



Annual Report 2015-16



A glimpse through the journey
2006-2016



INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH KOLKATA
भारतीय विज्ञान शिक्षा एवं अनुसंधान संस्थान कोलकाता

(An Autonomous Institution under Ministry of Human Resource Development, Government of India)



ANNUAL REPORT

2015-16



Contents

Foreword	02
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Key Committees	06
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1.1 Board of Governors	07
1.2 Finance Committee	07
1.3 Academic Senate	08



The IISER Kolkata Community	09
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2.1 Faculty Members	10
2.2 Administrative Staff	15



Highlights of 2015-16	17
------------------------------------	-----------



Students	19
-----------------------	-----------

4.1 Student Enrolment	21
4.2 Student Achievements	22
4.3 Student Research Publications	23
4.4 Ten Years at a Glance	24



Members of Faculty26

- 5.1 Research Funding 28
- 5.2 Research Publication..... 29
- 5.3 Awards and Recognitions..... 30
- 5.4 Ten Years at a Glance..... 31



Institute Administration34

- 6.1 Major Activities 35
- 6.2 Staff Achievements 36



Institute - Major Initiatives37

- 7.1 Research Support 38
- 7.2 International Collaboration..... 40
- 7.3 Research Infrastructure..... 40
- 7.4 Academic Seminars and Conferences 40
- 7.5 For Persons with Disabilities 42
- 7.6 Library 42
- 7.7 Campus 44
- 7.8 Outreach 46



Student Activities47

Foreword



I am both pleased and privileged to present to you the Institute's Annual Report, which gives an account of what has been accomplished at Indian Institute of Science Education and Research (IISER) Kolkata, an autonomous Basic Science Institute of Ministry of Human Resource Development, Government of India during the Financial Year 2015-16. IISER Kolkata will be completing ten years soon. This is a very short span of time in the life of an Institute/University. Nevertheless, the Institute has made tremendous progress during these years and crossed several milestones successfully. IISER Kolkata has been recognized for its vibrancy, its academic ethos and culture, and its energetic faculty, staff and students. The Institute is aware that it has to excel in making all-round development.

At present, IISER Kolkata has 600 BS-MS, 57 first- and second-year Integrated-PhD (IPhD) and 2 MS-by-Research students, comprising a total of 659 UG students. Third-year onwards IPhD students, 78 in number and 242 PhD students comprise our 320 PG students. We have Institute-supported 12 post-doctoral research fellows, distributed over five departments – Biology, Chemistry, Earth Science, Mathematics and Statistics and Physics. On the occasion of 4th Convocation of IISER Kolkata which will be held on 28 June 2016 a total of 122 students will be awarded degrees, of which 86 are BS-MS, 4 MS-by-Research, 5 MS of Integrated-PhD and 27 PhD. Excluding them, we have a total of 979

students. Currently we have 89 regular faculty members (Assistant Professor 41, Associate Professor 41, Professor 7) and 5 Assistant Professors (On Contract). The faculty recruitment and the process of nurturing/promoting present faculty both are going well.

To promote Government initiatives and to allow promising young faculty fellows to get an opportunity to be a part of IISER Kolkata academic fraternity in the starting phase of their career, we have with us 1 Ramanujan and 2 INSPIRE faculty fellows. After joining the Institute, they are adding value to themselves and to the Institute. We have a total of 72 regular non-teaching staff members for the smooth running of the Institute.

Our efforts towards excellence in science have become a way of life to provide international exposure to the UG and PG students through participation and presentations in the national and international conferences, and summer internships are distinctive. We also have a vibrant in-house summer research programme.

Several achievements of our students and faculty continue to make us proud.

Our alumni are doing exceedingly well. It is a matter of great satisfaction that most of our BS-MS students have booked their places in some of world's best institutes, in addition to joining premier research institutes in India.

Nine, mostly 3rd year students, of our BS-MS Programme have been selected for DAAD Working Internships in Science and Engineering (WISE) fellowship in Germany during the summer of 2016. Out of which 6 are from Physics, 2 from Biology and 1 from Chemistry.

Five – four 4th year BS-MS and one IPhD – students from Physics have been selected by DST to attend '66th Lindau Nobel Laureates Meeting' in Germany during 26 June – 1 July 2016.

Two BS-MS students of Physics have been awarded 'Optics and Photonics Education Scholarship-2015, and one BS-MS and one PhD student of Physics have been awarded Travel Scholarship-2015 by SPIE, the international society for optics and photonics for their potential contributions to the field of optics, photonics or related areas.

A PhD student of Earth Sciences has received prestigious award from 'International Atomic Energy Agency (IAEA)' to attend International Symposium on Isotope Hydrology: Revisiting Foundations and Exploring Frontier' held in Vienna, Austria, during 11–15 May 2015. An IPhD student of Earth Sciences and a BS-MS student of Physical Sciences have been selected for S.N. Bose Scholars Programme 2015. A PhD student of Chemistry has been selected for the prestigious Bhaskara Advanced Solar Energy (BASE) Internship Programme, supported by DST, Government of India and the Indo-US Science and Technology Forum (IUSSTF). A joint PhD student from Earth Sciences has been selected for Newton-

Bhabha PhD Placements Programme 2015-16. She also received the Geological Society of America (GSA)'s 2015-International Travel Grant and is the recipient of International Travel Grant in 2015 from DST.

The steady and positive growth in research in different scientific areas being carried out by the faculty and the students at IISER Kolkata are evident from the quality and the quantum of research work in terms of the number of high-quality research publications in peer-reviewed international and national journals. The total number of research publications from the Institute is 1231, majority of them in highly-reputed international journals. Some of this research output has been highlighted on the cover page of esteemed professional journals. Out of 1231 publications, 204 has emanated during the FY 2015-16. A sizeable number of presentations by the faculty have been made in national and international conferences.

The total number of research projects (including consultancy), funded by sponsoring agencies of national and international origin, implemented at IISER Kolkata, till now is 203, with 33 new projects sanctioned during 2015-16. The total amount of funds attracted so far is about ~Rs. 81 Crores.

Like students, many faculty members have made us proud through their scientific achievements, by receiving peer recognitions.

The work of our faculty colleagues has been getting recognized by their peers nationally and internationally. As a consequence, faculty members of IISER Kolkata have received many laurels and peer recognitions.

This year one of our faculty received 'National Geosciences Award' and two faculty received 'Early Career Research Awards'.

A senior faculty of Physics has been awarded the J.C. Bose National Fellowship and a young faculty of Chemistry has received SwarnaJayanti Fellowship award this year, both by the DST, Government of India.

The 'Special Breakthrough Prize in Fundamental Physics' has been awarded for detection of Gravitational Waves, 100 years after Einstein's prediction about the same. Also, the '2016 Gruber Foundation Cosmology Prize' recognizes the entire Laser Interferometer Gravitational-Wave Observatory (LIGO) discovery-team for the first observation of gravitational waves. We are happy that Dr. Rajesh Kumble Nayak and his student Ms. Anuradha Samajdar of the Department of Physical Sciences are part of the LIGO-team from IISER Kolkata, who participated in this successful global collaboration.

Research work of Dr. Raja Shunmugam's group from the Department of Chemical Sciences on 'Arsenic sensing and trapping by norbornene-based polymer' has been selected as Joint Runner-Up at the 6th National Award for Technology Innovation under the Polymeric Materials category. The award has been presented by Hon'ble Minister of Chemicals & Fertilizers, Shri Ananth Kumar, Government of India in the presence of Shri Hansraj Gangaram Ahir, Hon'ble Minister of State for Chemicals & Fertilizers, Government of India, during the function at New Delhi on 20 January 2016.

Dr. Raja Shunmugam also participated as Institute representative on the occasion of the Festival of Innovation 2016 at Rashtrapati Bhavan on 15 March 2016 and presented a poster on his work on Arsenic removal. This is a part of our initiative to get involved in socially-relevant projects.

Some faculty members have been invited to act as Associate Editor/part of the Advisory/Editorial Board members of research journals of international repute, such as, Dalton Transactions, RSC Advances (Analytical), RSC Advances (Polymer Chemistry), CrystEngComm (Royal Society of Chemistry).

Three of our faculty members are involved with the Indian Initiative in Gravitational Wave Observations (IndIGO) project.

During FY 2015-16, the Ministry of Earth Sciences sanctioned the National Centre for Laser Heated Diamond Anvil Cell Facility for High Pressure and Temperature Studies (NC-LHDAC-HPS) at IISER Kolkata. This centre aims to perform research and training activities at extreme conditions of pressure and temperature in a multidisciplinary area of materials sciences and geosciences.

Two FIST proposals from Chemistry and Earth Science departments have been sanctioned by DST in FY 2014-15 and 2015-16, respectively, with a total project amount of about Rs. 7.2 Crores.

Four nationally-competitive 'Global Initiative for Academic Network (GIAN)' proposals have been approved in FY 2015-16.

The number of patents filed so far by our faculty is six.

Recently an effort has been made to measure the research competitiveness of Indian Institutes of Science Education and Research (IISERs) through a scientometric analysis of their research output during the last five years (2010-14). This is reported in Current Science 2016, 110, 307-310

(appeared on 10 February 2016). It is very satisfying to note that IISER Kolkata is doing extremely well.

It is noteworthy that in the Nature Index of ranking Institutions, IISERs have been ranked as No. 4 in India, after all the IITs as No. 1, all CSIR laboratories as No. 2 and IISc Bangalore as No. 3. For Institutions established just 10 years ago, this is a notable achievement.

The academic curricula of our Department of Chemical Sciences have been accredited by the Royal Society of Chemistry in 2016. This is a signal achievement.

During the last year, 7 new faculty members have been appointed (Assistant Professors). All of them have accepted our offer, a few of them already joined the Institute in different disciplines and a few of them will be joining in coming months. Before the end of this year we will have total faculty strength of 95, reaching the sanctioned number of faculty by MHRD.

We arranged an interactive session with Dr. Amitava Pramanik, Hindustan Unilever Limited, Bangalore on 'Academia-Industry Interaction' (27 January 2016). We have now a Unilever Industries-supported research project in the Department of Chemical Sciences of about Rs. 39.33 Lakhs. Earlier, we had three Unilever Industries-supported research projects in the same department.

Our non-teaching staff is also attracting recognition. Mr. Shahid Ali Farooqui, System Administrator was appointed as Registry Authority of Indian Grid Certification Authority by C-DAC Bangalore. He has also been elected for Mozilla Reps Council for a period of one year and Chaired the council during January - February 2016.

In addition, faculty and students take an active interest in science outreach activities as well. In fact, outreach activities of IISER Kolkata are going strong. Throughout the year we organize events such as Department-level and Institute-level lectures and special lectures, conferences, workshops, special events as a part of various national missions and initiatives:

Republic Day Celebration (26 January), a workshop on 'Mathematical and Computational Biology (WMCB 2016)' (9-10 January), 'Ishan Vikas Program' (30 school children attended, who were accompanied by 6 school teachers (12-24 December), a conference on 'Frontiers in Modern Biology (FIMB-2015) (5-6 December), NNMCB Seminars (8 and 14 October), 'International Space Week' (7-8 October), 'Swachh Bharat Abhiyan' (2 October), National-level Student Engagement Campaign was also initiated on this day towards fulfilling this mission. 'Hindi Pakhwara' (23 September), a conference on 'Gravity, Cosmology, Astronomy and Astrophysics - Eastern Region (TCGCA - ER)' (19 September), 'India-Bangladesh Structural Chemistry Conference' (18-19 September), 2nd Sectional Committee Meeting of Chemical Sciences, Indian Academy

of Sciences (7 September), Dr. Goutam Mukherjee, Senior Technical Director, National Informatics Centre, Govt. of India delivered the Invited Talk on 'Digital India Event' (19 August), 69th Independence Day Celebration (15 August), Happiness Programme – Art of Living, Kalyani Chapter (6-11 July), Hindi-workshop on 'Rajbhasha Implementation Program' (30 June), Concluding ceremony of Summer Camp at 'Bud' (our Institute-run crèche-cum-play school) (30 June), International Yoga Day – Art of Living – Yoga Association, Kalyani Chapter, (21 June), an interaction with German Delegates on 'Opportunities of Higher Study in Germany', presented by Ms. Rosemarie E Hille, Acting German Consul General, Kolkata along with DAAD (German Academic Exchange Service) representatives (28 April).

IISER Kolkata has been awarded 'Karyalaya Deep Smriti Chinha' by Rajbhasha Sansthan, New Delhi for implementation of official language policy of Government of India (14-16 October 2015).

INQUIVESTA is a unique science-festival successfully celebrated by students of IISER Kolkata every year, since 2011. Many students from various colleges and universities take part in the festivals. This year it was celebrated during 11-13 March 2016. It was a grand success. We take all necessary measures to make sure that we remain connected with our neighbouring institutes.

