

ANNUAL REPORT 2013-14



National Institute of Science Education and Research (NISER)



2013 Annual Report 2014

**Major Achievements and Activities during
April 2013 to March, 2014**

National Institute of Science Education and Research, Bhubaneswar

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Members of NISER BOG

Sr. No	Name & Designation	Position in Board
1.	Dr. Anil Kakodkar <i>Ex- Chairman, Atomic Energy Commission & DAE Homi Bhabha Chair Professor</i>	Chairman
2.	Prof. V. Chandrasekhar <i>Director, NISER, Bhubaneswar</i>	Member (Ex-Officio)
3.	Dr. S. K. Joshi <i>Chairman, Governing Council, Institute of Physics, Bhubaneswar</i>	Member (Ex-Officio)
4.	Joint Secretary (R&D) <i>Department of Atomic Energy</i>	Member (Ex-Officio)
5.	Joint Secretary (Finance) <i>Department of Atomic Energy</i>	Member (Ex-Officio)
6.	Prof. Mustansir Barma <i>Director, TIFR</i>	Member
7.	Prof. Dipankar Chatterji <i>Professor, IISc, Bangalore</i>	Member
8.	Sri. Gagan Kumar Dhal <i>Secretary, Department of Higher Education, Govt. of Orissa</i>	Member (Ex-Officio)
9.	Prof. J. Maharana <i>Adjunct Professor, NISER</i>	Member
10.	Prof. A. M. Jayannavar <i>Director, IOP, Bhubaneswar</i>	Member
11.	Dr. A. K. Naik <i>Registrar, NISER</i>	Secretary

Members of Academic Council, NISER

Prof. V. Chandrasekhar , <i>Director, NISER (Ex-Officio)</i>	:	Chairman
Prof. Sudhakar Panda , <i>Director, IOP (Ex-Officio)</i>	:	Member
Prof. J. Maharana , <i>NISER</i>	:	Member
Prof. A. Ansari , <i>NISER</i>	:	Member
Prof. V. Krishnan	:	Member
Prof. Binayak Rath , <i>NISER</i>	:	Member
Prof. V. Muruganandam , <i>NISER</i>	:	Member
Prof. V. Ravishankar , <i>Department of Physics, IIT Kanpur</i>	:	Member
Prof. Sandeep Verma , <i>Department of Chemistry, IIT Kanpur</i>	:	Member
Prof. B. Rabindran , <i>Director, ILS, Bhubaneswar</i>	:	Member
Prof. Vidyanand Nanjundiah , <i>IISc, Bangalore</i>	:	Member
Prof. Srinivas Vasudevan , <i>TIFR, Mumbai</i>	:	Member
Dr. Pankaj. V. Alone , <i>School of Biological Sciences, NISER</i>	:	Member
Dr. A. Srinivasan , <i>School of Chemical Sciences, NISER</i>	:	Member
Dr. Anil Kumar Karn , <i>School of Mathematical Sciences, NISER</i>	:	Member
Dr. Bedangadas Mohanty , <i>School of Physical Sciences, NISER</i>	:	Member
Dr. Sumedha , <i>School of Physical Sciences, NISER</i>	:	Member
Dr. Manjusha Dixit , <i>School of Biological Sciences, NISER</i>	:	Member
Dr. A. K. Naik , <i>Registrar NISER</i>	:	Secretary

Members of Building Works Committee

- | | |
|-----------------------------------------------------------------------------------|-----------|
| 1. Prof. V. Chandrasekhar, Director, NISER (Ex-officio) | Chairman |
| 2. Mr. N.S. Ghabane, Director, DCS&EM (Ex-officio) | Member |
| 3. Prof. Sudhakar Panda, Director, IOP (Ex-officio) | Member |
| 4. MR. V.R. Sadashivam, JS (Fin), DAE, Mumbai (Ex-officio) or his representative. | Member |
| 5. JS (R&D), DAE, Mumbai (Ex-officio) or his representative. | Member |
| 6. Mr. U.S.P. Verma, Exe-Director (Civil &ES), NPCIL, Mumbai | Member |
| 7. Mr. Rajeev Singhal, SE, CPWD, Bhubaneswar | Member |
| 8. Dr. A.K. Naik, Registrar, NISER | Secretary |



FROM THE DIRECTOR'S DESK

"Someone's sitting in the shade today because someone planted a tree a long time ago."

– Warren Buffet

The National Institute of Science Education and Research (NISER) set up a few years ago, at Bhubaneswar, is growing from strength to strength. Although we are operating from a transit campus within the Institute of Physics and therefore constrained for space, we have a very vibrant academic atmosphere. Already two batches of 5-years Integrated MSc students have graduated and the third batch will be graduating in a couple of months' time. Many of our graduated students are pursuing their doctoral programmes in some of the best Universities/Institutes across the world, including India. Some others have opted for a placement at different places including DAE Institutions such as BARC. These developments are very satisfying and augur well for the future of the Institution. We are also very happy that the first batch of PhD students have graduated this year from NISER.

We have been extremely privileged to have the financial support from DAE to establish ourselves in the forefront of research and development. In addition, extramural funding is also pouring in from various sources underpinning our pursuit of research. Remaining true to their academic capability and credibility, our faculty members have been bagging funding from various national and international sources to carry out research here. This is the single most important area where we have to uninterruptedly keep our focus on rubbing shoulders with the more established

and illustrious peer institutions globally. Industry-academia interface is something that we have also kept our eyes on. Research being done here in our laboratories must translate into tangible benefits to humankind justifying the public funding that we receive and also reinforcing our commitment to pay back to the society at large. During the financial year ending in March 2014, our faculty members have added 23 new sponsored projects with funding to the tune of around Rs 6 crores from non-DAE sources. Some of the major non-DAE sources include Dept. of Science and Technology, Dept. of BioTechnology and Science and Engineering Research Board (SERB). Our research activities in 2013-14 are documented by over 100 research publications in peer-reviewed international journals.

The new initiatives that NISER has taken up include the setting up of an office of International Affairs and Resource Planning (IAPR). This office will support and offer advice to the faculty members and students to promote various international academic activities including: development of international partnerships with universities and institutes for academic collaboration and student exchange/visiting programs, setting guidelines for international agreements, opening up dialogues with government offices, industry and other institutions on internationally related issues and hosting visiting international delegations and dignitaries. One of the major activities of Resource Planning would

be to explore possibilities of generating funds. Alumni of NISER would be a potential target. As a first step, we would be generating a database of alumni of undergraduate and PhD students. A dynamic format will be placed for our students to update their current information. Members of the alumni will be contacted regularly appraising them of developments and relevant programs of NISER as well as for their kind and generous contribution to build NISER to put in the international map as a significant force to reckon with.

The year 2013-14 has been very good for NISER. This year we have new challenges and opportunities. Our new campus in

Jatni, built in 298 acres of land is getting ready. Hopefully, we will be able to move into this campus in coming months. We are making every effort to ensure that the movement will be smooth. We will try everything possible to mitigate the inconveniences associated with the shifting.

Finally, I am extremely thankful to the editorial team in bringing out this comprehensive Annual Report. Their efforts are sincerely appreciated.

Prof. V. Chandrasekhar, FNA, FTWAS
DIRECTOR

ABOUT NISER

National Institute of Science Education and Research (NISER) is envisioned to be a unique institution of its kind in India. NISER will strive to be recognized as a Centre of Excellence in science education and research in four basic sciences (Biology, Chemistry, Mathematics and Physics) and in related areas. The aim of this special institute is to nurture world class scientists for the country who will take up challenging research and teaching assignments in universities, R & D laboratories and various industries. The exemplary teaching and research attributes of its faculty will inspire strongly motivated bright young students to dedicate their lives for scientific research.

NISER is currently operating out of its transit campus with over 300 students spread over five batches of students admitted to the flagship MSc programme through NEST in Biology, Chemistry, Physics and Mathematics and Doctoral Programme in all Basic Sciences.

ACADEMIC OVERVIEW

The academic programme of NISER is designed to provide strong foundations to students through core courses, before they embark at the threshold of research in the field of their choice. Although there are four main school: Biology, Chemistry, Mathematics and Physics disciplines like Humanities and Social Sciences have already roped in and Computer science, engineering sciences and earth and planetary sciences will also be included at appropriate stages.

Curriculum

The academic curriculum, including the structure of courses, laboratory hours, emphasis to study interdisciplinary subjects etc. are framed with a vision that NISER will provide strong foundations in subjects of specialization with a broad perspective in fundamental sciences.

School of Biological Sciences

The School of Biological Sciences aims to establish itself as a leading international centre for research and teaching with

harmonious synthesis of classical and modern biology - always promoting scholarship, original thinking, innovative ideas and cutting edge research.

The school is on a mission

- To strive to become a centre of excellence in education and research in biological sciences providing training at undergraduate, graduate, doctoral and post-doctoral level.
- To provide effective interdisciplinary learning ambience through extensive subject coverage in all fields of modern biology and inter-phasing with other scientific disciplines.
- To equip its students to keep pace with recent developments in the field of scientific research.
- To undertake high quality research activities in defined areas of biosciences so as to make an impact at national and international level.
- To impart professional training for skilled human resource development across the state and country through short term training courses.
- To strive to develop state of the art infrastructure comparable to best anywhere in the world.

Facilities for Research and Teaching

- Confocal Microscope Facility
- DNA sequencing and Surface Plasmon Resonance Facility
- Micro-array facilities for Genomics

School of Chemical Sciences

Chemistry as a subject has considerable impact on our everyday lives and on other scientific disciplines. The aim of the School of Chemical Sciences at NISER is to impart high quality undergraduate and postgraduate level of knowledge to students coupled with cutting edge research activity by the faculty and the students of the school. In addition to traditional organic, inorganic, physical and theoretical chemistry areas, the school embarks on teaching and research activity in the interface areas of Biology, Material

Sciences and Medicine. The teaching philosophy at NISER is not only to impart high quality training to students to make them talented and motivated scientific personnel but also to inculcate human values and concern for societal needs and environment. The School of Chemistry offers one of the best integrated M. Sc. programme and the syllabus is designed not only to teach basic principles but also to have hands on practical experience by doing research projects as a part of the curriculum. The Ph. D. programme of School of Chemical sciences has also been initiated since 2009. Currently, there are over 30 students working in various frontier areas of chemistry.

Facilities for Research and Teaching

- GC Mass and ESI Mass Spectrometers
- State-of-the-art NMR Spectrometer for 1D and 2D Experiments
- Time-Resolved Fluorescence Spectrometers

School of Mathematical Sciences

The School of Mathematical Sciences (SMS) strives to become a citadel for mathematics and allied subjects in terms of teaching and research. The faculty of Mathematics has a strong penchant for acquiring and updating their knowledge and imparting it to the students. The undergraduate program in the school is carefully designed to train the students to acquire creative mind and analytical skills that are needed to pursue their career. SMS aspires to become the foremost center in the Ph.D. program in the forefront areas of Mathematics. In addition to formal courses and research, seminars are conducted regularly. In the seminars, outstanding mathematicians from throughout the world present their latest research findings in various fields of mathematics. SMS envisages introducing strong curriculum in the fields of applied mathematics, financial mathematics and computer science so that students can take up prominent careers in financial/industrial establishments.

The curricula of SMS stresses interdependence and unified structure of science and at the same time emphasizes intensity of study in order to achieve a good

understanding and skills in Mathematics. To fulfill this objective, a basic common core has been identified which constitutes the courses of the first two semesters. The courses on Mathematics in the 3rd semester onwards will focus on reading and understanding of mathematical proofs, emphasizing precise thinking and presentation of mathematical results both orally and in written form. The courses for the second and third year have been designed to provide an understanding of foundational level mathematics in the areas of logic, number theory, algebra, analysis, geometry, discrete mathematics and informatics. The students are encouraged to develop minor areas of interest in other streams of study by a system of open electives running up to the end of the sixth semester. The last four semesters have been reserved for advanced level courses and specialized courses. Provision has also been made for pursuing studies in special areas and writing an innovative project leading to a dissertation.

The aim and mission of the doctoral program in the School of Mathematical Sciences is to produce good and efficient scholars who will excel in acquiring and imparting good and deep knowledge in Mathematics. The program is carefully designed to understand mathematics both vertically and horizontally, that is, to obtain a fundamental understanding of basic fields of mathematics and a thorough state-of-the-art understanding of one major field of interest in which the student writes his thesis. Though the emphasis is placed on the abilities of the student recognizing significant research problems on their own and solving them, we create a sense of rapport between the students and the experts in the field, that is to say that an ambience is created for the students to have the excitement and stimulation on their own but at the same time with support and mentoring provided by the teachers.

The Ph.D. degree is generally a four year program culminating in an original piece of mathematical research for a thesis and eventual publications in good and scholarly journals. While the thesis is in a specific area, the coursework leading up to this is designed to provide breadth to prepare the students for successful careers in the academics. Besides, there are many opportunities for our students to enrich their background in mathematics. Students are strongly encouraged to talk in the research seminars in the school,

and to attend national/international conferences as well as regional meetings amply supported by NISER.

Facilities for Research and Teaching

– State-of-the-art Computing facility and a High Performance Computing Cluster for theoretical calculation.

School of Physical Sciences

The 5-year integrated Master of Science (M. Sc.) programme in Physics includes courses from core areas of physics such as Classical Mechanics, Quantum Mechanics, Electromagnetism, Statistical Mechanics and Mathematical Physics. In addition, elective courses based on upcoming areas in physical sciences are also offered for final and pre-final year students. Each semester of the programme includes one laboratory component where the students experimentally verify their theoretical understanding of concepts. For the pre-final year students, the laboratories offer state-of-the-art experimental facilities for addressing open-ended problems in physical sciences research. Final year of the programme includes one project course (depending on the expertise of the available faculty in the school) where the students learn about the various research methodologies and many aspects associated with carrying out active research in physics.

The Ph.D. students undergo one year of course work (spread over two semesters) which includes courses from the core-areas of physics such as Classical Mechanics, Quantum Mechanics, Electromagnetism, Statistical Mechanics, particle physics and condensed-matter physics.

The school offers the following broad areas in physics for carrying out research work leading to degree of Ph.D.

- High-energy physics (Theoretical) – String theory, Lattice Quantum Chromodynamics
- High-energy physics (Experimental) - Experiments at Large Hadron Collider (LHC), Switzerland
- Condensed-matter physics (Theoretical) – Electronic structure of matter, Colloids, Soft-condensed matter and statistical mechanics, density functional theory etc.

- Condensed-matter physics (Experimental)–Magnetism, superconductivity, low-temperature physics, semi-conductors and nano-fabrication, spectroscopy
- Ultra-cold atoms and Bose-Einstein condensation (Experimental)
- Photonics – Nonlinear optics, Laser Physics, Nanophotonics

Facilities for Research and Teaching

Scanning Electron Microscope and Lithography

Ultrafast Time-resolved Spectroscopy for quantum life measurements of molecular dynamics and Ultracold atoms and BEC facility using atom trapping by lasers

Facility of Magnetic nanostructures and multilayers

School of Humanities and Social Sciences

Scientific temper can sustain and advance in a holistic environment. Creative thinking along with skill based expertise is essential for new age scientists. The School of Humanities and Social Sciences plays a crucial role in the NISER undergraduate programme. The purpose of Humanities and Social Sciences is to help students to identify a set of values which will help them exercise integrity, vision, community involvement, and knowledge of self. It also helps students equip themselves with strong communication skills, interpersonal and team building skills and apply the same in their respective profession. Students must understand the application of their discipline to contemporary issues, they must acquire strong communication and team-building skills, and they must understand the definitions of leadership, personal responsibility, and professionalism. The Humanities and Social Sciences curriculum provides students the opportunity to explore and master communication skills, critical thinking skills, innovative problem-solving skills, and other learning opportunities offered by the department. The school focuses on bridging the gap between society-science interfaces. The School of Humanities and Social Sciences (SHSS) is encompassing five specific areas of study. The school aims to become an innovative centre

for research in the fields of English, Economics, Sociology, Philosophy and Psychology. With faculty drawn from diverse background and experience, it targets to be a thriving academic community, ensuring a fertile ground for true multi-disciplinary research. where academic programs are nationally recognized for high levels of quality and clear multi – disciplinary research.

The curricula of the school for the 5-year Integrated Program emphasize interdisciplinary and holistic approach to impart training and skills in humanities and social sciences. To achieve this objective, a set of core has been identified which constitutes the courses of the first two semesters, and one in each in third and fourth semester. The curriculum generally begins with a two-course in communication skills, the purpose of which is to develop the required proficiency necessary to communicate, both orally and in writing, in their classes, in the workplace, and in community. Subsequent courses consist of introductory courses humanities and social science courses in sociology, psychology and economics that introduce students to the concepts of community, society, and self. In the third and fourth semester students are offered a variety of humanities and social science with an opportunity to select any two courses. Students are required to complete a minimum 16 credits. The electives are designed to provide advanced and applied knowledge in the areas of science communication,

science, technology and society, organizational behaviour, urban planning, applied behavioural sciences, Indian society and social problems. This installs holistic vision and importance of responsible and sensitive global citizenship, through cultural self-reflection, ethical reasoning and historical understanding among the students.

The Ph.D. Programme in the school is currently in the implementation phase. The Ph.D programme aims to cultivate high quality research in various fields of English, Economics, Philosophy, Psychology and Sociology. Graduates of the programme are expected to design and execute original, high quality, interdisciplinary research that can be published in major scholarly journals and books of the profession. The Ph.D. degree is generally a four year program culminating in an original piece of humanities and social science research for a thesis and eventual publications in good and scholarly journals. The proposed programme consists of both course Work and research work independently carried out by the student. While the thesis is in a specific area, the coursework leading up to this is designed to provide breadth to prepare the students for successful careers in the academics and industry.. Students are expected to participate in the research seminars in the school, and to attend national/international conferences as well as regional meetings amply supported by NISER.

FACULTY

School of Biological Sciences

Dr. Abdur Rahaman Reader-F	<i>Biochemistry</i>
Dr. Asima Bhattacharyya Reader-F	<i>Physiology/Host-Pathogen Interaction, Cancer Biology</i>
Dr. Chandan Goswami Reader-F	<i>Cell Biology</i>
Dr. Debasmita Pankaj Alone Reader-F	<i>Molecular Genetics</i>
Dr. Harapriya Mohapatra Reader-F	<i>Microbiology</i>
Dr. Kishore CS Panigrahi Reader-F	<i>Plant Biology</i>
Dr. Manjusha Dixit Reader-F	<i>Human Genetics</i>
Dr. Palok Aich Associate Professor	<i>Systems Biology</i>
Dr. Pankaj Vidyadhar Alone Reader-F	<i>Molecular Biology</i>
Dr. Praful Singru Reader-F	<i>Neurobiology</i>
Dr. Subhasis Chattopadhyay Reader-F	<i>Immunology</i>
Dr. V Badireenath Konkimalla Reader-F	<i>Bioinformatics</i>
Dr. Rudresh Acharya Assistant Professor	<i>Macromolecular X-ray Crystallography, Structural Biology, De novo protein design</i>
Dr. Tirumala Kumar Chowdary Assistant Professor	<i>Structural Virology</i>

School of Chemical Sciences

Prof. V. Chandrasekhar Director	<i>Synthetic Inorganic Chemistry</i>
Prof. T. K. Chandrashekar Sr. Professor (on deputation to SERB, DST)	<i>Inorganic Chemistry</i> <i>Bio-Inorganic Chemistry – Expanded porphyrin Chemistry</i>
Dr. A. Srinivasan Professor	<i>Inorganic Chemistry</i> <i>Bio-inorganic Chemistry: Pyrrole Based Receptors</i>
Dr. Arindam Ghosh Assistant Professor	<i>Physical Chemistry</i> <i>Methodology development in NMR</i>
Dr. B. L. Bhargava Assistant Professor	<i>Physical Chemistry</i> <i>Computational studies of Materials</i>
Dr. C. S. Purohit Reader-F	<i>Organic Chemistry</i> <i>Bio-organic and Organic Synthesis</i>
Dr. C. Gunanathan Reader-F	<i>Organic Chemistry</i> <i>Organometallic Chemistry and Catalysis</i>
Dr. J. N. Behera Reader-F	<i>Inorganic Chemistry</i> <i>Low temperature multiferroics from single source precursors and Porous Magnetic Materials</i>
Dr. M. Sarkar Reader-F	<i>Physical Chemistry</i> <i>Fluorescence Spectroscopy</i>
Dr. N. K. Sharma Assistant Professor	<i>Organic Chemistry</i> <i>Bio-organic and Organic Synthesis</i>
Dr. Prasenjit Mal Reader-F	<i>Organic Chemistry</i> <i>Supramolecular chemistry and Photochemistry</i>
Dr. S. Peruncheralathan Reader-F	<i>Organic Chemistry</i> <i>Synthetic organic chemistry and Asymmetric Catalysis</i>
Dr. Sanjib Kar Reader-F	<i>Inorganic Chemistry</i> <i>Bio-inorganic chemistry: Metals in Medicine</i>
Dr. Sharanappa Nembenna Reader-F	<i>Inorganic Chemistry</i> <i>Main Group Organometallic chemistry and Low oxidation state metal chemistry</i>
Dr. Subhadeep Ghosh Assistant Professor	<i>Physical Chemistry</i> <i>Single Molecule Spectroscopy, Molecular Dynamics</i>

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Dr. Sudip Barman Reader-F	<i>Physical Chemistry</i> <i>Synthesis and Functionalization of Graphene</i>
Dr. U. Lourderaj Reader-F	<i>Physical Chemistry</i> <i>Theoretical and Computational Chemistry</i>
Dr. V. Krishnan Reader-F	<i>Inorganic Chemistry</i> <i>Catalysis and Materials synthesis</i>
Dr. Himansu Sekhar Biswal Assistant professor	<i>Laser Spectroscopy and Instrumentation</i>

School of Mathematical Sciences

Dr. Varadharajan Muruganandam Professor	<i>Harmonic Analysis</i>
Dr. Anil Karn Reader – F	<i>Theory of operator spaces</i>
Dr. Binod Kumar Sahoo Reader – F	<i>Representations of Geometries</i>
Dr. Brundaban Sahu Assistant Professor	<i>Number Theory</i>
Dr. Deepak K. Dalai Reader – F	<i>Cryptography</i>
Dr. Kamal Lochan Patra Assistant Professor	<i>Algebraic Graph Theory</i>
Dr. Nabin Kumar Jana Assistant Professor	<i>Probability Theory</i>
Dr. Sanjay Parui Reader – F	<i>Harmonic Analysis</i>
Dr. Vellat Krishna Kumar Visiting Professor	
Dr. Kaushik Bal Visiting Professor	
Dr. Subhas Visiting Professor	

