

DST-INSPIRE INTERNSHIP SCIENCE CAMP - 2016



Department of
Science & Technology
Government of India

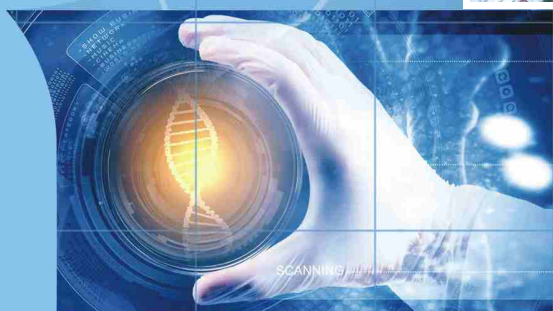
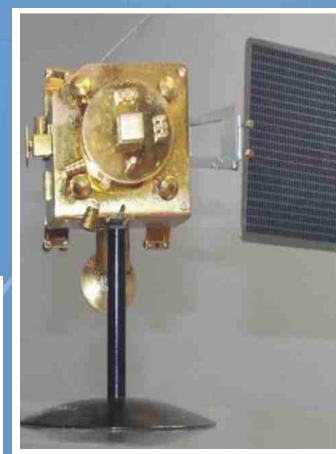
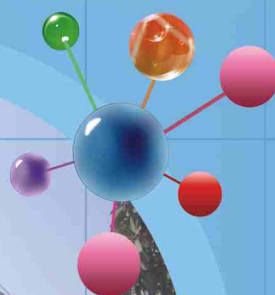


Jagadis Bose
National Science Talent Search
Government of West Bengal

53rd Science Camp "Learning Science"

October 01 — 05, 2016

At JB Centre of Excellence for Student – Scientists



Jagadis Bose National Science Talent Search

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“Learning Science”

About JBNSTS

Jagadis Bose National Science Talent Search (JBNSTS), Kolkata was conceptualized in 1958 by visionaries such as Dr. B C Roy, Sir J J Ghandy and others to commemorate the Birth Centenary Celebration of India's first modern scientist, Acharya J C Bose. The program was inaugurated by Pandit Jawaharlal Nehru. JBNSTS is an autonomous institute promoted by the Department of Higher Education, Government of West Bengal. It is administered by a Governing Body with representatives from the State Government, academia and industry. In the last five and half decades, JBNSTS has grown to become a premiere institute of non-formal science education in India with the objective towards pursuit of excellence through motivation, identification and nurture of young talented science students. Since 1961, JBNSTS has been conducting Senior Scholarship program in West Bengal for undergraduate students of science, engineering and medicine. This organization is considered as the oldest and first talent search institute of India and this prestigious scholarship is very well recognized across the globe. Since 2015, JBNSTS has also initiated a Junior Talent Search Test – a scholarship program for the students who are studying science in class XI. This program has been started to motivate and nurture the students from a younger age.

JBNSTS helps students to realize the importance of excellence in the scientific world and try to cultivate this in their own lives as students of science. It also encourages students towards the learning of basic sciences and inculcates scientific spirit in the minds of high school and undergraduate students. Focus has been given on unconventional and dynamic methods of non-formal accelerated learning through “out-of-class” activities, which have led to the recognition of intellectually sensitive and inquisitive minds.

JBNSTS is also conducting Teachers Training Program by involving middle school science teachers from different districts of West Bengal. Hands-on activity based science teaching has given the main emphasis throughout this program and accordingly science kits have been developed and distributed amongst the participating teachers for demonstrating scientific principles in front of the students in the classroom. The financial support for most of the activities of JBNSTS is provided by the Department of Higher Education & Department of Science & Technology, Government of West Bengal. In addition, Council of Scientific & Industrial Research (CSIR), Department of Science & Technology (DST), Government of India & some other Industries also collaborates with JBNSTS in such activities.



About DST-INSPIRE Program



Innovation in Science Pursuit for Inspired Research (INSPIRE) is one of the innovative programs developed by the Department of Science & Technology, Govt. of India for attraction of talent to Science and had been launched in December 2008. The basic objective of INSPIRE is to attract talented youth, ranked within top 1% in Class X board examinations and presently studying Science in +2 levels, to study science and motivate them to take up research career and inculcate scientific thought processes in all walks of their life and thus build the required critical human resource pool for strengthening and expanding the Science & Technology system and Research & Development base. It also aims to excite the

interns by rubbing shoulders with global leaders in science including Nobel Prize Winners to experience the joy of innovations.