A student-organized outreach programme 'Ek Pehal' – is a part of our Outreach Activity which empowers children of the underprivileged strata of the society. The students of IISER Kolkata organized a special Ek Pehal programme (28 February 2016) to bring the children of the local area on the Science Day providing them a platform to learn about the excitement of science. IISER Kolkata students interact with the local children on regular basis and teach them about all branches of science and inspire them about learning and understanding science education and research.

Eminent scientists/scholars from India and abroad are regularly invited to deliver special lectures on topics of wide interest to keep the students and the faculty members updated with recent scientific developments. On the occasion of 'Foundation Day' lecture on 11 July 2015 a few 'merit awards' (Performance-based Incentives) were given by Prof. Ashutosh Sharma, Secretary DST, Government of India to faculty and staff members for their exemplary performance.

After successful scheduling of the first National Science (VIJYOSHI) Camp (10-12 November 2014), under the aegis of KVPY, INSPIRE, and DST, IISER Kolkata hosted the second National Science Camp during 16-18 December 2015. The number of participants from all over India was about 500. The programme included inspiring lectures to motivate young minds toward basic sciences and a day

was devoted to demonstrate interesting and appealing laboratory experiments. Truly speaking, it has been a grand success.

As required by MHRD, Institute subjected itself recently to a full critical review of the research and teaching programmes of our five departments by expert committees, consisting of academicians/scientists of highest national repute. The expert committees highly appreciated the efforts of IISER Kolkata, but also have suggested various course corrections and future directions. Institute has started implementing many of the suggestions. We are about to undertake a peer-review of the Institute as a whole soon. We also plan to undertake soon an appraisal of IISER Kolkata created in the project mode, 10 years ago.

The Phase I construction of IISER Kolkata's residential campus (Architect: Suresh Goel and Associates, New Delhi) on 201.65 acres of land at Mohanpur has 'almost' been completed by Central Public Works Department (CPWD) on an area of 117,000 sq.m. The construction work at the permanent campus since end of 2012 has progressed extremely well. In fact, the progress has been more than satisfactory, considering the fact the construction work came to a standstill during 2011-12. We have already completed the following buildings: (i) Lecture Hall Complex, (ii) an 800-capacity Student Hostel and a 400-capacity Girls' Hostel, (iii) Research Complexes-I and -II, (iv) Director's Residence, (v) Academic-cum-Administrative Complex, (v) Visitors' Hostel of 60-bed capacity, (vi) a Campus School comprising Nursery to Class VI. Construction of faculty and non-teaching staff housing, animal facility, biome, centre for student activity, central utility complex, auditorium, and swimming pool, is in full swing and almost all of these works will be completed before the end of 2016.

The Institute has successfully relocated its laboratories into the Research Complex-I, particularly Departments of Biological Sciences, Mathematics and Statistics and Physical Sciences, from the transit campus. All of the activities of the Department of Earth Sciences are already in the permanent campus. The technical task of shifting the laboratories with sophisticated equipments is going on satisfactorily. The laboratories, mainly of the Department of Chemical Sciences, which are still functioning from the transit campus are expected to be shifted in the Research Complex-I, within a month. It is our belief that IISER Kolkata campus will be known for its several innovative features. We are also paying our utmost efforts to make IISER Kolkata campus 'Clean and Green'. The construction work in the permanent campus has given a sense of security and certainty of release of functioning from transit campus since 2008.

Since 2012 Inter-IISER Sports Meet has become a very popular one. This year in December, IISER Kolkata will host this event in our campus.

Annual 'Inter-IISER Sports Meet 2015' was held at IISER Bhopal during 15–21 December 2015, in which students from all five IISERs participated. Notably, IISER Kolkata won 4 medals, attesting the fact that our UG students are exposed to not only teaching and research but also are provided with good training in sports.

Four – 2nd year BS-MS students – have been awarded certificates by IISER Pune for their performance in the preliminary round of 'MIMANSA 2016', a two-stage quiz event for 1st, 2nd and 3rd year UG students from various Science, Engineering and Medical Colleges of India.

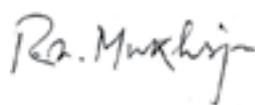
Overall, IISER Kolkata is emerging as a happening place, both academically and culturally, to the benefit of all students and faculty members.

I wish to thank each and every one of our students, faculty, and staff including the contract employees, security, and house-keeping members for contributing to the growth of IISER Kolkata, all working with a sense of belonging and ownership. I must place on record the funding by MHRD and the constructive role of various statutory bodies—the Board of Governors, the Finance Committee, the Building Works Committee, various Selection Committees, the Senate and the members of all internal committees of the Institute, Deans, administration and all the members of IISER Kolkata community, for their cooperation, guidance and appreciation.

On behalf of IISER Kolkata, I take this opportunity to express our sincere gratitude to the MHRD for advisory and financial support and Government of West Bengal for their unwavering assistance. I sincerely express my deep sense of gratitude to recent past Chairperson of BoG – Shri Pankaj R. Patel, CMD Zydus-Cadilla, and the present Chairperson – Dr. Pratap C. Reddy, Chairman, Apollo Hospitals Group.

IISER Kolkata has successfully established itself as a brand institution for teaching and research in basic sciences, with emphasis on interdisciplinary research. We have entered a new phase of growth and development. With the combined efforts of students, faculty and non-teaching staff, I am sure that we will do better in the years to come.

Let us look for a brighter future.



R N Mukherjee
Director



Key Committees

1.1 Board of Governors

Chairperson

Dr. Prathap C Reddy

Chairman

Apollo Group of Hospitals

Members

Secretary

Department of Higher Education

Government of India

Ex-officio

Prof. R N Mukherjee

Director

IISER Kolkata

Ex-officio

Director

Indian Institute of Science, Bangalore

Ex-officio

Prof. Indranil Manna

Director

Indian Institute of Technology Kanpur

Secretary

Ministry of Earth Sciences

Government of India

Secretary

Ministry of New and Renewable Energy

Government of India

Chief Secretary

Government of West Bengal

Ex-officio

Prof. Prasanta K Panigrahi

Professor and Dean of Faculty

IISER Kolkata

Prof. Asok K Nanda

Professor

IISER Kolkata

Financial Advisor

Ministry of Human Resource Development

Government of India

Ex-officio

Secretary

Shri Joydeep Sil

Registrar

IISER Kolkata

1.2 Finance Committee

Chairperson

Dr. Prathap C Reddy

Chairman

Apollo Group of Hospitals

Members

Prof. R N Mukherjee

Director

IISER Kolkata

Prof. Partha Pratim Majumder

Director

National Institute of Biomedical Genomics

Prof. Samaresh Bhattacharya

Dept. of Chemistry

Jadavpur University

Financial Adviser

Department of Higher Education

Ministry of Human Resource Development

Joint Secretary (Administration)

Department of Higher Education

Ministry of Human Resource Development

Secretary

Shri Joydeep Sil

Registrar

IISER Kolkata

1.3 Academic Senate

Chairperson

Prof. R N Mukherjee

Director
IISER Kolkata

Members

Prof. Aswini Ghosh

Department of Solid State Physics
Indian Association for the Cultivation of Science

Prof. Sivaji Chakravorti

Officiating Director, NIT Calicut

Prof. Sujata Sen

Ex-Faculty
Department of Sociology
University of Kalyani

Prof. Asok Kumar Nanda

Department of Mathematics & Statistics
IISER Kolkata

Prof. Narayan Banerjee

Department of Physical Sciences
IISER Kolkata

Prof. Prasanta K Panigrahi

Department of Physical Sciences and
Dean of Faculty Affairs
IISER Kolkata

Prof. Soumitro Banerjee

Department of Physical Sciences
IISER Kolkata

Prof. Jayasri Das Sarma

Department of Biological Sciences and
Dean of Students' Affairs
IISER Kolkata

Prof. Prasanta Sanyal

Head, Department of Earth Sciences
IISER Kolkata

Prof. Supriyo Mitra

Dean of Research & Development
IISER Kolkata

Dr. Punyasloke Bhaduri

Head, Department of Biological Sciences
IISER Kolkata

Dr. Raja Shunmugam

Head, Department of Chemical Sciences,
IISER Kolkata

Dr. Goutam Dev Mukherjee

Head, Department of Physical Sciences
IISER Kolkata

Dr. Dibyendu Nandi

Head, Center of Excellence in Space Sciences
IISER Kolkata

Dr. Pradipta Purkayastha

Dean of Academic Affairs
IISER Kolkata

Dr. Sanjio S Zade

Associate Dean of Research & Development
IISER Kolkata

Dr. Arindam Kundagrami

Chief Warden
IISER Kolkata

Dr. Vijay Raghav Tiwari

Librarian
IISER Kolkata

Dr. Chilla Malla Reddy

Associate Professor
Department of Chemical Sciences
IISER Kolkata

Dr. Nirmalya Ghosh

Associate Professor
Department of Physical Sciences
IISER Kolkata

Dr. Subhasis Sinha

Associate Professor
Department of Physical Sciences
IISER Kolkata

Dr. Tapas K Sengupta

Associate Professor
Department of Biological Sciences
IISER Kolkata

Dr. Sayan Bhattacharyya

Associate Professor
Department of Chemical Sciences
IISER Kolkata

Mr. Pamir Nag

SRF, IPhD Programme
IISER Kolkata

Mr. Mrinmoy Pal

3rd year, BS-MS Program
IISER Kolkata

Secretary

Shri Joydeep Sil

Registrar
IISER Kolkata



The IISER Kolkata Community

2.1 Faculty Members

Professors

Rabindra Nath Mukherjee

FNA, FASc, FRSc

Department of Chemical Sciences

Inorganic Chemistry and Bio-organic Chemistry

Prasanta K Panigrahi

Department of Physical Sciences

Non-linear Dynamics, Soft-matter and Bio-Physics

Narayan Banerjee

Department of Physical Sciences

Particle Physics, Gravitation, Cosmology and Astrophysics

Soumitro Banerjee

Department of Physical Sciences

Non-linear Dynamics, Soft-matter and Bio-Physics

Asok K Nanda

Department of Mathematics & Statistics

Reliability, Survival Analysis, Maintenance and Replacement, Entropy

Jayasri Das Sarma

Department of Biological Sciences

Neurobiology, Virology

Supriyo Mitra

Department of Earth Sciences

Earthquake Seismology, Continental Tectonics

Prasanta Sanyal

Department of Earth Sciences

Isotope Hydrology, Paleoclimatology and Paleoecology, River response to climate change

Associate Professors

Amit Ghosal

Department of Physical Sciences

Condensed Matter Physics and Materials Science

Amlan Kusum Roy

Department of Chemical Sciences

Physical Chemistry (Theory)

Ananda Dasgupta

Department of Physical Sciences

Atomic, Molecular and Optical Physics

Arindam Mukherjee

Department of Chemical Sciences

Inorganic Chemistry (Co-ordination/Bio-Inorganic Chemistry)

Ashwani Kumar Tiwari

Department of Chemical Sciences

Physical Chemistry (Theory)

Ayan Banerjee

Department of Physical Sciences

Atomic, Molecular and Optical Physics

Balaram Mukhopadhyay

Department of Chemical Sciences

Organic Chemistry (Synthesis)

Bhavtosh Bansal

Department of Physical Sciences

Atomic, Molecular and Optical Physics

Bipul Pal

Department of Physical Sciences

Atomic, Molecular and Optical Physics

Chilla Malla Reddy

Department of Chemical Sciences

Physical Chemistry (Materials)

Chiranjib Mitra

Department of Physical Sciences

Condensed Matter Physics and Materials Science

Debasis Koley

Department of Chemical Sciences

Physical Chemistry (Theory)

Debasish Haldar

Department of Chemical Sciences

Organic Chemistry (Bio-organic)

Devapriya Chattopadhyay

Department of Earth Sciences
Invertebrate Paleontology, Paleoecology, Biodiversity

Dhananjay Nandi

Department of Physical Sciences
Atomic, Molecular
and Optical Physics

Dibyendu Nandi

Department of Physical Sciences
Particle Physics, Gravitation, Cosmology and
Astrophysics

Goutam Dev Mukherjee

Department of Physical Sciences
Condensed Matter Physics and Materials Science

Nirmalya Ghosh

Department of Physical Sciences
Atomic, Molecular and Optical Physics

Pradip K Ghorai

Department of Chemical Sciences
Physical Chemistry (Theory)

Pradipta Purkayastha

Department of Chemical Sciences
Physical Chemistry (Spectroscopy)

Prasun Kumar Mandal

Department of Chemical Sciences
Physical Chemistry (Spectroscopy)