School of Physical Sciences

Sir Christopher Llewellyn Smith Distinguished Professor	
Prof. Jnanadeva Maharana Adjunct Professor	
Prof. Subhendra D. Mahanti Adjunct Professor	
Dr. Bedangadas Mohanty Associate Professor	<i>High energy heavy-ion collisions</i>
Dr. Subhasis Basak Reader – F	<i>HEP Theory: Lattice QCD</i>
Dr. Sanjay Kumar Swain Reader – F	<i>Experimental HEP: LHC Physics</i>
Dr. A. V. Anil Kumar Assistant Professor	<i>Statistical Mechanics and Modeling of Soft Matter</i>
Dr. Ashok Mohapatra Reader – F	<i>Ultra cold Atoms and Bose-Einstein Condensation</i>
Dr. Chethan N. Gowdigere Assistant Professor	<i>String Theory</i>
Dr. Colin Benjamin Reader – F	<i>Theoretical CMP and Quantum Information</i>
Dr. Joydeep Bhattacharjee Reader – F	<i>Computational Condensed Matter Physics</i>
Dr. Kartikeswar Senapati Assistant Professor	<i>Experimental CMP</i>
Dr. Prasanjit Samal Assistant Professor	<i>Theoretical CMP, Atomic and Molecular Physics</i>
Dr. Pratap Kumar Sahoo Reader – F	<i>Nano fabrication and Ion/Photon matter interaction</i>
Dr. Proloy Kumar Mal Assistant Professor	<i>Experimental High Energy Physics (Collider experiments)</i>
Dr. Ritwick Das Assistant Professor	<i>Fibre Optics, non-linear optics, Lasers</i>

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Dr. Subhankar Bedanta Reader – F	<i>Magnetism of nanoparticle, thin films, multiferroics</i>
Dr. Sumedha Reader – F	<i>Special Mechanics and Interdisciplinary Applications</i>
Dr. Yogesh Kumar Srivastava Assistant Professor	<i>String Theory</i>
Dr. V Ravi Chandra Asst. Professor	<i>Theoretical Condensed Matter Physics</i>

School of Humanities and Social Sciences

Dr. Pranay K. Swain Reader – F	<i>Public Policy and Governance, Voluntary Sector and Development, Contemporary Social Issues</i>
Dr. Debashis Pattanaik Assistant Professor	<i>Social Innovation, Social Network Analysis, Social Study of Science and Technology</i>
Dr. Rooplekha Khuntia Assistant Professor	<i>Business Ethics, Ethical Cynicism, Organizational behavior and Leadership</i>
Prof. Binayak Rath Visiting Professor (Economics)	<i>Benefit-Cost Analysis/Project Evaluation, and Environmental Impact Assessment</i>
Dr. Joe Varghese Yeldho Visiting faculty (English)	<i>Critical History and Narratives of Race</i>

COURSES OFFERED

School of Biological Sciences

Biology I: Science of Life, Biology II: Cellular and Genetic basis of life, Biophysics and Biostat, Cell biology, Genetics, Ecology, Cell biology Laboratory, Genetics Laboratory, General course, Advance Molecular Biology, Advance Neurobiology, Cancer biology, Advanced Biochemistry, Biology Laboratory, Microbiology, Biochemistry, Biophysics and Biostat, Microbiology Laboratory, Biochemistry Laboratory, Physiology I (Animal Physiology), Physiology II (Plant Physiology), Neurobiology, Physiology I (Animal Physiology) Lab, Physiology II (Plant Physiology) Lab, Principles of Drug design, Molecular genetics Infection and immunity, Cellular and Genetic Basis of Life, Cell Biology, Genetics, Ecology, Cell biology Laboratory, Genetics Laboratory, Molecular Biology, Immunology, Endocrinology, Plant Developmental Biology, Mol Biology Laboratory, Immunology Laboratory, Quantitative Biology, Biological techniques: Theory and practice.

School of Chemical Sciences

Theory: Chemistry I, Quantum Chemistry I, Physical Methods in Chemistry II, Nuclear Magnetic Resonance, Basic Inorganic Chemistry, Polymer Chemistry, Advanced Organic Chemistry, Classics in Molecules, Physical Organic Chemistry, Organic Chemistry I, Organic Chemistry II, Organic Chemistry III, Supramolecular Chemistry, Organic Photochemistry, Advanced Bio-Organic Chemistry, Magnetism, Solid State Chemistry, Crystallography

Laboratory: Chemistry Lab I, Chemistry Lab II, Chemistry Lab III, Physical Chemistry Lab -1, Biomolecular Lab, Electronics Lab, Inorganic Chemistry Lab

School of Mathematical Sciences

General Mathematics – I & II, Math Lab – I, II & III, Analysis-I, Algebra-I, Discrete Mathematics, Analysis-II, Algebra-II (Linear Algebra), Probability Theory, Elementary Number

Theory, Analysis-III, Algebra-III (Rings and Modules), Differential Equations, Topology, Analysis-IV (Calculus of Several Variables), Algebra-IV (Field Theory), Complex Analysis, Optimization Theory, Differential Geometry, Functional Analysis, Representation of Finite Groups, Measure Theory, Advanced PDE, Advanced Probability and Stochastic Process, Nonlinear Analysis, Commutative Algebra, Advanced Linear Algebra, Information and Coding Theory, Algebraic Topology, Operator Algebra, Harmonic Analysis.

School of Physical Sciences

Core: Mechanics and Thermodynamics, Electricity, Magnetism and Optics, Classical Mechanics, Mathematical Methods I, Electronics, Electromagnetism I, Mathematical Methods II, Quantum Mechanics I, Electromagnetism II, Statistical Mechanics, Quantum Mechanics II, Special relativity, Atoms, Molecules and Radiation, Introduction to Condensed Matter Physics, Nuclei and Particles

Electives: Classical Mechanics-II, Advanced Solid State Physics, Astronomy and Astrophysics, Computational Physics, Quantum Field Theory I, Quantum Optics, Particle Physics, Introduction to Phase-transition and Critical Phenomena, Plasma Physics and Magneto-hydrodynamics, Biophysics, Nonlinear optics and laser, Quantum Information, General Relativity and Cosmology, Soft Condensed matter, Applied Nuclear Physics, Many Body Physics, Quantum and Nano-Electronics, Nonlinear Physics, Chaos, Turbulence, Theory of Magnetism and Superconductivity, Density functional theory of atoms molecules and solids, Quantum Field Theory II,

School of Humanities and Social Sciences

Technical communication – I & II, Introduction to Psychology, Introduction to Sociology, Introduction to Economics, History of Science, Sociology of Science and Technology, Science Communication and Citizen, Organizational Behaviour, Applied Behavioural Science, Perspectives on Indian Society, Life and Community in the Urban World.

RESEARCH ACTIVITIES

School of Biological Sciences

Systems Biology, Vaccinology and Bio-Nanotechnology

Palok Aich is a biophysical chemist turned molecular and systems biologist whose long term interest is to understand mechanisms of retaining normal health through the balancing act of immunity and metabolism. Current research activities involve understanding (i) innate mucosal immunity following certain viral and/or bacterial infection and to develop means to enhance immunity, (ii) stress dependent disease susceptibility, (iii) mechanism of antibiotic resistance to develop alternate ways.

Palok Aich Associate Professor

Signaling systems in plants, Light perception, flowering time control, circadian rhythm and biological clock.

As a living organism, plants are unique in many ways compared to animals. Like animals they also sense and perceive environmental stimuli and react to it. However, unlike animals they cannot run away from the unfavorable environmental conditions. They have also mechanisms that anticipate diurnal and seasonal changes that in turn are required for its reproductive fitness. Undoubtedly, they have evolved with amazingly intricate but well defined signaling networks tuned to suit its neighboring environment. We would like to explore these signaling networks in plants and would employ molecular, genetic, proteomic and cell-biological approaches. These researches would lead to identify possible regulators that would help the plant to withstand the effects of global warming and climate change. Furthermore, we will also explore some of the locally available medicinal plants and their extracts under the frame-work of chemical genetics. We wish to start with the following areas first and would expand our research interest with time and need.

1. Light signaling and flowering time control in plants

2. Plant response to stress. proteomic and microarray profiling in different tissues and regions of a plant.
3. Screen for early or late photo-periodic flowering regulators influenced by the diurnal temperature differences.

Kishore CS Panigrahi Reader-F

Nuclear remodelling in *Tetrahymena*: Role of Dynamin related protein

Nuclear remodelling is a universal process that occurs in all eukaryotes. It is relevant to human health, since a number of known human diseases are linked to nuclear remodelling. In spite of extensive research using higher eukaryotic systems, some basic questions related to nuclear remodeling remains unanswered. Specifically the mechanism of nuclear envelope expansion including the lipid addition to the nuclear envelope is not clearly understood. *Tetrahymena* undergoes closed mitosis and nuclear envelope expands ~10 folds during specific stages in cell conjugation. My group is interested on nuclear remodelling in *Tetrahymena*, specifically understanding the mechanism and cell cycle regulation of nuclear envelope expansion. Gene manipulation, generation of knockouts, maintenance of lethal alleles and *in vivo* structurefunction analysis are easily achieved in *Tetrahymena*. This makes it a suitable model organism to study nuclear remodeling.

Abdur Rahaman Reader-F

Cell biology of pain

TRP channels at the peripheral neurons act as “pain receptors” and are sensitive to stimuli like low pH, high temperature, noxious compounds, immune system and psychological state. In most cases, the pain is “acute” and thus decays fast if not vanishes in absence of these stimuli. However, in case of long-lasting chronic pain, there is no effective medical treatment. The factors involved in the development of chronic pain remain unclear. The chronic pain can be partially explained by the permanent changes in the neuronal signaling events and by alternate neuronal

connections. Understanding of different molecules, cellular components like mitochondria and cytoskeleton as well as their complex regulation in the context of pain chronification is the main focus of this lab.

Chandan Goswami Reader-F

Molecular and Cellular Targets of Anesthesia and Anesthesia-induced Neurotoxicity; Role of small GTPases in Development and Disease

Understanding molecular mechanisms that lead to a clinical state of "Anesthesia" has been a struggle for anesthesiologists, physiologists, biochemists and behavioral biologists for a very long time now. Upon exposure to anesthetic agents the subject feels no pain, loses short term memory and remains unconscious. The required high concentrations of these drugs both influences the fluidity of the lipids and acts on proteins such as ion channels and receptors e.g. GABA, Glutamate receptors, voltage gated and leak channels. My research aims to contribute by uncovering novel molecular targets of general anesthetics using molecular genetics in *Drosophila melanogaster*. Another major thrust would be to develop a fly model for understanding any neurotoxicity possibly associated with exposure to general anesthetics. This would also help establish the validity of conflicting opinions about influence of anesthetics on progression of neurodegenerative diseases i.e. actions of anesthesia are completely reversible *versus* increasing evidence that they might lead to irreversible changes by inducing apoptosis in the CNS. Possible outputs would involve developing new behavioral methodologies and employing various genetic, anatomical and behavioral assays to screen for neurotoxicity associated not only with general anesthetics but also with various other drugs and chemicals.

Debasmita Pankaj Alone Reader-F

Microbial genome dynamics and plasticity, antibiotic resistance genes and mobile genetic elements

My areas of research interests basically revolves around comparative genomic analysis of commensal and pathogenic

bacteria. As antibiotic resistance has manifested itself as a serious public health problem all over the world. Complexity of the problem escalates manifold in developing countries due to numerous interlinked socio-economic factors. One of the projects aims at understanding the transmission dynamics of microbial resistome. Moreover, in nature seldom do bacteria exists in solitaire. It is increasingly evident that majority of pathogenic bacteria are derived from commensals that have acquired genes from foreign source. The second area of my research interest involves studying the evolution of pathogenic bacteria from their non-pathogenic counterpart.

Harapriya Mohapatra Reader-F

Finding out novel Angiogenesis regulators and understanding the etiology of Cancer

One of my research focuses is, to identify novel angiogenesis regulators, which can be targeted to control tumor growth and other angiogenesis related disorders. My group is currently validating FRG1 as angiogenic regulator and finding out its interacting partners.

Another major area includes understanding the etiology of gallbladder cancer, which has second highest frequency in North Indian women at world level. We are interested in establishing the environmental and genetic risk factors in population of Odisha. We are also trying to elucidate the gene-environment interaction and molecular mechanism of Gallbladder cancer. Establishment of early detection biomarkers will help in better management of cancer.

Manjusha Dixit Reader-F

Interdisciplinary approaches towards rational drug design and molecular medicine; Chemo/Pharmacogenomic profiling of traditional medicine and natural products

Interdisciplinary approaches in the area of rational drug design and molecular medicine is the need of hour to drive high-throughput drug discovery. An increased understanding of molecular principles of protein-ligand

interactions indeed enabled drug design and discovery in a big way by thoroughly indexing data from various computational and experimental methods. The quality of hit compounds from virtual screening can be adequately increased based on the understanding the structure activity relationship of any drug using different data-mining strategies. Ultimately, the goal of applying such methods would yield reliable hit compounds which can be further validated in lab conditions.

K. V. S. Badireenath Reader-F

Molecular mechanisms of eukaryotic translation initiation

Protein biosynthesis is an important step in the life cycle of cells where genetic information is converted into functional protein information. Selection of an open reading frame is a key function of the translation initiation apparatus and a key regulatory step, which controls geneexpression. My research interests are to understand a) Mechanism of start codon recognition & translation fidelity. b) Translational control in molecular medicine and regulation of protein biosynthesis. c) Architecture of translation apparatus, molecular interactions and supra molecular assembly of translation initiation complex. I am using a range of genetic, biochemical and biophysical techniques in the yeast model system.

Pankaj Vidyadhar Alone Reader-F

Cellular mechanism of immune-regulation and its translational use in immuno-therapy

Immune system is accountable for combating infectious diseases and cancer, in allergy, autoimmunity and immunopathology. The cellular, molecular and organismal levels to understand development, function, and regulation of the immune system from the most fundamental mechanisms to therapeutic applications are the major interests of Immunology Research. We would like to study immuno-regulatory T cells (Treg) and Toll Like Receptor

(TLR) response in cancers, infectious diseases and inflammatory responses to regulate the immunogenic T cell response and designing the cellular inhibitors of Tregs so that immunosuppressive Tregs in tumor and infectious diseases can be regulated. Research in animal model and also with the human blood samples from normal donors and patients with due consents and National guide lines are the prime candidates for such experimental studies.

Such understanding will help us towards designing vaccine strategies to control various diseases.

Subhasis Chattopadhyay Reader-F

Understanding the Molecular Mechanism of Gastric Cancer

Gastric cancer is a major cause of cancer-related mortality. *Helicobacter pylori*, a slowly growing, microaerophilic, gram-negative, flagellated spiral organism has been classified as type I carcinogen for gastric cancer. Other than *H. pylori*, hypoxia has also been linked to gastric cancer in recent times. Despite the progress in identifying some of the genetic and epigenetic factors involved in gastric cancer, identification of novel molecular markers is still lacking in case of gastric cancer. Therefore our interest to unravel underlying mechanisms regulating *H. pylori* and hypoxia-mediated gastric cancer development and metastasis could be of immense significance.

Asima Bhattacharyya Reader-F

Structural Biology of membrane and water soluble proteins, de novo protein design, and structure based drug design

Our research focuses on structural biology of membrane, and soluble proteins. We use X-ray crystallography as a tool to elucidate the structures of proteins. We are interested in elucidating structures vioporins. The channel structure provides insights into molecular mechanism for channel activity, and also aid in desiging antiviral drugs. Our interest is also to determine the structures of TM domain of bacterial histidine kinase sensors (HKs) to decipher the molecular mechanism for signal transduction across the

membrane. This understanding is essential in general, and critical for pharmaceutically relevant therapeutic targets.

Our research also focuses on understanding helix-helix interactions in membrane proteins with respect to dynamics, stability and structure-function correlations. The knowledge based parameters will be put into test by computational protein design of transmembrane proteins and characterization by various biophysical experiments. We are also open to widen our interests on the other systems.

Rudresh Acharya Assistant Professor

Structural Virology

We are interested in biology of emerging infectious viruses, with emphasis on viral entry into host cell and virus-host protein interactions. We use molecular virology, structural biology, biophysical and biochemical techniques to study viral cell-entry machinery and its interactions with cellular receptor(s). Broad goal of our research is to develop knowledge for novel therapeutic strategies that prevent viral entry, and hence infection.

Tirumala Kumar Chowdary Assistant Professor

Neural circuits and neuroendocrine regulation

We have been interested in studying the complexity of neural circuitries, the multisynaptic pathways, and the neuroactive substances involved in the regulation of feeding, energy balance, reward and neuropsychiatric disorders. We are also exploring the neural pathways and interaction of neurotransmitters in the preoptic area and hypothalamus which links reproduction with energy status, and governs the neuroendocrine regulation of seasonal reproductive cycle and reproductive behavior.

Praful S. Singru Reader-F

School of Chemical Sciences

Prof. V Chandrasekhar, Professor

Prior to joining NISER as Director in January 2014, Prof. Chandrasekhar worked at the Tata Institute of Fundamental Research, Centre for Interdisciplinary Sciences, Hyderabad as a Senior Professor and Dean (2012-14) and at IIT Kanpur at the head of the Department of Chemistry and Dean of Faculty Affairs. His current research interests are in the area of molecular materials, main-group- and organometallic chemistry. He is the recipient of several national and international awards including the Shanti Swarup Bhatnagar Award, the Friedrich-Wilhelm Bessel Award, and the national J. C. Bose Fellowship. He is a fellow of all the academies of sciences in India as well as the academy of sciences of the developing world, Trieste, Italy.

Prof. T. K. Chandrashekar, Professor

Our research activities are centered on synthesis and application of tetrapyrrole pigments and related macrocycles. Mainly focuses on; (1) To understand such macrocycles in the biological world; (2) Structure – Function correlations; (3) To find out their potential applications as Non-linear Optical materials, Photodynamic therapeutic drugs and receptor properties and (4) Use as versatile catalysts for many industrial inorganic reactions.

Dr. A. Srinivasan, Associate Professor

Pyrrole Based Receptor Materials. Our research interests are: (1) synthesis of various metallocenyl incorporated calixpyrrole and calixphyrin – normal and expanded derivatives, structural analysis and receptor properties; (2) Calixbenzophyrins with Aggregation Induced Enhanced Emission Characteristics and applications as Hg(II) chemosensor; (3) Synthesis and structural analysis of normal, expanded and contracted porphyrinoids; (4)

N-confused porphyrinoids – as Sensitizer for Photodynamic therapeutic applications and (5) Metal assisted macrocyclic synthesis.

Dr. Sanjib Kar, Reader F

Transition metal complexes are important in catalysis, materials synthesis, photochemistry, and biological systems. Display diverse chemical, optical and magnetic properties. In that context we are exploring the synthesis, structural characterization, spectroscopic properties (Raman, IR, NMR), electrochemistry, magnetic properties and chemical reactions of novel transition metal complexes.

To design and synthesis of newer classes of iron and manganese complexes incorporating selective combination of porphyrin and corrole ligand functionalities in order to achieve synthesis of the relevant iron and manganese complexes whose oxidation levels, electronic properties and mode of reactivity can be tuned by selective introduction of suitable donor or acceptor groups in the porphyrin/corrole frameworks. We will analyze *the use of high-valent iron and manganese complexes of corrole and porphyrin* in atom transfer and dioxygen evolving *catalysis*. Study of transition metal complexes of corrole and porphyrin will lead to discovery of excellent catalysts, in terms of stability and efficiency, for a variety of synthetic reactions. We will also investigate the efficacy of these complexes to intervene tumor growth. Preliminary study indicates that the proposed compounds indeed is able to induce apoptosis in vitro, an elaborate investigation is warranted to fully understand their mechanism of action and also the effectiveness in suppressing the tumor in vivo. Thus the present work will have a great translational importance in therapeutic intervention of tumor.

Water oxidation catalyzed at the oxygen-evolving center (OEC) in photosynthesis is one of the most important and fundamental chemical processes in nature. A manganese cluster consisted by four manganese ions in higher plants plays an important role as a catalyst for water oxidation and oxygen evolution. It is our aim to establish artificial OEC models not only for understanding and simulating the photosynthetic OEC, but also to construct artificial

photosynthesis, which is attracting a great deal of interest to convert solar energy into fuels.

The enzyme family cytochrome P-450 (cytochrome P-450s are oxidation enzymes, which bear a thiolate group as an axial ligand and catalyze the oxidation of organic substances by oxygen activation) catalyzes the incorporation of one oxygen atom from O₂ into a variety of organic substrates. We prepare chemical models (metal porphyrin) of cytochrome P-450 for catalytic oxygenation of olefins and hydrocarbons.

Dr. Arindam Ghosh, Assistant Professor

Our group works on method developments in the field of small molecules as well as large bio-molecules, digital signal processing techniques applicable to spectroscopy. Currently we are working on four different projects. The first aims at investigating, both theoretically and experimentally, the noise profiling of different rapid data acquisition techniques. The second project try to find solution against some of the fundamental challenges of NMR such as background noise, overlapping of signals, presence of undesired signals etc using digital signal processing techniques. The third project focuses on developing a MATLAB based programming package which will both simulate NMR spectra and help in product operator formalism at the same time. In addition we also work on NMR metabonomics and method developments associated with it.

Dr. B. L. Bhargava, Assistant Professor

Molecular simulations provide insights into the structure and dynamics of a system at atomic level helping to understand the system from a microscopic perspective. Using molecular simulations, it is possible to carry out controlled (virtual) experiments at extreme conditions without the safety issues involved in carrying out the actual experiments. We use ab initio methods, and empirical potential based molecular dynamics and Monte Carlo techniques to study condensed phases of materials. We explore the structural and dynamical properties of materials that are of potential use. For systems exhibiting aggregation behavior beyond the length scales accessible

to the atomistic simulations, coarse grained MD simulations are used. Biological systems such as proteins and lipids are also be studied using molecular dynamics.

