

ANNUAL REPORT 2013-14



INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH
THIRUVANANTHAPURAM
CET CAMPUS, THIRUVANANTHAPURAM-695 016

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CONTENT

Preface

1	Preamble	7
	Introduction	
	Board of Governors	
	Finance Committee	
	Building and Works Committee	
	Senate	
2	Human Resources	9
	Faculty	
	Visiting Faculty	
	Administrative and Support Personnel	
3	Academic Programmes and Students	16
4	Research and Development Activities	17
	New Sponsored Projects	
	Ongoing Sponsored Projects	
	Completed Sponsored Projects	
	Patents Filed	
5	Research Publications	24
	Journal Articles	
	Conference Articles	
6	Awards and Honours	28
7	Other Academic Activities	28
	Conferences and Workshops Attended	
	Invited Lectures and Seminars Delivered	
	Foundation Day and Science Day Lecture	
	Colloquia	
	Seminars	
	Short Term Courses Organised	
	Seminars/Workshops/Conferences Organised	
	Student's Achievements	
	Summer Programme	
8	Facilities	44
	Laboratory	
	Library	
	Computing and Networking Facility	
	Hostels	
9	Sports and Cultural Activities	47
10	Permanent Campus	49
11	Statement of Accounts	50

PREFACE

Prof. V. Ramakrishnan
Director

01-11-2014

With immense pleasure I present this Annual Report, which gives an account of what has been accomplished at Indian Institute of Science Education and Research Thiruvananthapuram (IISER-TVM) during the Financial Year 2013-2014.

Indian Institutes of Science Education and Research (IISERs) were established by Government of India, to provide high quality education in modern science, and integrating education with outstanding research at the undergraduate level. IISER-TVM started functioning in 2008. In the presence of academic leaders, with great pride, IISER-TVM community held the first convocation this year on April 24th, 2013, awarding BS-MS dual degrees to first batch of ten students. Many of these students are continuing their higher education in renowned institutions in India and abroad. Dr. Viswa Mohan Katoch, Chairman, Board of Governors declared the convocation open and Professor C. N. R. Rao graced the occasion as chief guest

Like previous years, this year also, we have been able to attract talented young faculty members and increased number of students to our academic programs. At the end of financial year the institute has faculty strength of 42: (Professor: 3, Associate Professor: 1, and Assistant Professor: 38) and 36 administrative staff. In addition to regular faculty, we have 15 guest faculty helping with teaching. The total strength of students is 547 with 411 in BS-MS Programme, 24 in Integrated Ph.D. Programme and 112 in Ph.D Programme.

We have expanded the infrastructure facility in and around the transit campus at the College of Engineering, Trivandrum to 13 hostels, 8 class rooms, and several teaching and research laboratories.

During this year changes occurred at the highest level of administration with new Director and Registrar taking the charge. At the end of his tenure, our founding Director, Professor E. D. Jemmis was repatriated to Indian Institute of Science, Bangalore. The Registrar, Bharat Jyoti went back to his parent organization, Indian Forest Service. Currently Mr. M. Radhakrishnan is serving as the Registrar.

The faculty members of our institute are committed to conducting research in the frontier areas of science and were able to procure extramural funding to the tune of Rs. 22 crores from different funding agencies within India and abroad. Much recognition was conferred on our faculty members including the Ramanujan Fellowship, the Ramalingaswamy Fellowship, the Wellcome Trust-DBT Fellowship and the DST-INSPIRE Faculty Fellowship. For their academic accomplishments, our faculty members were conferred with many awards. Professor E. D. Jemmis was conferred the Padma Shri earlier this year, and our Dean of Academics, Professor K. George Thomas was awarded the J.C. Bose National Fellowship. Some of the other recognitions include INSA Young Scientist Award, the DAE Young Scientist Award and the Kerala State Young Scientist Award.

IISER-TVM imparts rigorous academic and research training to its students. The strong interdisciplinary nature of the coursework in the first two years helps the students to pursue research in emerging areas as well as core areas in all four disciplines. Many of our BS-MS students have received national recognitions and international exposure. I am extremely happy to note that five of our graduating students are placed in the top 20 ranks of UGC-CSIR JRF examination and three of them – Ajai Pulianmackal, Jishnu Nampoothiri and Mano Vikash have been awarded the prestigious Shyama Prasad Mukherjee Fellowship of CSIR. Outgoing students have brought another significant honor-seven of our students are placed in the top 50 of JEST, another national examination-five in Physics and two in Theoretical Computer Science. This includes the national topper in Physics, Krishnanand Mallayya. These results are a testimony of the training that we offer to our students.

Our students have represented India at various delegations abroad. Three of our students were among the 22 selected to be part of the Indian contingent at the 63rd Lindau Meeting of Nobel Laureates held last June. Two of our students also represented India at the 7th Asian Science Camp in Jerusalem in August. Six of our students were selected for the German Academic Student Exchange Programme (DAAD-WISE) and the S. N. Bose Fellows Programme.

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 stellar performance in inter IISER sports event and won medals and achieved the second place in both the overall athletics events and the sports events. On the cultural front too, our institute students have won laurels in National Quiz competition, Hindi essay writing competition, and singing and dancing performances. In addition, faculty and students take an active interest in science outreach activities as well. On the occasion of National Science Day, we conducted a science quiz competition for high school students, and our undergraduate students organised a “Science Show” which captivated the interest of all participants.

On behalf of IISER-TVM, I would like to express our gratitude to the Ministry of Human Resource Development, Government of India for their unstinted support and Government of Kerala for their unwavering assistance. I am indebted to chairman and members of the Board of Governors and other statutory bodies for their effective advice and guidance.

Preamble

1. Introduction

The Indian Institutes of Science Education and Research were established by Government of India between 2006 and 2008 at Kolkata, Pune, Mohali, Bhopal and Thiruvananthapuram with the objectives mainly related to capacity enhancement for producing high caliber 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 Board of Governors of Indian Institute of Science Education and Research has been reconstituted in accordance with the provisions of amendment of NIT act 2012. The members of the BoG are as follows:-

Chairman

Dr. V. M. Katoch, Director General, ICMR & Secretary to Govt. of India, Department of Health Research, Ministry of Health & Family Welfare

Members

Secretary, Department of Higher Education, MHRD, GOI (ex-officio)

Director, IISER-TVM (ex-officio)

Director, Indian Institute of Science, Bangalore (ex-officio)

Director, Indian Institute of Technology, Madras (ex-officio)

Secretary, Department of Science & Technology, GOI

Secretary, Department of Space, GOI

Cheif Secretary, Govt. of Kerala (ex-officio)

Prof. K. George Thomas, IISER-TVM

Prof. M. S. Gopinathan, IISER-TVM

Financial Advisor, MHRD, Govt. of India (ex-officio)

Registrar, IISER-TVM (Secretary)

The board met on 03.06.2013 and 28.10.2013 during the year 2013-14.

Finance Committee

Chairman

Chairman, Board of Governors, IISER-TVM (ex-officio)

Members

Director, IISER-TVM (ex-officio)

Additional Secretary, Technical Education, Dept. of Higher Education, MHRD, GOI (ex-officio)

Joint Secretary & Financial Advisor, Dept. of Higher Education, MHRD, GOI (ex-officio)

Director, Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram

Prof. K. George Thomas, IISER-TVM

Secretary: Registrar, IISER-TVM

The finance committee met on 03.06.2013 and 28.10.2013 during 2013-14.

Building and Works Committee

Chairman

Director, IISER-TVM (ex-officio)

Members

Shri. P. A. Prabhakaran, Chief Consultant- Constructions, IISER-TVM

Prof. K. George Thomas, IISER-TVM

Prof. RavindraGettu, Department of Civil Engineering, IIT-Madras, Chennai

Shri. V. R. Rengaswamy, Head EM&C, NCBS-TIFR, Department of Atomic Energy, Govt. of India

Registrar, IISER-TVM (ex-officio)

Secretary

Project Engineer-cum-Estate Officer, IISER-TVM (ex-officio)

The Building & Works committee met on 24.4.2013, 30.5.2013, 21.9. 2013, 24.10.2013, 27.12. 2013 and 19.2.2014 during 2013-14.

Senate

The Senate of the institute was constituted under the provisions of section 14 of National Institute of Technology (Amendment) Act 2012. The details of members of Senate are as follows:

Chairman

Director, IISER-TVM (ex-officio)

Members

Prof. Vijayalakshmi Ravindranath, Chairperson, CNS, IISc, Bangalore

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

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

Prof. R. Balasubramanian, Director, Institute of Mathematical Sciences, Chennai

Prof. V. Balakrishnan, Dept. of Physics, IIT-M, Chennai

Prof. Umesh Varshney, Dept. of MCB, IISc, Bangalore

Prof. K. George Thomas, School of Chemistry, IISER-TVM
 Prof. Srinivasa Murty Srinivasula, School of Biology, IISER-TVM
 Prof. M. S. Gopinathan, School of Chemistry, IISER-TVM
 Prof. Subodh R Shenoy, Institute of Inter Disciplinary Sciences, TIFR, Hyderabad
 Prof. Unnikrisnan Nayar, School of Physics, IISER-TVM
 Registrar, IISER-TVM - Secretary (ex-officio)

The senate met on 22.4.2013, 21.10.2013 and 22.1.2014 during the year 2013-

2. Human Resource

Human resources of the institute in 2013-14 comprised the following:

Faculty	Regular Faculty		42
	Visiting Faculty		15
Technical and Non-Teaching Personnel	Officers	Regular	10
		Consultants & Others	8
	Subordinate	Regular	26
		Temporary & Contract	38
Students	BS-MS		411
	Ph.D.		112
	Int. Ph.D.		24

Faculty

The faculty strength of IISER-TVM during the period is increased to 42 compared to 37 in the period 2012-13. School wise lists of faculties and their names and research areas are given below.

Assistant Professor	School of Biology	9
	School of Chemistry	9
	School of Physics	14
	School of Mathematics	6
Associate Professor	School of Mathematics	1
Professor	School of Biology	1
	School of Chemistry	1
	School of Physics	1

School of Biology

Research in Biological Sciences at IISER-TVM spans all scales from single molecules all the way upto ecosystems. At present this nascent group consists of 10 faculty members, Ph.D. students, Post-Doctoral fellows, Technical Assistants and Project Assistants. Research activities in School of Biology are funded by IISER, Wellcome Trust/DBT India Alliance, The Royal Society UK, CSIR, DST and DBT. Our state-of-art research laboratories are well equipped for imaging, sequencing, biochemical and biophysical work. The IISER campus under construction at Vithura located in the Western Ghats is also ideal for field biology. Our teaching curriculum aims to provide students an exposure to a broad range of subjects in biology. Our lab modules are designed to offer them an experience of carrying out research along with faculties and Ph.D. students.

Sl. No.	Name	Position	Area of Research
1.	Prof. Srinivasa Murty Srinivasula	Professor	Apoptosis, Autophagy, NF-kB activation Genome stability
2.	Dr. Hema Somanathan	Assistant Professor	Sensory ecology and Plant-animal interactions
3.	Dr. Jishy Varghese	Assistant Professor	Nutrient and Energy Homeostasis
4.	Dr. Kalika Prasad	Assistant Professor	Evolution of regulatory logic controlling organ positioning in plants
5.	Dr. K. T.Nishant	Assistant Professor	Mechanisms for maintenance of genome stability in <i>Saccharomyces cerevisiae</i>
6.	Dr. Ramanathan Natesh	Assistant Professor	Molecular Structural Biology, Crystallography and CryoEM structural studies of complexes of signal cardiovascular disease, Proteins involved in <i>Mycobacterium Tuberculosis</i>
7.	Dr. Ravi Maruthachalam	Assistant Professor	Centromere biology, Haploid genetics, Minichromosomes
8.	Dr. Sunish Radhakrishnan	Assistant Professor	Cellular asymmetry and cell division in bacteria
9.	Dr. Tapas Manna	Assistant Professor	Cell cycle regulation in eukaryotic cells: structure-function of microtubule, Centrosome and kinetochore proteins
10.	Dr. Ullasa Kodandaramaiah	Assistant Professor	Butterfly host-plant co-evolution, Butterfly phylogenetics, Biogeography, Phylogeography, wing-pattern evolution in butterflies

School of Chemistry

The School of Chemistry at IISER-TVM provides high quality chemistry education integrated with research at the undergraduate and graduate levels. The activities of the School span from fundamental aspects of chemistry to interdisciplinary and applied areas of research. Current research activities of the school include theoretical and physical chemistry, synthetic organic and inorganic chemistry, physical organic and biophysical chemistry, NMR and ultrafast spectroscopy, photochemistry, chemical biology, DNA nanotechnology, non-linear dynamics, smart materials and clean energy. The School has established state-of-the-art laboratory and instrumentation facilities for conducting teaching and research in various branches of chemical sciences. Currently 45 BS-MS students are pursuing chemistry as their major subject, 60 Ph.D. and 9 integrated Ph.D. scholars and 3 post-doctoral research fellows are associated with the School. Within a short span of five years, School has published 120 papers in journals of international repute testifying the intense research effort of the faculty members and students. Research activities of the School are supported by MHRD, Government of India and ongoing twelve projects sponsored by various national and international funding agencies. The vision of the School is to nurture high quality scientific manpower who will contribute to the progress of the nation and become future leaders in science.

Sl. No.	Name	Position	Area of Research
1.	Prof. E. D. Jemmis (till June 06, 2013)	Professor	Theoretical and computational chemistry
2.	Prof. K. George Thomas	Professor	Photosciences, nanomaterials and surface properties
3.	Dr. Adithya Lakshmana Y.	Assistant Professor	Non-linear Optical Spectroscopy, Understanding ultrafast dynamics involved in various chemical and biological systems
4.	Dr. Ajay Venugopal	Assistant Professor	Inorganic and Organometallic Chemistry
5.	Dr. Mahesh Hariharan	Assistant Professor	Biophysical Chemistry, Photophysics of Biomolecules (Effect of Light on DNA and Proteins)
6.	Dr. Reji Varghese	Assistant Professor	Supramolecular Chemistry with DNA, DNA Nanotechnology, Functional Nanomaterials
7.	Dr. Sukhendu Mandal	Assistant Professor	Cluster-Assembled materials, Surface Plasmon of Nanoclusters, Hydrocarbon Cracking and Alkane metathesis
8.	Dr. K. M Sureshan	Assistant Professor	Organic synthesis, Medicinal Chemistry, Supramolecular Chemistry
9.	Dr. R. S. Swathi	Assistant Professor	Theoretical Spectroscopy and Quantum Chemistry
10.	Dr. A. Thirumurugan	Assistant Professor	Hybrid organic-inorganic Framework materials, Photoluminescence, Gas storage –separation and conducting materials
11.	Dr. Vinesh Vijayan	Assistant Professor	NMR Investigation of structure and dynamics of bio-molecules

School of Mathematics

The School of Mathematics is aimed to be a centre of excellence in the frontier areas of research and teaching in mathematics. The faculties of the School are in line with achieving this objective. The areas of research include Commutative Algebra, Combinatorics, Control Theory, Linear Algebra, Mathematical Finance, Financial Engineering, Group Theory, Functional Analysis, Numerical Functional Analysis, Homological Algebra, Number Theory, Numerical Analysis, Partial Differential Equations and Scientific Computing. The school at present has seven faculty members working in the above areas and will be expanding in the research areas such as Differential and Algebraic geometry, Topology, Probability and Statistics and Computer Science by hiring new faculty members in near future. Currently school has 37 BS-MS students, 5 Ph.D. and 7 integrated Ph.D. scholars of which 4 BS-MS students graduated in May 2013. The graduated students have taken up research positions in India and abroad.

Sl. No.	Name	Position	Area of Research
1.	Dr. M. P. Rajan	Associate Professor	Numerical Functional Analysis/ Functional Analysis Financial Engineering/Mathematical Finance
2.	Dr. Arun K. R.	Assistant Professor	Hyperbolic Systems of Conservation Laws, Finite Volume Schemes, Asymptotic Preserving Schemes, Nonlinear Waves
3.	Dr. Sachindranath Jayaraman	Assistant Professor	Linear Algebra –Non negative Matrices, Generalized Inverses and Applications
4.	Dr. Sheetal Dharmatti	Assistant Professor	Differential equations, control and game theory, Navier Stokes' equations and image processing.
5.	Dr. Sujith Vijay	Assistant Professor	Ramsey Theory on the Integers.
6.	Dr. Utpal Manna	Assistant Professor	Stochastic Partial Differential Equations, Stochastic Processes, Stochastic and Harmonic Analytic Approaches to Fluid Dynamics Models.
7.	Dr. Viji Z. Thomas	Assistant Professor	Group Theory; Commutative and Homological Algebra

School of Physics

The School of Physics at IISER-TVM at present has fifteen faculty members, two senior visiting professors, five postdoctoral fellows, two technical assistants, 33 graduate students and close to 70 undergraduate, physics major students. The school has faculty members working on core areas like Condensed Matter Physics (understanding properties of semiconductors, superconductors, Magnets and Topological Insulators), Statistical Mechanics and High-energy Physics as well as emerging areas like Gravitational wave astronomy, Nanoscale materials, Quantum information theory and Solar cells. The school is looking to expand in other areas like soft matter, biophysics,

quantum optics and particle physics theory. Currently, the school has more than 6 crores from external funding (national and international) agencies for carrying out research in these areas. It also has one industry funding. The majority of the first two batches of BS-MS students have all taken up research positions in leading national and international institutions. The students from the school have already been able to make a mark at the national level. For instance, one of the graduating students has been awarded Shyama Prasad Mukherjee fellowship, for the year 2013, by the Council of Scientific and Industrial Research. Five of the outgoing students are placed in the top 50 of JEST-2014 including the national topper in Physics.