Priyadarsi De

Department of Chemical Sciences
Physical Chemistry (Polymers)

Punyasloke Bhadury

Department of Biological Sciences
Marine Biology

Raja Shunmugam

Department of Chemical Sciences
Physical Chemistry (Polymers)

Rajesh Kumble Nayak

Department of Physical Sciences
Particle Physics, Gravitation,
Cosmology and Astrophysics

Rangeet Bhattacharyya

Department of Physical Sciences
Atomic, Molecular and Optical Physics

Sanjio Shankarrao Zade

Department of Chemical Sciences
Organic Chemistry (Physical/ Materials)

Satyabrata Raj

Department of Physical Sciences
Condensed Matter Physics and Materials Science

Saugata Bandyopadhyay

Department of Mathematics & Statistics
Differential Inclusions, Calculus of Variations, Partial
Differential Equations

Sayan Bhattacharyya

Department of Chemical Sciences
Physical Chemistry
(Materials)

Shree Prakash Pandey

Department of Biological Sciences
Bioinformatics and Plant Biology

Soumyajit Roy

Department of Chemical Sciences
Materials Science

Subhajit Bandyopadhyay

Department of Chemical Sciences
Organic Chemistry (Physical/ Materials)

Subhasis Sinha

Department of Physical Sciences
Condensed Matter Physics and Materials Science

Sumana Annagiri

Department of Biological Sciences
Animal Behaviour, Ecology and Evolution

Sumit Khanra

Department of Chemical Sciences
Main Group Chemistry, Organoaometallics, Catalysis

Supratim Sengupta

Department of Physical Sciences
Non-linear Dynamics, Soft-matter and Bio-Physics

Swadhin K Mandal

Department of Chemical Sciences
Main Group Chemistry, Organoaometallics, catalysis

Tapas Kumar Sengupta

Department of Biological Sciences
Cell Biology

Tarun Kumar Dalai

Department of Earth Sciences
Isotope and trace element geochemistry

V Mahalingam

Department of Chemical Sciences
Inorganic Chemistry (Materials)

Assistant Professors

Amirul Islam Mallick

Department of Biological Sciences
Infectious Disease, Virology

Anandamohan Ghosh

Department of Physical Sciences
Non-linear Dynamics, Soft-matter and Bio-Physics

Anindita Bhadra

Department of Biological Sciences
Ecology and Evolution

Anirban Banerjee

Department of Mathematics & Statistics
Spectral Graph Theory, Structure and Evolution of
Biological Networks, Human Brain Functional Networks

Anuradha Bhat

Department of Biological Sciences
Ecology and Evolution

Arindam Kundagrami

Department of Physical Sciences
Non-linear Dynamics, Soft-matter and Bio-Physics

Bidisha Sinha

Department of Biological Sciences
Biophysics

Debansu Chaudhuri

Department of Chemical Sciences
Physical Chemistry (Spectroscopy)

Devrajulu Sureshkumar

Department of Chemical Sciences
Organic Chemistry (Synthesis)

Golam Mortuza Hossain

Department of Physical Sciences
Particle Physics, Gravitation, Cosmology and Astrophysics

Kathakali Bhattacharyya

Department of Earth Sciences
Geometry and Kinematic Evolution of fold thrust belts,
Mechanical and Kinematic analyses of fault zones, Strain
analysis of deformed rocks, Lateral variation in structural
architecture of mountain

Koel Das

Department of Mathematics & Statistics
Computational Neuroscience

Malancha Ta

Department of Biological Sciences
Stem Cell Research

Manoj Kumar Jaiswal

Department of Earth Sciences
Geochronology and Geomorphology, Luminescence
Dating, Palaeoclimate

Mohit Prasad

Department of Biological Sciences
Developmental Biology

Mousumi Das

Department of Chemical Sciences
Physical Chemistry (Theory)

Partha Mitra

Department of Physical Sciences
Condensed Matter Physics and Materials Science

Partha Pratim Datta

Department of Biological Sciences
Structural Biology

Partho Sarothi Ray

Department of Biological Sciences
Gene Regulation

Pradip Kumar Tarafdar

Department of Chemical Sciences
Physical Chemistry (Biophysical)

Rahul Das

Department of Biological Sciences
Structural Biology

Rajib Dutta

Department of Mathematics & Statistics
Hyperbolic Conservation Laws, Nonlinear Dispersive
Equations, Numerical Analysis of Partial Differential
Equations, Linear and Nonlinear Partial Differential
Equations

Ratheesh K Vijayaraghavan

Department of Chemical Sciences
Organic Chemistry (Physical/ Materials)

Ritesh Kumar Singh

Department of Physical Sciences
Particle Physics, Gravitation, Cosmology and
Astrophysics

Rituparna Sinha Roy

Department of Biological Sciences
Biochemistry, Structural Biology

Robert John Chandran

Department of Biological Sciences
Ecology and Evolution

Rumi De

Department of Physical Sciences
Non-linear Dynamics, Soft-matter and Bio-Physics

Rupak Datta

Department of Biological Sciences
Cell Biology, Infectious Disease

Sankar Maiti

Department of Biological Sciences
Biochemistry, Cell Biology

Satyaki Mazumder

Department of Mathematics & Statistics
Statistics, Outlier Detection, Spatial Trimming

Shibananda Biswas

Department of Mathematics & Statistics
Operator Theory on Functions Spaces, Analytic
Hilbert Modules and its Classification using Geometric
Techniques, Non-commutative function Theory

Siddhartha Lal

Department of Physical Sciences
Condensed Matter and Materials Science

Sriram Balasubramanian (on lien)

Department of Mathematics & Statistics
Functional Analysis, Interpolation Problem of
Caratheodory Type

Subrata Shyam Roy

Department of Mathematics & Statistics
Operator Theory, Special Classes of Linear Operators,
Homogeneous Operators

Sujata Ray

Department of Earth Sciences
Environmental Science and Engineering

Suman De Sarkar

Department of Chemical Sciences
Organic Chemistry (Synthesis)

Supratim Datta

Department of Biological Sciences
Energy Bioscience

Sushil Gorai

Department of Mathematics & Statistics
Several complex variables

Swarnendu Datta

Department of Mathematics & Statistics
Representation Theory, Algebraic Geometry

Assistant Professors (On Contract)

Buddhananda Banerjee

Department of Mathematics & Statistics
Surrogate, Endpoint Analysis in Clinical Trials, Change Point problem, Goodness-of-fit Test for Censored Data, Spatiotemporal Data Analysis

Kajaljyoti Borah

Department of Earth Sciences
Shallow crustal structure and High resolution tomography, Crust and upper Mantle anisotropy, Model upper mantle discontinuities, Lithosphere Asthenosphere Boundary (LAB)

Sitindra Sundar Dirghangi

Department of Earth Sciences
Geochemical thermal maturity parameters of Petroleum, Paleoclimate

Supratim Banerjee

Department of Chemical Sciences
Self-assembled functional materials, supramolecular polymers in aqueous media, molecular recognition, luminescent sensors

Tapabrato Sarkar

Department of Earth Sciences
Metamorphic and igneous petrology, Precambrian geology and related geochemistry, Geochronology (Zircon and monazite dating), Applying petrology, geochemistry and geochronology in order to understand tectonics and crustal evolution

Faculty Fellows

Guha Dharmarajan

Ramanujan Fellow
Department of Biological Sciences
Disease Ecology

Shirshendu Chowdhury

Inspire Faculty
Department of Mathematics & Statistics
Linear and Nonlinear Partial Differential Equations, Fluid Mechanics, Compressible Navier-Stokes equations, Control of PDE

Subhas Samanta

Inspire Faculty
Department of Chemical Sciences
Inorganic Synthesis, Metal Mediated/Catalyzed Bond Forming Reactions, Transition Metal Complexes of Redox Non-innocent and Cooperative Ligands, Dehydrogenation Catalysis

Sutapa Bose

Ramanujan Fellow
Department of Earth Sciences
Soil and Crop Science, Soil Pollution and Solid Waste Management, Heavy Metal Pollution and Phyto-remediation

2.2 Administrative Staff

NON-TEACHING STAFF			
SL. No.	NAME	DESIGNATION	DEPARTMENT
1	Joydeep Sil	Registrar	Administration
2	Dr. Vijay Raghav Tiwari	Librarian	Library
3	D. Kasi Viswanatha Reddy	Superintendent Engineer	IWD
4	Devakivada Govinda Rao	Deputy Registrar (F&A) lien vacancy	Finance & Accounts
5	Shahid Ali Farooqui	System Administrator	Computer Centre
6	Uday Kumar	Sr. Scientific Officer	Physical Sciences
7	Kambalapalli Srikant	Sr. Scientific Officer	Chemical Sciences
8	Siladitya Jana	Assistant Librarian	Library
9	Sanad Kumar Shukla	Assistant Registrar	Administration
10	Parna Gupta	Scientific Officer	Chemical Sciences
11	Rana Bhadra	Technical Officer	Computer Centre
12	Dr. Sushmita Bhattacharjee	Assistant Registrar (Academics)	Academic Cell
13	Arnab Kumar Sadhukhan	Technical Officer	Computer Centre
14	Sunita Bhattacharjee	Technical Officer(Civil)	IWD
15	Santanu Das Mahapatra	Assistant Registrar	Stores & Purchase
16	Somraj Gupta	Medical Officer	Medical Unit
17	Indrajit Chatterjee	Scientific Officer	Physical Sciences
18	Partha Banerjee	Technical Officer(Elect.)	IWD
19	Chinmay Sarkar	Assistant Registrar (F&A)	Finance & Accounts
20	Suraj Narayan Bordoloi	Assistant Registrar	Research & Development
21	Kaushal Kumar Sharma	Chief Security Officer	Administration
22	Dibyendu Debnath	Assistant Registrar	Faculty Affairs
23	Biswajit Das	Assistant Registrar	Finance & Accounts
24	Immanuel Alexander	Private Secretary to Director	Director's Office
25	Debabrata Mazumder	Asst. Engineer (Elect.)	IWD
26	Shibajee Das	Asst. Engineer (Civil)	IWD
27	Arup Kumar Saha	Office Superintendent	Establishment
28	Mettu Vasudev	Physical Education Instructor	Student Affairs
29	Saberi Sen	Office Superintendent	Academic Cell
30	Shibnarayan Paul	Office Superintendent	Purchase Section
31	Bipul Kumar Bora	Office Superintendent	Student Affairs
32	Arnab Chatopadhyay	Tech/Scientific Asst	Chemical Sciences
33	Sanjib Das	Tech/Scientific Asst	Computer Centre
34	Rajni Marick	Tech/Scientific Asst	Physical Sciences
35	Sushanta Kumar Roy	Library Information Assistant	Library
36	Santosh Ch. Das	Scientific Assistant	Earth Sciences

NON-TEACHING STAFF			
SL. No.	NAME	DESIGNATION	DEPARTMENT
37	Abhinaba Basu	Software Assistant	Academic Cell
38	Pitambar Naskar	Library Information Assistant	Library
39	Subhankar Das	Technical Assistant (Civil)	IWD
40	Mitali Pal	Personal Assistant	Finance & Accounts
41	Gopal Shankar Mukherjee	Technical Assistant (Elect.)	IWD
42	Ritabrata Ghosh	Scientific Assistant	Biological Sciences
43	Ganga Ram Roy	Accountant	Finance & Accounts
44	Surashree Dutta	Junior Translator(OL)	Academic Cell
45	Raju Sethi	Accountant	Finance & Accounts
46	Ashok Das	Accountant	Finance & Accounts
47	Himanshu Ghosh	Jr. Superintendent	Purchase Section
48	Mustaque Khan	Jr. Superintendent	Registrar's Office
49	Puskar Das	Office Assistant (MS)	DOF Office
50	Prasanta K Bhui	Office Assistant (MS)	Finance & Accounts
51	Sukhendu Chatterjee	Office Assistant (MS)	Finance & Accounts
52	Purabi Mondal	Nursing Assistant (MS)	Medical Unit
53	Deepak Kumar Panigrahi	Nursing Assistant (MS)	Medical Unit
54	Sharmistha Ghosh	Office Assistant (MS)	Student Affairs
55	Nitin Kumar Mall	Office Assistant (MS) against lien vacancy	Research & Development
56	Sudip Mitra	Lab Technician	Biological Sciences
57	Pintu Das	Lab Assistant	Physical Sciences
58	Sudhangsu Maity	Lab Assistant	Biological Sciences
59	Saroj Nayak	Lab Assistant	Chemical Sciences
60	Aveek Chattopadhyay	Lab Assistant	Earth Sciences
61	Debabrata Sutradhar	Lab Technician	Biological Sciences
62	Rupan Chandra Rakshit	Lab Technician	Earth Sciences
63	Piyali Bose	Lab Technician	Chemical Sciences
64	Gour Gopal Paul	Lab Technician	Physical Sciences
65	Sanjit Singh	Attendant	Director's Office
66	Subhas Malo	Attendant	Physical Sciences
67	Ajay Kumar Das	Attendant(Multi Skill)	Administration
68	K. Dharma Rao	Attendant(Multi Skill)	IWD
69	Sujit Sarkar	Attendant(Multi Skill)	Computer Centre
70	Shyamal Sana	Attendant(Multi Skill)	Student Affairs

A photograph of a modern, multi-story white building with balconies. In the foreground, there is a courtyard with several large, green palm trees. The ground is paved and reflects the surrounding environment. A semi-transparent white banner is overlaid on the lower half of the image, containing the text 'Highlights of 2015-16' in a bold, red, sans-serif font.

