ANNUAL REPORT 2015 -16

Indian Institute of Science Education and Research
Thiruvananthapuram
Vithura, Thiruvananthapuram - 695 551

Publication Committee

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CONTENT

PREFACE

Prof. V. Ramakrishnan Date 17.11.2016
Director

Indian Institute of Science Education and Research Thiruvananthapuram (IISER-TVM) being established in 2008 is a very young, and upcoming institution. In this report, with pride, I give an account of what has been accomplished at IISER-TVM during the Financial Year 2015-2016. The year 2015-16 is very special in the history of our institution and achievements of this year will certainly be remembered for a long time to come. Overcoming many insurmountable hurdles, last year IISER-TVM has begun its operations from the permanent campus in Vithura. Honorable Minister of Human Resource Development, Smt. Smrith Zubin Irani, had inaugurated a Chemical Sciences block (built-up area 7825 sq mt), two hostels (built-up area 2470 sq mt), and a Central Dinning Hall (built-up area 2670 sq mt), on January 14th, 2016. The science block accommodates three common instrumentation laboratories for advanced scientific equipment, twenty eight advanced research laboratories, six teaching laboratories, one computer laboratory, twelve class rooms, thirty three faculty offices, one seminar room with 160 capacity. Both hostels are four storied, each with 92 rooms with attached balcony with facilities for recreation, laundry, and office for the Warden. Dinning hall, a two-storied hall is built with semi covered terrace and with modern kitchen with space for hand wash, dish wash, and storage. At any time the hall can accommodate up to 500 persons.

IISERs were established by Government of India, to provide high quality education in modern science to integrate education with outstanding research at the undergraduate level. In the presence of academic luminaries, with great pride,IISER-TVM community held the 3rd convocation this year on May 30th, 2015.

Awarding BS-MS dual degrees to third batch of 55 students, MS degree to 5 students and PhD degree to 5 students. Many of these students are continuing their higher education in reputed institutions worldwide. Dr. Viswa Mohan Katoch, Chairman, Board of Governors declared the convocation open and Professor Ashutosh Sharma (Secretary, Department of Science and Technology, Government of India) graced the occasion as the Chief Guest.

This year also, we have been able to attract talented young faculty members to join the institute and increased the number of students to our academic programs. At the end of financial year 2015-2016 the institute has faculty strength of 56: (Professor: 4, Associate Professor: 9, and Assistant Professor: 43) and 53 administrative staff. In addition to regular faculty, we have many guest faculty helping with teaching. The total strength of students is 768 with 564 in BS-MS Programme, 42 in Integrated Ph.D. Programme and 162 in Ph.D Programme. In August 2015, 144 students joined the eight batch of Five Year BS-MS dual degree program. These students qualified to the admission through channels, namely KVPY, IIT-JEE merit list and the Aptitude test conducted jointly for all the IISERs, coordinated this year by IISER-TVM. Pleased to report that the gender ratio among students admitted to the undergraduate programme is approximately equal. This year 21 students were admitted to Int Ph.D. programme and 41 students joined Ph.D. programme.

Many distinguished academicians serve as members of the Senate them being associated with the Institute as Honorary Professors, or Visiting Professors. The faculty members of our institute are continuing to do cutting

edge research in the frontier areas of science. Five foreign institutions signed Memorandum of Understanding (MoU) with IISER-TVM. These include National University of Singapore, Max-Planck Institutions of Germany, University of Bristol, UK, Stockholm and Lund Universities of Sweden. In addition to 37 ongoing sponsored projects, the faculty members have acquired 13 new projects. Projects worth tens of crores are funded by several funding agencies. IISER-TVM has published 102 papers during the period 2015-16 in highly reputed journals and five patents were filed. During the last year many recognitions conferred on our faculty members including the Ramanujan Fellowship, Kerala State Young Scientist Award, Swarnajayanthi Fellowship, DST Inspire Faculty (four members), Welcome DBT Intermediate and Early Career Fellowships, B. M. Birla Science Prize in Physics, CRSI Bronze Medal.

I am pleased to inform you majority of BS-MS students that have graduated from IISER-TVM thus far are continuing in research/higher studies in reputed academic/research institutions in India and world-wide continuing with the standard set by the alumni. This year also, IISER-TVM students were selected for the German Academic Student Exchange Programme (DAAD-WISE), Har Gobind Khorana and the S.N. Bose Fellows Programmes, World Science Conference-Israel 2015, 9th Asian Science Camp 2015 and BRIC Summit Meeting, Russia.

Last year, IISER-TVM organized several national and international conferences/ workshops, including 100 years Gravity Seminar Series, Conscientia 2016 Gravitatinal wave exhibit, IndIGO-LSC Face-To-Face Meeting, Inter IISER Chemistry meet 2016, Parma University IISER-TVM joint meeting, 18th International workshop on Physics of Semiconductor Devices, The XXXIX All India Cell Biology Conference, International meeting on Cellular Organization and Dynamics, Scales in Biology: From genes to Eco System, Science Talent Enrichment Programme, Emerging Trends in Advanced Functional Materials, International Symposium on "Clusters, Cluster Assemblies and Nanomaterials, Indo-US workshop on "Engineered Nanocarbons for Electrochemicals Energy Storage", Indo-UK Workshop on Stochastic Partial Differential Equations and Applications and AFS-II. In addition, many renowned national and international scientists visited IISER-TVM enlightening us with deep insights into their fields of expertise. IISER-TVM also very active in outreach activities to promote scientific temperament in the country, arranging interaction programmes with faculty members of IISER-TVM with teachers and students of various colleges and schools, including Tamilnadu Science and Technology, Coimbatore, St Berchman's college, Changanessery, Kerala, St. Micahel's College, Cherthala, Alappuzha, Kerala, St. Joseph's college, Irinjalakuda, Kerala and Kandaswamy Kandar's College, Velur, Namakkal, Tamilnadu, Government Higher Secondary Schhols, in Thiruvananthapuram and Iduki, Kerala. Also IISER-TVM facilitated visits by students from various schools and colleges.

IISER-TVM also offers ample opportunities for the overall personality development of our students. The cultural festival "Ishya" and the student-run magazine "Sopanam" provide avenues for students to display and develop their artistic and literary talents. IISER-TVM students exhibited admirable performance in inter IISER sports events and on the cultural front.

Finally, IISER-TVM family enthusiastically participated all the programs that were initiated by the Government of India, like Swatch Bharat Abhiyan, Unnat Bharat Abhiyan (UBA), Rastriya Avishkar Abhiyan (RAA), National Integration Day, Constitutional Day, International Yoga Day by organizing seminars, quiz programmes, writing competitions, exhibitions etc for each programme to increase awareness and importance of the idea behind these celebrations among the community.

Preamble

1. Introduction

The Indian Institutes of Science Education & Research were established by Government of India between 2006, 2008 and 2015 at Kolkata, Pune, Mohali, Bhopal, Thiruvananthapuram and Tirupathi with the objectives mainly related to capacity enhancement for producing high calibre scientific manpower and the commensurate necessary reforms in the institutional framework for that purpose in the field of higher education and research in basic sciences.

The creation of Indian Institute of Science Education and Research Thiruvananthapuram (IISER-TVM) was notified by Government of India vide no. 22-6/2007-TS.I dated 28th February, 2008 of Department of Higher Education, Ministry of Human Resource Development as an autonomous organization.

The institute came into being on 20th February, 2008 when it was registered as a society under the Travancore – Cochin Literary Scientific and Charitable Society Registration Act (12 of 1955) vide no. T.342/08 dated 20th February, 2008.

The statute for the existence and functioning of the institute has been approved by the parliament and governed by the National Institute of Technology (Amendment) Act 2012.

The institute's setting up is also owed to the support of Government of Kerala that has provided 200 acres of land in Vithura Panchayat in Thiruvananthapuram district for its permanent campus and also handed over premises in the College of Engineering Trivandrum for transit campus to start functioning in June 2008.

Board of Governors

The composition of the Board of Governors according to NITSER Act 2012 is as follows:-

Chairman

Dr. V. M. Katoch, Director General, ICMR & Secretary to Govt. of India, Department of Health Research, Ministry H&FW - till November 2015.
Dr. Tessy Thomas, Project Director for Agni-IV missile, Defence Research & Development Organisation (DRDO), Hyderabad - w.e.f 04.12.2015.

Members

Secretary, Department of Higher Education, MHRD, Govt. of India

Director, Indian Institute of Science Education and Research Thiruvananthapuram
Director, Indian Institute of Science, Bangalore
Chief Secretary, Govt. of Kerala
Joint Secretary & Financial Advisor, MHRD, Govt. of India
Prof. Srinivasa Murty Srinivasula, School of Biology, IISER Thiruvananthapuram
Prof. Vijayalakshmi Ravindranath, Honorary Professor, School of Biology, IISER, Thiruvananthapuram
Registrar, Indian Institute of Science Education & Research Thiruvananthapuram –Secretary

The board met on 13.05.2015, 26.08.2015 and 06.02.2016 during the period of report.

Finance Committee

Chairman

Chairman, Board of Governors, IISER Thiruvananthapuram

Members

Director, Indian Institute of Science Education and Research Thiruvananthapuram

Joint Secretary (Admin) DHE, MHRD, Govt.of India

Joint Secretary & Financial Advisor, MHRD, Govt. of India

Dr. Suresh Das, Former Director, NIIST, Thiruvananthapuram

Prof. Srinivasa Murty Srinivasula, School of Biology, IISER Thiruvananthapuram

Registrar, IISER Thiruvananthapuram - Secretary

The finance committee met on 13.05.2015, 26.08.2015 and 06.02.2016 during the period of report.

Building and Works Committee

Chairman

Director, Indian Institute of Science Education and Research Thiruvananthapuram

Members

Shri. V. R. Rengasamy, Head, EM&C, NCBS-TIFR, Bangalore

Shri. P. Raveendran, Dy Head, CMD (E), CMG, VSSC

Smt. Poornima U. B, Head Architect, NCBS-TIFR, Bangalore

Prof. Srinivasa Murty Srinivasula, Professor, School of Biology, IISER-TVM

Shri. M. Radhakrishnan, Registrar, IISER Thiruvananthapuram

Project Engineer-cum-Estate Officer, IISER Thiruvananthapuram - Member Secretary

The committee met on 29.06.2015, 07.11.2015, 02.02.2016, 29.03.2016 during the period of report.

Senate

Chairman

Director, Indian Institute of Science Education and Research Thiruvananthapuram

Members

Prof. K. George Thomas, School of Chemistry, IISER Thiruvananthapuram

Prof. Srinivasa Murty Srinivasula, School of Biology, IISER Thiruvananthapuram

Prof. M. P. Rajan (Dean Academics), IISER Thiruvananthapuram

Prof. R. Balasubramanian, Honorary Professor, School of Mathematics, IISER Thiruvananthapuram

Prof. M. S. Raghunathan, Honorary Professor, School of Mathematics, IISER Thiruvananthapuram

Prof. N. Mukunda, Honorary Professor, School of Physics, IISER Thiruvananthapuram

Prof. Vijayalakshmi Ravindranath, Honorary Professor, School of Biology, IISER Thiruvananthapuram

Prof. M. S. Gopinathan, Emeritus Professor, School of Chemistry, IISER Thiruvananthapuram

Prof. K. Veluthambi, Visiting Professor, School of Biology, IISER Thiruvananthapuram

Prof. M. K. Mathew, Visiting Professor, School of Biology, IISER Thiruvananthapuram

Prof. M. S. Ramachandra Rao, Visiting Professor, School of Physics, IISER Thiruvananthapuram

Prof. M. L. Munjal, Mechanical Engineering Department, IISc, Banglore

Prof. Amitabha Das Gupta, Dean, School of Humanities, University of Hyderabad

Dr. Anil Shaji, Associate Dean (P&D), IISER Thiruvananthapuram

Dr. Utpal Manna, Head, School of Mathematics, IISER Thiruvananthapuram

Dr. Tapas Kumar Manna, Head, School of Biology, IISER Thiruvananthapuram

Dr. S. Shankaranarayanan, Head, School of Physics, IISER Thiruvananthapuram

Dr. K. M. Sureshan, Head, School of Chemistry, IISER Thiruvananthapuram

Dr. Ramesh Chandra Nath, Associate Dean (Students Affairs), IISER Thiruvananthapuram

Dr. Hema Somanathan, Associate Dean (R&D), IISER Thiruvananthapuram

Dr. Viji Z Thomas, Warden, HoRs, IISER Thiruvananthapuram

Dr. Suheshkumar Singh, School of Physics, IISER Thiruvananthapuram

Dr. Sainul Abideen P, Assistant Librarian, IISER Thiruvananthapuram

Registrar, IISER Thiruvananthapuram – Secretary.

The senate met on 02.05.2015, 08.08.2015, 31.10.2015, 30.01.2016 and special Senate meeting on 27.06.2016 during the period of report.

2. Human Resources

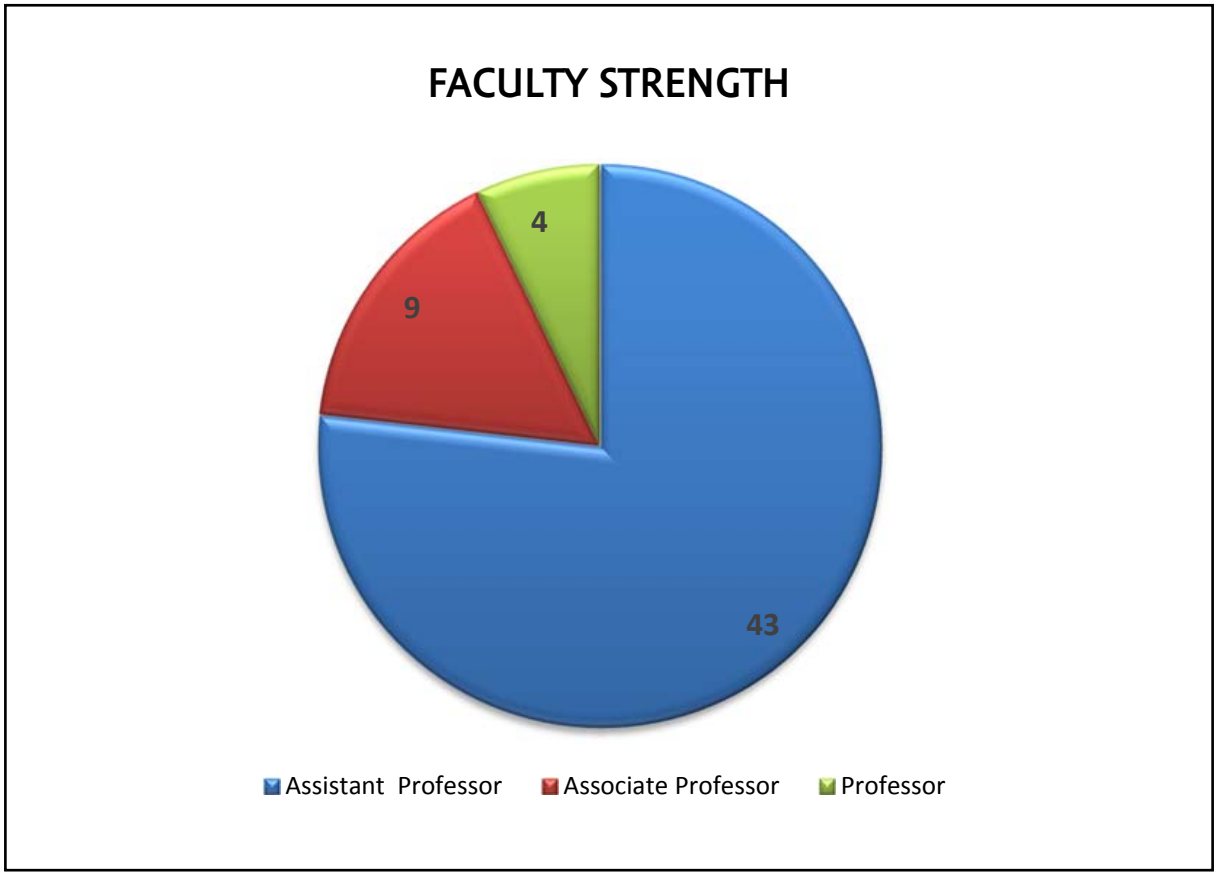
Human resources of the institute in 2015 -16 comprised the following:

Faculty	Regular Faculty		56
	Visiting Faculty		27
Technical and Non-Teaching Personnel	Officers	Regular	12
		Consultants & Others	02
	Subordinate	Regular	39
		Temporary & Contract	37
Students	BS-MS		564
	Ph.D.		162
	Int. Ph.D.		42

Faculty

School-wise lists of faculties and their names and research areas are given below.

Assistant Professor	School of Biology	9
	School of Chemistry	11
	School of Physics	15
	School of Mathematics	08
Associate Professor	School of Biology	2
	School of Chemistry	2
	School of Physics	3
	School of Mathematics	2
Professor	School of Biology	1
	School of Chemistry	1
	School of Physics	1
	School of Mathematics	1



School of Biology

The School of Biology has been engaged in carrying out cutting-edge research in the areas spanning from single molecules to ecosystems and providing high quality education. At present the School comprises of 13 faculty members. The degree programmes that are provided by the School are BS-MS (Biology), PhD, integrated PhD. School also provides advance training to Post-Doctoral fellows, Technical Assistants and Project Assistants. Research programmes in the School are funded by IISER, Wellcome Trust/DBT India Alliance, Dupont, The Royal Society UK, CSIR, DST, DAE and DBT. Efforts are on the way to establish state-of-art research laboratories, equipped with facilities for imaging, molecular biology research, animal tissue culture techniques, biochemical and biophysical work. The IISER permanent campus at Vithura located in the Western Ghats is also ideal for field biology. Our undergraduate teaching curriculum aims to provide students an exposure to a broad range of subjects in biology and gain experience in research in the frontier areas along with faculties and PhD students. Despite being a relatively new department of 8 years old, both academic and research achievements have been highly promising. A significant number of students graduated from the School with BS-MS degree in Biology are currently enagaged in PhD programmes in the Universities and Institutions of high standard both in abroad and in India. PhD students awarded from the School have started obtaining post-doctotal fellowships for research in the institutions and Universities abroad. Faculty members of the School have been recognized with many awards, both national and international levels as appreciation for their research excellence.

Name	Position	Area of Research
Dr. Srinivasa Murty Srinivasula	Professor	Nutrient and energy homeostasis, gene regulation in neuroendocrine centers, neural circuitry of feeding.
Dr. Tapas Kumar Manna	Associate Professor	Microtubule cytoskeleton, mitosis, centrosome and spidle pole regulation,drug development, and ciliogenesis.
Dr. Hema Somanathan	Associate Professor	Insect navigation and sensory ecology; insect-plant interactions.
Dr. Sunish kumar Radhakrishnan	Assistant Professor	Prokaryotic development and genetics.
Dr. Ramanathan Natesh	Assistant Professor	Molecular structural biology- protein crystallography, single particle cryoEM.
Dr. Kalika Prasad	Assistant Professor	Plant molecular genetics-patterning, stem cell and regeneration, evolutionary developmental biology.
Dr. Nishant. K. T	Assistant Professor	Meiotic recombination, genome stability, mutation rates.
Dr. Ullasa Kodandaramaiah	Assistant Professor	Prey-predator interactions, wolbachia in insects, secondary sexual characters, phylogenetic patterns, diversity of Indian butterflies.
Dr. Ravi Maruthachalam	Assistant Professor	Plant centromere biology, uniparental genome elimination, genome stability, aneuploidy, haploid genetics, and minichromosome biology.
Dr. Jishy Varghese	Assistant Professor	Nutrient and energy homeostasis, gene regulation in neuroendocrine centers, neural circuitry of feeding.
Dr. Satish Khurana	Assistant Professor	Hematopoietic stem cells, bone marrow niche, developmental hematopoiesis.
Dr. Nisha. N. Kannan	Assistant Professor	Circadian clock, neuropeptides and sleep, post- transcriptional regulation of circadian rhythm etc.

School of Chemistry

The school of chemistry established in the year 2008 at IISER Thiruvananthapuram has a vibrant academic and research ambience with 15 faculties, 71 PhD students, 3 research associates, 3 project assistants and 4 technical assistants. The school also hosts a large number of under graduate students for short projects. The research activites of the school cover a wide range of areas in chemistry (inorganic, organic, physical and theoretical chemistry). The department is actively involved in research in the areas of inorganic and organometallic chemistry, physical organic chemistry, supramolecular chemistry, DNA nanotechnology, photophysics and photochemistry of nanaomaterials and hybrid materials, NMR spectroscopy, theoretical chemistry, computational chemistry and non liner dynamics. On the experimental front, the department has a large number of state-of-the-art research facilities including 500 MHz NMR, single crystal X-ray diffractometer, powerd X-ray diffractometer,scanning electron microscope, atomic force microscope, absorptionspectrometer, emission spectrometer, infrared spectrometer, Raman spectrometer, circular dichroism spectrometer, femtosecond transient absorption, picosecond fluorescence, gas chromatography-mass spectrometry, differential scanning calorimetry, thermogravimetric analyzer, DNA and peptide synthesizers. The computational facilities include 3 clusters with a total of 120 processors.

Name	Position	Area of Reasearch
Dr. K. George Thomas	Professor	Photochemistry & photophysics, Hybrid nanomaterials, Light-matter interactions at nanoscale, Raman Spectroscopy using nanomaterials, Organized surfaces.
Dr. Kana. M. Sureshan	Associate Professor	Medicinal Chemistry, Chemical Biology, Organic Synthesis, Carbohydrate Chemistry, Supramolecular Chemistry, Methodology Development.
Dr. Mahesh Hariharan	Associate Professor	Physical organic chemistry, biophysical chemistry.
Dr. R. S. Swathi	Assistant Professor	Theoretical Chemistry.
Dr. Vinesh Vijayan	Assistant Professor	NMR spectroscopy, structure determination of macromolecules.
Dr. Reji Vargese	Assistant Professor	Supramolecular chemistry with DNA, and Functional DNA nanotechnology.
Dr. Ajay Venugopal	Assistant Professor	Inorganic and Organometallic chemistry.
Dr. Sukhendu Mandal	Assistant Professor	Biomass to liquid transportation fuel, Alkane metathesis, Cluster-Assembled Materials.
Dr. Thirumurugan Alagarsamy	Assistant Professor	Materials Chemistry - Metal organic frameworks, metal oxide clusters and nanocomposites for molecular separation, optical and conducting properties.
Dr. Yapamanu Adithya Lakshmanna	Assistant Professor	Non-linear Optical Spectroscopy, Understanding ultrafast dynamics involved in various chemical and biological systems.
Dr. Vennapusa Sivaranjana Reddy	Assistant Professor	Theoretical and Computational Chemistry.
Dr. Ramesh Rasappan	Assistant Professor	Asymmetric Catalysis and Natural Product Synthesis.
Dr. Alagiri Kaliyamoorthy	Assistant Professor	Developing new methods, Activation and functionalization of relatively unreactive C–H bonds, Asymmetric Catalysis, Synthesis of Natural Products.
Dr. Gokulnath Sabapathi	Assistant Professor	Macrocyclic systems, Bioinorganic Chemistry, Planar Aromatic and Antiaromatic systems, Porphyrin based Dye-Sensitized Solar cells (DSSC).

School of Mathematics

The School of Mathematics, IISER Thiruvananthapuram has one Professor (Dr. M. P. Rajan), two Associate Professors (Dr. Utpal Manna, and Dr. Shrihari Sridharan), eight Assistant Professors (Dr. K. R. Arun, Dr. Sheetal Dharmatti, Dr. Sachindranath Jayaraman, Dr. Viji. Z. Thomas, Dr. Saikat Chatterjee, Dr. P. Chiranjeevi, Dr. Midhun Mukherjee, and Dr. Sarbeswar pal) during the financial year 2015-2016. Professors M. S. Raghunathan (Head, National Centre for Mathematics, IIT Mumbai) and R. Balasubramanian (Director, Institute of Mathematical Sciences, Chennai) were (and are) Honorary Professors of the School.

The research areas represented include commutative Algebra, Group Theory, Homological Algebra, Linear Algebra, Algebraic Geometry, Differential geometry, Control Theory, Ergodic Theory, Complex Dynamics, Dynamical Systems, Stochastic Analysis, Numerical Functional Analysis, Mathematical Finance, Partial differential equations, Navier stokesequation, image processing, Genuinely multidimensional numerical schemes, Partial Differential Equations and Scientific Computing.

Name	Position	Area of Research
Dr. M. P. Rajan	Professor	Numerical Functional Analysis/ Functional Analysis; Financial Engineering/Mathematical Finance; Mathematical Biology.
Dr. Utpal Manna	Associate Professor	Stochastic Partial Differential Equations, Stochastic Processes, Stochastic and Harmonic Analytic Approaches to Fluid Dynamics Models.
Dr. Shrihari Sridharan	Associate Professor	Complex Dynamics and Ergodic Theory
Dr. K. R. Arun	Assistant Professor	Hyperbolic Systems of Conservation Laws, Finite Volume Schemes, Asymptotic Preserving Schemes, Nonlinear Waves.
Dr. Sachindranath Jayaraman	Assistant Professor	Linear Algebra –Non negative Matrices, Generalized Inverses and Applications.
Dr. Sheetal Dharmatti	Assistant Professor	Differential equations, control and game theory, Navier Stokes' equations and image processing.
Dr. Viji. Z. Thomas	Assistant Professor	Group theory, Commutative Algebra and Homological Algebra.
Dr. Saikat Chatterjee	Assistant Professor	Differential geometry, Higher Catogory theories, Gerbes.
Dr. P. Chiranjeevi	Assistant Professor	Dynamical Systems.
Dr. Midhun Mukherjee	Assistant Professor	Operator theory, operator algebra, non-cumulative dynamics.
Dr. Sabeswar Pal	Assistant Professor	Algebraic Geometry

School of Physics

School of Physics is committed for high quality research and teaching in basic physics and inter-disciplinary subjects. Research should and does influence teaching (and vice versa), but the gulf between the two can at times seem large. Our teaching curriculum for the undergraduate and graduate courses are designed so as to bridge this gap. We have developed world class undergraduate teaching laboratories which are fully equipped with advanced equipment. The quality of our teaching is reflected from the performance our students at various national and international examinations. In the last four years, we have witnessed several of our students securing top ranks in national level examinations such as CSIR, JEST, GATE etc. After

securing BS-MS degree, most of our students have taken up PhD positions in leading institutions both in India and abroad (USA, Europe, and UK etc).

At present, School of Physics has 19 faculty members, 6 of them working on theoretical physics and remaining 13 working on experimental physics. Many of the faculty members have received national and international recognitions. The expertize of our faculty members range over wide areas including condensed matter physics, optics, nano-science, quantum computation, gravitation and cosmology, and string theory. State of the art research laboratories are developed by our faculty members with the help of external and internal funding, for cutting edge research in advanced and applied research topics. In spite of being in a transit campus and with severe space constraint, our faculty members have proven their excellence by publishing results in high quality international journals. With a full-fledged permanent campus coming up at Vithura, the research activities of School of Physics are expected to enhance many folds.

Our second batch of BS-MS students have brought us more laurels. Jishnu Nampoothiri has been awarded the prestigious Shyama Prasad Mukherjee Fellowship of CSIR. Outgoing students have brought another significant honor. Five of our students were placed in the top 50 of JEST-2014 in Physics. This includes the national topper, Krishnanand Mallayya. These results are a testimony of the training which we offer to our students.

All of them have now taken up Ph.D. positions in India and abroad. Including the first batch, all the 17 School alumni have now taken up research as their career. This reiterates the initiative of the formation of IISERs in the country; courses are designed to equip the students to work on challenging research problems right from the undergraduate years.

