



SATYENDRA NATH BOSE NATIONAL CENTRE FOR BASIC SCIENCES

An autonomous institution under the Department of Science and Technology, Govt. of India
www.bose.res.in



Newsletter

Special Issue for

Centennial Celebration of the Indian Science Congress 2013

Published on 03.01.2013

Editorial

The S. N. Bose National Centre for Basic Sciences (SNBNCBS) was established in the year 1986 with the funding from the Dept. of Science and Technology. The aim of the Centre ever since its foundation is to carry out basic science research and act as a Centre for dissemination of scientific knowledge. The Centre encourages and promotes the growth of advanced studies and original research in basic sciences. One of the important mandates of the Centre is to have a vigorous Programme that would enhance the scientific activities and expand the science base in the country. The Centre's Visitors' Programme and its associated activities are coordinated by the **Extended Visitors Linkage Programme (EVLP)**. We organize several programmes throughout the year under the EVLP. In this special issue of the Newsletter, we highlight some activities which took place in recent times.

CFOM 2012

Tanusri Saha Dasgupta

The International Conference on Functional Oxides and New Carbon Materials, held during 6th-8th May, 2012 was organized as a part of the ongoing Silver Jubilee Celebrations of the Centre. The conference addressed the scientific excitement surrounding functional oxides and new carbon materials. In particular topics such as multifunctional oxides, multiferroics, magnetism in interfaces and in low dimension, superconductivity, graphene, nanotubes and related carbon materials were discussed. The conference was attended by participants and speakers from abroad as well as within India. The conference also celebrated the 60th birthday of the present Director, Prof. A. K. Raychaudhuri.



Silver Jubilee Celebrations

The year 2011 marks the Silver Jubilee of the Centre. There had been a number of academic events to commemorate the Silver Jubilee year. The celebration encompasses cultural programs alike. We report on some of the academic events.

Silver Jubilee Lecture: Warped side of our Universe (27.12.2011)

The Silver Jubilee Lecture was delivered by none other than Prof Kip S Thorne, one of the leading relativists whose expertise in the field is continuing to have substantial impact on current gravitational wave detection project. Prof Thorne explained in his famous pedagogical eloquence the space-time warps, which are manifestations of strongly correlated dynamics of gravitation alone, in the avatars of black holes, creation of our universe and gravitational waves.



International Symposium on 75 Years of Quantum Entanglement A. S. Majumdar



The SNBNCBS Silver Jubilee International Symposium on 75 Years of Quantum Entanglement : foundations and information theoretic applications, was organized during January 6th to 10th, 2011. Quantum entanglement which is the key ingredient for the storage and distribution of quantum information among the fundamental physical constituents, was first noticed as a key feature of the quantum world seventy-five years ago by Schroedinger. Since then, the long road of development of the theory and applications of entanglement has led to remarkable concepts and prospects such as quantum teleportation, cryptography and computation which are set to revolutionize the field of communication and information transfer, formed the heart of the conference.

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Named Lectures at the Centre

S N Bose Memorial Lecture is the one of the most prestigious lecture of our Centre. Every year an eminent person in the field of science and technology delivers this lecture. The first S N Bose Memorial lecture was delivered by Prof. Leon Van Hove, Ex-Director, European Organisation for Nuclear Research (CERN), on 17th February, 1988. Glimpses of S N Bose Memorial Lecture from last few years have been depicted below.



Prof. Graham R. Fleming, University of California, Berkeley, USA., delivering the 22nd S N Bose Memorial Lecture on **“Grand Challenges in Energy: Supply, Demand and Consequences”**.



Prof. Masashi Hayakawa of the University of Electro-Communications, Chofu, Tokyo, Japan, delivering the 20th S N Bose Memorial Lecture on **“Is prediction of earthquakes possible by means of electromagnetic effects?”**.



21st S N Bose Memorial Lecture on **“Science for Musical Excellence”**, **Dr. T. Ramasami**, along with **Vidwan Dr. Umayalpuram K. Sivaraman and Dr. M. D. Naresh**.



Prof Wolfgang Ketterle of the MIT, the Nobel Prize winner in Physics in 2001, delivered the 19th S N Bose Memorial Lecture on **“When Freezing Cold is not Cold Enough: New Forms of Matter Close to Absolute Zero Temperature”**.

C K Majumdar Memorial Lecture in commemoration of its founder director Prof. C K Majumdar, a leading condensed matter physicist in our country. First C K Majumdar Memorial Lecture was delivered by Prof. N. Mukunda on 11th August, 2001. Since then several distinguished scientists delivered this lecture.