Highlights of 2015-16

- **Nature Index** ranks IISERs at fourth position in terms of scientific publications, and IISER-K is the biggest contributor among all the IISERs.
- **Royal Society of Chemistry** has given accreditation to the 5 year BS-MS programme of Chemistry.
- **Dr. C. Malla Reddy** is the recipient of prestigious SwarnaJayanti Fellowship in Chemistry.
- **Prof. Soumitra Banerjee** is the recipient of J. C. Bose National Fellowship.
- IISER-K has attracted **Rs. 16.5 crores** from external sources in the form of research grants, fellowship and consultancy projects.
- Four proposals for courses under **Global Initiative of Academic Networks (GIAN)** Program have been approved.
- Newer avenues for **international collaboration** has been established, most notably MoU with Institute for Molecular Sciences (IMS), National Institutes of Natural Sciences (NINS), Japan to promote research in molecular sciences.
- **Construction of IISER-K Campus** near completion: state-of-the-art Research Building and 400 beds girls hostel completed.





Students



Dean of Academic Affairs (DoAA)

Dr. Pradipta Purkayastha
(Associate Professor)

The office of the Dean of Academic Affairs (DoAA) oversees all academic matters of undergraduate and PhD students, from admission to awarding of final degrees. The major activities of the Academic Cell include course formulation, periodic review of course structure, recording students' feedback and implementing decisions of the Senate.

Since its inception, IISER Kolkata has awarded degrees to 305 BS-MS students, 3 MS by Research students, 21 IPhD students (with MS) and 63 PhD students. Most of our students have opted to stay in science and pursue PhD. Many amongst them have joined leading universities and institutes of the world such as Cambridge, Oxford, Cornell, Yale, Göttingen, Ecole Normal Superiere, as well as premier Indian institutes such as IISc, NCBS, IIM, IISERs and IITs.

BS-MS admission in the IISER system is conducted through the Joint Admissions Committee (JAC). In the Academic Session 2015-16, the aptitude test was held on 12 July 2015, wherein a total of 862 candidates appeared for the test conducted at various centers across the eastern region: in Kolkata, Guwahati and Bhubaneswar. For 2016-17 academic session, the Joint Admissions Committee (JAC) of the IISERs will be controlled by IISER Kolkata, and the entrance test will be held on 3 July 2016 across India.

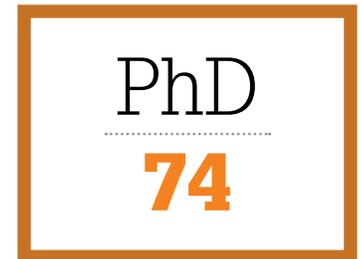
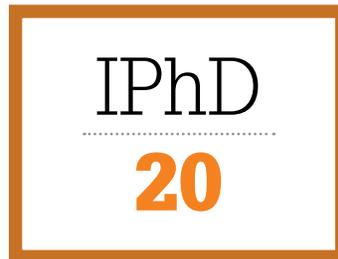
In addition to our academic programmes, the students are encouraged to participate in National and International conferences and workshops to gain and share knowledge. The BS-MS students are encouraged to go to various universities and institutes in India and abroad for summer internship during the summer vacation.

Over the last two years, IISER Kolkata was entrusted by the KVPY, Bangalore to organize and host NATIONAL SCIENCE (VIJYOSHI) CAMP in Kolkata. Students from all over the country participated in the Camp, including 1st year BS-MS students of IISER Kolkata. The participants are introduced to a mix of basic and advanced scientific knowledge through lectures delivered by some of the stalwarts of the scientific fraternity from India and abroad. VIJYOSHI 2014 was held during 10-12 November 2014, where 491 students participated, and VIJYOSHI 2015 was from 16-18 December 2015 with 497 participating students.

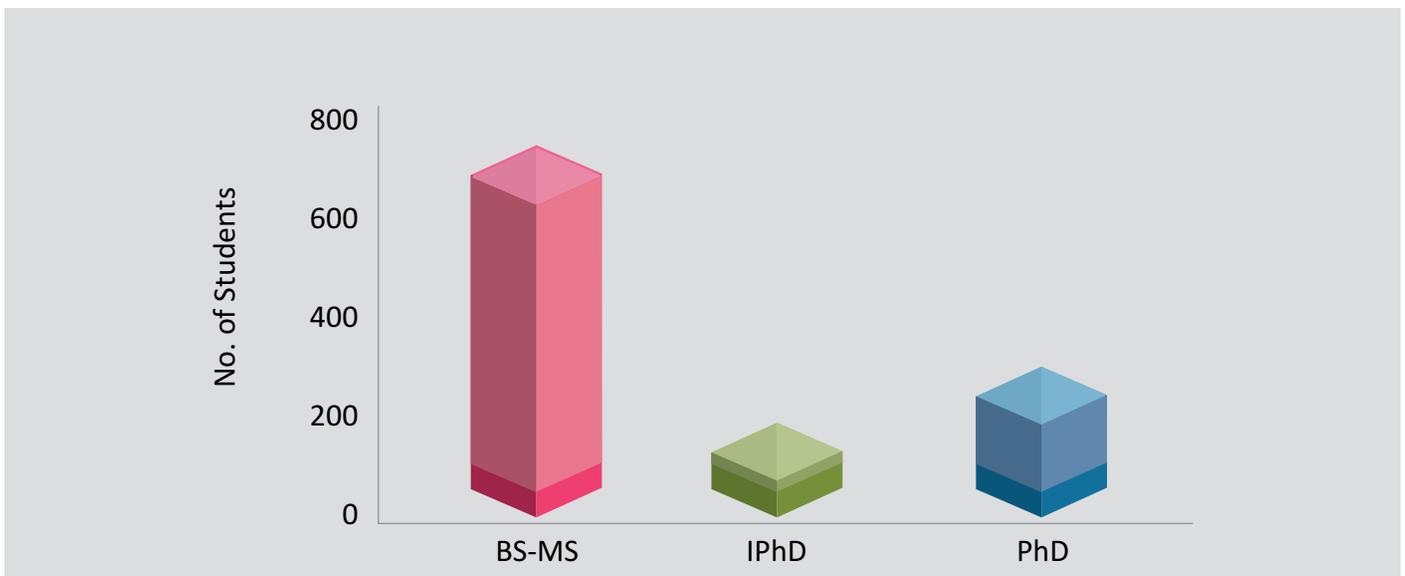
Over the past 10 years, the academic scene of IISER Kolkata has evolved, with the core focus being on integration of classroom teaching with hands-on laboratory learning. The Academic Cell of IISER Kolkata has been playing a pivotal role in creating an ambience of intellectual inquiry and academic discipline amongst its students.

4.1 Student Enrolment

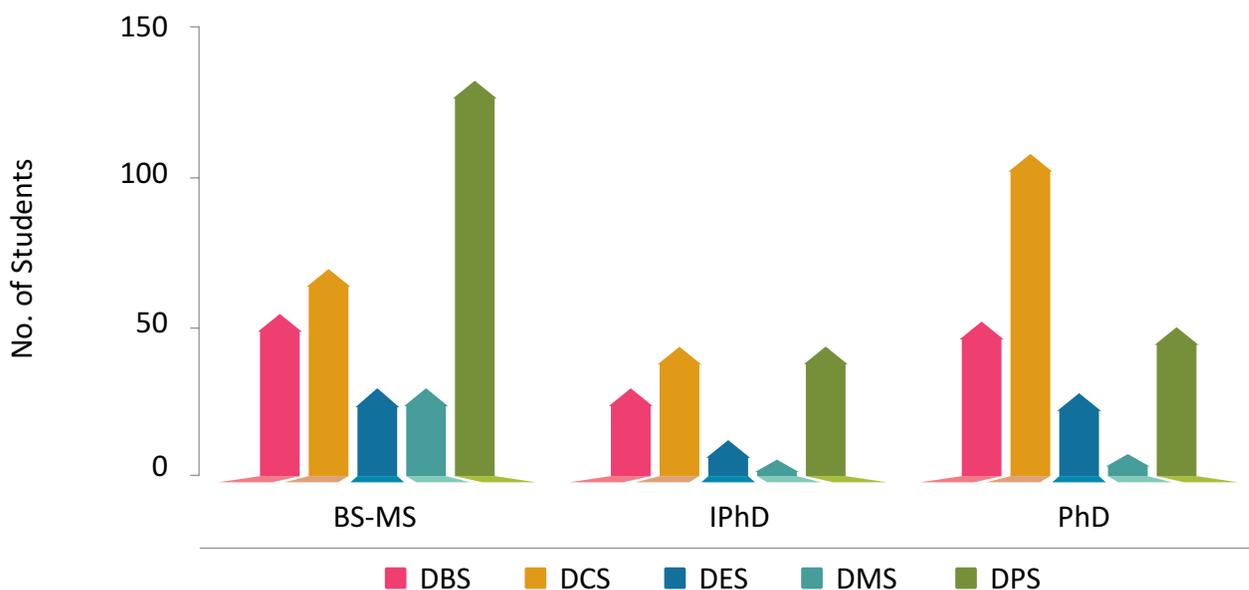
2015-16 Intake



Distribution across Academic Programmes



Distribution across Departments



4.2 Students Achievement



Mr. Sashi Debnath

of Department of Chemical Sciences (DCS) has been selected for the Bhaskara Advanced Solar Energy (BASE) Fellowship Program - 2016 to visit University of Massachusetts-Amherst, USA for 5 months as an intern.



Mr. Manmeet Singh

of Department of Biological Sciences (DBS) has been awarded Du Pré Grant 2015 by the Multiple Sclerosis International Federation (MSIF) to visit University of Pennsylvania, USA for a three-months internship under the supervision of Dr. K. Shindler.



Ms. Anamika Shrivastava

of Department of Earth Sciences (DES) has been selected for the Newton Bhaba PhD placement programme 2015-16 at the University of Surrey, UK.



Mr. Kazi Ranjibul Islam

of Department of Physical Sciences (DPS) was selected for the S N Bose Scholars Program Award 2015 to visit Harvard University, USA.



Nine of our BS-MS students

have received the prestigious DAAD-WISE fellowship for the year 2016.



**Three of our BS-MS students
and one PhD student**

have received the SPIE Optics and Photonics Scholarship 2015.



Dr. Basudev Roy

of Department of Physical Sciences has received the Alexander von Humboldt Fellowship 2015 to do his research work at Universität Tübingen, Germany.

4.3 Student Research Publication

Research is an integral part of our 5 years integrated BS-MS programme. Following research publications have resulted from the works of our BS-MS students.

A. Sahasrabudhe and S. Bhattacharyya

Dual sensitization strategy for high performance core/shell/quasi-shell quantum dot solar cells
Chem. Mater. 2015, 27, 4848.

D. Ghosh, G. Halder, **A. Sahasrabudhe** and S. Bhattacharyya

Microwave synthesized CuxS and graphene oxide nanoribbon composite as highly efficient counter electrode for quantum dot sensitized solar cells
Nanoscale 2016, DOI: 10.1039/C6NR01161F.

V. Siva Rama Krishna, M. Samanta, S. Pal, **N. P. Anurag** and S. Bandyopadhyay

Light-triggered assembly–disassembly of an ordered donor–acceptor π -stack using a photoresponsive dimethyldihydropyrene π -switch
Org. Biomol. Chem. 2016, DOI: 10.1039/C6OB00101G.

M. Chatti, S. Sarkar and V. Mahalingam

Glutathione-modified ultrasmall Ce³⁺ and Tb³⁺-doped SrF₂ nanocrystals for the fluorescent determination of Hg(II) and Pb(II) ions
Microchim. Acta 2016, 183, 133.

S. Sarkar, **M. Chatti**, Venkata N. K. B. Adusumalli and V. Mahalingam

Highly selective and sensitive detection of Cu²⁺ ions using Ce(III)/Tb(III)-doped SrF₂ nanocrystals as fluorescent probe
ACS Applied Mater. & Interfaces 2015, 7, 25702.