INSPIRE Program has three schemes:

I. Scheme for Early Attraction of Talent for Science: It aims to attract talented youth to study science by providing INSPIRE award of Rs.5,000/- to one million young learners in the age group 10-15 years for a duration of five years and arrange summer and winter camps for youth in various locations for top 1% in Class X board examinations with global leaders in science to experience the joy of innovations on an annual basis through INSPIRE internship.

a) **INSPIRE Award**

In order to seed and experience the joy of innovation, every year two lakh school children in the age-group of 10 to 15 years i.e., 6th to 10th standards are being identified for the INSPIRE Award. Each INSPIRE Award envisions an investment of Rs.5,000/- per child. The scheme plans to reach at least two students per secondary school during the next five years.

b) **INSPIRE Internship**

"Motivating talented youth to take-up research as a personal undertaking" by rubbing shoulders with global icons of science including Nobel Prize Winners, is the objective of INSPIRE Internship. This component of the program aims at working as a life-long catalyzing experience for the 11th graders in science stream.

II. Scholarship for Higher Education: Scholarship for Higher Education (SHE) aims at attracting talented youth into undertaking higher education in science intensive programs, by providing scholarships and mentoring through ‘summer attachment’ to performing researchers. The scheme offers 10,000 scholarships every year @ Rs 0.80 lakh per year to talented youth in the age group 17-22 years, for undertaking Bachelor and Masters level education in Natural and Basic Sciences. However, the 18 Science subject such as (1) Physics, (2) Chemistry, (3) Mathematics, (4) Biology, (5) Statistics, (6) Geology, (7) Astrophysics, (8) Astronomy, (9) Electronics, (10) Botany, (11) Zoology, (12) Bio-chemistry, (13) Anthropology, (14) Microbiology, (15) Geophysics, (16) Geochemistry, (17) Atmospheric Sciences and (18) Oceanic Sciences, either as major/honors or their combination in BSc/Integrated MSc/Integrated MS course will be under the scope of INSPIRE Scholarship. The main feature of the scheme is mentorship support being planned for every scholar through INSPIRE scholarship.

This scheme offers 10,000 scholarships every year @ Rs.80,000/- each for undertaking Bachelor and Masters level education in the Natural & Basic sciences, possessing any of the following criteria:

- a. Students who happen to be among the top 1% in 12th standard at their respective Board Examinations and are pursuing courses in Natural and Basic sciences at the B.Sc. or Integrated M.Sc. levels. Courses are not included other than Natural and Basic sciences in the current scheme in view of the focus on research in Basic sciences.
- b. Students who have secured in the Joint Entrance Examination of JEE-Advance top 10,000 ranks, JEE-Main (top 10,000 ranks) plus those clearing NEET (top 10,000 ranks), and who also opt to study Natural and Basic sciences in any academic institute or university leading to graduate and post-graduate degree, would be eligible for scholarship.
- c. Students admitted to Indian Institute of Science Education and Research (IISER), National Institute of Science Education and Research (NISER), Department of Atomic Energy Centre for Basic Sciences (DAE-CBS) at the University of Mumbai or happen to be Kishore Vaigyanik Protsahan Yojana (KVPY), National Talent Search Examination (NTSE), Jagadis Bose National Science Talent Search (JBNSTS) scholars and Science Olympiad Medalists, opting to undertake courses in the Natural & Basic sciences leading to B.Sc. and M.Sc. degrees are eligible for “SHE” scholarship.