Dr. Chandra Shekhar Purohit, Assistant Professor

Peptide Nucleic Acid as a Tool for Sequence Specific DNA Cleavage. The manipulation of DNA serves as a tool for genetic engineering and DNA nanotechnology. It can even be possible to use these tools in cancer therapy for these following reasons. Cancer is caused by unregulated cell division in the tissue. One of the chemotherapy approaches for its cure is to damage the DNA, thereby stopping the cell to divide further which leads to apoptosis of the cell. *cis*-Platin is one of the chemical agent used to treat cancer. The function of *cis*-Platin is to cross linking two DNA strands, thereby stopping the cell division. Another way of stopping cell division is to damage the DNA which cannot be repaired by the cellular mechanism. Single nick on the DNA by cleaving phosphate bond is usually repaired by the enzymes. However, a second damage around the damaged site is hard to repair and leads to apoptosis. Because of possible chemotherapy agents and other uses in biotechnology, there has been a lot of interest in preparing molecules and metal complex that cleave DNA. The major disadvantage with these molecules is their non-sequence specific cleavage of DNA. Therefore, new chemical agents are required which can cleave DNA with sequence specificity. In principle, this is possible if these molecules will have two components. One, which targets the DNA sequence specifically, and binds to it and a second component, cleaves the DNA at that position. This strategy will be used to synthesize few molecules and study their properties during the project execution.

Dr. C. Gunanathan, Assistant Professor

Chemistry of Pincer Complexes: Developing Sustainable Catalytic Processes. Sustainable development is accepted as an essential goal for achieving societal, economic and environmental objectives. Chemists have a prominent role to play for such a development by devising new environmentally benign methodologies. Discovery of new

reactions to make advanced synthetic intermediates and target molecules in minimal steps also could save time, investment and minimize chemical waste.

Chemistry of Pincer Complexes is an important and rapidly growing discipline in Science. The focus of our research is centered on developing new pincer complexes and their applications as catalysts for synthesis, bond activations, and activation of small molecules. Hence, our group opens up a research discipline that focus on the fundamental studies of design and synthesis of new pincer complexes, and their organometallic chemistry with the perspective of developing efficient and green catalytic transformations through new discoveries. We also plan to foray into multi-component reactions and development of new lanthanide complexes for catalysis.

Dr. Jogendra Nath Behera, Assistant Professor

There is a considerable interest in multimetallic oxides incorporating heavy main group (lead and bismuth) and transition metals because of their attractive properties, such as ferro- and piezoelectricity, multiferroism, catalysis, and superconductivity. However, the preparation of lead-containing mixed oxides by traditional high-temperature solid state synthesis is often difficult to control because of the volatility of PbO. It is well-known that some heterometallic coordination complexes with suitable ligands can be used as single-source precursors (SSPs) to obtain crystalline oxide materials upon their decomposition at significantly lower temperatures compared with the solid state or multisource precursor approaches. The most common application of metal β -diketonates as precursors for the metals and metal oxides is based on their high volatility and clean, low-temperature decomposition pattern. To understand the importance of lead-containing transition hetero-bimetallic oxides, we are synthesizing respective hetero-bimetallic diketonates as single source precursors by both solution and solid-state methods.

While metal-organic frameworks have shown much promise and potential in interactions with small molecules (i.e; gas adsorption, etc), few studies report electronic or ionic conductivity in such porous compounds. To induce

electronic conductivity, we will develop new frameworks with select metal cations and ligands to enhance electron transfer throughout the framework.

The most remarkable characteristic of MOFs relevant to catalysis, which makes them unique, is the lack of non-accessible bulk volume and thus, the mass transport in the pore is not hindered. Secondly, different strategies can be applied to introduce catalytically-active sites to facilitate the reaction inside MOFs. One approach is to utilize the metal-connecting points which coordination environments is saturated with coordinated water or other solvent molecules that can be easily removed without destroying the parent framework. In another approach, the catalytic sites are incorporated directly into the bridging ligands used for the construction of MOFs. Importantly, the MOFs allow the desired incorporation of catalytic sites in the controlled fashion, oriented towards the pore interior and specifically organic-grafting, therefore, can offer unique applications in heterogeneous catalysis.

Dr. Moloy Sarkar, Assistant Professor

We are mainly interested in the photophysical behavior of electron donor-acceptor (EDA) molecules in both conventional solvents and in room temperature ionic liquids. We are interested to study important photo-processes such as electron transfer, proton transfer reactions etc. of different EDA molecules by examining the spectral and temporal behavior of the systems using steady state and time-resolved absorption and fluorescence techniques.

Dr. Nagendra K. Sharma, Assistant Professor

Specialization in Bio-organic chemistry and dealing with following research area, Design, Chemical Synthesis and biological evaluation of Nucleic Acid & Peptide analogues, Synthesis of Inhibitors, to study the DNA/Protein and protein/protein Interaction *in vitro*, Mechanistic studies of Isoprenoids Enzymes and biosynthesis of natural products

Dr. Prasenjit Mal, Reader-F

Ion sensing, particularly as it could be applied to the emerging area of nano-technology and in parallel provide

a platform to the drug-discovery, is a key area in which scientific and technological progress may be translated into economic growth. Prasenjit Mal has developed several new concepts in supramolecular chemistry while working in Prof. Michael Schmittel's laboratory at University of Siegen (Germany) as a Humboldt fellow, in Dr. Jonathan R. Nitschke's laboratory at University of Cambridge and also at NISER Bhubaneswar and so has proved his abilities in this related domain i.e., development of transition metal ion sensor (submitted). In next few years, he is going to work in an area where the major focus will be to develop ratiometric fluorescent probes for monitoring transition metal ion triggered cellular uptake of bioactive molecules. Cellular delivery of bioactive molecules by passive diffusion is usually restricted to small nonpolar molecules, while large or polar/charged compounds are not membrane permeable unless actively transported to the interior of the cell by specific mechanisms (e.g. endocytosis). Beside the general challenge of effective cellular delivery, accumulation of a drug (or diagnostic agent) at its target site is a central aim of modern delivery techniques to make products more effective and selective and, as a result, safer. In general, fluorescence-based probes provide highly sensitive or accurate information that are suitable for the visualization of trace metal ions in biological environments. Specific requirements in terms of probe design will be taken into account for terpyridine/phenanthroline metal binding unit and proper functionalization of the probe for conjugation to other molecules. The terpyridine chelating unit is known to be an efficient binder for transition metal like Zn(II) or Fe(II), and also the phenanthroline unit can easily accommodate Cr(III). The project includes organic synthesis, photophysical characterization and probe application to live cells using fluorescence microscopy. Thus, successful execution of the proposed idea would lead both to the introduction of new tools into the toolkit of chemical biology, in addition to preparation of new materials that might be of potential use for are of medicinal chemistry.

Dr. S. Peruncheralathan, Reader-F

Over the decades chemistry has changed the way from alchemy to nanoworld. However, one facet remains constant; that's the ability to create molecules in a stereo and

regio controlled manner. In this regards, synthetic chemists play a vital role in assembling molecules by using different strategies. Among them, the use of catalysis to promote organic transformations is a key tool. Our research focuses on developing new catalytic approaches for synthesizing fine chemicals and enantiopure target molecules those are having unexplored physical and biological properties.

We are interested in engaging our research activities in the following areas: Enantioselective Organocatalysis, Metal-Mediated Molecular Synthesis

Dr. Sharanappa Nembenna, Assistant Professor

Main Group Organometallic and Synthetic Inorganic Chemistry. Development of new ligand systems, Synthesis and characterization of main group metal complexes, Metal complexes with metal-metal bonds, Synthesis of low oxidation state metal complexes

Dr. Sudip Barman, Reader-F

Graphene is new allotrope of carbon, a 'thinnest material in the world'. It is two-dimensional sheet of sp^2 hybridized carbon. In spite of profound interest and continuing experimental success by experimental scientists, widespread implementation of graphene has yet to occur. Just like other newly discovered carbon allotrope (Carbon nano tube, Fullerene) material synthesis and processibility have been the rate-limiting steps in evaluation of graphene application. The outstanding electrical and mechanical and chemical properties of graphene make it attractive element for application in electronics. However, efforts to make patterned conducting graphene have been hampered by the lack of specialist methods for electrical modification of graphene for its application. One of the main interests of my work is to develop new synthetic route for large scale production of graphene. The functionalization of graphene will be done by using well-known chemical reactions.

Dr. V. Krishnan, Assistant Professor

The chemistry in my group will be interdisciplinary which includes inorganic, polymer and organic. My research

focuses on the development of new synthetic routes for application in catalysis, and materials chemistry and fall into the following general areas viz., cooperative catalysts for CO_2 fixation, chiral counterions, hybrid inorganic-organic materials.

School of Mathematical Sciences

Dr. Varadharajan Muruganandam, Professor

Fourier Algebra and Fourier-Stieltjes Algebra: I am generally interested in the study of a Fourier algebra and Fourier-Stieltjes algebra of a locally compact group G . They are commutative Banach algebras and can be identified with the predual of the Von-Neumann algebra of the group and the dual of C^* -algebra of G respectively. If the group G is amenable, then the space of multipliers of $A(G)$ can be identified with $B(G)$. In 1989, there appeared a path-breaking paper due to Cowling and Haagerup (M. Cowling and U. Haagerup, *Completely bounded multipliers of the Fourier algebra of a simple Lie group of real rank one*, Invent. Math. 96 (1989), 507-549) which connects operator algebras and multipliers of $A(G)$; and creates certain exotic invariants called *Haagerup constants*. I gave a simpler proof of their work. Encouraged by this paper, Eymard suggested me to look into the Fourier algebras of hypergroups.

Besides, there is a general problem in this field which reads as follows: For every $\lambda \geq 1$, does there exist a von-Neumann algebra Γ such that $\lambda(\Gamma) = \lambda$? I am fascinated by this problem. I am exploring the possibility of having the von-Neumann algebras associated to hypergroups. As there is much to be done in the context of Fourier algebras of hypergroups, I initiated the study of Fourier algebras of hypergroups with particular reference to Fourier-Jacobi algebras which turn out to be Fourier algebras of Gelfand-pairs associated to simple Lie groups of rank one for some discrete parameters.

There is a long way to go and my current concern is to study the amenability of hypergroups on one hand and Fourier algebras of hypergroups that arise from H-type groups on the other hand.

Dr. Anil Kumar Karn, Reader-F

Order structure of C^* -algebra: I am interested in the study of the order structure of a C^* -algebra. Let us recall that the self-adjoint part of a C^* -algebra may be characterized by as an abstract-M space. (An abstract-M space is a Banach lattice with some additional properties.) Further, we note that the self-adjoint part of a non-commutative C^* -algebra (for example: $B(H)$, $\dim(H) \geq 2$) is not a Banach lattice. However, a 'non-commutative' lattice-type structure can be 'seen' in the self-adjoint part of a non-commutative C^* -algebra. This structure is a lattice if and only if the C^* -algebra is commutative. I am very close to find an abstract characterization of this structure. As soon as this gap is filled, a non-commutative Banach lattice theory may be proposed. This programme may lead to an abstract order theoretic characterization of a non-commutative C^* -algebra. Not to mention separately that this programme uses heavily the theory of matrix ordered spaces.

Dr. Deepak Kumar Dalai, Reader-F

Algebraic Attacks and Algebraic Immunity of Stream ciphers: Cryptology is the science of secure communications where Mathematical techniques are used to hide the information for secure communication. Stream Cipher is one of the class of techniques. Algebraic attack is one of the cryptanalysis of all techniques which is very effective in the case of stream cipher. Algebraic Immunity (AI) is a cryptographic term which measures the strength of a cipher (technique) against algebraic attack. In this research topic, we study the AI of different stream ciphers and find different ways to implement algebraic attacks on stream ciphers.

Dr. Sanjay Parui, Reader-F

Harmonic Analysis on Euclidean Spaces and Heisenberg Group: My research interest includes Harmonic Analysis on Euclidean spaces and Heisenberg group. I am now working on problems related to Dunkl transform on Euclidean spaces. Dunkl transform is a generalization of Fourier transform. We don't have explicit formula for Dunkl kernel and very little is known for translation operator. I am

planning to develop Littlewood Paley g function theory for Dunkl Hermite operator which may lead to multiplier theory for Dunkl Hermite operator. I am interested in establishing L^p , L^q mapping property for wave operators related to Dunkl and Dunkl Hermite Operator.

Dr. Binod Kumar Sahoo, Reader-F

Representations of Incidence Geometries: A. A. Ivanov et al. introduced the notion of representations of geometries with $p+1$ points per line, where p is a prime number, in 1994 for $p=2$ and in 2001 for a general prime p . Motivated by the theory they developed, I work on the question of existence of representations of incidence geometries in nonabelian groups. This work using the notion of representations of geometries also helps to look for the possibility of constructing new geometries and giving new constructions to known geometries.

Dr. Brundaban Sahu, Assistant Professor

Supercongruences of Apéry-like Numbers: The numbers which occur in Apéry's proof of the irrationality of $\zeta(2)$ and $\zeta(3)$ have many interesting congruence properties while the associated generating function satisfies a second/third order differential equation. We study supercongruences properties for a generalization of numbers which arise in Beukers' and Zagier's study of integral solutions of Apéry-like differential equations.

Convolution Sums: We use differential operator on modular/quasimodular forms to compute convolution sums of divisor function and related applications on the number of representations of an integer by certain quadratic forms.

Dr. Kamal Lochan Patra, Assistant Professor

Laplacian Spectrum of Graphs: The Laplacian is an important matrix associated with a graph, and the Laplacian spectrum is the spectrum of this matrix. The Laplacian eigenvalues have found numerous applications in various fields. Specially, the second smallest and the largest eigenvalues are used in theoretical chemistry, combinatorial

optimization and communication networks. I work on the relationship between the structural properties of a graph and its Laplacian spectrum.

Dr. Nabin Kumar Jana, Assistant Professor

Spin Glass and Related Problems: Spin glass theory has been introduced as a part of statistical physics to deal with the unusual glassy behaviour of different amorphous magnetic substances. However its application covers many other subjects as well. Our attention mainly is on the mean field models of this subject.

Dr. Kaushik Bal, Visiting Faculty

Concentration Phenomenon in Schrödinger Equation: Since the inception of Quantum Physics, Mathematician and Physicist all over the world for the last century have been trying to understand and study the nonlinear Schrödinger equation. Due the presence of the nonlinearity the solution exhibit some beautiful properties as was showed by W. M. Ni, J. Wei, T. Tao, M. Keel, Adimurthi, M. Del Pino among many. The existence of the single or multiple peak solutions and the concentration phenomenon that occur was widely studied for the semilinear case. But the Quasilinear case poses the problem of degeneracy and thus is very interesting phenomenon to study. My research interest is in studying the steady state quasilinear Schrödinger equation and the concentration phenomenon associated with it.

Dr. B. Subhash, Visiting Faculty

Vector Field Problem: The problem of finding the number of linearly independent vector fields on a sphere was a long standing one which was solved by Adams, using algebraic topological methods. This raised a lot of questions, like what is the maximum number of linearly independent vector fields on a manifold? When can an n-dimensional manifold have n linearly independent vector fields (parallelizable), etc. These sort of questions are collectively known under the name of vector field problems. This problem has been addressed for various manifolds like Projective spaces, Grassmann manifolds, Stiefel manifolds and entire or

partial results have been obtained. The tools of algebraic topology and k-theory have been effectively used to answer some of them. I am looking at the vector field problem for a class of manifolds that are quotients of the complex projective Stiefel manifold; I am interested in finding and understanding the co-homology algebra and the k-groups of these homogeneous spaces in order to solve the vector field problem for these classes of manifolds.

School of Physical Sciences

Dr. Bedangadas Mohanty

The research group (consisting of 4 PhD students, one research Associates and two scientific officers) is focused in establishing the phase diagram of strong interactions using a system formed by colliding heavy-nucleus at high energies. The phase diagram of strong interactions have a very rich phase structure, which includes: a hot and dense de-confined phase of quarks and gluon, and a low temperature phase of hadrons. In addition it offers the possibility to study transitions of different orders and possible existence of a critical point. Further a de-confined phase of quarks and gluons, the fundamental constituents of visible matter in Universe, allows for the interesting possibility to study its properties like viscosity, conductivity etc. The high-energy nuclear physics group at NISER is pursuing these physics areas through experimental programs at the Relativistic Heavy Ion Collider (RHIC) Facility at Brookhaven National Laboratory, USA and Large Hadron Collider (LHC) Facility at CERN, Switzerland.

The group leads the Beam Energy Scan Program at RHIC to establish the QCD phase diagram and earlier holds the Deputy spokesperson position in the STAR experiment at RHIC, currently the member of council of STAR experiment and Collaboration board of ALICE experiment at LHC. In the LHC experiment the group is assigned to coordinate all activities related to physics related to production of hadrons in light quark sector carried out in India. In future it intends to participate in high-energy programs at FAIR facility at GSI, electron Ion collider facility at BNL, USA and INO program in India.

The significant results that have come out from the research of the group in its short period of existence in NISER is: At RHIC - Demonstration of existence of partonic collectivity at very high-energy heavy-ion collisions and its disappearance as the collision energy is lowered (PhD thesis of 1st student from SPS, NISER) and the experimental results on the search for QCD critical point in the phase diagram. Both these are published in Physical Review Letters. At LHC – Evidence of re-scattering effects in low impact parameter heavy-ion collisions which reduces as the impact parameter increases. This is through the study of resonances produced in the collisions, which have small life time compared to system lifetime. The group has now started to build a gas based detector laboratory to cater to the needs to high energy experiment. With integrated MSc students the first resistive plate chamber detector has been built at NISER.

Dr. Sanjay Swain, Reader-F

The research group led by Dr. Swain carries out research in experimental high-energy physics. They are involved in the following large international collaborations:

- The CMS and ALICE experiments at the European Centre for Nuclear Research (CERN), Geneva, Switzerland
- The STAR experiment at Brookhaven National Laboratory, Upton, USA

The research activity taken up by the group is described below.

This year the focus of the activities has been around the analysis of the data taken in these experiments. Specifically in CMS we have been concentrating on looking for new physics (beyond standard model) by studying the production of B hadrons decaying to dimuons. In ALICE experiment we have concentrated on studying the resonance production and their properties in heavy-ion collisions. For STAR experiment we are involved in studying the azimuthal anisotropy of produced charged particles to understand collectivity in the heavy-ion collision system. Some of us are also involved in phenomenological study of the collectivity in heavy-ion collisions to extract transport properties of the QCD matter.

Dr. Prolay Kumar Mal - Assistant Professor (Ramanujan fellow, 2012-17)

The field of experimental particle physics holds the promises to validate new theories Beyond the Standard Model (BSM) along with the scopes for achieving further precision on the Standard Model (SM) measurements. The recent discovery of the SM Higgs boson at the LHC experiments (ATLAS and CMS) has finally culminated the long-standing puzzle of electroweak symmetry breaking (at least within the context of the SM), while broadening the scopes for beyond the Standard Model (BSM) physics involving the Higgs boson itself. For example, the SM Higgs boson can decay into potential dark matter candidates and identifying such rare decay modes for the SM Higgs boson would uniquely mark the signature of BSM physics. After the current long shutdown period, the LHC will resume its Run II in 2015 at higher center-of-mass energy (13 TeV). At this unprecedented high energy a much larger volume of dataset would be recorded with the upgraded CMS detectors. The group is strongly focussed to pursue such dark matter searches involving the SM Higgs boson.

Dr. Subhasis Basak, Reader-F

Presently the group is working on Charmonium spectroscopy with overlap fermions and 2+1+1 highly improved staggered quark (HISQ gauge) configurations

Dr. Chetan Gowdigere, Assistant Professor Dr. Yogesh Kumar Srivastava, Assistant Professor

The group led by Dr. Srivastava and Dr. Gowdigere are currently involved in research on issues related to black holes in general relativity as well as string theory. The activities of this group are described below.

1. Along with project students Siddharth Satpathy, Himanshu Raj and Abhass kumar, they have begun and completed the investigation on the smoothness of horizons in multiple M2 branes and multiple black hole solutions. First they investigated the case of collinear configuration and found that there was only finite

differentiability of all the fields. Then they investigated the case of coplanar configuration and found that they have identical finite differentiability. This led them to conjecture that more generic configurations with no symmetries will also have identical finite differentiability as the collinear and coplanar configurations; which they eventually proved by actually analyzing the generic configuration.

2. Another project in which they are involved, is calculation of quasinormal modes for various systems with horizon, especially higher dimensional black holes, black branes etc. In AdS/CFT context, such calculations tell interesting quantities in the dual field theory side. Being a strong-weak duality, such field theory quantities are quite difficult or impossible to calculate directly on the field theory side.
3. This group has been involved in helping with organizing an international conference on string theory, ISM 2014, to be held in Puri(Orissa) in December 2014. Conference involves many other string theory groups in India with financial and administrative commitments. Number of participants for this conference is about 120 with about one-third participants from abroad. They are expecting a very active and intellectually stimulating conference, with many of the top researchers from around the world participating in this conference."

Dr. Joydeep Bhattacharjee, Reader-F

The group led by Dr. Bhattacharjee focuses on studies related electronic and optical properties of different class of solids and nano-structures. The activities of his group are described below.

- The structural effects on electron-electron and electron-hole coulomb, exchange and correlation interactions become increasingly important with decreasing system size. At nanoscale they are extremely crucial in determining the optical properties, towards which, we perform extensive ab-initio many-body perturbation theory based calculations for accurate estimation of the ground and excited states. Based on the new

understanding obtained from such calculations we are exploring the possibility of structurally functionalized type-II heterojunctions ideal for photovoltaic applications.

- Another area of focus of this group is the studies related to graphene and carbon nanotubes. Since their discovery, graphene and carbon nanotubes have been long proposed as ideal building blocks for robust nano-electronic circuitry mainly due to their tunable electron transport property and structural robustness. Inspired by recent advancements in their controllable synthesis, we aim to design novel carbon based simple nanostructures which can be used as active elements like inductor, capacitor, diodes and transistors for electronic circuitry and spintronic applications at nanoscale. Research in this direction involves extensive calculation of mesoscopic electron transport using Greens functions and other techniques.

Dr. V. Ravi Chandra

In the last year this research group has worked on three problems addressing various issues pertaining to magnetism on the Kagome lattice.

