



अणुविद्या

HBNI Newsletter

Issue No :- 13

June 2025



होमी भाभा राष्ट्रीय संस्थान

HOMI BHABHA NATIONAL INSTITUTE

(यूजीसी अधिनियम 1956 की धारा 3 के तहत एक मानद विश्वविद्यालय एवं परमाणु ऊर्जा विभाग की एक सहायता प्राप्त संस्था)

(A Deemed to be University u/s 3 of UGC Act 1956 and a Grant-in-Aid Institute of the Department of Atomic Energy, Govt. of India)

Location of HBNI Central Office, Constituent Institutions & Off Campus Centres



A⁺ Grade
3.4 Score



1st in Physical Sciences
2nd in All Publications

HBNI Newsletter



Homi Bhabha National Institute

**(An aided institution of the Department of Atomic Energy and
a Deemed to be University under section 3 of the UGC Act, 1956)**



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Prof. H. N. Ghosh, Director, NISER	Member
Prof. Ujjwal Sen, Director, HRI	Member
Dr. V. S. Ramamurthy, Emeritus Professor, NIAS, Bengaluru	Member
Dr. S. Sivaram, Professor Emeritus, IISER Pune & Hon. Professor, IISER, Kolkata	Member
Prof. A. K. Tyagi, Dean, HBNI	Member
Shri Hari Narayan Sahu, Registrar, HBNI	Non-Member Secretary

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Prof. Sumit Som, Director, VECC	Member
Prof. Gautam Bhattacharyya, Director, SINP	Member
Prof. Shashank Chaturvedi, Director, IPR	Member
Prof. Karuna Kar Nanda, Director IoP	Member
Prof. V. Ravindran, Director, IMSc	Member
Prof. Ujjwal Sen, Director, HRI	Member
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(AS ON JUNE 30, 2025)

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Shri Vivek Bhasin, Director, BARC	Member
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From the Vice Chancellor's Desk



It is my pleasure to bring to you June 2025 issue of AnuVidhya, the Newsletter of HBNI. This issue will give you an overview of the major activities and events organised by HBNI at its Central Office in Mumbai as well as the events organised by various CIs and OCCs of HBNI at their respective locations during January 2025-June 2025.

HBNI organised its first Convocation on June 2, 2025 at DAE Convention Centre wherein 293 students received their doctoral degrees in presence or in absentia. Professor P. Balaram, Honorary Prof. JNCASR, and former Director IISc, Bengaluru was the Chief Guest on the occasion and he addressed the gathering with his inspiring lecture. This was followed by Foundation Day Program on June 3, 2025 in which M.Tech., MD, DM and MCh students received their degrees. Shri R. Mukundan, MD & CEO, Tata Chemicals Limited, Mumbai was the Chief Guest on the occasion and he delivered the J B Joshi Research Foundation Endowment Lecture titled 'Towards Viksit Bharat: Sustainable Energy for Industrial Advancement'. J B Joshi Foundation Innovation Awards were also presented on this occasion. Both events were well received by all the delegates and participants.

HBNI organised several commemorative events such as Republic Day, National Science Day, International Women's Day, National Technology Day, Dr. Srikumar Banerjee Memorial Day with Lecture International Yoga Day and so on. A week long *Swacchata Pakhwada* was also organised in the month of February 2025 which saw several activities related to cleanliness and hygiene.

I am happy to share that Homi Bhabha Cancer Hospital and Research Centre at New Chandigarh, Punjab became the 13th OCC of HBNI during this period. HBNI signed 4 new MoUs with premier research institutes in the country to augment academic activities for our faculty and students.

HBNI organised Innovations and Entrepreneurship Conclave for Young India in March 2025 in association with TMC-ACTREC to help HBNI Life Sciences students explore the opportunities of entrepreneurship in the rapidly evolving world of biotechnology, healthcare and allied life sciences. Three webinars were also organised by HBNI to foster the spirit of entrepreneurship among its students.

Many HBNI faculty and students received awards and honours during this period and we take this opportunity to congratulate them for their achievement.

