

বসু বিজ্ঞান মন্দির

बसु विज्ञान मन्दिर

BOSE INSTITUTE

Newsletter



No. 58

November 2023

A NEWSLETTER OF BOSE INSTITUTE

FROM THE DIRECTOR'S DESK



It is a privilege and honour for me to place important news to fellow countrymen and the academicians. Being a century-old Institute catering multidisciplinary as well as interdisciplinary research, dedicated for generating and diffusing knowledge, we are fulfilling our commitments to successfully accomplish the mission, vision and objectives of our iconic Founding Father Sir J. C. Bose and also updating ourselves completely aligned to DST mandate for making India globally competent.

I take pleasure to mention that Bose Institute has always been playing pivotal role to achieve success in research that created an international impact in the areas of *High Energy Physics – Understanding of Subatomic Particles, Quantum Information and Communication, Understanding of Response of Plants under Biotic and Abiotic Stress, System and Synthetic Biology, Environmental Microbiology and Climate Change, Structure and Functions of Macromolecules, Bioinformatics, Bioorganic Chemistry for Drug Development, Identification of Drug Target and Validation of Bioactive Molecules for Therapeutic Intervention, Atmospheric dynamics and air pollution.* It is noteworthy to mention that we are always catalysing frontier research in the field of Biomedical Sciences and venturing to find out a new molecules and targets for therapeutic interventions against diseases like Cancer, Alzheimer, Diabetes, Malaria and Tuberculosis.

Editorial Board

Members of J. C. Bose Center
(Comprising Publication and Museum Unit)

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It is praiseworthy to mention the following high value mega projects of Bose Institute which gives a signature to this Institute for international recognition and responsibilities.

- **India's participation in the construction of Facility for Antiproton and Ion Research (FAIR) at Darmstadt, Germany:** we have been fulfilling our commitments in overseeing the designing, manufacturing and supply of in-kind items (e.g. power converters, beam stoppers etc.) for accelerator and coordinate participation of Indian scientists in the experiments at FAIR, Germany.
- **Indian Participation in the ALICE Experiment at CERN:** A large ion collider experiment (ALICE): a dedicated heavy ion collision experiment at Large Hadron Collider (LHC) at CERN, Switzerland for the understanding of physics of strongly interacting matter at very high energy densities.

We are giving our maximum efforts to contribute efficaciously at the highest level from our Institute in the assigned areas. To cite a few:

(a) Germplasm, R6 of Sesame, with high oil content and superior lignan profile has been developed and certified by the Indian Council of Agricultural Research (b) A transgenic tomato plant with inducible and reversible altered expression pattern of two stress-related genes, HSF and NAC2 has been generated (c) Studies on the Anti-CRC activity of an alkaloid-rich fraction of E.

coronaria leaf extracts (AFE) and associated underlying mechanism provides a logical basis for consideration of AFE in future therapy (d) Water soluble Carbon dots (CD), have been synthesized which can be considered as a promising candidate for the biomedical applications (e) New studies have been initiated on the capsule-producing enzyme from *Staphylococcus aureus* (f) Recent understanding on the FKBP22, CapF, RsbW and σ^B would be helpful for the designing or screening of the new antibacterial agents in future. (g) Antimicrobial peptide have been shown to mimic as new adjunct antibiotics (h) In the atmospheric science studies, recent work emphasizes the immense importance of the role of biogenic emissions in cloud droplet formation over the eastern Himalaya under restricted anthropogenic emissions (i) Chemical characterization of the carbonaceous component of PM2.5 collected over a year-long campaign from a regional site in Shyamnagar, West Bengal, in the Indo-Gangetic Plains (IGP), India. The findings would benefit policymakers in strategizing proper and effective management of biomass/biofuel burning in the IGP to minimize air pollution (j) New understanding on the effect of atmospheric relative humidity and temperature on bioaerosols (k) Presented a class of tachyon-free (stable) AdS as well as dS solutions in the context of type IIA orientifold compactifications (l) Broadband (visible to near-infrared) photodetection with high sensitivity in the near-infrared region is demonstrated in a MoSSe/graphene heterostructure



(m) Improvement and broad-scale implementation of different biotechnology-oriented programmes for the socio-economic upliftment of Scheduled Tribe community of West Bengal (Tribal Sub Plan of DST SEED programme).

I am delighted to let you know that we have published 234 numbers of full length peer reviewed research papers in referred journals, 02 Books, 33 Chapters in books and 12 Papers in conferences during the year 2022-23. In addition, 29 Ph.D. students have been produced and 47 research manpower (other than Ph.D) have been trained, who are successfully leading their professional lives all over the globe.

Bose Institute is not always happy by generating knowledge but trying to percolate knowledge in different spheres of society by organizing different symposia, seminars, workshops and by imparting training to budding scientists in order to make a scientifically smart society in the country. Few symposia/ seminars / lectures / colloquia hosted / organized by Bose Institute, are enumerated as follows:

(i) D M Bose Memorial Lecture 2022 was delivered by Prof. (Dr.) Satinath Mukhopadhyay, Professor, Department of Endocrinology & Metabolism, IPGMER & SSKM Hospital, Calcutta, on "Impact of Vitamin D Deficiency on Skeletal and Non-skeletal Health" on 26-11-2022, the 138th Birth Day of Professor Debendra Mohan Bose; (ii) 83rd Acharya J. C. Bose Memorial Lecture on "The Brave New World of Science Today is but the World of J. C. Bose & C. V. Raman: Coming Full Circle" on the 106th Foundation Day Celebration of Bose Institute, was delivered by Prof. Ashutosh Sharma, Institute Chair Professor, Department of Chemical

Engineering, Indian Institute of Technology Kanpur on 30-11-2022; (iii) A colloquium talk on "Chemical Exchange Saturation Transfer MRI contrast agents based on intramolecular hydrogen bonded systems and their applications to kidney and cancer imaging" was delivered by Prof. Michael T. McMahon, F.M. Kirby Research Center for Functional Brain Imaging, Kennedy Krieger Institute, Baltimore, MD, USA, on 15-02-2023; (iv) Dr. Devasis Ghosh, Sr. Consultant Mental Health, delivered lecture entitled "Mental stress and its management" on 04-05-2022 as a part of the celebration of 75th year of Independence "AZADI KA AMRIT MAHOTSAV"; (vi) A talk on "AND AS WE MOVED, WE EMBRACED AND ABSORBED", a Narrative and Contextualization of the Work of Svante Paabo was delivered by Prof. Partha Pratim Majumder, National Science Chair and Founder Director, NIBMG, Kalyani, on 04-01-2023.