- In the first project, in collaboration with Ms. Meenu Kumari (Int. M. Sc student, NISER), we analysed the entanglement content of the ground state phases of the spin-1/2 antiferromagnet on the Kagome lattice. Unlike usual studies focussing on the entanglement of one half of the system with the rest, we focussed on the entanglement of the basic motifs of the lattice (e.g. the triangle, the hexagon etc) with the rest of the system for finite lattice sizes, as a function of the strength of a next nearest neighbour interaction. Analysis of the entanglement spectra and entropy showed a puzzling symmetric behaviour for both a small ferromagnetic and antiferromagnetic next nearest neighbour coupling. This part of the project became Ms. Meenu Kumari's Master's thesis. Currently, we are focusing on putting together entanglement information from individual motifs to analyse the system in the thermodynamic limit.

- In a second project, in collaboration with Amit Keren's group at Technion (Israel), we analysed using several experimental measurements (magnetisation, ESR, muSR, susceptibility) the properties of a Kagome compound [Cu(1,3-benzendicarboxylate)]. Our group contributed to the data analysis of the ESR experiments which combined with the magnetisation measurements was necessary to determine the Hamiltonian coupling constants of a very anisotropic spin-1/2 Hamiltonian. This research effort resulted in a publication (O. Ofer et. al, Phys. Rev. B 89, 205116 (2014)).
- We are currently working on the generalising the strategy used above for determination of coupling constants to other frustrated lattices and more complicated interaction terms. Finally, in collaboration with R. Moessner and M. Maksymenko at MPIPKS (Dresden), we have been studying the interplay between exchange and dipolar interactions for classical spins on the Kagome lattice. Using a combination of variational mean field theory, spinwave calculations and Monte Carlo simulations we find a transition between a non-magnetic 120 degree state to a ferrimagnetic state as we increase the strength of the dipolar interaction. Currently, a manuscript with the details of the analysis is under preparation.

Dr. Prasanjit Samal, Assistant Professor

The group led by Dr. Samal investigates the electronic and optical properties of nano-structures and nano-clusters using density-functional-theory (DFT). Below, they describe their research activities.

- We are working on new density functionals that provide more accurate estimates of molecular properties (structures, energies, chemical shifts etc.) and electronic as well as optical properties of nanoparticles and clusters. Firstly, our aim is to reconstructing the exact exchange-correlation potential or kernel from accurate wave-function based results for model systems. Secondly, we are further improving tuned range separated hybrid density functionals encompassing proposed excited-state methods. All the above mentioned developments are aimed at calculating more accurately the charge

transfer and double excitations which are now issues in TDDFT. (This work is being carried out in collaboration with Prof. R. Baer at Hebrew University, Israel)

- We are interested in studying the effect of dimensionality on the electronic, structural and optical properties of hydrogenated silicon nanoclusters. Hydrogenated silicon nanostructures have drawn increasing attention in the past one decade because of the visible luminescence was discovered in porous silicon, and more recently, optical gain was observed in silicon nanocrystals. Optical properties are thus of special interest because of the potential application for making optoelectronic devices. Low dimensionality of silicon nanostructures enlarges the smaller indirect band gap of bulk silicon into larger direct gaps, facilitating reasonably high visible photoluminescence (PL) from the nanostructures compared with the poor photoluminescence from bulk silicon. And now the most important thing which is noticed is the effect of quantum confinement in nanoclusters. As the size of bulk silicon decreases beyond the limit of its free-exciton Bohr radius (43 Å) the quantum confinement effect significantly alters the optical behavior of the system, resulting in possible excitations in the visible range. A unified DFT and MD approach will be very useful to study nanoscale phenomena. (This work is being carried out in collaboration with Prof. M. Cococcioni at University of Minnesota, U.S.A.)
- Our first attempt in this regard is to use novel (orbital-based) density functionals in practical TDDFT calculations for real molecules. Secondly, to work on time-dependent DFT in real time, for strong laser-molecule interactions. The ultimate goal of this TDDFT research plan will be the extension of the first principle molecular dynamics studies to include excited states with the help of time-dependent DFT. We are working on methods that hold the promise to be able to treat linear and nonlinear response and excitation properties of very large and complex systems in which many-body effects are dominating. (This work is being carried out in collaboration with Prof. Stephan Kummel at University of Bayreuth, Germany)

Dr. A. V. Anil Kumar, Assistant Professor

The group led by Dr. Kumar aims to understand the complexity in understanding the interaction between charged colloidal particles in solutions in order to unravel some basic physics. Their research activity is described below.

The interactions between charged colloidal particles in solution can be complex and varied. One particularly interesting case is when the particles attract one another at small separations, but repel at larger separations. These competing interactions lead to very rich phase behavior in these systems like formation of cluster fluids. Our investigations on a highly size-asymmetric binary colloidal mixtures shows that counter ion distributions around the colloidal particles are nonlinear and this leads to highly non-additive interactions between the two components. In such an asymmetric mixture, even though likely charged, larger colloidal particles form a cluster fluid which is in very good agreement with experimental findings. Similar effects may be observed in the case highly charge-asymmetric mixtures also. We are investigating the effect of this charge/size polydispersity in colloidal mixtures on phase behavior and dynamical properties using classical molecular simulation methods such as Monte Carlo and molecular dynamics. (This work is being carried out in collaboration with Prof. J. Horbach at German Aerospace Center (DLR), Köln, Germany)

Dr. Sumedha, Reader-F

Her research group is primarily interested in understanding and developing mathematical and numerical approaches to disordered systems. Some of the recent works involves using large deviation approach to study disordered systems. We have used the theory of large deviations to get the phase diagram of a p-spin random field model on a random graph.

– Besides that i am also interested in applying methods of statistical mechanics to study problems in biology and

computer science. We are working on understanding the phase-diagram of various constraint satisfaction problems in computer science. We have been able to solve the random K-Satisfiability problem exactly on a tree graph for arbitrary K. The exact results clearly reflect on the multi-critical behaviour of the problem and its connection to the computational complexity.

– Hard core lattice gas models serve as foundation on which many models of complex physical systems ranging from glasses to granular materials can be mapped. One of the long standing questions about lattice gases is related to understanding the order-disorder transition in a lattice gas as a function of range of exclusion. We have developed an entropic sampling algorithm which allows us to study the problem for extended hard core exclusion.

Dr. Colin Benjamin, Reader -F

The group led by Dr. Benjamin focuses on theoretical studies related to novel quantum effects in various systems. Presently the group is studying the following topics.

- In a generic quantum system non-local effects are quite obvious. In this context dephasing processes can lead to vanishing non-local or quantum effects because of the emergence of the classical. However in quantum dot attached to ferromagnetic leads when one operates it as a pure spin pump one counter-intuitively observes the opposite, dephasing processes which lead to the emergence of non-local effects.
- Understanding Photosynthesis has hitherto been done using chemical processes which dont have much to do with the wavenature of particles. Recently in a dramatic twist excitations which carry information related to photosynthetic processes were revealed to show quantum beats. How do we understand the wave nature at such high temperatures. Clearly, a best possible way would be to simulate another quantum system which behaves exactly similar to the

photosynthetic mechanism and see how it changes as room temperature effects are brought forth.

Dr. Subhankar Bedanta, Reader-F

The area of focus for the group led by Dr. Bedanta is magnetic thin films and novel effects in such nano-structures. The details of their research activities are mentioned below.

- They prepared thin films of Co/Al₂O₃ on Si substrate using sputtering method. The magnetization reversal in a single Co layer has been studied by performing longitudinal magneto-optic Kerr (LMOKE) microscopy at room temperature. LMOKE measurements reveal that the magnetization reversal is governed by domain wall motion and coherent rotation when measured along the easy and hard axes, respectively. Further relaxation of magnetization measured along the easy axis show Fatuzzo-labruno type of exponential behavior which matches to the observed domain nucleated dominated magnetization reversal. Further the measurement of domain wall velocity versus external magnetic field reveal the not so-often observed Walker breakdown occurring because of spin precession at higher magnetic fields. Further magnetic/non-magnetic multilayers have been prepared by sputtering in order to study the inter-layer coupling effects on the magnetization reversal processes. In a bilayer of Co/Al₂O₃/Co deposited on Si-substrate we have observed layer-by layer magnetization reversal evidenced by different color scale in the LMOKE microscopy domain images. Such layer-by-layer magnetization reversal has not been observed for thicker Al₂O₃ spacer layer. In future we plan to study Co/Au/Co multilayers to study the effect of RKKY interactions in addition to the dipolar and Neel coupling.
- The group has also studied the spin glass state in a (Bi_{1.88}Fe_{0.12})(Fe_{1.42}Te_{0.58})O_{6.87} pyrochlore. This compound undergoes a transition to the spin glass state at its glass temperature $T_g \sim 21$ K. The spin glass state in this compound has been evidenced by performing the so-called “memory effect” in the zero-field-cooled magnetization. The memory effect is clearly observed at temperatures below T_g and no such effect can be

observed above T_g . Further, the “rejuvenation” effect, also has clearly been observed, which evidences the chaotic nature of the spin glass state.

- In future we plan to prepare magnetic nanoparticles of Co and CoFe by both chemical and sputtering deposition. Then by putting them on substrates and varying the concentration of nanoparticles, the effect of inter-particle interaction effects can be studied. In particular focus will be given to understand the mechanism of “superferromagnetism”.
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Dr. Pratap Kumar Sahoo, Reader-F

The group led by Dr. Sahoo carries out experimental investigation of nano-photonic and plasmonic structures. The research areas are discussed below.

- Surface plasmons are electromagnetic excitations that propagate along a metal-dielectric interface, or along chains of metallic nanoparticles. Our goal is to study the generation and manipulation of surface plasmons, with the aim to achieve nanoscale control over the propagation of electromagnetic energy. Surface plasmons and photons do not couple efficiently due to their different dispersion relations. This mismatch can be overcome by using nano and micro-structuring or near-field coupling techniques.
- Also optical excitation by coupling a foreign atom by ion implantation to propagate surface plasmons and its anisotropic optical response due to the strong transverse and longitudinal plasmons coupling is a hot recent research area. Ion beams are also indispensable tools to dope materials with optically active ions. Ion irradiation can also lead to nanoscale changes in the structure and shape of materials such as colloids, Si nanostructures and lithographic masks. The thermal spike that is generated along the ion track leads to anisotropic deformation, with the material expanding perpendicular to the ion beam. Continuum modeling is used to determine the fundamental mechanisms behind these ion-solid interactions. The first attempt in this regard is to fabricate the nanostructures using various lithographic techniques, thin film deposition and energetic low and swift heavy

ion beam implantation and study the strong interaction of light with nano structured materials which lead to the design of plasmonic devices with optimized properties.

Dr. Kartikeswar Senapati, Assistant Professor

The group led by Dr. Senapati is exploring three separate experiments involving hybrid thin film structures consisting superconducting and ferromagnetic materials. The first one is proximity effect between superconducting and magnetic oxide films, which we plan to look from a band structure perspective using photoemission spectroscopy. This is running in collaboration with UGC-DAE consortium Indore and Institute of Physics Bhubaneswar. The second experiment was to explore the magnetic coupling between ferromagnetic insulators via a superconducting layer using SQUID magnetometry. This experiment was carried out in the national user facility at Institute of physics Bhubaneswar. The third experiment was to study a series of spin-filter Josephson junctions (NbN-GdN-NbN) with varied degree of spin filtering in barrier. Both the normal state conductance and the superconducting state conductance were measured under various magnetic field and microwave irradiation. This experiment was done in collaboration with the University of Cambridge UK. We intend to improve further all three experiments in the coming year.

Dr. Ashok Mohapatra, reader-F

This group aims to study the coherent Rydberg excitation in a thermal vapor cell with the motivation to realize a single photon source using Rydberg blockade. Rydberg blockade is a phenomenon where more than one atom within the blockade volume can't be excited to the Rydberg state using a monochromatic laser beam due to strong Rydberg-Rydberg interaction. The basic idea is to combine the single excitation due to Rydberg blockade and the 4-wave mixing technique to generate a single photon from a mesoscopic ensemble of atoms within a single blockade volume.

The lab is under development to carry out these experiments. Since the last academic year, we are involved in procuring the equipments. The single photon source will be useful for quantum information. Also,

the mesoscopic ensemble of atoms inside the blockade volume can be used as a qubit to build a quantum computer. The extracted single photon can be used to transfer the information between two far distant qubits.

Dr. Ritwick Das

The research group led by Dr. Das focuses on nonlinear photonics, plasmonics and waveguide optics. The main areas of research are described below.

- Optical Parametric Oscillators or OPOs provide an alternative and practical route to reach those spectral regions that are inaccessible to conventional laser technology, by exploiting nonlinear optical properties of non-centro-symmetric crystals. An interesting configuration of OPOs is singly-resonant OPOs or SROs where only one of the generated waves oscillates between a pair of mirrors forming a very stable source of generating coherent radiation. The frequency tunability is achieved by either changing the properties of the crystal such as temperature or angular orientation with respect to the pump beam, or by inserting a frequency selective element in the cavity such as an etalon which manipulates the longitudinal resonance condition. In the present research work, the main idea is to generate high-power, continuous-wave, coherent radiation in the mid-infrared that is tunable from 2-6 μm . This wavelength region is extremely crucial for carrying out absorption spectroscopy of trace-gas molecules such as methane, formaldehyde, nitrogen, carbon-dioxide and many more.
- The research work essentially comprises study of modal interaction between bandgap-guided modes in a dielectric medium and surface plasmon modes. The dispersive properties of the waveguides, anti-crossing behavior and propagation loss features are being investigated in detail. Another interesting feature that involves the existence and excitation of 'Tamm-plasmon' states is also being investigated. The major goal of this research activity is to provide alternative as well as efficient route for signal processing in the miniaturized photonic integrated circuits and realization of efficient biochemical sensors.

School of Humanities and Social Sciences

Dr. Pranay Swain, Reader-F (Chairperson)

Public Policy and Governance: public policy research aims at facilitating a better understanding of issues related to governance and public affairs and bridging the gap by offering to can analyse the actual implementation of policies by drawing upon comparative and international perspectives in public policy.

Voluntary Sector and Development: with the third sector assuming increasingly significant and creating a huge niche in social development the aim is to enhance our knowledge of the sector through independent and critical research. We also aim to better understand the value of the sector and how this can be maximized in terms of developmental interventions in an array of sectors.

Contemporary Social Issues: In order to achieve effective solutions to societal problems that involve science and technology, there is a need to understand the changing priorities and the patterns in social life. With technology driven life-style gripping the young generation, the resultant social issues must be addressed with fair amount of details. Our aim is to deep dive into the social transformation due to digital life style and offer valuable insights.

Dr. Debashis Pattanaik, Assistant Professor

Social networks for co-creation of knowledge: My research work is related to the understanding of knowledge diffusion and role of social networks. Social networks provide rich and systematic means of assessing informal networks In addition to mapping information flow; it also helps us in relational characteristics of knowledge, access, and engagement. My research focuses on analysis of the dimensions of relationships that precede or lead to effective

knowledge sharing, and an understanding and tools and techniques that improves a network's ability to create and share knowledge.

Dr. Rooplekha Khuntia, Assistant Professor

Business Ethics and Organizational Behaviour: Human behaviour is a result of their individual characteristics as well as the context in which they are placed. My research is about people working in organizations and understanding their behaviour from a person-situation interaction perspective. Exploring people's behaviour within a broader context of work culture, leadership characteristics as well human values and personal belief systems as applied to ethical decision making is the core of my research. Also included in my research is work stress and work life balance - the challenges of a dynamic evolving world like.

Prof. Binayak Rath, Visiting Professor

Benefit-Cost Analysis (BCA), Economic Development & Planning

Environmental Impact Assessment (EIA), Rehabilitation & Resettlement (R&R), Economics of Alternative Energy, Water Resource Management (WRM)

Dr Joe Varghese Yeldho, Visiting Faculty

Critical History and Narratives of Race

Event Studies, Pedagogy and the Public Sphere, Architecture and Performance, Topology and Affordances

ACADEMIC ACHIEVEMENTS

The research activities of the faculty members in all the schools are in full swing with many of them bagging research grants from non-DAE sources like DST, DBT, ect. One faculty member from the school of Physical Sciences has been selected for the prestigious Ramanujan fellowship. Two more faculties have been selected for the DST –INSPIRE faculty fellowship in Schools of Mathematical and Chemical Sciences.

Research and Development

- NISER formally joined the Compact Muon Spectrometer (CMS) experiment and A Large Ion Collider Experiment

(ALICE) at the Large hadron Collider (LHC) Facility in CERN, Geneva.

- During this academic session 2013-14, NISER's faculty members have added 19 new sponsored projects with funding to the tune of Rs 5.96 crores from non-DAE sources. Some of the major non-DAE sources include Dept. of Science and Technology, Dept. of BioTechnology, Ministry of Earth Sciences of Govt. of India, United Nations Development Program (UNDP).

Research projects awarded

Sl No.	Project Code	Name of the P.I./Co.PI	Department	Sponsor Department	Project Title	Cost of the Project in Rs.	Duration		Total Year
							From	To	
1	CH1302	Dr.V.Krishnan	Chemical	SERB	Chiral counterions understanding the basic principles and exploitation in metal catalyzed asymmetric catalysis.	46,00,000.00	25.04.2013	24.04.2016	3
2	CH1303	Dr.S.Nembenna	Chemical	SERB	N-Heterocyclic carbene (NHC) or donor/acceptor stabilisation of reactive main group compounds.	47,10,000.00	25.04.2013	24.04.2016	3
3	CH1301	Dr. Jogendra N. Behera	Chemical	SERB	Controlled synthesis of heterometallic oxides from single-source precursors.	43,60,000.00	25.04.2013	24.04.2016	3
4	CH1304	Dr. C. Gunanathan	Chemical	SERB	Pincer complexes for the sustainable and catalytic transformation of carbon dioxide.	54,00,000.00	14.05.2013	13.05.2016	3
5	BL1303	Dr. Prafulla Singuru (RGVI)	SBS	DBT	Interaction between nitric oxide & TRH in the anterior parvocellular subdivision of the hypothalamic paraventricular nucleus(PVNa):Implication in regulation of food intake.	25,00,000.00	17.09.2013	16.09.2016	3
6	HS1301	Dr.Pranay Ku. Swain	SHSS	UNDP	Flood waterlogging Hazards risks and Vulnerability Analysis of Mahanadi Delta Puri Dist-Odisha.	29,64,000.00	29.05.2013	28.05.2014	1
7	BL1301	Dr.Harapriya Mohapatra	SBS	DBT	Genetic diversity and alternate biological function of quinolone resistance determinants in gram negative opportunistic bacterial isolates.	29,51,600.00	15.05.2013	14.05.2016	3

8	PH1301	Dr. Joydeep Bhattacharjee	Physical	DST	Theoretical exploration of optical properties and photovoltaic application possibilities of carbon based nanostructures.	53,15,262.00	10.06.2013	09.06.2016	3
9	BL1302	Dr.K.V.S Badireenath	Biological	DBT	Design,synthesis,screening and evaluation of reduced forms of amino/imino/thio 1,4-naphthoquinone derivatives for anti-proliferative properties (RGYI).	33,48,000.00	12.07.2013	11.07.2016	3
10	MT1301	Dr. Debasis Sen	Math	DST	Inspire Faculty Award	7,00,000.00	22.07.2013	21.07.2014	1
11	CH1305	Dr.Nagendra Kr. Sharma	Chemical	DBT	Small RNA's with reversible protection:Stable, show high cellular uptake and target specific.	46,28,500.00	12.08.2013	11.08.2016	3
12	PH1303	Dr.Prolay Kr. Mal Ramanujan fellowship	Physical	SERB		28,00,000.00	30.08.2013	29.08.2018	5
13	PH1304	Dr. Colin Benjamin	Physical	DST	Topology quantum computation and spintronics with Dirac materials.	26,71,800.00	19.09.2013	18.09.2016	3
14	PH1302	Dr.Saikat Biswas (Ramanujan Fellowship)	Physical	DST	Investigation of the Applicability of Micro-pattern Gas Detectors in the high Rate Fair-Experiment CBM.	10,11,574.00	26.09.2013	25.09.2016	3
15	MT1303	Dr.Kaushik Bal	Math	DST	Inspire Faculty Award	35,00,000.00	01.08.2013	31.07.2018	5
16	BL1304	Dr. Prafulla S Singuru	SBS	DBT	Anticipation in genes:molecular, physiological and behavioral correlates of response of circa-annual clocks to seasons in night migratory song birds.	65,31,000.00	17.09.2013	16.09.2018	5

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Sl No.	Project Code	Name of the P.I./Co.PI	Department	Sponsor Department	Project Title	Cost of the Project in Rs.	Duration		Total Year
							From	To	
18	MT1305	Dr. Brundaban Sahu	Math	DST-SERB	Modular forms and supercongruences	12,24,000.00	13.02.2014	12.02.2017	3
19	CH1306	Dr. Bhargava B.L.	Chemical	DST-SERB	Effect of spacer chain length on the structure and aggregation properties of aqueous gemini dicationic surfactant solutions.	24,90,000.00	27.12.2013	26.12.2016	3
20	CH1307	Dr. Nagendra Kr. Sharma	Chemical	CSIR	Immobilized DNA G-Quad duplex Analogues on solid supports from synthesis to application	4,35,000.00	21.10.2013	20.10.2016	3
21	MT1306	Dr. Deepak Kr. Dalai	Mathematical	MOD	Consultancy for design & Development of tool to verify cryptographically significant boolean functions with high algebraic immunity along with sample verifications.	8,75,000.00	13.01.2014	12.07.2014	6 months
22	CH1401	Prof. V.Chandrasekhar	Chemical	IFCPAR/CEFIPRA	Phosphorus-supported multisite coordinating ligands for the assembly of polynuclear heterometallic (3d-4f) and homometallic (3d) ensembles: Towards a new generation of molecular magnetic materials.	44,56,868.00	28.03.2014	27.03.2017	3
23	CH1403	Dr. Moloy Sarkar	SCS	CSIR	Mesoporous silica-based materials as hybrid fluorescent chemosensor for biologically and environmentally important analysis.	16,92,000.00	28.10.2013	27.10.2016	3