I am happy to announce that from this issue of AnuVidhya, we are initiating a "Creative Corner" for our faculty and students. This will give them a forum to showcase their talent in the form of sketches, drawings, paintings, caricatures, creative writing, poetry and any other creative attribute. All the entries received will be screened for their content and selected for publishing in the Newsletter. I urge our stakeholders to be a part of this new initiative.

Thank you.



(U. Kamachi Mudali)

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EVENTS AT HBNI CENTRAL OFFICE

Marathi Language Conservation Program

As part of Marathi Language Conservation Fortnight, HBNI organised a talk on January 27, 2025 entitled “Promotion and dissemination of Marathi language: Origin and Journey of Marathi Language” by Prof. Savita Kulkarni, Former Head, Tuberculosis Immunology & Immunoassay Development Section and Medical Cyclotron & Radiopharmaceutical Production Section, Former Scientific Officer (H), Radiation Medicine Centre, BARC. Dr. Kulkarni spoke about evolution of the Marathi language and its rich heritage. The talk was attended by over 40 participants.



Prof. Savita Kulkarni delivering lecture in Marathi language



Prof. U. Kamachi Mudali, Hon'ble VC, HBNI felicitating Prof. Kulkarni

Republic Day Celebration

HBNI celebrated the 76th Republic Day on January 26, 2025. Hon'ble Vice Chancellor, Prof. U. Kamachi Mudali unfurled the National Flag and all the staff members and functionaries of HBNI paid respect to the National Flag. This was followed by the National Anthem. Prof. Mudali addressed the gathering with his motivational words. It was a truly momentous occasion wherein the feeling of patriotism filled all the hearts.



Prof. U. Kamachi Mudali, Hon'ble VC, HBNI addressing the gathering



Prof. U. Kamachi Mudali, Hon'ble VC, HBNI and other senior members paying respect to the National Flag

Swachhata Pakhwada 2025

HBNI actively observed the Swachhata Pakhwada between February 16-28, 2025. In alignment with the Government of India's directives and guidelines, the Swachhata Pakhwada was commemorated through a series of awareness-driven and participatory activities aimed at promoting cleanliness and sustainability. A wide range of initiatives were undertaken across the HBNI campus to reinforce the message of "Swachh Bharat."

The campaign was launched with banners displaying messages on cleanliness placed prominently at the main gate of the Training School Complex and other important locations within the HBNI premises. The observance began with the administration of the Swachhata Pledge in both Hindi and English, taken by students, faculty, and staff members. A selfie booth and signature board were set up to support the campaign theme of reducing single-use plastic. These activities generated enthusiastic participation across the HBNI community. An essay competition on the topic "Garbage-Free India/ Clean India" was conducted in both Hindi and English, engaging students and faculty members alike. Additionally, a session featuring talks and demonstrations on sustainable living and waste management was organized by the 'Punah Earth' and 'Organic Recycler Organisation'. This session saw active participation from students and faculty. To further spread awareness, a Nukkad Natak (street play) was performed on the theme "Clean India, Healthy India" by employees of the department, highlighting the importance of hygiene and eco-friendly habits. In an effort to encourage cleanliness in the workplace, a Rolling Trophy competition was held to recognize the cleanest office or section within HBNI.

The campaign concluded with a felicitation ceremony where housekeeping staff were honored for their contributions, and winners of the essay competition were awarded. The best-performing office/section was presented with the prestigious HBNI Swachhata Rolling Trophy.

Through its committed participation and multifaceted approach, HBNI reaffirmed its dedication to the Swachh Bharat Mission, fostering a culture of cleanliness, responsibility, and environmental consciousness among its community members.



From left to right (1) Administration of Swachhata Pledge (2) Signature campaign
(3) Employees performing Nukkad Natak



Winners of Swachhata Rolling Trophy

National Science Day Celebration

National Science Day (NSD) is celebrated every year on 28th February to commemorate the discovery of Raman Scattering Effect by the great Indian physicist Sir C. V. Raman for which he received the Nobel Prize in Physics. The celebrations are meant to spread a message about the importance of science used in the daily life of the people; to display all the activities, efforts and achievements in the field of science for human welfare and to discuss all the issues and implement new technologies for the development in the field of science.