Our faculty members, individually and collectively, have been developing different research laboratories and computational facility. Good amount of extramural research funding has started flowing in augmenting the research support by the institute. With the sight of moving to Vithura, faculty members will be able to enhance the research facilities to the full potential.

Name	Position	Area of Research
Dr. V. Ramakrishnan	Professor	Optical spectroscopy, nanomaterials, semiconductor heterostructures.
Dr. Anil Shaji	Associate Professor	Quantum Information theory and open quantum systems.
Dr. S. Shankarnarayanan	Associate Professor	Black-holes, Cosmology, Classical and quantum gravity.
Dr. Ramesh Chandranath	Associate Professor	Magnetism and Superconductivity.
Dr. Archana Pai	Assistant Professor	Gravitational Wave Physics, Statistical Signal Processing, Optics.
Dr. Manoj. A. G. Namboothiriy	Assistant Professor	Organic and hybrid optoelectronics, Spintronics, Metamaterials, Thermoelectrics, Application of Physics to biology and device applications, Solar Cell.
Dr. Sreedhar Dutta	Assistant Professor	Non-equilibrium Physics, Statistical and Quantum Field-theories.
Dr. M. M. Shaijumon	Assistant Professor	Multifunctional nanostructured materials- Graphene, 2-dimensional layered nanostructures; Energy storage - Lithium ion batteries, Supercapacitors; Gas storage.
Dr. Rajeev. N. Kini	Assistant Professor	Ultrafast optical studies of semiconductor nanostructures Terahertz spectroscopy & imaging.

Dr. Joy mitra	Assistant Professor	Scanning probe microscopy, tunnelling induced luminescence, metal-semiconductor junctions.
Dr. Deepshika Jaiswal Nagar	Assistant Professor	Quantum Phase transitions in low dimensional and low spin organic insulators as well as Heavy Fermions, Phase diagram of weakly pinned Type-II superconductors, Multiferroics.
Dr. Madhu Thalakulam	Assistant Professor	Low temperature electron transport on nanoscale devices: Quantum dots, Quantum point contacts, Nanowires & Superconducting tunnel junction systems and Topological insulators: etc.
Dr. Amal Medhi	Assistant Professor	Topological insulators, Fractional quantum Hall state, Strongly correlated electron systems.
Dr. Bindusar sahoo	Assistant Professor	Black hole entropy in supergravity and string theory, Supergravity, AdS-CFT correspondence, Higher-Spin holography.
Dr. Ravi Pant	Assistant Professor	Nanophononics, Stimulated Brillouin/Raman scattering, Opto-mechanical interactions, Slow-light, Nonlinear optical phenomenon and devices, Soliton self-frequency shift.
Dr. Bikas Chandra das	Assistant Professor	Novel charge transfer composite nanomaterials based thin film device applications.
Dr. M. Suheshkumar singh	Assistant Professor	Photoaccoustic imaging (microscopy and tomography), speckle contrast imaging, spectroscopy for Biomedical applications.
Dr. Vinayak. B. Kamble	Assistant Professor (On Contract)	Nanostructures and thin films, Surfaces and Interfaces, Defect induced properties of materials, Dilute Magnetic Semiconductors, Thermoelectric materials, Semiconducting Met etc.
Dr. Senthilkumar. D. V	Assistant Professor	Nonlinear Dynamics: Non-integrable systems, Chaotic Dynamics Bifurcation and Stability Analysis Synchronization Network Theory Complex Systems Time-delay Systems Delay-induce etc.

Visiting Faculty

The following visiting faculty in addition to guest faculty for special topics rendered their services to meet the requirements of academic works.

Prof. Mathew Moomen	Biology
Prof. M. K. Mathew, NCBS, Bangalore	Biology
Dr. J. Sreekumar, CTCRI	Biology
Prof. Vijayalakshmi Ravindranath,Honorary Professor,IISER-TVM	Biology
Prof. Veluthambi, Madurai Kamaraj University, Madurai	Biology
Dr. T. Ganga Devi, Ex-Principal, Government College for Women, Thiruvananthapuram.	Biology
Dr. M. D. Ajitha Bai	Chemistry

Dr. G. Jayakumar	Chemistry
Prof. M. S. Gopinathan, Ph.D (IIT Kanpur) FASc, FNA, Ex-Professor, IIT-M, Chennai	Chemistry
Prof. Shyamlava Mazumdar, TIFR Mumbai	Chemistry
Dr. Ravishankar L, NIIST, Pappanamcode	Chemistry
Prof. S. Sampath, IISc Bangalore	Chemistry
Prof. P. Jothilingam	Mathematics
Dr. Guram Donatze	Mathematics
Prof. M. S.Raghunathan, Honorary Professor, IISER TVM	Mathematics
Dr. Felix Pereira	Mathematics
Dr. Stephan Baier	Mathematics
Prof. R. Balasubramaniam, Honorary Professor, IISER TVM	Mathematics
Dr. Sarvesh Kumar, IIST Trivandrum	Mathematics
Dr. Tony Thomas, IITMK	Mathematics
Prof. M. S. Ramachandra Rao	Physics
Prof. N. Mukunda, Honorary Professor,IISER TVM	Physics
Prof. V. Unnikrishnan Nayar, Ph.D(Kerala University) Ex-Dean, Cochin University of Science & Technology	Physics
Dr. Thanu Padmanabhan	Physics
Prof. Prajit K Basu, Uty of Hyderabad	Humanities
Dr. VijayaMohanan Pillai	Humanities
Prof. R. Kannan, Madurai	Humanities
Prof. Vijayakumar	Humanities

Administrative & Support Personnel

The institute has been operating with 51 regular staff, 2 contractual experienced professionals. Recruitment of 10 personnel was done during the year and regular strength in position became 51 against a sanctioned strength of 66. The administrative personnel are enlisted as under

Administration

1. Shri. M. Radhakrishnan, Registrar
2. Shri. Bhaskara Rao, Deputy Registrar (Purchase & Stores)
3. Shri. Siva Dutt V. K, Project Engineer-cum-Estate Officer
4. Dr. Sainul Abideen. P, Assistant Librarian
5. Shri. B. V. Ramesh, Deputy Registrar (Finance & Accounts)
6. Shri. Hariharakrishnan, Assistant Registrar (Administration & Academics)
7. Shri. P. Y. Sreekumar, Scientific Officer (IT)

8. Shri. Priji. E. Moses, Assistant Executive Engineer (Civil)
9. Shri. Sreehari. S, Assistant Executive Engineer (Electrical)
10. Dr. Goldwin Hemalatha. M, Medical Officer
11. Dr. Thiraviam. P, Medical Officer
12. Shri Sudin B Babu, Assistant Registrar
13. Smt. Navya Paul, Technical Assistant
14. Smt. Divya V. J, Technical Assistant
15. Shri. Krishna Kumar, Junior Engineer (Civil)
16. Smt. Nimi Joseph Chaly, Accountant
17. Smt. Nafeesa C. K, Library Information Assistant
18. Shri. Jayaraj J. R, Library Information Assistant
19. Shri. Alex Andrews. P, Technical Assistant
20. Shri. Vijesh. K, Technical Assistant
21. Smt. Darli K. G, Private Secretary to Director
22. Shri. Manoj M. T, Office Assistant (Multi Skill)
23. Smt. Suja V. R, Office Assistant (Multi Skill)
24. Smt. Vidya Senan. I, Office Assistant (Multi Skill)
25. Smt. Archana P. R, Office Assistant (Multi Skill)
26. Smt. Beena N. K, Office Assistant (Multi Skill)
27. Shri. Muruganandam. A, Office Assistant (Multi Skill)
28. Shri. Rajesh A. P, Office Assistant (Multi Skill)
29. Shri. Satheesh. R, Office Assistant (Multi Skill)
30. Shri. Sudeep. S, Junior Engineer (HVAC)
31. Shri. Satya Srinivas Naraharisetti, Superintendent (Hostel & Hospitality)
32. Shri. Praveen Peter, Junior Engineer (Civil)
33. Smt. Mini Philip, Personal Assistant
34. Shri. Manoj Kumar. S, Superintendent (Office)
35. Smt. Veena P. P, Office Assistant (Multi Skill)
36. Shri. Sangeeth. M, Junior Engineer (Electrical)
37. Shri. Jins Joseph, Nurse
38. Smt. Divya A. T, Nurse
39. Shri. Adarsh. B, Technical Assistant
40. Shri. Anilkumar. P. R, Technical Assistant
41. Shri. Naveen Sathyan, Technical Assistant
42. Shri. Ajith Prabha, Office Assistant (Multi Skill)
43. Shri. Arun Kumar M, Attendant –Electrical
44. Shri. Ratheesh C, Attendant –Plumber
45. Shri. Arun Reghunath, Superintendent
46. Shri. Rakesh M. V, Office Assistant(Multi Skill)
47. Ms. Sarika Mohan, Junior Technical Assistant

48. Shri Vivek V G, Junior Technical Assistant
49. Shri. Pradeep Kumar G. T, Junior Technical Assistant
50. Shri Nibith Kumar K. P, JuniorTechnical Assistant
51. Ms. Lakshmi C, Junior Technical Assistant

Consultants and Contractual Officers

1. Shri. Gopakumar. G, Asst. Security Officer
2. Shri Jayan V, Asst. Security Officer

3. Academic Programmes & Students

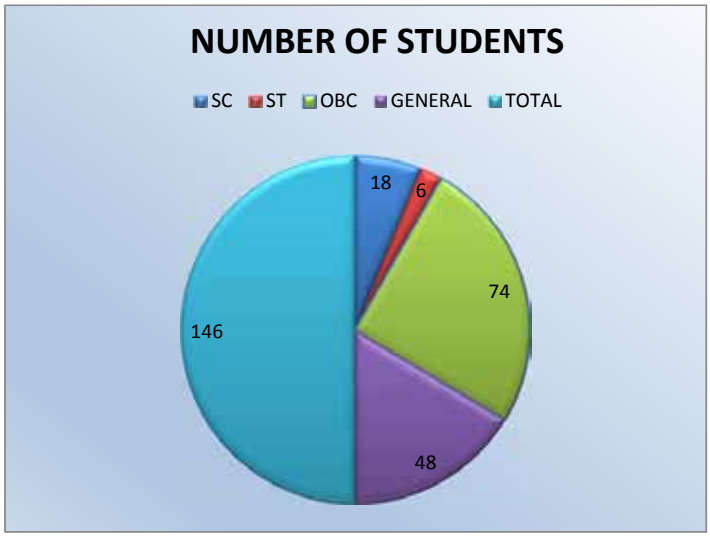
Students BS-MS Dual Degree Programme

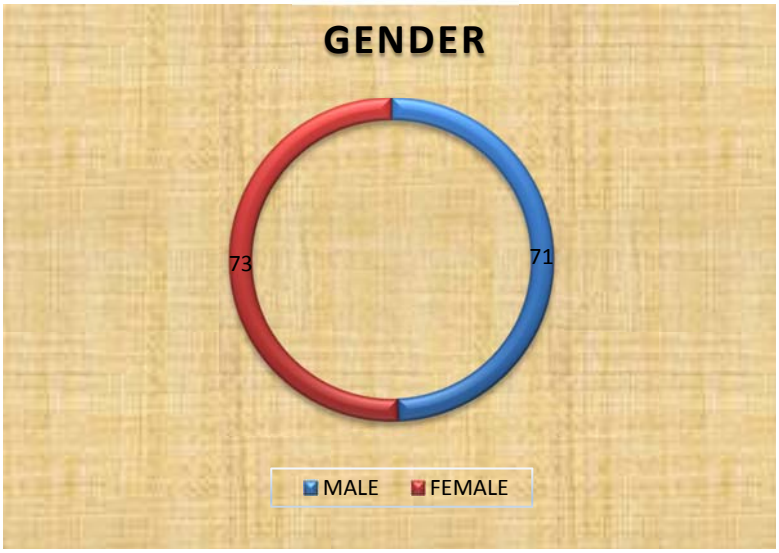
The Third Convocation of IISER-TVM was held on 30th May 2015, in the permanent campus of IISER Thiruvananthapuram. The Chief Guest of the function was presided by Prof. Ashutosh Sharma, Secretary to the Government of India, Department of Science & Technology. The third batch of Five Year BS-MS Dual Degree Programme consisting of 55 students, 5 MS and 5Ph.D. students were graduated on the occasion.

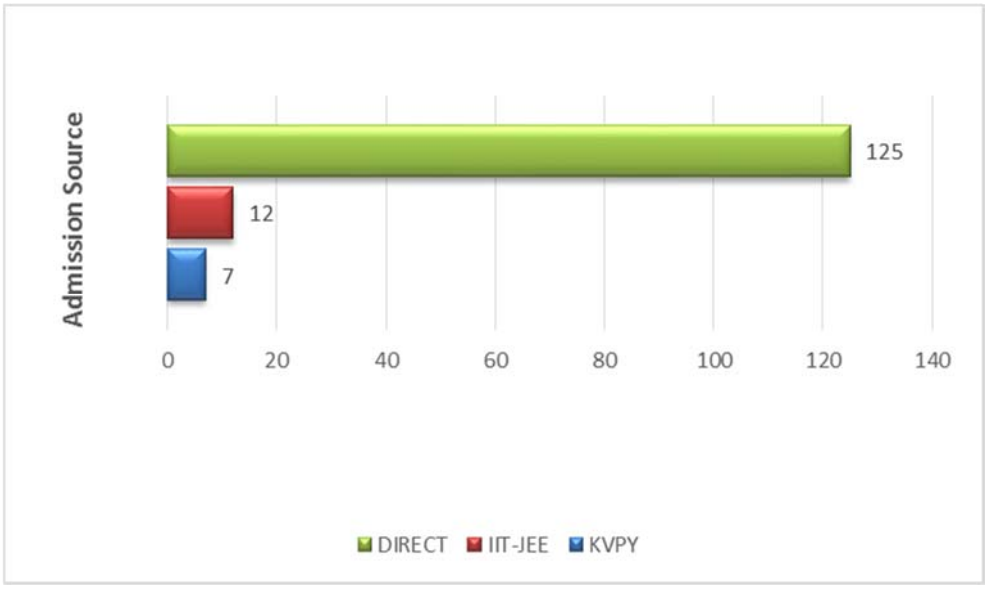
144 students joined the eight batch of Five Year BS-MS Dual Degree Programme in August 2015 at the Transit Campus in the College of Engineering Trivandrum, who were selected through three channels respectively KVPY, IIT-JEE merit list and the Aptitude Test for the top 1% students of class XII exams of all the State Boards, CBSE and ICSE.

The category distribution is as follows.

SC	ST	OBC	GEN	TOTAL	MALE	FEMALE	Admission Source		
							KVPY	IIT-JEE	DIRECT
18	6	74	48	146	71	73	7	12	125







Ph.D. Programme

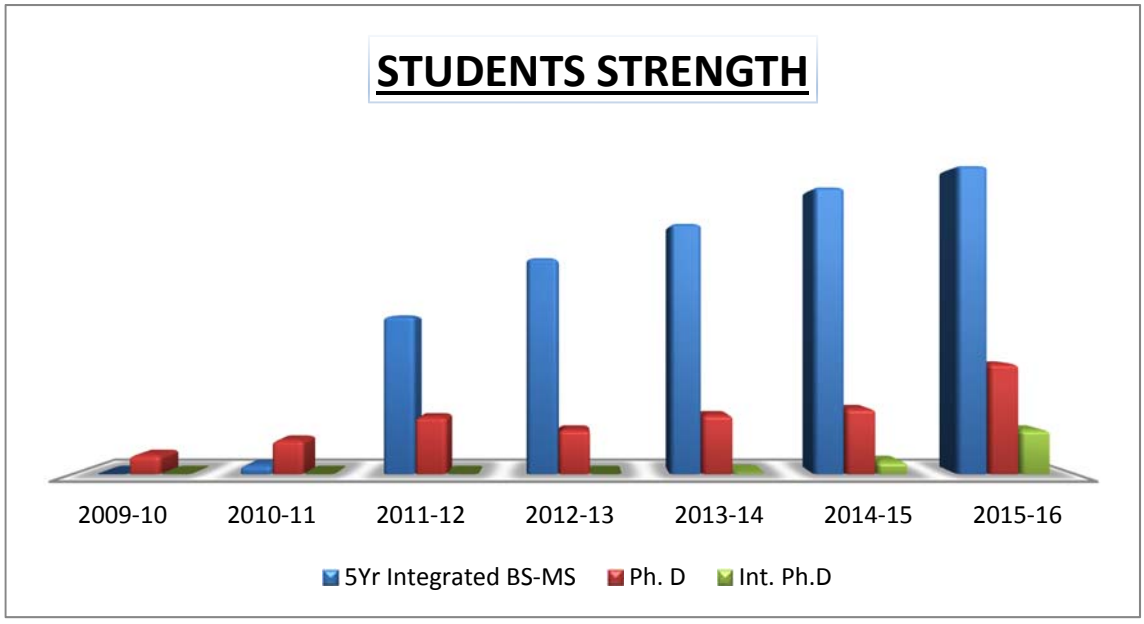
41 students were admitted to Ph.D. Programme during the academic year 2015-16. Students admitted to the doctoral program are those qualified in one of the National Eligibility Tests such as UGC-CSIR JRF/DBT-JRF/GATE/INSPIRE-Ph.D./NBHM/ICMR/JEST etc. 11 students from IPHD were promoted to PhD Programme.

Int. Ph.D. Programme

21 students were admitted to the programme during the academic year 2015-16 through written exam/JEST and interview.

Total student strength in 2015-16 is given below.

Programme	2009-10 admissions	2010-11 admissions	2011-12 admissions	2012-13 admissions	2013-14 admissions	2014-15 admissions	2015-16 admissions	Total
5Yr Integrated BS-MS	-	4	74	101	117	134	144	574
Ph. D	9	16	27	21	28	31	52	184
Int. Ph.D	-	-	-	-	1	6	21	28
Total	9	20	101	122	146	171	217	786



4. Research and Development Activities

The institute has been active in frontier areas of research across fields. Faculty members have set up experimental and theoretical research groups and have been publishing actively in reputed peer-reviewed journals. Several scientific collaborations with researchers in premier institutions in India and abroad were initiated. A number of new PhD students and post-doctoral fellows joined various research groups. Memoranda of understanding between IISER Thiruvananthapuram and several institutes and universities abroad were signed during the current period and joint activities have been initiated in several cases or being contemplated in others. Faculty members were awarded new extramural grants, while some projects were completed. The details of all the above activities are given below:-

Collaboration with Foreign Institutions

IISER-TVM has signed five memorandam of Understanding (MoU) with foreign universities during the period 2015-16 for academic research and development activities. Two of these MoUs were signed during the president's visit to the respective countries. The details are listed below:-

Sl.No.	Foreign University	Date of MoU	Remark
1	University of Bristol, UK	Sept 4, 2015	
2	Max-Planck, Germany	July 21, 2015	
3	Stockholm University Sweden	June 1, 2015	During President's Visit
4	Lund University, Sweden	June 1, 2015	During President's Visit
5	National University of Singapore	April 15, 2015	

New Sponsored Projects

Sl No.	Name of the Project	Principal Investigator	Co-Investigator	Sponsoring Agency	Amount Sanctioned (Rs.in Lakh) Amount	Duration
1.	Early Career Research Award (ECR)-SERB	Dr. Alagiri Kaliyamoorthy	None	SERB	40.9 Lakhs	2016-2019
2.	Ecology and Conservation of fresh water swamps in the Western Ghats	Dr. Hema Somanathan	Dr. Rajendra Prasad	DBT	43 Lakhs	2015-2018
3.	Community pollination at the landscape level.	Dr. Hema somanathan	Dr. Deepak Barua, Dr. Sreekala	DBT	28 Lakhs	2015-2018
4.	Quantum Plasmonics of Hybrid Nano-Assemblies	Professor Jaydeep Basu, IISC and Dr. Stephen K. Gray, Argonne National Laboratory (USA)	**Indian Partners** (i) Prof. K. George Thomas (IISER-TVM), (ii) Dr. G. V Pavan Kumar (iii) Dr. Aveek Bid. **US Partners** (i)Prof. George C. Schatz & Teri W.Odom, Northwestern University (ii)Profs. Peter Nordlander & Naomi Halas, Rice University (iii) Dr. Gary P. Wiederrecht, Argonne National Laboratory (iv) Prof. Alexander O. Govorov, Ohio University	Indo-US Science and Technology Forum	46.45 Lakhs	2015-2017

5.	Regulation of rice floret organ positioning	Dr. Kalika Prasad	Dr. Ravi Maruthachalam	DBT	110 lakhs	2015-2020
6.	Design, synthesis and photocatalytic water splitting properties of functional cobalt based inorganic-organic hybrids	Dr. Mahesh Hariharan	None	Kerala State Council for Science Technology and Environment	45.20 Lakhs	2015-2018
7.	Mid-IR sources using stimulated Brillouin scattering and solution self-frequency shift	Dr. Ravi Pant	None	SERB	65 Lakhs	2015-2018
8.	Ramanujan Fellowship	Dr. Ravi Pant	None	DST-SERB	38 Lakhs	2015-2020
9.	Theoretical investigation on relaxation dynamics of ultrafast generated molecular triplet states	Dr. V. Sivaranjana Reddy	None	SERB	23.26 Lakhs	2015-2018
10.	Comparative biogeography of plants of the Western Ghats	Dr. Ullasa Kodandaramaiah, N. Mohanan (JNTBGRI)	Dr. P. Padmesh, Dr. G. Rajmkumar, Dr. K. B. Rameshkumar, Dr. T. Shaju	DBT	36.77 Lakhs	2015-2018
11.	Graphene based Shear Harmonic – Surface Acoustic Wave Devices for Toxic Gas Detection	Dr. Vinayak. B. Kamble	Dr. Palash Kumar Basu (IIST)	ISRO, Respond programme	70.5 lakhs	2015-2018
12.	Comparative NMR study of structure and dynamics of VDACs, human VDAC1 and rice VDAC4, using segmental isotope labeling technique	Dr. Vinesh Vijayan	None	SERB	35.88 Lakhs	2015-2018

Ongoing Sponsored Projects

Sl No.	Name of the Project	Principal Investigator	Co-Investigator	Sponsoring Agency	Amount Sanctioned (Rs.in Lakh) Amount	Duration
1.	Lewis Acidic Molecular Bismuth Alkyls and Hydrides	Dr. Ajay Venugopal	None	SERB	25.8 lakhs	2013-2016
2.	Molecular Magnesium Hydrides: Hydrogen Storage	Dr. Ajay Venugopal	None	DST	35 lakhs	2013-2018
3.	Cationic Bismuth Complexes in Hydroamination	Dr. Ajay Venugopal	None	CSIR	14 lakhs	2014-2017
4.	Centre for Computation, Modeling and Simulations	Dr. Amal Medhi	Dr. Anil Shaji, Dr. Archana Pai, Dr. K. R.Arun, Dr. Nishant, Dr. R. S.Swathi, Dr. S. Shankaranarayanan	MHRD	400 lakhs	2014-2019
5.	Max Planck Partner group(of Albert Einstein Institut, Germany)	Dr. Archana Pai	German PI- Prof. Bernard Schutz, Director, Albert Einstein Institute	DST India and Max Planck Society, Germany	125 lakhs	2011-2016
6.	DST - JC Bose Fellowship 2014-2019	Dr. K. George Thomas	None	None	68 lakhs	2014-2019
7.	Synthesis and molecular recognition properties of novel ditopic ion receptors derived from crown ether and carbazole or calix[n] phyrin subunits	Dr. S. Gokulnath	None	DST	35 lakhs	2014-2017
8.	Planarization of Porphyrin Dimers and Trimers for Near-IR Applications	Dr. S. Gokulnath	None	SERB	26 Lakhs	2014-2017
9.	Effects of forest fragmentation on pollination in agricultural landscapes	Dr. Hema Somanathan	Natalie Hempel de Ibarra	UKIERI	32 lakhs	2015-2017
10.	MicroRNAs and nutrient homeostasis	Dr. Jishy Varghese	None	SERB	73 lakhs	2013-2018

11.	Nanoscale Schottky junctions for sub ppm hydrogen detection	Dr. Joy Mitra	None	SERB	40 lakhs	2014-2017
12.	Physics and applications of high aspect ratio Schottky Junction Devices	Dr. Joy Mitra	Dr. Madhu Thalakulam	UKIERI	6 lakhs	2014-2016
13.	Interplay between auxin and patterning regulators to control organ polarity	Dr. Kalika Prasad	Dr. S. Murty Srinivasula	DBT	80 lakhs	2013-2016
14.	Chemical Biological intervention in cell signaling	Dr. Kana. M. Sureshan	None	DST	245 lakhs	2015-2020
15.	Quantum point contact-double quantum dot system: A lab on chip for quantum measurement and back action	Dr. Madhu Thalakualm	None	SERB	50 lakhs	2014-2017
16.	Mechanistic Investigations on Light Induced Crosslinking of DNA Protein Nanostructures	Dr. Mahesh Hariharan	None	DBT	53.76 lakhs	2013-2016
17.	Incorporation of Plasmonic Structures to Improve organic Photovoltaics	Dr. Manoj A. G. Namboothiry	Dr. M. M. Shaijumon	DST	183.76 lakhs	2012-2015 (extended 6 months)
18.	Genetic analysis of crossover assurance mechanisms facilitating meiotic chromosome segregation	Dr. Nishant.K. T	None	Wellcome Trust-DBT India Alliance	330.3 lakhs	2012-2017
19.	Ultrafast optical and terahertz studies of the dilute bismide alloys, GaN:Bi and GaAs:Bi	Dr. Rajeev. N. Kini	None	SERB	27 lakhs	2013-2016
20.	Stereoconvergent Cross-Coupling: Asymmetric Synthesis of Boronic Esters and Silanes	Dr. Ramesh Rasappan	None	SERB	35 lakhs	2016-2021
21.	Asymmetric Catalysis: Exploring Organosilanes in Stereospecific and Convergent Reactions	Dr. Ramesh Rasappan	None	SERB	55lakhs	2015-2018
22.	Generation and characterization of minichromosomesand neocentromere formation in plant	Dr. Ravi Maruthachalam	None	DBT	82.5 lakhs	2013-2018

23.	Identification and characterization of kinetochore proteins with special emphasis on *in vivo* haploid induction in plants	Dr. Ravi Maruthachalam	None	Dupont Inc. USA	15 lakhs	2014-2017
24.	Nucleic acid-π amphiphiles: Luminescent and addressable nanobiomaterials	Dr. Reji Varghese	Prof. S. Murty Srinivasula	DBT	118.98 lakhs	2014-2017
25.	DNA Based Addressable Functional Nanomaterials: Design, Synthesis and Self-assembly of Novel DNARigid Rod Block Copolymers	Dr. Reji Varghese	None	SERB	73 lakhs	2011-2016
26.	Synchronization of complex Networks with delay	Dr. D. V. Senthilkumar	None	SERB	19.8 lakhs	2014-2017
27.	Ramanujan Fellowship	Dr. S. Shankara narayanan	None	DST	73 lakhs	2010-2015
28.	DST-Max Planck Partner group	Dr. S. Shankara narayanan	DST India and Max Planck Soceity, Germany	None	520 lakhs	2011-2016
29.	Derivatives of Lyapunov exponents, structural stability of systems and the pressure function	Dr. Shrihari Sridharan	None	DST, GoI	12.36 lakhs	2013 -2016
30.	Synthesis, Structural Evolution and Physical Properties Tuningof Cluster-Assembled Materials	Dr. Sukhendu Mandal	None	SERB	50 lakhs	2014-2017
31.	Metathesis of Alkanes Using Transition Metal Catalysts	Dr. Sukhendu Mandal	None	CSIR	11 lakhs	2014-2017
32.	A multilayered approach to decipher unchartered mechanisms of asymmetric cell division	Dr. Sunish Kumar Radhakrishnan	None	Wellcome Trust/DBT India Alliance	267.62 lakhs	2011-2016
33.	Determining the role of centrosome proetein $TACC_3$ in regulation of microtubule nucleation and elucidating its molecular mechanism	Dr. Tapas. K. Manna	Dr. Vinesh Vijayan	DAE	24.87 lakhs	2014-2017
34.	INSPIRE Faculty Award	Dr. Ullasa Kodandaramaiah	None	DST	35 lakhs	2013-2018
35.	Morphometry and phylogeography of Honey Bees and Stingless Bees in India Phase-II	Dr. Ullasa Kodandaramaiah	Network-Project with many institutions across India	DBT	33.73 lakhs	2015-2018