PUBLICATION

School of Biological Sciences

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27. Exploring the QCD phase diagram through relativistic heavy ion collisions; Bedangadas Mohanty, *European Physics Journal (Web of Conferences)*, 66 (2014) 04022. (Online)
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30. Multiplicity Dependence of Pion, Kaon, Proton and Lambda Production in p-Pb Collisions at $\sqrt{s_{NN}} = 5.02\text{TeV}$; B. B. Abelev...Bedangadas Mohanty...Subhash Singha...et al, *Phys. Lett. B*, 728 (2014) 25-38. (Online)
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32. Guided-mode Analysis of Tamm-Plasmon Polariton at Metal-Heterostructure Dielectric Interface; Ritwick Das, T. Srivastava and Rajan Jha, *IEEE/OSA Journal of Lightwave Technology*, Vol.32, pp. 1221-1227 (2014). (Online)
33. Tamm-plasmon and surface plasmon hybrid-mode based refractometry in photonic bandgap structures; Ritwick Das, T. Srivastava and Rajan Jha, *Optics Letters*, Vol. 39, pp. 896-899 (2014). (Online)
34. Controlling the anisotropy and domain structure with oblique deposition and substrate rotation; N. Chowdhury and S. Bedanta, *AIP Advances*, 4, 027104 (2014). (Online)
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40. Volume fluctuation and auto-correlation effects in the moment analysis of net-proton multiplicity distributions in heavy-ion collisions; Xiaofeng Luo, Ji Xu, Bedangadas Mohanty and Nu Xu, *J. Phys. G*, 40 (2013) 105104. (Online)
41. Coexistence of magnetic order and spin-glass-like phase in the pyrochlore antiferromagnet $\text{Na}_3\text{Co}(\text{CO}_3)_2\text{Cl}$; Zhendong Fu, Yanzhen Zheng, Yinguo Xiao, Subhankar Bedanta, Anatoliy Senyshyn, Giovanna Giulia Simeoni, Yixi Su, Ulrich Rucker, Paul Kögerler, and Thomas Brückel, *Phys. Rev. B*, 87 (2013) 214406. (Online)

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43. Spacer layer and temperature driven magnetic properties in multilayer structured FeTaC thin films, A K Singh, S. Mallik, S. Bedanta and A Perumal, J. Phys. D: Appl. Phys., **46** 445005 (2013).
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46. Structural and electromechanical study of $\text{Bi}_{0.5}\text{Na}_{0.5}\text{TiO}_3$ - BaTiO_3 solid-solutions; B. Parija, T. Badapanda, P. K. Sahoo, M. Kar, P. Kumar, S. Panigrahi, Processing and Application of Ceramics, **7** [2], 73-80 (2013).
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48. Third harmonic flow of charged particles in Au + Au collisions at $\sqrt{s_{NN}}=200$ GeV; L. Adamczyk...Rihan Haque...Bedangadas Mohanty...Md.Nasim..et al, Phys. Rev. C, **88** (2013) 014904. (Online)
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54. Elliptic and hexadecapole flow of charged hadrons in viscous hydrodynamics with Glauber and color glass condensate initial conditions for Pb-Pb collision at $\sqrt{s_{NN}} = 2.76$ TeV; Victor Roy, Bedangadas Mohanty and A K Chaudhuri, J. Phys. G: Nucl. Part. Phys., **40** (2013) 065103. (Online)
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60. Measurement of Four-Lepton Production at the Z Resonance in pp Collisions at $\sqrt{s} = 7$ and 8 TeV with ATLAS; G. Aad, ... P. Mal....et. al., Phys. Rev. Lett. **112** (2014) 231806

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68. Search for Invisible Decays of a Higgs Boson Produced in Association with a Z Boson in ATLAS; G. Aad, ... P. Mal...et. al., Phys. Rev. Lett. 112 (2014) 201802
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77. Measurement of the inclusive isolated prompt photon cross section in pp collisions at $\sqrt{s}=7$ TeV with the ATLAS detector using 4.6 fb⁻¹; G. Aad, ... P. Mal...et. al., Phys. Rev. D89 (2014) 052004
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81. Search for dark matter in events with a hadronically decaying W or Z boson and missing transverse momentum in pp collisions at $\sqrt{s}=8$ TeV with the ATLAS detector; G. Aad, ... P. Mal...et. al., Phys. Rev. Lett. 112 (2014) 4, 041802
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85. Search for new phenomena in final states with large jet multiplicities and missing transverse momentum at $\sqrt{s}=8$ TeV proton-proton collisions using the ATLAS experiment; G. Aad, ... P. Mal...et. al., JHEP 1310 (2013) 130
86. Search for excited electrons and muons in $\sqrt{s}=8$ TeV proton-proton collisions with the ATLAS detector; G. Aad, ... P. Mal...et. al., New J. Phys. 15 (2013) 093011
87. Dynamics of isolated-photon plus jet production in pp collisions at $\sqrt{s}=7$ TeV with the ATLAS detector; G. Aad, ... P. Mal...et. al., Nucl. Phys. B875 (2013) 483-535
88. Measurement of Top Quark Polarization in Top-Antitop Events from Proton-Proton Collisions at $\sqrt{s}=7$ TeV Using the ATLAS Detector; G. Aad, ... P. Mal...et. al., Phys. Rev. Lett. 111 (2013) 23, 232002
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98. Search for $t\bar{t}$ resonances in the lepton plus jets final state with ATLAS using 4.7 fb^{-1} of pp collisions at $\sqrt{s}=7$ TeV; G. Aad, ... P. Mal...et. al., Phys. Rev. D88 (2013) 1, 012004

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99. Triggers for displaced decays of long-lived neutral particles in the ATLAS detector; G. Aad, ... P. Mal....et. al., JINST 8 (2013) P07015
100. Search for resonant diboson production in the WW/WZ->Inuuj decay channels with the ATLAS detector at $\sqrt{s} = 7$ TeV; G. Aad, ... P. Mal....et. al., Phys. Rev. D87 (2013) 11, 112006
101. Measurement of the production cross section of jets in association with a Z boson in pp collisions at $\sqrt{s} = 7$ TeV with the ATLAS detector; G. Aad, ... P. Mal....et. al., JHEP 1307 (2013) 032
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104. Measurement of the inclusive jet cross section in pp collisions at $\sqrt{s_{NN}} = 2.76$ TeV and comparison to the inclusive jet cross section at $\sqrt{s}=7$ TeV using the ATLAS detector; G. Aad, ... P. Mal....et. al., Eur. Phys. J. C73 (2013) 2509

School of Humanities and Social Sciences

- **Swain, P.K.** & Ray, S. P. (2013). Social welfare through guaranteed wage employment: experience of National Rural Employment Guarantee Scheme in an Indian state, *Journal of International and Comparative Social Policy*, Vol. 29, No. 1, 79-90 (ISSN: 2169-9763, DOI: 10.1080/21699763.2013.809665)
- **Yeldho, Joe Varghese** and Jaya Shrivastava. “ “The City Knows You”: Spatial Consciousness in Colson Whitehead’s *The Colossus of New York*.” Notes on Contemporary Literature. 43.5 (November 2013): 4-8.
- **Yeldho, Joe Varghese** and G. Neelakantan. “Violence and the Textual Event in Toni Morrison’s *Beloved*.” *Research and Criticism*. 4.4(2013): 88-100.

CONFERENCES, SEMINARS AND WORKSHOPS

School of Biological Sciences

Faster and Enhanced Replication of Recent Outbreak Strains of Chikungunya Virus: Implication in Understanding Emergence of the Epidemic” by Abhishek Kumar, Prabhudutta Mamidi, Indrani Das, Tapas K Nayak, Sameer Kumar, Jagamohan Chhatai, Subhasis Chattopadhyay, Amol R. Suryawanshi, Soma Chattopadhyay in Asia Pacific Congress of Virology (Virocon-2013) scheduled on 17-20th December 2013 at Amity University Uttar Pradesh, Noida, India.

School of Chemical Sciences

A. Srinivasa, Contracted Porphyrinoids; CRSI-RSC symposium in Chemistry, Department of Chemistry, IIT Bombay, Mumbai, February 4-6, 2014.

C. Gunanathan, Ramanujan Fellows Second Conclave, 13-14, December 2013, IISER Pune, India.

S. Peruncheralathan: Selectivity in Organic Synthesis: A Facile Access of Deuterated Compounds and Novel Fused Heterocycles at National Symposium on ‘Recent Advances on Chemical Sciences’, March 28, 2014 was organized by the Department of Chemistry, Utkal University, Bhubaneswar (2nd Introductory lecture)

School of Mathematical Sciences

- Brundaban Sahu attended the Teachers Enrichment Workshop (TEW) in Complex Analysis (December 27-31, 2013) at Vivekananda Mahavidyalaya, Burdwan, West Bengal.
- Brundaban Sahu attended the Conference on Analytic Theory of Automorphic Forms (December 9-13, 2013) at IMSc, Chennai.
- Brundaban Sahu attended the International Conference on Automorphic Forms and Number Theory (August 30-September 3, 2013) at KSOM, Kozhikode.

- Sanjay Parui participated in the Discussion Meeting on Harmonic Analysis (December, 2013) at IMSc, Chennai.

School of Physical Sciences

P.K. Sahoo

- International conference on nanostructuring by Ion beams (ICNIB 2013), 23-25th October 2013.
- Nanoscience and condensed matter interface, JNU, New Delhi, March 2013.
- Physics of Surface and Interface 2014, 24-28th Feb 2014.

C. Benjamin

- International Program on Quantum Information, Feb 17-28, 2014 in Institute of Physics, Bhubaneswar.
- Workshop & Conference on Geometrical Aspects of Quantum States, July 1-5, 2013 in International center for theoretical physics, Italy.
- ICTP-VAST-APCTP Regional School and Conference on Theoretical Physics in Topological Phases and Quantum Computation December 9-20, 2013 in Hanoi, Vietnam.

B. Mohanty

- New frontiers in QCD 2013, Kyoto University, Japan, December 2013
- ALICE Collaboration Meeting, IIT, Bombay 27-28 April 2013
- Triggering Discoveries in High Energy Physics, 9-14, September 2013, Jammu University, Jammu
- XIII Workshop on High Energy Physics Phenomenology (WHEPP XIII), Puri, 12-21st December 2013
- India-UChicago@TIFR, Mumbai, 27th September 2013
- International Nuclear Physics, Conference, Florence, Italy, June 2013

School of Humanities and Social Sciences

- **Swain, P. K.** *State Intervention in Epidemic Prevention: the Case of Bird-flu Out-break in an Indian State*, International conference on Health Systems Reform in Asia, at the National University of Singapore during 13-16 December 2013
- **Swain, P. K.** *Vulnerability and Risk Associated with Flood in Odisha*, **Workshop on Knowledge Network Center on Floods and Waterlogging: Focus on Climate Change Adaptation and Disaster Risk Reduction**, IIT, Kanpur, 22-23 November, 2013
- **Swain, P.K.** *Reading Nature's Mind: Traditional Knowledge that Saves Lives*, **National Seminar on Traditional Knowledge and Practices for Sustainable Development, CSIR, Institute of Minerals and Materials Technology, Bhubaneswar, 15 April 2013**
- **Rath, B.** "Unemployment Scenario in Odisha and the Challenges Ahead", paper presented in the National Seminar on "Youth Unemployment in India: Dimensions, Challenges & Strategies", Organised by Patna University, Patna, May 18-19.
- **Rath, B.,** " Food Security Policy in India: Issues and Challenges to Attain the Goal of Sustainable Development" keynote paper presented in the National Seminar on " *Food Security in India: Its Issues and Challenges*", organised by Patna Women's College, Patna University, Patna, August 29-30, 2013

INVITED TALKS/LECTURES

School of Biological Sciences

Abdur Rahaman:

- XXXVII All India Cell Biology Conference and Symposium on Cell Dynamics and Cell Fate, NCBS, Bangalore. Dec 22-24 2013.

- 82nd Annual Meeting of Society of Biological Chemists India and International Conference on Genomes: Mechanism and Function, University of Hyderabad, Hyderabad. Dec 2-5 2013.

Chandan Goswami:

- International Conference on Comparative Endocrinology and Physiology. Nagpur, India. 21-23rd Oct 2013
- International conference on neurosciences on "brain plasticity and neurological disorders. Ravenshaw University, Cuttack. 11th Nov 2013.
- *(Invited seminar)* Department of Zoology, University of Pune. 19th Nov 2013.
- 37th Indian Social Science Congress, Aligarh Muslim University. 28th Dec 2013.
- Recent Advances in Polymer & Rubber Science & Technology (RAPT 2014), Calcutta University, Calcutta 24th Jan 2014
- *(Invited seminar)* 2013 Nobel prize winners. IOP, Bhubaneswar. 7th Feb 2014
- National Conference on "Current Trends in Life Sciences Research and Challenges Ahead", Sambalpur University, 1st March 2014
- *(Invited seminar)* Seminar on Neurodegeneration: Challenges and Management. Siksha O Anusandhan University, Bhubaneswar. 10th Mar 2014
- National Symposium on Emerging Trends in Biotechnology: Present Scenario and Future Dimensions". Utkal University, Bhubaneswar. 30th Mar 2014.

Debsmita Pankaj Alone:

- Cytogenetics Laboratory, Department of Zoology, Banaras Hindu University, Varanasi. 12-13th March, 2014.

- National Conference on “Current Trends in Life Sciences Research and Challenges Ahead”, School of Life Sciences, Sambalpur University, Sambalpur, Odisha. 28-29th February, 2014.
- 6th World Congress on Preventive and Regenerative medicine, KIIT University, Bhubaneswar, Odisha. 16-18th November 2013.
- National seminar on “Incidence and prevalence of Mendelian traits & diseases in people of Odisha”, Department of Zoology, Adashpur, Cuttack, Odisha. 21-22nd September, 2013.
- Invited Lecture. National symposium on emerging trends in biotechnology: Present scenario and future dimensions, 29-30 March 2014, PG department of biotechnology, Utkal University, India.
- Plenary Lecture: National Conference on “Current Trends in Life Sciences Research and Challenges Ahead; Sambalpur University, Feb 28-Mar 02, 2014
- Invited Lecture: Series of 4 lectures as resource person in Academic Staff College, Sambalpur University for Refresher Course in Life Sciences for College Teachers, August 24-25, 2013

Manjusha Dixit:

- (*Invited talk*) 2nd International Conference on ANGIOGENESIS: Theragnostics in Cancer and Cardiovascular Diseases, jointly organized by NCCS, Pune and KIIT, Bhubaneswar. 2nd to 4th Feb, 2014.
- (*Invited talk*) National conference on current trends in life sciences research and challenges ahead. Organized by Sambalpur University. 28th Feb.- 2nd Mar. 2014
- (*Invited talk*) Think Tank – on eye research. Organized by LV Prasad Eye Institute, Bhubaneswar. October 20th, 2013.
- (*Invited talk*) UGC Sponsored National Seminar in Zoology. Organized by Udayanath (Autonomous) College of Sc. & Tech., Adashpur, Cuttack and P.G. department of zoology, Utkal university, Bhubaneswar. 21st & 22nd Sept, 2013.

Palok Aich:

- Invited Lecture: Effects of probiotics on human health, Daflorne Ltd., Bulgaria, July 12-15, 2014
- Invited Lecture: Probiotics and Future. Centre for Human Microbial Ecology, Translational Health Science and Technology Institute (THSTI), July 10, 2014
- Invited Lecture: World Digestive Day on Assessment of gut microbiota in health and disease, Department of Gastroenterology, S.C.B. Medical College, Cuttack, India. [Mayfair, India], May 29, 2014

Pankaj Alone:

- 7th RNA group meeting, IICB Kolkata, Kolkata, 6-8th March 2014.

Praful Singru:

- Department of Biotechnology, Utkal University, Bhubaneswar, Sept 2013.
- International Conference on Comparative Endocrinology and Physiology (ICCEP-2013), Nagpur University, Nagpur, Oct 2013.
- DST-SERB School in Neuroscience, VII Edition, Centre for Neural and Cognitive Sciences, University of Hyderabad, Dec 2013.
- 1st Annual Meeting of the Society for Evolutionary and Integrative Biology-SEIB 2013, Dept of Zoology, University of Kerala, Trivandrum, Dec 2013.

National Symposium on emerging trends in Biotechnology, Department of Biotechnology, Utkal University, Bhubaneswar, March 2014.

Subhasis Chattopadhyay:

- LVPEI, Bhubaneswar, for the seminar on “Think Tank – on eye research Biology Interest Group (BIG)” 20th October, 2013

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- “Refresher Course in Life Science” organized by PG Dept of Zoology, Utkal University, 4th March, 2014.
- School of Pharmaceutical Sciences, Siksha O Anusandhan University, Bhubaneswar, on 10th March 2014.
- National Symposium on “Emerging trends in Biotechnology: present scenario and future dimensions” organized by PG Dept of Biotechnology, Utkal University, Bhubaneswar on 29th March, 2014.

V Badireenath Konkimalla

- **(Guest speaker)** AICTE-sponsored Quality Improvement Programme (QIP) – Recent advances and excellences in pharmaceutical sciences. Jun 10-23, 2014. Jadavpur University, Kolkata, India. .
- **(Invited lecture)** National Workshop on Drug Design and Discovery. Mar 3-6, 2014. Organised by Institute of Life Sciences (ILS), Bhubaneswar, India.
- **(Invited lecture)** National Conference on Current Trends in Life Sciences Research and Challenges Ahead. Feb 28-Mar 2, 2014. Organised by Sambalpur University, Sambalpur, India.
- **(Invited lecture)** Short-term Training Program on Phytochemicals in Biotechnology and Textile Industry (STPBT-2014). Jan 17-23, 2014. Organized by College of Engineering and Technology, Bhubaneswar, India.
- **(Invited lecture)** Industry-Institute Partnerships Meet, Dec 6-7, 2013, Hotel Presidency. Organized by Konark Institute of Science and Technology (KIST), Bhubaneswar, India.
- **(Invited lecture)** Drug Discovery India, Hotel Sheraton. Sept 27-28, 2013. Bangalore, Karnataka, India. Organized by SELECTBIO.
- **(Invited lecture)** One Day Seminar on DNA Sequencing, Bioinformatics Tools And Microbial Diagnostics. Jul 04, 2013. Regional Plants Research Centre (RPRC), Bhubaneswar, India.

School of Mathematical Sciences

- Brundaban Sahu, “Supercongruences of Apéry-like numbers via modular forms”, during International Conference on Automorphic Forms and Number Theory (August 30-September 3, 2013) at KSOM, Kozhikode.
- Brundaban Sahu, “Complex Analysis in Number Theory” (4 lectures during December 27-31, 2013) at Vivekananda Mahavidyalaya, Burdwan, West Bengal.
- Brundaban Sahu, “Symmetry” (2 lectures during July 2013) at North Odisha University, Baripada.
- Binod Kumar Sahoo, “Viewing transpose of a matrix as a linear transformation” during the Refresher Course for college lecturers held at the Department of Statistics, Utkal University, Bhubaneswar.
- Kamal Lochan Patra, “Spectral Radius and Algebraic connectivity of Graphs”, at the ATM School - Topics in Algebraic Graph Theory during (October 13 – 23, 2013), Center of Excellence in Mathematical Sciences (CEMS), Almora, India.

School of Physical Sciences

- P. K. Sahoo, “Phase synthesis using ion beams” IISER-NISER Meet March – 2014.
- P. K. Sahoo, “Antireflecting self Nanostructure and its application” JNU New Delhi March – 2013.
- P. K. Sahoo, “FDTD simulation of nanoporous Au nanoparticles” Institute of Materials engineering, TU Ilmenau, Germany, 25th June 2013
- P. K. Sahoo, “Self ion beam induced epitaxial crystallization”, University of Goettingen, Germany, 4th July 2013.
- P. K. Sahoo – “ Plasmonics in tapered Nanoslits” Physics of Surface and Interface 2014, 24-28th Feb 2014.

- **Joydeep Bhattacharjee** - New paradigms of activated carbon promoted by doping, IACS-IISc-APCTP: The Fifth international conference on Novel Oxide Materials, and Low Dimensional Systems. December 9-11, 2013. Indian Institute of Science
 - **S. Biswas**- “Development of GEM for the CBM MUCH Detector”, MPGD 2013 & 11th RD51 collaboration meeting, Paraninfo building, Zaragoza, Spain, 1-6 July 2013 (Through video).
 - **Ritwick Das**, “Refractometry using optical Tamm modes,” Proc. of International Conference on Optics and Opto-electronics (ICOL) 2014 held at IRDE, Dehradun, India, Mar. 2014.
 - **Mukesh K. Shukla, Samir Kumar and Ritwick Das**, “Saturation effects in high-power, continuous-wave, frequency doubling of Yb-fiber laser using MgO:cPPLT,” Proc. of International Conference on Optics and Opto-electronics (ICOL) 2014 held at IRDE, Dehradun, India, Mar. 2014.
 - **Ritwick Das** “Modeling of surface-plasmon/Tamm-plasmon hybrid modes in a distributed-Bragg-reflector based refractometer,” DST-Royal Society Seminar on Computational Photonics held at IIT Delhi (March 2014).
 - **Sumedha** - On the behaviour of K-SAT on trees” on 02-02-2014 at “Indian Statistical Physics Community Meeting 2014” ICTS Bangalore.
 - **V. Ravi Chandra** - Ground state of the spin-1/2 Kagome antiferromagnet: A Contractor Renormalisation study at the meeting on “Topological States in Quantum Matter”, IIT Kharagpur, February, 2014
- **S. Bedanta** -
- physics department, IIT Kharagpur, 2013.
 - MAGMA conference held at IIT Guwahati, Guwahati, 2013.
 - Forschungszentrum Juelich, Juelich, Germany in 2014
 - IFW, Dresden, Germany in 2014
 - Forschungszentrum Rosendorf, Germany, 2014
 - Institute of Material research, Tohoku University, Japan, 2014
 - IISER-NISER physics meet held at IISER Pune in 2014
 - Ravenshaw University, Cuttack, 2014.
 - Saha Institute of nuclear physics, Kolkata, 2014
 - SN Bose Institute for Basics Sciences, Kolkata, 2014.
 - Utkal University (national seminar by Odisha Bigyan academy), Bhubaneswar.
- Colin Benjamin** –
- International Program on Quantum Information, Feb 17-28, 2014 in Institute of Physics, Bhubaneswar on “Bell inequality violation and entanglement in Dirac materials”.
 - Talk at Workshop & Conference on Geometrical Aspects of Quantum States, July 1-5, 2013 in International center for theoretical physics, Italy on “How to detect a genuine quantum pump effect in graphene?”
 - ICTP-VAST-APCTP Regional School and Conference on Theoretical Physics in Topological Phases and Quantum Computation December 9-20, 2013 in Hanoi, Vietnam on “How to detect a genuine quantum pump effect in graphene?” , Poster on “Detecting Majorana bound states”.
 - Colloquium in NISER, Bhubaneswar on August 12, 2013 on “How to detect a genuine quantum pump effect in graphene?”
 - Condensed matter Journal club, NISER, Bhubaneswar on 24th January 2014 on “A tribute to Markus Buttiker & A pedagogic introduction to persistent currents in absence of magnetic field in graphene nanorings”
- B. Mohanty**
- IISER, Pune – April 2013
 - Plenary talk at International Symposium on Nuclear Physics, Mumbai, December 2-8, 2013
 - Plenary talk at WHEPP, Puri, December 2013

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- Invited Talk at Kyoto, Japan, December 2013
- Invited talk at INPC, Italy, June 2013
- Invited talk at National Conference on Nuclear Physics, Sambalpur, 2014
- Invited talk at National Seminar on Recent Trends in Physics, 2014
- Invited talk at Alumni/Foundation day celebrations, Institute of Physics, Bhubaneswar

School of Humanities and Social Sciences

- Swain, P.K., Traditional Knowledge in Disaster management, Golden Jubilee Seminar Series, CSIR Institute of Minerals and Materials Technology, Bhubaneswar, April 2013
- Rath, B., Keynote Speaker, National Seminar on “Food Security in India: Its Issues and Challenges”, Patna Women’s College, Patna University, Patna, August 29-30, 2013.

