

# DST-INSPIRE INTERNSHIP SCIENCE CAMP - 2016



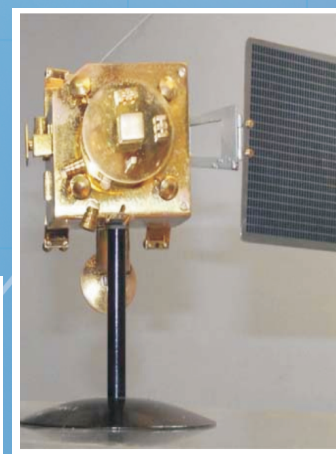
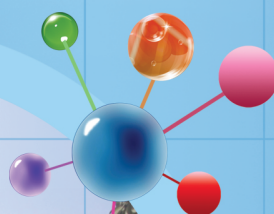
Department of  
Science & Technology  
Government of India



Jagadis Bose  
National Science Talent Search  
Government of West Bengal

52<sup>nd</sup> Science Camp  
"Learning Science"  
August 9 — 13, 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:

- 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.
- 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.
- 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. Palash Baran Pal**

Professor, Theory Division  
Saha Institute of Nuclear Physics, Kolkata

#### **Dr. Somdatta Ghosh Dey**

Assistant Professor, Inorganic Chemistry  
Indian Association for the Cultivation of Sciences, Kolkata

#### **Dr. Parthasarathi Mukhopadhyay**

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

#### **Dr. Arghya Taraphder**

Professor and Head  
Department of Physics  
Indian Institute of Technology, Kharagpur

#### **Dr. Pijush Kanti Das**

Senior Scientist and J. C. Bose National Fellow  
Infectious Diseases & Immunology Division  
Indian Institute of Chemical Biology, Kolkata

#### **Dr. Samita Basu**

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

#### **Dr. B. B. Bhattacharya**

INAE Distinguished Professor,  
S.N. Bose National Centre for Basic Sciences, Kolkata

#### **Dr. A. Ajayaghosh**

Scientist and Head  
Chemical Sciences and Technology Division,  
National Institute for Interdisciplinary Science and Technology  
(NIIST), Trivandrum

#### **Dr. Dhrubajyoti Chattopadhyay**

Vice Chancellor  
Amity University, Newtown, Kolkata

#### **Dr. Gitanjali Sundaram**

Assistant Professor, Department of Biochemistry  
University of Calcutta, Kolkata



#### **Dr. Anindita Ukil**

Assistant Professor, Department of Biochemistry  
University of Calcutta, Kolkata

#### **Dr. Debajyoti Ghoshal**

Assistant Professor, Inorganic Chemistry Section, Department of  
Chemistry, Jadavpur 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 52nd 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 **Centre for Research in Nanoscience & Nanotechnology (CRNN), University of Calcutta, Salt Lake Campus, Kolkata** has been arranged on **11th August, 2016**. The departure time from JBNSTS to CRNN will be 9.00 a.m. sharp. All the participants are required to complete their registration formalities by 8.45 a.m. on that day.
- 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 (13th August, 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 during **lunch break on 9th August, 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 10th August, 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 of 12th August, 2016.**

- You are required to fill up the **FEED BACK SHEET** and submit it **during lunch break on 13th August, 2016.**

**Reimbursements:**

Reimbursement for Travel expenses and Book Grant (school wise) will be made on **13th August, 2016 (01.00 p.m. – 02.00 p.m.)**

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

**On the last day i.e. 13th August, 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. PALASH BARAN PAL

Dr. Palash B. Pal is a Professor at Theory Division, Saha Institute of Nuclear Physics, Kolkata. His research interest includes Weak interactions with specific emphasis on neutrino physics; Beyond the standard model including left-right symmetric model and grand unification; Particle properties in material medium commonly (and inappropriately) known as finite temperature field theory; Particle properties in background magnetic fields etc. Dr. Pal has several research publications in peer reviewed national and international journals. He is a JBNSTS scholar from 1972 batch.