Sl. No.	Name	Position	Area of Research
1.	Prof. V. Ramakrishnan	Professor	Optical spectroscopy, nanomaterials, semiconductor heterostructures
2.	Dr. Amal Medhi	Assistant Professor	Topological insulators, Fractional quantum Hall state, Strongly correlated electron systems
3.	Dr. Anil Shaji	Assistant Professor	Quantum Information and quantum limited measurements
4.	Dr. Archana Pai	Assistant Professor	Gravitational Wave Physics, Statistical Signal Processing
5.	Dr. Deepshikha Jaiswal Nagar	Assistant Professor	Quantum criticality, magnetocaloric effect in quantum spin chains, Vortex state of superconductors and Multiferroics
6.	Dr. Joy Mitra	Assistant Professor	STM Tunnelling induced light emission and Plasmonics
7.	Dr. Madhu Thalakulam	Assistant Professor	Low temperature transport in nanoscale devices, Quantum measurement, of superconductors and Multiferroics
8.	Dr. Manoj A. G. Namboothiry	Assistant Professor	Optoelectronics Laboratory
9.	Dr. Rajeev N. Kini	Assistant Professor	Ultrafast and Terahertz spectroscopy of semiconductors
10.	Dr. Ramesh Chandra Nath	Assistant Professor	Quantum Phase Transition in Frustrated Low-dimensional Spin Systems and Unconventional Superconductivity.
11.	Dr. Ravi Pant	Assistant Professor	Nanophononics, Stimulated Brillouin/Raman scattering, Opto-mechanical interactions, Slow-light, Nonlinear optical phenomenon and devices, Soliton self-frequency shift
12.	Dr. Bindusar Sahoo	Assistant Professor	Black hole entropy in supergravity and string theory, Supergravity, AdS-CFT correspondence, Higher-Spin holography
13.	Dr. M. M. Shaijumon	Assistant Professor	Multifunctional Nanostructured Materials and Energy Storage.
14.	Dr. S. Shankaranarayanan	Assistant Professor	Black-holes, Cosmology and Quantum Gravity

15.	Dr. Sreedhar B. Dutta	Assistant Professor	Statistical Physics and Quantum Field Theory
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Visiting Faculty

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

Sl. No.	Name	Discipline
1.	Dr. Muniyandi Sivaram	Biology
2.	Prof. C.C. Kartha	Biology
3.	Prof.T.Ganga Devi, Ex-Principal, Government College for Women, Thiruvananthapuram	Lab Coordinator, Biology
4.	Prof. M.S. Gopinathan, Ex-Professor, IIT-M, Chennai	Chemistry
5.	Prof. M. Padmanabhan, Ex-Professor, MG University, Kottayam	Chemistry
6.	Shri.O.Thomas, Ex-Lecturer, Government College for Women, Thiruvananthapuram	Lab Coordinator, Chemistry
7.	Dr. Nicholas Sabu, Associate Professor, IIST, Valiamala	Mathematics
8.	Dr. E. Krishnan	Mathematics
9.	Dr. Sarvesh Kumar	Mathematics
10.	Prof. P. Jyothilingam, Rtd. Professor, Pondicherry University	Mathematics
11.	Dr. Guram Donadze	Mathematics
12.	Dr. K.S.S. Moosath, Associate Professor, IIST, Valiamala	Mathematics
13.	Prof. V. Unnikrishnan Nayar, Ex-Dean, Cochin University of Science and Technology	Physics
14.	Prof. Subodh Shenoy, Ex-Professor, TWAS Trieste and University of Hyderabad	Physics
15.	Prof. Ambika P	Physics

Administrative & Support Personnel

The institute has been operating with 36 regular staff, 8 Consultants and contractual experienced professionals. Recruitment of 14 personnel was done during the year and regular strength in position became 36 against a sanctioned strength of 66. The administrative personnel are enlisted as under

Administration

1. Shri. Bharat Jyoti, IFS, Registrar (till 21.11.2013)
2. Shri. M.Radhakrishnan, Registrar (from 31.03.2014)

3. Shri. N.K,Sukumaran Deputy Registrar (Administration & Academics) (till 26.03.2014)
4. Shri. G.R.Giridharan, Deputy Registrar (Finance & Accounts)
5. Shri. Anil.J, Project Engineer-cum-Estate Officer
6. Dr. Sainul Abideen.P, Assistant Librarian
7. Shri. B.V.Ramesh, Assistant Registrar (Finance & Accounts)
8. Shri. Hariharakrishnan, Assistant Registrar (Administration & Academics)
9. Shri. P.Y.Sreekumar, Scientific Officer (IT)
10. Shri. Laju I.P, Assistant Executive Engineer (Electrical) (till 30.09.2013)
11. Shri. Priji.E.Moses, Assistant Executive Engineer (Civil)
12. Dr. Goldwin Hemalatha.M, Medical Officer
13. Dr. Thiraviam.P, Medical Officer
14. Shri. Ajith Prabha, Office Assistant (Multi Skill)
15. Smt. Navya Paul, Technical Assistant
16. Smt. Divya V.J, Technical Assistant
17. Shri. Krishna Kumar, Junior Engineer (Civil)
18. Smt. Nimi Joseph Chaly, Accountant
19. Smt. Nafeesa C.K, Library Information Assistant
20. Shri. Jayaraj J.R, Library Information Assistant
21. Shri. Alex Andrews P, Technical Assistant
22. Smt. Reshmi V.K, Technical Assistant (till 20.02.2014)
23. Shri. Vijesh K, Technical Assistant
24. Smt. Darli K.G, Private Secretary to Director
25. Shri. Manoj M.T, Office Assistant (Multi Skill)
26. Smt. Suja V.R, Office Assistant (Multi Skill)
27. Smt. Vidya Senan.I, Office Assistant (Multi Skill)
28. Smt. Archana P. R, Office Assistant (Multi Skill)
29. Smt. Beena N.K, Office Assistant (Multi Skill)
30. Shri. Muruganandam A, Office Assistant (Multi Skill)
31. Shri. Rajesh A.P, Office Assistant (Multi Skill)
32. Smt. Sreeja.M, Office Assistant (Multi Skill) (till 31.07.2013)
33. Shri. Satheesh R, Office Assistant (Multi Skill)
34. Shri. Anoop V, Junior Engineer (Electrical) (till 15.10.2013)
35. Shri. Sudeep.S, Junior Engineer (HVAC)
36. Shri. Satya Srinivas Narahariseti, Superintendent (Hostel .& Hospitality)
37. Shri. Praveen Peter, Junior Engineer (Civil)
38. Smt. Mini Philip, Personal Assistant
39. Shri. Hariharan.S, Superintendent (Facilities & Services)

40. Shri. Manoj Kumar S, Superintendent (Office)
41. Smt. Veena P.P, Office Assistant (Multi Skill)
42. Shri. Sangeeth.M, Junior Engineer (Electrical)

Consultants and Contractual Officers

1. Shri. S. B. Jayaram, Consultant (Purchase & Stores)
2. Shri. P. N. Mohanan, Consultant (Finance & Accounts)
3. Shri. V. P. Nair, Consultant (Human Resources)
4. Shri. P. A. Prabhakaran, Chief Consultant (Constructions)
5. Shri. P. R. Balakrishna Pillai, Consultant (Civil)
6. Shri. K. Muraleedharan Nair, Consultant (Civil)
7. Shri. R. Vasudevan Nair, Consultant (Electrical)
8. Shri. Karthikeyan V, Security Officer

3. Academic Programmes & Students

BS-MS Dual Degree Programme

The First Convocation of IISER-TVM was held on 24 April, 2013, in the permanent campus of IISER-TVM at Vithura. The function was presided by Prof. C. N. R. Rao FRS, Head of the Scientific Advisory Council to the Prime Minister of India. The first batch of Five Year BS-MS Dual Degree Programme which started in August 2008, consisting of 14 students were graduated on the occasion.

146 students joined the sixth batch of Five Year BS-MS Dual Degree Programme in August 2013 at the Transit Campus in the College of Engineering Trivandrum, who were selected through three channels KVPY, IIT-JEE merit list and the Aptitude Test for the top 1 % students of class X and 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
23	8	48	67	146	77	69	5	26	115

Ph.D. Programme

31 students were admitted to Ph.D. Programme during the academic year 2013-14. 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.

Int. Ph.D. Programme

14 students were admitted to integrated Ph.D. programme during the academic year 2013-14 through written exam/ JEST and interview.

Total student strength in 2013-14 is given below.

Programme	2009-10 admissions	2010-11 admissions	2011-12 admissions	2012-13 admissions	2013-14 admissions	Total
BS-MS	48	56	74	101	132	411
Ph. D.	15	17	28	22	30	112
Int. Ph.D.	-	-	-	10	14	24
Total	63	73	102	133	176	547

Scholarship / Fellowship

All the students admitted to the BS-MS Programme through IIT/JEE, KVPY/ SCB (direct admission) are awarded with Fellowships of Rs 5000/- per month under KVPY or INSPIRE Programme of Department of Science & Technology, Government of India.

The Ph.D. scholars who are JRFs/SRFs of CSIR/UGC/ICMR/DBT etc. draw fellowships and contingency according to the granting organizations. The other qualified students with GATE/JEST admitted to Ph.D. Programme have been given scholarship of Rs 16000/- p.m. by the institute. The students of Integrated Ph.D programme draw fellowship of Rs.10, 000/- per month from the institute.

4. Research and Development Activities

The institute has been active in frontier areas of research. The faculty members have set up research and computing laboratories in the temporary campus. Several scientific collaborations with researchers in premier institutions in India and abroad are in progress. In addition to 18 ongoing sponsored projects from various funding agencies, the faculty members have started 9 new projects funded by government agencies and completed five projects during 2013-14. Many post-doctoral fellows and junior research fellows have joined under various projects during this period.

New Sponsored Projects

Sl. No.	Name of the Project	Principal Investigator	Co-Investigator	Sponsoring Agency	Amount Sanctioned	Duration
1.	Lewis Acid Molecular Bismuth Alkyls and Hydrides	Dr. Ajay Venugopal	None	DST Fast Track	25.8 Lakhs	2013-16
2.	Molecular Magnesium Hydrides: Hydrogen Storage	Dr. Ajay Venugopal	None	DST INSPIRE	35.0 Lakhs	2013-17
3.	microRNA functions in regulation of metabolism and energy homeostasis	Dr. Jishy Varghese	None	DST-SERB / Ramanujan Fellowship sponsored project	85 lakhs	2013-17
4.	Ultrafast optical and terahertz studies of the dilute bismide alloys, GaN:Bi and GaAs:Bi	Dr. Rajeev N. Kini	None	SERB	27 Lakhs	2013-16
5.	Ultrafast Optical and Terahertz studies of the dilute Bismide alloys, GaN:Bi and GaAs:Bi	Dr. Rajeev N. Kini	Prof A J Kent, University of Nottingham	DST-UKIERI	6.45 Lakhs	2013-15
6.	Determining the role of centrosome protein TACC3 in regulation of microtubule nucleation and elucidating its molecular mechanism	Dr. Tapas K. Manna	Vinesh Vijayan	DAE	24.87 lakhs	2014-17
7.	Unravelling higher-level phylogenetic relationships of skipper butterflies (Lepidoptera: Hesperidae), times of divergences and evolution of host plant associations	Dr. Ullasa Kodandaramaiah	Vladimir Lukhtanov	DST-RFBR	35 lakhs	2013-15
8.	Understanding diversification of butterflies using a multi-disciplinary approach	Dr. Ullasa Kodandaramaiah	None	DST- INSPIRE Faculty Award	35 lakhs	2013-18

Ongoing Sponsored Projects

Sl. No.	Name of the Project	Principal Investigator	Co-Investigator	Sponsoring Agency	Amount Sanctioned (Rs. in Lakh)	Duration
1.	Enhanced quantum measurements using Bose Einstein Condensates	Dr. Anil Shaji	None	DST (Fastrack)	12.84 Lakhs	2010-13
2.	Gravitational Waves: Emerging window of the Universe	Dr. Archana Pai	None	SERC Fast Track Scheme for Young Scientists	12.24 Lakhs	2011-14
3.	Max Planck Partner group (of Albert Einstein Institut, Germany)	Dr. Archana Pai	German PI-Prof. Bernard Schutz, Director, Albert Einstein Institut	DST India and Max Planck Society, Germany	12.50 Lakhs	(2011-14) Got extension after the review till 2016.
4.	Organic and Organic-Inorganic Hybrid Solar Cells	Prof. K. George Thomas	None	DST (funded under the framework of India-European Union Science and Technology Cooperation Agreement)	56.00 Lakhs	2011-14
5.	Development of Enhanced CPL-active Materials for Potential Application in Future Security Technology	Prof. K. George Thomas	None	DST (funded under DST-JSPS Indo-Japan Cooperative Science Programme)	5.30 Lakhs	2013-15
6.	Incorporation of plasmonic structures to improve organic photovoltaics	Dr. Manoj A. G. Namboothiry	Dr.M.M. Shaijumon	DST SERI	184 Lakhs	2012-15
7.	Genetic analysis of crossover assurance mechanisms facilitating meiotic chromosome segregation	Dr. Nishant K.T.	None	Wellcome Trust-DBT India Alliance	330.3 Lakhs	2012-17
8.	Structural analysis of proteins and its interacting partners.	Dr. Ramanathan Natesh	None	DBT (Ramalingaswami Fellowship)	70 Lakhs	2010 -15
9.	Synthesis and physical properties of frustrated $S=1/2$ square lattice compounds	Dr. Ramesh Chandra Nath	None	DST	52.84 Lakhs	2012-15

10.	Generation and characterization of minichromosomes and neocentromere formation in plants	Dr. Ravi Maruthachalam	None	DBT (Ramalingaswami Fellowship)	32.5 Lakhs	2013-18
11.	DNA Based Addressable Functional Nanomaterials: Design, Synthesis and Self-assembly of Novel DNA-Rigid Rod Block Copolymers	Dr. Reji Varghese	None	DST	70 Lakhs	2011-15
12.	Nanoarchitected TiO ₂ -based hybrid structures for Li-ion battery applications	Dr. M. M. Shaijumon	None	BRNS - DAE	14.80 Lakhs	2012-15
13.	Design, Synthesis and characterization of self-assembled molecular materials: Applications in Drug delivery and Nanoscale energy storage devices battery	Dr. M. M. Shaijumon	Dr. Vibin Ramakrishnan, IIT Guwahati	DBT	104.44 Lakhs	2013-16
14.	Development of Silicon-graphene hybrid anodes for Li-ion	Dr. M. M. Shaijumon	None	Renault – Nissan	25.00 Lakhs	2013-14
15.	Ramanujan Fellowship	Dr. S. Shankaranarayanan	None	DST, India	73 Lakhs	2010-15
16.	DST-Max Planck Partner group	Dr. S. Shankaranarayanan	None	DST India and Max Planck Society, Germany	120 Lakhs	2011-15
17.	A multilayered approach to decipher uncharted mechanisms of asymmetric cell division	Dr. Sunish K. Radhakrishnan	None	Wellcome Trust/ DBT India Alliance	267.62 Lakhs	2011-16
18.	To determine the molecular mechanisms involved in centrosomal transforming acidic coiled-coil 3(TACC3) mediated cell cycle progression	Dr. Tapas K. Manna	None	DST	27.14 Lakhs	2012-15

Completed Sponsored Projects

Sl. No.	Name of the Project	Principal Investigator	Co-Investigator	Sponsoring Agency	Amount Sanctioned (Rs. in Lakh)	Duration
1.	Coherent multi-detector gravitational wave search using LCGT and advanced interferometers	Dr. Archana Pai	Japanese PI-- Prof.H. Tagoshi, Osaka University Indian Co-PI Dr. Anand S. Sengupta, University of Delhi	Indo-Japan DST-JSPS joint research project DST, India and JSPS, Japan	5.46 Lakhs	2011-13
2.	Ecology and behaviour of group living spiders	Dr. Hema Somanathan	-	CSIR	17.34 Lakhs	March 2011-March 2014
3.	Analysis of the role of Holliday Junction processing proteins in Msh4-Msh5 mediated crossover pathway	Dr. Nishant K. T.	-	DST-JSPS Exploratory exchange, India-Japan Co-operative Science Program	2 lakhs	March 2014
4.	Probing IP3R activation by Click Chemistry	Dr. K. M. Sureshan	-	CSIR	12 Lakhs	2010-13
5.	Determining the structure-function aspects of microtubule end binding EB family proteins	Dr. Tapas Manna	-	CSIR	19 Lakhs	2011-14

The details of the completed projects are given below.