CONFERENCES AND SEMINARS ORGANIZED

STAR-QCD Meet, from Jul 08 - 10, 2013 organized by Dr. Bedangadas Mohanty, School of Physical Sciences.

DEPARTMENTAL SEMINARS ORGANIZED

School of Mathematical Sciences

- Professor M. Ram Murty from Queens University, Canada, “Mathematics and Technology” - on June 21, 2013.
- Dr. Samik Basu from Ramakrishna Mission Vivekananda University, Belur, West Bengal, “The closed geodesic problem for 4-manifolds” – on October 28, 2013.

- Dr. Somnath Basu from Binghamton University, “Counting curves and the Euler class” – on January 6, 2014.
- Dr. Swagata Sarkar, “Degrees of maps between certain homogeneous spaces of the same kind” – on March 31, 2014.

School of Physical Sciences

1. Dr. Somdutta Mukherjee, IISc, Bangalore, Spin-phonon coupling and room temperature ferroelectricity in magnetoelectric gallium ferrite
2. Prof. Gobinda Majumder, TIFR, Mumbai, Past, Present and Future of the CMS Experiment
3. Dr. Himadri Sekhar Samanta, University of Maryland, Collapse transition in protein-L
4. Prof. P. Jain, IIT, Kanpur, Testing the Cosmological Principle
5. Prof. Spenta Wadia, Distinguished Professor, TIFR Director, International Centre, Fermion-Boson duality in 2+1 dim large N gauge theories
6. Dr. Subhankar Bedanta, SPS, NISER, Magnetic domains and domain wall dynamics
7. Prof. Arul Lakshminarayan, Dept. of Physics, IIT Madras, Chennai, From integrability to chaos: Quantum manifestations
8. Dr. Kalpataru Pradhan, Univ. Augsburg, Germany, Magnetically Disordered Interfaces in Magnetic Tunnel Junctions
9. Dr. Prasana Sahoo, Instituto de Fisica Gleb Wataghin, Universidade Estadual de Campinas, Brazil, Controlling the evolution of Group III-V based Nanostructures and a case study to unravel the physio-chemical processes at the nano-bio interfaces
10. Dr. Subhanjoy Mohanty, Imperial College, London, Worlds Without End: The Formation, Detection and

- Characterization of Extrasolar Planets, and Implications for Life Elsewhere
11. Dr. Sayantan Sharma, Univ.Bielefeld, Germany, Towards understanding the phase diagram of QCD at zero baryon density
 12. Dr. Tiziano Camporesi, Spokesperson-elect, CMS experiment, LHC, CERN, High Energy Physics: understanding how our universe works
 13. Prof. Chandan Dasgupta, Indian Institute of Science, Bangalore, Physics of glassy systems
 14. Dr. A. Garai, UC, San Diego, USA, Exploring the physics of single bio-molecule rupture process through the model energy landscape
 15. Dr. Arnab, Saha, MPI, Germany, Fluids: From driven colloids to active patterns
 16. Sir Christopher Llewellyn Smith, Distinguished Professor, SPS, NISER, Waiting for the Higgs
 17. Dr. Rahul Marathe, Bacterial twitching motility: a stochastic tug-of-war with directional memory
 18. Prof. K. Thyagarajan, IIT, Delhi, Quantum Photonics
 19. Dr. Rishi Khatri, MPI, Germany, The information hidden in the shape of the cosmic microwave background spectrum
 20. Prof. Yogesh Singh, IISER, Mohali, Tuning a spin-liquid to a correlated metal in Na₄Ir₃O₈
 21. Prof. Sreerup Raychaudhuri, TIFR, Mumbai, Beyond the Standard Model : the Aftermath of the Higgs Boson Discovery
 22. Prof. Rajiv Gavai, TIFR, Mumbai, Looking for the QCD critical point
 23. Prof. Colin Benjamin, SPS, NISER, How to detect a genuine quantum pump effect in graphene?
 24. Dr Surajit Paul, IUCAA, Pune, Study on the evolution of thermal and non-thermal properties in the forming large scale structures(LSS) of the universe
 25. Dr. Soumen Basak, SAP, CEA-Saclay, France, A needlet ILC analysis of WMAP 9-year data
 26. Prof. Naresh Dadhich (ex-director of IUCAA) : Why Einstein (Had I been born in 1844!)? (Relativity for Everyone)

FELLOWSHIPS/AWARDS/HONOURS

- Prof, A Srinivasan, SCS, CRSI Bronze Medal- 2014
- Dr. Pratap K. Sahoo, SPS, DST-DAAD, research stay Fellowship: June-July 2013:
- Dr. Saikat Biswas, SPS, Ramanujan Fellowship - 2013

MOUs signed

- with Max-Planck Institute for student exchange, Koln Germany
- with LV Prasad Eye Institute for exchange of research ideas/ facilities
- with University of Freiburg, Germany for student and faculty exchange

SECOND GRADUATION CEREMONY

The 2nd graduation ceremony of NISER was held on 15 June 2013. Padma Bhushan Prof. Shri Krishna Joshi, Former Director General CSIR graced the occasion to deliver the convocation address and awarded the degrees to the graduated students

A total of 23 students from four schools graduated. Most of the successful candidates have opted research in their

further studies. Students have chosen to pursue their doctoral programmes at reputed universities such as Yale University, University of California, Los Angeles, University of Utah, Ohio State University, University of Wisconsin, Stony Brook University, Virginia Polytechnic Institute and State University (Virginia Tech) and University of Minnesota. It reinforces the mandate that NISER is committed to create quality manpower for research in different areas of basis sciences.



INFRASTRUCTURE

Existing Infrastructure in Transit campus:

- It has an infrastructure worth Rs 15 cores including an academic-cum-administrative building of 5000 sq. meters within Institute of Physics campus.
- A hostel for girls of 1781 Sq. meter inside Institute of physics campus.
- Initial expenditure of Rs 56 crores for the laboratories of different schools in the transit campus which include



Construction of NISER's Campus at Jatni

The academic complex at permanent campus comprises of a total built up area of 72,700 square metres spread in 11 buildings. The residential township has a built up area of 102,000 square metres comprising nine buildings for hostels, adequate number of faculty and staff quarters and one Directors' Bungalow. The sports complex is going to

have a student activity centre, aquatic sports complex and playground.

Public Outreach Programmes

Outreach Programmes

The school of Physical Sciences under the leadership of Prof J Maharana and North Orissa University, Baripada jointly organized a summer course of Excitements in Physics for Physics teachers drawn from various colleges and universities of Orissa during 3-8 June 2013. This event was very well received by the teaching community of the state.

Other such initiatives include:

- S. Bedanta: INSPIRE camp at New College, Kolkhapaur, Maharashtra, 2014
- P. Samal: National Seminar on "Recent Advances in Physics" at Department of Physics, North Orissa University, Baripada, Odisha, February 23rd, 2014
- A. Mahapatra: National Seminar on "Recent Advances in Physics" at Department of Physics, North Orissa University, Baripada, Odisha, February 23rd, 2014
- P. K. Sahoo: National Seminar on "Recent Advances in Physics" at Department of Physics, North Orissa University, Baripada, Odisha, February 23rd, 2014
- B. Mohanty: Origin of Mass, Science Day Celebrations, NM institute of Engineering and Technology, Bhubaneswar
- B. Mohanty: Why do basic Science, Modern Public School, Balasore

MISCELLANEOUS

New Director of NISER



Prof. V. Chandrasekhar has taken over the charge of Director, NISER during Jan'2014. He has a very distinguished career. He did his PhD from the Indian Institute of Science in 1982 and his postdoctoral research from the University of Massachusetts, Amherst (1983-86). After, an year's stint at the Indian Petrochemicals Corporation at Vadodara, he joined IIT Kanpur in 1987, where he holds the position of a full Professor. He served as the Head of the Department of Chemistry, IIT Kanpur (2008-10) and as the Dean of Faculty Affairs, IIT Kanpur (2011-12). He also worked at the Tata Institute of Fundamental Research, Centre for Interdisciplinary Sciences, Hyderabad as a Senior Professor and Dean (2012-14) prior to joining NISER as Director in January 2014. His current research interests are in the area of molecular materials, main-group- and organometallic chemistry. He is the recipient of several national and international awards including the Shanti Swarup Bhatnagar Award, the Friedrich-Wilhelm Bessel Award, and the national J. C. Bose Fellowship. He is a fellow of all the academies of sciences in India as well as the academy of sciences of the developing world, Trieste, Italy. He served on the editorial board of several leading journals including the ACS journal Organometallics. His work is documented in over 260+ international publications.

Public Awareness on Plantation and go-green

Plantation drives have been a regular feature at NISER permanent campus being constructed at Jatni. Every year while celebrating the significant days such as: Republic Day, Independence Day and NISER Foundation Day, the staff, students and faculty members of NISER participate in the go-green drive sending out a message to the stakeholders and public at large to care for and preserve our immediate environment. Over a thousand of saplings have so far been planted.

Social Welfare Measures

A donation camp was organized in NISER. The staff, students and faculty members have made generous contributions comprising of old clothes, papers, scrap materials, toys, etc apart from making financial contributions. The proceedings of the camp were handed over to a charitable organization which works for orphans and children in need.



NISER has donated 1.45 lakhs to Chief Minister's Relief Fund (CMRF) at Secretariat on 28 November 2013 for care of the Super Cyclone: Pahilin hit people of Odisha.

Vigilance Awareness Week

The vigilance awareness week was observed during 28 Oct 2013- 02 Nov 2013. All the employees of NISER took the oath of official secrecy and pledged for maintenance of honesty and transparency while delivering their work. Essay and debate competitions were held on topics related to transparency and e-governance which saw participation of members of NISER family in a large number.

Sadbhavana Diwas

The Sadbhavana Diwas was observed 20th August 2013. All the officers and employees took the Sadbhavana Pledge for maintaining communal harmony.

Official Language Implementation:

The celebration of Hindi Fortnight was held at NISER. During that, a weeklong competition of Hindi Debate, Hindi Essay, Hindi Rhymes, etc. was held for all the students, faculty members and staffs including family members, of NISER.

Moreover, the implementation of Hindi in official work has already been ensured and use of Hindi within the sphere of official work has been gaining momentum.

List of NISER Staffs

Administrative, Scientific, Technical and Auxiliary Staff Member as on 31st March 2014

Sl No.	Name of Employees	Designation
1.	Dr. A. K. Naik	Registrar
2.	Shri. Y. K. Srinath	Finance Officer
3.	Dr. Shyamasree Basu	Scientific Officer 'E'
4.	Dr. Sudakshina Prusty	Scientific Officer 'E'
5.	Dr. Arun Kumar	Scientific Officer 'E'
6.	Dr. Lokesh Kumar	Scientific Officer 'E'
7.	Sh. Saikat Hira	Scientific Officer 'E' (Computer)
8.	Shri. Ramakant Kar	Administrative Officer-III
9.	Shri. Bibhupada Tripathy	Administrative Officer-III

NEST-2013

The National Eligibility and Screening Test (NEST), 2013 was conducted successfully by NISER and UM-CBS. There was a significant increase in the number of application over the previous year. Around 24500 applications were received out of which around 18800 candidates appeared for the test. After due process of counseling 60 students were admitted to the MSc programme.

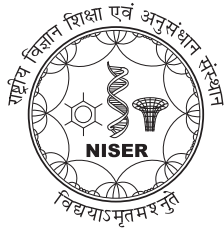
NISER Act

- NISER has an affiliation with Homi Bhabha National Institute (HBNI), a deemed University within the Department of Atomic Energy, for the award of degrees.
- NISER has not yet become a CI of HBNI.
- Considering the vision and size of NISER and to keep the Institute at par with other Institutes of national importance such as IITs, IISc, IISERs, etc. a separate NISER Act is deemed imperative and must be made at the very earliest.
- A draft Act and Rules & Bylaws has been approved by the BoG, NISER and been sent to DAE for further processing at the AEC and higher levels.

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Sl No.	Name of Employees	Designation
10.	Shri. Deepak Srivastava	Stores & Purchase Officer
11.	Shri Devakivada Govinda Rao	DCA
12.	Shri Gunda Santosh Babu	Scientific Officer 'D'
13.	Dr. Saikat Biswas	Scientific Officer 'D'
14.	Sh. Soubhagya Mohapatra	Scientific Officer 'D' (Civil)
15.	Sh. Dilip Jha	Scientific Officer 'D' (Electrical)
16.	Dr. Saurabh Chawla	Scientific Officer 'C (Veterinary)
17.	Shri. Dipak Kumar Rout	System Administrator
18.	Shri. Ranjan Kumar Rana	SA "C" Electrical
19.	Shri. Jitendra Narayan Dash	SA "C" Library
20.	Shri. Sambid Ranjan Pradhan	SA "C" (Civil)
21.	Mrs. Shabnam Khanum	Assistant Personnel Officer
22.	Shri. Dinesh Bahadur Singh	Assistant Personnel Officer
23.	Shri. Rajeev Kumar Singh	Assistant Personnel Officer
24.	Shri. Balraj Singh	Assistant Personnel Officer
25.	Shri Pradeep Kumar Mishra	Assistant Personnel Officer
26.	Shri Chandra Sekhar Mahapatra	Assistant Personnel Officer
27.	Shri Gopal Krishna Rath	Assistant Personnel Officer
28.	Shri Purna Chandra Sahu	Assistant Personnel Officer
29.	Shri Samarjit Dash	Assistant Personnel Officer
30.	Shri. Deepankar Dash	System Manager
31.	Ms. Suchismita Dash	Library Technician
32.	Shri Rabindra Kumar Maharana	Library Technician
33.	Shri. Susanta Kumar Parida	Laboratory Operator
34.	Shri. Bikash Chandra Behera	Laboratory Operator
35.	Shri. Ramprasad Panigrahi	Laboratory Operator
36.	Ms. Anuradha Das	Laboratory Operator
37.	Smt. Smita Prusty	Laboratory Operator
38.	Shri Sanjaya Kumar Mishra	Laboratory Operator
39.	Shri Alok Kumar Jena	Laboratory Operator
40.	Shri Deepak Kumar Behera	Laboratory Operator
41.	Shri Rudranarayan Mohanty	Laboratory Operator

Sl No.	Name of Employees	Designation
42.	Shri Pravakar Mallick	Laboratory Operator
43.	Shri V.A. Sakthivel	Laboratory Operator
44.	Shri Susanta Kumar Sethi	Operator
45.	Miss Sasmita Sahoo	Operator
46.	Miss Sandeepa Sahoo	Operator
47.	Shri Subrat Ranjan Hota	Operator
48.	Shri Jogendra Behera	Operator
49.	Shri Tusar Kanta Sahoo	Operator
50.	Shri Subhransu Sekhar Panda	Operator (Lab)
51.	Shri Mukesh Kumar Meena	Operator (Lab)
52.	Shri Raj Kumar Lakra	Operator (Lab)
53.	Shri Amit Sankar Sahu	Operator (Lab)
54.	Ms. Bishnupriya Das	Operator
55.	Smt. A B Rosy	Office Assistant (MS)
56.	Shri. D. Lingaraj	Office Assistant (MS)
57.	Shri. Sujit Kumar Bastia	Office Assistant (MS)
58.	Shri. Mustaque Khan	Office Assistant (MS)
59.	Smt.Smruti Kanungo	Office Assistant (MS)
60.	Ms. Monalisa Baliarsingh	Office Assistant (MS)
61.	Shri. Vijay Singh	Office Assistant (MS)
62.	Shri. Madhusudan Padhy	Office Assistant (MS)
63.	Ms. Lipsa Das	Office Assistant (MS)
64.	Smt. Lopamudra Sahoo	Office Assistant (MS)
65.	Shri. Nabin Kumar Sahoo	Office Assistant (MS)
66.	Ms. Banita Pradhan	Office Assistant (MS)
67.	Smt. Elina Das	Office Assistant (MS)
68.	Shri. Amarendra Kumar Behera	Office Assistant (MS)
69.	Shri. Ranjan Kumar Das	Office Assistant (MS)
70.	Shri. Abhaya Kumar Mohanty	Office Assistant (MS)
71.	Shri. Hiralal Das	Office Assistant (MS)
72.	Smt. Apolina Lakra	Office Assistant (MS)
73.	SK Safatulla	Tradesman (Library)



NATIONAL INSTITUTE OF SCIENCE EDUCATION AND RESEARCH

AN AUTONOMOUS INSTITUTE UNDER DAE, GOVT. OF INDIA



AUDITED STATEMENT OF ACCOUNTS & STATUTORY AUDITOR'S REPORT FOR THE FINANCIAL YEAR 2013-14

AUDITOR:

J PRADHAN & CO.

CHARTERED ACCOUNTANTS

L 3/69, ACHARYA VTHAR, BHUBANESWAR-751013,

TEL: 0674-2542418, EMAIL: jmpbbsr@yahoo.com

J PRADHAN & CO.
Chartered Accountants



L3/69, Acharya Vihar
Bhubaneswar-751 013
Tel. : 0674-2542418, 9437012300
E-mail: jmpbbsr@yahoo.com

Independent Auditor's Report

Report on the Financial Statements

We have audited the accompanying financial statements of **National Institute of Science Education and Research, Bhubaneswar** which comprise the Balance Sheet as at **31st March, 2014**, Income & Expenditure Account and Receipts & Payments Account for the year ended on that day, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation of these financial statements that give a true and fair view of the financial position and financial performance of the Institute in accordance with the Accounting Standards issued by Institute of Chartered Accountants of India. This responsibility includes designing, implementation and maintenance of internal control relevant to the preparation and presentation of the financial statements that give a true and fair view and are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with the Standards on Auditing issued by the Institute of Chartered Accountants of India. Those Standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of the accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.



Opinion

In our opinion and to the best of our information and according to the explanations given to us, the financial statements give a true and fair view in conformity with the accounting principles generally accepted in India:

- a) in the case of the Balance Sheet, of the state of affairs of the Institute as at 31st March, 2014;
- b) in the case of the Income & Expenditure Account, of the excess of expenditure over income for the year ended on that date; and
- c) in the case of the Receipts & Payments Account, of the Receipts & Payments for the year ended on that date.

Report on Other Legal and Regulatory Requirements

We report that:

- a) 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;
- b) In our opinion, proper books of account as required by law have been kept by the Institute so far as appears from our examination of those books;
- c) The Balance Sheet, Income & Expenditure Account and Receipts & Payments Account dealt with by this report are in agreement with the books of account.