#### DR. SOMDATTA GHOSH DEY

Dr. Somdatta Ghosh Dey was born and brought up in Kolkata, India. She spent her entire school years in Pratt Memorial School. She obtained her B. Sc. honors degree in Chemistry from Presidency College, India and M. Sc. degree in Chemistry from Indian Institute of Technology (IIT), Kanpur, India. She then moved to Stanford University, California, USA, where she worked under the supervision of Ed Solomon for her PhD degree and was the recipient of the William S. Johnson fellowship for excellence in research. During her PhD tenure she pursued spectroscopic and mechanistic investigations of various copper active sites in biology. She was a postdoctoral research associate at Stanford University working in the research group of Jim Collman. She was involved in studying the reactivities of functional synthetic mimics of enzyme active sites. She returned back home and joined the Department of Inorganic Chemistry, Indian Association for the Cultivation of Science, where she is currently an Associate Professor. The primary focus of her current research is to understand the role of neuro-toxic metals in Alzheimers's disease and Type 2 Diabetes. She has been listed as one of the emerging investigators in Bio-inorganic Chemistry by the American Chemical Society.

#### 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. GEETANJALI SUNDARAM

Dr. Geetanjali Sundaram is presently an Assistant Professor in the Department of Biochemistry, University of Calcutta. She did her M.Sc. and Ph.D. from Calcutta University. Her research interest is focused on Transcriptional control of *S.pombe* cell cycle and Regulation of mitotic timing by the MAPK pathway in *S. pombe*. Dr. Sundaram has several research publications in national and international 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. ARGHYA TARAPHER

Dr. Arghya Taraphder is a Professor and Head of the Department of Physics and Centre for Theoretical Studies at Indian Institute of Technology, Kharagpur. He stood first in B.Sc. (Calcutta University, 1979) and did Ph.D. from Indian Institute of Science, Bangalore in 1991. Dr. Taraphder visited several prestigious universities/Institutes across the globe as Visiting Professor/Scientist. His area of research is condensed matter physics and has several research publications in peer reviewed national and international journals. He is a JBNSTS scholar from 1979 batch.

#### DR. PIJUSH KANTI DAS

Dr. Pijush K. Das, NASI Senior Scientist and JC Bose National Fellow, Indian Institute of Chemical Biology, Kolkata. Did his B.Sc., M.Sc. and Ph.D. in Biochemistry from Calcutta University and Post-Doctoral research at National Institutes of Health (NIH), Bethesda, USA. As visiting scientist, he visited Memorial Sloan-Kettering Cancer Center, New York, Max-Planck Institute, Munich, Germany, University of Rome, Italy, Aarhus University, Denmark, Imperial College, London and Glasgow University, UK. For his outstanding contributions in biological sciences, he has been elected Fellow of all the three national academies (FNA, FASc and FNAsc) of India. He is member of most of the funding agencies like DBT, DST, CSIR and ICMR. He has received many prestigious research awards including Sir J.C. Bose National Fellowship, Jagdis Chandra Bose Medal and Vishwanath Memorial Award, Senior Scientist Oration Award, P.B. Rao Memorial Award etc. He has published over 90 high quality research papers in peer-reviewed journals and so far mentored 25 Ph.D. students.

#### DR. SAMITA BASU

Dr. Samita Basu is a Professor at the Chemical Sciences Division, Saha Institute of Nuclear Physics, Kolkata. She did her Ph. D. from Indian Association for the Cultivation of Science under supervision of Prof. Mihir Chowdhury in 1989. Her current research interests are photochemistry in homogeneous (solvent) and heterogeneous (micelles, reverse micelles, vesicles) media, Electron Transfer & Hydrogen abstraction, Interaction between small drug-like molecules with protein and DNA.