III. Assured Opportunity for Research Careers: Assured Opportunity for Research Careers (AORC) aims at attracting, attaching, retaining and nourishing talented young scientific Human Resource to strengthened the R&D foundation and base by offering doctoral INSPIRE Fellowship in the age group 22-27 years, in both Basic and Applied sciences (including engineering and medicine). It also aims at assuring opportunities for post-doctoral researchers through a scheme (similar to the New Blood program of the Royal Society of UK) through contractual and tenure track positions for five years in both Basic and Applied sciences areas through an INSPIRE Faculty Scheme.

a. INSPIRE Fellowship

INSPIRE fellowship aims at enhancing research fellowships for doctoral studies and opening up partnerships with private sector for topping the Government’s efforts in nurturing talents for scientific research. This scheme is applicable to Basic and Applied sciences as well as Medicine, Agriculture etc. with provision of multiple entries. The fellowship will be offered to (1) University 1st Ranker in a particular subject at PG level examination in Basic and Applied Science courses as well as (2) INSPIRE scholar, who have secured aggregate marks of 65 % or above at the 2 year MSc or 5 year Integrated MSc/MS.

b. INSPIRE Faculty Scheme

INSPIRE Faculty Scheme opens up an ‘Assured Opportunity for Research Career (AORC)’ for young researchers in the age group of 27-32 years. It is expected to augment high quality scientific manpower in scientific and educational institutions. It provides attractive opportunities to young achievers for developing independent scientific profiles and intends helping them emerge as S&T leaders in the long term. The Scheme offers contractual research positions. It provides career opportunities, but it is not a guarantee for tenure positions after 5 years.



“Learning Science”

Organizing Committee

Academic Committee :

Prof. (Dr.) Maitree Bhattacharyya, Director, JBNSTS
Dr. Paromita Roy, Deputy Director, JBNSTS
Dr. Abhijit Kar, Scientific Officer, JBNSTS
Dr. Smarajit Manna, Student Advisor, JBNSTS

Camp Coordinator :

Mr. Dipankar Sarkar

Mentors :

Dr. Maitree Bhattacharyya

Professor & Director
Jagadis Bose National Science Talent Search, Kolkata

Dr. Bichitra Kumar Guha

Professor of Physics & Dean, Faculty Affairs,
Indian Institute of Engineering Science and Technology, Shibpur, Howrah

Dr. Arnab Chakraborty

Assistant Professor, Applied Statistics Unit (ASU)
Indian Statistical Institute, Kolkata

Dr. Parthasarathi Mukhopadhyay

Associate Professor, Department of Mathematics
RK Mission Res. College, Narendrapur, Kolkata

Dr. Soumitra SenGupta

Sr. Professor and Dean (Academic & Students Affairs)
Department of Theoretical Physics
Indian Association for the Cultivation of Sciences, Kolkata

Dr. Dulal Senapati

Associate Professor, Chemical Science Division
Saha Institute of Nuclear Physics, Kolkata

Dr. Samir Kumar Pal

Professor, Department of Chemical, Biological &
Macromolecular Sciences,
S.N. Bose National Centre for Basic Sciences, Kolkata

Dr. Kalyan Kr. Bhar

Professor, Civil Engineering & Dean, Research & Development
Indian Institute of Engineering Science and Technology,
Shibpur, Howrah

Dr. Siddhartha Sen

Emeritus Professor, School of Physics,
Trinity College, Dublin, Ireland

Dr. Amit Roy

DAE Raja Ramanna Fellow
Variable Energy Cyclotron Centre, Kolkata

Dr. Sanghamitra Sengupta

Asstt. Professor, Department of Biochemistry
University of Calcutta, Kolkata

Dr. Anindita Ukil

Assistant Professor, Department of Biochemistry
University of Calcutta, Kolkata

Dr. Rajat Banerjee

Assistant Professor
Department of Biotechnology and Dr. B. C. Guha Centre for
Genetic Engineering & Biotechnology
Calcutta University, Kolkata



Dr. Soumen Basak

Senior Professor, Chemical Science Division
Saha Institute of Nuclear Physics, Kolkata

Dr. Debasis Das

Professor, Department of Chemistry,
Calcutta University, Kolkata

Dr. Abhijit Kar

Scientific Officer
Jagadis Bose National Science Talent Search, Kolkata

Dr. Smarajit Manna

Student Advisor
Jagadis Bose National Science Talent Search, Kolkata

CAMP RULES

Welcome to the 53rd Science Camp of JBNSTS entitled ‘Learning Science’

Here you will have a unique experience of learning science through active interaction with great scientists and be encouraged to share your ideas with others. No test/grade – only learning science in a different way.