S. Das, **D. Lai**, **A. Mallick** and S. Roy

Photo redox mediated inexpensive one-pot synthesis of 1,4-diphenyl substituted butane-1,4-dione from styrene using polyoxometalates as catalysts
Chem. Select 2016, 1, 691.

S. Das, **A. Misra** and S. Roy

Enhancement of photochemical heterogeneous water oxidation by manganese based soft oxometalate immobilized on graphene oxide matrix
New J. Chem. 2016, 40, 994.

A. Mallick, **D. Lai** and S. Roy

Autonomous movement induced in chemically powered active soft-oxometalates using dithionite as fuel
New J. Chem. 2016, 40, 1057.

S. Das, S. Kumar, **A. Mallick** and S. Roy

Competitive self-assembly manifests supramolecular Darwinism in soft-oxometalates
J. Mol. Eng. Mater. 2015, 3, 1540008.

S. Sao, **B. R. Samanta** and D. Chaudhuri

An unusual one-donor-two-acceptor interaction in a pair of covalently bridged naphthalenediimide dimers
RSC Adv. 2016, 6, 34350.

D. Roy, T. Routh, **A. V. Asaithambi**, S. Mandal and P. K. Mandal

Spectral and temporal optical behavior of blue, green, orange, and red-emitting CdSe-based core/gradient alloy shell/shell quantum dots: ensemble and single-particle investigation results
J. Phys. Chem. C 2016, 120, 3483.

K. Bhattacharyya, **H. V. Dwivedi**, **J. P. Das** and **S. Damania**
Structural geometry, microstructural and strain analyses of L-tectonites from Paleoproterozoic orthogneiss: Insights into local transport-parallel constrictional strain in the Sikkim Himalayan fold thrust belt
Journal of Asian Earth Sciences 2015, 107, 212.

S. Dutta, **R. S. Rohit** and A. Adhikari

Constructions and Analysis of Some Efficient t-(k, n)-Visual Cryptographic Schemes Using Linear Algebraic Techniques*
Design, Codes and Cryptography 2015,
DOI : 10.1007/s10623-015-0075-5.

P. Dey, **R. S. Rohit** and A. Adhikari

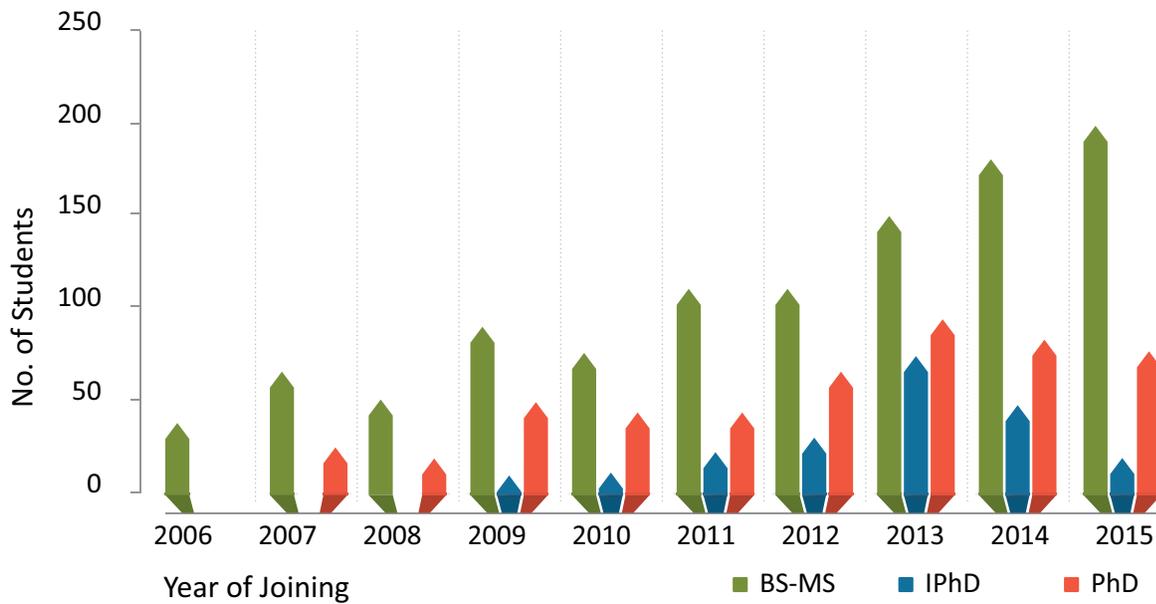
Full key recovery of ACORN with a single fault
Journal of Information Security and Applications 2016,
DOI : 10.1016/j.jisa.2016.03.003

S. Goswami, **S. Dhara**, M. Pal, **A. Nandi**, P. K. Panigrahi and N. Ghosh

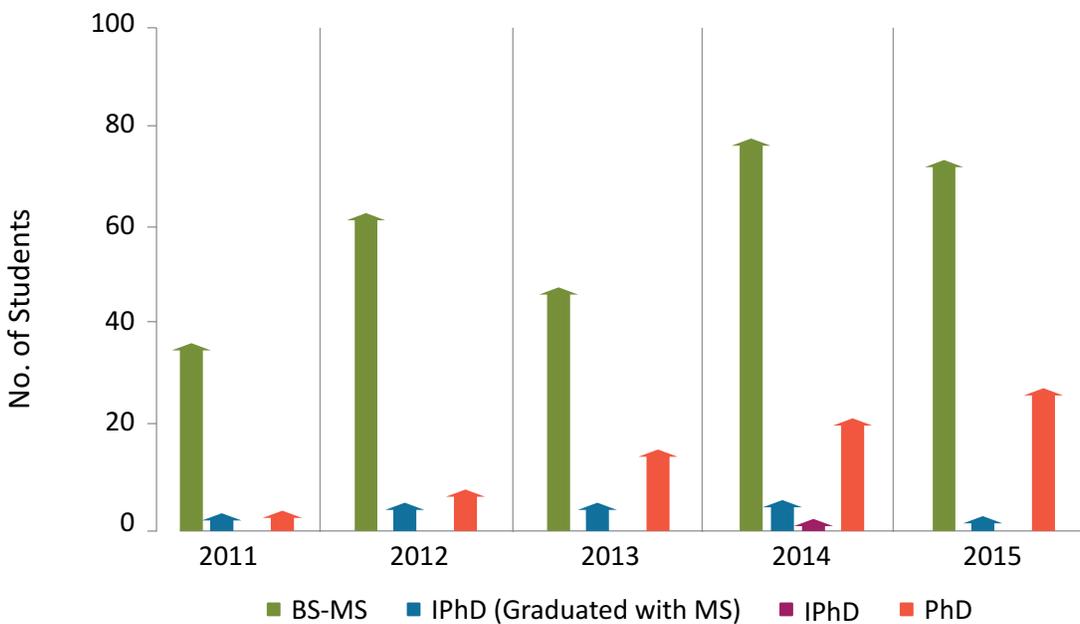
Optimized weak measurements of Goos–Hänchen and Imbert–Fedorov shifts in partial reflection
Optics Express 2016, 24, 6041.

4.4 Ten Years at a Glance

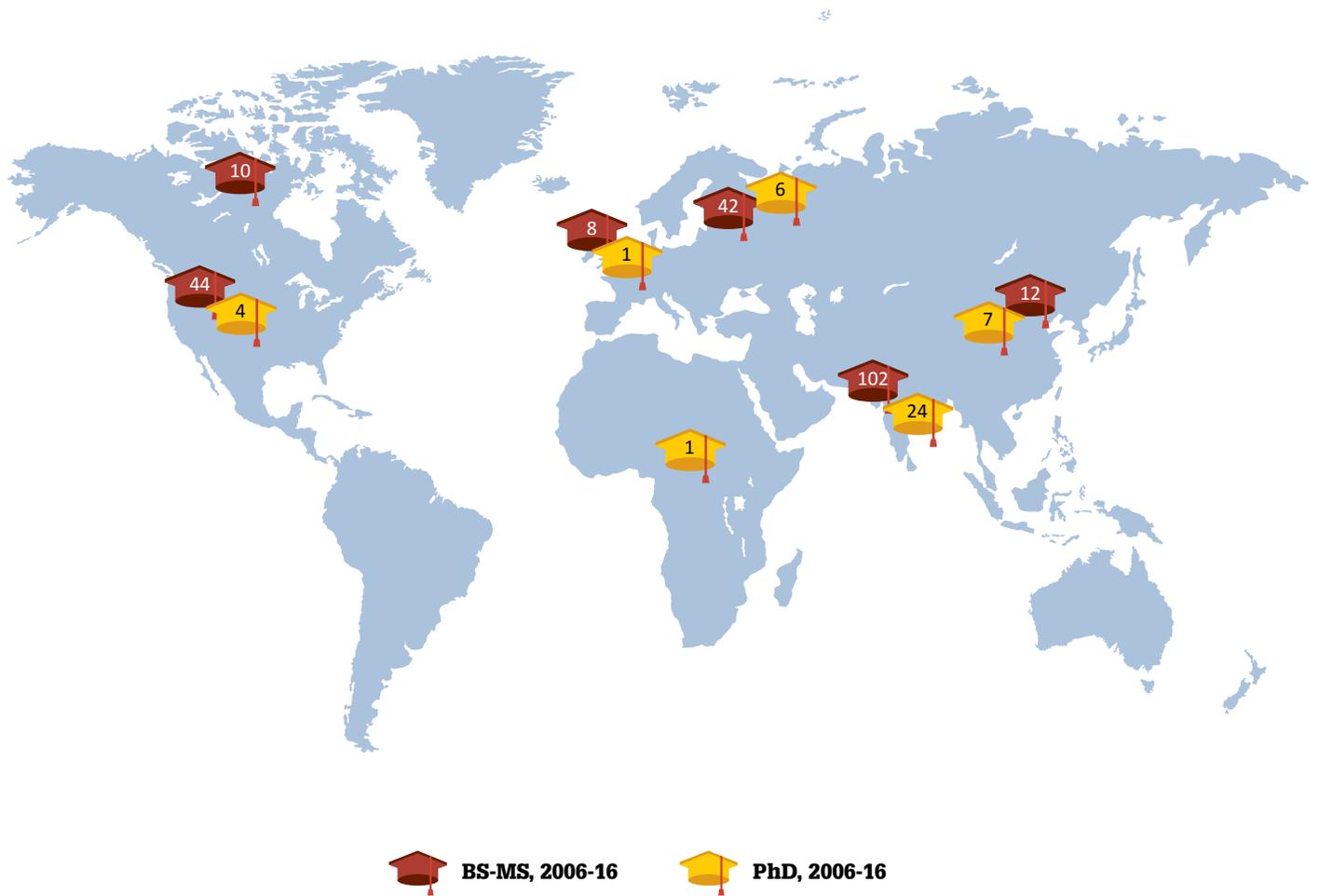
Distribution across Academic Programmes



Students Graduated



Demography of IISER-K Graduates





Members of Faculty



Dean of Faculty (DoF)

Prof. Prasanta K Panigrahi

Starting with two faculty members in the year 2006, IISER Kolkata has consistently grown, keeping in view the stipulated 1:10 faculty and student ratio. The Institute is proud of its mainstay – the Faculty, forming a vibrant and cohesive group.

They worked against all the difficulties of a new born budding institute and achieved beyond expectation both in teaching and research, enabling the Institute to realize its aim of providing high quality education in modern science, integrated with research at the undergraduate level itself. IISER Kolkata, comprising of five departments: Biological Sciences, Chemical Sciences, Earth Sciences, Mathematics and Statistics and Physical Sciences, has a strong interdisciplinary character. The faculty are engaged in research in the frontier areas of basic sciences, with a high degree of autonomy and creativity, in well-equipped research facilities.

In ten years of its existence, IISER Kolkata has been able to attract talented and promising faculty members with large diversity, specialisation and research experience from prestigious institutes in India and abroad. The faculty members, currently 87 in strength, are supported by attractive start-up and matching research grants.

In addition to regular faculty, we have four Assistant Professors (on contract), two Ramanujan and two INSPIRE fellows.

Faculty members of IISER Kolkata have received many laurels and peer recognitions. The Institute boasts of one Shanti Swarup Bhatnagar Awardee, three Fellows of Indian National Science Academy (FNA, New Delhi), three Fellows of Indian Academy of Sciences (FASc, Bangalore), three Fellows of National Academy of Sciences India (FNASc, Allahabad), two Fellows of Third World Academy of Sciences (TWAS, Trieste), four J.C. Bose National Fellows

and one Harvey Prize winner of the American Astronomical Society. Several of our younger colleagues has received prestigious awards and fellowships from India and abroad.