36.	Study of Stochastic Analysis and Control of Certain Hydrodynamic Models	Dr. Utpal Manna	None	NBHM	2 lakhs	2014-2017
37.	Development of Novel metal oxide-graphene based nanocomposite materials for Microsensors and Nanoelectronics device Applications.	Dr. Vinayak Kamble	None	DST	35 lakh	2016-2021

Travel Grants

Sl No.	Name of the Project	Principal Investigator	Co-Investigator	Sponsoring Agency	Amount Sanctioned (Rs.in Lakh) Amount	Duration
1.	Structural studies on transcription regulators	Dr. Ramanathan Natesh	None	DBT and ESRF Grenoble	In the form of travel support, boarding and 8 days of shared beam time	24 shifts in April 2015 between Apr 22-29 2015
2.	Stochastic Landau-Lifshitz-Gilbert equation with Levy noise and ferromagnetism	Dr. Utpal Manna	None	The Royal Society, UK	12 lakhs	Sep 2014 Feb 2017

Completed Sponsored Projects

Sl No.	Principal Investigator	Name of project	Co-Investigator	Sponsoring Agency	Amount Sanctioned (Rs. in Lakh) Amount	Duration
1.	Dr. K. George Thomas	Development of Enhanced CPL-active Materials for Potential Application in Future Security Technology	None	DST-JSPS	53 lakh	2013-2015
2.	Dr. K. George Thomas	Organic and Organic-Inorganic Hybrid Solar Cells	None	DST	56 lakh	2011-2015

3.	Dr. Mahesh Hariharan	Synthesis, Structure and Electronic Properties of Natural and Non-Natural Nucleic Acid Sequences	None	DST	26.08 lakh	2012-2015
4.	Dr. Manoj. A. G Namboothiry	Incorporation of Plasmonic Structures to Improve organic Photovoltaic	M. M. Shaijumon	DST SERI	183.7 lakh	2012-2015
5.	Dr. Rajeev. N. Kini	Ultrafast Optical and Terahertz studies of the dilute Bismide alloys, GaN:Bi and GaAs:Bi	Prof. A. J. Kent	DST-UKIERI	6.45 lakh	2013-2015
6.	Dr. Ramanathan Natesh	Structural analysis of proteins and its interacting partners.	None	DBT	75.7 lakh	2010-2015
7.	Dr. Ramesh Chandra Nath	Synthesis and physical properties of frustrated S=1/2 square lattice compounds.	None	DST	52.84 lakh	2012-2015
8.	Dr. M. M. Shaijumon	Nanoarchitectured TiO_2 based hybrid structures for Li-ion battery applications	None	BRNS-DAE	14.80 lakh	2012-2015
9.	Dr. M. M. Shaijumon	Design, Synthesis and characterization of self-assembled molecular materials: Applications in Drug delivery and Nanoscale energy storage devices	Dr. Vibin Ramakrishnan IIT Guwahati)	DBT	104.44 lakh	2013-2016
10.	Dr. M. M. Shaijumon	3-D Engineered Electrodes for Electrochemical Energy Storage	Dr. Vijayamohanan Pillai (CSIR-CECRI). Dr. A. K. Singh (IISc Bangalore). Prof. P. M. Ajayan (Rice University, USA). Prof. S. Talapatra (SIUC, USA). Prof. P. Sharma (U.O. H, USA).	IUSSTF- DST	67.81 lakh	2013-2015

1. Development of Enhanced CPL-active Materials for Potential Application in Future Security Technology

The project is a bilateral project under the Indo-Japan cooperative science programme in the priority area of advanced materials and nanotechnologies between IISER-TVM (Prof. K. George Thomas) and Nara Institute of Science and Technology (Prof. Tsuyoshi Kawai) for a period of two years. Investigators have synthesized several linear as well as tripod phenyleneethynylenes, conjugated to amino acids, which can act as chiral centers. These photoemissive materials possess circularly polarized luminescence (CPL). An enhancement in CPL activity was observed on integrating these chiroptical materials on to plasmonic/ magnetic nanomaterials.

2. Organic and Organic-Inorganic Hybrid Solar Cells

The project is a bilateral project funded under the framework of India-European Union Science and Technology Cooperation Agreement. From the Indian side project is coordinated by CSIR-NIIST with IISER-TVM, IISc, Bangalore, JNCASR, Bangalore and University of Madras as participating institutes (Co-PIs). Under this project, IISER-TVM (Prof. K. George Thomas) has undertaken the design of (i) heterojunction semiconductor nanorods and (ii) environmentally friendly quantum dots having efficient electron and resonance energy transfer properties. Based on various photophysical studies, it is concluded that InP/ ZnS is a versatile and environmentally friendly material for energy transfer applications, meeting various photophysical requirements. Photophysical investigations indicate that the excitons in heterojunction nanorods are loosely bound and hence it is easy to extract electrons/holes from these systems. They are useful as active components in photovoltaic devices.

3. Synthesis, Structure and Electronic Properties of Natural and Non-Natural Nucleic Acid Sequences

We could demonstrate that the structural dynamics of non-natural and natural G-quadruplex in natural and non-natural environment. Structural dynamics of G-quadruplex is highly important towards cancer research. We could demonstrate DNA based approach for the isolation of an atropisomer of a biaryl derivative using non-specific interactions. We showed that the exciton interactions between DNA bases and the reporter chromophores are important while analysing the circular dichroism spectra of chromophore containing nucleic acids. In addition, we could characterise a novel bichromophoric system that has huge potential in the direction of artificial photosynthesis. Through collaborative efforts, we could also explore the properties of the perylenediimide based materials for battery applications.

The current proposal has led to the generation of several interesting research leads that will be explored in our group. It is includes the following aspects

- Context dependence of CpG methylation
- Charge transport across G-quadruplex structures
- DNA based isolation of atropisomers that has medicinal importance
- Novel chromophoric systems to explore artificial photosynthesis
- Novel DNA based material for battery applications

4. Incorporation of Plasmonic Structures to Improve organic Photovoltaics

Fabrication of solution processed organic photovoltaics (OPVs) from polymer thin films have drawn theattention of many researchers due to their ability of converting sunlight to electricity at a low cost with moderate efficiencies compared to conventional silicon based solar cells. The main objective of this project was to make plastic solar cell with a power conversion efficiency (PCE) more than 5 % and to study the effects of incorporation of plasmonic structure into organic photovoltaics.

Different photovoltaic systems studied includes P3HT:PCBM, PTB7:PCBM, SQ:PCBM, Perovskite, and CuO. A 9.1% PCE was obtained for PTB7:PCBM based inverted bulk heterojunction devices. P3HT and PCBM blended solution was used as the active layers in the bulk-heterojunction solar cell devices. Both direct and inverted devices were fabricated using P3HT:PCBM. The maximum PCE obtained for direct P3HT:PCBM device is 2.85% and 5.65% for inverted device. We have studied these systems with two types of ZnO layers as electron transporting layers (figure 1a,1b). When compared to ZnO solgel, ZnO nanoparticles exhibits better charge extraction. Squaraine, a dye (small molecule) exhibitsgood absorbance in the range of 500-900 nm finds better place in the field of OPVs.

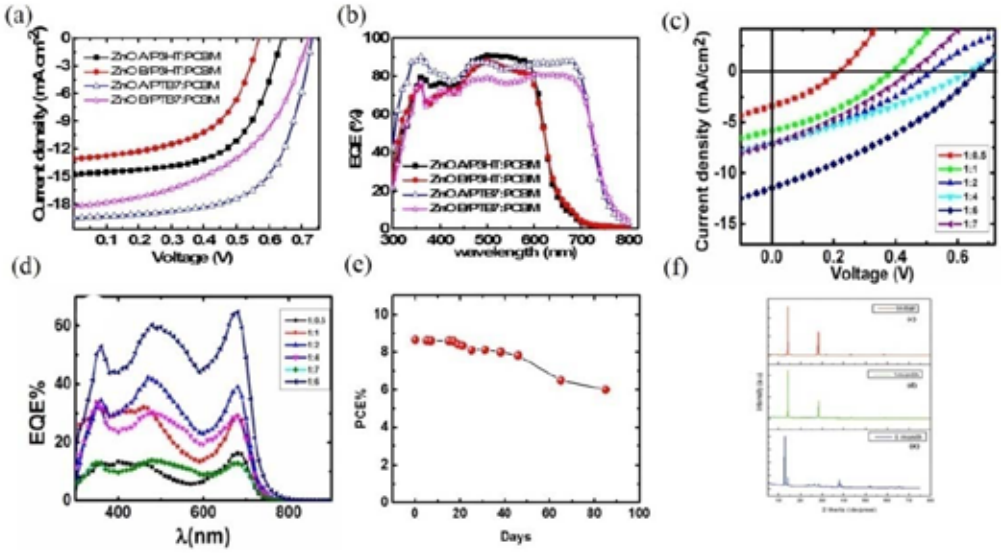


Figure 1: (a) J-V characteristics (b) The external quantum efficiency of ZnO A and ZnO B buffer layered PTB7:PC71BM and P3HT:PC71BM inverted device (c) J-V characteristics of SQ:PCBM inverted device for different ratios (d) The external quantum efficiency of SQ:PCBM inverted device for different ratios (e) Stability of PTB7:PCBM device under air for 90 days (f) Stability of perovskite layer for 6 months.

For SQ:PCBM based inverted device we could obtain a PCE of 4.20 % (figure 1c, 1d). The main attraction of all these high efficient bulk heterojunction solar cells are that they are processed at low temperature under ambient conditions. The PTB7:PCBM devices processed in air were stable for more than 90 days (figure 1e). Organic–inorganic hybrid perovskite solar cells with FTO/titanium dioxide/$CH_3NH_3PbI_{3-x}Cl_x$/P3HT/silver were made in air with more than 50% humidity. The best devices showed an open circuit voltage of 640 mV, a short circuit current density of 18.85 mA cm^{-2}, a fill factor of 40.7% and a PCE of 5.67%. The study provides an insights into air-stability of perovskite solar cells (figure 1f).

The use of noble metal nanoparticles (NPs) in solar cell structure is a promising way of addressing the problems associated with organic solar cells and improving the device efficiency. Light trapping, due to the embedding of metallic nanoparticles, has been shown to be beneficial for a better photo absorption in organic solar cells. The concentration, size and geometry of gold nanoparticles are key factors that directly influence the light absorption in the devices. The effect of incorporation of plasmonic gold (Au) nanoparticle as a buffer layer and in the active layer of inverted bulk heterojunction organic photovoltaic cells of P3HT:$PC_{71}BM$ fabricated in ambient air condition were studied.

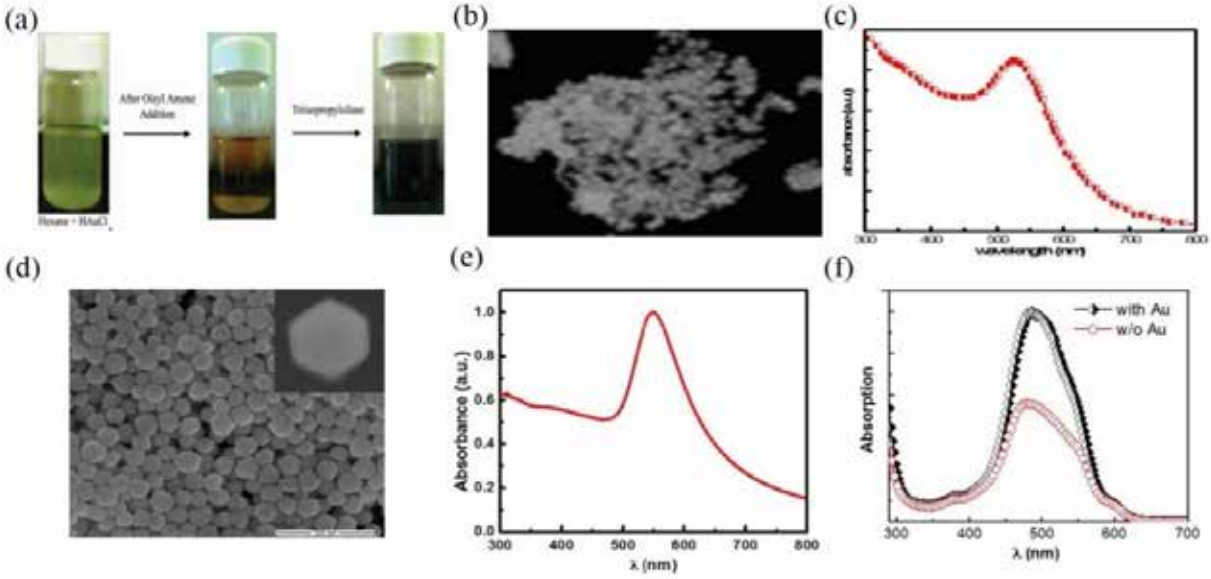


Figure 2: (a) Synthesis of Au nanosphere (b) Au nanosheres of size ~ 10 nm (c) UV-Vis absorption spectra (d) Truncated octahedral Au nanoparticles of size ~ 65 nm (e) UV-Vis absorption spectra of Au NPs (f) UV-Vis absorption spectra of P3HT: PCBM with and without Au NPs.

By introducing Au nanospheres in between the ITO and MoO3 layer of the direct P3HTR: PCBM device, efficiency was enhances by 25% and the short circuit current increased by 16%. In the inverted P3HT: PCBM device structure, truncated octahedral Au nanoparticles were incorporated in to the active layer and a PCE of 5.36 % was obtained.

These low temperature processing methods developed for fabricating photovoltaic devices can be used in designing flexible solar cells and in roll to roll printing process.

5. Ultrafast Optical and Terahertz studies of the diluteBismide alloys, GaN: Bi and GaAs: Bi

Our aim was to study the optical and electronic properties of the dilute bismide alloys, GaN: Bi and GaAs: Bi using ultrafast optical techniques and Terahertz spectroscopy techniques. We had grown GaN: Bi samples on sapphire substrate and made the structural characterization using XRD and found the samples to be polycrystalline. The GaN: Bi samples were found to be optically inactive in photoluminescence measurements. For detecting coherent strain pulses in ultrasonics measurements we have designed a p-i-n structure with a GaAs: Bi QW as the intrinsic region. The structure was grown by MBE by our collaborators at Nottingham. A method to generate THz waves using ionization of air plasma was developed. During the exchange visit our PhD student Mr Sandeep Sathyan, did ultrafast measurements on InSe few-layer flakes and his work was published in Scientific Reports.

6. Structural analysis of proteins and its interacting partners.

The project was aimed at developing a simple and economically viable method to synthesize hybrid nanostructured materials and use the multifunctional capability of such materials in the design and fabrication of Li-ion batteries. This project mainly dealt with the preparation of nanostructured TiO_2 -based hybrid materials and their electrochemical performance studies as anodes in Li-ion batteries. Well-ordered arrays of Titania nanotubes have been synthesized using electrochemical anodization technique. TiO_2 nanotube based hybrid structures - TiO_2/ZnO, TiO_2/Co_3O_4, $TiO_2/CoFe_2O_4$, and TiO2/CNT have been synthesized. Electrochemical performance of TiO_2 based hybrid nanowires as electrodes for supercapacitor and lithium battery anode, have been studied. These novel nano-architectured hybrid nanowires with its unique properties showed promise as high performance supercapacitor electrodes.

The research goal in our lab is to understand the structure function relationship of proteins relevant to human health and diseases. Towards this we have cloned, expressed, purified and crystallised several transcription regulators in Mycobacteriumtuberculosis (Mtb) and Mycobacteriumsmegmatis (Msmeg). Our MR trials did not yield any solution and ab-initio phasing with Selenium derivative has yielded the structure of a protein of 266 kDa in Asymmetric Unit of the protein crystal. Ab-initio/MR phasing for the other proteins are in progress. For the first time, we have showed that some of these transcription regulators and their homologues that we are studying play a role in post translational protein quality control as chaperone. The structures will yield us plethora of information for further biochemical investigations and possible lead to design of anti tuberculosis drugs against these targets. CryoEM 3D reconstruction of the quinary complex (GroEL: Substrate: GroES, ADP, ATP) has also been carried out at IISER-TVM along with the Binary Complex of non-native protein Substrate with GroEL. The recent progress and results in structural and related work of these proteins and other proteins relevant to this fellowship was presented at the Ramalingaswamy conclave in December 2015 and the committee appreciated the work done.

7. DST-MPG Project

- Dilution effect of Ti^{4+} in the antiferromagnetic square lattice compound $Zn_2VO(PO_4)_2$ is investigated by means of magnetization, heat capacity, and NMR measurements.
- We have synthesized polycrystalline sample of a new spin-1/2 ladder compound $Cu_4P_2O_9$ and investigated its physical properties. Single crystals are also grown using the Bridgman technique. Magnetic susceptibility shows a broad maximum reflecting the low-dimensional character of the compound. It undergoes a commensurate magnetic transitions at T_N = 8.5 K.
- Quasi-two-dimensional spin-1/2 magnetism of Cu $[C_6H_2(COO)_4][C_2H_5NH_3]_2$ is studied.
- Strong lattice softening on cooling is observed in frustrated spin-5/2 ladder compound $BiMn_2PO_6$ and its non-magnetic analogue $BiZn_2PO6$. $BiMn_2PO_6$ undergoes two successive magnetic transitions at low temperatures; one is incommensurate and another is commensurate in nature.
- We have synthesized spin-1/2 and spin-1 antiferromagnetic triangular lattice compounds $Li_2CuW_2O_8$ and $Li_2NiW_2O_8$ and investigated their thermodynamic, static, and dynamic properties by means of magnetization, heat capacity, ^{7}Li-NMR and electronic structure calculations. $Li_2CuW_2O_8$ shows a pronounced low-dimensionality and it undergoes a collinear and commensurate magnetic order at $T_N \simeq 3.9$ K. It features a unique spin lattice, which is strongly frustrated along all three crystallographic directions. The effect of non-magnetic impurity substitution reveals strong 1D anisotropy in

$Li_2CuW_2O_8$. On the other hand, the magnetic model of $Li_2NiW_2O_8$ can be represented by spin-1 chains stacked on the triangular lattice in the *ab* plane. It undergoes two successive magnetic transitions at $T_{N1} \simeq 18$ K and $T_{N2} \simeq 12.5$ K in zero field: a collinear and commensurate magnetic order below T_{N2} and an incommensurate magnetic order between T_{N1} and T_{N2}.

8. BRNS-DAE Project:

The project was aimed at developing a simple and economically viable method to synthesize hybrid nanostructured materials and use the multifunctional capability of such materials in the design and fabrication of Li-ion batteries. This project mainly dealt with the preparation of nanostructured TiO_2 -based hybrid materials and their electrochemical performance studies as anodes in Li-ion batteries. Well-ordered arrays of titania nanotubes have been synthesized using electrochemical anodization technique. TiO_2 nanotube based hybrid structures - TiO_2/ZnO, TiO_2/Co_3O_4, $TiO_2/CoFe_2O_4$, TiO_2/CNT have been synthesized. Electrochemical performance of TiO_2 based hybrid nanowires as electrodes for supercapacitor and lithium battery anode, have been studied. These novel nano-architectured hybrid nanowires with its unique properties showed promise as high performance supercapacitor electrodes.

9. Design, Synthesis and characterization of self-assembled molecular materials: Applications in Drug deliveryand Nanoscale energy storage devices

We proposed a novel algorithm for design and synthesis of peptide amphiphiles and its possible application as drug delivery vehicle and nanoscale energy storage devices. Novel designs of miniaturized energy storage devices using these materials were looked at in this project. We have been able to demonstrate a novel method of forming Stimulus responsive Peptide nano-structures from di-histidine or dihistidine like molecules. The method comprises of (i) generating peptide nanostructures in solution, (ii) modulating their nano-level architecture and (ii) their response to electric and magnetic fields that make them more amenable for fabrication and moulding for specific application. The fabrication of nanoscale energy storage devices using these tailored materials has also been studied.

10. 3-D Engineered Electrodes for Electrochemical Energy Storage

The Indo-US Joint Centre is focused on collaboration in investigating 3-D Engineered Electrodes for Electrochemical Energy Storage. Indo-US virtual centre with partners including IISER Thiruvananthapuram, CECRI, Karaikudi, India, Materials Research Centre, Indian Institute of Science Bangalore (IISc.), Rice University, Houston TX, USA, University of Houston (UH) and Southern Illinois University Carbondale (SIUC) aimed to develop a communication platform in materials research for academicians and students, and to facilitate coordination in focused areas of electrochemical energy storage and education in these two countries through personnel exchanges, internet based data sharing, web portal and graduate level courses.

Students and PIs have visited their project partner's laboratories, and spent the allowed time in engaging the research on the proposed topics. We have been able to develop conformal and space filling methods for fabricating 3-D engineered architectures for thin film batteries and supercapacitors. These electrodes have been characterized for their microstructure with particular reference to their electrode-electrolyte interfaces. Investigations on the electrochemical properties of these devices were also carried out.

Patents filed

Sl. No	Principal Investigator	Co-Investigator	Name of the Project	Date of Patent
1	Dr. M. M. Shaijumon	D. Gopalakrishnan and D. Damien	A method for the synthesis of layered luminescent transition metal dichalcogenide quantum, dots	152247012016/ CHE/2016
2	Dr. M. M. Shaijumon	P. Manikandan and D. Ramasubramonian	Cathode active material for a sodium ion battery and a process thereof Indian Patent filed	2095/CHE/2015
3	Dr. K. George Thomas	M. Shanthil	A method of fabricating core-shell nanostructure coated substrates and the products.	201641009486 / CHE/2016.
4	Dr. K. George Thomas	Jatish Kumar, Reshmi Thomas, R. S. Swathi	A method of fabricating gold nanorod plasmonic platforms and product.	2614/CHE/2015-2016
5	Dr. K. George Thomas	B. P. Krishnan, K. M. Sureshan,	semi-conducting fabric and its synthesis there of	2015

5. Research Publications

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Conference Article

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2. C. Pradeep, **Manoj A. G. Namboothiry**, C P G Vallabhan, P Radhakrishnan, V P N Nampoori Enhanced brightness from all solution processable biopolymer LED (Nanobiosystems: Processing, Characterization, and Applications VIII, edited by Norihisa Kobayashi, Fahima Ouchen, Ileana Rau, Proc. of SPIE Vol. 9557, 95570O-1, doi: 10.1117/12.2190836, 2015.

3. C. Pradeep, S. Mathew, **Manoj A. G. Namboothiry**, C P G Vallabhan, P Radhakrishnan, V P N Nampoori, Study on cadmium sulphide nanoparticles on blue and green light emitting polymers, (Organic Light Emitting Materials and Devices XIX, edited by Franky So, Proc. of SPIE Vol. 9566, 95661Z-1 doi: 10.1117/12.2188369, 2015.

4. Prasad V. Sarma, Prasanna D. Patil, Prahalad K. Barman, **Rajeev N. Kini** and **M. M. Shaijumon**, Controllable growth of few layer spiral WS2, Poster presentation, Frontiers in Nanoscience and Technology (COCHIN 2016) Cochin Nano 2016, Cochin, 20-23 February 2016.

5. David Marpaung, **Ravi pant** and Benjamin J Eggleton, Recent advances in on-chip stimulated Brillouin scattering based microwave photonic signal processing, Progress in Electromagnetic Research Symposium (PIERS), Prague 6-9 July 2015.

6. Deepesh Gopalakrishnan, Dijo Damien, Bo Li, Hemtej Gullappalli, Vijayamohan K Pillai, P.M. Ajayanand **M. M. Shaijumon**, Electrochemical Synthesis of Luminescent MoS2 Quantum Dots, Oral presentation, Indo-US Workshop on Engineered Nanocarbons for Electrochemical Energy Storage, Karaikudi, 19-20 June 2015.

7. G. Binitha, A. G. Ashish, D. Ramasubramonian, P. Manikandan, and **M. M. Shaijumon**, Flower-like Cobalt Oxide Microstructures embedded in Graphene Hydrogel as an Anode Material for Lithium-ion Batteries, Poster Presentation – National Conference on Materials Science and Technology, Trivandrum, 6-8 July, 2015.

8. Dijo Damien, Parambath M. Sudeep, Tharangattu N. Narayanan, Maleimadam R. Anantharaman, Pulickel M. Ajayan and **M. M. Shaijumon**, Fluorinated graphene -based high performance electrodes for primary lithium batteries, Workshop on Material Science for Energy Storage, May 11-15, Trieste, Italy, 2015.

9. Deepesh Gopalakrishnan, Dijo Damien, Bo Li, Hemtej Gullappalli, Vijayamohanan K. Pillai,Pulickel M. Ajayan and **M. M. Shaijumon**, Electrochemical Synthesis of Luminescent MoS2 Quantum Dots, NCMST June 23-25, Thiruvananthapuram, 2015.

10. Sb_2O_3 Microstructures as Efficient Anode Material for Sodium-ion Batteries, K. P. Lakshmi, D. Ramasubramonian, **M. M. Shaijumon,**Frontiers in Nanoscience and Technology (COCHIN 2016) Cochin, 20-23 February, 2016.
11. A. G. Ashish, P. Arunkumar, Binson Babu, S. Sarang, S. Abhin, and **M. M. Shaijumon**,Graphene-based Hybrid Nanostructured Electrodes for Lithium ion Batteries, Indo-US conference June 19-20, Karaikudi, tamilnadu, 2015.
12. Binson Babu, Lashmi P G and **M. M. Shaijumon**, High Performance Lithium-ion Hybrid Electrochemical Capacitor Based on Li4Ti5O12 and Rice husk-Derived Porous Carbon, ICAER conference, Dec 15-17, IITB Mumbai, 2015.
13. Binson Babu, Lashmi P G and **M. M. Shaijumon**, High Performance Lithium-ion Hybrid Electrochemical Capacitor Based on Li4Ti5O12 and Rice husk-Derived Porous Carbon, ETAFM conference, Jan 18-21 Institute of Physics, Bhubaneswar, 2016.
14. Binson Babu, Lashmi P G and **M. M. Shaijumon**, High Performance Lithium-ion Hybrid Electrochemical Capacitor Based on Rice husk-Derived Nanoporous Activated Carbon, COCHIN- , conference, Feb 20-23 CUSAT, Kerala, 2016.
15. Binson Babu, Lashmi P G and **M. M. Shaijumon**, Chemically activated rice husk derived porous carbon as cathode material for advanced Li-ion hybrid electrochemical capacitor, NCE-19 conference, March 28-29, NIT Tiruchirappalli, Tamil Nadu, India, 2016.