General Instructions:

- The camp hours are from **09:00 a.m. to 6:00 p.m.** You are to attend all the sessions in your school uniform. **MOBILE PHONES MUST BE KEPT IN SWITCHED OFF MODE DURING ALL ACADEMIC SESSIONS.**
- Each participant has to make registration daily.
- An academic visit to **Science City** has been arranged on **3rd October, 2016.** On that day the camp hour may be extended up to **6:30 p.m.**
- All the participants will be divided into groups. There will be a group leader for each group selected by group members of each group. Each group has to prepare a project based on the ‘hands-on activity’ at the laboratory and present the same (PowerPoint / Chalk & talk) during project presentation session (5th October, 2016). Each group will get 10 minutes for presentation/ demonstration and 5 minutes for discussions.
- You will not be given any home work, but you are expected to interact freely with the experts, your group members and other groups.
- SUBMISSION OF ALL DOCUMENTS AND REIMBURSEMENT WILL BE MADE AT **REGISTRATION DESK ONLY.**

Submission of important documents:

- You are required to submit an attested copy of your 10th Standard Board Examination Mark Sheet, INSPIRE Registration Form endorsed by your Principal/HM and filled-in STUDENT’S INFORMATION SHEET (Blue Sheet) during **lunch break on 1st October, 2016.**

Book Bill:

- All the participants will receive a **Book Grant of Rs.1,200/-.** For that all the participants have to submit the original bills for the book(s), endorsed by the Principal/HM, during **morning registration (09.00 a.m. to 10.00 a.m.) on 2nd October, 2016.**

Travel Bill:

- Travel bills (as per instruction communicated to the Principal/HM) are to be submitted along with relevant documents (tickets etc.) **during lunch break on 2nd October, 2016 (for RESIDENTIAL participants) and during morning registration on 4th October, 2016 (for NON-RESIDENTIAL participants).**
- You are required to fill up the **FEED BACK SHEET** and submit it **during lunch break on 5th October, 2016.**

Reimbursements:

Reimbursement for Travel expenses and Book Grant (school wise) will be made on **4th October, 2016 (01.00 p.m. – 02.00 p.m.) (for RESIDENTIAL participants) and 5th October, 2016 (01.00 p.m. – 02.00 p.m.) (for NON-RESIDENTIAL participants).**

In case, any payment related assistance / clarifications are needed, you may contact our accounts section.

On the last day i.e. 5th October, 2016 you will receive the Participation Certificate.



“Learning Science”

BRIEF INTRODUCTION TO THE EXPERTS

DR. MAITREE BHATTACHARYYA

Dr. Maitree Bhattacharyya is presently a Professor and Director of Jagadis Bose National Science Talent Search. She graduated from Presidency College with Honours in Physics and obtained M.Sc. degree from Calcutta University. Started research career in Department of Biophysics and Molecular Biology, Calcutta University with a Ph.D. degree in 1991. She pursued research with Research associateship from CSIR and joined Calcutta University as an Assistant Professor in 1994 to start with independent research laboratory. Later on, she was awarded DBT Overseas fellowship and worked as Visiting Scientist in UCSD, USA. Now she is the Professor, Department of Biochemistry, University of Calcutta (On lien). Ten students have already been awarded Ph.D. degree under her supervision and now she is leading a group of ten research scholars which comprises of Ph.D. and post doctoral students. She has published several research articles and chapters in books of International repute. Her research interests include (i) Study of microbial diversity in coastal and estuarine water and soil sediment in the world heritage site, Sundarbans. Exploration of dynamic correlations among physical, chemical and biological domains of this estuarine ecosystem. Inventorisation of microbial diversity along Indian coast; (ii) Identification of risk factors and biomarkers in the disease dynamics of diabetes associated cardiovascular disease and dyslipidemia; (iii) Application of green chemistry in bioremediation and biotransformation of heavy metal toxicity in industrial effluent, green synthesis of nanoparticles and (iv) Protein structure- function and interactions with special interest to heme proteins, bio molecular interaction.

Apart from academic research and teaching, she aims,

- To develop Scientific and Technological sphere of India especially the human resource to the level of highest possible International Standard.
- To develop Science and Technology of modern India so as to make India self-reliant to the extent possible in all spheres including Agriculture, Industry and Medicine.
- To inculcate scientific and rational temper within the younger section of the population towards developing a modern India based on logical foundation, objective and realistic state of mind and against all kinds of superstition, obscurantism and illogical thinking and actions.

