha Ghosh**

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**Sanjoy Bhowmick**

Office Assistant (MS), Stores &amp; Purchase

**Abir Banerjee**

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**Pradip Chandra Dhara**

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**Sudip Mitra**

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**Debabrata Sutradhar**

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**Rupan Chandra Rakshit**

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**Piyali Bose**

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**Gour Gopal Paul**

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**Purabi Mondal**

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**Deepak Kumar Panigrahi**

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**Arun Dutta**

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**Joydeep Sengupta**

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**Hira Lal Pasi**

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**Prosenjit Mukherjee**

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**Soumya Kanti samanta**

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**Avijit Debnath**

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**Zeeshan Akhtar**

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**Prasenjit Ghosh**

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**Annie Sunita Kerketta**

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**Supriya Gupta**

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**Hiru Pramanik**

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**Ananda Mohan Saha**

Lab Attendant, Physical Sciences

**Subhas Malo**

Attendant, Physical Sciences

**Sanjit Singh**

Attendant, Director's Office

**Shiodeni Yadav**

Attendant, Registrar's Office

**Ajay Kumar Das**

Attendant (Multi Skill), Administration

**K. Dharma Rao**

Attendant(Multi Skill), IWD

**Sujit Sarkar**

Attendant (Multi Skill), Computer Centre

**Shyamal Sana**

Attendant(Multi Skill), Student Affairs



# Important Administrative Committees

# Members of The Board of Governors

[As on 31.03.2020] [updated]

## Chairperson

### Prof. (Retd.) Arvind A. Natu

IISER Pune  
Former Senior Scientist, National Chemical Laboratories (NCL)

## Ex-officio

### Secretary

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### Secretary

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### Secretary

Ministry of Earth Sciences, Prithvi Bhawan,  
Govt. of India  
Opp. India Habitat Centre, Lodhi Road, New Delhi  
Email: secretary@moes.gov.in

### Prof. Jayasri Das Sarma

Professor, Department of Biological Sciences  
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### Prof. Raja Shunmugam

Professor, Department of Chemical Sciences  
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## Secretary

### Shri. Joydeep Sil

Registrar, IISER Kolkata  
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## Members of the Finance Committee

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[As on 31.03.2020] [updated]

### Chairperson

**Prof. (Retd.) Arvind A. Natu**

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Former Senior Scientist,  
National Chemical Laboratories (NCL), Gol, Pune  
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### Member

**Prof. Sourav Pal**

Director  
Indian Institute of Science Education and Research Kolkata  
Mohanpur- 741 246

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**Dr. Swati De**

Professor,  
Department of Chemistry  
Kalyani University,  
Kalyani, Nadia District,  
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**Col. G Raja Sekhar (Retd.)**

Registrar,  
IISER Pune,  
Dr. Homi Bhabha Road, Ward No. 8,  
NCL Colony, Pashan,  
Pune – 411 008 (Maharashtra)

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**Financial Adviser**

Department of Higher Education  
Ministry of Human Resource Development  
Shastri Bhawan, New Delhi - 110 001

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### Secretary

**Shri. Joydeep Sil**

Registrar  
Indian Institute of Science Education and Research Kolkata  
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# Members of BWC

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[As on 31.03.2020] [updated]

## Chairperson

**Prof. Sourav Pal**

Director, IISER Kolkata  
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## Invitee

**Prof. Soumitro Bannerjee**

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**Prof. Bipul Pal**

Chairman, IWD, IISER Kolkata  
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**Chief Engineer (EZ – I), CPWD**

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## Secretary

**Shri. D Kasi Viswanatha Reddy**

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## Senate Members

[As on 31.03.2020] [updated]