**DR. BIMALENDU BHUSAN BHATTACHARYA**

Dr. Bimalendu Bhusan Bhattacharya did his B.Sc. in Physics and M.Sc. in Geophysics from Banaras Hindu University and Ph.D. in Physico-Mathematical Sciences from Leningrad State University, USSR (Presently St. Petersburg University, Russia). His major research interests include Geoelectromagnetism, Mining Geophysics, Engineering Geophysics, Environmental Geophysics and Interpretation of Geophysical Data using Nonlinear Inversion, Computer Simulation and Modeling. He has done pioneering work during Indian Antarctica Expedition as leader. He has worked as Scientist in National Geophysical Research Institute (NGRI), Hyderabad and Director in Indian School of Mines (ISM), Dhanbad. Currently he is Emeritus Professor (CSIR Emeritus Scientist) and INAE Distinguished Professor in S. N. Bose National Centre for Basic Sciences, Kolkata. He has worked different parts of the globe and held distinguished positions such as Visiting Professor, Department of Physics in University of Alberta Edmonton, Canada, Leader, Fourth Scientific Indian Antarctica Expedition, Government of India; Visiting Professor (Fulbright) Department of Geology & Geophysics in University of Wisconsin, Madison Wisconsin, USA and Guest Faculty in Bengal Engineering and Science University, Shibpur, Howrah, W.B. Among many distinguished awards, he has got National Mineral Award, Dept. of Mines, Govt. of India, Distinguished Service Award Indian School of Mines, Dr. Coggin Brown Gold Medal on Earth Sciences, MGMI; Decennial Award, Association of Exploration Geophysicists, etc. He is a member of the editorial committee of The Journal of Geological Society of India, recipient of distinguished professor's chair by Indian National Academy of Engineering (INAE).

**DR. A. AJAYAGHOSH**

Dr. A. Ajayaghosh is a native of Quilon, Kerala, the south west costal state of India. He obtained his Bachelor's degree in Chemistry from Sree Narayana College, Quilon in the year 1982. After obtaining M. Sc. (1984) and Ph. D (1988. Thesis supervisor, Prof. V. N. Rajasekharan Pillai ) in Chemistry from Calicut University Chemistry Department, he joined the National Institute for Interdisciplinary Science and Technology (formerly Regional Research Laboratory) as a scientist. Subsequently he was an Alexander Von Humboldt Fellow at the Maxplank Institute fuer Strahlenchemie, Muelheim an der Ruhr, Germany (1994 – 96) and a visiting scientist to many universities in Germany, Japan and The Netherlands. He is a recipient of the Young Scientist award of the Indian Science Congress Association (1988), Young Scientist Medal of the Indian National Science Academy (1991), the Bronze Medal of the Chemical Research Society of India (2002), Materials Research Society of India Medal (2006), DAE-SRC Outstanding Research Award 2009, Thomson Reuters Research Excellence-India Research Front Award 2009. He is a Fellow of all the three major Science Academies of India. In addition, he is an honorary fellow of the Kerala Academy of Sciences, a fellow of the Royal Society of Chemistry London and is a fellow of The World Academy of Sciences. His research contributions in the interdisciplinary areas of organic photoresponsive materials, supramolecular chemistry, molecular self-assembly, organogels and molecular probes and sensors made him internationally visible and are recognized with the prestegeous Shanti Swarup Bhatnagar Prize for Chemical Sciences (2007), the Infosys Science Prize (2012), the Silver Medal of the Chemical Research Society of India (2013) and the TWAS Prize for Chemistry 2013. He has published 145 research papers and filed 11 patents. He has mentored 19 researchers for Ph. D. and more than 50 students obtained training for their master degree. is the Director of the CSIR-National Institute for Interdisciplinary Science and Technology (CSIR-NIIST), Thiruvananthapuram, India and is a Professor and the Dean of Chemical Sciences, Academy of Scientific and Innovative Research (AcSIR).

**DR. DHRUBAJYOTI CHATTOPADHYAY**

Dr. Chattopadhyay is presently the Vice Chancellor of Amity University, Kolkata. He is formerly Pro Vice-Chancellor (Academic), University of Calcutta and Director of Centre for Research in Nanoscience and Nanotechnology. He is an eminent academican and researcher in his area of study. He has received a number of awards and recognition of his research work like Young Scientist Award, Membership of Guha Research Conference, Professor Umakant Sinha Memorial Award, Fellowship of National Academy of Science, Fellowship of Indian Academy of Sciences, Fellowship of West Bengal Academy of Science and Technology etc. Presently he is the President of West Bengal Academy of Science and Technology and Society of Biological Chemists (India). His area of research is Regulation of gene expression of negative stranded RNA viruses, the structure-function studies of different regulatory proteins, Oxidative damage of different macromolecules in the cell and its mechanism, microbial diversity study, culture dependent and independent, Metagenomics, industrial enzymes etc. He is the life member of different organizations like Society of Biological Chemists, Indian Science Congress Association, Indian Virological Society, Indian Biophysical Society, Asiatic Society, Biotechnological Society of India etc.