DR. BICHITRA KUMAR GUHA

Prof. Bichitra Kumar Guha has been a topper throughout his career. He has been a gold medalist of the Calcutta University standing first class first in B.Sc. (Hons.) from Presidency College. He did his M.Sc. and M.Phil. from University of Delhi and Ph.D. from Calcutta University. His works on technology of hi- tech ferroelectric materials have been acclaimed internationally. He has authored a number of research papers and a text book and guided several students for doctoral works. He has been the Dean, Faculty of Science in Bengal Engineering and Science University, Shibpur and is now the Dean, Faculty Affairs of the same Institute which is now an Institute of National Importance under the name of Indian Institute of Engineering Science and Technology.

DR. ARNAB CHAKRABORTY

Dr. Arnab Chakraborty is presently the Assistant Professor at Applied Statistics Unit, Indian Statistical Institute, Kolkata. He did B. Stat and M. Stat from Indian Statistical Institute, Kolkata and Ph.D. from Stanford University, USA. He loves to motivate students to learn mathematics by exploring new ideas. A thorough hater of the routine way adopted in most schools and textbooks to teach mathematics.

DR. PARTHASARATHI MUKHOPADHYAY

Dr. Parthasarathi Mukhopadhyay is the Associate Professor of Mathematics in Ramkrishna Mission Residential College, Narendrapur. He is also a guest faculty (Post Graduate) at Ramkrishna Mission Vidyamandir, Belur Math. Dr. Mukhopadhyay did his M.Sc. in Pure Mathematics, M. Phil. & Ph.D. in Mathematics from C.U. He published lots of research papers in National & International journals. He also published books for undergraduate level and school level. He attended many conferences & seminars at National & International level. He is a life time member of the Calcutta Mathematical Society.

DR. SOUMITRA SEN GUPTA

Dr. Soumitra Sengupta is presently a Senior Professor at the Department of Theoretical Physics and Dean, Academic & Students Affairs at Indian Association for the Cultivation of Science (IACS), Kolkata. He did his B.Sc. from Presidency College, M.Sc. from Calcutta University and Ph.D. from Saha Institute of Nuclear Physics, Kolkata. His academic career includes several distinguished positions such as Sr. Lecturer at the Department of Physics, Presidency College, Kolkata; Sr. Lecturer & Reader at the Department of Physics of Jadavpur University; Reader, Professor and Sr. Professor at Department of Theoretical Physics, IACS, Kolkata. He is a fellow of The National Academy of Sciences, India. His current research interest includes String Theory, Supersymmetry, Supergravity, Braneworld Phenomenology, Cosmology and Black holes. Dr. Sengupta has several research publications in national and international peer reviewed journals.

DR. DULAL SENAPATI

Dr. Dulal Senapati received his Master degree in 1998 with Physical Chemistry specialization from Jadavpur University and then joins same year to the Inorganic and Physical Chemistry Division in Indian Institute of Science, Bangalore for PhD program in the field of Physical Chemistry and Chemical Physics. After receiving his PhD degree in 2004, immediately he joined in the Chemistry Department at the Georgia Institute of Technology as a Research associate and continued till 2008 in the field of Single Molecule Raman Spectroscopy. Later Half in 2008 he joined Jackson State University as a staff scientist and continued till he joined to Saha Institute of Nuclear Physics in February 2013 as an Associate Professor and established Nanophotonics Group there. Dr. Senapati has published more than 60 international peer reviewed papers and wrote 6 book chapters. His work got total 3047 citation with 'h-index' of 27. He holds a visiting faculty position in National University of Science and Technology, Russia. His current research activity in SINP broad defined as "application of highly anisotropic nanomaterials in ultra-sensing, theranostics, microscopy, and in developmental optics".