1. Coherent multi-detector gravitational wave search using LCGT and advanced interferometers

We use the technique of Fisher information matrix to carry out astrophysical parameter estimation. We have systematically quantified with a network of detectors and using Higher Harmonics i.e. FWW as the signal, how 9 signal parameters (the distance, location to the source, inclination angle of the binary, polarisation angle, masses of the binary, time of arrival of the signal in the detector band, signal phase at the time of arrival of the binary) of a non-spinning compact coalescence binary with NS and BH can be estimated using the Fisher Information matrix. The inverse of the Fisher Information Matrix is the covariance matrix; the diagonal terms of which give the variance on the signal parameters. The errors are the square root of the variance matrix. Improving the accuracy of inclination angle for the EM follow-up of the short Gamma ray bursts

has implications on understanding the Short Gamma Ray Burst energetics. We have studied the implications of such targetted EM follow-up of the GRB in the gravitational wave window. Both the papers are in the final stages of Phys. Rev. D. They appear in the arXiv with the titles as

a. Parameter estimation of neutron star-black hole binaries using an advanced gravitational-wave detector network: Effects of the full post-Newtonian waveform H. Tagoshi, C. K. Mishra, Archana Pai, K. G. Arun, arXiv:1403.6915

b. Synergy of short gamma ray burst and gravitational wave observations: Constraining the inclination angle of the binary and possible implications for off-axis GRBs K. G. Arun, H. Tagoshi, C. K. Mishra, Archana Pai, arXiv:1403.6917

2. Ecology and behaviour of group living spiders

The objectives of this project were to understand the basis for sociality in spiders, a taxa that mostly consists of solitary species, using the permanently social spider *Stegodyphus sarasinorum* as model species. We asked whether the benefits of group-living in *S. sarasinorum* served functions such as efficient prey capture, or economy in the per capita expenditure of silk. Our results indicate that though there are no morphological castes, spider societies are structured such that individuals show some degree of task specialisation in two main behaviours, namely prey capture and web-building. We also examined the dynamics of colony fission and fusion in these colonies in order to understand what factors determine dispersal in spider colonies. We found that females largely disperse after mating and the nutritional status of individuals determine decisions to stay behind in the natal colony or to bud-off and establish solitarily before egg-laying. Publications from this project have been submitted or are under preparation.

3. Analysis of the role of Holliday Junction processing proteins in Msh4-Msh5 mediated crossover pathway

The purpose of the DST-JSPS exchange program was to explore collaborations with the laboratory of Prof. Akira Shinohara, Institute for Protein Research, Osaka University. During the visit to Prof. Shinohara's laboratory we had extensive discussions with his students and postdoctoral fellows on the various research projects going on in the laboratory. These discussions were useful to plan various collaborative projects where my laboratory's expertise in genetics and genomics can be used. During these discussions, we worked out a research plan to send my graduate students to Prof. Shinohara's laboratory for a few months to get expertise in the use of cytological techniques. Prof. Shinohara's laboratory will also make use of my laboratory's expertise in genome sequencing in collaborative projects.

4. Probing IP3R activation by Click Chemistry

One of the mechanisms by which calcium levels are regulated inside the cell is through IP3R mediated calcium release from endoplasmic reticulum. When IP3 binds to IP3R the calcium channels on the ER opens up and the calcium flows out of the ER to cytoplasm. Adenophostin is an agonist of IP3R and is even more potent than IP3 itself in calcium release. Due to the importance of calcium signaling, lot of interests are there to understand the mechanism of action and molecular levels details adenophostin binding to IP3R. Thus a large library of adenophostin analogs is required to understand the Structure-Activity Relationships (SAR). By undertaking this project, we have made a library of adenophostin analogs by employing click chemistry. The calcium

release ability of these ligands has been tested in collaboration with Prof. Colin Taylor, University of Cambridge. This biological study revealed that our design offers fast and easy access to many potent analogs of the IP3R agonists. Further works to unravel the SAR, their metabolism, localization of these molecules in cells are underway. The manuscript on the synthesis and preliminary biological evaluation is being written and will be communicated soon.

5. Determining the structure-function aspects of microtubule end binding EB family proteins

TIPs protein EB1 autonomously tracks growing plus ends of microtubules and regulates plus end dynamics. Previous studies have indicated that EB1 can recognize GTP-bound tubulin structures at the plus ends and it localizes on the microtubule surface at a site close to the exchangeable GTP-binding site of tubulin. Although the GTP-dependent structural change in tubulin has been implicated as a determinant for recognition of the plus ends by EB1, the effect of GTP on the structure of EB1 has remained unclear. Here, we have used spectroscopic and biochemical methods to analyze the effect of GTP on EB1 in vitro. Isothermal titration calorimetry and tryptophan quenching experiments revealed that EB1 binds to GTP with moderate affinity. Detailed analysis showed that the binding involves association of one molecule of EB1 dimer with two molecules of GTP. Circular dichroism measurements showed that EB1 undergoes changes in its secondary structure upon binding with GTP. Size exclusion chromatography and urea-induced unfolding analyses revealed that GTP-binding induces dissociation of the EB1 dimer to its monomers. The results reveal a hitherto unknown GTP-dependent mechanism of dimer to monomer transition in EB1 and further implicate its possible role in regulation of EB1 dimer vs. monomer stability and microtubule plus ends in cells.

Publications from the sponsored project:

K.K. Gireesh, Rashid A., Chakraborty S., Panda D., Manna T. CIL-102 binds to tubulin at colchicine binding site and triggers apoptosis in MCF-7 cells by inducing monopolar and multinucleated cells. *Biochemical Pharmacology* 84, 633-645, 2012.

Paper under revision

K.K. Gireesh, Sreeja J.S., Chakraborty S., Singh P., Thomas G.E., Gupta H., Manna T.* Microtubule binding +TIP protein EB1 binds to GTP and undergoes a dimer to monomer dissociation upon binding with GTP. *Biochemistry*, 2014.

Patents Filed

Sl. No.	Principal Investigator	Co-Investigator	Name of the Project	Date of Patent
1.	Dr. K. M. Sureshan	A. Pathigoolla	A method for synthesis of polysaccharides and products thereof	2586/CHE/2013
2.	Dr. K. M. Sureshan	R. Mohanrao	An improved method for the synthesis of cyclic polyols and derivatives thereof	1138/CHE/2014

5. Research Publications

Journal Articles

1. W. Fegler, **Ajay Venugopal**, T. P. Spaniol, L. Maron, J. Okuda, Reversible dihydrogen activation in cationic rare-earth-metal polyhydride complexes, *Angew. Chem. Int. Ed.*, 52, 7976, 2013.
2. A. Raghavan, **Ajay Venugopal**, Structurally characterized -diimine complexes of s- and p-block elements, *J. Coord. Chem.*, DOI: 10.1080/00958972.2014.931576, 2014.
3. S. Jose and **Anil Shaji**, Corrections to the expected signal in quantum metrology using highly anisotropic Bose-Einstein Condensates, *Phys. Rev. A* 88, 05312, 2013.
4. J. Joy, R. T. Cheriya, K. Nagarajan, **Anil Shaji**, and **Mahesh Hariharan**, Breakdown of Exciton Splitting through Electron Donor–Acceptor Interaction: A Caveat for the Application of Exciton Chirality Method in Macromolecules *J. Phys. Chem. C*, 117, 17927–17939, 2013.
5. J. Aasi et al.(LIGO Scientific Collaboration, **Archana Pai**), Enhancing the sensitivity of the LIGO gravitational wave detector by using squeezed states of light, *Nature Photon.* 7 613-619, 2013.
6. J. Aasi et al (LIGO Scientific Collaboration, **Archana Pai**), Gravitational waves from known pulsars: results from the initial detector era, *Astrophys.J.* 785, 119, 2014.
7. J. Aasi et al.(LIGO Scientific Collaboration and Virgo Collaboration, **Archana Pai**), Search for long-lived gravitational-wave transients coincident with long gamma-ray bursts, *Phys. Rev D* 88, 122004, 2013.
8. J. Aasi et al.(LIGO Scientific Collaboration and Virgo Collaboration, **Archana Pai**), Directed search for continuous gravitational waves from Galactic center, *Phys. Rev. D* 88, 102002, 2013.
9. J. Aasi et al.(LIGO Scientific Collaboration and Virgo Collaboration, **Archana Pai**), First Searches for Optical Counterparts for Gravitational-wave Candidate Events, *Astrophys. J. Suppl.* 211,7, 2014.
10. J. Aasi et al.(LIGO Scientific Collaboration and Virgo Collaboration, **Archana Pai**), Gravitational waves from known pulsars: results from the initial detector era, *Astrophys.J.* 785, 119, 2014.
11. J. Aasi et al.(LIGO Scientific Collaboration and Virgo Collaboration, **Archana Pai**), Application of a Hough search for continuous gravitational waves on data from the fifth LIGO science run, *Class. Quant. Grav.* 31, 085014, 2014.
12. J. Aasi et al.(LIGO Scientific Collaboration and Virgo and NINJA-2 Collaboration, **Archana Pai**), The NINJA-2 Project: Detecting and characterizing gravitational waveforms modelled using numerical binary black hole simulations, *Class. Quant. Grav.* 31, 115004, 2014.
13. J. Aasi et al.(LIGO Scientific Collaboration and Virgo Collaboration, **Archana Pai**), Search for gravitational-wave ringdown from perturbed intermediate mass black holes in LIGO-Virgo data from 2005-2010, *Phys. Rev D* 89, 102006 (2014).
14. Georgij Bispfen, **K. R. Arun**, Maria Lukacova-Medvid'ova and Sebastian Noelle IMEX large time step finite volume methods for low Froude number shallow water flows. *Commun. Comput. Phys.*, 16, 307-347, 2014.
15. K. B. Subila, G. Kishore Kumar, S. M. Shivaprasad and **K. George Thomas**, Luminescence Properties of CdSe Quantum Dots: Role of Crystal Structure, *J. Phys. Chem. Lett.*, 4, 2774–2779, 2013.

16. Anoop Thomas, Pratheesh V. Nair and **K. George Thomas**, InP Quantum Dots: An Environmentally Friendly Material with Resonance Energy Transfer Requisites, *J. Phys. Chem. C*, 118, 3838–3845, 2014.
17. Shivani Krishna and **Hema Somanathan**, Secondary removal of *Myristica fatua* (Myristicaceae) seeds by crabs in *Myristica* swamp forests in India. *Journal of Tropical Ecology*, 30, 259-263, 2014.
18. Pulianmackal A, Kareem A, Durgaprasad K, **Kalika Prasad** Competence and regulatory interactions during regeneration in plants. *Front. Plant Sci.* doi 10.3389/fpls, 2014.
19. Hofhuis H., Laskowski M., Du Y., **Kalika Prasad**, Grigg S., Pinon V., Scheres B., Phyllotaxis and Rhizotaxis in *Arabidopsis* Are Modified by Three PLETHORA Transcription Factors. *Current Biology*, 23: 956-962, 2013.
20. S. K. Rajagopal and **Mahesh Hariharan**, Non-natural G-quadruplex in a Non-natural Environment *Photochem. Photobiol. Sci.*, 13, 157-161, 2014 (Nick Turro's Special Issue).
21. **Mahesh Hariharan**, K. Siegmund, C. Saurel, M. McCullagh, G. C. Schatz and F. D. Lewis, Thymine Photodimer Formation in DNA Hairpins. Unusual Conformations Favor (6-4) vs. (2+2) Adducts *Photochem. Photobiol. Sci.*, 13, 266-271, 2014 (Nick Turro's Special Issue).
22. **Mahesh Hariharan**, Y. Zheng, B. Rybtchinski and F. D. Lewis, Thermal Response of DNA Supramolecular Polymers Assembled with Hydrophobic Sticky Ends, *J. Phys. Chem. B*, 117, 14649–14654, 2013.
23. A. Suresh, G. Krishnakumar and **Manoj A. G. Namboothiry**, Filament theory based WORM memory devices using aluminum /poly(9vinylcarbazole)/ aluminum structures, *Phys. Chem. Chem. Phys.*, 16, 13074-13077, 2014.
24. **N. Mazumder**, S. Mitra, and S. Dhurandhar, Astrophysical motivation for directed searches for a stochastic gravitational wave background, *Phys. Rev D* 89. 084076, 2014.
25. Rakshambikai, R., Srinivasan, N. and **Nishant K.T.**, Structural insights into *Saccharomyces cerevisiae* Msh4-Msh5 complex function using homology modeling, *PLoS One* 8, e78753, 2013.
26. **R. Nath**, Tsirlin A. A., Khuntia P., Janson O., Forster T., **Padmanabhan M.** et al, Magnetization and spin dynamics of the spin $S = 1/2$ hourglass nanomagnet $\text{Cu}_5(\text{OH})_2(\text{NIPA})_4 \cdot 10\text{H}_2\text{O}$., *Physical Review B: Condensed Matter and Materials Physics* 87(21), 214417/1-214417/15, 2013 (Highlighted as Editor's Choice paper).
27. **R. Nath**, K. M. Ranjith, J. Sichelschmidt, M. Baenitz, Y. Skourski, F. Alet, I. Rousochatzakis, and A. A. Tsirlin, Hindered magnetic order from mixed dimensionalities in CuP_2O_6 , *Phys. Rev. B* 89, 014407, 2014.
28. R. Ghosh, Asha K. S, S. M. Pratik, A. Datta, **R. Nath**, **Sukhendu Mandal**, Synthesis, Structure, photocatalytic and magnetic properties of an ox-bridged copper dimer, *RSC Advances*, 4, 21195-21200, 2014.
29. Linguito S L, **Padmanabhan M.**, Zhang X, Biradar A V, Emge T J, Asefa T, New polyoxomolybdate compounds synthesized in situ using ionic liquid as green solvent, *New Journal of Chemistry*, 37, 2894-2901, 2013.
30. R S Joshya, A. J Ptak, R France, A Mascarenhas and **Rajeev N Kini**, Coherent acoustic phonon generation in $\text{GaAs}_{1-x}\text{Bi}_x$, *Appl. Phys. Lett.* 104, 091903, 2014.
31. S. Gayathri, P. Jayabal, M. Kottaisamy, and **V. Ramakrishnan**, Synthesis of ZnO decorated graphene nanocomposite, *Journal of Applied Physics*, 115, 173504, 2014.

32. S. Pushpam, S. Gayathri, **V. Ramakrishnan**, Photoinduced interaction studies on N-(2-methylthiophenyl)-2-hydroxy-1-naphthdiamine with TiO₂ nanoparticles: A combined experimental and theoretical (DFT and spectroscopic) approach, *Spectrochimica Acta Part A* 133, 80, 2014.
33. E. Wijnker, L. Deurhof, J. van de Belt, C.B. de Snoo, H. Blankestijn, F. Becker, **Ravi Maruthachalam**, S.W.L. Chan, K.van Dun, C.L.C. Lelivelt, H. de Jong, R. Dirks and J.J.B. Keurentjes. Hybrid recreation by reverse breeding in *Arabidopsis thaliana*. *Nature Protocols* 9, 761-772, 2014.
34. S.K. Albert, H. V. P. Thelu, M. Golla, N. Krishnan, S. Chaudhary, and **Reji Varghese**, Self-assembly of DNA-Oligo(p-phenylene-ethynylene) Hybrid Amphiphiles into Surface-engineered Vesicles with Enhanced Emission, *Angew. Chem. Int. Ed.*, 53, DOI: 10.1002/anie.201403455, 2014.
35. **Sachindranath Jayaraman**, A note on self-dual cones in Hilbert spaces, *Extracta Mathematicae*, 28(2), 225 – 233, 2013.
36. **Sainul Abideen P**, Model for Indian E-Governance Metadata Set for Information Management and Interoperability, *Journal of Communication & Information Science*, (JKCM), Vol. 3(1), pp 1-12, ISSN 227-779-38, April 2013.
37. D. Gopalakrishnan, D. Damien and **M. M. Shaijumon**, MoS₂ quantum dot interspersed MoS₂ nanosheets, *ACS Nano*, 8, 5297–5303, 2014.
38. Tanvi P. Gujarati, A. G. Ashish, M. Rai and **M. M. Shaijumon**, Highly Ordered Vertical Arrays of TiO₂/ZnO Hybrid Nanowires: Synthesis and Electrochemical characterization, *J. Nanoscience & Nanotech*, 2014.
39. D. Damien, P. M. Sudeep, T. N. Narayanan, M.R. Anantharaman, P. M. Ajayan and **M. M. Shaijumon**, Fluorinated graphene-based electrodes for high performance primary Lithium batteries, *RSC Advances*, 3, 25702-25706, 2013.
40. P. Sharma, D. Damien, K. Nagarajan, **M. M. Shaijumon** and **Mahesh Hariharan**, Perylene-polyimide based organic electrode materials for rechargeable Lithium batteries, *J. Phys. Chem. Lett.*, 4, 3192-3197, 2013.
41. A. Basak, Jitesh R. Bhatt, **S. Shankaranarayanan**, K.V. Prasantha Varma, Attractor behaviour in ELKO cosmology, *JCAP*1304, 025, 2013.
42. J. Skakala, **S. Shankaranarayanan**, Horizon spectroscopy in and beyond general relativity, *Phys.Rev. D* 89, 044019, 2014.
43. J.Skakala, **S. Shankaranarayanan**, Black hole hair in Lovelock gravity, *Phys.Rev. D* 89, 104003, 2014.
44. S. Santhosh Kumar, S. Ghosh, **S. Shankaranarayanan**, Entanglement entropy for non-zero genus topologies, *Phys. Rev. D* 89, 065019, 2014.
45. S.Ghosh, **S. Shankaranarayanan**, 5D non-symmetric gravity and geodesic confinement, *Gen.Rel.Grav.* 45, 1787-1804, 2013.
46. Fiebig, A., Herrou, J., Fumeaux, C., **Sunish. K. Radhakrishnan**, Viollier, P.H., and Crosson, S A Cell Cycle and Nutritional Checkpoint Controlling Bacterial Surface Adhesion, *PLOS Genetics* 10(1), e1004101, 2014.