6. AWARDS AND HONOURS

SL NO	FACULTY	HONORS/ AWARDS
1.	Dr. Sunish.K.Radhakrishnan	Swarnajayanti Fellowship
2.	Dr. Ravi Pant	Ramanujan Fellowship
3.	Dr. Vinayak. B. Kamble	DST-Inspire Faculty
4.	Dr. Gokulnath Sabapathi	DST-Inspire Faculty
5.	Dr. Tapas. K. Manna	DST-Inspire Faculty Award
6.	Dr. Satish Khurana	Intermediate career fellowship from Wellcome trust-DBT India alliance
7.	Dr. Nisha Kannan	Wellcome-DBT Fellowship
8.	Dr. Archana Pai	Recipient of Savithri (Savithri bai Phule) SanmanAwarded by Maharashtra Channel 1 on Woman's Day for contribution in Gravitational Wave Discovery —- March 2016
9.	Dr. Sainul Abideen P	Excellency Award 2016 constituted by the Kodur Panchayath.
		Nominated as Member, Committee for Modernization of the University Library, CUSAT.
		Nominated as Member, Technical Expert Committee, State Central Library Thiruvananthapuram
10.	Dr. Utpal Manna	Invited to Chair a session and give a talk at the International Zassenhaus group theory
		Conference (May 20-22, 2015) at Binghamton University, USA.

11.	Dr. K. M. Sureshan	Young Scientist Award (YIM-Boston), MIT, USA
		Chemical Research Society of India CRSI-Bronze medal.
12.	Dr. Thirumurugan	Membership of Royal Society of Chemistry
13.	Dr. Alagiri Kaliyamoorthy	Early Career Research Award (ECR) by SERB
14.	Dr. Mahesh Hariharan	Associate Editor of Photochemical and Photobiological Sciences, 2016
		Associate Editor of RSC Advances, 2015
		Chartered Chemist of the Royal Society of Chemistry, 2015
		Chartered Scientist of the Royal Society of Chemistry, 2015
15.	Dr. R.S. Swathi	Young Scientist Award of the Kerala State Council for Science, Technology and Environment (2015)
16.	Dr. V. Sivaranjana Reddy	Early Career Research Award 2016 by Science and Engineering Research Board (SERB)
17.	Dr. Vinayak kamble	DST INSPIRE Faculty Award

7. Other Academic Activities

The faculties of the institute have participated in various national and international conferences as listed below

Conferences/Workshops/Symposia Attended

Sl No	Faculty/Student	Conference/Workshop	Venue	Date	International/ National
1.	Dr. Y. Adithya Lakshmanna	Inter-IISER Chemistry Meet	Thiruvananthapuram	Dec 11-13, 2015	National
2.	Dr. Ajay Venugopal	11th JNC Conference on the Chemistry of Materials	Alleppey, Kerala	Oct 02-04, 2015	National
3.	Dr. Alagiri Kaliyamoorthy	OC symposium	IISc, Bangalore	Dec 26, 2015	National
		Faculty development programme (FDP)	IIT, Madras	Jan 4-6, 2016	National
4.	Dr. Archana Pai	Indo-Korean Meeting	IUCAA, Pune	Jan 27-28, 2016	International
		How, What and Why Club	IIT, Palakkad	Mar 9, 2016	National
		GW Discovery Annoucement Event	IUCAA, Pune	Feb 12, 2016	National
		Symphony of SpaceTime, IIST	IIST, Trivandrum	Mar 16, 2016	International
		Frontiers of Physics 2016	University of Hyderabad	Mar 29, 2016	National

5.	Dr. Bikas C. Das	Emerging Research and Career Opportunities in Basic Sciences and its Applications	V.O. Chidambaram College, Thoothukudi	Sep 23, 2015	National
6.	Dr. Bindusar Sahoo	National Strings Meeting	IISER, Mohali	Dec 12-15, 2015	National
7.	Dr. Hema Somanathan	Introduction to data analysis using R	IISER	Sep 11-15, 2015	National
		Pollination of flowers by insects: from ecology to chemistry and behaviour	JNTBGRI Palode, Kerala	Jan 9-13, 20116	International
8.	Dr. Jishy Varghese	Neural control of energy homeostasis	IIT, Madrass	Dec 2015	National
		Neural sensing of nutrient and energy homeostasis" Scales in Biology: From genes to ecosystems	IISER-NUS Joint Symposium	Sep 2015	National
		Genetic control of nutrient and energy homeostasis	National Seminar on Omics and Biomarker Analysis, University of Kerala	Dec 2015	National
		Pollination of flowers by insects: from ecology to chemistry and behaviour	JNTBGRI Palode, Kerala	Jan 9–13, 2016	International
9.	Dr. Madhu Thalakulam	ETAFM 2016	Bhubaneswar	Jan 18-21, 2016	National
10.	Dr. Manoj. A. G Namboothiry	2nd Asian-European Symposium on Organic Optoelectronics by RSC	Edinburgh, UK	Oct 27-29, 2015	International
		National Photonics Symposium and Workshop	International School of Photonics, CUSAT, Cochin	Feb-26-28, 2016	National
		National workshop on Fundamentals and Applications of Material Science	Mahatma Gandhi University, Kottayam	Mar 4-6, 2016	National
		MRS Spring Meeting 2016, Arizona, USA	Phoenix, Arizona, USA	Mar 28–Apr 1, 2016	International
11.	Dr. S. Murty Srinivasula	The XXXIX All India Cell Biology Conference, International meeting on Cellular Organization and Dynamics	KTDC Samudra Conference Hall, Kovalam, Trivandrum.	Dec 6-8, 2015	International
		PostDoc Research Symposia	NCBS, Bangalore	Oct 10, 2015	National

12.	Dr. Nishant K. T	EMBL|Stanford Conference: Personalised Health	Heidelberg, Germany	Nov 16-19 2015	International
		International Conference on Yeast Biology	Kolkata, India	Dec 9-12 2015	International
		Foundations in Biology Meeting, (Discussion meeting)	IISER, Pune	Mar 12-14 2016	National
		Workshop on Applications and Needs of Terahertz (THz) Technologies for Defense and Security	New Delhi	Nov 2, 2015	National
		The 15th International Conference on Phonon Scattering in Condensed Matter, Phonons 2015	Nottingham, UK	Jul 12-17 2015	International
13.	Dr. Rajeev N. Kini	Workshop on Applications and Needs of Terahertz (THz) Technologies for Defense and Security	New Delhi	Nov 2, 2015	National
		The 15th International Conference on Phonon Scattering in Condensed Matter, Phonons 2015	Nottingham, UK	Jul12-17, 2015	International
14.	Dr. Ramanathan Natesh	International Conference on Electron Microscopy and XXXVI Annual Meeting of Electron Microscope Society of India	CIDCO Convention Centre, Vashi, Mumbai	Jul 8-10, 2015	International
		DBT NER Training Programme	ACTREC, Mumbai	Jul 9, 2015	National
		Refresher Course, UGC-HRDC. 30 Jul to 19 Aug 2015	Calicut University, Calicut	Aug 14, 2015	National
		IISER-NUS Joint Symposium	IISER Thiruvananthapuram	Sep 21-22, 2015	International
		Emerging Research Career Opportunities in Basic Sciences and its Applications	V.O. Chidambaram College, Thoothukudi	Sep 23, 2015	National
		CoE Workshop on Biomolecular Interactions, 25 to 28 Nov 2015.	NCBS, Bangalore	25 Nov 2015	National

15.	Dr. Ramesh Chandra Nath	Emerging Trends in Advanced Functional Materials	Institute of Physics, Bhubaneshwar	Jan18-21, 2016	National
		International Symposium on "Clusters, Cluster-Assemblies and Nanomaterials" (ISCAN-2016)	Uday Samudra, Thiruvananthapuram	Mar 9-12, 2016	International
16.	Dr. Ravi Maruthachalam	Asian Chromosome Colloquium: New Horizon for unifying of chromosome research	Kasetsart University (KU), Bangkok, Thailand	Apr 29 - May 1, 2015	International
		Arabidopsis-2016	IISER Mohali	Mar 20-22, 2016	International
		National Symposium on germplasm to genes: Harnessing biotechnology for Food Security and Health	National Research Centre on Plant Biotechnology (NRCPB)	Aug 9-11, 2015	National
		IISER-NUS Joint Symposium: Scales in Biology: from genes to ecosystems	UdaySamudra Resort, Kovalam	Sep 21-22, 2015	International
17.	Dr. Ravi Pant	Progress in Electromagnetic Research Symposium (PIERS)	Prague, Czech Republic	Jul 6-9, 2015	International
18.	Dr. Reji Varghese	Current Developments in Material Sciences	Government Arts College, Trivandrum	Mar 15, 2016	International
19.	Ranjith Kumar K M (PhD student)	International workshop on "Quantum Transport in One Dimension"	MPIPKS, Dresden, Germany	Sep14–18, 2015	International
20.	Ranjith Kumar K M (PhD student)	School and Workshop on "Strongly Correlated Electronic Systems - Novel Materials and Novel Theories"	ICTP, Italy	Aug10-21, 2015	International
21.	Dr. Sainul Abideen P	9th meeting of the IISER Library Consortium	IISER Kolkata	Dec 08-09, 2015	National
		11th Annual Meet & Workshop of INDEST-AICTE Consortium	IISER Mohali	Apr 29-30, 2015	National
		National Library Week: Librarian's Meet	VSSC, Thiruvananthapuram	Nov 18, 2015	National
22.	Dr. Sarbeswar Pal	Higgs bundles	ICTS, Bangalore	Mar 21- Apr 1, 2016	International

23.	Dr. Satish Khurana	EMBL conference on hematopoiesis	Heidelberg (Germany)	Jun 3-5, 2016	International
		Young investigators meet (India Bioscience)	Manesar (India)	Feb 27, 2016	International
24.	Dr. D. V. Senthilkumar	Complex Systems Approach to Self-Organization	IITM, Madras	Feb 1-5, 2016	International
25.	Dr. M. M. Shaijumon	MRS Fall meeting	Boston, USA	29 Nov - 04 Dec, 2015	International
		Emerging Trends In Advanced Functional Materials	IOP, Bhubaneswar, INDIA	Jan 18-21, 2016	National
		Iconsat 2016	IISER Pune, INDIA	Feb-29 Mar-2, 2016	International
		Cochin Nano 2016	Kochi, INDIA	Feb 20-23, 2016	International
		Indo-German workshop on Electrochemical Energy Storage	IIT Kharagpur, INDIA	Feb 17-20, 2016	International
		National convention of Electrochemists	NIT Trichy, INDIA	Mar 28-29, 2016	National
		ICAER-2015	IIT, Bombay	Dec 15-17, 2015	International
26.	Dr. Shrihari Sridharan	Training Programme in Mathematics	NISER, Bhubaneswa	May 25 – Jun 5, 2015	National
		Real Analysis and its applications	NIT Calicut	Oct 29 - 31, 2015	National
		One day Mathematics workshop	KMCPGS Puducherry	Nov 12, 2015	National
		XIV Discussion meeting on Harmonic Analysis	Delhi University	Dec 9-12, 2015	International
		National seminar on algebra, analysis and geometry	University College Thiruvananthapuram	Feb 18, 2016	National
		Discussion meeting on Probability and Analysis	Orange County	Feb 21-24, 2016	National
27.	Dr. Sukhendu Mandal	Modern trends in Inorganic Chemistry (MTIC-16)	Jadavpur University, Kolkata, India	Dec 2-4, 2015	International
		International Conference on Cluster, Cluster-Assemblies and Nanomaterials (ISCAN-2016)	IISER-TVM	Mar 9-12, 2016	International
28.	Dr. Sunish Kumar Radhakrishnan	EMBO | EMBL Symposium: New Approaches and Concepts in Microbiology	EMBL Heidelberg, Germany	Oct 11-14, 2015	International
		Bacterial Expressions II	NCBS, Bangalore	Dec 1-5, 2015	International

29.	Dr. R. S. Swathi	Inter IISER chemistry Meet	IISER-TVM	Dec 11-13. 2015	National
		JNC Conference on Chemistry of Materials	Lake Palace Resort, Alleppey	Oct 02-04, 2015	National
		Physical and Biophysical Chemistry: Theory and Experiment	IIT, Mumbai	Dec 04-07, 2015	National
30.	Dr. Tapas.K.Manna	Indo-French Meeting on Frontiers in Cytoskeleton Research, Coordination, Adaptation, Fine Tuning	IISER-Pune	Oct 25-27, 2015	International
		National Seminar on Current Trends in Life Sciences	Dept.of Biotechnology, Govt. College Trivandrum	Feb 10-12, 2016	National
31.	Dr. A. Thirumurugan	Symposium on Clusters, Cluster-Assemblies and Nanomaterials (ISCAN)	Kovalam	Mar 9-11, 2016	International
32.	Dr. Ullasa Kodandaramaiah	Blodbadet 2015	Department of Zoology, Tovetorp Research Station, Stockholm	Nov 2015	International
33.	Dr. Utpal Manna	Indo-UK Workshop on Stochastic Partial Differential Equations and Applications	EPSRC (UK), DST (GoI), NBHM (DAE, GoI), IISER TVM and TIFR-CAM	Dec 9-19, 2015	International
		Advanced Summer School and Workshop on Control and Numerics of Fluid Structure Interaction Problems	TIFR-CAM	Jun 22-Jul 1, 2015	International
		Indo-UK Workshop on Stochastic Partial Differential Equations and Applications	IISc Bangalore	Dec 9–19, 2015	International
34.	Dr. Vinayak. B. Kamble	International conference on Ceramics and Advanced Materials for energy and environment	Christ University, Bangalore	Dec 14-17, 2015	International
35.	Dr. Viji. Z. Thomas	Zassenhaus Conference 2015	Binghamton University	May 22-24, 2015	International
		Topology and Groups	Goa University	Oct 16-21, 2015	International
36.	Dr. Vinesh vijayan	NMR meets biology: an interaction week	Cherthala, Kerala	Jan 14, 2016	International

Invited Lectures and Seminars Delivered

Sl No.	Name of Faculty	Title of Lecture	Venue
1.	Dr. K. George Thomas	Playing with Excitons: Light Induced Electron Transfer in Semiconductor Nanoparticles and Heterojunction	Université Pierre and Marie Curie, Paris
		Coupling of elementary excitations: A case study with plasmons and excitons	Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum
		Playing with Excitons in Semiconductor Quantum Dots	Bhabha Atomic Research Centre Mumbai
		Coupling of elementary excitations: A case study with plasmons and excitons	INST, Mohali
		Role of Heterojunctions in Tuning the Optical Properties of Nanostructured Materials	INST, Mohali
		Playing with Excitons in Semiconductor Quantum Dots	JNCASR, Bangalore
		Playing with Excitons in Semiconductor Quantum Dots	IIT Guwahati
		Coupling of elementary excitations: A case study with plasmons and excitons	Honolulu, Hawaii, USA
		Photoinduced Charge transfer with Quantum Dots: Deep trap states versus shallow trap states	Bhabha Atomic Research Centre, Mumbai
		(i) Probing the Ultrafast Event during light Matter Interactions(ii)Plasmonics: From fundamentals to applications	University of Parma, Italy
		Playing with Excitons in Semiconductor Quantum Dots	Weizmann Insti- tute of Science, Rehovot, Israel
		Exciton across Interface: Tuning the Optical Properties of Hybrid Quantum Structures	Indian Institute of Science Education and Research Pune
		Exciton across Interface: Tuning the Optical Properties of Hybrid Quantum Structures	University of Hyderabad

2.	Dr. S. Gokulnath	Chemistry & Society as a part of IISER TVM outreach	Thoothukodi, Tamilnadu
		Chemistry & Society as a part of IISER TVM outreach	Cherthala, Kerala
		Role of Metal ions in biological systems	Vellore, Tamilnadu
3.	Dr. Joy Mitra	ZnO: its many unanswered questions	School of mathematics and Physics
4.	Dr. Kalika Prasad	Regeneration: being competent is not enough	Pune
		Regeneration: a journey from acquisition of competence to completion	Hyderabad
		Plasticity of developmental programs in plants: search for new horizon	Bangalore
		Regeneration: a new twist	Mohali
5.	Dr. Mahesh Hariharan	Tuning the Solid State Packing and Optical Properties of Organic Crystals	Honolulu, Hawaii, USA
		Strategies to Reduce the Rate of Charge Recombination	Honolulu, Hawaii, USA
6.	Dr. Nisha N Kannan	26th National Symposium on Chronobiology	Mysore University, Mysore
		MKC Memorial meet	JNCASR, Bangalore
7.	Dr. Ramanathan Natesh	Visualising the non-native protein in the chamber of secrets by single particle Cryo Electron Microscopy and image processing method	Chandigarh
		CryoEM structural studies of negative cooperativity in substrate specific binding to Chaperonin	Mumbai
		Structural studies on transcription regulators and the unusual link to protein quality control	UDS, Kovalam
		Transmission Electron Microscopy in Structural Biology – High resolution is a reality	Dept. of Biotechnology

8.	Dr. Ramesh Chandra Nath	Synthesis and characterization of frustrated magnetic materials.	University of Kerala
		Collinear Order in the Frustrated Three-Dimensional Spin-1/2 Antiferromagnet Li2CuW2O8	Uday Samudra, Thiruvananthapuram
		Magnetic Phase Transitions in spin-1/2 and spin-1 Frustrated Triangular Lattice Antiferromag- nets Li2(Cu,Ni)W2O8	Max-Planck Institute
9.	Ranjith Kumar K. M (PhD student)	Magnetic properties of frustrated triangular lattice antiferromagnets $Li_2MW_2O_8$ (M = Cu, Ni)	Max-Planck Institute
10.	Dr. Ravi Maruthachalam	Centromeres and parental genome conflict	Bangkok, Thailand
		Engineering Uniparental genome elimination in plants	University of Kerala, Kariavattom
		Engineering Uniparental genome elimination in plant- An improved in vivo method for producing haploids	Thiruvananthapuram, Kerala
		In vivo haplids- Panel discussion in Emerging Tech nologies session	Indian Agricultural Research Institute(IARI), New Delhi
		Centromeres and parental genome signaling	Uday Samudra resort
		Engineering centromeres in plants for in vivo haploid production	Seminar Hall, Department of Agricultural Extension
		Uniparental genome elimination: An improve in vivo method for haploid production in plants	Thiruvananthapuram
		Natural variation for in vivo haploid induction in A thaliana	IISER Mohali
11.	Dr. Reji Varghese	DNA-Based Surface Engineered Nanostructures	Thiruvananthapuram
		Supramolecular Chemistry with DNA	Thiruvananthapuram
		Supramolecular Chemistry with DNA	Kochi
		Supramolecular Materials	Thiruvananthapuram

12	Dr. Sainul Abideen P	Workshop of INDEST-AICTE Consortium	Mohali
		Refresher course in Library and Information Science	Calicut
		International Training Programme on "Digital Library practices & Information Technology Application for Knowledge Management".	Palakkad
13.	Dr. M. M. Shaijumon	Hybrid nanostructured materials for energy storage	Trichy, INDIA
		Controllable growth of 2D layered nanomaterials	Kochi, INDIA
		Graphene based nanostructures for energy storage	Kharagpur
		Controllable growth of 2D layered nanomaterials	Bhubaneswar
		Controllable growth of 2D layered nanomaterials	Pune
		Graphene based nanostructures for energy storage	Mumbai
		Graphene based nanostructures for energy storage	SIU, USA
		Nanostructured materials for efficient energy storage	GERMANY
14.	Dr. Shrihari Sridharan	Complex Analysis	NISER, Bhubaneswar
		Real Analysis	NIT Calicut
		Hyperbolic Geometry	KMCPGS, Puducherry
		Ramanujan lecture: Period three implies chaos	IIST, Thiruvananthapuram
		An introduction to complex dynamics	University College Thiruvananthapuram
		Dynamics of holomorphic correspondences	Orange County
		Coupling of elementary excitations: A case study with plasmons and excitons	INST, Mohali
15.	Dr. S. Shankara narayanan	Primodial Magnetogenesis	Hyderabad

16.	Dr. Sukhendu Mandal	Electrochemical oxygen reduction catalyzed by $\{Co_3(\mu_3\ OH)(BTB)_2(BPE)_2\}$ $\{Co_{0.5}N(C_5H_5)\}$	VCU, Department of Physics
		Metal Nanocluster	Kerala University
		Structural Evolution of Atom- Precise Metal Nanocluster	IISER-TVM
		Metal Metathesis on Single Crystal	University of Parma, Italy
		Cation-π Interactions: Graphene vs Graphynes	Madurai Kamaraj University, Madurai
17.	Dr. R. S. Swathi	Modelling Chemical Systems using Computational Chemistry	Sree Kerala Varma College, Thrissur
		Cation-π Interactions: Graphene vs Graphynes	Hotel Residency Tower, Trivandrum
		Theoretical Studies on Carbon-based and Metal- based Nanostructures: Towards Sensing, Storage and Spectroscopy	University of Calicut, Calicut
		Theoretical Chemistry Research at IISER-TVM	University of Parma, Italy
18.	Dr. Tapas. K. Manna	New Molecular Insights of Spindle-Kinetochore Interface	Pune
		Molecular Drivers of Chromosome Segregation in Vertebrates	Thiruvananthapuram
19.	Dr. Utpal Manna	Stochastic magneto- hydrodynamics equations.	Mathematical Finance and Stochas- tic Analysis Sem- inar at University of York, UK
20.	Dr. Viji. Z. Thomas	Zassenhaus Conference 2015	SUNY Binghamton, NY, USA
		Topology and Groups	Goa University
		Research Talk	University of Santiago de Compostela, Spain

Foundation Day Lecture

The institute celebrated its seventh foundation day on 18th October, 2015. Prof. V. Ramakrishnan, Director, IISER-TVM welcomed the gathering and introduced the chief Guest. The chief guest Prof. P. Balaram, Former Director, Indian Institute of Science, Bangalore delivered the foundation day lecture titled "Chemical ecology: Natural products chemistry strikes back". Prof. George K. Thomas (Dean Academics) proposed the Vote of thanks.

Colloquia

Sl.No.	Speaker	Institute	Title	Date
1.	Prof. S. Kesavan	Institute of Mathematical Sciences (IMSc), Chennai	On the spectrum of the Laplacian	13 Nov 2015
2.	Prof. Kalidas Sen	School of Chemistry, University of Hyderabad, Hyderabad	Model Quantum Potentials: A Density point of View	06 Nov 2015
3.	Prof. V. Nagaraja	Department of Microbiology and Cell Biology, Indian Institute of Science, Bengaluru	How do we fight the resurgent tubercle bacillus?	16 Oct 2015
4.	Prof. Naba. K. Mondal	Tata Institute of Fundamental Research, Mumbai	Neutrinos – A New Window To The Universe	09 Oct 2015
5.	Prof. Sir. Tom Blundell	Department of Biochemistry University of Cambridge	Genomics, Structural Biology and Making NewMedicines: Understanding Mutations in Genetic Disease and Drug Resistance	08 Jan 2016
6.	Prof. S. Kumaresan	School of Mathematics and Statistics, University of Hyderabad	Coordinates, Dimension and Constraints.	05 Feb 2016
7.	Prof. T. Pradeep	DST Unit of Nanoscience and Thematic Unit of Excellence, Department of Chemistry, Indian Institute of Technology Madras, Chennai	Nanomaterials to cleanwater: Lab to industry	12 Feb 2016
8	Prof. S.Ramanan	Chennai Mathematical Institute (CMI)	Globalization	11 Mar 2016
9.	Prof. Shridhar R	Indian Institute of Technology, Kanpur	Computing Large Molecules: Broken Bottlenecks	17 Mar 2016
10.	Prof. Sanjeev Dhurandhar	Inter-University Center for Astronomy and Astrophysics (IUCAA), Pune	Einstein's Centennial gift: Gravitational Waves Discovered	21 Mar 2016

Seminars

Sl No.	Speaker	Institute	Title of Lecture	Date
1.	Prof. Zdzislaw Brzezniak	University of York, UK	Strong and weak solutions to stochastic Landau-Lifshitz equations	9 Apr 2015
2.	Dr. Sakshath S	Department of Physics, Technical University of Kaiserslautern, Germany	Ultrafast demagnetization dynamics in multi-component systems	10 Apr 2015
3.	Prof. Jayantha K Bhattacharjee	HRI , Allahabad	Turbulence In Stratified Fluids : Kolmogorov Or Bolgiano ?	13 Apr 2015
4.	Dr. P.V. Shivaprasad	Epigenetics group, National Centre for Biological Sciences, GKVK Campus, Bangalore.	Insight into Small RNA biogenesis and their functions in plants.	5 May 2015
5.	Dr. Sibasish Ghosh	Institute of Mathematical Sciences - Chennai	Entanglement sharing through noisy qubit channels: One-shot optimal singlet fraction	28 Apr 2015
6.	Prof. K . Veluthambi	Visiting Professor, School of Biology	Rice functional genomics through Agrobacterium T-DNA tagging	1 May 2015
7.	Dr. P.V. Shivaprasad	Epigenetics group, National Centre for Biological Sciences, GKVK Campus, Bangalore	Insight into Small RNA biogenesis and their functions in plants.	4 May 2015
8.	Dr. R K Kushawaha	Kansas State university, Manhattan, USA	From Double Slit Interference to Structural information in simple hydrocarbon	11 May 2015
9.	Dr. Babu Joseph	University of South Florida, Tampa, Florida	Catalyst design for liquid fuel production from renewable sources	4 Jun 2015
10.	Prof. S. Ramakumar	Department of Physics, Indian Institute of Science, Bangalore-560012, INDIA	nalysis of structure, function and inhibition of HU, a nucleoid associated protein from Mycobacterium Tuberculosis.	12 Jun 2015
11.	Dr. Kajari Mazumdar	TIFR, Mumbai	The Large Hadron Collider (LHC)	10 Jun 2015
12.	Dr. Harsha Gowda, Ph.D.	Faculty Scientist, Institute of Bioinformatics, Bangalore - 560066.	Proteomics to decode genomes and understand disease mechanisms	16 Jun 2015
13.	Dr. Manoj A G Namboothiry	School of Physics, Indian Institute of Science Education and Research Thiruvananthapuram (IISER TVM).	Organic and Hybrid Photovoltaics-Approaches to improve the performances	19 Jun 2015
14.	Utkarsh Mishra	IISER-TVM	Benford's law detects quantum phase transitions similarly as earthquakes	30 Jun 2015

15.	Vinayak K Kamble	IISER-TVM	Exploiting the defect induced magneto-transport properties of wide bandgap metal oxide semiconductor nanostructures	1 Jul 2015
16.	Dr. Arvind Kumar	Assistant Professor, School of Computer Science and Communication., Kth Royal Institute of Technology, Stockholm, Sweden	How brain copes with noise	7 Jul 2015
17.	Prof. Akira Shinohara	Institute for Protein Research, Osaka University Japan.	Control of chromosome motion and its role in DNA biochemistry during meiosis	7 Jul 2015
18.	Dr. Jayakumar Balakrishnan	DST Inspire, IIT Patna	Spin orbit coupling in graphene decorated with adatoms	7 Jul 2015
19.	Dr.Mukesh Jewariya	CISR, National Physical Laboratory	Generation of Intense Monocycle Terahertz Pulse using Tilted Wavefront Technique and its Application : Nonlinear Terahertz Spectroscopy and 3-Dimensional Computed Tomography	14 Jul 2015
20.	Dr.Samir Kumar Biswas	IIT, Hydrabad	Developing opto-acoustic based diagnostic devices: theory, design, optimization and patient measurement.	14 Jul 2015
21.	Dr. M. Suheshkumar singh	IISER-TVM	Non-destructive estimation of blood flow velocity and elastic property through photoacoustic effect: A promising technique towards biomedical applications for brain imaging	15 Jul 2015
22.	Dr. K. Vasu	JNCSR-Bangalore	Optical and electrical properties of sputtered Nb-substituted TiN thin film.	15 Jul 2015
23.	Dr. Shyamal Biswas	University Of Hydrabad	Unified theories on the magnetism and on the critical Casimir force	15 Jul 2015
24.	Dr. P. Chiranjeevi	Presidency University, Kolkata	Some results in dynamical systems with an emphasis on interval maps	16 Jul 2015
25.	Dr. A. Sathish Kumar	IIT Roorkee	On convergence of certain linear positive operators	16 Jul 2015
26.	Dr. V. Chandrasekar	SKP Engineering College, Tamil Nadu	Growth of difference operators and it applications in numerical methods, control theory and signal processing	16 Jul 2015
27.	Dr Santosh Kumar	University of Edinburgh, UK	Unravelling the Biophysical and Regulatory facets of RNA-protein interactions.	27 Jul 2015