DR. SAMIR KUMAR PAL

Dr. Samir Kumar Pal is a Professor at the Dept. of Chemical, Biological & Macromolecular Sciences of S. N. Bose National Centre for Basic Sciences, Kolkata. He did M.Sc. in Physics in 1994 and Ph. D. in 2000 on Laser Spectroscopy (picosecond). During the year 2000 – 2003, he worked as a Post-Doctoral Fellow at California Institute of Technology (CALTECH), U.S.A. under Prof. A. H. Zewail, Nobel Laureate in Chemistry in 1999. He is a Regular Visiting Professor of CALTECH, USA; TU Brunswick, Germany; University Aarhus, Denmark; Durham University, UK; University Leiden, Netherlands etc. His research interests include Ultrafast Spectroscopy of Molecules and Nanomaterials, Solar Devices and Biomedical Instrumentation. 14 students have already obtained their Ph.D. degree (all settled in abroad) and 12 scholars are working for the same under the able guidance of Dr. Pal. He has 170 research publications in international Peer-referred Journals, 5 Books and 14 Patents (including one has been approved). Dr. Pal was awarded with UKERI in 2007 for his work in the field of Nano-science. He is one of the editors of EPJ techniques and Instrumentation (Springer, London), Advances in Physical Chemistry (Hindawi, USA). He has been refereed in nos. of journals such as Nature, Angew. Chem., Journal of the American Chemical Society, Journal of Physical Chemistry, Journal of Chemical Physics, Biochemistry etc.

DR. KALYAN KR. BHAR

Dr. Kalyan Kr. Bhar is a Professor, Department of Civil Engineering and Dean, Research & Development at the Indian Institute of Engineering Science and Technology, Shibpur, Howrah. He did B.E. in Civil Engineering, M.E. in Hydel Engineering and Ph.D. in Water Resources Engineering. His present areas of research are water resources engineering, remote sensing, geographical information system and related computer applications. Dr. Bhar has several research publications in national and international peer reviewed journals.

DR. SIRDDHARTHA SEN

Dr. Siddhartha Sen is a former Head of School of Mathematics, Trinity College, Dublin, Ireland. He is an Emeritus Fellow of Trinity and a Member of the Royal Irish Academy. He has research links with a number of Indian Centres. He was a Visiting Professor at TIFR, Hyderabad and was a UGC Professor of Applied Mathematics at Calcutta University. Professor Sen currently spends 5 months in India as Adjunct Professor in the Ramakrishna Vivekananda University at Belur, Howrah and as a Visiting Scientist at IACS, Jadavpur. In Dublin he is a consultant for CRANN, Trinity College, Dublin, Ireland.

DR. AMIT ROY

Dr. Amit Roy completed his M.Sc from Delhi University in 1968 and his Ph.D. from Tata Institute of Fundamental Research, Mumbai in 1975, where he continued as faculty till 1990. He has worked at Florida State University, USA, KVI, Netherlands and Argonne National Laboratory, USA. He joined Inter-University Accelerator Centre in 1991 as senior scientist and was its director from 2001 till July 2013. Currently he is DAE Raja Ramanna Fellow at the Variable Energy Cyclotron Centre, Kolkata. He was leader of the team that built the Superconducting Linear Accelerator at IUAC and pioneered the development of Niobium superconducting cavities in India. He is a Fellow of the National Academy of Sciences, India and has received the Eminent Scientist award of the Indian Nuclear Society. His research interests are in the area of Nuclear Physics, Accelerator Physics and Atomic Physics. He is interested in science communication and has written on Great Experiments in Physics in Journal of Science Education "Resonance".

DR. SANGHAMITRA SENGUPTA

Dr. Sanghamitra Sengupta received the M.Sc. and Ph.D. degrees in 1991 and 1998, respectively, from the Department of Biochemistry, University of Calcutta. After obtaining postdoctoral training in the Department of Genetics of Case Western Reserve University and Stanford University, USA, she joined the Human Genetics Unit of the Indian Statistical Institute as a research scientist. She has been a faculty member in the Department of Biochemistry, University of Calcutta, since 2005. She is a member of the Indian Society of Human Genetics, Society of Biological Chemists and Indian Association of Cancer Research. Her main research interests include host genetics of infectious disease and cancer genomics. Besides, she bears an active interest in the environmental and human metagenomics. Her work has resulted in 30 research publications in peer-reviewed journals.