Diffusion of knowledge has been successfully fulfilled by Bose Institute by accomplishing various outreach activities at Falta Experimental Farm (FEF). We practice the production of several vegetable and grain crops using minimum to no use of synthetic chemicals. We demonstrate this cultivation to local people via regular interactions with them and training programmes organized at the FEF. A Rural Biotechnology project for helping SC/ST people in their livelihood generation, funded by the DST SEED division, is also implemented using Falta Farm. This project's review meeting was held on 28th February 2023 at Bose Institute. In this review meeting, several DST officials were present, including the SEED division's head and external experts. This group of officials also led the selection process of 35



Non-Governmental Organizations (NGOs) that will facilitate the implementation of the rural biotechnology project in the remotest villages of West Bengal.

I can't resist myself to highlight a few praiseworthy participation of Bose Institute in the mega events viz.

(i) Meeting I: The Inception Meeting at Puducherry as a delegate during January 30-31/01/2023 as a part of the S20 Meeting and also Chairing a session in the meeting (ii) 39th FAIR Council Meeting during July 05-06, 2023 at FAIR-Germany (iii) Mega Science Technology & Industry Expo of 8th India International Science Festival 2022 at MANIT, Bhopal during January 21-24, 2023 (iv) 46th International Kolkata Book Fair 2023 from 31st January to 12th February, 2023 (v) 30th State Science and Technology Congress at Science City, Kolkata during February 28 – March 01, 2023, organized by Department of Science and Technology & Biotechnology, Govt. of West Bengal.

After long efforts and expectations, a remarkable statue of Acharya Jagadis Chandra Bose made by the renowned sculptor Shri Gautam Pal in front of the Main Gate of the Institute, has been erected. The statue was unveiled and the keynote address was delivered by the honourable Chairman of Bose Institute, Prof. Gautam R. Desiraju, IISC Bangalore.

A significant number of visits of students accompanied by teachers from different school, colleges, universities, Government organizations under different Ministries, have been successfully conducted by the Institute fulfilling their very purpose.

I take pleasure also to mention that a significant number of global and national collaborations/MOU (bipartite/tripartite) with Bose Institute has been made. The Institute is catalysing all these international events in order to elevate the image of the country to a greater extent. To name a few are:

(i) MoU between Tea Board India, Kolkata and Bose Institute, Kolkata for Research and Development

Collaboration was signed on 26th August, 2023 (ii) Bipartite agreement between Bose Institute and M/s. Trident Autocomponents Pvt. Ltd. and a tripartite Non-Disclosure Agreement (NDA) among Bose Institute, CSIR-CMERI Durgapur and M/s. Trident Autocomponents Pvt. Ltd. for the procurement of Beam Stoppers as an Indian in-kind item for the Facility for Anti Proton and Ion Research (FAIR) were signed on 07th December, 2022 (iii) Actively participating in National Mission on Strategic Knowledge for Climate Change (NMSKCC), DST since 2018. We are working on "Relative role of biogenic and anthropogenic air pollutants on cloud formation over eastern Himalaya"; National clean air program: NCAP (MoEFCC, Govt of India) Strategic action plans to mitigate air pollution state-wise. Bose Institute is the Nodal Institute and Dr. Abhijit Chatterjee, ESS is the Nodal Faculty for West Bengal (iv) Visit of German Ambassador Dr. Philipp Ackermann and The German Consul General in Kolkata, Ms. Barbara Voss alongwith cultural attaché of German Embassy in India at the Unified Academic Campus of Bose Institute on 13th October, 2023 to meet and discuss FAIR project related matters with the undersigned and other colleagues of the Institute (v) A talk jointly organized by West Bengal Academy of Science and Technology and Bose Institute in the memory of Prof. C. R. Rao, the legendary statistician and scientist, was held in the Auditorium Hall of the Unified Academic Campus of Bose Institute on 07th November, 2023.

To conclude, Bose Institute has always been the pioneer of carrying out cutting-edge scientific research with the significant contributions to the repository of scientific knowledge, in the areas of Biological, Physical and Chemical Sciences and opens avenues for consumption of knowledge generated.

Prof. (Dr.) Uday Bandyopadhyay
Director

106TH FOUNDATION DAY OF BOSE INSTITUTE



The 106th Foundation Day of Bose Institute was celebrated on November 30, 2022. Prof. Ashutosh Sharma, Institute Chair Professor, Department of Chemical Engineering, Indian Institute of Technology, Kanpur, delivered the 83rd

Acharya J.C. Bose Memorial Lecture on “The Brave New World of Science Today is but the World of J C Bose & C V Raman: Coming Full Circle”. Professor Gautam R. Desiraju, Honorary Professor, Solid State and Structural Chemistry Unit, Indian Institute of Science, Bangalore presided over the programme.

Unveiling the Statue of Acharya Jagadis Chandra Bose on September 5, 2023 at Unified Academic Campus, Bose Institute, Kolkata

A 12 ft tall bronze statue of Acharya Jagadis Chandra Bose was unveiled at Bose Institute, Unified Academic Campus, Salt Lake on September 5, 2023. The statue was sculpted by the eminent sculptor Shri Gautam Pal, Sculptor & Proprietor of *Studio Di Scultura*. Shri Niranjana Pradhan, Ex-Professor, Govt. College of Art & Craft was the external expert. Prof. Gautam R. Desiraju, Chairman of Bose Institute Governing Council and honorary Professor at the Indian Institute of Science, Bangalore, unveiled the statue in presence of Director, BI, Registrar (O) BI and Dy. Registrar, BI. The statue was sponsored by Union Bank of India. Shri Gaddam Krishna Sudhakar Rao, Zonal Head, Kolkata Zone, Union Bank of India and Shri Dillip Mishra, Regional Head, Kolkata, Union



Bank of India were present at the unveiling ceremony. All Faculty and staff members of Bose Institute, distinguished guests, along with students from Ramakrishna Sarada Mission Sister Nivedita Girls' School and from Ananda Mohan College attended the programme. Special Lectures on “The Legacy of Sir Jagadis Chandra Bose” were delivered in the Auditorium of Unified Academic Campus, Bose Institute. Prof. Sanjay Kumar Ghosh, Department of Physical Sciences, delivered the Lecture on Contribution of Jagadis Chandra Bose in *Radio Science Research*. Prof. Gaurab Gangopadhyay, Department of Biological Sciences, delivered the Lecture on Contribution of Jagadis Chandra Bose in *Biological Research*.



CURRENT EVENTS

Signing of Agreement for Procurement of Beam Stoppers for Super FRS, FAIR



A bipartite agreement between Bose Institute and M/s. Trident Auto Components Pvt. Ltd. and a tripartite Non Disclosure Agreement (NDA) among Bose Institute, CSIR-CMERI Durgapur and M/s. Trident Auto Components Pvt. Ltd. for the procurement of Beam Stoppers as an Indian in-kind item for Facility for Antiproton and Ion Research (FAIR) were signed on December 7, 2022.