For J PRADHAN & CO.
Chartered Accountants
FRN: 326206E



S. Sumit Sahu

CA. S. Sumit Sahu
(Partner)

Membership No. : 304809

Place: **Bhubaneswar**
Date: **18th August, 2014**

National Institute of Science Education and Research Bhubaneswar



National Institute of Science Education and Research, Bhubaneswar
(Under the Deptt. of Atomic Energy, Govt. of India)

BALANCE SHEET AS AT 31ST MARCH, 2014

Particulars	Schedule	Amount (₹.)	
		As at 31st March, 2014	As at 31st March, 2013
CORPUS/CAPITAL FUND AND LIABILITIES			
CORPUS/CAPITAL FUND	1	6,450,874,209	4,530,964,374
RESERVES AND SURPLUS	2	-	-
EARMARKED/ENDOWMENT FUNDS	3	-	-
SECURED LOANS AND BORROWINGS	4	-	-
UNSECURED LOANS AND BORROWINGS	5	-	-
DEFERRED CREDIT LIABILITIES	6	-	-
CURRENT LIABILITIES AND PROVISIONS	7	31,619,939	30,399,602
TOTAL		6,482,494,148	4,561,363,976
ASSETS			
FIXED ASSETS	8	630,148,352	438,520,678
INVESTMENTS- FROM EARMARKED/ENDOWMENT FUNDS	9	-	-
INVESTMENTS-OTHERS	10	36,574,466	7,581,907
CURRENT ASSETS, LOANS, ADVANCES ETC.	11	5,815,671,330	4,115,261,391
MISCELLANEOUS EXPENDITURE (to the extent not written off or adjusted)		-	-
TOTAL		6,482,494,148	4,561,363,976
SIGNIFICANT ACCOUNTING POLICIES	24		
CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS	25		

For J PRADHAN & CO.
Chartered Accountants

S. Sumit Sahu
(CA. S. Sumit Sahu)
Partner
Mem. No. 304809

D. Govinda Rao
(D. Govinda Rao)
Dy. Controller of Accounts

Prf. V. Chandrasekhar
(Prf. V. Chandrasekhar)
Director

(CMA. V.K. Srinath)
(CMA. V.K. Srinath)
Finance Officer

Date: 18th August, 2014
Place: Bhubaneswar



National Institute of Science Education and Research, Bhubaneswar
(Under the Deptt. of Atomic Energy, Govt. of India)

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 2014

Particulars	Schedule	Amount (₹.)	
		For the Year Ended 31st March, 2014	For the Year Ended 31st March, 2013
INCOME			
Income from Sales/ Services	12	-	-
Grant/Subsidies	13	-	-
Fees / Subscriptions	14	9,297,075	6,276,581
Income from Investment	15	-	-
Income from Royalty, Publication etc	16	-	-
Interest Earned	17	33,000,965	25,145,693
Other Income	18	-	-
Increase/(decrease) in stock of Finished goods and work-in-progress	19	-	-
TOTAL(A)		42,298,040	31,422,474
EXPENDITURE			
Establishment Expenses	20	157,005,747	130,722,090
Other Administrative Expenses etc	21	49,111,449	65,460,616
Expenditure on Grants, Subsidies etc	22	-	-
Interest	23	-	-
Depreciation(Net total at the year-end-corresponding to Schedule 8)		116,302,068	121,289,735
TOTAL(B)		322,419,264	337,472,441
Balance being excess of Expenditure over Income(B-A)		280,121,224	306,049,967
Add: Depreciation Adjustment		-	24,610,728
Add: Prior Period Expenditure		-	35,749,501
Less: Prior Period Income		31,059	91,632
BALANCE BEING SURPLUS/(DEFICIT) CARRIED TO CORPUS/CAPITAL FUND		280,090,165	366,318,565
SIGNIFICANT ACCOUNTING POLICIES	24		
CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS	25		

For J PRADHAN & CO.
Chartered Accountants

B. Sumit Sahu

(CA. S. Sumit Sahu)
Partner
Mem. No. 304809

D. Govinda Rao

(D. Govinda Rao)
Dy. Controller
of Accounts

Prof. V. Chandrasekhar

(Prof. V. Chandrasekhar)
Director

Y.K. Srinath

(CMA, Y.K. Srinath)
Finance Officer

Date: 18th August, 2014
Place: Bhubaneswar



National Institute of Science Education and Research Bhubaneswar



National Institute of Science Education and Research, Bhubaneswar (Under the Deptt. of Atomic Energy, Govt. of India)

RECEIPTS AND PAYMENTS ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 2014

RECEIPTS	For the Year Ended 31st March, 2014	For the Year Ended 31st March, 2013	PAYMENTS	For the Year Ended 31st March, 2014	For the Year Ended 31st March, 2013
Amount (₹.)					
I. Opening Balances			I. Expenses		
a) Cash in Hand	1,000	-	a) Establishment Expenses (corresponding to Schedule 20)		
b) Bank Balances:			i. Pay and Allowances	104,862,078	77,078,140
i) In current accounts	49,074,799	573,561	ii. Manpower (Outsourced)	13,633,693	12,019,295
ii) In deposit accounts	-	-	iii. Staff Welfare Expenses	3,584,372	4,358,292
iii) In Savings accounts	281,514,682	456,406,841	iv. Other Expenditure	20,185,987	10,433,172
II. Grants Received			v. New Pension Contribution	7,871,972	8,974,098
a) From Government of India	2,200,000,000	2,200,000,000	b) Administrative Expenses (corresponding to Schedule 21)		
b) From State Government	-	-	i. Laboratory Consumable	24,250,679	28,838,444
c) From other sources	-	-	ii. Computer Consumables	589,588	134,275
III. Income on Investments			iii. Rent, Rates & Taxes	3,054,222	23,434
IV. Interest Received			iv. Duties & Taxes	473,739	-
On Bank Deposits	33,000,995	25,145,893	v. Other Expenditure	24,636,935	34,368,470
V. Other Income			vi. Prior Period Expenses	-	6,227,517
a) Registration Fee (Msc & Phd)	6,155,815	5,786,908	II. Payments made against funds for various projects	-	-
b) Mess Dues	19,970	-	III. Investments and deposits made	-	-
c) Students Dues	315,300	475,800	IV. Expenditure on Fixed Assets & Capital Work- in- progress		
d) Application fees	18,600	249,308	a) Purchase of Fixed Assets	111,416,433	151,624,652
e) Receipts of CIF, SCS	78,035	24,100	b) Expenditure on Capital WIP	178,245,036	1,749,544
f) RTI Application Fees	260	350	V. Refund of Surplus money/loans	-	-
g) Sale of Tender paper	78,300	78,350	VI. Finance Charges (Interest)	-	-
h) Encashment of Deposits(LC)	-	53,451,957	VII. Other Payments		
i) Earned Leave Received	12,713	-	a) Sundry Creditors	29,808	470,172
j) License Fees	182,496	-	b) Deposits Opened (LC)	30,435,222	55,114,841
k) Misc. Receipt	69,423	210,067	c) Advance to Staff & Suppliers and Other	6,169,465	4,709,980
l) Transcript Fees	19,702	-	d) Refund of Security Deposit	-	194,373
VI. Amount Borrowed			e) Salary Recoveries	-	470,835
VII. Any other receipts (Loans, Advances & Expenses Recovered)			f) Fellowship	66,965	-
a) Security Deposit	67,313	271,395	g) Scholarship	2,977,259	4,199,090
b) E.M.D	2,940,927	483,728	h) DST	-	4,489,183
c) Fellowship	182,500	-	i) NISER R&D	-	3,247,511
d) NISER R&D	3,188,728	-	j) CBS, Mumbai (MSc Prog. Regd.)	-	60,000
e) ISM (String Meeting) -2011	-	148,409	k) DCS & EM Mumbai	1,300,000,000	2,000,000,000
f) Recovery towards Duties & Taxes	-	36,225	l) DCSEM-Medical Expenses	55,327	69,413
g) Conference/ Seminar	103,317	104,520	m) JEST	-	7,038
h) Ext. Support Seminar/ Scholarship	-	3,000,000	n) Conference / Seminar	-	115,150
i) Prior Period Income	30,559	-	o) Ext. Support Seminar/ Scholarship	3,000,000	-
			p) CERN Entry Fee	458,703.00	8,882,012.00
			VIII. Closing Balances		
			a) Cash in hand	3,606	1,000
			b) Bank Balances		
			i) In current accounts	201,397,624	49,074,799
			ii) In deposit accounts	-	-
			iii) In savings accounts	541,646,711	281,514,682
TOTAL	2,577,055,404	2,746,447,410	TOTAL	2,577,055,404	2,746,447,410

For J PRADHAN & CO.
Chartered Accountants
S. Sumit Sahu
(CA. S. Sumit Sahu)
Partner
Mem. No. 304809

D. Govinda Rao
(D. Govinda Rao)
Dy. Controller of Accounts

Prof. V. Chandrasekhar
(Prof. V. Chandrasekhar)
Director

(CMA. Y.K. Srinath)
Finance Officer

Date: 18th August, 2014
Place: Bhubaneswar



Interim Annual Report, 2013-14



National Institute of Science Education and Research, Bhubaneswar

(Under the Department of Atomic Energy, Govt. of India)

Schedule -1 : Corpus / Capital Fund

(Schedule forming part of Balance Sheet as at 31.03.2014)

Particulars	Current Year(2013-14)		Previous Year(2012-13)	
Balance as at the beginning of the year	5,350,000,000		3,150,000,000	
Add: Contribution towards Corpus/Capital Fund	2,200,000,000		2,200,000,000	
		7,550,000,000		5,350,000,000
Add/(Deduct): Balance of net income/ (expenditure) transferred from the Income and Expenditure Account	-	(1,099,125,791)	-	(819,035,626)
Balance as at the year end		6,450,874,209		4,530,964,374

Schedule -2 : Reserves & Surplus

(Schedule forming part of Balance Sheet as at 31.03.2014)

Particulars	Current Year(2013-14)		Previous Year(2012-13)	
1. Capital Reserve:				
As per last Account	-		-	
Addition during the year	-		-	
Less: Deduction during the year	-		-	
2. Revaluation Reserve				
As per last Account	-		-	
Addition during the year	-		-	
Less: Deduction during the year	-		-	
3. Special Reserve				
As per last Account	-		-	
Addition during the year	-		-	
Less: Deduction during the year	-		-	
4. General Reserve				
As per last Account	-		-	
Addition during the year	-		-	
Less: Deduction during the year	-		-	
TOTAL				

For J PRADHAN & CO.

Chartered Accountants

S. Sumit Sahu

(CA. S. Sumit Sahu)

Partner

Mem. No. 304809

D. Govinda Rao

(D. Govinda Rao)

Dy Controller of
Accounts

Prof. V. Chandrasekhar

(Prof. V. Chandrasekhar)

Director

(CMA. Y.K. Srinath)

Finance Officer



10P CAMPUS, PO: SAINIK SCHOOL, BHUBANESWAR, ODISHA-751005. Ph: 0674-2304000, Email: director@niser.ac.in

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National Institute of Science Education and Research, Bhubaneswar
(Under the Department of Atomic Energy, Govt. of India)

Schedule - 3 : Earmarked/Endowment Fund
(Schedule forming part of Balance Sheet as at 31.03.2014)

Particulars	Fund-wise break up				Totals		Amount (₹.)
	Fund WW	Fund XX	Fund YY	Fund ZZ	Current year(2013-14)	Previous year(2012-13)	
a). Opening balance of the funds	-	-	-	-	-	-	-
b). Additions to the funds:							
i. Donations/grants	-	-	-	-	-	-	-
ii. Income from investments made on account of funds	-	-	-	-	-	-	-
iii. Other additions	-	-	-	-	-	-	-
TOTAL (a + b)	-	-	-	-	-	-	-
c). Utilisation/Expenditure towards objectives of funds							
I. Capital Expenditure	-	-	-	-	-	-	-
Fixed Assets	-	-	-	-	-	-	-
Others	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-
II. Revenue Expenditure	-	-	-	-	-	-	-
Salaries, Wages and allowances	-	-	-	-	-	-	-
Rent	-	-	-	-	-	-	-
Other Administrative expenses	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-
TOTAL (c)	-	-	-	-	-	-	-
Net Balance at the year end (a+b-c)	-	-	-	-	-	-	-



For, J PRADHAN & CO.
Chartered Accountants
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(CA. S. Sumit Sahu)
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(D. Govinda Rao)
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(Prof. V. Chandrasekhar)
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(CMA. M.K. Srinath)
(CMA. M.K. Srinath)
Finance Officer



National Institute of Science Education and Research, Bhubaneswar
(Under the Department of Atomic Energy, Govt. of India)

Schedule -4 : Secured Loans and Borrowings
(Schedule forming part of Balance Sheet as at 31.03.2014)

Particulars	Amount (₹.)			
	Current Year(2013-14)		Previous Year(2012-13)	
1. Central Government		-		-
2. State Government (Specify)		-		-
3. Financial Institutions				
a) Term Loans	-		-	
b) Interest accrued and due	-	-	-	-
4. Banks:				
a) Term Loans	-		-	
Interest accrued and due	-		-	
b) Other Loans (specify)	-		-	
Interest accrued and due	-	-	-	-
5. Other Institutions and Agencies		-		-
6. Debenture and Bonds		-		-
7. Others(specify)		-		-
TOTAL		-		-

For J PRADHAN & CO.
Chartered Accountants

B. Sumit Sahu
(CA. S. Sumit Sahu)
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Mem. No. 304809

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(D. Govinda Rao)
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(CMA. Y. K. Srinath)
Finance Officer



National Institute of Science Education and Research Bhubaneswar



National Institute of Science Education and Research, Bhubaneswar (Under the Department of Atomic Energy, Govt. of India)

Schedule -5 : Unsecured Loans and Borrowings (Schedule forming part of Balance Sheet as at 31.03.2014)

Particulars	Amount (₹.)			
	Current Year(2013-14)		Previous Year(2012-13)	
1. Central Government		-		-
2. State Government (Specify)		-		-
3. Financial Institutions		-		-
4. Banks:				
a) Term Loans	-		-	
b) Other Loans (specify)	-		-	
5. Other Institutions and Agencies		-		-
6. Debenture and Bonds		-		-
7. Fixed Deposits		-		-
8. Others(specify)		-		-
TOTAL		-		-

Schedule -6 : Deferred Credit Liabilities (Schedule forming part of Balance Sheet as at 31.03.2014)

Particulars	Amount (₹.)	
	Current Year(2013-14)	Previous Year(2012-13)
a) Acceptances secured by hypothecation of capital equipment and other assets	-	-
b) Others	-	-
TOTAL	-	-

For J PRADHAN & CO.
Chartered Accountants
S. Sumit Sahu
(CA. S. Sumit Sahu)
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Mem. No. 304809

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(D. Govinda Rao)
Dy. Controller
of Accounts

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(Prof. V. Chandrasekhar)
Director

Y. K. S. Prath
(CMA. Y. K. S. Prath)
Finance Officer





National Institute of Science Education and Research, Bhubaneswar
(Under the Department of Atomic Energy, Govt. of India)

Schedule -7 : Current Liabilities and Provisions
(Schedule forming part of Balance Sheet as at 31.03.2014)

Particulars	Amount (₹.)	
	Current Year(2013-14)	Previous Year(2012-13)
A. CURRENT LIABILITIES		
1. Acceptances	-	-
2. Sundry Creditors:		
a) For Goods	95,641	125,449
b) Others - EMD	6,040,170	5,523,265
	6,135,811	5,648,714
3. Advances Received	-	-
4. Interest accrued but not due on:		
a) Secured loans/borrowings	-	-
b) Unsecured Loans/borrowings	-	-
5. Statutory Liabilities		
a) Overdue	-	-
b) Others		
Professional Tax Payable	-	23,975
TDS (Non Salary)	(2,380)	50,032
TDS (Salary)	13,873	435,200
	11,493	509,207
c) Other Recoveries Payables		
Statutory Deposit	59,000	59,000
CGEGIS	-	30
CPF/GPF	-	2,435
Faculty Club Niser	-	8,400
	59,000	69,865
6. Other Current Liabilities		
a) Student Dues		
Internal amenitie S.D.	162,000	134,000
Excess Prog. Regd. Fees	5,200	2,100
Caution Money (Hostel)	13,000	28,000
Sports Fee	55,424	55,424
Caution Money (Labrotary)	13,000	28,000
Caution Money (Library)	691,000	576,000
Fellowship DST	896,838	896,838
Caution Money (Institute)	1,250,000	1,004,000
Mess Advance	1,444,400	1,507,400
Programme Registration	186,000	-
Student Welfare Fund	60,640	-
Mess Dues	19,970	-
Earned Leave Payable	12,713	-
	4,810,185	4,231,762



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National Institute of Science Education and Research Bhubaneswar



National Institute of Science Education and Research, Bhubaneswar (Under the Department of Atomic Energy, Govt. of India)

Schedule -7 : Current Liabilities and Provisions
(Schedule forming part of Balance Sheet as at 31.03.2014)

Particulars	Amount (₹.)	
	Current Year(2013-14)	Previous Year(2012-13)
Contd. From Page 10		
b) Security Deposit		
Abk Electronics	-	14,667
Thames Consultant Pvt. Ltd.	20,677	13,894
Jena Travels	101,000	126,000
Mahaveer Farm House	-	25,029
Nandighosh Trading Agen.	-	16,900
Basant Ku. Mishra	-	8,240
JSR Infrastructure Pvt.ltd.	-	14,195
Pest Control India Pvt. Ltd.	7,200	2,880
Biswajit Mishra	126,694	142,514
Subhashree Engineering	-	3,496
Netweb Technologies	-	57,650
Nimal Chandra Sar	16,980	18,379
Osaw Industrial Product	-	2,092
Santosh Ku Sahoo	-	4,319
Larsen & Turbo Ltd.	445,000	445,000
Numeric Power Systems Ltd.	14,343	14,343
X security service Pvt.ltd.	-	60,000
Wipro Ltd.	-	111,513
Deepak Ku Das	27,334	25,000
Freezeco Pvt.Ltd.	-	199,113
Jaykrishna Biswal	-	3,000
Laser Science Services (I) Pvt Ltd	450,900	-
Tathagata Engineering	3,292	117,355
	1,213,420	1,425,579
c) Other Payables		
99th Indian Science Congress	-	3,000,000
NPS Employees Subscription	-	644,278
	-	3,644,278
TOTAL(A)	12,229,909	15,529,405
B. PROVISIONS		
1. For Taxation	-	-
2. Gratuity	-	-
3. Superannuation / Pension	-	-
4. Accumulated Leave Encashment	-	-
5. Trade Warranties / Claims	-	-



D. K. Mishra

[Signature]



National Institute of Science Education and Research, Bhubaneswar
(Under the Department of Atomic Energy, Govt. of India)

Schedule -7 : Current Liabilities and Provisions
(Schedule forming part of Balance Sheet as at 31.03.2014)

Particulars	Amount (₹.)			
	Current Year(2013-14)		Previous Year(2012-13)	
Contd. From Page 11				
6. For Expenses				
Advertisement Charges	14,884		-	
Audit Fees Payable	44,944		44,944	
Fellowship Payable	1,817,065		1,453,381	
Contingency Expenditure Payable	77,198		-	
Hire Charges Vehicle Payable	108,322		-	
House Keeping Expenses Payable	14,045		-	
Honorarium/Remuneration Payable	205,000		307,075	
News Paper & Magazine Payable	1,957		-	
Outsourced Manpower Payable	478,683		-	
Postage & Telegram Payable	38,802		-	
Repair & Maintenance Exp. Payable	54,505		-	
Expenses Payable	-		1,656,175	
Programme Registration	-		186,000	
Student Welfare Fund	-		49,600	
Pay and Allowances Payable	11,833,295		7,692,212	
Stipend to Trainee Payable	21,354		18,387	
Telephone & Telex Payable	72,765		45,807	
PRIS Payable	4,588,949		3,416,616	
Water Charges Payable	18,262		-	
TOTAL (B)		19,390,030		14,870,197
TOTAL (A+B)		31,619,939		30,399,602

For J PRADHAN & CO.
Chartered Accountants
S. Sumit Sahu
(CA. S. Sumit Sahu)
Partner,
Mem. No. 304809

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(CMA Y.K.Srinath)
Finance Officer





National Institute of Science Education and Research, Bhubaneswar
(Under the Department of Atomic Energy, Govt. of India)

Schedule - 8 : Fixed Assets
(Schedule forming part of Balance Sheet as at 31.03.2014)

Sl. No.	Particular of Assets	Rate	WDV as on 01.04.2013	GROSS BLOCK			DEPRECIATION			NET BLOCK		
				Addition during the year		Deductions (Sale / Adjust.) during the year	Cost/valuation at the year-end	Depreciation for the year	Deductions during the year	Total for the year	As at the current year-end	As at the Previous year-end
				more than 180 days	less than 180 days							
1	Land	-	27,617,405	-	-	-	27,617,405	-	-	27,617,405	27,617,405	
2	Furniture & Fixtures	10%	44,606,044	7,997,888	7,553,321	-	60,157,253	5,638,059	-	5,638,059	54,519,194	44,606,044
3	Computers	60%	3,438,057	1,352,291	2,218,609	-	7,008,887	3,539,810	-	3,539,810	3,469,177	3,438,057
4	Software	60%	1,537,173	-	-	-	1,537,173	822,304	-	822,304	614,869	1,537,173
5	Lab Equipments	15%	282,458,208	12,047,857	10,711,106	-	306,217,171	44,979,243	-	44,979,243	280,237,928	282,458,208
6	Tools Equipments	15%	242,678	-	-	-	242,678	36,402	-	36,402	206,276	242,678
7	Books	60%	6,407,820	2,416,918	8,343,021	-	17,167,759	7,797,749	-	7,797,749	9,370,010	6,407,820
8	Journals	100%	-	13,926,395	58,753,571	-	72,679,966	43,303,181	-	43,303,181	29,376,785	-
9	Air Conditioners	15%	2,231,045	-	-	-	2,231,045	334,657	-	334,657	1,896,388	2,231,045
10	Vehicles	15%	779,946	-	-	-	779,946	116,992	-	116,992	662,954	779,946
11	Bicycle	15%	5,888	-	-	-	5,888	885	-	885	5,013	5,888
12	Machinery & Equipments	15%	59,252,639	900,767	169,881	-	90,343,287	9,037,252	-	9,037,252	51,306,035	59,252,639
13	EPABX	15%	18,453	-	-	-	18,453	2,768	-	2,768	15,685	18,453
14	Kitchen Equipments	15%	148,773	2,319,739	2,951,342	-	5,419,854	591,627	-	591,627	4,828,227	148,773
15	Telephones	10%	11,392	-	-	-	11,392	1,139	-	1,139	10,253	11,392
16	Capital Assets(WIP)	-	9,765,117	176,247,036	-	-	186,012,153	-	-	-	186,012,153	9,765,117
	TOTAL		438,520,678	217,208,891	90,720,851		746,450,420	116,302,068		116,302,068	630,148,352	438,520,678

For J PRADHAN & CO.
Chartered Accountants

S. Sumit Sahu
(CA. S. Sumit Sahu)
Partner
Mem. No. 304809



D. Govinda Rao
(D. Govinda Rao)
By, Controller of Accounts

Prof. V. Chandrasekhar
(Prof. V. Chandrasekhar)
Director

(CMA Y. K. Srijanth)
Finance Officer



National Institute of Science Education and Research, Bhubaneswar
(Under the Department of Atomic Energy, Govt. of India)

Schedule -9 : Investments from Earmarked/Endowment Funds
(Schedule forming part of Balance Sheet as at 31.03.2014)

Particulars	Amount (₹.)	
	Current Year(2013-14)	Previous Year(2012-13)
1. In Government Securities	-	-
2. Other approved Securities	-	-
3. Shares	-	-
4. Debentures and Bonds	-	-
5. Subsidiaries and Joint Ventures	-	-
6. Others (to be specified)	-	-
TOTAL	-	-

Schedule -10 : Investments-Others
(Schedule forming part of Balance Sheet as at 31.03.2014)

Particulars	Amount (₹.)	
	Current Year(2013-14)	Previous Year(2012-13)
1. In Government Securities	-	-
2. Other approved Securities	-	-
3. Shares	-	-
4. Debentures and Bonds	-	-
5. Subsidiaries and Joint Ventures	-	-
6. FD against LC's	36,674,466	7,581,907
TOTAL	36,674,466	7,581,907

For J PRADHAN & CO.
Chartered Accountants

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(CA. S. Sumit Sahu)
Partner
Mem. No. 304809

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Finance Officer



National Institute of Science Education and Research Bhubaneswar



National Institute of Science Education and Research, Bhubaneswar (Under the Department of Atomic Energy, Govt. of India)

Schedule -11 : Current Assets, Loans, Advances etc.
(Schedule forming part of Balance Sheet as at 31.03.2014)

Particulars	Amount (₹.)			
	Current Year(2013-14)		Previous Year(2012-13)	
A. CURRENT ASSETS:				
1. Inventories:				
a) Stores and Spares	-		-	
b) Loose Tools	-		-	
c) Stock-in-trade				
Finished goods	-		-	
Work-in-progress	-		-	
Raw Materials	-		-	
2. Sundry Debtors:				
a) Debts Outstanding for a period exceeding six months	-		-	
b) Others	-		-	
3. Cash balances in hand	3,606			1,000
4. Bank Balances				
a) SBI	201,397,624		49,074,799	
b) UBI	463,330,305		195,710,226	
c) IOB	58,316,406	743,047,941	85,804,457	330,589,482
5. Post office Savings Accounts				
Total(A)		743,047,941		330,590,482
B. LOANS, ADVANCES AND OTHER ASSETS				
1. a) Staff				
Anil K. Karn	20,211		-	
Arun Kumar	3,000		-	
Balraj Singh	19,000		-	
Chethan N Gowdigere	(2,347)		-	
D.B. Singh	17,500		11,500	
Deepak Srivastav	3,826		-	
Hiralal Das	-		4,176	
Vijay Singh	8,531		-	
V.Muruganandum	-		(331)	
U.Laduraj	3,000		(283)	
Prafulla Singru	6,000		1,000	
Sudhakshina Prusty	-		(11,975)	
Deepak kumar Dalai	-		32,190	
Ashok Mohapatra	-		(4,520)	
Festival Advance to Staff	47,000		42,905	
Contingency Adv. to Students	131,570		131,570	
		257,291		206,232
b) Other Entities engaged in activities similar to that				
c) Others				
NBHM Support DHA	167,174		167,174	
Advances to Suppliers				
Balmer Lawrie & Co. Ltd.	444,332		329,454	
Esco Micropte Ltd.	-		335,305	
Toptica Photonics,AG	-		651,233	
Cheap Tubes, USA	39,080		-	
DHL Express India Pvt. Ltd.	12,515		-	
Redington Pte Ltd.	1,004,782		-	
National Centre for Cell Sc.	-		5,000	
Carl Zeiss Microimaging GmbH, Germany	354,755		-	
Perkin Elmer (India) Pvt Ltd	196,630		-	
Eureka Forbes Ltd.	41,905		-	

Signature
Director

Signature

Signature
Director



National Institute of Science Education and Research, Bhubaneswar

(Under the Department of Atomic Energy, Govt. of India)

Schedule -11 : Current Assets, Loans, Advances etc.
(Schedule forming part of Balance Sheet as at 31.03.2014)

Amount (₹.)