47. R.Mohan rao, A. Asokan and **K. M. Sureshan**, Bio-inspired synthesis of rare and unnatural carbohydrates and cyclitols through strain driven epimerization, *Chem. Commun.* 50, DOI:10.1039/C4CC00868E, 2014.
48. A.Pathigoolla, **K. M. Sureshan**, Reverse-CD mimics with flexible linkages offer adaptable cavity sizes for guest encapsulation, *Chem. Commun.*, 50, 317-319, 2014.
49. A.Vidyasagar and **K. M. Sureshan**, Total Synthesis and Glycosidase Inhibition Studies of (–)-Gabosine J and Its Derivatives, *European Journal of Organic Chemistry*, 2349–2356, 2014.
50. **S. Mondal**, A. Prathap and **K. M. Sureshan**, Vinylogy in Orthoester Hydrolysis: Total Syntheses of Cyclophellitol, Valienamine, Gabosine K, Valienone, Gabosine G, 1-epi-Streptol, Streptol, and Uvamalol A, *J. Org. Chem.*, 78, 7690–7700, 2013.
51. A. Vidyasagar, A. Pathigoolla and **K. M. Sureshan**, Chemoselective alcoholysis/acetolysis of trans-ketals over cis-ketals and its application in the total synthesis of the cellular second messenger, D-myo-inositol 1,4,5-trisphosphate, *Org. Biomol. Chem.*, DOI:10.1039/C3OB40789F, 2013.
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53. S. Chandra Shekar and **R. S. Swathi**, Stability of Nucleobases and Base Pairs adsorbed on Graphyne and Graphdiyne, *J. Phys. Chem. C*, 118, 4516, 2014.
54. Jatish Kumar, Reshmi Thomas, **R. S. Swathi** and **K. George Thomas**, Au nanorod quartets and Raman signal enhancement: Towards the design of plasmonic platforms, *Nanoscale*, DOI: 10.1039/c4nr00170b, 2014
55. W. Li, **A. Thirumurugan** et al. Mechanical Tunability via Hydrogen Bonding in Metal–Organic Frameworks with the Perovskite Architecture, *J. Am. Chem. Soc.*, 136, 7801, 2014.
56. **R. Tibrewala**, Inhomogeneities, loop quantum gravity corrections, constraint algebra and general covariance, *Class.Quant.Grav.* 31 055010, 2014.
57. V. Sreenath, **R. Tibrewala**, L. Sriramkumar, Numerical evaluation of the three-point scalar-tensor cross-correlations and the tensor bi-spectrum, *JCAP*1312 037, 2013.
58. **Ullasa Kodandaramaiah**, Lindenfors P. and Tullberg B., Deflective and intimidating eyespots: A comparative study of eyespot size and position in *Junonia* butterflies. *Ecology and Evolution*, 4518-4524, 2013.
59. **Ullasa Kodandaramaiah**, Simonsen TJ, Bromilow S, Wahlberg N & Sperling F, Deceptive single-locus taxonomy and phylogeography: *Wolbachia* mediated discordance between morphology, mitochondria and nuclear markers in a butterfly species, *Ecology and Evolution*, 5167-5176, 2013.
60. Dinca V., Wiklund C., Lukhtanov V.A., **Ullasa Kodandaramaiah**, Noren K., Dapporto L, Wahlberg N, Vila R and Friberg M., Reproductive isolation and patterns of genetic differentiation in a cryptic butterfly species complex, *Journal of Evolutionary Biology*, 26, 2095–210, 2013.
61. A. Bhaduri and **Utpal Manna**, Impacts of Water Supply Uncertainty and Storage on Irrigation Technology Adoption, *Natural Resource Modeling*, 27 (1), 1-24, 2014.

Conference Articles

1. **Archana Pai**, Aperture Synthesis in Gravitational Wave Search, Astron. Soc. of India, Conf. Series, 9, 21, 2013.
2. **K. R. Arun**, G.-X. Chen and S. Noelle. Finite volume evolution Galerkin schemes for wave propagation in heterogeneous media, 2013.
3. A. Joseph, A. China, V. Nagaraja and **Ramanathan Natesh**, Expression, purification, crystallization and preliminary crystallographic analysis of Gre homologue from Mycobacterium smegmatis, 42nd National Seminar on Crystallography and IWAXDDD, NSC42, New Delhi, 21-23 November, 2013.
4. T. Forster, F. A. Garcia, A. N. Ponomaryov, **R. Nath**, E. E. Kaul, B. Schmidt, S. A. Zvyagin, C. Geibel, and J. Sichelschmidt, Field dependence of XY-behavior in a frustrated $S = 1/2$ square lattice, J. Phys. Soc. Jpn.: Conference Series, 2014.
5. Suhail T.V., **Tapas Manna**, Knock-down of centrosome protein TACC3 activates the p53-mediated G1/S check-point in cancer cells, Annual Meeting of Indian Association of Cancer Research (IACR) on Cancer at Kollam, Kerala Feb 13-15, 2014.

6. Awards and Honours

Sl. No.	Faculty	Honours/Awards
1	Dr. Archana Pai	Council Member, Indian Association for General Relativity and Gravitation, March 2014
		Member, Selection Committee of GWIC (Gravitational Wave International Committee) Thesis Prize and Stefano Braccini Thesis Prize, January 2014
		Member, LSC Academic Credit and Corresponding Authorship Committee, April 2013
2.	Prof. K. George Thomas	J. C. Bose National Fellowship (2014-2019)
3.	Dr. Jishy Varghese	Ramanujan Fellowship (DST-SERB)
4.	Dr. Mahesh Hariharan	Kerala State Young Scientist Award 2013
5.	Dr. Ramesh Chandra Nath	DST-Max Planck Fellowship (2011-2014)
6.	Dr. K. M. Sureshan	Swarnajayanthi Fellowship in Chemical Sciences
		Alexander von Humboldt revisit Fellowship
7.	Dr. A.Thirumurugan	Membership of Royal Society of Chemistry
8.	Dr. Ullasa Kodandaramaiah	INSPIRE Faculty Award (DST)
9.	Dr. Viji Thomas	PEIN Fellowship(Government of Spain and University of Santiago de Compostela), 1 month duration

7. Other Academic Activities

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

Conferences and Workshops Attended

Sl. No.	Faculty/ Student	Conference/ Workshop	Venue	Date	International/ National
1.	Dr. Anil Shaji	Conference on Quantum Information Processing and its applications	HRI Allahabad	Dec, 2013	International
2.	Dr. Archana Pai	Inter IISER Physics Meeting	IISER Pune	15-16 Mar, 2014	National
		4-th Bi-annual Meet of Head of Partner Groups at Trivandrum.	Residency Towers, Trivandrum	18-20 Apr, 2013	International
3.	Arvind Yogi	GWPAW-Pune India	IUCAA Pune	16-21 Dec, 2013	International
		FPSchool – 2013	ILL, Grenoble, France	November, 2013 (10 days)	International
4.	Dr. Bindusar Sahoo	National Strings meeting	IIT Kharagpur	22-27 Dec, 2013	National
5.	Dr. Chandra Kant Mishra	LIGO-VIRGO Collaboration Meeting	Albert Einstein Institute	23-27 Sept, 2013	International
6.	Prof. K. George Thomas	International Symposium on Photoresponsive Materials 2014 (organized by NAIST-AGU-YNU Comprehensive Alliance for the Research of Photoresponsive Materials)	Aoyama Gakuin University, Kanagawa, Japan	24 Feb, 2014	International
7.	Haris M. K.	LIGO-VIRGO Collaboration Meeting	Albert Einstein Institute	23-27 Sept, 2013	International
8.	Dr. Hema Somanathan	International Conference on Invertebrate Vision	Sweden	27 July -3 Aug, 2013	International
		Behaviour 2013	New Castle UK	1 Aug, 2013	International
		The buzz about bees	IISER Kolkata	27 Oct, 2013	National
9.	Dr. Manoj A. G. Namboothiry	Numerical Relativity and Data Analysis Meeting	Mallorca, Spain	18-21 Sept, 2013	International
		Indo-US workshop On Organic Solar Cells	IIT Kanpur	20-21 Mar, 2014	International
		Inter IISER Meet	IISER Pune	15-16 Mar, 2014	National
10.	Nairwita Mazumder	GWPAW-Pune	IUCAA, Pune	16-21 Dec, 2013	International
11.	Dr. Rajeev N. Kini	ICMAT 2013	Singapore	30 Jun-5 July, 2013	International
		Inter-IISER-NISER Physics Meeting 2014	IISER Pune	14-17 Mar, 2014	National

12.	Ranjith Kumar KM	9th JNC Conference on Chemistry of Materials	Thiruvananthapuram, Kerala	October, 2013 (3 days)	National
		IUMRS ICA 2013	IISc Bangalore	December, 2013 (5 days)	International
		7th India - Singapore Symposium on Experimental Condensed Matter Physics	IIT Bombay	February, 2014 (3 days)	International
13.	Prof. V. Ramakrishnan	International workshop on electronic materials technology	Anna University, Chennai	13-15 Mar, 2014	International
14.	Dr. Ramanathan Natesh	42nd National Seminar on Crystallography and International workshop on Application of X-ray Diffraction for Drug Discovery	New Delhi	21 November, 2013	National Conference and International workshop
		43 rd A : National Seminar on Crystallography	IISER Mohali	29 March, 2014	National
15.	Dr. Ravi Maruthachalam	International conference on Arabidopsis Research (ICAR)	Sydney, Australia	24 -27 Jun, 2013	International
		American Society of Plant Biologists (ASPB)	Providence, Rhode Island, USA	19 -24 July, 2013	International
		Interactive meeting on Doubled haploids: Scope and Future in horticultural crops"	Indian Institute of Horticultural research, Hessarghatta, Bengaluru	4 October, 2013	National
16.	Dr. Sachindranath Jayaraman	International Conference on Matrix Analysis and Applications (ICMAA) 2013	Konya, Turkey	July, 2013	International
17.	Dr. M. M. Shaijumon	US-India Tunable Materials Technical Exchange Meeting	Dayton, Ohio, USA	25-27 Mar, 2014	International
		International Conference on Advanced Functional Materials (ICAFM 2014)	Trivandrum, India	19-21 Feb, 2014	International
		Indo-German Conference on Laser Applications & Nanoscience	Trivandrum, India	5-7 Dec, 2013	International
		International Workshop on Energy Storage	KAUST, Saudi Arabia	23-25 Sept, 2013	International

18.	Dr. Sheetal Dharmatti	SIAM annual Meet	San Diego, USA	8-12 July, 2013	International
		International Conference on Mathematics Education & Mathematics in Engineering and Technology	Trivandrum, India	17-20 Dec, 2013	National
19.	Prof. Srinivasa Murty Srinivasula	Ubiquitin Systems and Cellular Processes	IISER Mohali	17 October, 2013	International
		Young Investigators Meetings (YIM)	MIT, Boston USA	27-29 Sept, 2013	International
		Young Investigators Meetings (YIM)	Hyderabad	8-9 Feb, 2014	International
20.	Dr. Sukhendu Mandal	International Symposium on Cluster, Cluster-Assemblies and Nano-scale Materials-III	Harish Chandra Research Institute, Allahabad, India	11-14 Mar, 2014	International
21.	Dr. Sunish Kumar Radhakrishnan	Bacterial Expressions 2013	NCBS, Bangalore	22-25 Oct, 2013	International
22.	Dr. K. M. Sureshan	Gordon Research Conference	Mount Snow, Vermont, USA	16-21 Jun, 2013	International
23.	Dr. R. S. Swathi	DAE-BRNS Symposium on Current Trends in Theoretical Chemistry (CTTC-2013)	Mumbai	26-28 Sept, 2013	International
24.	Dr. Tapas Manna	Stem Cells and cancer: Proliferation, differentiation and apoptosis	Haffkine Institute, Mumbai	19-22 Oct, 2013	International
25.	Dr. A. Thirumurugan	9 th JNC research conference on Chemistry of Materials	Trivandrum	14-16 Oct, 2013	National
		Directions in Materials Science	Bangalore	30 Nov–1 Dec, 2013	International
26.	Dr. Ullasa Kodandaramaiah	Wallace Symposium	NCBS, Bangalore	30 September, 2013	National
		YETI (Young Ecologists Meet and Interact)	Nagaland University, Lumami	17-19 Dec, 2013	International
27.	Dr. Utpal Manna	Nonlinear Filtering and Data Assimilation	International Centre for Theoretical Sciences (ICTS), Bangalore	8-11 Jan, 2014	International

Invited Lectures and Seminars Delivered

Sl. No.	Name of Faculty	Title of Lecture	Venue
1	Dr. Anil Shaji	Quantum Information Theory	Thiruvananthapuram
2.	Dr. K. R. Arun	IMEX large time step schemes for low Froude number shallow water flows	Aachen, Germany
3.	Dr. Bindusar Sahoo	N=4 conformal supergravity	National Strings meeting, IIT Kharagpur
4.	Prof. K. George Thomas	Probing the Optoelectronic Properties of Quantum Dots	Nara Institute of Science and Technology, Nara, Japan
5.	Dr. Kalika Prasad	Competence and regulatory interactions during regeneration in plants	Bangalore
		A regulatory framework for regeneration	Vermont, Boston (USA)
		Genetic control of de novo shoot assembly in Arabidopsis	Wageningen, Netherlands
6.	Dr. Madhu Thalakulam	Mesoscopic Charge amplifiers & the Quantum limit	IISER Pune
		Solution processed SQ: PCBM inverted bulk heterojunction solar cells	IIT Kanpur
7.	Dr. Mahesh Hariharan	DNA Donor-Acceptor Conjugates: Towards Understanding Biological Processes in Femtosecond Timescale	Trivandrum
		DNA Donor-Acceptor Conjugates: Towards Understanding Biological Processes in Femtosecond Timescale	Kottayam
		Ultrafast Dynamics of Charge Carriers in Superstructured Organic Materials	Mumbai
		Dynamics of Charge Recombination in DNA	Kharagpur
		Ultrafast Dynamics of Charge Carriers in DNA and Superstructured Organic Materials	Trivandrum
		Light Harvesting Vesicular Donor-Acceptor Scaffold Limits the Rate of Charge Recombination	Delhi
		Conformational and Excited State Dynamics of Near-Orthogonal Donor-Acceptor Bichromophores	Easton

8.	Dr. Manoj A. G. Namboothiry	Organic Solar cells	NIT Suratkal
		Organic Solar cells	University College Thiruvananthapuram
		Ultrafast Dynamics of Carriers And Phonons In The Dilute Bismide Alloy, GaAs _{1-x} Bix	IIT Kharagpur
		Ultrafast Spectroscopy of Semiconductors	CUSAT, Kochi
		Ultrafast Spectroscopy of Semiconductors	DB College, Thayolaparambhu
		Dynamics of carriers and phonons in semiconductors studied using ultrafast lasers	Trivandrum
9.	Dr. Nishant K.T.	Mechanisms of meiotic chromosomesegregation: Understanding the effect of recombination rate variation	Colorado, USA
		Mechanisms of meiotic chromosomesegregation: Understanding the effect of recombination rate variation	Osaka, Japan
10.	Dr. Rajeev N. Kini	Electrons, Photons, Phonons; SASER and Phoniton	Payyanur, Kerala
11.	Prof. V. Ramakrishnan	Raman mapping studies of Zinc oxide/ Graphene (GZ) composites	Anna University, Chennai
		Kerala state science academy	Science day
		Inter IISER Physics Meet	IISER Pune
		University College Trivandrum	Trivandrum
12.	Dr. Ramanathan Natesh	Visualising the non-native proteins bound to Chaperonin complexes	Strasbourg, France
		The Binaries and Quinaries of non-native protein binding to Chaperonin complexes by Single Particle CryoEM	Kolkata
		The amazing world of biological NANO MACHINES and Structural Biology as seen through some noble prizes	Trivandrum
		Combining Protein Crystallography and single particle cryoEM	New Delhi
		Tackling the challenges in visualising the non-native protein binding to chaperonin complexes	Pune
		TheVisualizing the amazing world of biological macromolecules using X-Ray crystallography and single particle cryoEM	Chennai
		Unfolding the folding secrets of chaperonin assisted protein folding	New Delhi
		Hybrid methods PX with SP cryoEM : pushing the barriers	Mohali

13.	Dr. Ravi Maruthachalam	Centromeres and parental genome conflict	Sydney, Australia
		Centromeres and parental genome conflict	Adelaide, Australia
		Centromere incompatibility induces genome catastrophe during zygotic mitosis in <i>A thaliana</i>	Providence, Rhode Island, USA
		An improved <i>in vivo</i> method for haploid induction and synthetic clonal reproduction through seeds	International center for research in semi Arid tropics (ICRISAT), Patancheru, Hyderabad
		A haploid tool box for <i>Arabidopsis thaliana</i>	Hyderabad, India
14.	Dr. Ravi Pant	Annual Photonics Workshop	CUSAT, Kochi
15.	Dr. Reji Varghese	Supramolecular Chemistry: A general perspective	Edathala, Ernakulam
		Supramolecular Chemistry: General Perspective	Thrissur
		Functional DNA Nanostructures	Trivandrum
		DNA Nanostructures: Surface Engineered Nanomaterials	Darjeeling, West Bengal
		Supramolecular Chemistry: General Perspective	Thevara, Kerala
		Supramolecular Chemistry: General Perspective	Kottayam, Kerala
		Molecular Recognition of Macroscopic Materials	Kasaragod, Kerala
		Supramolecular Chemistry	Calicut, Kerala
16.	Dr. Sachindranath Jayaraman	Some aspects of nonnegative generalized inverses	Konya, Turkey
17.	Dr. Sainul Abideen. P	International Training Programme on Digital Library Practices & Information Technology Application for Knowledge Management	Fluid Control Research Institute (FCRI) Plakkad, (under the Ministry of Heavy Industries & Public Enterprises, Govt. of India)
		Open Access Week organized by the Department of Library & Information Science	University of Kerala
		Information Delivery Systems for Academic and Research Institutions" (IDSARI Version 3.0)	IIITM-K
18.	Dr. Sheetal Dharmatti	H Infinity feedback boundary stabilization of Navier Stokes' equations	San Diego
		Mathematics behind image processing	Thiruvananthapuram

19.	Prof. Srinivasa Murty Srinivasula	Toll-Like Receptor (TLR)-mediated Autophagy in Macrophages	New Haven, CT, USA
20.	Dr. Sukhendu Mandal	A Multifunctional Luminescent Metal Organic Framework Sensor	West Bengal
21.	Dr. Sunish K. Radhakrishnan	Entangled: negative regulation of topoisomerase IV activity during cell cycle in <i>Caulobacter crescentus</i>	Bangalore
22.	Dr. K. M. Sureshan	Glycopolymer Synthesis via Topochemical Huisgen Reaction	Bangalore
		Practical Syntheses of Rare or Unnatural Carbohydrates and Cyclitols via inversion of up to three contiguous stereocenters	Pune
		Design of Topochemical Huisgen reactions	Suratkal
		Organogels for soft-optics and oil spill recovery	Trivandrum
		Topochemical reactions	Payyanur
23.	Dr. R. S. Swathi	Graphyne and Graphdiyne: New materials in the carbon family	Trivandrum
		Understanding the world of atoms and molecules using quantum mechanics	Trivandrum
		The story of Graphynes as novel materials in carbon family	St. Joseph's College, Irinjalakuda
		Insights into some exactly solvable problems in quantum mechanics	St. Joseph's College, Irinjalakuda
24.	Dr. Tapas Manna	Centrosome mediated check-point regulation: the role of transforming acidic coiled-coil 3 (TACC3)	Mumbai
		Self-assembly and self-organization of microtubule cytoskeleton: molecular links to biological functions	Mumbai
25.	Dr. Ullasa Kodandaramaiah	The dispersal-vicariance pendulum and historical biogeography	Bangalore
		The dispersal-vicariance pendulum and historical biogeography	Lumami, Nagaland
		Eyespots and sexual parasites in butterflies	Kolkata
26.	Dr. Viji Z. Thomas	Bazzoni-Glaz Conjecture	Kolkata
		Non-abelian tensor product and its connections to Schur Multiplier	Allahabad

Foundation Day and Science Day Lecture

The institute celebrated its fifth foundation day on 11 November 2013. The foundation day lecture was delivered by Prof. K. Vijay Raghavan FRS (Secretary, Department of Biotechnology) and was titled "The False War between Excellence and Relevance in Scientific Research".