DR. ANINDITA UKIL

Dr. Anindita Ukil is presently an Assistant Professor in the Department of Biochemistry, University of Calcutta. She did her M.Sc. in Biochemistry from Calcutta University and Ph.D. from Infectious Diseases and Immunology Division at Indian Institute of Chemical Biology, Kolkata. Her research interest is focused on studying the negative regulators of macrophage signal transduction cascade and elucidating their role in intramacrophage parasite survival. Dr. Ukil is interested to identify those negative regulators using visceral leishmaniasis as a model macrophage associated disease. She is the recipient of Prof. B.K. Bachhawat Memorial Young Scientist Lecture (2014) by National Academy of Sciences, Allahabad (NASI), India; SERB Women Excellence Award (2013) by Department of Science and Technology; and Young Scientist Award (2010) in Biomedical Sciences by National Academy of Sciences, Allahabad (NASI), India. Dr. Ukil has several research publications in national and international peer reviewed journals.

DR. RAJAT BANERJEE

Dr. Rajat Banerjee is presently an Assistant Professor at the Department of Biotechnology and Dr. B. C. Guha Centre for Genetic Engineering & Biotechnology, Calcutta University. He did his M.Sc. in Biophysics, Molecular Biology and Genetics from Calcutta University and Ph.D. from Bose Institute, Kolkata. His research interest is focused on Protein structure-function relation, Protein-nucleic acid interaction. Dr. Banerjee has several research publications in national and international peer reviewed journals.

DR. SOUMEN BASAK

Dr. Soumen Basak is a Senior Professor at the Chemical Science Division, Saha Institute of Nuclear Physics, Kolkata. He did his Ph.D. from University of Chicago in 1982 and then joined SINP as faculty member in 1987. Dr. Basak has several research publications in national and international peer reviewed journals.

DR. DEBASIS DAS

Dr. Debasis Das is a Professor at the Department of Chemistry, Calcutta University, Kolkata. His research interest focused on Coordination Chem.; Bioinorganic Chem.; Catalysis etc. Several students have already been awarded with Ph.D. degree under the able guidance of Dr. Das. He has several research publications in national and international peer reviewed journals.

DR. ABHIJIT KAR

Abhijit Kar received his PhD in Chemistry-Materials Science from Jadavpur University, India. Dr. Kar has carried out his postdoctoral research in Sungkyunkwan University, South Korea, Swiss Federal Laboratory at Zürich, Switzerland; visiting scientist at Ruhr Universität, Germany. Dr. Kar has about 15 years of research & teaching experience. His current research interest comprises of Application of Nanotechnology for Advanced Materials Processing and Characterizations. He has developed expertise on Different Materials Characterization Techniques; Mechanical & Functional Property Evaluation of Materials. He has worked on different similar and dissimilar materials joining techniques and Thermodynamic Modeling of materials. He is one of the first and pioneer research scientist worked on lead free solder development for electronics/microelectronics applications from India. Dr. Kar has published 39 research papers in Journals and contributed in book chapter on Electron Microscopy. Dr Kar has edited a book entitled Nanoelectronics and Materials Development. Abhijit also serves as reviewer of many International Peer Reviewed Journals from Elsevier & Springer. He is editorial board member of Journal of Materials Sciences and Applications, American Association for Science & Technology, Journal of Energy and Natural Resources etc.

DR. SMARAJIT MANNA

Dr. Smarajit Manna did his B.Sc. and M.Sc. in Physics. Worked as Junior Research Fellow and Senior Research Fellow at Jadavpur University and Delhi University South Campus respectively and received his Ph.D. degree from Jadavpur University Currently working as Student Advisor at JBNSTS, Kolkata. His research interest includes conduction mechanism through biological membranes and the underlying dynamics. His research interests are Statistical analysis of dynamical systems and Bio-informatics. Dr. Manna has 8 research publications in national and international journals and he is one of the authors of the book chapter "Electrical noise in cells, membranes and neurons in: Understanding Complex Systems", Springer Berlin/ Heidelberg. He is working as Student Advisor of JBNSTS and apart from guiding students he is carrying out different academic and research work. His current research interests include statistical analysis of dynamical systems and Bio-informatics.

“Learning Science”

Day to Day Program

Day 1 : Saturday, October 01, 2016

09:00 a.m. – 09:45 a.m.
09:45 a.m. – 10:00 a.m.

Registration

Welcome Address

Dr. Maitree Bhattacharyya, Professor & Director, Jagadis Bose National Science Talent Search, Kolkata



10:00 a.m. – 11:30 a.m.