Invited Faculty Talk-2023



Division of Molecular Medicine, Bose Institute organised an Invited Faculty talk on “And As We Moved, We Embraced and Absorbed” at Unified Academic Campus, BI, on 04.01.2023 delivered by Prof. Partha Pratim Majumder, National Science Chair & Founder Director, National Institute for Biomedical Genomics.

West Bengal Science & Technology Congress



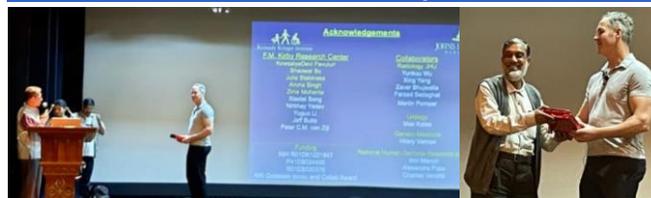
Bose Institute participated in the West Bengal Science & Technology Congress during February 28 and March 01, 2023 and Prof. (Dr.) Uday Bandyopadhyay, Director, Bose Institute delivered a talk at Science City Auditorium, Kolkata.



National Science Day-2023

Bose Institute observed **National Science Day** on February 28, 2023, through various activities. The theme of the National Science Day 2023 was "Global Science for Global Wellbeing".

Bose Institute Colloquium



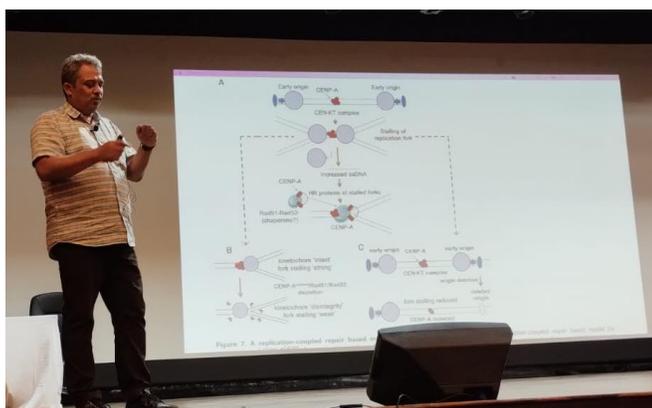
1. Prof. Michael T. McMahon, F.M. Kirby Research Center for Functional Brain Imaging, Kennedy Krieger Institute, Baltimore, MD, USA delivered Bose Institute Colloquium held on February 15, 2023 at Unified Academic Campus, Salt-Lake, organized by Prof. Dhruva Gupta and Prof. Shubhra Ghosh Dastidar. Prof. McMahon visited the J.C. Bose Museum at Bose Institute, Main Campus before the Colloquium.



2. Prof. Naba K Mondal, INSA Senior Scientist, Saha Institute of Nuclear Physics, delivered the Bose Institute Colloquium on “History of the Development of Particle Detector in India”, organized by Prof. Dhruva Gupta and Prof. Shubhra Ghosh Dastidar. He also visited J.C. Bose Museum at Bose Institute, Main Campus before the Colloquium on March 15, 2023.



3. Prof. Sumantra Chattarji, Director, CHINTA, TCG Centres for Research and Education in Science and Technology (CREST), Salt Lake, Kolkata, delivered the Bose Institute Colloquium on "Astro"logy and Autism: New Insights from recordings in human brain cells" on May 8, 2023, organized by Prof. Dhruva Gupta and Prof. Shubhra Ghosh Dastidar.



4. Professor Kaustuv Sanyal, Molecular Biology & Genetics Unit, JNCASR, Bangalore, delivered the Bose Institute Colloquium on "The Centromere Code Hypothesis: Lessons Learned from Fungi" on June 28, 2023, organized by Prof. Dhruva Gupta and Prof. Shubhra Ghosh Dastidar.



5. Prof. Uday Chand Ghoshal, Professor and Head, Dept. of Gastroenterology, SGPGI, Lucknow, delivered a lecture titled "**Pathogenesis of irritable bowel syndrome, a common bowel disorder, including the post COVID-19 IBS and the role of gut microbiota dysbiosis**" on September 4, 2023.

Visit to Bose Institute



1. Prof. Peter and Dr. Ana Senger from FAIR/GSI, Darmstadt visited Bose Institute and had participated in discussions with scientists and students of Bose Institute.

2. Mizoram University (A Central University), Aizawl, made a Curriculum Stipulated Study Tour (CSST) on 16.03.2023 at Bose Institute alongwith forty postgraduate (Botany and Microbiology) students with their teachers. Prof. Gaurab Gangopadhyay,



BI, gave a presentation on Recent Plant science research and students from the Department of Microbiology (Mr. Sumit Chatterjee and Mr. Mahamadul Mondal) gave theoretical and practical demonstrations of the instruments concerning the Microbiology experiments, including a visit to the Central Instrumentation Facility.



3. Twenty postgraduate (Botany) students with their teachers from M.C. College (Guwahati University), Barpeta, Assam made a Study Tour on 21.03.2023 at Bose Institute. Research Scholars from the Division of Plant Biology (Mr. Raghuvir Singh and Ms. Saptadipa Banerjee) gave oral presentations; and technical staff of Division of Plant Biology gave theoretical and practical demonstrations of the instruments concerning the experiments on Plant Sciences.



4. Smt Supriya Roy (nee Mallick), grandniece of Sir J C Bose (she is also married to Smt Sarala Ray's (elder sister of Lady Abala Bose) great-grandson, visited the Unified Academic Campus of Bose Institute on 03.05.2023 at 11:30 am. It was a historic occasion since she took this opportunity to hand over a few priceless mementos of Sir J.C. Bose at Giridih (the house named Shantinibas), to Professor Uday Bandyopadhyay, Director, Bose Institute. Smt Roy shared a few of her fond childhood memories at Giridih and the Main Campus with Lady Abala Bose. She also handed over an antique photograph where she attended the Lecture given by Late Sarvepalli Radhakrishnan, the then Vice President of India, during Sir J.C. Bose's birth centenary (1958). Smt. Roy also visited a laboratory at the Unified Academic Campus. She then visited the J.C. Bose Museum at the Main Campus in the afternoon. It was a memorable day in the history of Bose Institute.

FAIR Industry Meet



The "FAIR Industry Meet" was held at Bose Institute, Kolkata during April 12-13, 2023. The goal of this meeting was to appraise the Indian industries regarding the opportunities as well as challenges in the various upcoming International scientific facilities, especially the Mega Science projects where India is playing a crucial part in building the facilities and encourage them to participate in these ventures.



The event was inaugurated by Prof. (Dr.) Uday Bandyopadhyay, Director, Bose Institute. Mr. Manfred Auster, the Hon'ble Consulate General of the Federal Republic of Germany, Kolkata was present as the Chief Guest. Among others present were Dr. Sumit Som, Director, VECC and chief patron for Indo-FAIR Project, Dr. David Uner, Head, In-Kind Office & Procurement, FAIR GmbH and Mr. Gaurav Aggarwal, Scientist from International Cooperation Division of the Department of Science and Technology, Government of India.