This year, as part of the National Science Day Program, HBNI organised a lecture on March 03, 2025. Prof. BHVS Narayana Murthy (Hon'ble Vice Chancellor, Defence Institute of Advanced Technology, DRDO, Pune) delivered a talk on a topic of high relevance 'Role of AI in Defence and Space Technologies'. Other distinguished guests present on the occasion were Prof. Sangeeta Kale and Prof. Balasubramanian from DIAT, Pune.

The program began with the welcome address by Dean HBNI, Prof. A. K. Tyagi followed by presidential remarks by Hon'ble Vice Chancellor, HBNI, Prof. U. Kamachi Mudali.

The program was attended by about 50 Participants which included HBNI faculty, students and staff members. There was an engaging discussion about the future of AI in different walks of life. The program ended with a vote of thanks extended by Prof. Naveen Kumar, Associated Dean & Officiating Registrar, HBNI.



A photograph during the NSD 2025 lecture

International Women's Day Celebration

The Women's Cell of HBNI celebrated International Women's Day on March 11, 2025 at Multipurpose Hall, TSH, Anushaktinagar, Mumbai by organizing special talks and panel discussion, keeping in mind the UN theme for the year "Accelerate Action". The event was attended by almost 150 participants that included students, faculties and officials of HBNI and scientists and employees of BARC. The event began with the traditional lighting of the lamp and a warm welcome by Prof. Dipanwita Dutta, Associate Dean, HBNI followed by opening remarks by Prof. A. K. Tyagi, Dean, HBNI and inaugural address by Prof. Aradhana Srivastava, Chairperson, HBNI Women's Cell. Guest speaker, advocate Ms. Sandhya Vasudevan Sondhi, delivered an inspiring talk on the topic, "POSH policy" wherein she highlighted the significance of the Prevention of Sexual Harassment (POSH) Act, the definition of the workplace, and the constitution and role of the Internal Complaints Committee (ICC) within organizations. Dr. (Mrs.) Aparajita Chattopadhyay, Professor, International Institute of Population Science (IIPS), Mumbai gave an insightful talk titled "Linking pertinent gender issues in India: Pessimism and Optimism". Her presentation gave a broad overview of both macro and micro aspects of gender-related challenges, including the sex ratio at birth in India and abroad, its causes, and variations over time. She also discussed the challenges women face in marriage and the labour market, influence of literacy in addressing gender issues, and reasons for optimism in overcoming these hurdles. Following the talks, an enlightening panel discussion was conducted on the topic "Overcoming the Barriers to Advancing the Careers." The key panellists were, guest speakers, Dr. (Smt.) Shobha Nair, Head of the Psychiatric Unit at BARC Hospital, and Prof. Umasankari, former Head of RPDD, BARC, who shared their valuable insights. The discussion also included the participation of HBNI Women's Cell members Smt. Swati Ingole, Prof. Naveen Kumar, and Prof. Aradhana Srivastava. The event also included a colourful poster competition, with participants from all CIs/OCCs submitting their entries via e-mail. The winners of the competition were announced, and prizes were awarded. There was a vibrant cultural performance, showcasing the talents of HBNI students, faculty, and staff members, making it a truly memorable and celebratory occasion. The program concluded with a formal vote of thanks by Prof. Naveen Kumar, Associate Dean & Officiating Registrar, HBNI, followed by National Anthem.



*From left to right (1) Prof. Dipanwita Dutta delivering the welcome address
(2) Prof. Aradhana Srivastava delivering the inaugural address (3) Ms. Sandhya Vasudevan Sondhi delivering her talk
(4) Dr. (Mrs.) Aparajita Chattopadhyay delivering her talk*



Panel discussion



Glimpses of the cultural program on the occasion of International Women's Day Celebration at HBNI on March 11, 2025