On 28 February, 2014 on the occasion of National Science Day, the institute organized a quiz competition for high school students in the city of Thiruvananthapuram. The undergraduate students of the institute also organized a "Science Show" with several accessible and interdisciplinary talks and demos of science experiments for the benefit of the participants in the quiz competition as well as the accompanying school teachers.

Colloquia

Sl. No.	Speaker	Institute	Title	Date
1.	Prof. K. N. Ganesh	Director, IISER Pune	Making medicines out of DNA and RNA: From Peptide Nucleic acids (PNA) to Pune Nucleic acids (PuNA)	21.03.2014
2.	Prof. Ajay Sood	Department of Physics, Indian Institute of Science, Bangalore	Driven Matter	21.02.2014
3.	Prof. D. D. Sarma	Chairman, Solid State and Structural Chemistry Unit, Indian Institute of Science, Bangalore	A World Beyond the Obvious: Science of the Nanometer Scale	03.01.2014
4.	Dr. Danaboyina Ramaiah	F. A. Sc., Chief Scientist & Head, Chemical Sciences & Technology Division, National Institute of Interdisciplinary Science and Technology, Thiruvananthapuram, CSIR, Govt of India	Functional Organic Molecules: Towards Biosensors and Phototherapeutics	27.09.2013

Seminars

Sl. No.	Speaker	Institute	Title	Date
1.	Dr. Siva Rama Krishnan	TIFR Hyderabad	Ultrafast meets ultrasmall: Few-femtosecond IR and EUV pulses probe collective dynamics in nanoscale plasmon and superfluid systems.	21.03.2014
2.	Prof. Mewa Singh	University of Mysore	Animal Behaviour: Applications for Wildlife Conservation and Management.	10.03.2014

3.	Dr. Dinesh Naik	Universität Stuttgart Institut für Technische Optik ITO, Germany	Spectrally-resolved Incoherent Holography	03.03.2014
4.	Dr. Kalpataru Pradhan	University of Augsburg , Germany	Magnetically Disordered Interfaces in Magnetic Tunnel Junctions	03.03.2014
5.	Dr. Sharmila Mande	TCS Innovation Labs	Gut microbiome and Human Health : Insights from Metagenomics study	06.02.2014
6.	Dr. Arijith Saha	University of Basel, Switzerland	Novel Transport phenomena in hybrid junctions of Nanowires	31.01.2014
7.	Dr. Ranjith Anand Brandeis	University, USA	Chromosome Rearrangements: Repair-Fork Gymnastics	27.01.2014
8.	Prof. Giovanni Mancini	Dipartimento di Matematica e Fisica, Università Degli Studi Roma Tre, ITALY.	On some elliptic problems in hyperbolic space	23.01.2014
9.	Mr. D. Pradeep	Research Scholar, School of Mathematics, IISER Thiruvananthapuram	A regularized iterative scheme for solving non-linear ill-posed problems	16.01.2014
10.	Prof. A.K. Kapoor	Visiting Professor, BITS Hyderabad	Recent Developments in Quantum Hamilton Jacobi Method	09.01.2014
11.	Dr. Suresh Doravari	LIGO Laboratory, California Institute of Technology, LIGO-Livingston	An Introduction to LIGO: science, technology and research opportunities	09.01.2014
12.	Dr. Manesh Gopinadhan	Department of Chemical and Environmental Engineering, Center for Research on Interface Structures and Phenomena (CRISP), Yale University, New Haven, CT, USA	Magnetic Field Directed Self-assembly: a facile route to enable Nanotechnology with Soft Matter	09.01.2014
13.	Prof. M. R. N. Murthy	Indian Institute of Science, Bangalore	Complex assembly of a simple virus - Sesbania mosaic virus	20.12.2013
14.	Dr. Ajai Sriram Mathuru	Institute of Molecular and Cell Biology, Singapore	Functional analysis of vertebrate neural circuits that control behavior	18.12.2013

15.	Dr. Prashant Athavale	University of Toronto	Variational techniques in image processing and applications	12.12.2013
16.	Dr. Kaustuv Sanyal	Associate Professor, Molecular Biology and Genetics Unit, JNCASR, Bangalore	Epigenetic regulation in determining centromere identity.	02.12.2013
17.	Prof. Shyamalava Mazumdar	Department of Chemical Sciences, Tata Institute of Fundamental Research (TIFR), Mumbai - 400 005	Doing Chemistry with the Metal center in Proteins – Rational Design of Thermostable Metalloproteins	12.11.2013
18.	Dr. Ullasa Kodandaramaiah	IISER-TVM	Reading DNA to infer ancient flight	01.11.2013
19.	Dr. Aditya H Kelkar	TIFR, Mumbai	Imaging Dynamics of Chemical Reaction between F- and CH ₃ Cl	29.10.2013
20.	Dr. Uma Shankar	Department of Cell Biology and Physiology, University of Pittsburgh School of Medicine, Pennsylvania, USA	Traffic block: Sort it all out in one minute	29.10.2013
21.	Dr. Ronnie Sebastien	IISER Pune	Smash nilpotent cycles on varieties dominated by products of curves	11.10.2013
22.	Dr. Ronnie Sebastien	IISER Pune	Finite dimensional complex representations of the Lie algebra $sl(2, \mathbb{C})$	10.10.2013
23.	Prof. Turab Lookman	Los Alamos National Laboratory	Shock Response in Metals: Collective Nature of Plasticity in Mediating Phase Transformation	04.10.2013
24.	Prof. K. N. Raghavan	IMSc Chennai	Ruler and Compass Constructions	27.09.2013
25.	Prof. V. Parameswaran Nair	City College of the CUNY New York	Wave Functionals, Boundary Conditions and Casimir Effect	13.09.2013

26.	Prof. G. Ambika	IISER Pune	Environmental effects in Dynamics of Coupled Systemsbehavior	11.09.2013
27.	Prof. Anil K. Tripathi	School of Biotechnology, Faculty of Sciences, Banaras Hindu University	Role of zinc-binding anti-sigma factors and their cross-talk with non-cognate extra-cytoplasmic sigma factors in <i>Azospirillum brasilense</i>	06.09.2013
28.	Dr. Saikat Talapatra	Department of Physics, Southern Illinois, University Carbondale	Materials and Applications: Carbon Nanotubes, Graphene and Beyond Graphene	05.09.2013
29.	Manil T. Mohan	School of Mathematics, IISER-TVM	Stochastic Navier-Stokes Equations In Unbounded Channel Domains	22.08.2013
30.	Prof. Rajendra Prasad	School of Life Sciences, Jawaharlal Nehru University, New Delhi	Efflux Pumps in clinical drug resistance	21.08.2013
31.	Dr. Mousumi Bhakta	Technion University, Israel	Semilinear Elliptic equations admitting similarity transformations	14.08.2013
32.	Dr. Anup Biswas	Technion University, Israel	Law of Large Numbers for Queues under earliest deadline first scheduling	13.08.2013
33.	Dr. I. Shyjumon	Institute for Synchrotron Radiation (ISS), Karlsruher Institut für Technologie (KIT), Germany	Synchrotron Small Angle X-ray Scattering (SAXS) analysis on Nanosystems –Study of Mesostructure in gas phase & Nanoparticles by Laser ablation	12.08.2013
34.	Dr. Tejas Kalelkar	Washington University in St Louis	Taut foliations of 3-manifolds	06.08.2013
35.	Dr. Gautam V. Soni	Kavli Institute of NanoScience, Dept. of Bionanoscience, TU Delft, The Netherlands	Nanopore Biophysics: From Gene Sequencing to Gene Silencing	02.08.2013
36.	Dr. Senthil Kumar Dharmapuri Vijayan	Potsdam Institute for Climate Impact Research, German	Synchronization in networks of time-delay system	01.07.2013
37.	Dr. R. Uma Shanker	Department of Crop Physiology, University of Agricultural Sciences, GKVK Campus, Bangalore 560065	Do ecological niche reflect the adaptive landscape of species?	27.06.2013

38.	Dr. Sairam Swaroop Mallajosyula	Department of pharmaceutical Sciences, University of Maryland School of Pharmacy, Baltimore, USA	Protein Glycosylation: From Force field Development to applications	18.06.2013
39.	Prof. John Kuriyan	Department of molecular and Cell Biology and Department of Chemistry, Howard Hughes Medical Institute	Allosteric Mechanisms in the Activation of Receptor Tyrosine Kinases	17.06.2013
40.	Dr. Minhaj Sirajuddin	Department of Cellular and Molecular Pharmacology, University of Californi, San Francisco CA	Regulation of motor proteins by tubulin carboxy- termini tails	07.06.2013
41.	Prof. Anantha Ramakrishna	IIT Kanpur	Super structures of columnar thin films: Photonic properties and their applications	07.06.2013
42.	Dr. Deepti Trivedi Das	Department of Neurology, University of Texas, USA	A tale of two genes affecting synaptic structure and function	28.05.2013
43.	Prof. Phoolan Prasad	Department of Mathematics, Indian Institute of Science, Bangalore.	Fermat's Principle and Huygens' Wavefront Construction	14.05.2013
44.	Dr. Barath Coleppa	Arizona Sate University	Constraining Models With Strong Top-Quark Dynamics	02.05.2013
45.	Dr. Swasti Raychadhuri	Department of Cellular Biochemistry, Max Planck Institute of Biochemistry, Martinsried, Germany	Regulation of protein homoeostasis in aging and age-related diseases	19.04.2013
46.	Dr. H. H. Krishnan	Project leader, Centre for Cellular and Molecular Biology (CCMB), Hyderabad	Game on: Hepatitis C Virus protein NS5A and Host Protein Translation	17.04.2013
47.	Dr. Amal Medhi	NIT, Meghalaya	Edge states of Topological Insulators and electronic correlation	04.04.2013

Short Term Courses Organised

1. The school of mathematics organised a compact course on computational fluid dynamics by INSA chair Professor Philip L. Roe, University of Michigan during May 15-18, 2013.

Seminars/Workshops/Conferences Organized

Sl. No.	Name of Faculty	Name of Sem./ Wor./Con.	Funded By	Date	International/ National
1.	Dr. Archana Pai	Member of SOC: Astronomical Society of India (ASI)-2014 Meeting at IISER Mohali	Multiinstitutes and ASI, India	20-22 March, 2014	National
		GW@ASI2014: A Satellite Workshop on Gravitational Wave Astronomy at the ASI Meeting Co-Organized by P. Ajith, ICTS-TIFR, Bangalore Streamed through NKN from IISER-Mohali to IISER-TVM	Max Planck Partner Group on Gwaves and LOC, ASI	19 March, 2014	National
		Searching for Gravitational Waves from the Coalescence of Binary Black Holes with Spinby Stephen Privitera, LIGO, California Institute of Technology	Max Planck Partner Group on Gwave at IISER-TVM	2 December, 2013	IISER-TVM
		Time Delay Interferometry, ByK. Rajesh Nayak, IISER-Kolkata	Max Planck Partner Group on Gwave at IISER-TVM	11 December, 2013	IISER-TVM
		What you can do for astronomy? By Ashish Mahabal, California Institute of Technology	Max Planck Partner Group on Gwave at IISER-TVM	27 January, 2014	IISER-TVM
		An Introduction to LIGO: science, technology and research opportunities by Suresh Doravari, LIGO, California Institute of Technology	Max Planck Partner Group on Gwave at IISER-TVM	9 January, 2014	IISER-TVM
2.	Dr. Mahesh Hariharan and Dr. R. S. Swathi	IISER-American Chemical Society Mini-Symposium	American Chemical Society	28 November, 2013	International
3.	Dr. S. Shankar-narayanan	4th Biannual Meeting of Heads of Max Planck Partner Group	IISER-TVM + Max Planck Society	16-18 April, 2013	National

Student's 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.	Anu Thomas	DAAD Programme (Germany) 2013	2nd May-26th July, 2013
2.	Ranjith Viswanathan	DAAD Programme (Germany) 2013	1st June-31st July, 2013
3.	Jishnu N. Nampoothiri	DAAD Programme (Germany) 2013	2nd May-26th July, 2013
4.	Atul Mohan	DAAD Programme (Germany) 2013	2nd May-26th July, 2013
5.	Pooja Agarwal	DAAD Programme (Germany) 2013	1st May-29th July, 2013
6.	Michelle Noble	7th ASC 2013 at Tsukuba Japan	25th Aug-30th Aug, 2013
7.	Siddharth Pillai	7th ASC 2013 at Tsukuba Japan	25th Aug-30th Aug, 2013
8.	Salini. K.	SN. Bose(US) 2013	28th May-28th July, 2013
9.	Jimmy joy	63rd Annual Meeting of Nobel Laureates dedicated to Chemistry at Linadu, Germany	30th June-13th July, 2013
10.	Athira George	63rd Annual Meeting of Nobel Laureates dedicated to Chemistry at Linadu, Germany	30th June-13th July, 2013

Mr. Kalaivanan Nagarajan, Ph.D. Student has achieved "Innovative Research Award" for the best poster presentation at the International Conference on Organic Devices: A Future Ahead (ODEFA-2014), organized by Department of Atomic Energy – Board of Research in Nuclear Sciences (DAE-BRNS), Government of India, held at Bhabha Atomic Research Center, Mumbai, India.

The graduated students of our Five Year BS-MS Dual Degree Programme got admissions for various programmes in different national/international universities for higher studies as given below:

Sl.No.	Name	School	Universities
1.	Thejasvi B.R.	Biology	JRF at IISER-TVM
2.	Saranya P.S.	Chemistry	Penn State University, USA
3.	Syed Zahid Hassan		Tokyo Metropolitan University, Japan
4.	Hitesh Khandelwal		Eindhoven University of Technology, Netherlands
5.	Devendra Singh		Decided to teach students for an year
6.	Pavan Sharma		Preparing for Civil Service

7.	Gaurav Dhariwal	Maths	Ph.D. at University of York, UK
8.	K.V. P. Varma		MS at University of Illinois Urbana-Champaign, USA
9.	B. S. Reddy		Project Fellow at IIT Hyderabad
10.	Bobbala Manogna		MS in Illinois Institute of Technology
11.	Tanvi Gujarati	Physics	Ph.D. at University of Michigan, USA
12.	Gopikrishnan M		Ph.D. at University of New Mexico, USA
13.	Prashant Pathak		Project Fellow at IISER-TVM
14.	Pranav Khandelwal		JRF at IISc, Bangalore

Out of 6000 candidates appeared in JEST 2014 Physics Examination, 7 fifth year BS-MS students have made an excellent performance in the qualifying examination for Ph.D. The rank and percentile details are given below:

Sl. No.	Name	Rank	Percentile
1.	Krishnanand Mallayya M.	1	99.99
2.	Ajeesh M.O.	32	99.14
3.	Vijay Pathak	38	99.04
4.	Ajit Kumar Mehta	42	98.97
5.	Atul Mohan	44	98.83
6.	Vigneshwar N.	78	98.08
7.	Chithra H. Sharma	147	96.26

Summer Programme

The detail of summer programme conducted during the period is given below.

IISER Thiruvananthapuram Summer Visiting Programme Fellowship:

729 online applications were received for 2013 IISER-TVM Summer Visiting Programme. 27 students were selected by individual schools, based on merit, out of which 20 students reported and carried out the project. 19 students received the IISER Thiruvananthapuram Summer Visiting Programme Fellowship and one opted out of IISER-TVM Fellowship as he received Inspire fellowship. The project students submitted their four Weeks and Final Eight weeks reports.