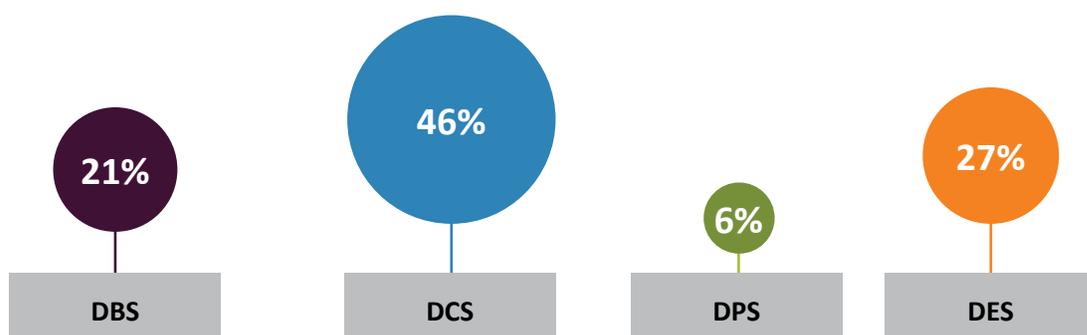
The period 2015-2016 has been a defining year in the short history of IISER Kolkata. It is a matter of great satisfaction that, some of the awards and honours received by the faculty members during this year include the SwarnaJayanti Fellowship award, Joint Runner-Up for the 6th National Award for Technology Innovation, National Geosciences Award by Ministry of Mines. This has been capped by the special breakthrough prize in 'Fundamental Physics' for our faculty, member being a part of the prestigious LIGO project that detected the gravitational wave.

Our faculty members have published their research works in journals of national and international repute. Institute encourages the faculty to do quality research, supporting them with Academic and Research Fund (ARF), Funding Innovation in Research and Education (FIRE) apart from Cumulative Professional Development Allowance (CPDA). Research papers from IISER Kolkata have appeared in prestigious journals, such as *Nature Chemistry*, *Journal of American Chemical Society*, *Angewandte Chemie International Edition*, *Physical Review Letters*, *Scientific Reports*, *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. Apart from engaging in scientific activities, students and faculty of IISER Kolkata are also involved in various social and outreach activities. IISER Kolkata faculty members engage themselves in various national level programmes, such as VIJYOSHI, International Yoga Day, Swachh Bharat Abhiyan, Science Day etc. The members of IISER Kolkata family feel proud to be a part of this budding institution.

5.1 Research Funding

- In 2015-16, faculty members of IISER Kolkata received twenty two new research grants with a cumulative sanctioned amount of Rs. 6.58 Crores.
- Department of Earth Sciences (DES) received a funding of Rs. 1.38 Crores, under DST-FIST programme, to setup an X-Ray Fluorescence System at IISER Kolkata.

Research Grant (8 Crores)



Some of the major research funding received during 2015-16

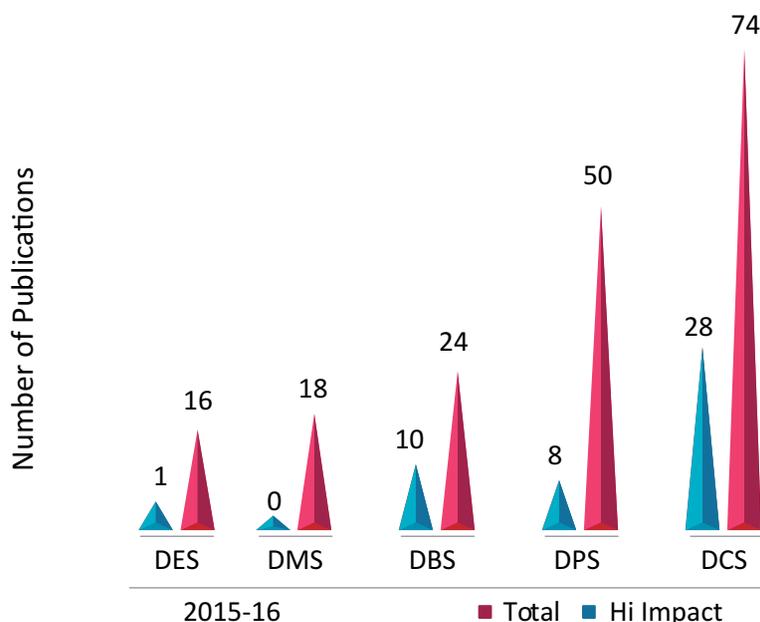
Project title	Department	Funding agency	Sanctioned Amount (Rs. in lakhs)
Understanding the role of myo- inositol hexakisphosphate in the regulation of Bruton's tyrosine kinase in B- cell signaling	Biology	SERB	49
Single particle photoluminescence investigation of multichromophoric π - stacked aggregates	Chemistry	SERB	72
New class of biodegradable polymer as theranostic agent for multiple tumors using a single target	Chemistry	SERB	64
Dynamics of water dissociation on Cu- Ni and Ag- Ni alloy surfaces	Chemistry	SERB	46
Study of molecular dynamics in the low-energy electron collisions with jet-cooled molecules	Physics	SERB	50

- Five consultancy projects with a total value of Rs. 1.18 Crores were initiated, establishing the much-needed link between industry and academia.
- In 2015-16, IISER-K received seven new faculty fellowships with a sanctioned amount of Rs. 7.45 Crores.

Fellowship	Department	Funding agency	Sanctioned Amount (Rs. in lakhs)
Swarnajayanti Fellowship	Chemistry	DST	241
J C Bose National Fellowship	Physics	SERB	68
Ramanujan Fellowship	Chemistry	SERB	89
Ramalingaswami Fellowship	Biology	DBT	88
Inspire Faculty Award	Chemistry, Mathematics and Statistics	SERB	86

5.2 Research Publication

- Faculty members at IISER Kolkata have earned a reputation as independent researchers, which is reflected in the numbers of publications in peer-reviewed, high impact factor journals.
- The h-index of IISER-K has increased to an all-time high of 37.
- Average citation per research article: 7.66



Representative Publications:

Biology

- D. K. Poria, A. Guha, I. Nandi and P. S. Ray *RNA binding protein HuR sequesters microRNA-21 to prevent translation repression of proinflammatory tumor suppressor gene programmed cell death 4* *Oncogene* 2016, 35, 1703.
- R. Sahu, M. Sharaff, M. Pradhan, A. Sethi, T. Bandyopadhyay, V. K. Mishra, R. Chand, A. K. Chowdhury, A. K. Joshi and S. P. Pandey *Elucidation of defense-related signaling against spot blotch infection in bread wheat (*Triticum aestivum* L.)* *The Plant Journal* 2016, 86, 35.

Chemistry

- A. Pariyar, G. Vijaykumar, S. K. Dey, S.K. Singh, S. Kurungot and S. K. Mandal *Switching closed-shell to open-shell phenalenyl: toward designing electroactive materials* *Journal of American Chemical Society* 2015, 137, 5955.

- A. Sahasrabudhe and S. Bhattacharyya *Dual sensitization strategy for high performance core/shell/quasi-shell quantum dot solar cells* *Chemistry of Materials* 2015, 27, 4848.

Earth Sciences

- A. Kumar, S. Mitra and G. Suresh *Seismotectonics of the eastern Himalayan and Indo-Burman plate boundary systems* *Tectonics* 2015, 34, 2279.
- S. Das, D. Chattopadhyay and D. Chattopadhyay *The effect of hunger on drilling behaviour of *Natica tigrina*: An experimental assessment* *Palaeogeography Palaeoclimatology Palaeoecology* 2015, 429, 57.

Mathematics

- S. Bandyopadhyay, B. Dacorogna, and S. Sil
Calculus of variations with differential forms
Journal of European Mathematical Society 2015, 17, 1009.
- P. Kundu, N. Hazra and A. Nanda
Reliability study of a coherent system with single general stand by component
Statistics and Probability Letters 2016, 110, 25.

Physics

- Golam Mortuza Hossain and Gopal Sardar
Violation of the Kubo-Martin-Schwinger condition along a Rindler trajectory in polymer quantization
Physical Review D 2015, 92, 024018.
- A. Kumar and P. K. Panigrahi
Quantum and thermal fluctuations and pair-breaking in planar QED
Journal of High Energy Physics 2016, 3, 1.

5.3 Awards and Recognitions



Dr. C. Malla Reddy (Associate Professor, DCS) has been awarded the prestigious SwarnaJayanti Fellowship by Department of Science and Technology in Chemistry.

Dr. C. Malla Reddy has also been invited to join the editorial board of RSC Advances as an associate editor.



Prof. Soumitro Banerjee (DPS)

has received the prestigious J. C. Bose Fellowship.



Prof. Prasanta Sanyal (DES)

has been awarded the National Geosciences Award- 2014 by the Ministry of Mines, Government of India.



The work from the group of

Dr. Raja Shunmugum (Associate Professor, DCS)

on Arsenic sensing and trapping has been selected as the joint runner-up for 6th National Award for Technology Innovation under polymeric materials category.



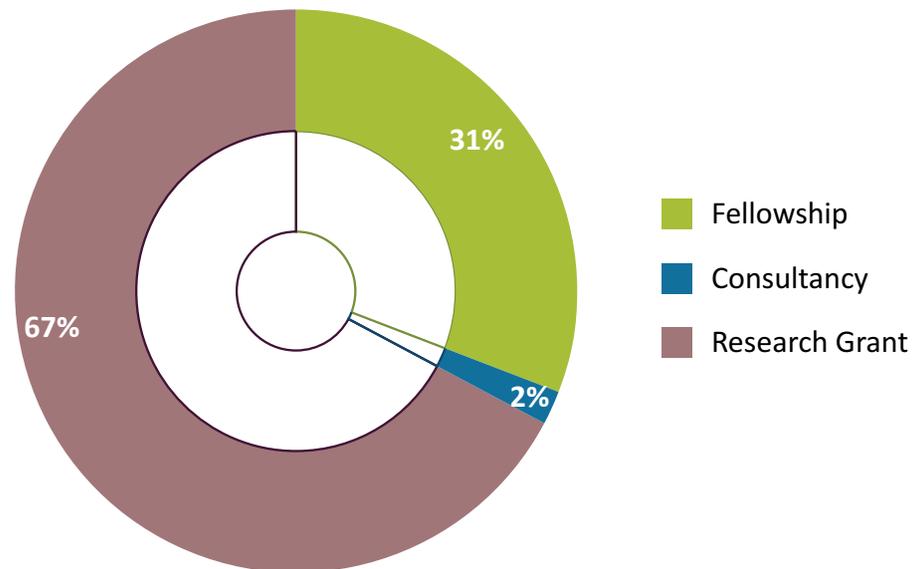
Dr. Priyadarsi De (Associate Professor, DCS)

has been invited to join the advisory board of Polymer Chemistry.