28.	Dr. Nisha N. Kannan	Okayama University, Japan	Precision and temperature entrainment mechanism of the circadian clock	15 Jul 2015
29.	Dr. Archana. P.R	IISER-TVM	Molecularly targeted nanomedicines against aberrant signalling pathways in cancer	16 Jul 2015
30.	Dr. Mahesh Kandasamy	Bharathidasan University	Regulation and functional significance of neurogenesis in the adult brain	17 Jul 2015
31.	Dr. Vijaya Srinivasan	NIST, Thiruvananthapuram	protein kinases, a central hub for several cellular responses including antimicrobial resistance: an emerging paradigm in klebsiella signaling	24 Jul 2015
32.	Dr. N. Sadananda Singh	IISER-TVM	Application of new generation tools for better disease diagnosis and to understand molecular mechanism of biological systems.	23 Jul 2015
33.	Prof. Gautam Bharali	IISc	The dynamics of holomorphic correspondences on Riemann surfaces	21 Jul 2015
34.	Dr. Arijith De	IIT, Madras	Equivariant bundles over toric varieties.	22 Jul 2015
35.	Dr. Suresh Govatati	Department of biochemistry, Sri Krishna Devaraja University	The role of candidate genes in the pathophysiology of endometriosis	27 Jul 2015
36.	Prof. S. Ravi P. Silva	University of Surrey, UK	Nano-Carbon Electronics	28 Jul 2015
37.	Dr. Rajesh Kumar Gupta	ICTP	Black Hole Entropy and Holography	10 Aug 2015
38.	Prof. A. Thamizhavel	TIFR	Anisotropic magnetic properties of binary Cerium compounds	21 Aug 2015
39.	Ms. Debopriya Mukherjee	Ph D student IISER TVM	Stochastic Analysis of 2D Linear Viscoelastic Fluid Model perturbed by L\'{e}vy Noise: Existence, Uniqueness and Control.	27 Aug 2015
40.	Prof. Tony Puthenpurakal	IIT Bombay	Use of non-commutative ring theory in commutative algebra	27 Aug 2015
41.	Dr. Narayanan N,	IITM	Erdos Magic	7 Sep 2015
42.	Prof. K Suresh Kumar	IIT Bombay	Risk-sensitive control and generalized Collatz-Wielandt formula	8 Sep 2015
43.	Prof. Navin Khaneja,	Harvard University	On Convexity, The Weyl Group, and Time Optimal Control of Coupled Spins	8 Sep 2015

44.	Prof. Soumya Das	IISc Bangalore	Characterization of cusp forms by the growth of the Fourier coefficients of modular forms.	17 Sep 2015
45.	Dr. Abhishek K Singh	IISc, Bangalore	Reversible Tuning of "Electronic Structure" of Semiconducting Transition Metal Dichalcogenides	16 Sep 2015
46.	Dr. C. Vijayan	IIT Madras	Nanophotonics with Regular and Random Media	18 Sep 2015
47.	Prof. Manoj Kumar	HRI Allahabad	Central versus class-preserving automorphisms of finite groups	23 Sep 2015
48.	Prof. Manoj Kumar	HRI Allahabad	Groups with maximal central quotient	25 Sep 2015
49.	Prof. Raman Kashyap	Departments of Engineering Physics and Electronics Engineering at Ecole Polytechnique de Montreal, Canada	Fiber - Bragg grating and its application in photonics	5 Oct 2015
50.	Prof. K. Thyagarajan	IIT, Delhi	Integrated Quantum Optics	8 Oct 2015
51.	Prof. D. Narayana Rao	Central University of Hyderabad	TBA	8 Oct 2015
52.	Prof. P. Balaram, FASc, FTWAS	Molecular Biophysics Unit Indian Institute of Science Bangalore - 560 012	Chemical Ecology: Natural Products Chemistry Strikes Back	15 Oct 2015
53.	Brinda Varma	IISER- TVM	Patentability Subject matter and Filing Mechanisms	8 Oct 2015
54.	Dr. Anilatmaja Aryasomayajula	Department of Mathematics, University of Hyderabad	Arakelov theory and estimates of automorphic forms.	14 Oct 2015
55.	Dr. Nagaiah Chamakuri	RICAM, Austrian Academy of Sciences	Large scale PDE constrained optimization of cardiac defibrillation	29 Oct 2015
56.	Dr. Mithun Mukherjee	IISER Kolkata	Aspects of Non-Commutative Dynamics: Powers' Problems and its Solution	29 Oct 2015
57.	Dr. Saurabh Trivedi	TIFR Mumbai	Flat currents on definable pseudomanifolds	29 Oct 2015
58.	Dr. Rema Krishnaswamy	JNCSR,Bangalore	Yielding and structural transitions in sheared nanostructured soft matter	27 Oct 2015
59.	Prof. Rohit Bhargava	UIUC	Chemical imaging: From basic physics to molecular histology for cancer	27 Oct 2015
60.	Dr. Bibhu Ranjan Sarangi	SRM University	Mechanosensing at different length scales	30 Oct 2015

61.	Dr. Ashok Garai	IIT, Jaipur	Single molecule conformational dynamics and mechanics: Theory, simulation, analysis and interpretation	30 Oct 2015
62.	Dr. Mamata Sahoo	NIST, Thiruvananthapuram	Driven Non-equilibrium Systems and Biological Processes:Transcription	30 Oct 2015
63.	Dr. Brajesh Mani	IIT, Delhi	Properties, simulations, and results of perovskite oxides at finite temperatures	30 Oct 2015
64.	Prof. Sabrina Mansicalco	University of Turku, Finland	Thermodynamic meaning and power of non-Markovianity	9 Nov 2015
65.	L. Resmi,(Resmi Lekshmi)	IIST, Thiruvananthapuram	Short-duration Gamma Ray Bursts	2 Nov 2015
66.	Dr. Sashikumar Ganesan	Super Computer Education and Research Centre, IISc Bangalore.	Finite element methods for PDEs with moving boundaries	5 Nov 2015
67.	Dr. Jyrki Pillo	University of Turku, Finland	Efficient superdense coding in the presence of non-Markovian noise	4 Nov 2015
68.	Prof. L. S. Shashidhara	IISER Pune	Past and the future of Science & Technology Education and Research in India	12 Nov 2015
69.	L. S. Shashidhara	IISER Pune	Evolution of insect wing number and morphology	13 Nov 2015
70.	Dr. Burkhard Fechner	Coherent GmbH, Goettingen, Germany	Recent trends of Excimer laser in PLD and other application	1 Dec 2015
71.	Prof. Ady Arie	Dept. of Physical Electronics, School of Electrical Engineering, Tel Aviv University, Tel Aviv 69978, Israel	Self-Accelerating Waves of Light and Matter	30 Nov 2015
72.	Dr. Anindya Goswami	IISER Pune	Regime switching model of financial market.	27 Nov 2015
73.	Debanjana Mitra	TIFR-CAM, Bangalore	Controllability and stabilizability of compressible Navier-Stokes system.	25 Nov 2015
74.	Dr. Azeef Muhammed P. A	Department of Mathematics, Kerala University.	Connections beyond cross-connections	26 Nov 2015
75.	Dr. Rakesh Reddy	Department of Mathematics, IIT Bombay	Hilbert functions and coefficients	26 Nov 2015
76.	Dr. Vipul Kakkar	HRI Allahabad	On The Congruences in Right Loops	26 Nov 2015
77.	Prof. Zdzislaw Brzezniak,	York University, UK	2-d Navier Stokes equations: controllability, quasipotential and exit time asymptoics for small noise perturbations.	3 Dec 2015

78.	Dr. Saneep Goyal	University of Calgary - Canada.	Quantum Information Processing:Implementation Schemes and Quantum Memory	17 Dec 2015
79.	Prof. Chandan Dalawat	HRI, Allahabad	The general reciprocity law	18 Dec 2015
80.	Prof. Chandan Dalawat	HRI, Allahabad	A sum worthy of Gauss	22 Dec 2015
81.	Dr. P. Anil Kumar	Faculty of Physics, University of Duisburg – Essen, Duisburg, Germany	Influence of magnetic tunnel barriers on magneto resistance behavior	7 Jan 2016
82.	Dr. Cyril Tintarev	Uppsala University	Delta-convergence: an alternative approach to weak compactness	7 Jan 2016
83.	Prof. N. Srinivasan	Molecular Biophysics Unit, Indian Institute of Science, Bangalore	Bridging the islands of protein families in sequence space using artificial sequences	7 Jan 2016
84.	R. Sowdhamini	National Centre for Biological Sciences (TIFR), GKVK Campus, Bellary Road, Bangalore	Genome sequencing of Tulsi – a medicinally important herb	7 Jan 2016
85.	Dr. Sajal Dhara	Institute of Optics, University of Rochester, Rochester, New York, USA	Electron transport and circular photogalvanic effect in nanowires	11 Jan 2016
86.	Dr. Carol Trager -Cowen	Faculty of Physics, University of Duisburg – Essen, Duisburg, Germany	Nanocharacterisation of the structural and luminescence properties of materials in the scanning electron microscope	15 Jan 2016
87.	Dr. Girja Tripathi	Univesitat Osnabrueck, Germany.	Algebraic vector bundles in motivic homotpy theory.	15 Jan 2016
88.	Dr. Shadak Alee Kamanoor	Department of Nuclear and Atomic Physics, Tata Institute of Fundamental Research,	Single mode and perturbed band-edge lasing in an amplifying periodic on average random system	18 Jan 2016
89.	Dr. Manish Jaiswal	Department of Molecular and Human Genetics,Baylor College of Medicine, Houston, TX, USA	Genetic dissection of neuronal maintenance and demise	22 Jan 2016
90.	Dr. Sonal Nagarkar-Jaiswal	Howard Hughes Medical Institute, BCM, Houston, TX, Department of Molecular and Human Genetics, Baylor College of Medicine, Houston, TX,	Novel genetic approaches to explore neural stem cell homeostasis	22 Jan 2016
91.	Prof. E K. Narayanan	IISc Bangalore	Some applications of complex analysis	28 Jan 2016
92.	Dr. Azeef Muhammed P A	IISER-TVM	An introduction to semigroup theory	29 Jan 2016

93.	Dr. Sabyasachi Mukhopadhyay	Department of Materials and Interfaces & Organic Chemistry Weizmann Institute of Science, Rehovot, Israel	Integrating Proteins into Electronics	4 Feb 2016
94.	Dr. Dipramit Majumdar	IISER Pune	p-adic Langlands' Transfer	4 Feb 2016
95.	Prof. Amiya Kumar Pani	IIT Mumbai	Through eyes of viscoelastic fluids: How can external stimulus influence research in theoretical and computational PDEs ?	5 Feb 2016
96.	Dr Sabyasachi Mukhopadhyay	Department of Materials and Interfaces & Organic Chemistry Weizmann Institute of Science, Rehovot, Israel	Integrating Proteins into Electronics	2 Feb 2016
97.	Dr Ajay Kumar nayak	Max Planck Institute of Microstructure Physics, Halle and Max Planck Institute for Chemical Physics of Solids, Dresden	Designing magnetic anisotropy in Heusler materials for spintronics	3 Feb 2016
98.	Dr. Mayukh Majumder	Max Planck Institute of Microstructure Physics, Halle and Max Planck Institute for Chemical Physics of Solids, Dresden Germany	Magnetic order at the border: NMR and NQR as a microscopic tool	8 Feb 2016
99.	Mr. D. Pradeep	IISER-TVM	Iterative Methods for Solving Nonlinear Ill-posed problems	11 Feb 2016
100.	Dr.Ritupan Sarmah	Department of Physics, Tezpur University, Tezpur – 784028, India	Dynamics of strain bifurcations in magnetostrictive ribbon	10 Feb 2016
101.	Dr. Senthil Raani	IISER Bhopal	Inequalities of Fractal Measures	10 Feb 2016
102.	Dr. Srinivas Kotyadi	Institute of Mathematical Sciences, Chennai	Zeros of zeta functions	11 Feb 2016
103.	Prof. Semir Zeki FRS	University collage of london	The Neurobiology of Aesthetic Experiences and the Significance of Beauty	13 Feb 2016
104.	Dr. Chandni U	Department of Physics, Institute for Quantum Information and Matter at Caltech	Engineering quantum transport in low dimensional electron systems	15 Feb 2016
105.	Mr. Vatsalkumar Nandkishor Mer	IISER-TVM	Cauchy's Interlacing Theorem	18 Feb 2016
106.	Atma Ram Tiwari	IISER-TVM	Riemann Surfaces	25 Feb 2016
107.	Saurav Samntray	IISER-TVM	Duality between Hyperbolic Conservation Laws and Hamilton-Jacobi Equations.	17 Mar 2016
108.	Dr. Mathew Joseph	University of Sheffield	Longest increasing path within the critical strip	24 Mar 2016

Conferences and Workshops Organized

Sl. No.	Name of Faculty	Name of Sem./Wor./Con.	Funded By	Date	International/ National
1.	Dr. Archana Pai	100 years of Gravity Seminar Series	Max Planck Partner Group at IISER-TVM	Mar 2016	National
2.	Dr. Archana Pai	Conscientia 2016 Gravitational wave exhibition, IIST Tech-Fest Trivandrum	Max Planck Partner Group at IISER-TVM	Mar 2016	National
3.	Dr. Archana Pai	IndIGO-LSC Face-To-Face Meeting, IISER-TVM, Trivadrum	Max Planck Partner Group at IISER-TVM	Dec 2015	National
4.	Prof. K. George Thomas and Prof. Anna Painelli	Parma University IISER-TVM Joint meeting	IISER-TVM and University of Parma	Feb18-19, 2016	Bilateral
5.	Dr. Kana. M. Sureshan	Inter IISER Chemistry meet 2016	IISER-TVM	Dec11-13, 2015	National
6.	Dr. Manoj. A. G. Namboothiry	18th International workshop on Physics of Semiconductor Devices (IWPSD 2015) [Technical sub committee chair of the Theme Symposium on Organic Electronics]	IUMRS and MRS India	Dec 7-10, 2015	International
7.	Dr. S. MurtySrinivasula, Dr. Ramanatha Natesh, Dr. Jishy Varghese, Dr. Ravi Maruthachalam, Dr. Tapas. K. Manna	The XXXIX All India Cell Biology Conference, International meeting on Cellular Organization and Dynamics	IISER-TVM, DST, KSCSTE, Welcome DBT India Alliance JNCASR RGCB And industry sponsors	Dec 6-8, 2015	International
8.	Dr. S. Murty Srinivasula	Scales in Biology: From genes to ecosystems, IISER-TVM - National University of Singapore Joint Symposium	IISER-TVM and National University of Singapore	Sep 21-22, 2015	International
9.	Dr. M. P. Rajan	Science Talent Enrichment Programme	KSCSTE	Dec 14-19, 2015	National
12.	Dr. Sainul Abideen. P	Workshop of INDEST-AICTE Consortium	IISER Mohali	Apr 29, 2015	National
		Refresher course in Library and Information Science	University of Calicut	Oct 2, 2015	National
		International Training Programme on "Digital Library practices & Information Technology Application for Knowledge Management".	Fluid Control Research Institute (FCRI) Palakkad	Nov 16-17, 2015	International
13.	Dr. M. M. Shaijumon	Indo-US workshop on "Engineered Nanocarbons for Electrochemical Energy Storage"	IUSSTF, INDIA	Jun 19-20,2015	International

14.	Dr. Sukhendu Mandal	International Conference on Cluster, Cluster-Assemblies and Nanomaterials (ISCAN-2016)	IISER-TVM, KSCSTE, Virginia Commonwealth University	Mar9-12, 2016	International
15.	Dr. Utpal Manna	Indo-UK Workshop on Stochastic Partial Differential Equations and Applications	EPSRC (UK), DST (GoI), NBHM (DAE, GoI), IISER-TVM and TIFR-CAM	Dec 9-19, 2015	International
16.	Dr. Viji. Z. Thomas	AFS-II	NBHM	May-10 Jun-6 2015	National

Students Achievements

IISER-TVM students have excelled in academic activities during this period.

➢ Many students achieved honours at international level as listed below.

International Visits of Students

Sl .No.	Name	Achievements	Date
1	Sooraj Ben. K. R	SN Bose Programme 2015	May 17, 2015
2	Brinda. K	SN Bose Programme 2015	May 30, 2015
3	Aparajitha. R	World science conference-Isreal 2015	Aug 15-20, 2015
4	Gopika Gopan	World science conference-Isreal 2015	Aug 15-20, 2015
5	Pooja sekhar	9th Asian Science Camp 2015	Aug 2-8, 2015
6	Hridya Dilip	9th Asian Science Camp 2015	Aug 2-8, 2015
7	Jyothishraj Nambisan	BRICS summit meeting, Russia	July 1-7, 2015

➢ Some graduated students of our Five Year BS-MS Dual Degree Programme got admissions for various programmes in different national/international universities.

Sl.No.	Name	School	Universities
1.	Debraj Sarkar	Chemistry	Research Scholar, Gachon University, South Korea
2.	Sanjay Kumar Meena	Chemistry	Research Associate, Indian Institute of Science Education and Research-Thiruvananthapuram, India
3.	Ardra. A	Chemistry	Research Scholar, University of Jyvaskyla, Finland
4.	Aromal. A	Chemistry	Junior Research Fellow, Tata Institute of Fundamental Research, Mumbai, India
5.	Rathod Suman	Chemistry	Research Scholar, Indian Institute of Science, Bangalore, India
6.	Aswani Raveendran	Chemistry	Research Scholar, Indian Institute of Technology-Bombay, Mumbai, India

7.	Athira George	Chemistry	Research Scholar, University of California, San Diego, USA
8.	Daniel Sylvinson. M. R	Chemistry	Research Scholar, University of Southern California, Los Angeles, USA
9.	Dhanya. S. R	Chemistry	Research Scholar, Indian Institute of Science Education and Research-Thiruvananthapuram, India
10.	Harish Banda	Chemistry	Research Scholar, Atomic Energy and Alternative Energies Commission, Gif-sur-Yvette, France
11.	Lekshmi. R. S	Chemistry	Research Scholar, Indian Institute of Science Education and Research-Thiruvananthapuram, India
12.	Neethu Anand	Chemistry	Research Scholar, Indian Institute of Science Education and Research-Thiruvananthapuram, India
13.	Ramarani Sethy	Chemistry	Research Scholar, Nara Institute of Science and Technology, Nara, Japan
14.	Perapaka Deepak	Chemistry	Research Scholar, Hyderabad Central University, Hyderabad, India
15.	Devansh Agarwal	Physics	Project Fellow, Pulsar Timing Studies & Emission Mechanisms, IISER Thiruvananthapuram
16.	Joseph. P. J	Physics	Research Scholar, Indian Institute of Science Education and Research-Thiruvananthapuram, India
17.	Karthik. R.	Physics	PhD, Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune
18.	Prasanna Patil	Physics	PhD, Southern Illinois University, Carbondale, USA
19.	Ramasubramonian. D	Physics	PhD, University of Illinois, Chicago, USA
20.	V. P. S. Ritwika	Physics	PhD, University of California, Merced, USA
21.	Sisira. K	Physics	PhD, Dartmouth College, New Hampshire, USA
22.	Sreekanth. K. M	Physics	PhD, Stockholm University, Stockholm, Sweden
23.	Sreenath. K. M	Physics	PhD, University of Rochester, New York, USA
24.	Yadukrishnan. S	Physics	PhD, University of Tennessee, Knoxville, USA.
25.	Deepak Suryavanshi	Mathematics	PhD, IITM-Pune
26.	Aditya Singh	Biology	International Max Planck Research School for Neurosciences, Goettingen, Germany
27.	Jery Joy	Biology	Institute for Research in Biomedicine, Barcelona, Spain
28.	Ranjith Viswanathan	Biology	European Molecular Biology Laboratory, Heidelberg, Germany
29.	Anu Thomas	Biology	University of Texas Southwestern, Dallas, TX, USA
30.	Sarang Mahajan	Biology	IISER Pune
31.	Sumedha Sudhir Agas	Biology	National Centre for Biological Sciences, Bangalore
32.	Aswathy. J. R	Biology	Rajiv Gandhi Centre for Biotechnology

➢ The graduated students of our Ph.D. Programme have joined for Post Doctoral Positions in different international universities/places.

Sl.No.	Name	School	Universities
1	Atchutarao Pathigoolla	Chemistry	Post-doctoral Researcher, University of Nottingham, United Kingdom
2	Rijo. T. C	Chemistry	Wimpey Laboratories, Sharjah, UAE
3	Manil. T. Mohan	Maths	Post-Doctoral Fellow at Air Force Institute of Technology, Fairborn, Ohio, USA
4	Damodar Reddy. G	Maths	Post-Doctoral Fellow, IIT Hyderabad

Summer Programme

IISER Thiruvananthapuram Summer Visiting Programme Fellowship:

1378 online applications were received for 2015-2016 IISER-TVM Summer visiting programme. A total of 36 students were selected by individual schools, based on merit out of which 28 students reported and have successfully completed the project.

IASc-INSA-NASI Project Fellowsip:

23 selected students from Indian Academy of Science (IAS) have been allotted to IISER Thiruvananthapuram for the Academy summer programme and 12 have completed their project.

External Students from other institutions:

According to present record, various individual laboratories from IISER Thiruvananthapuram selected 8 external students from other institutions and have carried out or are carrying out their projects.

IISER Thiruvananthapuram students:

237 BS-MS & IPHD students from IISER Thiruvananthapuram have collected Registration Forms for carrying out projects during this summer in various laboratories.

Outreach activities

The institute is very active in outreach activities to promote scientific research in the country. IISER-TVM conducted Interaction program with scientists aimed at enabling the college students to interact with the faculty members of IISER-TVM with a view to improve their scientific knowledge. Three interaction programs with scientists were held as a one-day symposium at various colleges. In addition an IISER-TVM conference stall was organized and held for International Educator's meet from 25th to 26th January 2016 at Anna University, Chennai. Scientists and BS-MS students of IISER-TVM conducted outreach programs at various schools to nurture scientific thinking and research skills in children at the school level. Institution visit to IISER-TVM by various college students from Kerala is facilitated to provide students an overview about the current research ongoing at IISER-TVM.

1. Interaction programme with Scientists:

Interaction program with scientists aimed at enabling the college students to interact with the faculty members of IISER-TVM was held with a view to improve their scientific knowledge. Three interaction programs with scientists were held as one-day symposium at various colleges. The details are as follows:

Sl.No	Name of the college	Name of the Faculty from IISER TVM	Date	Co-ordinator from the college
1	Tamilnadu Science and Technology, Coimbatore, Tamilnadu	Dr. Ramesh Rasappan, Dr. Nisha Kannan, Dr. Vinayak Kamble and Dr. Stephan Baier	Oct 26, 2015	Executive director
2	St. Berchman's College, Changanessery, Kerala	None	Nov 17, 2015	Principal
3	St. Micahel's college, Cherthala, Alappuzha, Kerala	Dr. Viji Z Thomas Dr. Nisha N Kannan Dr. Gokulnath S Dr. Senthil Kumar D V	Jan 29, 2016	Dr. P. Manoj
4	St. Joseph's college, Irinjalakuda, Kerala	Dr. Chiranjeevi P Dr. Nisha N Kannan Dr. Mahesh Hariharan Dr. Senthil Kumar D V	Mar11, 2016	Dr. Gigi Paulose
5	Kandaswamy Kandar'scollege, Velur, Namakkal, Tamilnadu	Prof. V. Ramakrishnan Dr. Arun. K. R Dr. Ravi Maruthachalam Dr. Ramesh Rasappan Dr. Vinayak Kamble	Aug11, 2016	Dr. N. Latha

In addition an IISER-TVM conference stall was organized and held for International Educators' meet on 25 - 26th January 2016 at Anna University, Chennai.

2. Outreach program at Schools:

Scientists and BS-MS students of IISER-TVM conducted outreach programs at various schools to nurture scientific thinking and research skills in children at the school level. The details are as follows:

Sl.No	Name of the School	Name of the faculty from IISER-TVM	Date
1	Government Higher Secondary School, Sreekaryam, Thiruvananthapuram	Dr. M. P. Rajan	04-01-2016
2	Government Higher Secondary School, Idukki, Kerala	Dr. Vinayak. B. Kamble	13-02-2016

3	Dr. Ambedkar Memorial Model Higher Secondary School, Thiruvananthapuram	Dr. Nisha. N. Kannan	01-08-2016
4	Government Higher Secondary School,Vithura, Thiruvananthapuram	Prof. V. Ramakrishnan, Director	24-10-2015
5	Government Higher Secondary School, Sreekaryam	Prof. V. Ramakrishnan, Director Prof. M. P. Rajan	30-12-2015

3. Institution visit by college students as a part of the walk with scholar program:

Institution visit to IISER-TVM by various college students from Kerala is facilitated to provide students an overview about the current research ongoing at IISER-TVM. List of institution visit is placed below:

Sl. No	Name of the college	Date
1	Maria Rafols Matriculation HSS, Kanyakumari	02-12-2015
2	Farook College, Calicut	13-02-2016
3	Loyola School, Sreekaryam	19-02-2016
4	MES College, Valanchery, Kerala	19-02-2016
5	St. Mary's college, Wayanad, Kerlala	24-02-2016
6	St. Joseph's college, Irinjalakkuda, Kerala	25-02-2016
7	Guruvayoorappan College, Kozhikode	27-02-2016
8	Unity womens college, Manjeri	29-02-2016
9	Khagol Mandal, Astroclub in Mumbai	02-03-2016
10	Government Brennan college, Thalassery	05-03-2016
11	Marvanios College Trivandrum	18-03-2016
12	Newmann college, Thodupuzha, Kerala	21-03-2016
13	SES college, Sreekandapuram, Kannur, Kerala	22-03-2016
14	St. Thomas college, Thrissur, Kerala	30-03-2016
15	Planetarium Trivandrum	31-03 2016

Activities of ANVESHA, the science club of IISER TVM

Anvesha Launch was a programme intended to introduce Anvesha, the science club, to the first years. Director Prof. V. Ramakrishnan inaugurated the year's club activities by releasing the Anvesha brochure on 15th August 2015. As the first activity of the club, Anand E. P from batch 13 gave a small talk on the topic 'Biomemetics', which provided insights into various evolutionary adaptations that different organisms acquired and how it would help humans solve a variety of problems we face in our daily life.

This year the release of Anvesha'15 promo video marked the beginning of the science fest organized between 30th October 2015 and 1st November 2016. Director, Prof. V Ramakrishnan released Anvesha'15

promo video and Associate Dean (Student Affairs), Dr. Ramesh Chandra Nath released the brochure of Anvesha'15 events. The promo video was created by students of Batch '14.The scientific elements were maintained through the talks given by faculty members on Nobel Prize 2015. Dr. Mahesh Hariharan (School of Chemistry) discussed about the research on DNA repair mechanisms that won 2015 Nobel Prize in chemistry. The talk by Dr. Satish Khurana (School of Biology) gave insights about the discoveries concerning novel therapies against malaria and roundworm parasite infections that won the Nobel Prize in physiology/ medicine 2015. The official T-Shirt of Anvesha'15 was released on the same day by Dr. Thirumurugan, Faculty Coordinator of Anvesha which was designed by Rafeeq of Batch '11.