Sir Michael Berry, Bristol University, delivering the 10th C K Majumdar Memorial Lecture on **“Making Light of Mathematics”**.



Prof Daniel Khomskii, Universitaet Zu Koeln, delivering the 9th C K Majumdar Memorial Lecture on **“Main Problems and Current Challenges With Strongly Correlated Electrons”**.



Prof. Peter Littlewood of Cambridge University's Cavendish Laboratory delivering the 8th C K Majumdar Memorial Lecture on **“New Condensates of Matter and Light”**.

S Chandrasekhar Memorial Lecture in the name of eminent Indian born astrophysicist S Chandrasekhar was started in the year 2008. First S Chandrasakhar Memorial Lecture was delivered by Prof. W. David Arnett.



3rd S Chandrasekhar Memorial Lecture delivered by **Prof. Eric Herbst**, University of Virginia, on **“The Universe as a Giant Laboratory: The making of Complex Molecules from simple Atoms”**.



Sir Rager Penrose, Mathematical Institute Oxford, England, delivered the 2nd S Chandrasekhar Memorial lecture. The title of his lecture was **“Mathematical Beauty : Its Power in Scientific Research”**.

G N Ramachandran Memorial Lecture in the name of the remarkable crystallographer G N Ramachandran, the exponent of the Ramachandran Plot, started in 2010.



Prof. Raghavendra Gadagkar, Indian Institute of Science, Bangalore, delivered the 1st G N Ramachandran Memorial Lecture on 3rd November 2010. The title of his talk was **"Interrogating an Insect Society"**.



Prof. Govindarajan Padmanabhan, Padma Bhushan, IISc, Bangalore, delivered the 2nd G N Ramachandran Memorial Lecture on **"Drugs and Drug targets against the Malarial Parasite"**.

Other EVLP activities in recent times

- **Bose Colloquium** delivered by noted scientists like Prof. Risto Nieminen of Aalto University, Finland; Prof. Sourav Pal, CSIR-NCL, Pune and Prof. Sandip Kumar Chakrabarti, SNBNCBS.
- Prof. Sujit Sarkar, Prof. Vaibhav Prabhudesai, Prof. M. Krishnamurthy, Dr. Samir K. Pal, Prof. Sudipto Roy Choudhury and Prof. Amitabha Lahiri gave **Institute Colloquium**.
- Dr. Nilotpal Ghosh, Dr. Biplab Sanyal, Dr. Sohail Ahmad and Dr. Satadeep Bhattacharjee visited our Centre under the Visitor, Associates and Students Program. Dr. Biplab Sayal and Dr. Sohail Ahmed also gave talks.
- A two days seminar (May 31 – June 1, 2012) organized to celebrate The **'Associates Day'** during May 31 – June 1, 2012. The Associates under the Extended Visitors &

Linkage Programme delivered an 'open talk' showcasing the work done in collaboration with the Centre.

- This summer, 15 students visited our Centre to do **summer research** project under the supervision of our faculties and they also made presentation after completion of their project.
- The noted **seminar** speakers include Arup Kumar Raychaudhuri (SNBNCBS), Animesh Chakravorty (IACS), Supriya Chakraborty (IACS), Sudhansu Sekhar Mandal (IACS), Anunay Samanta (Univ. of Hyderabad), Tanusri Saha Dasgupta (SNBNCBS), B.M. Deb (IISER, Kolkata), Yashwant Singh (BHU), Charusita Chakrabarty (IIT, Delhi), Aaron Lewis (Nanonics Imaging Limited) and Srinivas Sridhar (Northeastern University).

The Bose Fest (2012) Saikat Ghosh

Bose Fest 2012, as the name suggests, is an annual event where all members of our community come together to celebrate the spirit of creativity in science and culture. The basic skeleton of the festival is defined by the wide range of scientific activity in the institute. The students share their work through seminars and poster sessions, while the evenings are usually marked by cultural events, where the Bose community shares talents in art, music, dance and drama. Over the period of three days we got to hear over 50 scientific presentations all of sublime quality, around 60 student posters displaying the wide range of scientific activity in the institute. A brilliant cultural night topped with a marvellous dance - drama Chitrangada and a one-act play 'Ghare-Baire' in the next day that left the audience spell-bound. The second night had two classical musical recitals. The mastero, Pandit Buddhadeb Dasgupta started the evening with Raga Jhinjhoti, which used to be a favourite of S. N. Bose himself. He ended the recital with a Tagore dhun, which also set the stage for classical-Tagore-singer Shounak Chattopadhyay, who was fluent in his art with a brilliant voice and mind to mix the two genres.