IASc-INSA-NASI Summer Research Fellowship:

26 selected students from Indian Academy of Science (IAS) were allotted to IISER Thiruvananthapuram for the Academy summer programme out of which 25 students reported and carried out their project and submitted their reports to IAS.

External Students from other Institutions:

PI's from Various individual laboratories from IISER Thiruvananthapuram selected 11 External Students from other Institution. Out of which 9 students registered and carried out projects in various laboratories at IISER Thiruvananthapuram.

IISER Thiruvananthapuram students:

111 BS-MS students from IISER-TVM carried out projects during this summer in various laboratories.

Summer Research Programme 2013	No. of students selected	No of students done project
External Students-other Institution.	11	9
IISER-TVM Summer Visiting Programme SVP	27	19
Direct IISER-TVM summer project students.	111	111
IASc-INSA-NASI Summer Research Fellowship	26	25

8. Facilities

Laboratory

Various high-end instruments and advanced technological platforms were added to our state of the art laboratories which deal with inorganic, synthetic, physical, organic and supramolecular chemistry, DNA nanotechnology, photophysics and photochemistry of nanomaterials, NMR spectroscopy, optoelectronic materials and photovoltaics, nanoscale devices, quantum phase transitions and superconductivity, ultrafast spectroscopy, scanning tunneling microscopy, superconducting and magnetic materials, high resolution imaging platforms, cell and animal culture facilities, molecular biology, biochemistry and biophysics techniques, behavioral, evolutionary and ecological studies.

Library

Institute has a fast growing library to meet academic and research needs of the institute community. Library adopts state of the art technologies to facilitate access to online and print resources to its users. Major international journals and online resources in science and

interdisciplinary areas have been subscribed. Library is successful in providing most of the resources in electronic format which facilitate 24X7 e-library.

Library possesses nearly 6000 books, 10,000 e-Books, over 4,300 e-journals, 1700 standards and 15,700 conference proceedings. The library's extensive online collection from more than 40 international societies, institutes and scientific publishers includes full-text e-journal databases, journal archives, video journal, e-books, bibliographic and review databases etc., which are useful for academic and research activities of the institute research community. Major online full text databases made available include ScienceDirect, ACS Web Edition, Nature, Wiley, APS, AIP, AMS, ASM, AACR, RSC Gold, IOP, OUP, Annual Reviews, JSTOR, Project Euclid, SpringerLink, Science Online, SIAM, World Scientific, IEEE Xplore etc. Resources like Electro Chemical Society Digital Library, OpticsInfobase, Wiley Journals and ESA Package are added during this period. Major Bibliographic database include Web of Science, ScifinderScholar, MathScinet, Faculty of 1000 etc. are also made available. American Chemical Society (ACS) Archive was added during this period.

Library of IISER-TVM is a core member in the Indian National Digital Library in Engineering, Science and Technology (INDEST-AICTE) Consortium established by the Ministry of HRD. The Ministry has nominated institute director/nominee as a member of the National Steering Committee of the INDEST-AICTE Consortium. Asst. Librarian attended the 21st meeting of the National Steering Committee of the INDEST-AICTE Consortium held on 17th September 2013 at IIT Delhi.

Institute Library is also part of the IISER Library Consortium, constituted jointly by all IISERs. Library has memberships/affiliations in national bodies like Developing Library Network (DELNET) and the UGC-Infonet Consortium established by the University Grants Commission (UGC). Institute library is also having institutional membership in the library of University of Kerala.

Library has a very effective document delivery facility which facilitates in providing the articles/resources that are not available in the institute. 1799 interlibrary loan transactions were undertaken during this period. Library received 112 books as complementary copies mainly from National Board for Higher Mathematics (NBHM).

More than 200 new users were taken library membership in 2012-13. Library conducted several user training programmes to increase the usage of e-resources. The training programme on 'ScifinderScholar' was conducted in April 2013 and library orientation programme was conducted in August 2013. MLISc Students and faculty members of the Dept. of Library and Information Science, Kannur University visited the library on 26th November 2013.

Asst. Librarian represented the institute in the 7th Meeting of 'IISER Library Consortium' held during Nov 21-22, 2013 at IISER Pune.

Library operations are automated using the 'Evergreen' library automation software. Major enhancement of library automation was carried out during this period with several innovative facilities.

Computing and Networking Facility

The institute has gigabit ethernet based data network in the transit campus. Internet connectivity is through a 100 Mbps leased line provided as part of the National Knowledge Network (NKN). This will be upgraded to 1 Gbps. Additional bandwidth of 10 Mbps through a BSNL leased line is also available. 2 Mbps leased line connectivity is available at the permanent campus site. Different office buildings are interconnected using fibre. It is planned to provide WiFi connectivity to the hostels from the transit campus through BSNL telephone lines.

The institute has a computer lab with 50 workstations, three computational clusters 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 250 PCs. Licences are available for the software like Windows, Office, EndNote, Adobe Acrobat Pro, Origin and Kaspersky Antivirus.

Since August 2011, the institute has a fully functional virtual classroom funded by the NKN project. The classroom has been in use for over six semesters facilitating the exchange of at least two courses each semester between IISER-TVM, 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.

Hostels

During 2013-14 four buildings were taken on lease for use as hostels (Hall of residence XI (A), XI (B), XII and XIII) to accommodate the students joined during the academic year. Presently there are 14 rented buildings being used as hostels. There are six ladies hostels and eight gents hostels.

All the hostels are furnished and have provision for amenities like washing machine, television, indoor games etc. Round the clock security is provided in all the hostels. A shuttle transport connecting the hostels has been commenced during day time for commutation of students to and from hostels to institute and back in addition to the existing night shuttle.

The process for setting up of institute gymnasium to cater the student's requirement has been initiated.

9. Sports and Cultural Activities

Sports

IISER-TVM students participate in two major sports events each year:

1. Institute's Annual Sports Fest
2. Inter-IISER Sports Meet.

The institute's Annual Sports Fest, ITSAV, was held on 20-22nd Sept 2013. With each year, ITSAV is evolving into prominent student event in the annual calendar of IISER Trivandrum with more participation and with more intense competition as a natural result. Events included Athletics, Badminton, Cricket, Football, Table Tennis, Throwball, Kho-Kho, Basketball and Volleyball. The events were held in 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 IIST-Trivandrum, CET-Trivandrum and other local colleges.

The second Inter IISER Sports Meet (IISM) was held between 10th and 14th Dec 2013 in IISER-Pune. It had participation from all the IISERs and NISER-Bhubaneswar. IISER-TVM students availed the sports facilities present in CET-Trivandrum to prepare for the event. IISER-TVM contingent comprised of 71 students (both girls and boys) left for Pune on 8th December. Our students participated in all events including Athletics, Chess, Badminton, Cricket, Football, Table Tennis, Throwball, Kho-Kho, Kabaddi, Basketball and Volleyball. IISER-TVM contingent returned to Trivandrum after putting a credible performance to become the runner-up in the Athletics (with 7 Gold, 6 Silver and 3 Bronze medals) and Runner-up in the overall Sports Championship. IISER-TVM contingent also secured the March past trophy proving their discipline and team work. This year's meet involved stiff competition among the five IISERs and NISER in almost all events. In the Group events, our men's badminton team secured gold beating IISER Kolkata in a repeat final of last year. The kabaddi team put in a great display to secure silver. Our girls played professionally in almost all events and won silver in volleyball and throwball, narrowly losing to IISER Pune in both the events. They showed that they are quick learners by improving in each match. Sagil G. Sathyan won the 'Best Athlete Award' as a result of winning gold in 100 m, 200 m and 400 m events and also being a part of the 4'x400 m relay gold winning team. All of these performances put together resulted in IISER Thiruvananthapuram bagging second position in the overall sports trophy in IISM-2013.

To recognize the contribution of students to the institute sports and also to encourage them, awards in different categories are given to the students every year. For instance, for the year 2014, eight students (5 boys and 3 girls) were awarded with "Sports Color" for their extraordinary performance in ITSAV-2013 as well as in IISM-2013. For their consistent and remarkable contribution towards institute sports for the last 4-5 years in various sports events, four of the passing out batch students were given the "Sports Citation" award. Mr. Sagil G Sathyan was honored with the "sports man of the year-2013" award for his outstanding performance in both ITSAV-2013 and IISM-2013.

In addition to the above, time to time, IISER-TVM sports club organize blood donation camp in the institute campus.

Cultural Activities

Cultural club activities

This academic year saw an increased participation and enthusiasm for various cultural activities. Some of the highlights of this year were a bigger and better Ishya '14, the purchase of various musical instruments and the creation of a music club. A dance and movie club were also formed and were quite active this year. The IISER-Tvm Theatre was also a new initiative.

Ishya '14

To make Ishya bigger and more exciting, we decided to hold many exciting competitions in the weeks building up to the build up to Ishya. Aalap (music), Tarang (dance), Ikebana (art), Inkspell(writing), Illusio(photography), Ouroboros (quiz) and gaming were some of the competitions organized. Ishya was also conducted on a grander scale than before, the final event was spread out over threedays, 27th, 28th and 29th of March 2014. Many exciting games and events were organised for Ishya'14: Soap Carving, Face Painting, Jam. Tee Shirt Painting, Mehendi competitions and Mr. and Ms. Ishya, a personality competition. The most anticipated of these, was the Treasure Hunt organised by the "Sentinels" (Batch '11). Almost two hundred people were madly rushing around IISER trying to solve various clues in this hi-tech treasure hunt. The Ishya-Night had many musical, dance and dramatic performances some of the additions to usual performances were the finals of Tarang, the Dance competition with various Batches competing for a grand prize. The newly created IISER-TVM Theatre troupe put on a fabulous performance. A few faculty and Phd students put together an original drama on the life of Gallileo. The first of its kind, we hope that it will promote more students to actively take part in drama and theatre.

Music Club

This year, the cultural committee established a music club with space set aside for a proper music room and the purchase of various musical instruments. Guitars and amplifiers, a key board, drumkit, a tabla set and a violin were some of the instruments which we have acquired. They were used for the final Ishya event with some spectacular fusion music and band performances. Hopefully this will create the right platform to inculcate the abundant musical talent at IISER.

Dance and Movie and Quiz Clubs

The Dance Club was very active this year, with many members meeting frequently to practice Dance and teach interested students. The also put on a brilliant performance for the Ishya night. The new batch '13 formed a club with the sole purpose of displaying various 'home videos' created by various students at IISER. The newly formed Quiz club held various quizzes throughout the semester and finally conducted a Grand Quiz- Ouroboros for Ishya with great participation and an enthusiastic audience.

Among the many festivals that were celebrated, Diwali and Onam were celebrated with most pomp and excitement. Various fun games, artful performances and traditional decorations marked the celebration of these festivals at IISER.

10. Permanent Campus

The residential permanent campus of the institute is under construction in 200 acres of land allocated by Government of Kerala at Vithura Panchayat in Nedumangad Taluk about 40 Km from Thiruvananthapuram. The campus is located on the southern slope of the 'Kottamala' hill in verdant forest ambience. The terrain is highly uneven with a number of smaller and larger hills and borders the reserve forest and private plantations.

In the master plan the buildings are planned following the contours of land taking maximum advantage of the hilly terrain and incorporating maximum topographical features like existing streams and rivers. Buildings are clustered into groups – for academics, student hostels, faculty housing with suitable provision for future expansion. The clustered site design reduced the foot print to the minimum, leaving a large portion of the campus undisturbed. Covered walk ways connect different parts of the campus allowing easy movement even during monsoon season.

The campus is being developed taking into account the 'Green building' concepts to achieve four star rating as per GRIHA (Green Rating for Integrated Habitat Assessment) norms. Design of buildings and other structures has been carried out by incorporating suitable provisions to:-

- (i) Preserve and protect landscape during construction.
- (ii) Reduce hard paving on site.
- (iii) Minimise demand for electricity, water and other natural resources by using efficient electrical fixtures and low flow water supply fixtures.
- (iv) Cater to water demands through sustainable processes such as rain water harvesting.
- (v) Waste water recycling and using the same for landscape water requirement.
- (vi) Onsite energy generation through renewable means (solar power system).
- (vii) Optimise energy performance of buildings within specified comfort limits.
- (viii) Optimise on site circulation efficiency.

The total built up area of the campus master plan is 1,17,000 Sq. m. The major facilities provided in the master plan include academic complex, administrative block, lecture theatre complex, hostel blocks, residential blocks, guest house, shopping centre, health centre, indoor stadium, faculty club, utilities and engineering services etc.

The construction of the campus has been undertaken in two phases. Construction of the first phase for a built up area of about 69,000 Sq.m which commenced in March 2011 is under progress. Operationalisation of the campus is expected in next financial year.

Under Phase-II, planning activities for Hostels and Central Dining Hall for 1000 students having an area of 36000 m² were completed and the tendering action is under progress.

11. Statement of Accounts

The Annual Statement of Accounts of IISER Thiruvananthapuram for the year 2013-14 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 01.04.2013: Rs. 61.31 crore
 - The grants received from MHRD during the year: Rs. 81.00 crore
- | | | |
|----------------------|---|------------------------|
| <i>Capital Grant</i> | : | <i>Rs. 64.43 crore</i> |
| <i>Revenue Grant</i> | : | <i>Rs. 16.57 crore</i> |
- Total fund available for the year 2013-14 : Rs. 142.31 crore

B. Revenue Receipts

The revenue of the institute from Annual Fees & Others for the year is Rs.8.19 crore.

II. Expenditure

- The amount utilised during the year : Rs. 69.97 crore
- | | | |
|---|---|------------------------|
| <i>Construction, Lab Equipment & Other Assets</i> | : | <i>Rs. 45.57 crore</i> |
|---|---|------------------------|
- The establishment expenses :

Expenditure on Salaries	:	Rs. 6.04 crore
Other Non-salary Expenditure and		
Other Administrative expenses		Rs. 18.36 crore

III. External Projects & Fellowships

- o Total grant available during the year: Rs. 8.72 crore
- o Utilisation: Rs. 4.52 crore
- o Unutilised balance: Rs. 4.20 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 2014

Lr.No.CE/AB/7-129/SAR/IISER/14-15/79 dated 28.11.2014

We have audited the attached Balance Sheet of Indian Institute of Science Education and Research, Thiruvananthapuram as at 31 March 2014, 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 not been drawn up in the format approved by the Ministry of Finance, 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:

A. Balance Sheet

A.1 Sources of Funds

A.1.1 Current Liabilities and Provisions (Schedule 6) Rs.44.72 crore

A.1.1(a) Sundry Creditors for Expenses- Rs.4.67 crore

- (i) This is understated by Rs.26.78 lakh due to non-provision of value of RA Bill for Consultancy charges payable to M/s Consulting Engineering Services (India) Private Limited, New Delhi which has submitted and approved for payment in March 2014 with corresponding understatement of Capital work in progress by similar amount.
- (ii) This is understated by Rs.27.05 lakh due to non provision of fee for online journals payable during the period from January 2014 to March 2014 and paid during April

2014 with corresponding understatement of Fixed Assets by 25.17 lakh (excluding depreciation). Expenditure for the year has been understated by Rs.1.88 lakh due to inclusion of depreciation on online journals with corresponding overstatement of Excess of Income over expenditure.

B. Income and Expenditure

B.1 Expenditure Rs.36.72 crore

B.1.1 Depreciation

This is overstated by Rs.8.84 lakh due to provision of depreciation for the assets Liquid Chromatography Integrated with HRMs (Rs.5.46 lakh), Small & Large Growth Chamber (Rs.1.18 lakh) and Growth Chamber to breed Insects & Drosophila (Rs.2.20 lakh) which were purchased before March 2014 and not installed resulting in corresponding understatement of Fixed Assets by Rs.8.84 lakh.

C. General Format of Accounts

Ministry of Finance,GOI had introduced Uniform Format of Accounts for all Central Autonomous Bodies in 2001 in consultation with CAG of India. Accounts of the Indian Institute of Science Education and Research have been prepared in the new format of account introduced by Ministry of Human Resources Development, Government of India for institutions of Higher Education, which are still under finalization in consultation with CAG of India.

D. Grants in aid

Out of the grants in aid Rs.144.24 crore (including Rs.61.31 crore brought forward from previous year), the organization could utilize a sum of Rs.72.67 crore leaving a balance of Rs.71.57 crore as unutilized grant as on 31 March 2014.

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.

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.

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 to this Audit Report give a true and fair view in conformity with accounting principles generally accepted in India.

- 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 2014; and
- In so far as it relates to Income & Expenditure Account of the surplus for the year ended on that date.

For and on behalf of the C & AG of India

Sd/-

Principal Director of Audit (Central),Chennai

Place: Chennai

Date: 28 November 2014

Annexure

1. **Adequacy of Internal Audit System**

The Internal audit system is adequate and commensurate with the size and nature of transactions of the Institute.

2. **Adequacy of Internal Control System:**

IISER has not prepared Accounting Manual so far.

3. **System of Physical Verification of Assets:**

Annual Physical Verification of Assets was in progress.

4. **System of Physical Verification in Inventory**

Physical Verification of inventory was not conducted during the year 2013-14. Reportedly procurements were made on need basis and issued to concerned Department.

5. **Regularity in payment of statutory dues:**

The IISER is regular in payment of statutory dues.