Particulars	Current Year(2013-14)		Previous Year(2012-13)	
Contd. From Page15				
HCL Infosystem Ltd.	19,828		-	
MTI Corporation USA	1,430		1,430	
SDMC Symposium	280,000		-	
RS Components & Control (I) Ltd.	-		-	
Scholarship -ICMR	(31,094)		34,730	
Scholarship -UGC	4,551,310		2,235,645	
Scholarship-INSPIRE	498,898		36,522	
Scholarship-DAE SRC	-		33,172	
Scholarship-DST Swarnajayanti	-		33,172	
CBS Mumbai	150,000		150,000	
DCS & EM,Mumbai	4,800,000,000		3,500,000,000	
Scholarship -CSIR	3,752,558		2,996,772	
Fellowship- J.C Bose	-		25,000	
Fellowship- SSB	-		15,000	
Ramalingaswami Fellowship DBT Receivable	247,500		82,500	
Ramanujam Fellowship DST Receivable	75,000		225,000	
DCS & M,VECC,Kolkata	246,210,423		246,210,423	
		5,058,017,026		3,753,567,532
Security Deposit		675,550		675,050
2. Advances and other amounts recoverable in cash or in kind or for value to be received:				
a) on Capital Account		-		-
b) Prepayments		-		-
c) Others				
IOP,Bhubaneswar			109,324	
JEST-2010	7,038		7,038	
DST Receivable	112,652		112,652	
DCSEM-Medical Expenses Receivable	124,740		69,413	
DST- INSPIRE Fellowship Account	-		(66,965)	
Adv. 45th Orissa Economic Association Conf.	-		115,150	
R&D Receivable	77,540		3,260,268	
CERN Entry fee	13,203,673		8,882,012	
KYPY 2013	11,833		-	
Electricity Charges Receivable	378		-	
Prepaid Expenses	135,668		17,733,203	
		13,673,522		30,222,095
3. Income Accrued:				
a) On Investments from Earmarked/Endowment Fund		-		-
b) On Investment-Others		-		-
c) On Loans and Advances		-		-
d) Others		-		-
4. Claims Receivables				
		-		-
Total (B)		5,072,623,389		3,784,670,909
TOTAL(A+B)		5,815,671,330		4,115,261,391

For J PRADHAN & CO.

Chartered Accountants

S. Sumit Sahu

(CA. S. Sumit Sahu)

Partner

Mem. No.304809



D. Govinda Rao
(D. Govinda Rao)
Dy. Cont. of Accounts

Prof. V. Chandrasekhar
(Prof. V. Chandrasekhar)
Director

Y. K. Srinath
(Y. K. Srinath)
Finance Officer



National Institute of Science Education and Research, Bhubaneswar

(Under the Department of Atomic Energy, Govt. of India)

Schedule -12 : Income from Sales/Services
(Schedule forming part of Income & Expenditure for the year ended on 31.03.2014)

Particulars	Amount (₹.)	
	Current Year(2013-14)	Previous Year(2012-13)
1) <u>Income from sales</u>		
a) Sale of Finished Goods	-	-
b) Sale of Raw Material	-	-
c) Sale of Scraps	-	-
2) <u>Income from Services</u>		
a) Labour and Processing Charges	-	-
b) Professional/Consultancy Service	-	-
c) Agency Commission and Brokerage	-	-
d) Maintenance Services (Equipment/Property)	-	-
e) Others (Specify)	-	-
TOTAL	-	-

Schedule -13 : Grants/Subsidies
(Schedule forming part of Income & Expenditure for the year ended on 31.03.2014)

Particulars	Amount (₹.)	
	Current Year(2013-14)	Previous Year(2012-13)
(Irrevocable Grants & Subsidies Received)		
1) Central Government	-	-
2) State Government(s)	-	-
3) Government Agencies	-	-
4) Institutions/Welfare Bodies	-	-
5) International Organisations	-	-
6) Others (Specify)	-	-
TOTAL	-	-

For J PRADHAN & CO.
Chartered Accountants

(Signature)
(CA. S. Sumit Sahu)
Partner
Mem. No. 304809

(Signature)
(D. Govinda Rao)
Dy. Controller
of Accounts

(Signature)
(Prof.V.Chandrasekhar)
Director

(Signature)
(CMA Y.K.Srinath)
Finance Officer





National Institute of Science Education and Research, Bhubaneswar
(Under the Department of Atomic Energy, Govt. of India)

Schedule -14 : Fees/Subscriptions
(Schedule forming part of Income & Expenditure for the year ended on 31.03.2014)

Particulars	Amount (₹)	
	Current Year(2013-14)	Previous Year(2012-13)
1. Registration Fees (Msc & Phd)	6,146,765	5,667,408.00
2. Application Fees	18,600	249,308
3. License Fees	182,496	-
4. Sale of Tender Paper	78,300	78,350
5. CIF, SCS Receipt	78,035	24,100
6. RTI Application Fees	260	350
7. EMD Forefeiture Account	4,800	-
8. Lapsed Deposits (EMD/SD)	2,698,694	-
9. Transcript Fees	19,702	-
10. Miscellaneous Receipts	69,423	257,067
TOTAL	9,297,075	6,276,581

Schedule -15 : Income from Investments
(Schedule forming part of Income & Expenditure for the year ended on 31.03.2014)

Particulars	Amount (₹)			
	Investment from Earmark Fund		Investment Others	
	Current Year(2013-14)	Previous Year(2012-13)	Current Year(2013-14)	Previous Year(2012-13)
(Income on Invest. From Earmarked/Endowment Funds transferred to Funds				
1. Interest				
a) On Govt. Securities	-	-	-	-
b) Other Bonds/Debentures	-	-	-	-
2. Dividends:				
a) On Shares	-	-	-	-
b) On Mutual Fund Securities	-	-	-	-
3) Rents	-	-	-	-
4) Others (Specify)	-	-	-	-
TOTAL	-	-	-	-
Transferred to Earmarked/Endowment Funds	-	-	-	-

For J PRADHAN & CO.
Chartered Accountants
S. Sumit Sahu
(CA. S. Sumit Sahu)
Partner
Mem. No.304809

D. Govinda Rao
(D. Govinda Rao)
Dy. Controller of
Accounts

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(Prof. V. Chandrasekhar)
Director

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(CMA. Y.K. Srinath)
Finance Officer





National Institute of Science Education and Research, Bhubaneswar

(Under the Department of Atomic Energy, Govt. of India)

Schedule -16 : Income from Royalty, Publication etc.

(Schedule forming part of Income & Expenditure for the year ended on 31.03.2014)

Amount (₹.)

Particulars	Current Year(2013-14)	Previous Year(2012-13)
1) Income from Royalty	-	-
2) Income from Publications	-	-
3) Others (specify)	-	-
TOTAL	-	-

Schedule -17 : Interest Earned

(Schedule forming part of Income & Expenditure for the year ended on 31.03.2014)

Amount (₹.)

Particulars	Current Year(2013-14)	Previous Year(2012-13)
1) On Term Deposits:		
a) With Scheduled Banks	-	-
b) With Non-Scheduled Banks	-	-
c) With Institutions	-	-
d) Others	-	-
2) On Savings Accounts:		
a) With Scheduled Banks	33,000,965	25,145,893
b) With Non-Scheduled Banks	-	-
c) With Institutions	-	-
d) Others	-	-
3) On Loans:		
a) Employees/ Staff	-	-
b) Others	-	-
4) Interest on Debtors and Other Receivables		
TOTAL	33,000,965	25,145,893

For J PRADHAN & CO.

Chartered Accountants

S. Sumit Sahu
(CA. S. Sumit Sahu)

Partner

Mem. No.304809

D. Govinda Rao
(D. Govinda Rao)

Dy. Controller

of Accounts

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(Prof. V. Chandrasekhar)

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(CMA. Y. K. Srinath)

Finance Officer





National Institute of Science Education and Research, Bhubaneswar

(Under the Department of Atomic Energy, Govt. of India)

Schedule -18 : Other Income

(Schedule forming part of Income & Expenditure for the year ended on 31.03.2014)

Particulars	Amount (₹.)	
	Current Year(2013-14)	Previous Year(2012-13)
1. Profit on Sale/disposal of Assets:		
a) Owned Assets	-	-
b) Assets acquired out of grants, or received free of cost	-	-
2. Export Incentives realised	-	-
3. Fees for Miscellaneous Services	-	-
4. Miscellaneous Income	-	-
TOTAL	-	-

Schedule -19 : Increase/(Decrease) in Stock of Finished Goods & Work-in-progress

(Schedule forming part of Income & Expenditure for the year ended on 31.03.2014)

Particulars	Amount (₹.)	
	Current Year(2013-14)	Previous Year(2012-13)
a) Closing Stock	-	-
Add: Finished Goods	-	-
Add: Work in Progress	-	-
b) Less: Opening Stock	-	-
Add: Finished Goods	-	-
Add: Work in Progress	-	-
NET INCREASE/(DECREASE) (a-b)	-	-

Schedule -20 : Establishment Expenses

(Schedule forming part of Income & Expenditure for the year ended on 31.03.2014)

Particulars	Amount (₹.)	
	Current Year(2013-14)	Previous Year(2012-13)
a) Pay and Allowances	108,588,801	86,534,470
b) Manpower (Outsourced)	14,112,376	13,537,479
c) Stipend to Trainee	101,271	156,029
d) Contribution to NPS	8,616,047	7,700,826
e) Staff Welfare Expenses	5,583,162	5,322,757
f) Fellowship to Phd Scholars	14,979,813	11,107,220
g) Fellowship to Post Doctoral Scholars	316,800	74,658
h) Contingency to PHD Students	413,465	211,651
i) Honorarium & Remuneration	3,904,323	5,499,347
j) T.A on Transfer	389,689	577,653
TOTAL	157,005,747	130,722,090

For J PRADHAN & CO.

Chartered Accountants

S. Sumit Sahu

(CA. S. Sumit Sahu)

Partner

Mem. No. 304809

D. Govinda Rao

(D. Govinda Rao)

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CMA. Y.K. Srinath

(CMA. Y.K. Srinath)

Finance Officer



PO CAMPUS, PO: SAINIK SCHOOL, BHUBANESWAR, ODISHA-751005. Ph: 0674-2304000, Email : director@niser.ac.in

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National Institute of Science Education and Research Bhubaneswar



National Institute of Science Education and Research, Bhubaneswar (Under the Department of Atomic Energy, Govt. of India)

Schedule -21 : Other Administrative Expenses
(Schedule forming part of Income & Expenditure for the year ended on 31.03.2014)

Particulars	Current Year(2013-14)	Previous Year(2012-13)
Graduation Ceremony Expenses	258,062	-
45th Orissa Economic Association Conference	100,000	-
Freight & Forwarding Expenses	74,730	-
Foundation Day Expenses	259,671	168,695
Purchases (Consumables)	26,370,591	29,614,808
Office Maintenance	156,796	-
Repair & Maintenance	2,324,692	2,188,725
Advertisement	1,659,450	1,240,610
Audit Fees	44,944	44,944
Bank Charges & Commission	-	5,593
CRA Service Charges	42,985	39,632
Journal Subscription	-	32,029,343
Electricity Charges	498,794	595,788
Fuel for DG set	41,888	37,468
House Rent Allowance PHD Student	-	307,754
Hospitality Expenses	440,537	-
Membership Fees	-	2,000
Housekeeping Expenses	289,077	-
ISM Expenses	-	401,591
Legal Fees	-	76,025
License Fees	-	904,030
Meeting Expenses	388,014	-
News Papers and Periodicals	26,275	31,758
Other Academic Expenses	8,270	-
Other Admn. Expenses	-	2,716,079
Outreach Programme	21,047	-
Postage & Courier	354,018	241,731
Printing & Stationery	1,540,825	2,433,870
Recruitment Expenses	97,007	-
Rent, Rates & Taxes	3,064,292	2,136,558
Seminar/Workshop Expenses	22,629	-
SPIC Macay Expenses	19,602	-
Star QCD Meeting Expenses	67,505	-
Telephone & Internet charges	2,277,564	1,183,190
Travelling & Conveyance	4,545,850	4,300,820
Vehicle Maintenance Expenses	3,788,276	4,555,910
Vigilance Awareness Weak-2013	5,500	-
Water Charges	198,962	203,695
TET, BET & Raman Analysis Charges	123,596	-
TOTAL	49,111,449	85,460,616

For J PRADHAN & CO.

Chartered Accountants

S. Sumit Sahu

(CA. S. Sumit Sahu)

Partner

Mem. No. 304809

D. Govinda Rao

(D. Govinda Rao)

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of Accounts

Prof. V. Chandrasekhar

(Prof. V. Chandrasekhar)

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(CMA V. K. Srinath)

Finance Officer



IOP CAMPUS, PO: SAINIK SCHOOL, BHUBANESWAR, ODISHA-751005. Ph: 0674-2304000, Email : director@niser.ac.in

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National Institute of Science Education and Research, Bhubaneswar

(Under the Department of Atomic Energy, Govt. of India)

Schedule -22 : Expenditure on Grants, Subsidies etc.

(Schedule forming part of Income & Expenditure for the year ended on 31.03.2014)

Particulars	Amount (₹.)	
	Current Year(2013-14)	Previous Year(2012-13)
a) Grant given to Institutions/Organisation	-	-
b) Subsidies given to Institutions/Organisation	-	-
TOTAL	-	-

Schedule -23 : Interest

(Schedule forming part of Income & Expenditure for the year ended on 31.03.2014)

Particulars	Amount (₹.)	
	Current Year(2013-14)	Previous Year(2012-13)
a) On Fixed Loans	-	-
b) On Other Loans (including Bank Charges)	-	-
c) Others (specify)	-	-
TOTAL	-	-

For J PRADHAN & CO.

Chartered Accountants

B. Sumit Sahu
(CA. S. Sumit Sahu)
 Partner
 Mem. No. 304809

D. Govinda Rao
(D. Govinda Rao)
 Dy. Controller
 of Accounts

Prof. V. Chandrasekhar
(Prof. V. Chandrasekhar)
 Director

Y. K. Prithvi
(CMA Y. K. Prithvi)
 Finance Officer





SCHEDULES FORMING PART OF THE ACCOUNTS FOR THE PERIOD ENDED 31ST MARCH 2014

SCHEDULE 24-SIGNIFICANT ACCOUNTING POLICIES

1. Basis of Preparation of Financial Statements

The Financial Statements have been prepared on accrual basis following going concern concept, accounting standards and in accordance with the Generally Accepted Accounting Principles in India (Indian GAAP) except otherwise stated elsewhere.

The accounting policies adopted in the preparation of financial statements are consistent with those of previous year.

2. Fixed Assets

Fixed assets are stated at cost of acquisition inclusive of inward freight, duties & taxes and incidental & direct expenses related to acquisition.

3. Depreciation

Depreciation is provided on written down value method as per rate specified in the Income-Tax Act, 1961.

4. Capital Assets (WIP)

The Institute is at project stage. Hence capital expenditure incurred on construction activities including Electrical Furnishing, Electrical Installation, Electrical Transformer & Office Automation were therefore shown as Capital Work-in-Progress in the FY 2013-14.

5. Recognition of Income & Expenditure

Income & Expenditure are generally recognised on accrual basis & provision is made for all known liabilities.

Lab consumables and stores consumables purchased during 2013-14 is treated as recurring expenditure and the consumables are transferred to respective schools of study. Necessary records are maintained at the school concerned.



Signature

Signature



SCHEDULES FORMING PART OF THE ACCOUNTS FOR THE PERIOD ENDED 31ST MARCH 2014

SCHEDULE 24-SIGNIFICANT ACCOUNTING POLICIES

Contd. From Page 23

6. Foreign Exchange Transactions

Lab consumables relating to foreign exchange transactions are recorded at exchange rates prevailing on the date of the transactions.

7. Accounting For Sales

Not Applicable.

8. Government Grants/Subsidies

- a) Government grants of the nature of contribution towards capital cost of setting up projects are treated as grant-in-aid for creation of assets.
- b) Grants in respect of specific fixed assets acquired are not shown as a deduction from the cost of the related assets as the project is under progress.
- c) Government grants/subsidy is accounted on realization basis.

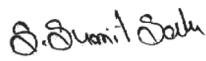
9. Lease

Lease rentals are expensed with reference to lease terms.

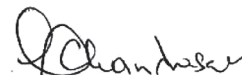
10. Retirement Benefits


Liability towards gratuity payable on death/retirement and provision for accumulated leave encashment benefit to employees is not applicable at present.

For J PRADHAN & CO.
Chartered Accountants

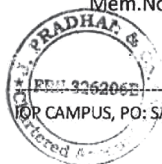

(CA. S. Sumit Sahu)
Partner


(D. Govinda Rao)
Dy. Controller of Accounts


(Prof. V. Chandrasekhar)
Director


(CMA. Y. K. Srinath)
Finance Officer

Mem.No.304809





National Institute of Science Education and Research, Bhubaneswar
(Under the Department of Atomic Energy, Govt. of India)

Schedule -25 : Contingent Liabilities and Notes on Accounts
(Schedule forming part of the accounts for the period ended on 31.03.2014)

	<u>Amount (₹.)</u>
A) CONTINGENT LIABILITIES	
1. Claims against the Entity not acknowledge as debts	NIL
2. Liability for partly-paid investments	NA
3. Liability on account of outstanding forward exchange contracts	NA
4. Guarantee and Letters of credit outstanding	NIL
5. Bills discounted	NIL
6. Other items for which the entity is contingently liable	NIL

B) NOTES ON ACCOUNTS

1. JOURNAL SUBSCRIPTION:

During the year Journal Subscription is shown under the head Fixed Assets and the rate of depreciation is taken accordingly (i.e. 100% as per Income Tax Act).

2. Schedule-1 depicts the break-up of cumulative contribution towards Corpus/Capital Fund and balance of net income/(expenditure) transferred from the Income and Expenditure Account.

3. PRIOR PERIOD INCOME:

A) Amount of Rs. 11,400 received from candidates towards job application fees in the earlier year has now been accounted for during the current F. Y. 2013-14.

B) Amount of Rs. 500 paid towards SD to BSNL in earlier years which was treated as expenses is now being rectified.

C) SD refund from BSNL amounting to Rs. 4,968, which was earlier treated as expenses at the time of payment is now being accounted as income in the current financial year.

D) Employer Contribution towards LS & PC of Rs. 14,191 which were booked under Establishment Expenses in earlier years now refunded and taken into account as 'Prior Period Income'.



Dhanish

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National Institute of Science Education and Research, Bhubaneswar
(Under the Department of Atomic Energy, Govt. of India)

Schedule -25 : Contingent Liabilities and Notes on Accounts
(Schedule forming part of the accounts for the period ended on 31.03.2014)

Contd. From Page 25

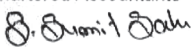
4. LIEN AGAINST FD:

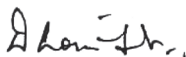
Lien against FD shown in Receipt & Payments account relates to items under import and the same is in order.

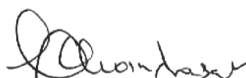
5. Corresponding figures for the previous year have been regrouped/ rearranged, wherever necessary.


6. Schedule 1 to 25 are annexed to and form an integral part of the Balance Sheet as at 31st March, 2014 and the Income & Expenditure Account for the year ended on that date.

For J PRADHAN & CO.
Chartered Accountants


(CA. S. Sumit Sahu)
Partner
Mem. No. 304809


(D. Govinda Rao)
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Finance Officer