International Kolkata Book Fair 2023



Bose Institute participated at the 46th International Kolkata Book Fair at Central Park Mela Ground, held from January 31 to February 12, 2023. The Director, Bose Institute inaugurated the stall of Bose Institute. A large number of visitors visited the stall of Bose Institute. Bose Institute Publications were in great demand. It was our privilege to have with us the Director, Registrar (O), faculty members, research fellows and staff members in the Institute stall.

FAIR Video Conferencing Facility



The FAIR video conferencing room was inaugurated by the Director, Bose Institute on 14th February, 2023. The program was followed by the TCMC meeting for beam stopper.

Celebration of World Technology Day

Bose Institute is celebrating the Swachhata Pakhwada Program for 2023 from May 01 – May 15, 2023 as per the directives of the Department of Science & Technology, Govt. of India. The celebration of World Technology Day on May 11, 2023 was a mandate for this program. We organized a day-long program for the school children (class X to XII) on that day with the theme, 'The technological advancement of Environmental and Biotechnological Sciences at the UAC'. Fifty-five students from different schools in Kolkata and Haldia took part in it. Prof. Gaurab



Gangopadhyay initiated the event with an introductory talk and screening of the movie on Bose Institute filmed on the occasion of the golden jubilee of DST. Dr. Abhijit Chatterjee gave a thought-provoking lecture on 'Air Pollution Mitigation: Technology and Citizen's Role'. Dr. Abhrajyoti Ghosh charmed the students with emerging microbial, medical, plant, and animal biotechnology techniques. The students visited different laboratories of the departments and the Central Instrument Facility. It was a highly successful event to ignite the young minds on this special occasion.

Field Trip to the Madhyamgram Experimental Farm



The Botany undergraduate students and their teachers of Shri Shikshayatan College Kolkata made a field trip to the Madhyamgram Experimental Farm of Bose Institute on June 01, 2023. It was in connection with the study of the cultivation processes of cereal, oilseed, and other food crops, along with the related laboratory demonstration under the CBCS syllabus of the University of Calcutta. After attending brief lectures, the students went to the field and observed sesame breeding and selection processes in field conditions. They visited the laboratories and greenhouses of Acharya J.C. Bose Transgenic Plant Research Laboratory. They also visited the Central Animal House and Research Facility. The students returned with high spirits and ambition for higher studies and research.

Celebration of World Environment Day



Bose Institute celebrated World Environment Day on 05th June, 2023. The Director, BI delivered the inaugural address and Prof. Gautam Basu delivered a lecture on this occasion.

International Day of Yoga 2023



Bose Institute observed International Day of Yoga 2023 on 21st June, 2023 at Unified Academic Campus. All members of Bose Institute actively participated on the occasion.

Ananda Shiksha Samman 2023

We feel proud to announce that Bose Institute is awarded this year for recognition at the "Ananda Shiksha Samman 2023" for the top position (Ananda Shiksha Shrestha Samman 2023).



Professor Uday Bandyopadhyay, the Director of our Institute, received the certificate and memento on behalf of our beloved Institute on June 8, 2023 at Rangmanch, Swabhumi, Kolkata.

ALICE Experiment at CERN



Faculty members from the Department of Physical Sciences, Bose Institute are participating and playing key roles in the ALICE experiment at CERN, LHC. Recently Dr. Sidharth Kumar Prasad and his student Mr. Abhi Modak of Bose Institute in collaboration with Dr. Sudipan De, NISER studied the inclusive photon production at forward rapidity for the first time in proton-proton and proton-lead collisions at a center-of-mass energy of 5.02 TeV using indigenously built Photon Multiplicity Detector of ALICE experiment. Their work is highlighted in the prestigious CERN Courier in July/August 2023 edition.

Achievements & Schemes Expo, 2023



Bose Institute participated in the Government of India's Achievements & Schemes Expo, 2023, from July 21 to 23, 2023 at the Pragati Maidan, New Delhi. It was a

mega event where different Government organizations presented their recent activities and successes. Our Director, Professor Uday Bandyopadhyay, graced the occasion in the first two days; the other team members were Prof. Gaurab Gangopadhyay, Prof. Supriya Das, Dr Saikat Biswas, Mr. Jadab Kumar Ghosh and Mr. Swaroop Biswas. Bose Institute received the second prize for its excellent achievements, and it was a proud moment for all of us.

26th National Science Exhibition



Bose Institute participated in the 26th National Exhibition organized by the Central Calcutta Science and Culture Organisation for Youth from August 24 to 27, 2023 at Central Park Maidan, Salt Lake, Kolkata. The theme was "Contribution to make an advanced, powerful and great India". Besides the scientific posters, our stall was unique among others, where we gave live presentations of a few biological experiments. Thousands of students and other people cutting across the barrier of age and profession thronged our exhibits. This successful event probably justified the comment of the great visionary Acharya J C Bose, the founder of our Institute, "the diffusion of knowledge".

German Ambassador and German Consul General visited Bose Institute



His excellency, German Ambassador Dr. Phillip Ackermann along with the German Consul General in Kolkata Ms. Barbara Voss and cultural attaché of the German Embassy in India visited Bose Institute on 13th October 2023 and discussed FAIR related and other scientific activities of Bose Institute with the Director and other colleagues.

Hindi Diwas and Pakhwada



Bose Institute organized "Hindi Diwas and Pakhwada" during September 14 to September 29, 2023. "Hindi Diwas" was observed on September 14, 2023 in the main auditorium of UAC. Prof. Gaurab Gangopadhyay, Department of Biological Sciences

delivered the inaugural address. The Registrar (Officiating), Scientists and Members of Bose Institute, Kolkata were present and delivered short speeches about Hindi Diwas. The following two weeks were celebrated as "Hindi Pakhwada". Essay/Poem/Story/Scientific Article delivered in Hindi were organized during these weeks, on 18th, 20th, and 22nd September, 2023. Prof. Soumen Roy and Dr. Promod Shukla, Department of Physical Science delivered Hindi Lecture on Physics. Scholars and students delivered Hindi Speeches, Poems and short stories during the period. Dr. Sanat Das, Department of Physical Sciences organised the whole programme. Bose Institute also organised a Hindi Workshop on 22.11.2023 and Shri Kamakhya Narayan Singh, Assistant Director (Ra.Va.), DST, delivered the lecture as chief guest.

Special Lecture



Dr. Dipyaman Ganguly, Principal Scientist, CSIR-IICB and Shanti Swarup Bhatnagar Awardee 2022 presented a talk titled "Plasmacytoid dendritic cells and their role in diverse clinical contexts" organised by the Department of Biological Sciences, Bose Institute, Kolkata on October 18, 2023. The talk highlighted how pDCs were discovered, how they differ from classical DCs, and their studies to uncover their roles in the pathogenesis of a multitude of chronic inflammatory diseases, thereby making them a suitable therapeutic target.