**DR. DEBAJYOTI GHOSHAL**

Dr. Debajyoti Ghoshal is presently an Assistant Professor in the Department of Chemistry (Inorganic Section), Jadavpur University. He did his M.Sc. from Visva-Bharati, Santiniketan and Ph.D. from Jadavpur University. His research interest is focused on Non-covalent interactions, Functional supramolecular architecture, Crystal engineering and Molecular materials. Dr. Ghoshal 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 R?hr 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 : Tuesday, August 09, 2016

09:00 a.m. – 09:45 a.m.

#### Registration

09:45 a.m. – 10:00 a.m.

#### Welcome Address

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

10:00 a.m. – 11:30 a.m.

#### Motivational Lecture

**Dr. Palash Baran Pal**, Professor, Theory Division  
Saha Institute of Nuclear Physics, Kolkata

11:30 a.m. – 01:00 p.m.

#### 'Evolution in the Eyes of an Inorganic Chemist'

**Dr. Somdatta Ghosh Dey**, Assistant Professor, Inorganic Chemistry  
Indian Association for the Cultivation of Sciences, Kolkata

01:00 p.m. – 02:00 p.m.

Lunch & Interaction

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 : Wednesday, August 10, 2016

09:00 a.m. – 10:00 a.m.

#### Registration

10:00 a.m. – 12:30 p.m.

#### '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. Gitanjali Sundaram**, Assistant Professor & **Dr. Anindita Ukil**,  
Assistant Professor Department of Biochemistry, University of Calcutta, Kolkata

01:30 p.m. – 02:30 p.m.

Lunch & Interaction

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 : Thursday, August 11, 2016

09:00 a.m. – 10:00 a.m.

#### Registration

10:00 a.m. – 01:00 p.m.

#### Academic Visit to Centre for Research in Nanoscience & Nanotechnology (CRNN)

University of Calcutta, Salt Lake Campus, Kolkata

01:00 p.m. – 02:00 p.m.

Lunch & Interaction

02:00 p.m. – 06:00 p.m.

Continuation of the Academic Visit to CRNN, University of Calcutta, Salt Lake Campus, Kolkata



### Day 4 : Friday, August 12, 2016

09:00 a.m. – 10:00 a.m.

#### Registration

10:00 a.m. – 11:30 a.m.

#### 'Collective organization: emergent behaviour in physical systems'

**Dr. Arghya Taraphder**, Professor and Head  
Department of Physics, Indian Institute of Technology, Kharagpur

11:30 a.m. – 01:00 p.m.

#### 'Site-specific drug targeting: Magic bullet approach'

**Dr. Pijush Kanti Das**, Senior Scientist and J. C. Bose National Fellow  
Infectious Diseases & Immunology Division, Indian Institute of Chemical Biology, Kolkata

01:00 p.m. – 02:00 p.m.

Lunch & Interaction

02:00 p.m. – 03:30 p.m.

#### 'Laser: Basic Principles and Applications'

**Dr. Samita Basu**, Professor, Chemical Science Division,  
Saha Institute of Nuclear Physics, Kolkata

03:30 p.m. – 05:00 p.m.

#### "Exploration Antarctica: Adventure and Science"

**Dr. B. B. Bhattacharya**, INAE Distinguished Professor, S.N. Bose National Centre for Basic Sciences, Kolkata

05:00 p.m. – 06:00 p.m.

#### Summing up Session



### Day 5 : Saturday, August 13, 2016

09:00 a.m. – 10:00 a.m.

#### Registration

10:00 a.m. – 11:30 a.m.

#### 'Science, Technology and Nation Building'

**Dr. A. Ajayaghosh**, Scientist and Head, Chemical Sciences and Technology Division,  
National Institute for Interdisciplinary Science and Technology (NIIST), Trivandrum

11:30 a.m. – 01:00 p.m.

#### Motivational Lecture

**Dr. Dhruvajyoti Chattopadhyay**, Vice Chancellor, Amity University, Kolkata

01:00 p.m. – 02:00 p.m.

Lunch & Interaction

02:00 p.m. – 06:00 p.m.

#### Project Presentation by the Participants

**Judge: Dr. Debajyoti Ghoshal**, Assistant Professor  
Department of Chemistry (Inorganic Section), Jadavpur University, Kolkata