Sd/-

Deputy Director / DT (II)

Action taken notes to the Separate Audit Report of the Comptroller & Auditor General of India on the Accounts of the Indian Institute of Science and Education Research, Thiruvananthapuram for the year ended 31st March 2014

Para 1 to 3 Introductory	-	No comments
Para 4 i to iii	-	No comments
Para 4 iv A	-	Balance Sheet
A.1.1(a) Sundry Creditors for Expenses		
Noted		
Para 4 iv B	Income and Expenditure	
B.1	Expenditure Rs.36.72 crore	
Noted		
Para 4 iv C	General Format of Accounts	
Noted		
Para 4 iv D	Grants-in-aid	
	The facts and figures are confirmed	
Para 4 iv E	Management Letter	
	Remedial / corrective actions have been taken for the deficiencies pointedout by the Audit.	
Para 4 v & vi	-	No comments

Annexure

- Adequacy of Internal Audit System**
Noted
- Adequacy of Internal Control System**
Accounts Manual is being prepared.
- System of Physical Verification of Assets**
Noted for compliance.
- System of Physical Verification of Inventory**
Noted
- Regularity in payment of statutory dues**
No Comments

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH , THIRUVANANTHAPURAM

BALANCE SHEET AS AT 31ST MARCH 2014

SOURCES OF FUNDS	Schedule	Amount in Rupees	
		Current Year 2013-14	Previous Year 2012-13
Corpus	1	71,57,66,399	61,31,39,261
General Fund	2	197,57,51,125	141,90,09,655
Designated / Earmarked Funds			
Capital Fund	3	-	-
Loans / Borrowings	4	-	-
Secured	5	-	-
Unsecured			
CURRENT LIABILITIES AND PROVISIONS	6	44,72,53,465	7,14,30,269
UNSPENT BALANCE OF EXTERNAL PROJECTS	24	4,20,40,897	2,10,23,828
TOTAL		318,08,11,886	212,46,03,013
APPLICATION OF FUNDS			
FIXED ASSETS	7	174,09,39,923	1,26,61,19,471
Tangible Assets			
Intangible Assets			
Capital Work in Progress			
INVESTMENTS	8	-	-
Long Term			
Short Term			
CURRENT ASSETS	9	102,04,44,994	52,56,70,243
LOANS, ADVANCES & DEPOSITS	10	41,94,26,969	33,28,13,299
TOTAL		318,08,11,886	212,46,03,013
NOTES ON ACCOUNTS	22		

**INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH,
THIRUVANANTHAPURAM**

INCOME AND EXPENDITURE ACCOUNT FOR THE PERIOD/YEAR ENDED 31.03.2014

		(Amount in Rupees)					
	Schedule	2013-14					2012-13
		Corpus	Designated Fund	General Fund	Capital Fund	Total	
INCOME							
Academic Receipts	11			76,86,600		76,86,600	52,00,190
Grants & Donations	12			27,09,62,002		27,09,62,002	19,51,36,319
Income from Investments	13			-		-	-
Other Incomes	14			7,42,34,418		7,42,34,418	4,92,41,006
Depreciation Added back due to change in adopting depreciation rates from Income Tax to Companies Act				11,54,13,103		11,54,13,103	-
TOTAL (A)				46,82,96,123		46,82,96,123	24,95,77,515
EXPENDITURE							
Staff Payments & Benefits	15			11,30,95,882		11,30,95,882	7,91,47,858
Academic Expenses	16			9,21,07,840		9,21,07,840	7,18,11,106
Administrative and General Expenses	17			15,14,02,866		15,14,02,866	15,58,67,009
Transportation expenses	18			68,89,096		68,89,096	63,67,141
Repairs and Maintenance	19			30,49,654		30,49,654	-
Finance Costs	20			7,02,666		7,02,666	1,20,037
Other expenses	21			-		-	-
TOTAL (B)				36,72,48,004		36,72,48,004	31,33,13,151
Balance being excess of Income over Expenditure (A-B)				10,10,48,119		10,10,48,119	(6,37,35,636)
Transfer to / from Designated Fund				-		-	-
Building Fund				-		-	-
Others (Specify)				-		-	-
Balance being Surplus (Deficit) Carried to General Fund				10,10,48,119		10,10,48,119	(6,37,35,636)
Notes on Accounts	22						

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH, THIRUVANANTHAPURAM

RECEIPTS AND PAYMENTS FOR THE PERIOD/YEAR ENDED 31.03.2014

Amount in Rupees					
Receipts	2013-14	2012-13	Payments	2013-14	2012-13
I. Opening Balance			I. Expenses		
a) Cash In hand			a) Establishment Expenses (Corresponding to Schedule 20)	16,16,44,568	10,34,06,944
b) Bank Balances			b) Administrative Expenses (Corresponding to Schedule 21)	15,67,44,496	8,10,41,433
i) In current accounts					
1. Canara Bank	6,48,43,965	1,54,06,118			
ii) In Deposit / Savings Account					
1. State Bank of Travancore	1,27,02,355	51,96,528			
2. Canara Bank	42,10,73,726	14,12,40,598			
3. State Bank of India	1,16,09,715	-			
4. Canara Bank Project Account	1,54,40,483	2,00,69,783			
II. Grant Recleced			II. Payments made against funds for various projects		
a) From Government of India	84,22,00,000	126,14,00,000		4,51,96,910	3,68,06,491
b) From State Government					
c) From other sources					
i) DST	1,64,23,600	1,65,59,236			
ii) CSIR	2,50,400	5,01,407			
iii) KVPY	26,08,491	13,41,000			
iv) UGC	-	29,39,613			
d) External projects including interest	5,51,42,979	3,59,93,812			
III. Income on Investment from			III. Investment and deposits made		
a) Earmarked Endow. Funds			a) Out of Earmarked / Endow. Fund		
b) Own Funds (Oth. Investment)			b) Out of own funds (Oth. Investment)		
IV. Interest Received			IV. Expenditure on Fixed Assets & Capital Work In Progress		
a) On Bank Deposit	3,75,72,165	2,86,90,200	a) Purchase of Fixed assets and expenditure on Capital Work in Progress	45,56,93,351	76,87,03,318
b) Loans, Advances etc					
V. Other Income	2,87,29,267	2,86,87,981	V. Refund of surplus money/loans		
VI. Amount Borrowed			a) To the Government of India		
VII. Any other receipts	33,67,28,015	58,94,347	b) To the State Government		
			c) To the other providers offund		
			VI. Finance Charges (Interest)		
			VII. Other Payments (Specify)	56,00,842	4,82,92,193
			VIII. Closing Balance		
			a) Cash in hand		
			b) Bank Balances		
			i) In current accounts		
			1. Canara Bank	14,40,05,729	6,48,43,965
			ii) In Deposit / Savings Account		
			1. State Bank of Travancore	34,78,65,159	1,27,02,355
			2. Canara Bank	47,52,29,970	42,10,73,726
			3. State Bank of India	2,85,20,006	1,16,09,715
			4. Canara Bank Project Account	2,48,24,130	1,54,40,483
	184,53,25,161	156,39,20,623		184,53,25,161	156,39,20,623

**INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH
THIRUVANANTHAPURAM**

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31.03.2014

SCHEDULE 1- CORPUS	Amount of Rupees			
	2013-14		2012-13	
Balance as at the beginning of the year	-	61,31,39,261	-	55,76,05,700
ADD: Contributions towards Corpus	82,92,82,491	144,24,21,752	103,66,41,256	159,42,46,956
LESS: Utilised during the year	-	72,66,55,353	-	98,11,07,695
	-		-	
BALANCE AT THE YEAR-END		71,57,66,399		61,31,39,261

**INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH
THIRUVANANTHAPURAM**

SCHEDULE 2- GENERAL FUND	Amount of Rupees			
	2013-14		2012-13	
Balance as at the beginning of the year	-	141,90,09,655	-	69,67,73,916
ADD: Contributions towards General Fund				
Amount utilised for acquiring Capital Asset	45,56,93,351	45,56,93,351	78,59,71,376	78,59,71,376
Amount committed for Lab Equipment & Library Books				
LESS: Depreciation provided for the above mentioned item written back				
ADD (Deduct): Balance of Net Income/(expenditure) transferred from the Income and Expenditure Account	10,10,48,119	10,10,48,119	(6,37,35,637)	(6,37,35,637)
BALANCE AT THE YEAR-END		197,57,51,125		141,90,09,655

**INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH,
THIRUVANANTHAPURAM**

SCHEDULE 6- CURRENT LIABILITIES AND PROVISIONS		
	Amount of Rupees	
	2013-14	2012-13
A. CURRENT LIABILITIES		
1. Deposits from Staff		
2. Deposits from Students		
3. Sundry Creditors		
a) For Goods and Services	4,67,45,239	3,08,50,117
b) Others		
4. Advances Received		
5. Interest accrued but not due on:		
a) Secured Loans/borrowings		
b) Unsecured Loans/borrowings		
5. Statutory Liabilities, GPF, TDS, WC, TAX, CPF, GIS, NPS)		
a) Overdue		
b) Others	93,698	29,33,347
6. Other current Liabilities	40,04,14,528	3,76,46,805
a) Salaries		
b) Receipts against Sponsored Projects		
c) Receipts against Sponsored Fellowships & Fellowships		
d) Unutilised Grants		
e) Grants in advance		
f) Other Funds		
g) Other Liabilities		
Total (A)	44,72,53,465	7,14,30,269
B. PROVISIONS		
1. For Taxation		
2. Gratuity		
3. Superannuation/Pension		
4. Accumulated Leave Encashment		
5. Expenses Payable		
6. Trade Warranties / Claims		
7. Others (specify)		
TOTAL (B)		
TOTAL (A+B)	44,72,53,465	7,14,30,269

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH , THIRUVANANTHAPURAM
SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31.03.2014

SCHEDULE 7 - FIXED ASSETS OF MAIN ACCOUNT										NET BLOCK	
DESCRIPTION	GROSS BLOCK			DEPRECIATION					Total up to the year-end	As at the current year-end	As at the previous year-end
	Cost/valuation As at beginning of the year	Total Additions	Deductions during the year	Cost/valuation at the Year-end	Rate of Depreciation	As at the beginning of the year	Adjustment for Change in Accounting Policy	For The year	On Deductions During the year		
FIXED ASSETS:											
LAND:											
a) Freehold Land obtained from Govt Vithura	1 9,54,506									1 9,54,506	1 9,54,506
b) Leasehold											
BUILDINGS:											
a) On Freehold Land	7,03,02,240	51,41,662		7,54,43,902	5.00	1,67,60,347	92,98,819	32,15,626		6,47,66,748	5,35,41,893
BUILDINGS:											
b) On Leasehold Land											
c) Ownership Flats/Premises											
d) Superstructures on Land not belonging to the educational institution											
GENERATOR SET	49,96,542	3,66,065		53,62,607	13.91	14,32,022	1,95,901	5,62,475		35,64,011	35,64,520
ELECTRIC INSTALLATIONS	1,38,63,947	2,73,110		1,41,37,057	13.91	31,11,813	(9,32,528)	13,72,772		87,19,944	1,07,52,134
INTERIOR FURNISHING	7,07,832	-		7,07,832	18.10	2,19,224	(1,08,347)	68,827		3,11,434	4,88,608
FURNITURE, FIXTURES	2,02,46,441	37,28,014		2,39,74,455	25.88	53,39,133	(51,52,593)	30,26,944		1,04,55,786	1,49,07,308
LAB FIXTURES	1,12,92,239	4,97,395		1,17,89,634	18.10	17,34,924	(10,07,271)	15,68,262		74,79,177	95,57,315
LAB EQUIPMENT	47,48,38,962	14,33,79,413		61,82,18,375	13.91	12,47,66,191	1,85,42,976	5,64,20,054		45,55,75,106	35,00,72,771
TUTORIAL EQUIPMENTS	4,27,561	2,77,357		7,04,918	13.91	1,27,210	(2,53,944)	18,757		3,99,911	3,00,351
OTHER EQUIPMENTS	99,57,648	19,42,099	2,900	1,18,96,847	13.91	34,10,771	5,56,454	10,83,176		79,59,354	65,46,877
HOTEL KITCHEN EQUIPMENTS	7,83,248	1,17,988		9,01,236	13.91	2,68,793	45,281	88,925		5,88,799	5,14,455
LIBRARY BOOKS	1,59,11,058	16,40,429	-	1,75,51,487	13.91	1,39,74,671	87,83,249	16,08,739		1,07,51,326	19,36,387
LIBRARY JOURNALS	14,57,64,013	1,16,87,311		15,74,51,324	13.91	10,66,33,319	7,64,20,746	1,65,65,161		11,06,73,590	3,91,30,694
COMPUTER/PERIPHERALS	4,31,40,472	93,49,603		5,24,90,075	40.00	3,57,52,916	89,91,133	1,06,34,576		1,50,93,716	73,87,556
VEHICLES - MOTOR CAR	7,01,044	-		7,01,044	13.91	3,62,541	33,227	51,708		3,20,022	3,38,503
TOTAL	81,38,87,754	17,84,00,446	2,900	99,22,85,300		31,38,93,875	11,54,13,103	9,62,86,002		69,75,18,526	49,99,93,879
CAPITAL WORK-IN PROGRESS										104,34,21,397	76,61,25,592
TOTAL										174,09,39,923	126,61,19,471

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH THIRUVANANTHAPURAM

SCHEDULE 9 - CURRENT ASSETS		
	Amount of Rupees	
	2013-14	2012-13
1. STOCK		
a) Stores and Spares		
b) Loose Tools		
c) Publications		
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. Bank Balances:		
Main A/c		
a) With Scheduled Banks:		
- On Current Accounts	14,40,05,729	6,48,43,965
- On Term Deposit Accounts (includes margin money)	83,90,78,189	40,23,14,461
- On Savings Accounts	1,25,36,946	4,30,71,334
b) With non-Scheduled Banks:		
- On Current Accounts		
- On Term Deposit Accounts (includes margin money)		
- On Savings Accounts		
Project A/c		
a) With Scheduled Banks:		
- On Current Accounts		
- On Deposit Accounts (includes margin money)		
- On Savings Accounts	2,48,24,130	1,54,40,483
b) With non-Scheduled Banks:		
- On Current Accounts		
- On Deposit Accounts		
- On Savings Accounts		
5. Post Office - Savings Accounts		
TOTAL	102,04,44,994	52,56,70,243

**INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH
THIRUVANANTHAPURAM**

SCHEDULE 10- LOANS, ADVANCES AND DEPOSITS		
	Amount in Rupees	
	2013-14	2012-13
1. Advances to employees (Non interest bearing)		
a) Salary		
b) Festival		
c) LTC		
d) Medical Advance		
e) Others (to be specified)		
2. Long Term Advances to employees (Interest bearing)		
a) Vehicle Loan	60,428	2,77,300
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	18,55,62,694	13,00,21,985
4. Prepaid Expenses		
a) Insurance		
b) other expenses	11,50,91,835	9,78,10,029
5. Deposits		
a) Telephone		
b) Lease Rent		
c) Electricity		
d) AICTE, if applicable		
e) MCI, if applicable		
f) Others (to be specified)		
6. Income Accrued		
a) On Investments from Earmarked / Endowment Funds		
b) On Investment – Others		
c) On Loans and Advances		
d) Others (includes income due unrealized Rs.....)	2,97,12,422	1,40,92,836
7. Others receivable		
a) Debit balances in Sponsored Projects		
b) Debit Balances in Fellowship & Scholarship		
c) Grants Recoverable		
d) Others receivables		
8. Claims Receivable	8,89,99,590	9,06,11,149
TOTAL	41,94,26,969	33,28,13,299

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH THIRUVANANTHAPURAM

SCHEDULE 11- ACADEMIC RECEIPTS		
	Amount in Rupees	
	2013-14	2012-13
FEE FROM STUDENTS		
Academic		
a) Tuition Fee	63,06,850	46,23,340
b) Admission Fee		
c) Enrolment Fee		
d) Library Fee	1,38,300	1,92,300
e) Laboratory Fee		
f) Art & Craft Fee		
g) Registration fee	1,83,400	1,33,200
h) Syllabus Fee		
i) Other Receipts	5,07,000	-
TOTAL (A)	71,35,550	49,48,740
Examinations		
a) Admission Test Fee		
b) Annual Examination Fee	3,54,450	2,24,350
c) Mark sheet, Certificate Fee		
TOTAL (B)	3,54,450	2,24,350
Other Fee		
a) Identity Card Fee		
b) Fine / Miscellaneous Fee		
c) Medical Fee	46,800	3,600
d) Transportation Fee		
e) Hostel Fee	1,49,800	23,500
f) Other Academic Receipts		
TOTAL (C)	1,96,600	27,100
Sale of Publications		
a) Sale of Syllabus and question paper		
b) Sale of prospectus including admission forms		
TOTAL (D)		
GRAND TOTAL (A+B+C+D)	76,86,600	52,00,190

**INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH
THIRUVANANTHAPURAM**

SCHEDULE 12- GRANTS AND DONATIONS (Irrevocable Grants & Subsidies Received)		
	Amount in Rupees	
	2013-14	2012-13
1. Central Government		
Revenue Grant		
Opening unspent grant	61,31,39,261	55,79,05,700
ADD: Grant Received / Receivable during the year	81,00,00,000	101,50,00,000
Capital Grant		
General 49,93,55,000		
SC 9,66,10,000		
ST 4,83,35,000		
Revenue Grant		
General 12,84,18,000		
SC 2,48,55,000		
ST 1,24,27,000		
DST	1,64,23,600	1,65,59,236
CSIR	2,50,400	5,01,407
KVPY	26,08,491	13,41,000
UGC	-	29,39,613
	144,24,21,752	159,42,46,956
LESS: Capital Expenses incurred during the year	45,56,93,351	78,59,71,376
LESS: Closing Unspent balance of grant	71,57,66,399	61,31,39,261
2. State Government		
3. Government Agencies		
4. Institutions / Welfare Bodies (DST,CSIR,KVPY)		
5. International Organisations		
TOTAL	27,09,62,002	19,51,36,319