8th IISF 2022



Bose Institute participated in the **Mega Science Technology and Industry Expo of 8th IISF 2022** held from January 21-24 2023 at MANIT, Bhopal. Faculty members and staff of BI actively attended the Science Festival.

Vigilance Awareness Week



The Vigilance Awareness Week was observed during October 30 – November 05, 2023. As a part of this programme, the Integrity Pledge taking ceremony was organized by Bose Institute on October 30, 2023.

Rashtriya Ekta Diwas (National Unity Day)

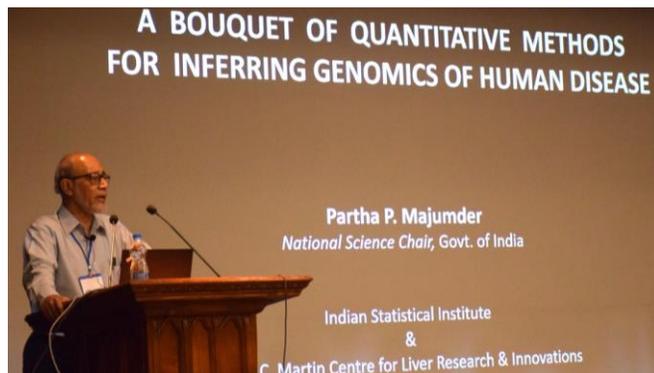


“Rashtriya Ekta Diwas” (National Unity Day) was observed by Bose Institute, Kolkata on October 31, 2023 to commemorate the birth anniversary of Sardar Vallabhbhai Patel. A Pledge taking ceremony was organized.

National Workshop on Plant Bioinformatics

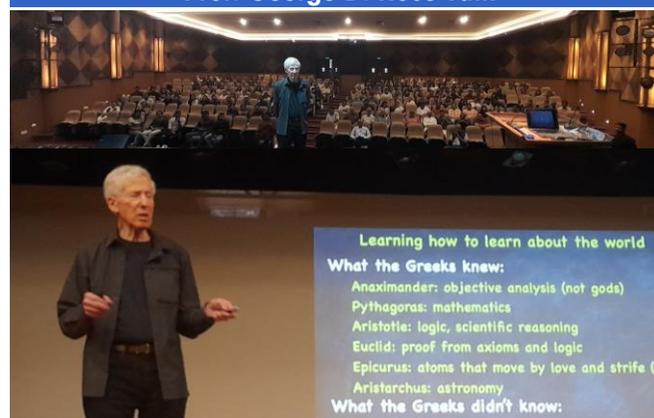


139th Birthday of Prof. Debendra Mohan Bose



One Day National Workshop on Plant Bioinformatics organized by the DBT funded Bioinformatics centre at Bose Institute, coordinated by Prof. Shubhra Ghosh Dastidar was held on November 7, 2023.

Prof. George D. Rose Talk



Prof. George D. Rose, Jubilee Chair Professor of the Indian Academy of Science, Bengaluru and Krieger-Eisenhower Professor Emeritus at the Department of Biophysics, Krieger School of Arts and Sciences, Johns Hopkins University, visited Unified Academic Campus, Salt Lake, Bose Institute, Kolkata, on November 22, 2023 and delivered the talk on “Protein Folds Vs. Protein Folding: Differing Questions, Different Challenges”. This talk was jointly organized by the Indian Academy of Science, Bengaluru and Bose Institute, Kolkata. Prof. Rose is a highly engaging speaker, as was evident from his over an hour long talk followed by nearly an hour of exciting, informative, and thought-provoking discussions with a full-house audience. Prof. Gautam Basu chaired the session.

Research Scholar's Symposium 2023

Bose Institute organised Research Scholar's Symposium 2023 on "Recent Trends in Natural Sciences" during 27th – 29th November, 2023, as a part of the celebration of 75th year of Independence "AZADI KA AMRIT MAHOTSAV". About 100 scholars/students participated in the symposium and presented their research work.

Special Campaign 3.0 Creating Awareness for Keeping the Campus Clean



SYMPOSIA/CONFERENCES/COLLOQUIA/ WORKSHOPS/WEBINARS ORGANIZED

- **Dr. Saikat Biswas** (Physical Sciences) (a) organized the "CBM theme meeting" at NISER during 3-4 February 2023. (b) Organized the "FAIR Industry Meet", 12-13 April 2023 at Bose Institute. The event was inaugurated by Prof. (Dr.) Uday Bandyopadhyay, Director, Bose Institute and **Mr. Manfred Auster, the Hon. Consul-General, Consulate General of the Federal Republic of Germany, Kolkata was present as the Chief Guest.** Among others present were Dr. Sumit Som, Director, VECC and chief patron for Indo-FAIR Project, Dr. David Urner, Head, In-Kind Office & Procurement, FAIR GmbH and Mr. Gaurav Aggarwal, Scientist from International Cooperation Division of the Department of Science and Technology, Government of India.
- **Prof. Gaurab Gangopadhyay** (Biological Sciences)
 - a. Coordinated the visit of the IAS trainees at the UAC and MC of Bose Institute on 24.01.2023.
 - b. Nodal officer of Bose Institute for the West Bengal State Science and Technology Congress, 28.02.2023 - 01.03.2023 at the Science City, Kolkata.
 - c. Organized the visit of the post graduate students (Botany and Microbiology) of the Mizoram University as a Curriculum Stipulated Study Tour at the UAC, Bose Institute on 16.03.2023; delivered a lecture on the topic entitled "Crop improvement: From traditional to the state-of-art techniques".
 - d. Organized the visit of the post graduate students (Botany) of the M.C. College (Gauhati University), Barpeta, Assam for a study tour at the UAC, Bose Institute on 21.03.2023.
 - e. Organized the visit of the under and post graduate students (Botany) of the RNLK Women's College, Midnapore, WB for a Study Tour at the UAC, Bose Institute on 18.04.2023; delivered a lecture on the topic entitled "Totipotency: The basis of developing Transgenic plants".
 - f. Organized the programme entitled "Vigyansabha Anubhov Darshan" at the UAC, Bose Institute as the nodal officer on 30.04.2023; delivered the lecture entitled "The advancements in Plant Science research at Bose Institute: Contribution to the Green Revolution".
 - g. Organized the ceremony of handing over a few priceless mementos used by Sir J C Bose from Smt Supriya Roy (nee Mallick), grandniece of Sir J C Bose to the Director of Bose Institute at the UAC, BI on 03.05.2023. The mementos will be displayed in the Sir J C Bose Museum at the Main Campus of BI.
 - h. Organized the "World Technology Day" on 11.05.2022 at the UAC, Bose Institute; fifty five school students of Kolkata and Haldia of classes X-XII participated in the event.
 - i. Organized the field visit of the Botany undergraduate students of Shri Shikshayatan College, Kolkata to the Madhyamgram Experimental Farm of Bose Institute on 01.06.2023.
 - j. Coordinated the visit of Anjuman Islamia Girls' High School to the UAC, BI on 16.06.2023 under their summer project.
 - k. Nominated by the Director, BI to represent Bose Institute in the Expo entitled "Government Achievements and Schemes Expo, 2023" held from 21-23 July, 2023 at the Pragati Maidan, New Delhi. Bose Institute received the second prize for its excellent achievements in this Expo.
 - l. Represented Bose Institute in the 26th National Science Exhibition organized by "Central Calcutta Science & Culture Organization for youth" from 24th to 27th August, 2023 at the Central Park Maidan, Salt Lake, Kolkata.
 - m. Coordinated the visit of the senior school students of the DPS (Howrah) to the UAC, BI on 01.09.2023.
 - n. Delivered a talk entitled "The legacy of Acharya J C Bose: A Glimpse into his Biological Research" in the auspicious programme for unveiling the statue of Acharya JC Bose at the UAC, BI on 05.09.2023.