### Chairperson

#### **Prof. Sourav Pal**

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## Secretary

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Mohanpur - 741 246

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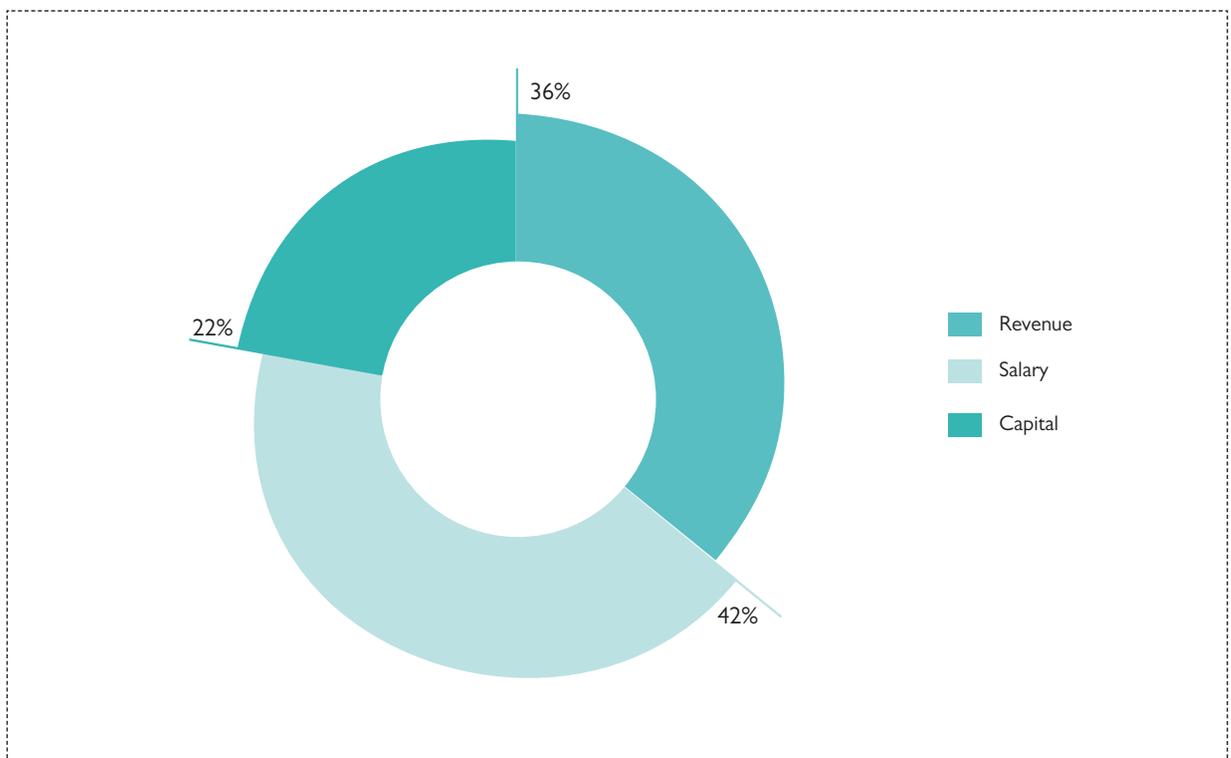
# Accounts at a Glance

## Accounts at a Glance

The Annual Accounts of the Institute were approved by the Finance Committee and the Board of Governors during its meeting held on May 26, 2020. The annual audit for every Financial Year is carried out by C&AG. The balance sheet and the income and expenditure statement for the Financial Year 2019–20 are given in the following pages.

### Funds Received From MHRD

During the Financial Year 2019–20 IISER Kolkata received an amount of ₹109.21 crores from the MHRD under the budget heads revenue, capital, and salary. The break-up across the three budget heads is as below.



### Corpus Fund

The cumulative corpus fund as on March 31, 2019 from the Internal Revenue generated is ₹55.82 crores. The Institute generated an amount of ₹7.21 crores during the Financial Year 2019–20 from internal receipts.

### Extramural Grants

A number of research projects receive support from extramural grants through individual competitive research grants that faculty members have secured. During the Financial Year 2019–20, a total of ₹30.41 crores have been received by the Institute via extramural grants. New grants initiated during the Financial Year 2019–20 are listed in the Appendix section of this report.

## Balance Sheet

as on 31st March, 2020

(Amount in ₹)

Sl. No.	SOURCES OF FUNDS	Schedule	Current Year 2019-20	Previous Year 2018-19
I	CAPITAL FUND	1	53731,33,601	53378,21,742
II	DESIGNATED/EARMARKED/ENDOWMENT FUNDS	2	7209,17,831	6089,54,712
III	CURRENT LIABILITIES & PROVISIONS	3	8602,27,240	8513,04,881
		<b>TOTAL</b>	<b>69542,78,672</b>	<b>67980,81,335</b>
Sl. No.	APPLICATION OF FUNDS	Schedule	Current Year 2019-20	Previous Year 2018-19
IV	FIXED ASSETS:			
	TANGIBLE ASSETS	4	40563,66,884	41057,57,350
	INTANGIBLE ASSETS		538,78,359	481,31,166
	CAPITAL WORK-IN-PROGRESS		12628,88,358	11839,33,226
V	INVESTMENTS FROM EARMARKED/ENDOWMENT FUNDS:			
	LONG TERM	5	-	-
	SHORT TERM		6317,54,845	4353,94,074
VI	INVESTMENTS - OTHERS	6	-	-
VII	CURRENT ASSETS	7	3753,57,020	4497,70,403
VIII	LOANS, ADVANCES AND DEPOSITS	8	5740,33,206	5750,95,116
		<b>TOTAL</b>	<b>69542,78,672</b>	<b>67980,81,335</b>
IX	SIGNIFICANT ACCOUNTING POLICIES	23		
X	CONTINGENT LIABILITIES AND NOTES TO ACCOUNTS	24		