5.4 Ten Years at a Glance

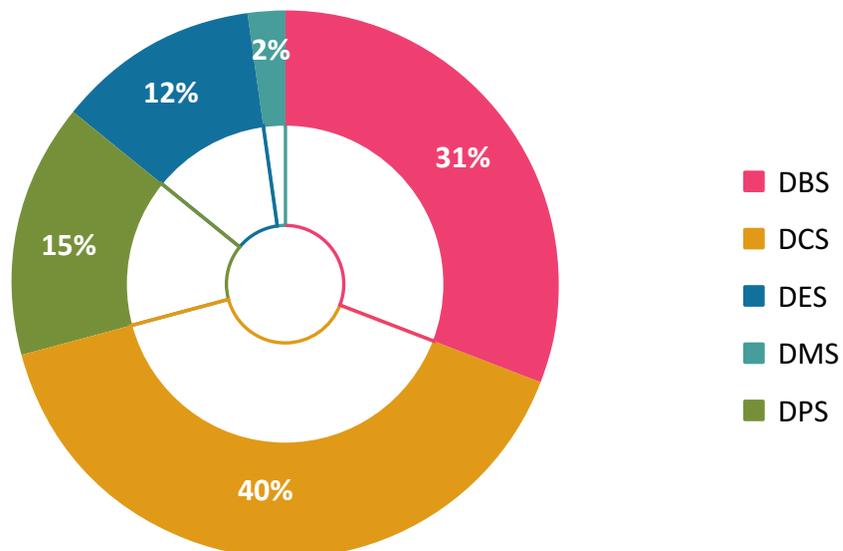
Nature of Funding

2006-16 (88 Crores)

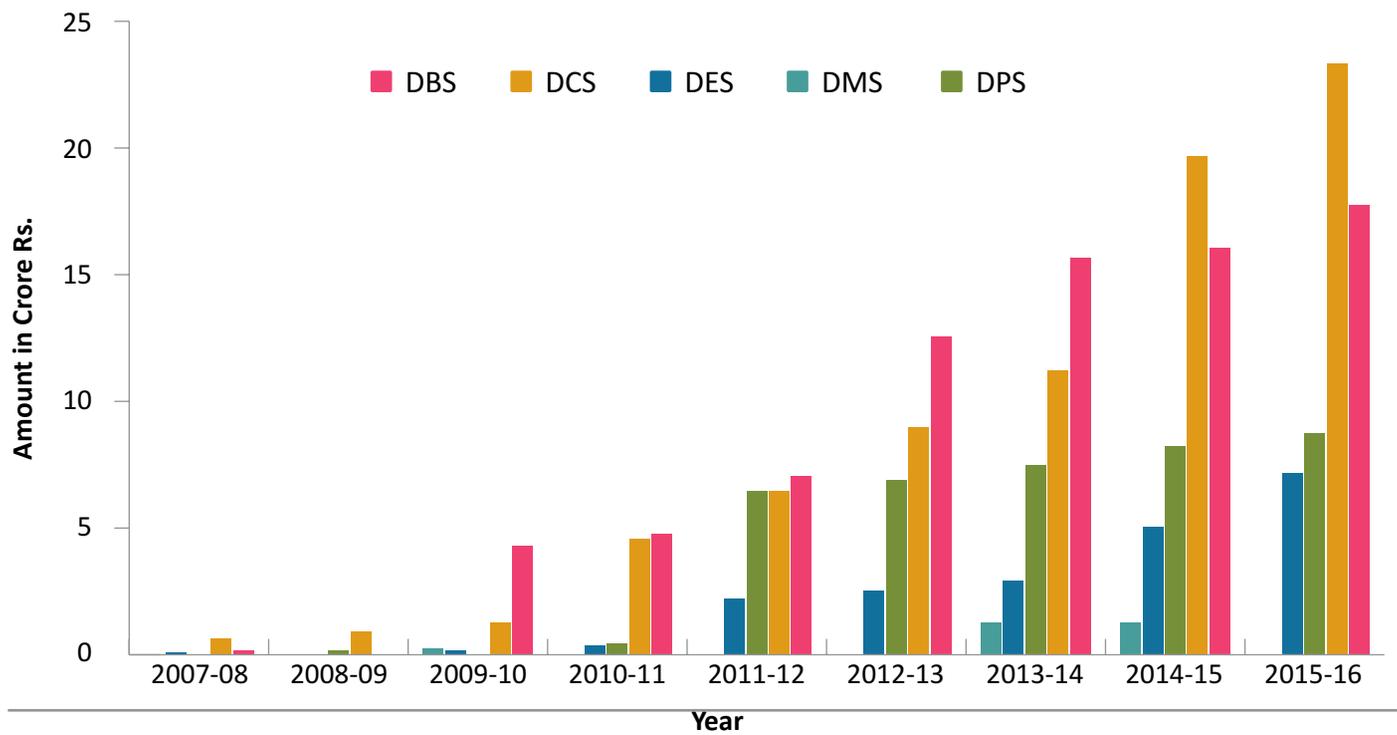


Cumulative Research Grant

Research Grant, 2006-16 (58.3 Cr)



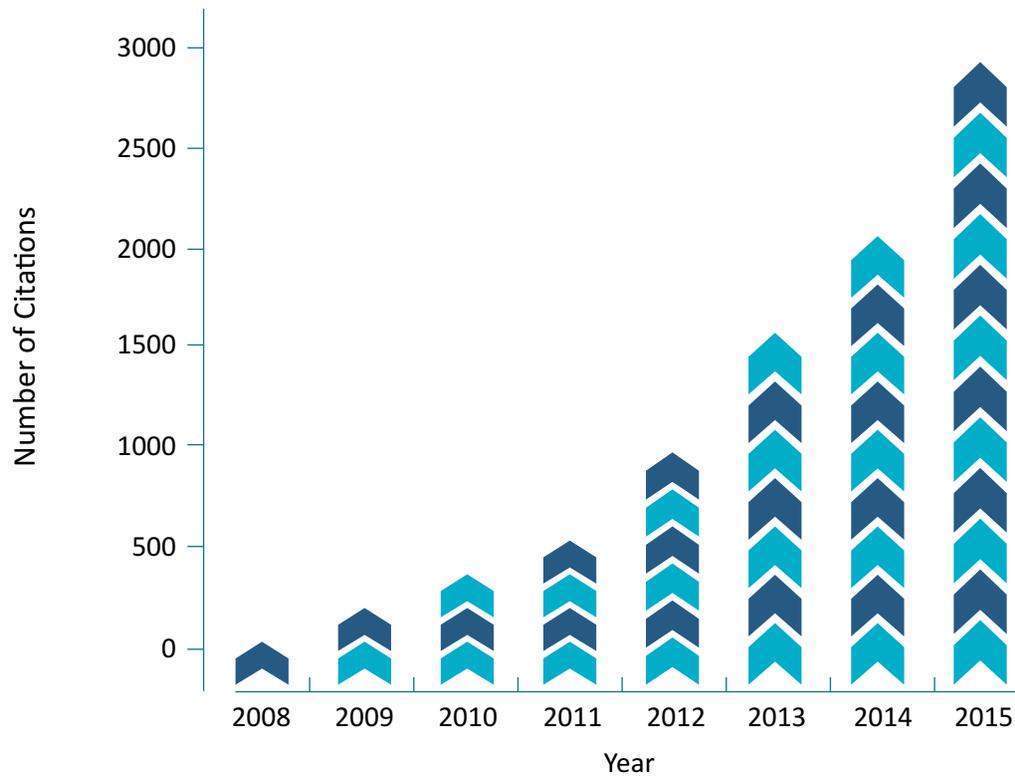
Grant Over The Years



Research Publication



Research Citation





Institute Administration

6.1 Major Activities

Meetings

- Four meetings of the Board of Governors were held on 22.06.2015, 23.09.2015, 18.12.2015 and 29.03.2016
- Four meetings of the Finance Committee were held on 22.06.2015, 23.09.2015, 18.12.2015 and 29.03.2016
- Four meetings of the Senate were held on 08.06.2015, 03.09.2015, 01.12.2015 and 19.02.2016
- Three meetings of the Building and Works Committee were held on 06.08.2015, 02.012.2015 and 18.02.2016



The Third Convocation of the Institute was held on 23 June 2015 at the permanent campus of IISER Kolkata. Shri Keshari Nath Tripathi, Hon'ble Governor of West Bengal graced the occasion as the Chief Guest. All the passed out students of 09 batch of BS-MS programme, Integrated PhD programme, MS by Research programme and PhD programme received their degrees at the Third Convocation. The best performing student, based on academic and extra-curricular performances, was felicitated.



Construction of the Director's Residence-cum-Office was completed during the year under report at the permanent campus of IISER Kolkata. Several faculty offices were shifted from the transit campus to the Research Block in the permanent campus.



Prof. Ashutosh Sharma, Secretary DST, Govt. of India delivered the 'Foundation Day' lecture of IISER Kolkata on 11 July 2015.



Digital India Event was organized on 19 August 2015 at IISER Kolkata. Dr. Goutam Mukherjee, Senior Technical Director, NIC, Govt. of India gave the Invited Talk.



Swachh Bharat Abhiyan was celebrated at IISER Kolkata on 02 October 2015. National Level Student engagement campaign was also initiated on this day towards fulfilling this mission.



IISER Kolkata organised the National Science (Vijoyshi) Camp during 16 – 18 December 2015 at Kolkata under the auspices of the KVPY fellowship scheme.

IISER Kolkata was awarded ‘Karyalaya Deep Smriti Chinha’ by Rajbhasha Sansthan, New Delhi for implementation of official language policy of Government of India.

IISER Kolkata has won the “Karyalaya Jyoti Smriti Chinha Puraskar” from Rajbhasha Sansthan.

6.2 Staff Achievement



- Mr. Shahid Ali Farooqui, System Administrator, has been appointed as the Registry Authority of Indian Grid Certification by C-DAC Bangalore



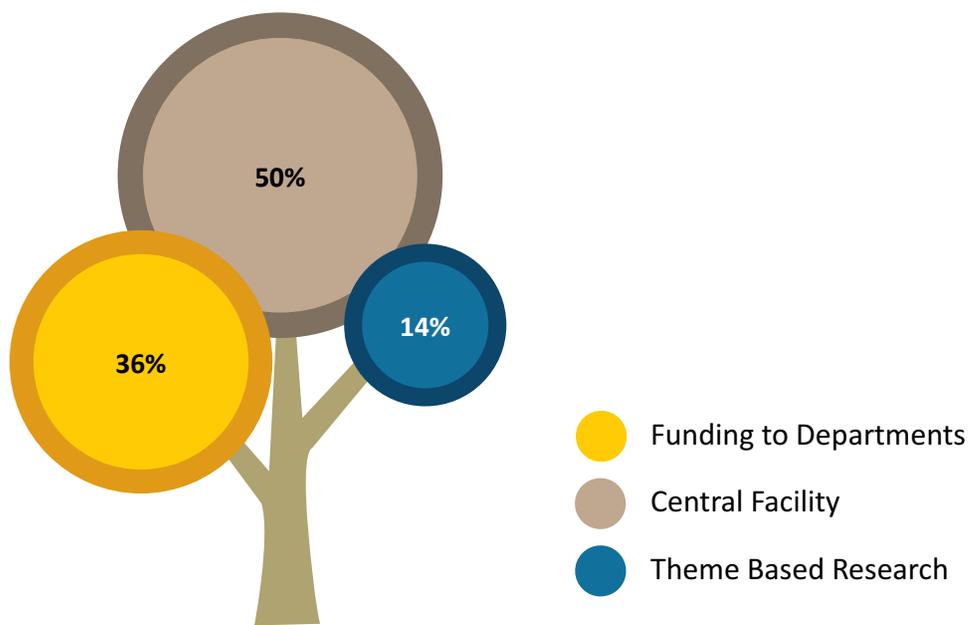
Institute

-Major Initiatives

7.1 Research Support

There are three major forms in which the institute supports scientific research:

Research Support in 2015-16 (Rs. 8 Crores)



Research Funding (in lakh Rs.) to the Departments

Year	DBS	DCS	DES	DMS	DPS
2015-16	97.5	102.7	12.1	2.0	73.2

Central Research Facility

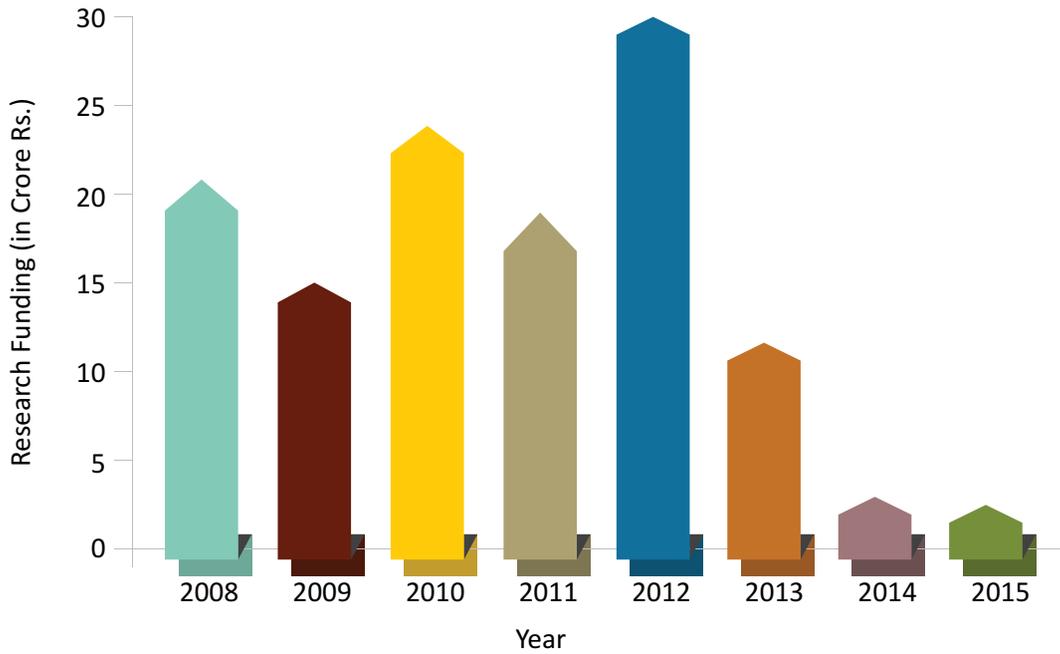
Facility	Funding Amount (in Crores Rs.)
High Resolution Transmission Electron Microscope (HR-TEM)	4.0 (IISER-K) 5.9 (DST-FIST)