- **Prof. Kaushik Biswas** (Biological Sciences) organized seminars (i) Dr. Triparna Sen, Associate Professor & Co-Director, Dept of Oncological Sciences, Tisch Cancer Institute, Icahn School of Medicine at Mount Sinai, USA, entitled “Novel Insights and Therapies of Recalcitrant Subsets of Lung Cancer” on November 01, 2023. (ii) Dr. Krishnananda Chattopadhyay, Chief Scientist & Head, Structural Biology & Bioinformatics Division, CSIR-IICB, Kolkata, entitled “Protein conformation, dynamics and aggregation: from test tubes to human diseases” on February 22, 2023. (iii) Dr. Partha Chakraborti, Senior Principal Scientist, Cell Biology & Physiology Division, entitled “Proteotoxicity in liver disease” on July 19, 2023.
- **Prof. Shubhra Ghosh Dastidar** (Biological Sciences) organized seminars by (i) Nishita Mandal of Adam Mickiewicz University, Poland, on Jan 2,

2023, talk title "Exploring transport pathways in proteins through MD simulations" (ii) Dr. Asish Chaudhuri, L E K Consulting, USA, on February 10, 2023, talk title “Applications of new tools to understand the underlying Mechanism of aging”.

- **Dr. Zhumur Ghosh** (Biological Sciences) jointly organized a One Day National Workshop on Plant Bioinformatics”, on 07.11.2023.
- **Dr. Sudipto Saha** (Biological Sciences) jointly organized a “One Day National Workshop on Plant Bioinformatics” on 7th November 2023.
- **Prof. Debaraj Mukherjee** (Chemical Sciences) organized lecture series in the Department of Chemical Sciences namely ‘Advancement of surface-enhanced Raman Spectroscopy in Nanotheranostic Applications by Dr Kaustabh Kumar Maiti, Sr. Principal Scientist CSIR-NIIST on 28th March 2023.

VISITS ABROAD

- **Prof. Supriya Das** (Physical Sciences) visited CERN, Geneva during April 2-6, 2023.
- **Dr. Saikat Biswas** (Physical Sciences) visited CERN, Geneva, Switzerland during 2-6 April, 2023 for ALICE related discussions and meetings.
- **Dr. Sidharth Kumar Prasad** (Physical Sciences) (i) visited CERN, Geneva, Switzerland for ALICE experimental work during 02-04-2023 to 07-04-2023. (ii) visited CERN, Geneva, Switzerland for ALICE experimental work during 03-09-2023 to 01-10-2023.
- **Abhi Modak** (Physical Sciences) visited University of Trieste, INFN, Italy during 04-09-2023 to 29-09-2023 for experimental collaborative work.
- **Arindam Sen, SRF, DST-Inspire Fellow** (Physical Sciences) attended the EURIZON detector school at Wuppertal, Germany (17–28 July 2023). (Fully sponsored by the Organizers of EURIZON detector school, Wuppertal, Germany).
- **Rudrapriya Das, JRF** (Physics Sciences) visited FAIR/GSI during to participate in collaborative research during September 6-16, 2023 and participated in 63rd. Cracow School of Theoretical Physics at Zakopane, Poland during September 17 - 23, 2023.
- **Dr. Wriddhiman Ghosh** (Biological Sciences) Convened and Co-chaired **Session10h: Microbial metabolism of metals and non-metals through geologic time and space: from lithoautotrophy and coenzymes to pollutants and bioremediation**, in the **Goldschmidt Conference 2023** held at Lyon, France, during 09 to 14 July 2023, and presented the following paper therein:

(i) Mandal S, Bhattacharya S, Peketi A, Mazumdar A and Ghosh W (2023) The enigmatic polythionate S4O6²⁻ as a key junction in the sulfur cycle of continental slope sediments.

(ii) **Goldschmidt** is the foremost annual conference on geochemistry and related subjects, organised by the European Association of Geochemistry and the Geochemical Society (USA).

- **Dr. Anupama Ghosh** (Biological Sciences) visited Indiana University, Bloomington, USA as a Fulbright Nehru Academic and Professional Excellence Fellow for a period of three months during August 2023 to October 2023.
- **Dr. Sudipto Saha** (Biological Sciences) attended and gave an oral presentation on the topic “**MCDR-MTB: Multiclass Classification of Drug Resistance in MTB clinical isolates using WGS data**” at the International Conference on Bioinformatics (InCoB 2023) from 12-15 November, 2023 in Brisbane, Australia.
- **Arghya Bhowmick**, CSIR Fellow (Biological Sciences) visited the laboratory of Prof. Sonja-Verena Albers at the University of Freiburg, Germany from 01.02.2023 to 30.04.2023 as a short-term EMBO fellow for collaborative experimental research work.
- **Karishma Biswas** (Chemical Sciences) received three weeks scholarship from Technical University of Munich, Germany to perform Solid state NMR experiments at Technical University of Munich, Germany.

RECENT AWARDS/HONOURS/MEMBERSHIP

- **Prof. Somshubhro Bandyopadhyay** (Physical Sciences) APS (American Physical Society) Outstanding Referee Award 2023.
- **Prof. Dhruva Gupta** (Physical Sciences) delivered an invited plenary lecture on "The ⁷Be + d reaction in the context of the cosmological lithium

problem" at the "ISOLDE Workshop and Users Meeting 2022", CERN, Geneva, Switzerland, during November 30 - December 2, 2022 (online); acted as a National Organizing Committee member of the "International Symposium on Nuclear Astrophysics (ISNA 2023)" at Manipal Academy of Higher Education (MAHE), Manipal,

Karnataka during October 30 - November 3, 2023 and delivered an invited plenary talk titled "Nuclear Astrophysics at Bose Institute"; invited to write a review article for the European Physical Journal special topics issue on "Nuclear Astrophysics"; member of the international collaboration for the experiment (approved on November 17, 2023) "Probing the scattering of $^{17}\text{Ne} + ^{64}\text{Zn}$ at Coulomb barrier energies" at the radioactive ion beam facility GANIL in France.