'Evolution of Science since the days of Aristotle'

Dr. Bichitra Kumar Guha, Professor of Physics & Dean, Faculty Affairs, Indian Institute of Engineering Science and Technology, Shibpur, Howrah

11:30 a.m. – 01:00 p.m.

'Anker dhnadha ityadi'

Dr. Arnab Chakraborty, Assistant Professor Applied Statistics Unit (ASU), Indian Statistical Institute, Kolkata
Lunch & Interaction

01:00 p.m. – 02:00 p.m.

02:00 p.m. – 06:00 p.m.

'Let's improve your research aptitude – do some active research'

Dr. Abhijit Kar, Scientific Officer & **Dr. Smarajit Manna**, Student Advisor, JBNSTS, Kolkata

Day 2 : Sunday, October 02, 2016

09:00 a.m. – 10:00 a.m.
10:00 a.m. – 12:30 p.m.

Registration

'The Story of Calculus'

Dr. Parthasarathi Mukhopadhyay, Associate Professor Department of Mathematics, RK Mission Res. College, Narendrapur, Kolkata



12:30 p.m. – 01:30 p.m.

Technical Write-up Session

Dr. Rajat Banerjee, Assistant Professor Department of Biotechnology and Dr. B. C. Guha Centre for Genetic Engineering & Biotechnology & **Dr. Anindita Ukil**, Assistant Professor Department of Biochemistry, University of Calcutta, Kolkata
Lunch & Interaction

01:30 p.m. – 02:30 p.m.

02:30 p.m. – 06:00 p.m.

'Let's improve your research aptitude – do some active research'

Dr. Abhijit Kar, Scientific Officer & **Dr. Smarajit Manna**, Student Advisor, JBNSTS, Kolkata

Day 3 : Monday, October 03, 2016

09:00 a.m. – 10:00 a.m.
10:00 a.m. – 12:30 p.m.

Registration

Motivational Lecture

Dr. Soumitra SenGupta, Senior Professor and Dean (Academic & Students Affairs), Department of Theoretical Physics, Indian Association for the Cultivation of Science, Kolkata
Lunch & Interaction



12:30 p.m. – 01:00 p.m.

01:00 p.m. – 06:00 p.m.

Academic Visit to Science City, Kolkata

Day 4 : Tuesday, October 04, 2016

09:00 a.m. – 10:00 a.m.
10:00 a.m. – 11:30 a.m.

Registration

'Nanosciene: The Idiosyncratic Thinking, Tiny Machine and the Missing Link

Dr. Dulal Senapati, Associate Professor Chemical Science Division, Saha Institute of Nuclear Physics, Kolkata



11:30 a.m. – 01:00 p.m.

'Essential Dance of Life and Its Crucial Measurement Strategies'

Dr. Samir Kumar Pal, Professor, Department of Chemical, Biological & Macromolecular Sciences, S. N. Bose National Centre for Basic Sciences, Kolkata
Lunch & Interaction

01:00 p.m. – 02:00 p.m.

02:00 p.m. – 03:30 p.m.

'Disaster Mitigation: Use of Modern Technology'

Dr. Kalyan Kr. Bhar, Professor, Civil Engineering & Dean, Research & Development Indian Institute of Engineering Science and Technology, Shibpur, Howrah

03:30 p.m. – 05:00 p.m.

Motivational Lecture

Dr. Siddhartha Sen, Emeritus Professor School of Physics, Trinity College, Dublin, Ireland

05:00 p.m. – 06:00 p.m.

Summing up Session

Day 5 : Wednesday, October 05, 2016

09:00 a.m. – 10:00 a.m.
10:00 a.m. – 11:30 a.m.

Registration

'What makes the Sun shine?'

Dr. Amit Roy, DAE Raja Ramanna Fellow Variable Energy Cyclotron Centre, Kolkata



11:30 a.m. – 01:00 p.m.

Motivational Lecture

Dr. Sanghamitra Sengupta, Asstt. Professor, Department of Biochemistry, Calcutta University, Kolkata
Lunch & Interaction

01:00 p.m. – 02:00 p.m.

02:00 p.m. – 06:00 p.m.

Project Presentation by the Participants

Judges : Dr. Soumen Basak, Senior Professor, Chemical Science Division, SINP, Kolkata

Dr. Debasis Das, Professor, Department of Chemistry, Calcutta University, Kolkata