This year the retrovirals (biology department) kicked off the events fun Quizzes and puzzling questions, followed by the Wolverines (chemistry department) through pH painting, chemical Origami, Crosswords and chemical Sudoku and a combined treat of the Math Pirates and the SUP (Society of Undergraduate physicists). The Dead man's chest once again revealed how tricky maths could get. The physicists proved their skills with a model of the LHC and a lot of fun physics facts and Questions. To ignite the scientific passion among school students and introduce them to the research techniques being used in modern research field, the science club Anvesha conducted a workshop in which selected students from invited schools could participate. Students received a talk by Dr. Mahesh Hariharan (School of Chemistry) about the instrumental methods used in modern research, and then they were escorted to different research labs by Anvesha volunteers. 20 students from ten schools participated in the programme. The main attraction of Anvesha'15 was the scientific exhibition in which students from all Batches presented scientific principles and ideas through models, games and experiments.

Informals included various fun-filled games and competitions that tested the skills of the participants. Vagyuddha is the debate competition which we conduct as part of Anvesha fest every year. This year, the topic given was 'Should Net neutrality be implemented?'. The arguments made by students showed their knowledge and awareness on the topic. The participants were graded by Dr. Joy Mitra and Dr. Satish Khorana. Neha P.R.S. of Batch '12 bagged the first prize and Jose Mathew of Batch '14 stood second. Science themed movies and documentaries such as PhD and BBC Atom were played which discussed about scientific research and history of atomic science. This new experience helped students learn more and be passionate about science.

On the 3rd and final day of Anvesha'15, exhibitions and informals were continued. The final round of CSI was conducted on the same day. 'Speak up' provided a stage for the students to express their ideas on various topics.

The invited Chief Guest, Prof. M.R.N. Murthy (IISc, Bangalore) visited the exhibition and spent time interacting with the students presenting the exhibits. The valuable comments made by the chief guest benefited the students.

The official closing ceremony of 'Anvesha'15 was graced with the presence of Chief Guest Prof. M.R.N. Murthy. In the excellent talk delivered at the ceremony, he explained why Charles Darwin's theory of evolution by natural selection, which is considered to be one among the paradigm shifts, became so controversial. He focused on scientific studies and ideas for and against the theory put forward by Darwin. The talk was enriched with excerpts from works of scientists and philosophers like W.D. Hamilton, Will

Durant, Michael Behe, James A. Shapiro etc. The lecture was followed by the distribution of prizes for the Debate competition, CSI, the Best exhibits (one from each department), and Anvesha T-shirt design.

This event provided an open platform for students to discuss their views on a particular topic. The topic for the first edition of Vox Populi was, 'The Gaps in Science Communication'. Importance of communicating to the common people about the progress in scientific research, the issues India is facing due to lack proper scientific awareness among the people, etc, were under discussion. Also, the option of taking science communication as a profession and the opportunities in this field was discussed.

Other programs organized by Anvesha include:

The Sci-Tech Quiz conducted as part of National Science Day celebrations was entertaining as well as informative.

The experiment demonstration competition 'Aficianados' invited students' experimental ideas and selected ones were presented in front the student community. Along with the ideas such as Generating fuel from plastic by pyrolysis, cross linking in sodium alginate, Water purification using bamboo charcoal, etc. the student made radio telescope was also demonstrated. As National Science Day, is celebrated in memory of the Nobel winning discovery Raman Effect, a talk on the life of Sir. C. V. Raman was conducted. The talk was given by Prof. K George Thomas, in which, the story of discovery of Raman Effect was explained. He also discussed the issues faced and progress achieved by Indian Science Community.

Prof. Sanjeev Dhurandhar is one of the pioneers of the Gravitational Wave research in India. Following his colloquium at IISER Trivandrum, Anvesha members visited him for an interview. The history of Gravitational Wave physics in India, the importance of detecting Gravitational waves, opportunities for young researchers in this field, LIGO India project, etc. were discussed.

Anvesha organized a popular lecture by Dr. T. V. Venkateswaran, a science communicator from Vigyan Prasar, DST on the topic "Encountering modern science in colonial India: Ragoonathachary and the modernisation of pañcā ga". The talk shed light on the scientific ideas prevailed in colonial India and how modern scientific thoughts reformed the mindset of people. The talk mainly concentrated on technique and mathematical aspects of panchanga that is the astrological calendar used by Indians and the false believes related to it and the works of Chinthamani Ragoonathachari as the first Indian fellow of the Royal Astronomical Society.

A workshop aimed at making students familiar with programming using python was conducted by John Francis (IPhD student) in association with Anvesha. A one day long workshop provided an introduction to python and helped students to acquire basic programming skills.

A lecture on Quantum computing and demonstration of quantum computer simulator in python, quapywas conducted by Anvesha. The speaker was Abhijith Jayakumar from IISc, Bangalore.

As part of British Council's Science Beyond lecture series, a talk on history of scientific communication was given by Prof. Charlotte Sleigh on 29th January 2016.

As part of British council 'Science and Beyond' lecture series, world renowned neurobiologist from University College London, Prof. Semir Zeki gave a talk on Neuro-aesthetics on 13 February 2016. The event was co-sponsored by school of Biology, IISER Thiruvananthapuram.

8. Facilities

Laboratory

The institute has dedicated laboratories for undergraduate program in addition to advanced level research labs maintained by faculty members of various schools.

Physics Laboratory

Physics Laboratory for BS-MS students are arranged to raise curiosity of the students towards scientific principles. The experiments are such that they give training to students to handle simple instruments and also sophisticated instruments. Sufficient numbers of instruments are available, as far as possible, so that the students can individually do the experiments. Some experiments which require computers to plot the data are also arranged. In the first two years all BS-MS students do all experiments. They are categorised as Mechanics, Electricity & Magnetism, Optics and Heat & Thermodynamics. From fifth semester onwards they do advanced experiments, Electronics (using both discrete and integrated devices) experiments. Students have to design electronic circuits and analyse their working. The laboratory has acquired some good facilities for the laboratory courses. X-ray diffraction experiments, STM, velocity of light determination apparatus, spectroscopic instruments, gamma ray spectrometer etc. are available. A vacuum coating unit is available for doing mini projects. Some more instruments are being added to the list, for Physics Major Students.

Chemistry Laboratory

Chemistry experiments carried out during the first and second years (four semesters) provide students opportunities to extend their knowledge and understanding of the basic concepts of chemistry and include both qualitative and quantitative analysis. In each semester ten to twelve experiments have been done. The course covers, principles and applications of chemical laboratory techniques including preparation of chemical compounds, its qualitative and quantitative analysis. The students get accustomed in measurement of pH, paper chromatography, thin layer chromatography, column chromatography, visible-ultraviolet spectrophotometry, infrared spectroscopy, chemical kinetics, data analysis, and elementary analysis. Experiments were done from refractometry, conductometry, potentiometry, and cryoscopy. Physical properties like surface tension, viscosity, dipole moment were measured and recorded for various organic compounds. Extensive hands-on laboratory training was provided to each student. This helped them to gain proficiency in basic laboratory techniques and experience in modern laboratory instrumentation. Some of the experiments done during the advanced courses were: Isolation and analysis of natural products and preparation of their derivatives, multi-step organic synthesis (Benzoin condensation, Perkin reaction, Grignard reaction etc.) for fifth semester, synthesis of transition metal complexes (Cobalt, Nickel, Molybdenum etc.) with various ligands and study of their kinetic, magnetic and spectral properties with group theoretical interpretation for sixth semester. Advanced physical chemistry experiments in polarimetry, conductometry, potentiometry, cyclic voltammetry, study of the rotational barrier using NMR, solvatochromism, single crystal XRD measurements, life-time measurements study by TCSPC, verification of adsorption isotherm by volumetric titration etc. were practiced in the seventh semester. The courses enabled the students to analyse, interpret and solve problems in chemistry, to integrate chemical knowledge in the successful conduct of research as well as work in team-based research.

Biology Laboratories

The BS-MS Biology laboratories of IISER-TVM are located in the Permanent Campus at Vithura where students of I year (approximately 180) & II year (approximately 130) are being trained in doing projects and experiments related to Biological Diversity and Evolution (I Sem), Biological structure and Function (II Sem), Genetics (IIIrd Sem), Cell Biology and Signalling (IVth Sem). The topics for project work are given by the concerned faculties. Experiments related to Ecology and Evolution (IIIrd Sem) are mostly performed in a field setting. Taking complexities involved in conducting biological experiments into consideration, all the experiments would be performed ahead of actual class experiment to standardize the protocols with each set of reagents, to ensure quality of reagents. Substantial amount of time is spent on preparations for the experiments before the arrival of the students. The students are provided with a Laboratory manual with all the necessary details of the experiments in the first class itself. In the laboratory, the students will get an opportunity to test theory experimentally, and confirm the facts related to the design of experiments. They will also be trained on how to be critical and analytical. Students follow safe laboratory practices, maintainsproper record of the experiments and take active participation in doing the experiments.

Lab sessions are also conducted for 3rd & 4th year Biology Major Students (approximately 40 students in each year) as well as Integrated Phd students at the Advanced Biology Lab at Malayil Center, IISER-TVM located at Pongumoodu. The experiments are of high standards and are designed to complement their theory courses and ongoing research in the Institute encouraging the students to have a better understanding of biological concepts laying emphasis on scientific planning, analysis and interpretation of data. The syllabi has been prepared in consultation with various experts in Advanced Biology teaching and also by incorporating experiments from MS lab courses offered at reputed International Universities/ Research Centers. The advanced course covers broader areas on Advanced Genetics, Advanced Cell and Molecular biology, Microbiology, Immunology, Biochemistry etc. Apart from a team of well-trained Technical Assistants the students are also assisted by PhD students under the concerned faculties in charge. The students work hand in hand with research labs of the institute and are exposed to sophisticated instruments such as Real Time PCR, Spectrophotometer, Microplate Reader, FPLC, Confocal microscopy, Stereomicroscopy, Flow Cytometry, Gel electrophoresis and techniques like PCR, quantitative real time PCR (qRT-PCR), Western Blotting, SDS-PAGE, Animal cell culture, Invitro transcription and translation, Chromatography, Microbiological and Immunological techniques.

Library

Central library of the institute supports the academic and research needs of the institute community. The state of the art library facilitates access to online and print resources to its users. Reputed international journals and online resources in science and allied areas have been made available. Library is successful in providing most of the resources in electronic format which facilities 24X7 e-library.

The library's extensive online collection from more than 50 international scientific publishers and societies includes full-text e-journal databases, journal archives, video journal, e-books, bibliographic and review databases etc. Major online full-text databases includingAACR, ACS Web Edition, AIP, AMS, Annual Reviews, APS, ASM, Electro Chemical Society Digital Library, IEEE ASPP+POP, IOP, JSTOR,Nature, OpticsInfobase, OUP, Project Euclid, RSC Gold, Science Online, ScienceDirect, SIAM, SpringerLink, Wiley Online Library, World Scientific, etc are made available. Library also provides access to 'Grammarly' online grammar checking

and document authentication tool. Major bibliographic databases including Faculty of 1000, MathScinet, ScifinderScholar, Web of Science, etc. are also made available. Apart from the online resources, library possesses print books, CD ROMs, thesisetc. in core and allied subjects.

Library was shifted to a spacious building with wifi access for using laptops, augmented reading area etc. during this period.

IISER Thiruvananthapuram Library is a core member of the e-Shod Sindhu Consortium established by the Ministry of HRD, Govt. of India. Institute library is also part of the IISER Library Consortium, constituted jointly by all IISERs. Dr. Sainul Abideen, Asst. Librarian, and Joint Coordinator of IISER Library Consortium attended the 9thmeeting of the IISER Library Consortium held at IISER Kolkata, during December 08-09, 2015 and 11thAnnual Meet & Workshop of INDEST-AICTE Consortium held at IISER Mohali during April 29-30, 2015.Dr. Sainul attended the librarian's meet organized by the VSSC Library on 18th November 2015.

Library has membership/affiliation in national bodies like Developing Library Network (DELNET) and the UGC-Infonet Consortium established by the University Grants Commission (UGC), and in the Kerala University Library.

Library has a very effective document delivery service which facilitates in providing the articles/resources that are not available in the institute. More than1250 inter library loan transactions were undertaken during this period. Library received 87 books as complementary copies during 2015-16, mainly from National Board for Higher Mathematics (NBHM). A Malayalam book collection was started during this financial year. 239 new users were taken library membership during 2015-16.

Library operations are automated using the 'Evergreen' integrated library automation software. Major enhancement of the library automation was carried out during this period with several innovative facilities including instant online new arrivals display, trending title display etc.

In connection with the Mother Tongue Day, an exhibition of Malayalam books was organized by the library on 3 March, 2016. As part of the Hindiweek celebrations, an 'Exhibition of Hindi Books' was organized on 14 Sept, 2015. As part of the observance of the Communal Harmony Campaign a poster exhibition was conducted on 25th November 2015 and a photo exhibition was organized on 26th November 2015 in connection with the Constitution Day.

Computing and Networking Facility

The Internet connectivity at the transit campus is through a 1Gbps leased line provided as part of the National Knowledge Network (NKN). Additional bandwidth of 10Mbps through a BSNL leased line is also available. Different office buildings are interconnected using fibre. WiFi connectivity is provided to select hostels at the transit campus through BSNL telephone lines.

There are two computer labs at the transit campus. There is one computational cluster and several servers providing instructional and research support including Moodle course management suite, DNS, DHCP, NFS and other services. The IT personnel of the institute provide both hardware and software support to the faculty, students and staff in addition to making computational software like GAUSSIAN, MATLAB, QCHEM etc. available for use. The LAN of the institute has over 300 PCs. Licences are available for the software like Windows, Office, End Note, Adobe Acrobat Pro, Origin and Symantec Antivirus.

The institute has a fully functional virtual classroom funded by the NKN project. The classroom has been in use for course exchange between IISER Thiruvananthapuram, IISER Pune, IISER Bhopal, NCBS Bengaluru and TIFR Centre for Applicable Mathematics in Bengaluru as well as allowing for the streaming of research talks and colloquia from the premier institutes in the country. The virtual classroom facility also allows for the recording and storage of lectures and seminars organized by the institute.

The Internet bandwidth at permanent campus at Vithura is upgraded to 100Mbps. Chemical Sciences Block, Central Dining Hall, SB1 and SB2, Library, CIF and Project Office are interconnected using Fibre cable. Vithura campus and Transit campus are connected on VPN. A computer lab with 70 desktops is functioning at Vithura campus. Wireless connectivity is provided at CSB, CDH, SB1, SB2 and Library.

Hostels

During 2015-16 six buildings were taken on lease for use as hostels (Halls of residence XIV, XV, XVI, XVII, XVII, XIX, XX) to accommodate the students joined during the academic year. Presently there are 20 rented buildings being used as hostels.There are eight ladies hostels and twelve gents hostels.

All the hostels are furnished and have provision for amenities like washing machine, television, indoor games and internet facilities. Round the clock security is provided in all the hostels. Shuttle transport services are provided round the clock for commutation of students to and from hostels to institute and back.

A new gym with state of the art facilities has been operationalized for use of students and staff. Efforts are on to hire one swimming pool and outdoor game facilities for the students.

9. Sports and cultural Activities

Sports

The sports activities of IISER-TVM students centre around the two major sports events each year, ITSAV – The IISER-TVM Annual Sports Meet and IISM- Inter-IISER Sports Meet. The institute's Annual Sports Fest, ITSAV, was held on 18th -20th September 2015. This year ITSAV had a very enthusiastic participation from students and turned out to be a grand success. This year's ITSAV was augustly inaugurated with the March-past event, which witnessed excellent participation and torch lighting by the Director Prof. Ramakrishnan. There were various events conducted, including Athletics, Badminton, Cricket, Football, Table Tennis, Throwball, Kho-Kho, Basketball, Volleyball etc. The events were held in the transit campus using the facilities of the College of Engineering (CET). Apart from the sports fest activities, IISER-TVM students regularly play practice matches (Football, Cricket, Volleyball etc.) with local institutes.

The state-of-the-art gymnasium established last year is very highly utilized by the students. An experienced gym trainer oversees usage of gymnasium. A swimming pool attached to the Guest House is available to the students and is being used regularly. The Physical Education Trainer has been guiding students to improve their general levels of fitness and also to imrprove specific areas such as football and running events.

The fourth Inter IISER Sports Meet (IISM) was held between 15th to 21st December in IISER-Bhopal. All IISERs, NISER-Bhubaneswar and IISc–Bangalore participated. The IISER-TVM contingent comprised 88 students (58 boys and 30 girls). Our students participated in all events including Athletics, Chess, Badminton, Cricket, Football, Table Tennis, Throwball, Kho-Kho, Kabaddi, Basketball, Volleyball and Lawn Tennis.

There was stiff competition among the participating institutions, but the IISER-TVM contingent returned to Trivandrum with an excellent performance, standing third overall. The team spirit and efforts of our contingent were sincere and inspiring. Following are the achievements during the meet:

TEAM EVENTS:
Badminton boys- WINNERS
Throwball girls- RUNNERS-UP
Volleyball girls- RUNNERS-UP

ATHLETICS; BOYS
Kedar Sharma - 5000m (GOLD) and 1500m (SILVER)
Alex Johny – 800m (GOLD)
Shuaib P - 400m and 200m (GOLD)
Vijith Jacob – 400m (BRONZE)
Louis Jose - Long jump (GOLD)
4*400m relay - GOLD
4*100m relay - GOLD

ATHLETICS: GIRLS
Indrani Das - 100m and 200m (SILVER)
Aparna D - Long jump (BRONZE)
Nila Mohan - Javelin throw (BRONZE)
Akhila - Discuss throw (THIRD)
4*100m relay - SILVER
4*400m relay – SILVER

In addition, IISER-TVM participated in the CET Cultural Festival Volleyball tournament, and Alex Johny participated in the Bangalore Marathon Race.

To recognize the contribution of students to the institute sports and to encourage them, awards in different categories are given to the students every year. For this year, ten students (6 boys: Kedar, Dhruv, Anand M P, Shuaib, Praveen Roy, Ajmal Basheer, and 4 girls: Leya, Bhagya, Indrani, Arya T) were awarded with "Sports Color" for their extraordinary performance in ITSAV-2015 as well as in IISM-2015. For their consistent and remarkable contribution towards institute sports for the last 4-5 years in various sports events, four students of the outgoing batch (Louis, Sujatha, Vijith Jacob, and Anjali) were awarded the "Sports Citation" award. Mr. Shuaib P and Miss Nila Mohan together shared the "Sportsman of the Year-2015"

award for their outstanding performance in both ITSAV-2015 and IISM-2015. This year the "Role of Honor" was awarded to Mr. Louis Jose for his impeccable and exceptional performance throughout the years. Finally, 6 students (Sreethin, Arjun D. V, Arjun T. M, Amar Nath Gali, Umesh, Karanveer) were given the 'Special Mention' Certificate for their performance during ITSAV and IISM.

Cultural Activites

Hindi Week was celebrated at IISER Thiruvananthapuram from 11th September 2015 to 17th September 2015.

An exhibition of Hindi books was held in the Library on 14th Sept 2015, which was inaugurated by Prof. V. Ramakrishnan, Director, IISER Thiruvananthapuram in the presence of Dean (SA), faculty, staff and students. Important Hindi books from major publishers were exhibited during the exhibition. Similarly, collections of Hindi books in the institute library also were exhibited for popularising the official language.

Essay Writing, and Letter writing Competition for students and staff were conducted during 14th to 15th Sept 2015.

A English-Hindi translationcompetition (for Non Hindi Members) was conducted on, 16th Sept 2015 for students and staff of the institute. Debate competition held on 16th for students was participated by many students. Hindi Poem Recitation Competition was held in the valedictory session of the Hindi week celebrations.

The valedictory session and cultural evening was held on 17th Sept 2015 at the Jubilee Hall of the College of Engineering Thiruvananthapuram. Eminent Hindi poet and satirical writer Shri. Vishnu Nagar (New Delhi), inaugurated the concluding session. Prof. S. Murty Srinivasula, Dean, Student Affairs, Dr. Kalika Prasad, Asst. Professor etc. spoke during the function.

There were many cultural events like speeches, songs, poems, jokes, short dramasetc by students, made the programme more successful. Vibrant faculty members of the institute performed songs and short drama (directed by Dr. Deepshikha Jaiswal Nagar) which, got more attention from the audience.

Cultural Club

Cultural club's events in the academic year 2015-16 were started with 69th National Independence Day Celebrations at our Institute. We organized various program at both permanent and transit campuses on 15th August 2015. The Hon. Director received Guard of honor and hoisted the flag which was followed with Patriotic songs by Students and staffs.

On 23rd August 2015 we celebrated the biggest Keralite festival of happiness, brotherhood and togetherness at the Pratheeksha Building. All the students and faculties were dressed up in the traditional Keralite way and joined in making colourful Pookkalams. The whole IISER community tasted the famous delicious Onasadhya arranged by the SCoM (Students Cooperative Mess committee) during this festival of joy.

We celebrated the festival of lights- Diwali of this year on 10th November 2015 with various cultural events along with a musical night and Crackers. We had organized lantern making competitions and Rangoli competition for the students and staffs which was followed with cultural programs and Lighting of diyas. Special dinner with Diwali sweets served on that day.

Ishya, the annual cultural fest of IISER, Thiruvananthapuram was officially inaugurated by our director, Dr.Ramakrishnan on February 24, 2016. The social wing of cultural club, MUSKAAN- spreading smiles with Ishya was officially introduced in this function. Through MUSKAAN, we intend to share and spend some of our time and money and lend our helping hands to those in need. There had been some generous attempts on the same in the past years like visiting CHILLA (home for children of sex workers, HIV orphans and children in conflict with law) balasadhan (orphanage), and ASHRAYAM (Centre for rehabilitation of woman and children). Many of the students were ready to willingly spend some time from their hectic schedule by volunteering for providing teaching aids to students of NISH (National Institute of Speech and Hearing), Thiruvananthapuram wherein they teach the students and help them in their academics. Through MUSKAAN we have taken this to a more organized and an official manner.

In the upcoming years we plan to involve more of the IISER community to serve and be part of this noble deed. A dance performance by the students of NISH (Performance by students who are deaf and mute) was conducted on the day as part of the official inauguration of Muskaan.

The cultural activities of ISHYA'16 began with the curtain raiser program ISHQYA on Feb14, 2016 which included cultural programmes from students of IISER. We had a lineup of various events in the weekends followed by debate competition (Vagyudha), stand-up comedy, Graffiti, literary events, painting and drawing competitions which saw a lot of talents showing up. We had competitions like nail art, mehendi designing, hairstyling, tattoo designing, comic strip etc as box events.

A blood donation camp was held as part of MUSKAAN activities on March 13, 2016. A team of medical professionals from Trivandrum medical college consented for the event. We are indeed happy that 43 IISERians donated their blood and made the event a huge success. AALAP, the duet singing competition was held on March13, 2016 which saw the finest singing talents fighting it out. Avant garde- the short film competition and Lumera Obscura- the photography competition was conducted. Various online events like dubsmash, selfie competition were also held which saw huge participation.

The main three days of ISHYA (18, 19&20th March, 2016) was a huge success. For the first time an intercollegiate dance competition, MUDRA was conducted which saw participants from Sree Chithra Thirunal College of engineering (SCT), LBS College of engineering and Lourde matha College of engineering, Thiruvananthapuram battling it out. RAWAAZ, the fashion show contest was held on 18th march and which also include an exclusive platform for the kids of our faculty and staff. The immense participation for this event shows that Ishya is a common entertaining platform for the whole IISER family. Silencium, the mime competition and battle of bands were the two new events introduced this year.

Cultural programmes of both students and faculties were conducted on these 3 days. We are sure Ishya would be in higher levels in the coming years. We plan to put up an official website featuring all the details of our fest so that we can share the spirits of Ishya with the whole world and let's hope that in the coming years ISHYA spirits would soar high.

10. Permanent Campus

A. General & Master Plan

The permanent campus of IISER is coming up in an area of 200 acres of land at Vithura in the valley of scenic Ponmudi hills. The site at Vithura is 40km from Thiruvananthapuram. The land was handed over by Govt. of Kerala to the institute on 15.10.2008. The campus is highly uneven with smaller and larger hills and borders a reserve forest. Part of the area lies between an 800 m high steep sided hill Kottamala and a perennial stream called Makki.

The master plan was prepared taking maximum advantages of the terrain.

- The Academic Complex has been located as a compact integrated cluster on the central plot midway between the lowest and highest elevations.
- The student hostels have been located towards the south east periphery of the campus with covered pedestrian connectivity to the academic complex.
- The residential zone of faculty members and staff is planned in the 35 acres of undulating terrain in the western portion of the campus and is separated by the Makki river with the academic zone.
- Construction will be done as per the plans with minimum foot print and retaining maximum green cover.

Master Plan was also prepared taking into consideration energy conservation, rain water harvesting, waste water recycling etc. and with a view to provide for future expansion.

- The Campus will be developed taking into account green building concepts and we are aiming to achieve four star rating as per GRIHA (Green Rating for Integrated Habitat Assessment).
- The project area falls within the high rain fall zone of South Kerala. The total average annual rain fall is 300cm and with 8 months of the year having rain fall over 20cm. There are two streams passing through the project area having catchment of 200 ha and 100 ha respectively totally falling within the forest. This catchment is adequate to supply the entire water requirements for the project. Taking the average rainfall of 300cm, the total water annually passing through the campus is 90 lakh m^3 while the annual water requirement for the project is only 3.65 lakhs m^3 which constitutes only about 4% of the water availability. In order to cater the water requirements for a period of 4 dry months a small reservoir of storage (50,000 m^3) has already been constructed in the Vattakuzhy thodu on the southern part near the entrance to the project area.
- A very good rain water harvesting system is nearing completion for collecting water from roof of buildings for recharging the ground water.

The major facilities provided in the master plan include

I. Academic Complex

Administrative Block, Computer Centre, Lecture Theatre Complex, Physical Science Block, Chemical Science Block, Biological Science Block, Mathematical Science Block, Humanities Block, Common Instrumentation & Workshop, Animal House, Solvent Store.

II. Faculty Residence

Directors Bungalow, Type A, B, C, D, E Quarters, Faculty Club, Health Centre.

III. Student Hostels

M.S. Boys Hostel Cluster, Girls Hostel Cluster (M.S & Ph.D), PhD Boys, Hostel cluster, Central Dining Hall.

IV. Recreation

Sports ground, Indoor Stadium, Tennis Courts, Students Club, Coffee Shop.

V. Others

Campus School, Shopping Centre, Guest House.

VI. Engineering Services

Pump house, UG reservoir, Main receiving station & 3 other substations, Sewage Treatment Plant – 2 Nos, Effluent Treatment Plant – 1 No.

The total plinth area of academic complex proposed is 40523 sqm and residential complex is 76477 sqm totaling to 1,17,000 sqm Out of this, in the first phase Academic Complex with a plinth area of 31183 sqm and the Residential complex and other services with an area of 38188 totaling 69371 m² has been taken up. The tendered cost of Phase-I work is Rs. 253 Crores.

B. PHASE I : BALANCE CONSTRUCTION OF BUILDINGS & STRUCTURES (PHASE I BALANCE BUILDING AND DEVELOPMENT WORKS & PHASE II WORKS) IN THE CAMPUS IISER TVM

In the 26th meeting of Buildings & Works Committee on 14.11.2014, it was decided to recommend on entrusting the remaining works of Phase I and Phase II works like guest house, shopping complex, admin and lecture theatre complex to Central Public Works Department (CPWD). The MoU was entered with CPWD by IISER TVM on 15.01.2015.