- **Prof. Achintya Singha** (Physical Sciences)

(i) A member of the Expert Committee of Teachers Associateship for Research Excellence (EC-TARE), Science and Engineering Research Board (SERB), Government of India.

(ii) A member of the Empowerment and Equity Opportunities for Excellence in Science (EMEQ)-Task Force Committee, Science and Engineering Research Board (SERB), (SERB), Government of India.

- **Dr. Sidharth Kumar Prasad** (Physical Sciences)

(i) serving as the Deputy Spokesperson of the ALICE-STAR-INDIA Collaboration; (ii) appointed as the convener of the Physics Analysis Group – Jet Substructure (PAG-JSUB), by the ALICE Collaboration at CERN, Geneva.

- **Abhi Modak** (Physical Sciences) received one of best posters award at the Symposium on Recent Trends in Natural Sciences 2022 at Bose Institute, Kolkata, on November 28-29, 2022.

- **Abhi Modak, Debjani Banerjee and Prottoy Das** (Physical Sciences) have received the full student support to attend and participate in the 8th International Conference on Physics and Astrophysics of Quark Gluon Plasma (ICPAQGP2023) to be held on February 07-10, 2023.

- **Shahina Raushan Saikh** (Physical Sciences) received The Junior Researcher Award 2023.

- **Sayak Chatterjee**, SRF (Physical Sciences) received the award for best oral presentation in the Students' Symposium "Recent Trends in Natural Sciences, 2022" at Bose Institute, Kolkata, on November 28-29, 2022.

- **Prof. Debaraj Mukherjee** (Chemical Sciences)

(i) Awarded Bronze Medal with citation by the Chemical Research Society of India (CRSI) at the award ceremony held during 2nd - 5th Feb 2023 at Jawaharlal Nehru University (JNU), New Delhi by the President CRSI Padma Shri Prof. V. K Singh, IIT Kanpur. The Bronze Medal award is given to young researchers who have made significant contributions to research in Chemical Science.

(ii) Invited to join as an editorial board member in the prestigious Journal of Carbohydrate Chemistry (JCC), Taylor & Francis in 2023 for five years. JCC has been serving the community of carbohydrate chemists over the past 40 years.

- **Dr. Abhijit Chatterjee** (Chemical Sciences)

(a) Expert member of the Kolkata Climate Action Plan by Govt. of West Bengal.

(b) Expert/Advisor to the Kolkata Municipal Corporation for air pollution and air quality assessment program over Kolkata city.

(c) Resource person for the "Parliamentary Group of Clean Air", Govt. of India.

(d) Member of the Executive Committee of Indian Aerosol Science and Technology Association (IASTA), India.

- **Prof. Gaurab Gangopadhyay** (Biological Sciences)

(a) Nominated by the VC, Netaji Subhas Open University (NSOU) as one of the members of the Departmental Research Committee (DRC) of Department of Botany, School of Sciences, NSOU (Memo No. SoSci/2652 dated 06.03.2023).

(b) Acted as the 'Session Chair' in 'Technical Session IV-Scientific Deliberations' in the 1st Botanical Congress organized by the Botanical Society of Bengal and Department of Botany, University of Calcutta on 23.03.2023.

(c) Invited to act as an academic expert in the BOS meeting of Biotechnology Department, Techno India University on 08.09.2023.

- **Prof. Kaushik Biswas** (Biological Sciences) Elected Fellow of the West Bengal Academy of Science & Technology (WAST), with effect from 01.01.2023.

- **Dr. Zhumur Ghosh** (Biological Sciences) (i) Associate Editor, Molecular Plant-Microbe Interactions (ii) Editor, Current Bioinformatics (iii) Member of the National Academy of Science.

- **Dr. Wriddhiman Ghosh** (Biological Sciences) Conferred honorary membership of the European Association of Geochemistry in July 2023.

- **Dr. Anupama Ghosh** (Biological Sciences) received **Fulbright Nehru Academic and Professional Excellence Fellowship** for a research visit to Indiana University Bloomington, USA for a period of six months in two stretches of three months each (flex award).

- **Dr. Sudipto Saha** (Biological Sciences) received International Travel Support (ITS) from the Science and Engineering Board (SERB), DST, Govt. of India to attend InCoB 2023 conference in Brisbane, Australia.

- **Koustav Bhakta**, SRF (Biological Sciences), was awarded for best oral presentation in the Students' Symposium "Recent Trends in Natural Sciences, 2022" at Bose Institute, Kolkata, November 28-29, 2022.

- **Arghya Bhowmick**, CSIR Fellow (Biological Sciences), received an EMBO Scientific Exchange Award for a scientific visit to the University of Freiburg, Germany, on December 13, 2022.

RECENT PH.D. DEGREES AWARDED

- **Sayak Chatterjee** (CU) Performance studies of Gas Electron Multiplier detector for the Muon Chamber of high rate CBM experiment at FAIR. Supervisor: Dr. Saikat Biswas.
- **Shreya Roy** (CU) Characterisation of Gaseous and Scintillator Detectors for High Energy Physics and Cosmic Ray experiments. Supervisor: Prof. Supriya Das.
- **Udita Acharya** (CU) Evaluating rice proteases and protease inhibitors as potential defence proteins against sheath blight infection. Supervisor: Prof. Shubho Chaudhuri, Jointly with Dr. Anupama Ghosh.
- **Subhasish Mukherjee** (CU) Investigating the role of extracellular proteases of *Ustilago maydis* in the pathogenesis of the fungus. Supervisor: Dr. Anupama Ghosh.
- **Nibendu Mondal** (CU) High Temperature Adaptation By Phylogenetic Relatives of Mesophilic Bacteria. Supervisor: Dr. Wriddhiman Ghosh.
- **Monika Bhardwaj** (ACSIR) Development of novel cascade reactions in carbohydrates for the generation of medicinally important scaffolds. Supervisor: Prof. Debaraj Mukherjee.
- **Md Sorique Aziz Momin** (CU) Theoretical Study of Information Processing In Some Recurrent Biological Network Motifs. Supervisor: Prof. Suman Banik.
- **Shibjyoti Debnath** (CU) defining the anti-cancer role and elucidating the mechanism behind the selective anti-cancer ability of the plant derived flavonoid eriodictyol. Supervisor: Prof. Kaushik Biswas.
- **Sreyan Raha** (CU) Vibrational and Optical Properties of Semiconductor Nanostructured Materials using Raman and Optical Spectroscopy. Supervisor: Prof. Achintya Singha.
- **Arkaprabha Ghosal** (CU) Fidelity fluctuations and noise in quantum information processing. Supervisor: Prof. Somshubhro Bandyopadhyay.
- **Pratiti Dasgupta** (CU) Genome-wide study of changes in Histone H3K27 modification and its correlation with differential gene expression in *Oryzasativa*L. Under cold stress. Supervisor: Prof. Shubho Chaudhuri.
- **Sananda Raychaudhuri** (CU) Study Of The Accretion Phenomena And The Outflows In Giant Elliptical Galaxies And Implications On AGN Feedback. Jt. Supervision: Prof. Dhruva Gupta and Dr. P. Joardar.
- **Bhawna Pandey** (CU) Structural Insights of Protein-Protein Interactions In p53-PC4 & GluRS-HipA Complexes. Supervisor: Dr. Smarajit Polley.
- **Saran N** (CU) Dissecting the role of Mycobacterial Fluoroquinolone Pentapeptide (Mfp) proteins conferring drug resistance in Mycobacteria. Supervisor: Dr. Sudipto Saha.
- **Dipita Bhattacharyya** (CU) Structural And Mechanistic Insight into Biologically Active Peptides and Proteins: Understanding their Membrane Association, Aggregation and Cytotoxicity. Supervisor: Prof. Anirban Bhunia.
- **Sk Abdul Mohid** (CU) Biophysical Studies of de-novo Designed Antimicrobial peptides: Correlation with Biological membranes. Supervisor: Prof. Anirban Bhunia.