Innovations and Entrepreneurship Conclave for Young India

A one-day workshop called “Innovations and Entrepreneurship Conclave for Young India” was jointly organised by TMC, DAE and HBNI on March 22, 2025 at Khanolkar Shodhika Auditorium, ACTREC-TMC, Navi Mumbai. The aim of the workshop was to encourage life science students of HBNI at ACTREC, TMC, BARC, NISER, RRCAT and SINP as well as post-doc fellows, alumni, scientists and faculties, to explore the opportunities of entrepreneurship in the rapidly evolving world of biotechnology, healthcare, and allied life sciences. The event was attended by almost 125 delegates (offline and online) that included students, faculties of HBNI and scientists, alumni, and employees of ACTREC, TMC, BARC, NISER and other CIs/OCCs of HBNI. The event began with the traditional lighting of the lamp, chanting of Ganesh Shloka by Ms. Manasi Nagare, SRF, HBNI-ACTREC and a warm welcome by Dr. Jyoti Kode, ACTREC, Secretary of the workshop. It was followed by opening remarks by Prof. Pankaj Chaturvedi, Director, ACTREC-TMC and inaugural address by Prof. Sudeep Gupta, Director TMC. Prof. U Kamachi Mudali, Vice Chancellor, HBNI and chief guest of the event, addressed the gathering where he explained the motivation behind the event. It was highlighted by him that, ACTREC-TMC, HBNI along with HBNI Institution Innovation Council (HIIC), strongly believes that fostering an entrepreneurial mindset among HBNI scholars and researchers is key to transforming ground breaking ideas into tangible solutions that may benefit the society. Through platforms like this, HBNI hopes to provide the right guidance, mentorship, and networking opportunities that will inspire the young minds to take bold steps toward establishing their own start-ups. Prof. Banavali, Dean Academic, TMC and Convener of the event and Shri Daniel Babu, Head TT&CD, BARC also graced the occasion. Inaugural session ended with vote of thanks by Prof. Dipanwita Dutta, Associate Dean, HBNI and Joint-Convener of the workshop. Twelve eminent experts and entrepreneurs from Mumbai, Pune, Bangalore and St. Louis, USA were the invited speakers for the event. They shared their success stories, challenges faced and tactics to overcome inner fears with courage and perseverance, invaluable experiences, insights, and strategies on how to navigate the entrepreneurial landscape. Following the talks, an enlightening panel discussion was conducted where Dr. Vikram Gota, ACTREC and Dr. Saumil Sanghavi, Alumni of ACTREC, were the moderators and all invited speakers were the panellists. There was a stimulating and exciting discussion among speakers, students and faculties. The program was well appreciated by everyone.



Dr. Sudeep Gupta, Director TMC, delivering the inaugural address



Prof. U. Kamachi Mudali, Chief-Guest and Vice-Chancellor HBNI, addressing the participants



Few speakers delivering their talks (from left to right)



Participants raising their queries during the panel discussion



Participants during the event



Group photograph of all the participants of the "Innovations and Entrepreneurship Conclave for Young India" on March 22, 2025 jointly organized by TMC, DAE and HBNI at ACTREC-TMC, Navi Mumbai

National Technology Day 2025

To mark National Technology Day 2025, a talk was organized by HBNI, Mumbai on May 14, 2025 in HBNI Council Hall in hybrid mode. The program opened with the welcome address by Prof. A. K. Tyagi, Dean HBNI which was followed by introductory remarks by Hon'ble Vice Chancellor, HBNI Prof. U. Kamachi Mudali. Dr. S. Roy Choudhury, Outstanding Scientist and Director, Naval Materials Research Laboratory (NMRL), DRDO, Ambarnath was the Chief Guest for the program who gave an insightful talk on the topic "Hydrogen Energy and Its Uses for the Defense and Commercial Sector". The talk was followed by a discussion session. Shri Hari Narayan Sahu, Registrar HBNI, submitted a vote of thanks. The program closed with the singing of the National Anthem.



Participants during the National Technology Day Program at HBNI, Mumbai

Dr. Srikumar Banerjee Memorial Program

HBNI organized a special lecture as part of Dr. Srikumar Banerjee Memorial Program on May 23, 2025. Prof. Manoj Kumar Tiwari, Director, IIM Mumbai was the Chief Guest on the occasion who delivered the talk entitled “Logistics Science and Technology”. The program was well attended by over 40 participants and many through online.