International Conference on Chemical Evolution of Star Forming regions and Origin of Life (10th-13th July, 2012)

Kinsuk Acharyya

An international conference on "Chemical Evolution of Star Forming Regions (SFR) and Origin of Life" was organized at S N Bose National Centre for Basic Sciences between 10th July and 13th July, 2012. Topics covered were: overview of interstellar medium, gas-grain chemistry, observations of chemical compositions of star forming Regions, laboratory astrochemistry and astrobiology, numerical simulations of collapse and fragmentation of star forming regions along with chemical evolution, role of physical parameters such as mass, angular momentum, magnetic fields, and radiation environments on the chemical evolutions of SFRs, exo-solar planets, martian environment, etc.

Other Recent Events

2012 Transit of Venus put on spectacular show for the last time this century

Ramkrishna Das

An observational campaign was organized on June 6, 2012 at SNBNCBS to witness the rare astronomical event of Venus transit across the face of the Sun. The transit of Venus occurs when the planet passes directly between the earth and the sun and we see a small dark spot gliding slowly across the disk of the sun. However, this alignment is rare, which makes it practically once in life time opportunity. Despite being so rare, such event provides a unique opportunity to determine the length of the Astronomical Unit, which is the average distance between the earth and the sun, a fundamental length scale in the universe. A mosaic of photographs (arranged in



chronological order) snapped at different time through clouds shows the planet Venus (black dots) on the solar disk (Photo credit: Sudip Garain & Tamal Basak).



Book Exhibition

Saumen Adhikari



The Library of the S N Bose Centre organized a Book Exhibition during 5th June 2012 to 7th June 2012 from 10 am to 5 pm at the dining hall of Krishnachura Hostel.

Observation of Forest Week

Supriyo Ganguly & Swarup Dutta



Forest Week, 2011, was organized by the Engineering Section at the campus of SNBNCBS. All faculties, students and administrative staff members participated in a tree plantation programme held during the period, 14th-21st July, 2011.

The Photo Fest (2012)

Suman Dutta



The very first photo exhibition in S N Bose Centre was jointly organised by the Bosonic Students' Society for Academics and Recreation (BOSSAR) and S N Bose Centre during the Bose Fest 2012.

Honours and Distinctions

- **Patent** on *detection and estimation of Au³⁺ present in very low concentrations in aqueous solutions, 2011.*
- **Prof. Rabin Banerjee**, Department of Theoretical Sciences, is one of the recipients of **Thomson Reuters Research Excellence - India Citation Awards 2012.**
- **Dr. Mithun Kumar Mitra** has been awarded the **Ramanujan Fellowship, 2012.**
- **Dr. Soumendu Dutta** and **Dr. Gobinda Gopal Khan** awarded under the **DST INSPIRE Faculty Scheme, 2012.**
- **Raka Dasgupta** was awarded one of the three **Best Poster prizes in the 514th Wilhelm and Else Heraeus-Seminar "Quo vadis BEC? IV", Germany, 2012.**
- **Ashis Kumar Nandy** was awarded the **best poster award** in the **"INDO-US Meeting on New Functional Materials: Synthesis, Properties and Methods", Manali, Himachal Pradesh, 2011.**
- **Dr. Priya Mahadevan**, Condensed Matter Physics and Material Sciences, has been awarded the **NASI-SCOPUS young scientist award for physics** by Elsevier, **2010.**
- **Prof. Tanusri Saha-Dasgupta** elected the **Fellow of National Academy of Sciences, India (NASI), 2010.**
- **Dr. Priya Mahadevan** has been awarded the **TWOWS Award, 2010.**
- **Dr. Tanusri Saha Dasgupta** elected **Fellow of the Indian Academy of Sciences, Bangalore, 2010.**
- **Sujoy K Modak** received **APS-IUSSTF Award, 2010.**
- **Kapil Gupta** received the **best poster award** in **"The International conference on quantum effects in solids of today (I-Conquest)"** organised by NPL, Delhi, **2010.**

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The opinions expressed here are opinion of individuals. The administration of the Centre and the Editorial Board are not responsible for these opinions.

Designed by : Gurudas Ghosh (SNBNCBS) & Graphique International. Printed by : Graphique International