GRANTS RECEIVED

- A Novel Approach to the Construction of N-alkylated Hydroxylaminolnterglycosidic Linkages from glycal epoxides : Application in the synthesis of esperamicin-calicheamicin cores; SERB; Prof. Debaraj Mukherjee, Department of Chemical Sciences; Rs. 26,74,600(BI); 3 years.
- Epidemiological Survey on Tribal Communities of Binajpur District in North Bengal to Develop a Knowledgebase on Disease Predisposition for Estimating Disease Etiology; ICMR; Dr. Sudipto Saha, Department of Biological Sciences, Rs. 30,000; 3 years.
- Molecular characterization of factor(s) regulation transcription of MYB21 and MYB24 genes in Jasmonic acid signaling pathway during pollen development; SERB; Prof. Shubho Chaudhuri, Department of Biological Sciences; Rs. 43,99,747; 3 years.
- Rational design and structure-function analysis of antimicrobial peptides tailored to treat fungal Ocular infections; Velux Stiftung(Switzerland) ; Prof. Anirban Bhunia, Department of Chemical Sciences; EURO 1,04,995; 4 years.
- Cancer Cell-specific CRISPR-Based Gene-Editing and Transcriptional Regulation to Reduce On-target Genotoxicity in Gene-therapy; SERB ; Dr. Basudeb Maji, Department of Biological Sciences; Rs. 14,77,918(BI); 2 years.
- Deciphering the cellular functions of the multiple paralogues of GINSF and GlASNAps of *Giardia lamblia*; SERB ; Prof. Srimonti Sarkar, Department of Biological Sciences; Rs. 48,51,790; 3 years.
- Transcriptional regulation of human Telomerase (hTERT) by chromatin remodeling protein SMAR1; DBT ; Prof. Subhrangsu Chatterjee, Department of Biological Sciences ; Rs. 16,00,000; 3 years.

Short Term Training at Bose Institute

Short term summer training was offered during June to August 2023 at Bose Institute. Outstanding students in Physical Sciences (5), Chemical Sciences (1) Biological Sciences (13) from all over India successfully carried out projects at Bose Institute. (Coordinator : Prof. Dhruva Gupta).

STAFF NEWS

Appointments

1. **Dr. Pramod Kumar Shukla**, joined as Assistant Professor in the Department of Physical Sciences w.e.f. 19.12.2022.
2. **Prof. Debaraj Mukherjee**, joined as Professor in the Department of Chemical Sciences w.e.f. 27.12.2022.
3. **Dr. Basudeb Maji**, joined as Assistant Professor in the Department of Biological Sciences w.e.f. 29.12.2022.

Retirements on Superannuation

1. Sk. Inal Ali, Madhyamgram Experimental Farm, superannuated on 31.03.2023.
2. Prof. Tapan Kumar Dutta, Department of Microbiology, superannuated on 30.04.2023.
3. Mr. Pranab Banerjee, Workshop, superannuated on 30.04.2023.
4. Sk. Md. Kalu, Administration, superannuated on 30.09.2023.
5. Mr. Basudeb Marick, Biological Sciences, superannuated on 31.10.2023.

84th Acharya J.C. Bose Memorial Lecture will be delivered by Prof. Dr. Paolo Giubellino, Scientific Managing Director, Facility for Antiproton and Ion Research in Europe GmbH (FAIR GmbH), GSI Helmholtzzentrum für Schwerionenforschung GmbH, Darmstadt, Germany

Abstract

India and Big Science: A Success Path for the 21st Century



Science in this century is driven by large international infrastructures, which are realized by groups of nations pooling their know-how and resources. In an increasingly interdependent world, India's scientific community has embarked on a remarkable journey that transcends borders and demonstrates its commitment to unraveling the mysteries of the universe and develop cutting-edge technologies. India is playing a leading role on the global stage and is a key player in a number of international mega-science projects. In my lecture I will address the reasons for Big Science, the transformative potential of international collaboration, the unique educational opportunities it creates and the limitless horizons of scientific exploration on a global scale.

A special attention will be devoted to the current Renaissance of Nuclear Physics, and its role in society and in our understanding of the Universe.

IMPORTANT COLLABORATIVE EVENTS



Director, Bose Institute along with faculties from Department of Physical Sciences visited CERN, Geneva during 2-6 April, 2023 for

the discussion on participation of Bose Institute in the ongoing projects and exploration of future possible collaboration on other multidisciplinary areas.



The members of the Technical Co-ordination and Monitoring Committee (TCMC) along with technical experts from FAIR, Germany visited the factory site of M/s. Siechem Technologies Pvt. Ltd. at Pondicherry for the technical evaluation and approval of the Conceptual Design Report (CDR) of the IT-cable (in-kind contribution from India to FAIR, Germany).



The members of the Technical Co-ordination and Monitoring Committee (TCMC) along with technical experts from FAIR, Germany visited the factory site of M/s. Trident Auto Components Pvt. Ltd. at Kanpur for the technical evaluation and approval of the Conceptual Design Report (CDR) of the Beam Stopper (in-kind contribution from India to FAIR, Germany).



The members of the Technical Co-ordination and Monitoring Committee (TCMC) visited the factory site of M/s. Siechem Technologies Pvt. Ltd. at Pondicherry for the Factory Acceptance Test (FAT) of the prototype production of IT Cables and Power Cables (in-kind contributions from India to FAIR, Germany).