Prof. Manoj Kumar Tiwari, Director, IIM Mumbai delivering the lecture during the Dr. Srikumar Banerjee Memorial Program

First Convocation of HBNI

Homi Bhabha National Institute (HBNI), organized its first Convocation on June 2, 2025 in DAE Convention Centre, Anushaktinagar. Heads of CIs and OCCs, academic authorities, HBNI Central office colleagues, students and faculties participated in a grand manner for the event. The Convocation was pronounced open by Dr. Anil Kakodkar, Hon'ble Chancellor, HBNI who also presided over the function. Prof. U. Kamachi Mudali, Hon'ble Vice Chancellor, HBNI delivered the welcome address and presented the HBNI's annual report with academic progress and achievements for 2024-2025. This was followed by the presidential address by the Hon'ble Chancellor, Dr. Anil Kakodkar who narrated the genesis of HBNI and its growth over the period resulting in an excellent performance. Dr. A. K. Mohanty, Chairman, Council of Management (CoM) and Secretary, Department of Atomic Energy & Chairman, Atomic Energy Commission, delivered a special address in which he highlighted the academic achievements of HBNI faculty members and students. Prof. P. Balaram, Honorary Professor, JNCASR and former Director IISc Bengaluru was the chief guest on the occasion. He delivered the convocation day address in which he talked about life and elements. He emphasized the role of carbon and silicon in driving the biological and technological evolutions, respectively. He advised the young graduating students to be resilient and imaginative for excelling in their careers. This was followed by the presentation of outstanding doctoral students awards to the 13 candidates from Chemical, Engineering, Life, Mathematical and Physical Sciences by the Chief Guest, Hon'ble Chancellor and Chairman, CoM. The degrees were also presented to the graduating Ph.D. students (293) by the Hon'ble Chancellor and Chairman, CoM, in person or in absentia. Hon'ble Chancellor, HBNI administered the pledge followed by conferment of the degrees to the candidates by the Chairman CoM. Hon'ble Chancellor signed the register of graduates and declared the convocation closed. The ceremony concluded with National Anthem after which the procession returned for de-robing. This was followed by a group photograph of all the graduating students with the dignitaries.



Address by the dignitaries



Dignitaries on the dais



Convocation Procession – Onward and Return



Medal and Degree Certificate distribution by the dignitaries



Pledge administration to the graduating students



Invitees and participants of the Convocation Ceremony



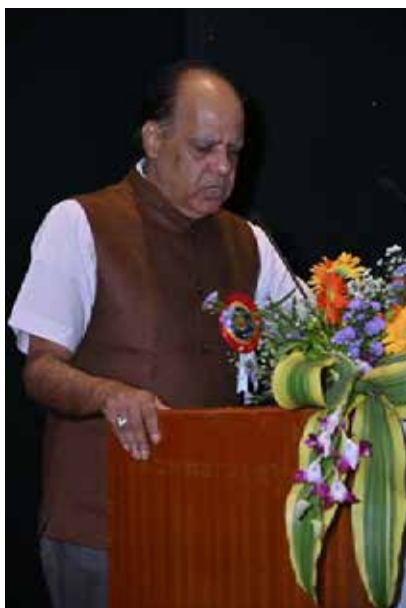
Group photograph of all the graduating students with the dignitaries

20th Foundation Day Celebration of HBNI

Homi Bhabha National Institute (HBNI), organized its 20th Foundation Day on June 3, 2025 in DAE Convention Centre, Anushaktinagar. Shri R. Mukundan, Managing Director and CEO, Tata Chemicals Limited, Mumbai was the Chief Guest for the occasion. Ms. Seema, Jain, Member-Finance, Space, Atomic and Earth Commission was the guest of honor. The programme opened with the Saraswati Vandana sung by Prof. Dipanwita Dutta, Associate Dean, HBNI. Thereafter, a welcome address was delivered by Prof. A. K. Tyagi, Dean, HBNI. This was followed by opening remarks and presentation of HBNI's annual report by The Hon'ble Vice Chancellor Prof. U. Kamachi Mudali. Prof. Mudali showcased the academic and administrative achievements of HBNI during 2024-25. Ms. Seema Jain released the HBNI's Foundation Day Brochure. Ms. Jain also addressed the gathering and appreciated the commendable performance of HBNI and applauded the unique academic structure of the institution. Prof. Naveen Kumar announced the outstanding student award for M.Tech., M.D., D.M. and M.Ch. degrees. The awards were distributed by the Chief Guest. This was followed by distribution of M.Tech. degrees. Thereafter, J B Joshi Research Foundation Innovation Awards were conferred on to the selected students. The chief guest Shri R. Mukundan delivered the J B Joshi Research Foundation Endowment Lecture titled "Towards Viksit Bharat: Sustainable Energy for Industrial Advancement". The ceremony concluded with the Vote of Thanks delivered by Registrar HBNI Shri Hari Narayan Sahu followed by the National Anthem.