M/s CES have submitted the estimates for balance works of non-priority works in Phase-I coming under the scope of CPWD. Based on these estimates supplied by CES, CPWD has invited tenders for works in hostel area and academic area. The work order for works in Hostel and the Primary were issued by the CPWD on 23.06.2015 and 01.07.2015 respectively and works are progressing.

C. PHASE-II - PACKAGE – I - WORK OF CONSTRUCTION OF HOSTELS AND DINING HALL

The work was awarded to M/s RDS Project Limited for a value of Rs. 131,22,97,959/. The contractor has started work on 05.05.2015 and is progressing steadily. The foundation works for Block A, Block B and the Dining Hall is in progress. Footing concreting of block B has been started. The work is being monitored by the department staff. The completion date is fixed as November 2017.

D. DETAILS OF COMPLETED WORKS

The following works have been completed and handed over for occupancy.

1. Chemical Science Block
2. Common Instrumentation Facility building
3. Single Bedded Hostel-1
4. Single Bedded Hostel-2
5. Double Bedded Hostel -1
6. B1 Residence
7. Primary School building
8. Water Treatment Plant
9. Main Receiving Sub Station
10. Sub Station - 4

11. Statement of Accounts

The Annual Statement of Accounts of IISER Thiruvananthapuram for the year 2014-15 consists of

Balance Sheet with Schedule forming part of Balance Sheet;

Income and Expenditure Account with supporting Schedules; and

Receipts and Payments Account

I. Grants & Receipts

A. Grants

- The unspent balance as on 01.04.2015: Rs.121.32 crore
- The grants received from MHRD during the year: Rs.155.00 crore

Capital Grant: Rs. 106.40 crore
Revenue Grant: Rs. 43.00 crore

- Total fund available for the year 2015-16:Rs. 276.32 crore

B. Revenue Receipts

The revenue of the institute from Annual Fees & Others for the year is Rs. 8.48 crore.

II. Expenditure

- The amount utilised for acquiring Capital Assets during the year:

Construction, Lab Equipment & Other Assets : Rs. 76.20 crore

- The amount utilised for Revenue Expenditure during the year:

Revenue Expenses : Rs. 42.33 crore

- Total expenditure for the year 2015-16 : Rs. 118.53 crore

III. External Projects & Fellowships

- Total grant available during the year: Rs. 12.02 crore
- Utilisation: Rs. 4.74 crore
- Unutilised balance: Rs. 7.28 crore

Separate Audit Report of the Comptroller & Auditor General of India on the accounts of the Indian Institute of Science, Education and Research, Thiruvananthapuram for the year ended 31 March 2016.

We have audited the attached Balance Sheet of Indian Institute of Science Education and Research, Thiruvananthapuram as at 31 March 2016, the Income & Expenditure Account and Receipts & Payment Account for the year ended on that date under Section 19(2) of the Comptroller and Auditor General's (Duties, Powers and Conditions of service) Act, 1971 read with section 22 of the NIT Act. These financial statements are the responsibility of the Institute's management. Our responsibility is to express an opinion on these financial statements based on our audit.

2. This Separate Audit Report contains the comments of the Comptroller & Auditor General of India (CAG) on the accounting treatment only with regard to classification, conformity with the best accounting practices, accounting standards and disclosure norms, etc. Audit observations on financial transactions with regard to compliance with the Law, Rules & Regulations (Propriety and Regularity) and efficiency –cum – performance aspects, etc., if any, are reported through Inspection Reports /CAG's Audit Reports separately.

3. We have conducted our audit in accordance with auditing standards generally accepted in India. These standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatements. An audit includes examining, on a test basis, evidences supporting the amounts and disclosure in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of financial statements. We believe that our audit provides a reasonable basis for our opinion.

4. Based on our audit, we report that:

i We have obtained all the information and explanations, which to the best of our knowledge and belief were necessary for the purpose of our audit:

ii The Balance Sheet, Income & Expenditure Account and Receipt & Payment Account dealt with by this report have been drawn up in the format approved by the Ministry of Human Resource Development, Government of India.

iii In our opinion, proper books of accounts and other relevant records have been maintained by the Indian Institute of Science Education and Research, Thiruvananthapuram as required under Regulation 16.1 forming part of Memorandum of Association of the Institute in so far as it appears from our examination of such books.

iv We further report that :

I. **BALANCE SHEET**

A. SOURCE OF FUND

(i) Current Liabilities Rs. 5161.25 lakh (Schedule-3)

(1) (a) This is understated by Rs. 22.68 lakh due to the non-provision of liability towards the work – Fabrication and erection of Structural Steel Roof for Indoor Stadium, Vithura Campus completed during

February 2016 and payment was made in April 2016. This has also resulted in understatement of Expenditure in the Income & Expenditure account to that extent.

(b) This is understated by Rs. 2.44 lakh due to non-provision for the lab consumables already supplied/ taken into stock but payment was made in April 2016. This has also resulted in understatement of expenditure to that extent.

(c) This is understated by Rs. 4.69 lakh due to non-provision of liability for equipment purchased during the period 2015-16 and taken into stock but the payment was made only in April 2016. This has resulted in understatement of expenditure to that extent.

(2) (a) This is understated by Rs. 216.97 lakh due to non-provision of liability for Online Library Journal purchased during 2015-16 and payments were effected in April 2016. This has resulted in understatement of Fixed Assets – Intangible Assets to Rs.173.58 lakh. Depreciation is also understated by Rs. 43.39 lakh.

(b)This is understated by Rs. 4.81 lakh due to non-provision of liability for the work of Providing & Fixing of Roofing Sheet for Directors' House at Vithura completed in March 2016 and payment was made in April 2016. This has resulted in understatement of Fixed Assets to Rs. 4.77 lakh. Depreciation is also understated by Rs. 4805/- in Income and Expenditure Account.

(3) The institute has been accounting the entire grant received during the year in the corpus. Thus the unutilised grant in aid amounting to Rs.15271.99 lakh (Schedule -10) was shown as part of corpus fund instead of showing the same in current liabilities due to adoption of incorrect accounting practice. This resulted in overstatement of corpus fund and understatement of current liabilities to that extent.

B. APPLICATION OF FUND

In the Annual Accounts – Schedule 4 the Work-in-progress of Lab Equipment was Rs. 4348.77 lakh whereas the figure supplied by Purchase Wing showed an amount of Rs. 5925.79 lakh being lab equipment which were not installed till date (31.3.2016). Thus there is a difference of Rs.1577.02 lakh. This has resulted in understatement of Capital Work-in-progress by Rs.1577.02 lakh and overstatement of expenditure to that extent.

C. GENERAL COMMENTS

(1) No provision for retirement benefit on the basis of actuarial valuation as prescribed in A-S- 15 was made.

(2) No provision of unutilized grant was made in current liabilities & provision.

D. GRANT -IN –AID

Out of the Grants-in-aid of Rs.158.25 crore (including Rs.1.58 crore brought forward from previous year) the Institute could utilize a sum of Rs.136.96 crore leaving a balance of Rs. 21.29 crore as unutilized Grants as on 31 March 2016.

E. Management letter:

Deficiencies which have not been included in the Audit Report have been brought to the notice of the Director, Indian Institute of Science, Education and Research, Thiruvananthapuram through a management letter issued separately for remedial/corrective action.

v. Subject to our observations in the preceding paragraphs, we report that the Balance sheet, Income & Expenditure Account and Receipt & Payment Account dealt with by this report are in agreement with the books of accounts.

vi. In our opinion and to the best of our information and according to the explanations given to us, the said financial statements read together with the Accounting Policies and Notes on Accounts, and subject to the significant matters stated above and other matters mentioned in Annexure I to this Audit Report give a true and fair view in conformity with accounting principles generally accepted in India.

a. In so far as it relates to the Balance Sheet, of the state of affairs of the Indian Institute of Science, Education and Research, Thiruvananthapuram as at 31 March 2016; and

b. In so far as it relates to Income & Expenditure Account of the deficit for the year ended on that date.

For and on behalf of the C& AG of India

Principal Director of Audit (Central),Chennai.

Place : Chennai
Date : November 2016

Annexure I

1. Adequacy of Internal Audit System:

The Internal Audit system was not adequate as physical verification of fixed assets was not conducted and inventory of assets registers were not maintained properly.

2. Adequacy of Internal Control System:

IISER has not prepared Accounting Manual. Management Information System (MIS) is also not implemented. Fixed Asset Register is not maintained in accordance with GFR provisions. Hence Internal Control System is weak.

3. System of Physical verification of Fixed Assets.

IISER is not maintaining Fixed Asset Register in conformity with the generally accepted accounting procedure as per GFR 40 & AS 10. As per the normal procedure, the Fixed Asset Register should show the details of date of deletion, depreciation rate, if an item is written off such details etc and in the case of land, details of area, type of possession, survey number, value etc. During 2015-16 period, IISER had disposed of some of the Assets. However no deletion is seen recorded in red ink in the Register.

The IISER has not carried out annual physical verification of fixed assets for the period 2015-16.

4. System of Physical verification of Inventories

The procurement was made on need basis and issued to concerned department/labs, hence physical verification of inventory doesn't happen.

5. Regularity in payment of statutory dues:

The IISER is regular in payment of statutory dues.

Dy. Director (DT)II

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH , THIRUVANANTHAPURAM

BALANCE SHEET AS AT 31ST MARCH 2016

SOURCES OF FUNDS	Amount in Rupees		
	Schedule No	2015-16	2014-15
UNRESTRICTED FUND			
CORPUS/ CAPITAL FUND	**1**	4,79,84,60,116	3,75,59,78,429
DESIGNATED/ EARMARKED FUNDS	**2**	-	-
CURRENT LIABILITIES AND PROVISIONS	**3**	51,61,25,263	48,97,28,078
UNSPENT BALANCE OF EXTERNAL PROJECTS	**3A**	7,28,21,692	6,44,49,730
TOTAL		**5,38,74,07,071**	**4,31,01,56,237**
APPLICATION OF FUNDS			
FIXED ASSETS	**4**		
TANGIBLE ASSETS		77,76,95,461	1,06,20,44,285
INTANGIBLE ASSETS		3,58,41,365	6,29,47,881
CAPITAL WORK-IN-PROGRESS		2,04,80,23,083	1,11,90,08,451
INVESTMENTS FROM EARMARKED / ENDOWMENT FUNDS	**5**	-	-
LONG TERM INVESTMENT			
SHORT TERM INVESTMENT			
INVESTMENT - OTHERS	**6**	-	-
CURRENT ASSETS	**7**	1,09,61,44,111	41,46,95,015
LOANS, ADVANCES & DEPOSITS	**8**	1,42,97,03,051	1,65,14,60,605
TOTAL		**5,38,74,07,071**	**4,31,01,56,237**
SIGNIFICANT ACCOUNTING POLICIES	**23**		
CONTINGENT LIABILITIES AND NOTES TO ACCOUNTS	**24**		

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH, THIRUVANANTHAPURAM

INCOME AND EXPENDITURE ACCOUNT

FOR THE PERIOD/YEAR ENDED 31ST MARCH 2016

PARTICULARS	Amount in Rupees		
	Schedule	2015-16	2014-15
INCOME			
Academic Reciepts	9	1,16,82,700	91,33,550
Grants & Subsidies	10	46,45,66,062	47,77,97,576
Income from Investments	11		
Interest Earned	12	67,65,462	32,93,115
Other Income	13	6,63,95,461	7,76,18,809
Prior Period Income	14		-
Depreciation Added Back due to change in adopting depreciation rates from Income Tax Act to Companies Act			
TOTAL (A)		**54,94,09,685**	**56,78,43,050**
EXPENDITURE			
Staff Payments & Benefits	15	16,85,14,409	15,01,73,305
Academic Expenses	16	15,79,28,086	11,29,86,439
Administrative & General Expenses	17	11,41,84,548	20,00,30,553
Transportation Expenses	18	1,63,37,281	97,99,613
Repairs & Maintenence	19	74,80,113	46,00,696
Finance cost	20	1,21,624	2,06,971
Other Expenses	21	-	-
Depreciation	4	14,45,23,431	5,70,42,033
Prior Period Expenses	22	-	-
TOTAL (B)		**60,90,89,492**	**53,48,39,610**
Balance being excess of Income over Expenditure (A-B)		**5,96,79,807**	**3,30,03,440**
Transfer to/ from Designated Fund			
Building Fund			
Others (Specify)			
BALANCE BEING SURPLUS/(DEFICT) CARRIED TO CAPITAL FUND		**5,96,79,807**	**3,30,03,440**
Significant Accounting Policies	23		
Contingent Liabilities & Notes on Accounts	24		

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH, THIRUVANANTHAPURAM

RECEIPTS AND PAYMENTS FOR THE PERIOD/YEAR ENDED 31.03.2016

Amount in Rupees

RECEIPTS	2015-16	2014-15	PAYMENTS	2015-16	2014-15
I. Opening Balance			I. Expenses		
a) Cash in hand			a) Establishment Expenses	162,490,139	245,633,312
b) Bank Balances			b) Academic Expenses	162,594,690	139,970,537
i) In current accounts			c) Administrative Expenses	110,657,881	243,353,714
Canara Bank	4,493	144,005,729	d) Transportation Expenses	14,764,671	14,283,182
State Bank of India					
ii) Deposit/Savings accounts			e) Repair & Maintenance Expenses	6,999,472	4,600,696
State Bank of Travancore	358,858,410	347,865,159	f) Prior period Expenses		
Canara Bank	79,306,631	475,229,970			
State Bank of India	56,315,750	28,520,006	II. Payments made against earmarked endowement funds		
Canara Bank Project A/c	78,822,993	24,824,130			
			III. Payment against Sponsored Projects	39,813,997	53,426,265
II. Grants Received					
a) From Government of India	1,550,000,000	1,494,000,000	IV. Payment against Sponsored Fellowships		
b) From State Government					
c) From other sources (details)			V. Investments and deposits made		
DST	1,685,200		a) Out of Earmarked/Endowment funds		
CSIR	13,100,213		b) Out of Own Funds (Investments-Others)		
KVPY	1,863,000	1,833,000			
UGC		13,422,041	VI. Term Deposits with Scheduled Banks		
DBT					
ICMR	79,142				
External Projects (including interest)	55,772,470	82,891,238			
			VII. Expenditure on Fixed Assets & Capital		
III. Academic Receipts	24,210,052	9,133,550	Work-in-Progress		
			Purchase of Fixed Assets and	694,439,506	560,102,726
IV. Receipts against Earmaked/ Endowment Fund			Expenditure on Capital Work-in-progress		
			VIII. Other payment including Statutory payment		
V. Receipts against Sponsored Projects					
			IX. Refunds of Grants		204,750
VI. Receipts against Sponsored Fellowships and Scholarships					
			X. Deposits & Advances	1,056,841,448	998,922,213
VII. Income on Investments from					
a) Earmarked/Endow. Funds			XI. Other payments		
b) Own Funds					
			XII. Closing Balances		
			a) Cash in hand		0
VIII. Interest Received			b) Bank Balances		
a) On Bank deposits	79,610,162	26,633,263	i) In current accounts		
b) Loans. Advances etc.			a) Canara Bank A/c	3,257	4,493
c) Saving Bank Account	6,765,462	3,293,115	b) State Bank of India	377,793	25,691,218
			ii) In deposit /savings accounts		
			a) SBT	387,994,925	358,858,410
IX. Investment encashed			b) Canara Bank	548,081,711	-79,306,631
			c) SBI	94,451,245	30,624,532
X. Term Deposits with Schedule bank encashed	990,361,299		d) Canara Bank Project A/c	65,235,180	78,822,993
XI. Other Income (Incuding prior period income)	14,931,059	18,792,343			
XII. Deposits & Advances	191,672,841	4,748,866			
XIII. Miscellaneous receips including Statutory receipts					
XIV. Any other receipts					
Total	**3,344,745,915**	**2,675,192,410**	**Total**	**3,344,745,915**	**2,675,192,410**

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH, THIRUVANANTHAPURAM

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31st MARCH 2016

SCHEDULE 3 - CURRENT LIABILITIES AND PROVISIONS		Amount in Rupees	
	Sub Sch No.	2015-16	2014-15
A. CURRENT LIABILITIES			
1. Deposits from staff			
2. Deposits from students			
3. Sundry Creditors:	1		
a) For Goods & Services		74	3,29,118
b) Others		7,30,50,882	6,48,89,317
4. Deposits Others (including EMD, Security Deposits)	2	5,28,55,960	4,02,91,546
5. Statutory Liabilities(GPF,TDS,WC TAX, CPF, GIS,NPS) :			
a) Overdue			
b) Others	3	57,80,589	9,99,988
6. Other current Liabilities	4	38,44,37,758	38,32,18,109
a) Salaries			
b) Receipts against sponsored projects			
c) Receipts against sponsored fellowships and scholorships			
d) Unutilised Grants			
e) Grants in advance			
f) Other Funds			
g) Other liabilities			
Total (A)		**51,61,25,263**	**48,97,28,078**
B. PROVISIONS			
1. For Taxation			
2. Gratuity			
3. Superannuation/Pension			
4. Accumulated Leave Encashment			
5. Trade Warranties/Claims			
6. Others (Specify)			
Total (B)		-	
Total (A+B)		**51,61,25,263**	**48,97,28,078**

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH, THIRUVANANTHAPURAM

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31ST MARCH 2016

SCHEDULE 3 (a)-ENDOWMENT FUNDS (Sponsored Projects)								
							Amount in Rupees	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Sl. No	Name of the Project	Opening Balance 2015-16		Receipts / Recoveries during the year	Total	Expenditure during the year	Total	
		Credit	Debit				Credit	Debit
1	CEFIPRA-Dr. Archana Pai-IFC/A/5504-1/2016/11	-	-	543,400	543,400	-	543,400	-
2	CSIR PROJECT OF DR. AJAY VENUGOPAL	100,000	-	988,093	1,088,093	184,223	903,870	-
3	CSIR PROJECT OF DR. TAPAS. K. MANNA		166,667	166,667	-	-	-	-
4	CSIR PROJECT OF DR. SUKHENDU MANDAL	537,497	-	195,000	732,497	1,005,310	-	272,813
5	DAE PROJECT OF DR. M. M. SHAIJUMON		168,247	-	(168,247)	64,457	-	232,704
6	DAE NBHM PROJECT OF DR. UTPAL MANNA	13,903	-	180,000	193,903	77,517	116,386	-
7	DAE PROJECT OF DR. TAPAS. K. MANNA		134,609	794,000	659,391	278,949	380,442	-
8	DBT PROJECT OF DR. KALIKA PRASAD		1,517,536	1,259,800	(257,736)	445,288	-	703,024
9	DBT PROJECT OF DR. M. M. SHAIJUMON	170,573	-	201,000	371,573	625,897	-	254,324
10	DBT PROJECT OF DR. REJI VARGHESE	8,002,595	-	1,095,700	9,098,295	1,571,872	7,526,423	-
11	DBT PROJECT OF DR. MAHESH HARIHARAN	1,415,420	-	1,178,248	2,593,668	3,108,619	-	514,951
12	DST FT DR. AYAN DATTA	136,490	-	-	136,490	-	136,490	-
13	DST FT PROJECT OF DR. K. M. SURESHAN		1,196,840		(1,196,840)	-	-	1,196,840
14	DST FT PROJECT OF DR. ANIL SHAJI	36,605	-	-	36,605	-	36,605	-

15	DST INDO-EUROPE PROJECT OF DR. K. GEORGE THOMAS		1,029,761	1,797,784	768,023	827,170	-	59,147
16	DST MPG PROJECT OF DR. ARCHANA PAI	787,899	-	387,723	1,175,622	1,141,262	34,360	
17	DST MPG PROJECT OF DR. SHANKARA NARAYANAN	60,234	-	973,475	1,033,709	532,183	501,526	-
18	DST SERB PROJECT OF DR. TAPAS. K. MANNA	-	-	-	-	139,308	-	139,308
19	DST SERB PROJECT OF DR. MAHESH HARIHARAN		385,312	1,339,778	954,466	430,538	523,928	-
20	DST SERB PROJECT OF DR. RAJEEV KINI	155,448	-	-	155,448	473,063	-	317,615
21	DST SERB PROJECT OF DR. RAMESH CHANDRANATH	25,223	-	(25,223)	-	-	-	-
22	DST SERB PROJECT OF DR. MADHU THALAKULAM	2,883,300	-	-	2,883,300	719,096	2,164,204	-
23	DST SERB PROJECT OF DR. SUKHENDU MANDAL	3,483,059	-	800,000	4,283,059	3,580,043	703,016	-
24	DST SERB PROJECT OF DR. JOY MITRA	2,733,300	-	-	2,733,300	2,292,784	440,516	-
25	DST SERI PROJECT OF DR. MANOJ NAMBOOTHIRY		1,442,063	1,886,928	444,865	284,512	160,353	-
26	DST UKIERI PROJECT OF DR. RAJEEV KINI	425,151	-	-	425,151	554,585	-	129,434
27	DST FT PROJECT OF DR. ARCHANA PAI	18	-	-	18	-	18	-
28	DST-INDO-JAPAN PROJECT OF DR. K. GEORGE THOMAS	148,893	-	-	148,893	80,160	68,733	-
29	DST-JSPS OF DR. NISHANT. K. T	37,350	-	-	37,350	-	37,350	-
30	DST-RFBR PROJECT OF DR. ULLAS KODANDARAMAIAH		741,321	61,319	(680,002)	523,277	-	1,203,279
31	DST SERB PROJECT OF DR. AJAY VENUGOPAL		9,554	500,000	490,446	435,702	54,744	-
32	DU-PONT YOUNG PROF. PROGRAMME OF DR. RAVI MARUTHACHALAM	403,241	-	1,074,467	1,477,708	183,827	1,293,881	-
33	INSPIRE FACULTY AWARD OF DR. AJAY VENUGOPAL	639,286	-	439,993	1,079,279	993,168	86,111	-

34	INSPIRE FACULTY AWARD OF DR. ULLASA KODANDARAMAIAH	657,755	-	-	657,755	446,574	211,181	-
35	IUSSTF FELLOWSHIP OF DR. MAHESH HARIHARAN	-	-	-	-	-	-	-
36	JC BOSE FELLOWSHIP OF DR. K GEORGE THOMAS	975,816	-	500,000	1,475,816	1,866,815	-	390,999
37	MAX PLANCK PROJECT OF DR. ARCHANA PAI	1,605,485	-	1,935,224	3,540,709	666,083	2,874,626	-
38	MHRD COE PROJECT OF DR. AMAL MEDHI	15,000,000	-	-	15,000,000	-	15,000,000	-
39	MPG PROJECT OF DR. SHANKARA NARAYANAN	2,248,749	-	519,711	2,768,460	2,275,256	493,204	-
40	NISSAN PROJECT OF DR. M.M. SHAIJUMON	-	-	-	-	62,580	-	62,580
41	RAMALINGA SWAMY FELLOWSHIP OF DR. RAMANATHAN NATESH		1,056,615	1,652,581	595,966	538,493	57,473	-
42	RAMALINGA SWAMY FELLOWSHIP OF DR. RAVI MARUTHACHALAM	97,633	-	1,444,000	1,841,633	2,007,061	-	165,428
43	RAMANUJAN FELLOW. OF DR. ANIL SHAJI	1,498,796	-	-	1,498,796	671,049	827,747	-
44	RAMANUJAN FELLOW OF DR. SHANKARA NARAYANAN	1,696,222	-	-	1,696,222	915,696	780,526	-
45	RAMANUJAN FELLOW. OF DR. REJI VARGHESE	1,071,488	-	-	1,071,488	401,618	669,870	-
46	RAMANUJAN FELLOW.OF DR. K. M. SURESHAN		36,851	-	(36,851)	1,727,625	-	1,764,476
47	RAMANUJAN FELLOWSHIP OF DR. JISHY VARGHESE	1,926,519	-	-	1,926,519	477,991	1,448,528	-
48	SWARNA JAYANTI FELLOWSHIP OF DR. K. M. SURESHAN	14,325,000	-	-	14,325,000	50,965	13,374,035	-
49	UGC UKIERI PROJECT OF DR. JOY MITRA	647,454	-	-	647,454	488,040	159,414	-
50	WELCOME TRUST DBT PROJECT OF DR. NISHANT K. T.	4,828,663	-	1,859,979	6,688,642	9,556,178	-	2,867,536

51	WT/ DBT PROJECT OF DR. SUNISH RADHAKRISHNAN		1,731,117	4,285,120	2,554,003	957,954	1,596,049	-
52	DBT-A1- DR. HEMA SOMANATHAN	-	-	640,000	640,000	142,474	497,526	-
53	DBT-A2- DR. HEMA SOMANATHAN	-	-	1,453,000	1,453,000	482,805	970,195	-
54	DBT-A3- DR. ULLASA KODANDARAMIAH	-	-	1,178,000	1,178,000	436,436	741,564	-
55	DST-RAMANUJAN- DR. RAVI PANT	-	-	760,000	760,000	64,865	695,135	-
56	SERB-DR. RAVI PANT	-	-	5,900,000	5,900,000	166,667	5,733,333	-
57	DST-UKIERI PROJECT OF DR. HEMA SOMANATHAN	-	-	492,000	492,000	537,482	-	45,482
58	DBT-DR. ULLASAKODANDA RAMAIAH	-	-	1,110,000	1,110,000	343,083	766,917	-
59	SERB-DR. RAMESH RASAPPAN	-	-	4,652,000	4,652,000	166,700	4,485,300	-
60	KSYSA-PROJECT- DR. MAHESH HARIHARAN	-	-	3,068,000	3,068,000	2,048	3,065,952	-
61	IUSSTF-DR. MM SHAIJUMON	-	-	508,708	508,708	222,951	285,757	-
62	SERB-DR. VINESH VIJAYAN	-	-	1,195,999	1,195,999	166,700	1,029,299	-
63	DBT- DR. KALIKAPRASAD -RESEARCH ASSOCIATESHIP PROGRAMME	-	-	3,176,000	3,176,000	-	3,176,000	-
64	RAMANUJAN FELLOW. OF DR. RAMESH RASAPPAN	-	-	760,000	760,000	60,000	700,000	-
65	DBT- IISC- MOHAMMED AIYAZ	-	-	529,381	529,381	-	529,381	-
66	KSCSTE - DR. MAHESH HARIHARAN				-	38,000	-	38,000
67	INTEREST ON SB ACCOUNT	4,991,158		2,314,616	7,305,774	7,509	7,298,265	-
	Total	**74,066,223**	**9,616,493**	**55,772,470**	**120,222,200**	**47,400,508**	**83,179,633**	**10,357,941**

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH, THIRUVANANTHAPURAM

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31ST MARCH 2016

SCHEDULE 3 (b)-SPONSORED FELLOWSHIPS AND SCHOLARSHIPS							
SSS						Amount in Rupees	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sl. No	Name of the Sponsor	Opening Balance as on 01.04.2015		Transactions during the year		Closing Balance as on 31.03.2016	
		Credit	Debit	Credit	Debit	Credit	Debit
1.	DST - INSPIRE	-	17,317,975	1,685,200	28,587,334	-	44,220,109
2.	CSIR (Ph D Research Scholars)	-	13,332,477	13,100,213	1,629,345	-	1,861,609
3.	KVPY (BSMS)	168,314		1,863,000	1,916,000	115,314	-
4.	UGC (Ph D Research Scholars)	4,326,661	-	-	9,000,705	-	4,674,044
5.	DBT (Ph D Research Scholars)	-	-	-	75,000	-	75,000
6.	ICMR (Ph D Research Scholars)	-	-	79,142	75,000	4,142	-
	Total	**4494975**	**30650452**	**16727555**	**41283384**	**119456**	**50830762**