Theme Based Research

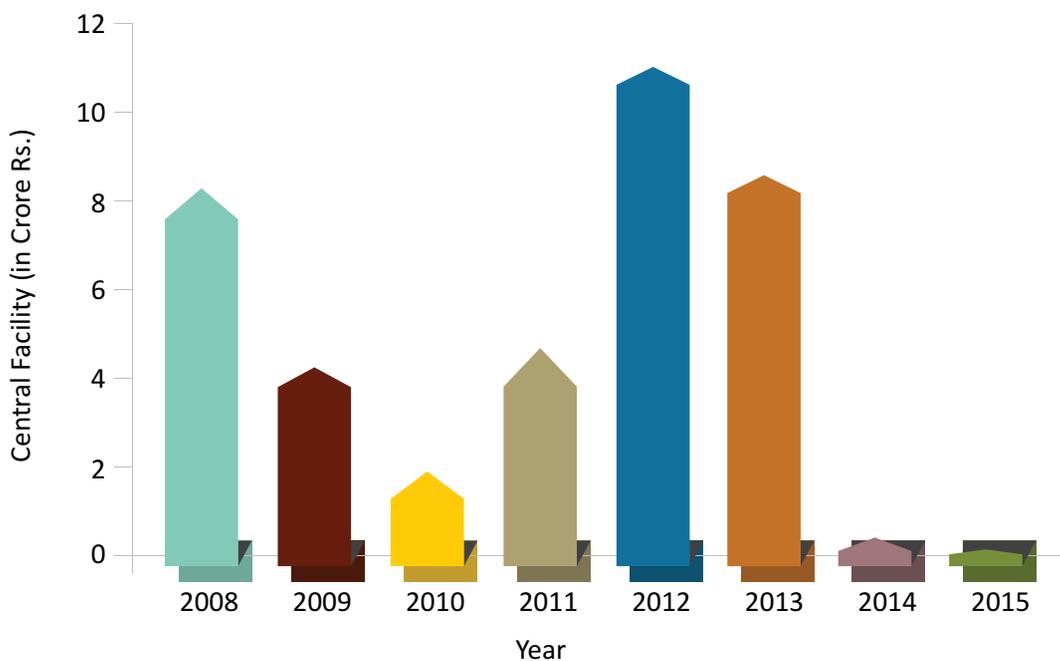
Research Theme	Funding Amount (in lakh Rs.)
Study of arsenic detection and removal from ground water and its consequences in health and disease	17.5
Bisimide based sensing and removal of fluoride from water to prevent fluorosis	6.0
Investigation of the plant microbiome and its role in crop productivity and tree community dynamics	32.1
Conjugated covalent organic frameworks for organic photovoltaics	19.0
Simultaneous reduction of carbon dioxide and water to generate liquid fuels	26.0
Dynamics of bidirectional photonic switching at the single molecule level	12.5

Over the years, research has become self-reliant and less dependent on institute support

Research Funding to the Departments



Central Facility



7.2 International Collaboration

IISER-K has established a Memorandum of Understanding (MoU) with Institute for Molecular Sciences (IMS), National Institutes of Natural Sciences (NINS), Japan to promote Indo-Japan collaborative research projects in Molecular Sciences. The MoU is valid for the period 2015-19.

7.3 Research Infrastructure

IISER Kolkata has built a state-of-the-art Research Complex to support cutting-edge research in the frontier areas of physical and natural sciences. The facilities include:

- 79,000 sq. ft. (Approx.) of lab space to accommodate research and teaching labs
- Constructed as per Green building concept.
- Central HVAC (Humidity, Ventilation and Air-conditioning) Facilities
- Equipped with fire-safety facilities like smoke detectors, automatic water sprinklers, and dedicated fire hydrant systems
- False ceilings and doors are made-up of fire retardant material
- Clean rooms of 10,000 and 100 class facilities for dust control environment
- Conducting flooring facilities to nullify static DC current
- Windows have double sealed toughened glass to avoid shattering, and sun control film to reduce the heat transmission by 40%.

7.4 Academic Seminars and Conferences

- Details of the courses approved under Global Initiative of Academic Networks (GIAN) Program

Name of Course	Instructor	IISER-K Faculty
Polyoxometalates in materials science, technology and medicine	Prof. Dr. Craig L. Hill The Goodrich C. White Professor Department of Chemistry Emory University, USA	Dr. R. Shunmugam
A short course on Ocean acidification and implications for global marine ecosystems	Professor Richard Bellerby Director, SKLEC-NIVA Center for Marine and Coastal Research, East China Normal University, China	Dr. P. Bhadury
A short course on Active Continental Tectonics	Professor James A. Jackson, FRS Department of Earth Sciences University of Cambridge, UK	Prof. S. Mitra
Superoscillations and Weak Measurement	Prof. Sir Michael Berry University of Bristol, UK	Prof. P. K Panigrahi

- Leading scientists from all over the world are invited to deliver special institute lectures

Speaker	Title
Prof. Philip Maini University of Oxford, UK	The role of mathematical modeling in biology
Prof. Ian Thomas Baldwin Max Planck Institute for Chemical Ecology Germany	Timing is everything in ecology
Dr. T. Ramasami Former Secretary Department of Science and Technology	Excellence and relevance in research systems
Prof. Javed Iqbal International Council of Science Kuala Lumpur, Malaysia	AMP Activated Protein Kinase: A next generation target for total metabolic control
Prof. Aravinda Chakravarti Johns Hopkins University, USA	Gene Regulatory Networks and Human Disease

- Departments also organize weekly seminars where guest speakers from reputed national and international institutes are invited.

Speaker	Department	Title
Prof. Tapas Kundu Jawaharlal Nehru Centre for Advanced Scientific Research Bangalore, India	Biological Sciences	Chromatin dynamics and epigenetic regulation of differentiation
Prof. Masa-aki Haga Chuo University, Japan	Chemical Sciences	Coordination Chemical Approach to Molecular Functional Devices on Surface
Dr. Alex Copley University of Cambridge, UK	Earth Sciences	Exploring the controls on earthquakes and tectonics: from the plains of India to the greatest mountain range on earth
Dr. Ananta Kumar Majee TIFR Centre for Applicable Mathematics	Mathematic and Statistics	Convergence analysis of an operator splitting scheme for stochastic balance laws driven by Levy noise
Prof. Kishan Dholakia University of St. Andrews, UK	Physical Sciences	Trapping in a material world

7.5 For Persons with Disabilities

1) Policy decisions	<ul style="list-style-type: none"> • Implementation of reservation policy as per Govt. of India norms in admission and in recruitment • Creating provision of various schemes for benefit of PWDs
2) Budget provision a) Allocation under various schemes	Rs. 1.17 Crores (approx.) a) Lecture Hall Complex Ramp – 750 sqm, Rs. 26.25 lakh Barrier free toilet – 2 nos, Rs. 6.00 lakh Elevator – 1 no., Rs. 15.00 lakh b) Research Complex Ramp – 77 sqm., Rs. 7.70 lakh Barrier free toilet – 8 nos., Rs. 24.00 lakh Elevator – 2 no., Rs. 30.00 lakh c) Hostel Ramp – 50 sqm., Rs.5.00 lakh Barrier free toilet – 1 nos., Rs.3.00 lakh
3) Number of beneficiaries with disabilities	Non-Teaching Staff: 2 Students: 2

7.6 Library



The year under report (2015-2016) was an important period for IISER Kolkata library from the point of view of online journals and database subscription. Ministry of Human Resource Development (MHRD) has initiated the e-Shodh Sindhu programme for providing selected digital resources to its constituent institutes for giving impetus to their teaching and research programmes. IISER Kolkata benefitted from this initiative by receiving several online resources. Prominent amongst them are the full text databases like ACM Digital Library, Annual Reviews and JSTOR, and journals published by Oxford University Press and SIAM. It also provides access to bibliographic databases like MathSciNet, SciFinder and the Web of Science. Apart from extending access to the new resources, access was continued to almost all resources that were provided by the erstwhile INDEST-AICTE Consortium.

During this period Dr. V. R. Tiwari has joined the IISER-K as the Librarian in September, 2015. The IISER-K library organized an all IISERs Librarians/Library-in-charges meeting during 8-10 December, 2015 to discuss the consortium issues.

The IISER-K library has become the participating library in the NDL (National Digital Library) project, initiated by MHRD, Govt of India. The librarian has become the coordinator for the same. The IISER has also joined the E-Shodh Ganga project, initiated by MHRD, Govt of India, through INFLIBNET, Ahmedabad. An MoU has been signed for the purpose too. The librarian has been nominated as Coordinator for the purpose. IISER Kolkata library has started subscribing the originality checking and plagiarism prevention tool *Turnitin*. The Library added 170 printed books to its collection during the reported period. Apart

from that, the library received 51 printed documents as gratis.

Approximately 18,700 transactions (for printed books and audio-video materials) took place at the circulation desk. As part of document delivery service, the library supplied 370 papers to its own community. The library has also provided 245 papers to other academic institutions as part of inter-library loan. Approximately 770 photocopies/print outs were provided to outside users on payment basis, and nearly 5,700 scanned pages/photocopies/print outs to its own users.

The library is open on all seven days of the week.

Library Hours, weekdays: 08:00 to 22:00 hrs.

Saturdays and Sundays: 08:00 to 22:00 hrs.

During Examination: 24 Hours



7.7 Campus



Faculty Housing



Director's Bungalow



Visitor Hostel





Campus School



Research Complex



Lecture Hall Complex



Students Hostel



Administrative Block



7.8 Outreach

National Science Day, 28th February, 2016



National Science Exhibition, 9-13th September 2015



Ek Pehal



Ishan Vikas Programme, 12-14th December 2015



Summer Research Programme

IISER-K conducted a successful summer research programme during May-July 2015. Nearly 100 students from all over the country were selected to spend a two-month period under the supervision of our faculty members and gain valuable research experience. The students were provided on-campus accommodation, and over 30 students were paid a monthly subsistence during their stay.



Student Activities



Dean of Students (DoS)

Prof. Jayasri Das Sarma

What started off with few students 10 years ago has, today, grown into a 1000+ strong community. The impetus here is not solely on academic achievement. Through the various clubs, we focus on the holistic development of our students.

Beginning on a campus in Kolkata, then moving to a transit-campus in Mohanpur, it is a matter of great pride that now at the threshold of the 10th anniversary, IISER-Kolkata is shifting to its own campus, complete with the residential block, research block and lecture halls. The Gymkhana was set up in 2012 as the student welfare body. With increase in student strength, the Gymkhana was replaced with the Student Affairs Council (SAC) in 2015. The student body strives to address student-related issues and give voice to the concern of the students. This also gives the student representatives an opportunity to learn administration and policy-making, thus providing ample scope for nurturing future leaders.

The student community of IISER-Kolkata laid the foundation for the Inter-IISER Sports Meet (IISM) in the year 2012. Today, the annual sporting event boasts of

participation from students of other scientific institutes like IISc, NISER, CBS, thus forging a strong bond that extends beyond scientific endeavors. It is our privilege that IISM – 2016 shall be hosted by IISER-Kolkata, thus becoming part of our 10th year celebrations.

Inquivesta, the annual fest of IISER-Kolkata, was started in 2011 and has seen six successful editions, each better than the previous edition. It has carved a niche for itself in the student circuit as the country's largest science festival. The Annual Drama Night, Karaoke Night, Art Exhibition, Dance Night, various sports tournaments, the student magazine – all these focus on helping students explore various avenues and thereby give rise to well-rounded personalities.

The institute also boasts of being part of the global cultural network SPIC MACAY. Starting from 2014, the chapter of SPIC MACAY has hosted several musicians and dancers of great repute and also organized an edition of VIRASAT, their annual convention. The feather in the cap was the performance by Padma Vibhushan Pt. Hariprasad Chaurasia.



**Inquivesta 2016, 11-13th
March, 2016**



**Alter Ego: Painting Exhibition, 8 – 10th
March, 2016**



**Flute recital by
Pandit Hariprasad
Chaurasia, SPIC
MACAY, IISER
Kolkata Chapter**



**Muse', the
annual literary
magazine of
IISER Kolkata,
Literary club of
IISER Kolkata**

Inter IISER Sports Meet 2015, Team IISER-K





Mousumi Biswas won a gold medal in Javelin throw



Football and Kho-Kho teams won a silver medal each

Institute Level Tournaments like inter-batch tournaments and Auction Based League (ABL) tournaments are organized by various clubs. Farewell matches for outgoing students are also held.



Different regional festivals like Utkal Divas, Onam, Holi, Lohri, Janmashtami, Ganesh Chaturthi , Saraswati Puja and many more are organized by the students community.





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