For and on behalf of IISER Kolkata

Sd/-  
**(D. Govinda Rao)**  
Deputy Registrar (F&A)

Sd/-  
**(Joydeep Sil)**  
Registrar

Sd/-  
**(Prof. Sourav Pal)**  
Director

Place: Mohanpur

Date: May 23, 2020

# Income and Expenditure Account

For the Year Ended 31st March, 2020

(Amount in ₹)

Sl. No.	Particulars	Schedule	Current Year 2019-20	Previous Year 2018-19
	<b>INCOME</b>			
I	ACADEMIC RECEIPTS	9	473,96,765	493,01,200
II	GRANTS/SUBSIDIES	10	8422,72,345	7021,58,258
III	INCOME FROM INVESTMENTS	11	-	-
IV	INTEREST EARNED	12	150,52,212	190,52,089
V	OTHER INCOME	13	150,80,163	125,96,657
VI	PRIOR PERIOD INCOME	14	1,40,907	12,95,638
VII	DEPRECIATION (ADJUSTED) FOR THE YEAR TO BE ADJUSTED WITH CAPITAL FUND		2929,97,701	2841,20,229
	<b>TOTAL (A)</b>		<b>12129,40,093</b>	<b>10685,24,071</b>
	<b>EXPENDITURE</b>			
VIII	STAFF PAYMENTS & BENEFITS (ESTABLISHMENT EXPENSES)	15	4566,98,087	3993,50,379
IX	ACADEMIC EXPENSES	16	1298,78,052	1369,41,655
X	ADMINISTRATIVE AND GENERAL EXPENSES	17	1444,62,444	1321,19,647
XI	TRANSPORTATION EXPENSES	18	21,02,209	31,55,443
XII	REPAIRS & MAINTENANCE	19	724,20,701	651,98,197
XIII	FINANCE COSTS	20	80,785	1,00,146
XIV	DEPRECIATION (ADJUSTED) FOR THE YEAR TO BE ADJUSTED WITH CAPITAL FUND	4	2929,97,701	2841,20,229
XV	OTHER EXPENSES	21	-	-
XVI	PRIOR PERIOD EXPENSES	22	366,30,066	77,49,446
	<b>TOTAL (B)</b>		<b>11352,70,045</b>	<b>10287,35,142</b>
	<b>BALANCE BEING EXCESS OF INCOME OVER EXPENDITURE (A-B)</b>		<b>776,70,048</b>	<b>397,88,929</b>
	Less: Interest earned on GIA transferred to Schedule-3 (Current liabilities)		55,23,985	
	TRANSFER TO/FROM DESIGNATED FUND			
	BUILDING FUND			
	OTHERS (SPECIFY)			
	(I) Balance of Internal Earnings of the Institute carried to Corpus Fund: Total of Schedule 9, 11, 12, 13 & 14 (less) utilized for current year Capital/Revenue Expenditure (if any) & interest earned on GIA		721,46,063	397,88,929
	(II) PROFESSIONAL DEVELOPMENT ACCOUNT-PROJECT (PDAP)		-	-
	(III) DEPARTMENT PROMOTIONAL ACCOUNT (DPA)		-	-
	(IV) RESEARCH & DEVELOPMENT (R&D)		-	-
	<b>BALANCE BEING SURPLUS/(DEFICIT) CARRIED TO CAPITAL FUND</b>		<b>-</b>	<b>-</b>
	SIGNIFICANT ACCOUNTING POLICIES	23		
	CONTINGENT LIABILITIES AND NOTES TO ACCOUNTS	24		

For and on behalf of IISER Kolkata

Sd/-  
**(D. Govinda Rao)**  
Deputy Registrar (F&A)

Sd/-  
**(Joydeep Sil)**  
Registrar

Sd/-  
**(Prof. Sourav Pal)**  
Director

Place: Mohanpur  
Date: May 23, 2020



**Published by**

The Director, Indian Institute of Science Education and Research Kolkata



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