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH, THIRUVANANTHAPURAM

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31ST MARCH 2016

SCHEDULE 3(C)- UNTILIZED GRANTS FROM UGC, GOVERNMENT OF INDIA AND STATE GOVERNMENTS	Amount in Rupees	
	2015-16	2014-15
A. Plan grants: Government of India (MHRD)		
Balance B/F	1,21,32,76,615.00	72,37,22,228.00
Add: Receipts during the year	1,55,00,00,000.00	1,49,40,00,000.00
Total (a)	2,76,32,76,615.00	2,21,77,22,228.00
Less Refunds		
Less: Utilized for Revenue Expenditure	42,32,82,678.00	44,43,42,887.00
Less: Utilized for Capital Expenditure	76,20,82,722.00	56,01,02,726.00
Total (b)	1,18,53,65,400.00	1,00,44,45,613.00
Unutilized carried forward (a-b)	**1,57,79,11,215.00**	**1,21,32,76,615.00**
B. UGC Grants: Plan		
Balance B/F		
Add: Receipts during the year		
Total (c)	NIL	NIL
Less Refunds		
Less: Utilized for Revenue Expenditure		
Less: Utilized for Capital Expenditure		
Total (d)	NIL	NIL
Unutilized carried forward (c-d)		
C. UGC Grants Non-Plan		
Balance B/F		
Add: Receipts during the year		
Total (e)	NIL	NIL
Less Refunds		
Less: Utilized for Revenue Expenditure		
Less: Utilized for Capital Expenditure		
Total (f)	NIL	NIL
Unutilized carried forward (e-f)		
D. Grants from State Govt.		
Balance B/F		
Add: Receipts during the year		
Total (g)	NIL	NIL
Less Refunds		
Less: Utilized for Revenue Expenditure		
Less: Utilized for Capital Expenditure		
Total (h)	NIL	NIL
Unutilized carried forward (g-h)		
Grand Total (A+B+C+D)	**1,57,79,11,215.00**	**1,21,32,76,615.00**

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH , THIRUVANANTHAPURAM

SCHEDULES FORMING PART OF BALANCESHEET AS AT 31st MARCH 2016

SCHEDULE 4 - FIXED ASSETS (PLAN)												
Sl. No	DESCRIPTION	GROSS BLOCK				DEPRECIATION					NET BLOCK	
		Opening Balance as on 01.04.2015	Additions	Deductions	Closing Balance	Rate of Depreciation	Opening Balance	Depreciation for the year	Deductions / Adjustment	Total Depreciation	31.03.2016	31.03.2015
	TANGIBLE ASSETS											
1	**LAND:**											
	a) Freehold											
	Land obtained from Govt	1			1	0.00%					1	1
	Vithura	954,506			954,506	0.00%					954,506	954,506
2	Site Development											
3	BUILDINGS:	95,273,628	34,484,515		129,758,143	2.00%	5,838,056	3,747,830		9,585,886	120,172,257	89,435,572
4	Roads & Bridges					2.00%		-				
5	Tubes & Water Supply					2.00%		-				
6	Sewage & Drainage					2.00%		-				
7	Electrical Installation and equipment	14,465,413	2,866,114		17,331,527	5.00%	2,406,432	1,160,452		3,566,884	13,764,643	12,058,981
8	Plant and Machinery	31,961,989	5,256,292	78,385	37,139,896	5.00%	3,719,659	2,273,769	7,643	5,985,785	31,154,111	28,242,330
9	Scientific & Laboratory Equipment	1,008,521,681	52,758,184	341,224,407	720,055,458	8.00%	153,513,684	106,152,833	56,027,282	203,639,235	516,416,223	855,007,997
10	Office Equipment					7.50%		-				
11	Audio Visual Equipment					7.50%		-				

12	Computers & Peripherals	48,660,812	17,080,202	1,077,860	64,663,154	20.00%	18,580,708	11,465,436	851,816	29,194,328	35,468,826	30,080,104
13	Furniture, Fixtures and Fittings	42,336,863	19,017,060		61,353,923	7.50%	9,109,495	5,184,177		14,293,672	47,060,251	33,227,368
14	Vehicles	711,323			711,323	10.00%	330,088	66,925		397,013	314,310	381,235
15	Library Books & Scientific Journals	18,640,802	2,195,445	6,000	20,830,247	10.00%	5,984,611	2,456,443	1,140	8,439,914	12,390,333	12,656,191
16	Small Value Assets											
	TOTAL(A)	**1,261,527,018**	**133,657,812**	**342,386,652**	**1,052,798,178**		**199,482,733**	**132,507,865**	**56,887,881**	**275,102,717**	**777,695,461**	**1,062,044,285**
17	CAPITAL WORK-IN PROGRESS - Construction										**1,613,145,862**	**1,119,008,451**
	CAPITAL WORK-IN PROGRESS -Lab Equipment										**434,877,221**	-
	CAPITAL WORK IN PROGRESS(B)										**2,048,023,083**	**1,119,008,451**
	TOTAL A+B										**2,825,718,544**	**2,181,052,736**

Sl. No.	INTANGIBLE ASSETS	GROSS BLOCK				DEPRE-CIATION	NET BLOCK					
		Opening Balance as on 01.04.2015	Additions	Deductions	Closing Balance	Rate of Depreci-ation	Opening Balance	Amortiza-tion for the year	Deductions / Adjustment	Total Amortization / Adjustments	31.03.2016	31.03.2015
18	Computer Software	13,615,140	1,248,396		14,863,536	40.00%	12,869,804	1,244,694		14,114,498	749,038	745,336
19	E-Journals	201,658,814	40,568,472	19,937	242,207,349	40.00%	139,456,269	67,671,513	12,760	207,115,022	35,092,327	62,202,545
20	Patents					9 Years						
	TOTAL -(C)	**215,273,954**	**41,816,868**	**19,937**	**257,070,885**		**152,326,073**	**68,916,207**	**12,760**	**221,229,520**	**35,841,365**	**62,947,881**
	GRAND TOTAL (A+B+C)	**1,476,800,972**	**175,474,680**	**342,406,589**	**1,309,869,063**	**-**	**351,808,806**	**201,424,072**	**56,900,641**	**496,332,237**	**2,861,559,909**	**2,244,000,617**

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH, THIRUVANANTHAPURAM

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31ST MARCH 2016

SCHEDULE 7- CURRENT ASSETS	Amount Rupees		
-	Sub Sch. No.	2015-16	2014-15
1. Stock			
a) Stores and Spares			
b) Loose Tools			
c) Publications			
d) Laboratory Chemicals, consumables and glass wares			
e) Building materials			
f) Electrical materials			
g) Stationery			
h) Water supply material			
2. Sundry Debtors:			
a) Debts Outstanding for a period exceeding six months			
b) Others			
3. Cash balances in hand (including cheques/drafts and imprest)	4	-	-
4. Bank Balances:			
Institute balance			
a) With Scheduled Banks:			
- On Current Accounts	5	381,050	25,695,711
- On Term Deposit Accounts (includes margin money)	5	676,917,528	560,257,282
- On Savings Accounts	5	353,610,353	(250,080,971)
b) With non-Scheduled Banks:			
- On Current Accounts			
- On Term Deposit Accounts			
- On Savings Accounts			
Project Balance			
a) With Scheduled Banks:			
- On Current Accounts			
- On Term Deposit Accounts (includes margin money)		4,146,218	
- On Savings Accounts		61,088,962	78,822,993
b) With non-Scheduled Banks:			
- On Current Accounts			
- On Term Deposit Accounts			
- On Savings Accounts			
5. Post Office- Savings Accounts			
TOTAL		**1,096,144,111**	**414,695,015**

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH, THIRUVANANTHAPURAM

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31ST MARCH 2016

SCHEDULE 8- LOANS, ADVANCES & DEPOSITS	Amount Rupees		
-	Sub Sch. No.	2015-16	2014-15
1. Advances to employees: (Non interest bearing)			
a) Salary			
b) Festival			
c) Medical Advance			
d) Other (to be specified)			
2. Long Term Advances to employees: (Interest bearing)			
a) Vehicle Loan			-
b) Home Loan			
c) Others (to be specified)			
3. Advances and other amounts recoverable in cash or in kind or for value to be received			
a) On Capital Account			
b) To suppliers			
c) Others	7	1,301,542,957	1,144,194,601
4. Prepaid Expenses			
a) Insurance			
b) Other Expenses	6	12,792,918	27,157,561
5. Deposits			
a) Telephone			
b) Lease Rent			
c) Electricity			
d) AICTE, if applicable			
e) Others (to be specified)			
6. Income Accrued:			
a) On Investments from Earmarked/ Endowment Funds			
b) On Investments-Others			
c) On Loans and Advances			
d) Others (includes income due unrealized-Rs……)	8	16,672,399	69,239,172
7. Other Current Assets Recievables			
a) Debit balances in sponsered projects			
b) Debit balances in fellowship & scholarships			
c) Grants recoverable			
d) Other recievables			
8. Claims Receivable	9	98,694,777	410,869,271
TOTAL		**1,429,703,051**	**1,651,460,605**

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH THIRUVANANTHAPURAM

SCHEDULES FORMING PART OF INCOME AND EXPENDITURE ACCOUNT FOR THE PERIOD/YEAR ENDED 31st MARCH 2016

SCHEDULE 9- ACADEMIC RECEIPTS	Amount of Rupees	
	2015-16	2014-15
FEE FROM STUDENTS		
Acadamic		
a) Tuition fee	98,11,950	75,35,350
b) Admission fee		
c) Enrolment fee		
d) Library fee	3,55,200	3,14,100
e) Laboratory fee		
f) Art & Craft fee		
g) Registration fee	2,42,000	2,16,400
h) Syllabus fee		
i) Other Receipts	7,38,050	5,73,700
TOTAL (A)	1,11,47,200	86,39,550
Examinations		
a) Admission test fee		
b) Annual examination fee	4,52,400	4,13,450
c) Mark sheet, Certificate fee		
d) Entrance Examination fee		
TOTAL (B)	4,52,400	4,13,450
Other Fee		
a) Identity Card fee		
b) Fine/ Miscellaneous fee		
c) Medical fee	64,100	57,050
d) Transportation fee		
e) Hostel Fee	19,000	23,500
TOTAL (C)	83,100	80,550
Sale of publications		
a) Sale of admission forms		
b) Sale of syllabus and question paper		
c) Sale of prospectus including admission forms		
TOTAL (D)		
Other Accademic Receipts		
a) Registration fee for workshops programmes		
b) Registration fees (Academic Staff College)		
GRAND TOTAL (A+B+C+D)	**1,16,82,700**	**91,33,550**

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH THIRUVANANTHAPURAM

SCHEDULES FORMING PART OF INCOME AND EXPENDITURE ACCOUNT FOR THE PERIOD/YEAR ENDED 31st MARCH 2016

SCHEDULE 10- GRANTS/ SUBSIDIES		Amount of Rupees	
		2015-16	2014-15
(Irrevocable Grants & Subsidies Received)			
Balance B/F		1,18,71,21,138	71,57,66,399
ADD: Receipts During the Year			
Capital Grant		1,55,00,00,000	1,49,40,00,000
General	82,15,00,000		
SC	15,90,00,000		
ST	7,95,00,000		
Revenue Grant			
General	37,97,50,000		
SC	7,35,00,000		
ST	3,67,50,000		
DST - INSPIRE (Ph D / BSMS)		16,85,200	
CSIR (Ph D Research Scholars)		1,31,00,213	
KVPY (BSMS)		18,63,000	18,33,000
UGC (Ph D Research Scholar)			1,34,22,041
DBT			
ICMR		79,142	
DST - INSPIRE		-	-
		2,75,38,48,693	**2,22,50,21,440**
Less: Capital Expenses Incurred during the year		76,20,82,722	56,01,02,726
Less: Closing Unspent balance of grant		1,52,71,99,909	1,18,71,21,138
		46,45,66,062	**47,77,97,576**
TOTAL		**46,45,66,062**	**47,77,97,576**

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH THIRUVANANTHAPURAM

SCHEDULES FORMING PART OF INCOME AND EXPENDITURE ACCOUNT FOR THE PERIOD/YEAR ENDED 31st MARCH 2016

SCHEDULE 12- INTEREST EARNED	Amount of Rupees	
Particulars	**2015-16**	**2014-15**
1) On Savings Accounts with scheduled banks	6,765,462.00	3,293,115.00
2) On Loans		
a. Employees/ Staff		
b. Others		
3) On debtors and others receivables		
TOTAL	**6,765,462.00**	**3,293,115.00**

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH THIRUVANANTHAPURAM

SCHEDULES FORMING PART OF INCOME AND EXPENDITURE ACCOUNT FOR THE PERIOD/ YEAR ENDED 31st MARCH 2016

SCHEDULE 13 - OTHER INCOME	Amount of Rupees	
	2015-16	2014-15
A. Income from Land & Building		
a) Hostel room rent	2,152,500	1,932,000
b) License fee	502,700	325,150
c) Hire charges of Auditorium/ Play ground/ Convention Centre, Etc		
d) Electricity Charges recovered	717,500	641,500
e) Water Charges recovered		
Total	**3,372,700**	**2,898,650**
B. Sale of Institutes Publications		
Total	-	-
C. Income from Holding Events		
a) Gross reciepts from annual function/ sports carnival		
Less: Direct expenditure incurredon the annual function/ sports carnival		
b) Gross reciepts from fetes		
Less: Direct expenditure incurred on fetes		
c) Gross reciepts on educational tours		
Less: Direct expenditure incurred on tours		
d) Others (to be specify and separately disclosed)		
Total	-	-
D. Interest On Term Deposits:		
a) With Scheduled Banks	47,287,237	66,160,012
b) With Non-Scheduled Banks		
c) With Institutions		
d) Others		
Total	**47,287,237**	**66,160,012**
E. Interest On Savings Accounts:		
a) With Scheduled Banks		
b) With Non-Scheduled Banks		
c) With Institutions		
d) Others		
Total	-	-
F. On Loans:		
a) Employees/Staff		
b) Others	9,686,622	44,721
Total	**9,686,622**	**44,721**
G. Interest on Debtors and Other Receivables		
Total	-	-
H. Others		
a) Income from consultancy		
b) RTI Fees	1,573	160
c) Income from royalty		
d) Sale of application form	141,929	2,600
e) Misc. reciepts (Sale of tender form, waste paper, etc.)	5,905,400	8,512,666
f) Profit on sale/ disposal of Assets		
1. Owned asset		
2. Assets aquired out of grants, or received free of cost		
g) Other Incomes		
Total	**6,048,902**	**8,515,426**
GRAND TOTAL (A+B+C+D+E+F+G+H)	**66,395,461**	**77,618,809**

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH THIRUVANANTHAPURAM

SCHEDULES FORMING PART OF INCOME AND EXPENDITURE ACCOUNT FOR THE PERIOD/ YEAR ENDED 31st MARCH 2016

SCHEDULE 15- STAFF PAYMENT & BENEFITS	Amount of Rupees	
	2015-16	2014-15
a) Salaries and Wages	153,815,280	115,089,645
b) Allowances and Bonus	2,184,746	3,498,580
c) Contribution to Provident Fund		
d) Contribution to Other Fund (Leave Salary & NPS Employer Share)	8,783,505	27,195,058
e) Staff Welfare Expenses		
f) Retirement and Terminal Benefits		
g) LTC facility	1,292,048	1,497,641
h) Medical facility	1,289,605	1,889,106
i) Children Education Allowance	939,163	815,170
j) Honorarium		
k) Others (Leave Salary)	210,062	188,105
TOTAL	**168,514,409**	**150,173,305**

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH THIRUVANANTHAPURAM

SCHEDULES FORMING PART OF INCOME AND EXPENDITURE ACCOUNT FOR THE PERIOD/ YEAR ENDED 31st MARCH 2016

SCHEDULE 16- ACADEMIC EXPENSES	Amount of Rupees	
Particulars	2015-16	2014-15
a) Laboratary Expenses	73,660,991	55,779,507
b) Field Work/ Participation	506,962	272,633
c) Expenses on Seminar/ Workshop		
d) Payment to visiting faculty		
e) Examination		
f) Student welfare expense		
g) Admission expenses	212,620	179,591
h) Convocation expense	935,104	712,976
i) Publication		
j) Stipend/ means-cum-merit scholarship	82,612,409	56,041,732
k) Subscription Expense		
l) Others (Specify)		
TOTAL	**157,928,086**	**112,986,439**

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH THIRUVANANTHAPURAM

SCHEDULES FORMING PART OF INCOME AND EXPENDITURE ACCOUNT FOR THE PERIOD/ YEAR ENDED 31st MARCH 2016

SCHEDULE 17- ADMINISTRATIVE AND GENERAL EXPENSES	Amount of Rupees	
Particulars	2015-16	2014-15
A. Infrastructure		
a) Electricity and power	16,521,354	128,038,448
b) Water charges	2,031,248	1,024,358
c) Insurance	-	-
d) Rent, Rates and Taxes	49,562,414	33,250,653
B. Communication		
e) Postage & Telegram	777,778	615,315
f) Telephone and Internet Charges	1,250,324	2,145,841
C. Others		
g) Printing and Stationary	4,749,532	2,741,617
h) Travelling and Conveyance Expenses	4,041,665	4,919,245
i) Expenses on Seminar/Workshops	10,180,626	6,994,356
j) Hospitality		
k) Auditors Remuneration	262,859	201,960
l) Professional Charges		
m) Advertisement and Publicity	2,668,991	6,978,220
n) Magazine & Journals		
o) Others (specify)		
Sports / Cultural Festival / Celeberation expense	1,384,633	1,220,533
Consumables	839,041	647,519
Contingencies	3,532,022	1,598,744
Cable TV Charges	120,774	57,250
Newspaper & Periodicals	143,106	125,599
Office contingencies	2,685,095	3,808,183
Software License fees	5,029,539	839,489
Photography Charges	21,860	24,815
Guest house and other expenses	678,482	639,446
Miscellaneous expenses		
Gardening & Landscaping Chages	483,790	15,750
Other Adminstrative / Miscellaneous Expenses	1,071,570	3,205,721
Permananent Campus Inaguration expenses	4,866,600	
Anvesha Programme Expenses	232,038	
Legal and consultancy charges	1,049,207	937,490
TOTAL	**114,184,548**	**200,030,553**

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH THIRUVANANTHAPURAM

SCHEDULES FORMING PART OF INCOME AND EXPENDITURE ACCOUNT FOR THE PERIOD/ YEAR ENDED 31st MARCH 2016

SCHEDULE 18- TRANSPORTATION EXPENSES	Amount of Rupees	
	2015-16	2014-15
1. Vehicles (owned by educational institution)		
a) Running expense	203,500	83,165
b) Repairs & Maintanence	16,269	42,038
c) Insurance Expenses	13,585	8,412
2. Vehicles taken on rent		
a) Rent/ Lease expenses	16,103,927	9,665,998
3. Vehicle (Taxi) Hiring expenses		
TOTAL	**16,337,281**	**9,799,613**

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH THIRUVANANTHAPURAM

SCHEDULES FORMING PART OF INCOME AND EXPENDITURE ACCOUNT FOR THE PERIOD/YEAR ENDED 31st MARCH 2016

SCHEDULE 19- REPAIRS & MAINTANENCE	Amount of Rupees	
	2015-16	2014-15
a) Building		213,125
b) Furniture & Fixtures		
c) Plant & Machinary	7,480,113	4,387,571
d) Office Equipments		
e) Computers		
f) Laboratory & Scientific equipment		
g) Audio Visual equipment		
h) Cleaning Material & Services		
i) Book binding charges		
j) Gardening		
k) Estate Maintenance		
f) Others (Specify)		
TOTAL	7,480,113	4,600,696

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH THIRUVANANTHAPURAM

SCHEDULES FORMING PART OF INCOME AND EXPENDITURE ACCOUNT FOR THE PERIOD/ YEAR ENDED 31st MARCH 2016

SCHEDULE 20- FINANCE COSTS	Amount of Rupees	
	2015-16	2014-15
a) Bank Charges	121,624	206,971
b) Others (specify)		
TOTAL	**121,624**	**206,971**

SCHEDULE 23 - SIGNIFICANT ACCOUNTING POLICIES

1. Basis for preparation of Accounts:

The Annual Accounts of the institute are prepared on the basis of revised format and guidelines issued by the Ministry of Human Resource Development, Government of India and approved by the C&AG of India for all Central Educational Institutes w.e.f. FY 2014-15 (Communicated vide Lr.No.29-4/2012-IFD dated 17.04.2015 of MHRD, GOI).

2. Accounting Convention:

The financial statements are prepared on the basis of Historical Cost Convention unless otherwise stated and generally on the accrual method of accounting.

3. Revenue Recognition:

Admission fees, Tuition Fees and other fees received from students are accounted on accrual basis.
Interest on Fixed Deposits has been credited in the accounts on accrual basis.
No interest bearing advances for House Building, Purchase of Vehicles etc., has been sanctioned to staff to the said period.

4. Fixed Assets and Depreciation

The fixed assets are valued at cost of acquisition and inclusive of inward freight, duties, taxes, incidental and direct expenses related to acquisition.
No fixed asset has been received directly by way of non-monetary grant during the year under consideration.
The land at Jersey Farm, Vithura Nedumangad Taluk, Thiruvananthapuram District has been given by the Government of Kerala at no cost, hence the same has been shown at nominal value of Rs.1/- in Annual Account.
No gifted/donated assets and Books have been received during the year under consideration.
Fixed Assets are valued at cost less accumulated depreciation. No change has been made in the method and depreciation on fixed assets has been provided on Written Down Value Method at the following rates:

Tangible Assets:

1.	Land	0%
2.	Site Development	0%
3.	Buildings	2%
4.	Roads and Bridges	2%
5.	Tube wells and water supply	2%
6.	Sewerage and Drainage	2%
7.	Electrical installation and equipment	5%
8.	Plant and Machinery	5%

9.	Scientific and Laboratory Equipment	8%
10.	Office Equipment	7.5%
11.	Audio Visual Equipment	7.5%
12.	Computer and Peripherals	20%
13.	Furniture, Fixtures and Fittings	7.5%
14.	Vehicles	10%
15.	Library Books and Scientific Journals	10%

Intangible Assets (Amortization)

1.	E-Journals	40%
2.	Computer Software	40%
3.	Patents and Copyrights	9 Years

Depreciation is provided for the whole year on additions during the year for acquisition period of six months and above and for half year on additions for acquisition period of less than six months.

Where an asset is fully depreciated, it will be shown at a residual value of Rs.1/- in the Balance Sheet and will not be further depreciated.

Assets created out of Earmarked Funds and Funds of Sponsored Projects where the ownership of such assets vests in the Institution will be setup by credit in Capital Fund and merged with the Fixed Assets of the institution. Depreciation will be charged at the rates applicable to the respective assets. However no such assets are there at present.

Patents, copyrights and E Journals are grouped under intangible assets.

Electronic Journals (E-Journals) are separated from Library Books in view of the limited benefit that could be derived from the on-line access provided. E-Journals are not in a tangible form, but temporarily capitalized in view of the magnitude of expenditure and the benefit derived in terms of perpetual knowledge acquired by the Academic and Research Staff. Depreciation is provided in respect of E-Journals at a higher rate of 40% as against depreciation of 10% provided in respect of Library Books.

Software and Computer Peripherals are being shown under the Fixed Assets.

Stocks:

Expenditure on purchase of Chemicals, Lab ware, Office Consumables, Publications and other consumable items are accounted as revenue expenditure. Such items issued to Labs are treated as consumed and hence closing stock is taken as NIL.

Retirement Benefits:

All employees of the Institute are covered under the New Pension Scheme. As such no provision has been made for pension, however suitable provision on the basis of actuarial valuation has been made for the Earned Leave Encashment.

No long term or Short Term Investments are made by the institute in Government Securities, Bonds, Debentures and Shares.

Corpus / Earmarked / Designated Endowment Funds:

The funds of the institute are classified into following categories:

1. Corpus / Capital Fund: It refers to fund contributed by Government for establishment and activities of the institute. Corpus fund is the main fund of the institute and it denotes a permanent fund kept for the existence of the institute. The additions to this fund are Grants from Government to the extent utilised for Capital Expenditure. Assets purchased out of earmarked funds and sponsored project funds and excess of income over expenditure transferred from Income and Expenditure account.

Government Grants:

Plan grants received from Government are accounted on accrual basis.

To the extent utilised towards capital expenditure, Government Grants are transferred to the Capital Fund.

Unutilised Government Grants are shown as Liability in Balance Sheet.

Sponsored Projects:

The amount received under Sponsored Projects has been separately shown in Schedule 3 A.

The fellowships and scholarships funded by the UGC, CSIR, DST INSPIRE etc., are also shown separately in Schedule 3B

The Fellowships and Scholarships provided by the institute itself are accounted as Academic expenses.

Income Tax:

The income of the institute is exempt from Income Tax under Section 10 (23c) of the Income Tax Act 1961. Therefore, no provision for tax is made in the accounts.

SCHEDULE 24 – CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS

The financial statement of the institute is prepared in three parts:

i) Receipt and Payment Account

ii) Income and Expenditure Account

iii) The Balance Sheet.

The Receipts and Payments Account consists of the figures of actual receipts and payments of the institute during the financial year 2015-16 as per Cash Book. The total receipts from the different sources as shown in Receipt and Payment Account comes to Rs. 3,34,47,45,915/- Which inter alia includes grant of Rs.155 crore received from Ministry of Human Resource Development and the total receipts towards Fees, interests and other resources of Rs. 1,79,47,45,915/-.

The Income and Expenditure Account is prepared on accrual basis. The total income during the financial year was Rs. 54,94,09,681/-.

In Balance Sheet the acquired fixed assets, current assets are taken as assets while the Corpus Fund, Designated Fund, Endowment Funds, balance of Sponsored Projects and Grants received from Government and Current Liabilties etc are shown in respective Schedules under Sources of Funds / Liabilities.

Figures in Final Accounts have been rounded off to the nearest rupee.

Schedule 1 to 22 are annexed and they form an integral part of Annual Accounts.

The details of balances in Saving Bank, Current Accounts and in Fixed Deposit Accounts are given in Schedule 7 of the Balance Sheet.

The unutilized grant shown under Schedule 3(C) Plan Grants from MHRD is Rs.157.79 cr. out of which Rs.131.43 crore has been paid as advance including Rs.96.65 crore payment made to CPWD as Deposit work for Phase I construction of IISER Permanent Campus vide Balance Sheet Sub Schedule 7. Hence physical unspent balance as on 01.04.2016 is Rs.26.36 crore.

Sponsored Project Accounts:

The institute has received grants from DST, DBT, CSIR, UGC etc., in Research and Development (R&D) Projects. A separate bank account is maintained for Sponsored R & D Projects. The transactions in Sponsored Projects and Project wise closing balances are being shown in Schedule 3(A) of the Balance Sheet.

Capital Works-in-Progress:

The construction work of institute's permanent campus situated at Jersey Farm, Vithura is under progress and expenditure related to the same is shown under Schedule 4 (Fixed Assets) of the Balance Sheet. The expenditure on capital work-in-progress as at 31.03.2016 was of Rs. 2,04,80,23,083/- out of which construction is Rs.1,61,31,45,862/- and uninstalled equipment procured during the period is Rs. 43,48,77,221/-.

The unutilised grant shown under Schedule 3(C) Plan Grants from MHRD is Rs.123.64 crore out of which Rs.130.15 crore has been paid as advance including Rs.96.65 crore payment made to CPWD as Deposit work for Phase I Construction of IISER Permanent Campus vide Balance Sheet Sub Schedule 7.

The treatment of Project Grant and its Utilisation is on Cash Basis.

The NPS Accounts are maintained by NSDL. Hence relevant schedule prescribed in the format are not applicable to the institute accounts.

GPF is not applicable to the institute employees. Hence GPF accounts schedule has not been prepared.