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH THIRUVANANTHAPURAM

SCHEDULE – 14 OTHER INCOME		
	Amount in Rupees	
	2013-14	2012-13
A. Income from Land & Building		
a) Hostel Room Rent	16,20,000	11,86,500
b) Licence Fee	1,82,900	1,14,700
c) Hire charges of Auditorium / Play ground / Convention Centre etc.,	-	-
d) Electricity & Water charges	5,40,000	3,95,500
TOTAL	23,42,900	16,96,700
B. Sale of Institute's Publications	-	-
C. Income from holding events		
a) Gross Receipts from annual function / sports carnival		
Less: Direct expenditure incurred on the annual function/sports carnival		
b) Gross Receipts from Fetes		
Less: Direct expenditure incurred on the fetes		
c) Gross Receipts for educational tours		
Less: Direct expenditure on the tours		
d) Others		
TOTAL	-	-
D. Interest on Term Deposits:		
a) With Scheduled Banks	5,27,61,665	2,32,50,960
b) With Non-Scheduled Banks		
c) With Institutions		
d) Others		
TOTAL	5,27,61,665	2,32,50,960
E. Interest on Savings Accounts:		
a) With Scheduled Banks	4,30,086	9,42,255
b) With Non-Scheduled Banks		
c) With Institutions		
d) Others		
TOTAL	4,30,086	9,42,255
F) Interest on Loans:		
a) Employees/Staff		
b) Others	1,16,24,975	1,42,16,220
TOTAL	1,16,24,975	1,42,16,220
G) Interest on Debtors and Other Receivables	-	-
H) Others		
a) Income from Consultancy		
b) RTI Fees	210	-
c) Income from Royalty	-	90,160
d) Sale of application form (recruitment)	4,800	26,420
Miscellaneous Receipts (Sale of tender form, waste paper etc.,)	27,30,121	-
e) Profit on Sale / Disposal of Assets		
a) Owned Assets		
b) Assets acquired out of grants, or received free of cost		
f) Other incomes	43,39,661	90,18,291
TOTAL	70,74,792	91,34,871
GRAND TOTAL (A+B+C+D+E+F+G+H)	7,42,34,418	4,92,41,006

**INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH
THIRUVANANTHAPURAM**

SCHEDULE – 15 STAFF PAYMENTS & BENEFITS		
	Amount in Rupees	
	2013-14	2012-13
a) Salaries and Wages	9,05,95,164	6,63,42,578
b) Allowances and Bonus	37,62,396	29,08,733
c) Contribution to Provident Fund		
d) Contribution to Other fund (Leave Salary&NPS Employer share)	56,92,146	32,65,837
e) Staff Welfare expenses		
f) Retirement and Terminal Benefits		
g) LTC Facility	20,17,902	-
h) Medical Facility	23,46,749	15,49,929
i) Children Education Allowance	7,34,381	3,54,717
j) Honorarium		
k) TA / DA expenses		
l) Others	79,47,144	47,26,064
TOTAL	11,30,95,882	7,91,47,858

**INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH
THIRUVANANTHAPURAM**

SCHEDULE – 16 ACADEMIC EXPENSES		
	Amount in Rupees	
	2013-14	2012-13
a) Laboratory Expenses	4,63,71,447	4,01,95,601
b) Field work / Participation	13,68,586	-
c) Seminar / Workshop		
d) Payment to Visiting Faculty		
e) Examination		
f) Student Welfare expenses		
g) Admission expenses	4,42,762	4,03,502
h) Convocation expenses	10,83,014	-
i) Publications		
j) Stipend / Means-cum-Merit Scholarship	4,28,42,031	3,12,12,003
k) Subscription Expenses		
l) Others (specify)		
TOTAL	9,21,07,840	7,18,11,106

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH THIRUVANANTHAPURAM

SCHEDULE – 17 ADMINISTRATIVE AND GENERAL EXPENSES		
	Amount in Rupees	
	2013-14	2012-13
a) Electricity and Power	89,80,122	16,97,266
b) Water Charges	2,03,174	2,23,126
c) Insurance	48,033	33,62,530
d) Rent, Rates and Taxes	2,25,85,426	1,54,05,220
e) Postage and Telegram	2,16,136	19,51,618
f) Telephone and Internet charges	15,40,349	-
g) Printing and Stationery	22,24,303	15,30,909
h) Travelling and Conveyance charges	27,77,145	29,63,556
i) Expenses on Seminar / Workshops	46,62,166	29,55,673
j) Hospitality	-	-
k) Auditors Remuneration	86,180	1,01,490
l) Professional charges	-	-
m) Advertisement and Publicity	42,87,414	31,96,592
n) Magazines & Journals	-	-
o) Others	-	-
KSPCB Consent Fee	-	3,20,200
Sports, Cultural Festival and Celebration expenses	3,57,569	3,03,908
Consumables	2,52,175	2,92,878
Contingencies	8,70,566	15,74,010
Cable TV charges	70,865	-
Newspaper and Periodicals	53,591	34,602
Office Contingencies	13,20,589	-
Software Licence Fees	8,01,849	3,58,076
Catering charges	-	11,03,668
Prior Period expenses	-	15,000
Photography charges	46,100	52,600
Guest House and other expenses	6,14,564	1,69,570
Miscellaneous expenses	2,500	41,984
Gardening & Landscaping charges	13,150	-
Other Administrative / Miscellaneous expenses	30,01,610	-
Reward & Recognition	3,588	-
Legal and Consultancy charges	97,700	35,700
Depreciation for Fixed Assets	9,62,86,002	11,81,76,833
TOTAL	15,14,02,866	15,58,67,009

**INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH
THIRUVANANTHAPURAM**

SCHEDULE – 18 TRANSPORTATION EXPENSES		
	Amount in Rupees	
	2013-14	2012-13
1. Vehicles (owned by educational institution)		
a) Running expenses	40,766	1,19,416
b) Repairs and Maintenance	24,769	11,258
c) Insurance expenses	7,939	9,178
2. Vehicles taken on Rent / Lease		
a) Rent / Lease expenses	68,15,622	62,27,289
TOTAL	68,89,096	63,67,141

**INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH
THIRUVANANTHAPURAM**

SCHEDULE – 19 REPAIRS AND MAINTENANCE		
	Amount in Rupees	
	2013-14	2012-13
a) Building	2,82,579	-
b) Furniture & Fixture		
c) Plant and Machinery	27,67,075	-
d) Office Equipments		
e) Cleaning material & Services		
f) Others (Specify)		
TOTAL	30,49,654	-

**INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH
THIRUVANANTHAPURAM**

SCHEDULE – 20 FINANCE COSTS		
	Amount in Rupees	
	2013-14	2012-13
a) Interest on Fixed Loans		
b) Interest on Other Loans		
c) Bank charges	7,02,666	1,20,037
d) Others (specify)		
TOTAL	7,02,666	1,20,037

SCHEDULE 22 – NOTES ON ACCOUNTS

1. The land (approx 200 acres in Jersey Farm, Vithura, Karipur Village, Nedumangad Taluk, Thiruvananthapuram District) has been given by Government of Kerala at free of cost and hence recorded at nominal value in the accounts as per Accounting Standard: 12 – Accounting for Government Grants.
2. The construction works done at CET Campus which were completed are capitalized. Permanent infrastructure assets created in the temporary premises located in CET Campus will be handed over to CET on shifting of the location of the Institute permanently to Vithura.
3. During the year Income & Expenditure Account shows balance of net income of Rs. 10,10,48,119/-
4. The Commitment for Purchases outstanding as on 31.03.2014 amounts to Rs. 19.77 crore out of which provision has been created for an amount of Rs. 0.58 crore pertaining to purchase of consumable against which payments have been made after 01.04.2014. The balance commitment is Rs. 19.19 crore
5. Library Journals are reference material and used like Library books hence it is capitalized.

6. Change in Accounting Policies:

- Depreciation has been added back in the current financial year on account of change in the depreciation rate from Income tax rate to Companies Act rate. As a result the Income & Expenditure account of the Institute for the current financial year shows net income of Rs. 10,10,48,119/-.
- The treatment of Project Grant & its utilisation is on cash basis. The accounting of Assets acquired out of project grant & revenue expenditures met from such grant are not accounted in the institutes Final Accounts, only the unspent balance of Project Grant & interest is shown under the Current Liabilities of the Institute's Balance Sheet.

SCHEDULE 23 – SIGNIFICANT ACCOUNTING POLICIES

1. **Accounting convention:** The accompanying financial statements are prepared on Historical Cost Convention.
2. **Fixed Assets:** Cost of Assets acquired out of Grant from Government of India is credited to General Fund.
3. **Closing Stock:-** Items issued to labs are treated as consumed and hence Closing Stock of Lab Consumables/Chemicals is taken as NIL.
4. **Depreciation:-** Depreciation on Fixed Assets has been charged under Written Down Value Method at rates specified as per the Companies Act rates.
5. **Grant in aid:**
 - Grant-in-aid received and receivable from Government of India, amounting Rs. 81,00,00,000/- during the year 2013-14 has been credited to the General Fund to the extent of amount spent for Capital expenditure and credited to the Income & Expenditure Account to the extent of amount utilised for Revenue expenditure.
 - Grant-in-aid received from DST amounting to Rs. 1,64,23,600/- has been credited to Income & Expenditure account to the extent of amount utilised for Revenue expenditure.
 - Grant-in-aid received from CSIR amounting to Rs. 2,50,400/- has been credited to Income & Expenditure account to the extent of amount utilised for Revenue expenditure.
 - Grant-in-aid received from KVPY amounting to Rs. 26,08,491/- has been credited to Income & Expenditure account to the extent of amount utilised for Revenue expenditure.
6. **Interest on Flexi / Fixed Deposits & Term deposits:**

Interest on flexi / fixed deposits has been credited in the accounts on Accrual basis.

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH THIRUVANANTHAPURAM
SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31.03.2014

SCHEDULE 24- UNSPENT BALANCE OF EXTERNAL PROJECTS										
SL NO.	NAME OF PROJECT	OPENING BALANCE	GRANT RECEIVED	INTEREST RECEIVED	REFUND	Loan from IISER	NET AMOUNT AVAILABLE	AMOUNT UTILISED		CLOSING BALANCE
								FIXED ASSETS	REVENUE EXPENDITURE	TOTAL EXPENDITURE
1	DST FT PROJECT OF DR K M SURESHAN	(10,69,341)				11,96,840	1,27,499		1,27,499	1,27,499
2	DST FT DR AYAN DATTA	1,36,490					1,36,490			1,36,490
3	J C BOSE E.D.JEMMIS	(1,28,557)	2,92,837				1,64,280		1,64,280	1,64,280
4	CSIR PROJECT OF DR. AYAN DATTA	(1,04,937)				1,04,937	-			-
5	CSIR PROJECT OF DR. KM.SURESHAN	(2,75,134)	7,81,904				5,06,770		7,200	7,200
6	CSIR PROJECT OF DR. TAPAS K MANNA	(7,29,615)	3,20,000			7,24,159	3,14,544		3,14,544	3,14,544
7	DST FT PROJECT OF DR. ANIL SHAJI	36,605					36,605			36,605
8	RAMALINGA SWAMY FELLOWSHIP OF DR. RAMANATHAN NATESH	5,03,245	14,90,000				19,93,245		13,86,549	13,86,549
9	RAMALINGA SWAMY FELLOWSHIP OF DR. RAVI MARUTHACHALAM	14,90,000	5,00,000				19,90,000		18,55,445	18,55,445
10	RAMANUJAN FELLOW. OF DR ANIL SHAJI	76,121	14,00,000				14,76,121		13,68,451	13,68,451
11	RAMANUJAN FELLOW.OF DR. KM SURESHAN	(3,13,954)	17,60,000				14,46,046		13,32,218	13,32,218
12	RAMANUJAN FELLOW. OF DR. SHANKARA NARAYANAN	(3,59,691)				13,96,877	10,37,186		10,37,186	10,37,186
13	SSB AWARD OF PROF. ED. JEMMIS	(1,80,000)	1,80,000				-			-
14	SSB AWARD OF PROF.K GEORGE THOMAS	(1,80,000)	3,60,000				1,80,000		1,80,000	1,80,000
15	CSIR PROJECT OF DR.HEMA SOMANATHAN	(2,59,161)				5,99,805	3,40,644		3,40,644	3,40,644
16	DST-FT PROJECT OF DR.ARCHANA PAI	956	3,50,000				3,50,956		1,89,003	1,89,003
17	DST-JSPS PROJECT OF DR.ARCHANA PAI	41,604			41,604		-			-
18	DST-MPG PROJECT OF DR.RAMESH CHANDRANATH	62,000					62,000			62,000
19	DST INDO-EUROPE PROJECT OF DR.K.GEORGE THOMAS	31,981	18,71,600				19,03,581		12,04,866	12,04,866
20	DST FT PROJECT OF DR.M.M. SHAJIUMON	(1,04,685)	4,70,000			3,49,794	7,15,109	3,33,855	3,81,254	7,15,109
21	DST RF PROJECT OF ANOOP THOMAS	-					-			-
22	DST SERB PROJECT OF DR.RAMESH CHANDRANATH	34,01,049	2,00,000			2,34,576	38,35,625	33,00,000	5,35,625	38,35,625
23	DST MPG PROJECT OF DR.ARCHANA PAI	1,83,622	7,38,100				9,21,722		8,09,635	8,09,635
24	DST MPG PROJECT OF DR.SHANKARA NARAYANAN	(5,31,682)	27,57,540				22,25,858	1,06,900	9,32,287	10,39,187
25	MAX PLANCK PROJECT OF DR.ARCHANA PAI	16,49,687	14,43,993				30,93,680	2,05,158	2,24,927	4,30,085
26	NKN PROJECT OF DR ANILSHAJI	-					-			-

SL NO.	NAME OF PROJECT	OPENING BALANCE GRANT RECEIVED	INTEREST RI:CI:VI;D	REFUND	Loan from USER	NET AMOUNT AVAILABLE	AMOUNT UTILISED FIXED ASSETS	REVENUE EXPENDITURE	TOTAL EXPENDITURE	CLOSING BALANCE
27	MPG PROJECT OF DR.SHANKARA NARAYANAN	15,83,545	14,17,541			30,01,086	1,17,240	7,06,394	8,23,634	21,77,452
28	RAMANUJAN FELLOW. OF DR.REJI VARGHESE	1,25,707			12,15,319	13,41,026		13,41,026	13,41,026	
29	WT/ DBT PROJECT OF DR.SUNISH R	80,751	31,58,921		36,63,881	69,03,553		69,03,553	69,03,553	-
30	DAE PROJECT OF DR.M.M.SHAJUMON	3,25,615			54,987	3,80,602		3,80,602	3,80,602	-
31	DBT PROJECT OF DR.MAHESH HARIHARAN	12,55,598	13,30,400			25,85,998		9,94,542	9,94,542	15,91,456
32	DBT PROJECT OF DR.M.M.SHAJUMON	31,60,920				31,60,920	25,00,000	4,17,901	29,17,901	2,43,019
33	DST DFG RESEARCH INTERSHIP - M.GOPIKRISHNAN	9,000				9,000		9,000	9,000	-
34	DST SERB PROJECT OF DR.MAHESH HARIHARAN	2,76,612			3,99,656	6,76,268		6,76,268	6,76,268	
35	DST SERI PROJECT OF DR.MANOJ NAMBOOTHIRY	36,857	1,35,00,000			1,35,36,857	34,715	9,95,771	10,30,486	1,25,06,371
36	DST PROJECT OF DR.TAPAS K MANNA	5,47,736	8,00,000		10,50,299	13,02,563		13,02,563	13,02,563	-
37	WELCOMET TRUST DBT PROJECT OF DR NISHANT K-T.	1,00,48,890	39,50,738			1,39,99,628	17,05,212	46,21,839	63,27,051	76,72,577
38	DST SERB PROJECT OF DR.RAJEEV KIN1	1,97,901	16,30,000			14,32,099	3,59,522	3,31,822	6,91,344	7,40,755
39	NISSAN PROJECT OF DR. M.M. SHAJUMON	3,77,201	22,50,000			18,72,799	5,00,922	6,51,418	11,52,340	7,20,459
40	DBT PROJECT OF DR.KALIKA PRASAD		42,59,600			42,59,600	94,540	17,70,369	18,64,909	23,94,691
41	DSTUKIERI PROJECT OF DR.RAJEEV KINJ		6,11,000			6,11,000				6,11,000
42	DST-RFBR PROJECT OF DR.ULLASA K		9,54,260			9,54,260		84,737	84,737	8,69,523
43	DST-SERB PROJECT OF DR.AJAY VENUGOPAL		13,50,000		63,824	14,13,824	9,59,142	4,54,682	14,13,824	
44	DST-1DO-JAPAN PROJECT OF DR.K.GEORGE THOMAS		3,00,000			3,00,000		65,697	65,697	2,34,303
45	INSPIRE FACULTY AWARD OF DR.AJAY		7,00,000			7,00,000		78,105	78,105	6,21,895
46	RAMANUJAN FELLOWSHIP OFDR.JISHY VARGHESE		14,60,000			14,60,000		7,35,355	7,35,355	7,24,645
47	DST-JSPS OF DR.NISHANT.K.T				57,650	57,650		57,650	57,650	-
48	DAE PROJECT OF DR.TAPAS KUMAR MANNA		7,72,500			7,72,500			-	7,72,500
49	INDO US PROJECT OF DR.MMM SHAJUMON		3,71,262			3,71,262				3,71,262
48	INTEREST ON SB ACCOUNT	18,66,568		14,10,783		32,77,351		8,797	8,797	32,68,554
	TOTAL	2,10,23,828	5,37,32,196	41,604	1,11,12,604	8,72,37,807	1,02,17,206	3,49,79,704	4,51,96,910	4,20,40,897