Dignitaries on the dias



Prof. A. K. Tyagi, Dean HBNI, delivering the welcome address



Prof. U. Kamachi Mudali, Hon'ble Vice Chancellor HBNI delivering the opening remarks



Shri R. Mukundan, MD and CEO, Tata Chemicals Limited, Mumbai delivering the J B Joshi Research Foundation Innovation Lecture



Outstanding Student Award presentation



HBNI Foundation Day Brochure released by Ms. Seema Jain



J. B. Joshi Research Foundation Innovation Award presentation



Vote of thanks delivered by Shri Hari Narayan Sahu, Registrar, HBNI

International Yoga Day 2025

In line with the Government of India's directives and guidelines, HBNI observed the International Yoga Day on June 21, 2025. The theme for this year is "Yoga for one earth, one health". HBNI organized special yoga sessions for its staff, students, and faculty to commemorate the occasion. Yoga instructors from the BARC Yoga Club conducted demonstrations of various asanas, which were actively followed by the participants. The instructors also elaborated on the health benefits associated with each asana.

To further promote awareness and encourage the practice of yoga among students, the Yoga Pledge and the official Yoga mobile application were also highlighted. Information regarding these initiatives was shared through the HBNI website.



Yoga instructor's demonstrating asanas to all the participants at MPH, Anushaktinagar

❖ News Update

- 1) HBNI signed MoUs with four premier Indian Universities and Institutes between January-June 2025. These are (A) Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore (B) AIC RRCAT PI-Hub Foundation (AIC π -Hub), Indore (C) Indian Institute of Technology (IIT), Hyderabad (D) AIC-IPR Plasmatech Innovation Foundation (AIC-IPR), Gandhinagar
- 2) HBNI conducted faculty induction program in hybrid mode on May 8, 2025 for the benefit of newly inducted faculty members to brief them about the structure of academic processes and ordinances of HBNI. Twenty-nine new faculty members and five teaching staff from different CIs/OCCs of HBNI attended the program.
- 3) Homi Bhabha Cancer Hospital & Research Centre, New Chandigarh, Punjab became the 13th OCC of HBNI on April 7, 2025.

❖ Programmes and Courses Conducted by HBNI

1) Nuclear Leadership Development Programme

HBNI has entered into a Memorandum of Understanding (MoU) with Indian Institute of Management, Ahmedabad [IIM (A)]. The objective of this MoU is to create a framework for HBNI to avail the services of IIM (A) in providing a customized Management Development Programme (MDP) for the senior executives of DAE organizations.

A Nuclear Leadership Development Programme was conducted during March 22-27, 2025 at IIM (A) for 30 participants from NPCIL. The training programme consisted of three sessions in a day and covered topics on effective project management approaches, uncertainty and risk management in nuclear project, financial analysis using ratios, mapping and influencing difficult stakeholders in Nuclear Projects etc.

2) Online course on Research Methodology & Research and Publication Ethics

This Course was conducted online by HBNI between March 10-July 7, 2025. 149 students from 9 CIs/OCCs enrolled for the course and 119 students appeared for the exam that was held on July 28, 2025.

❖ Webinars Conducted by HBNI

1) AI and Machine Learning Applications and Future Scope in Industrial Domain (24.04.2025) (Alumni Webinar)

Dr. Amit Chandrakar, Principal Data Scientist, Symphony Incubator Business Services Private Limited (SymphonyAI), Bangalore

2) Career Opportunities in Entrepreneurship (28.03.2025)

Shri Shashikant Nayak, Founder and Director, Vensol Ventures Private Limited, Navi Mumbai

3) Success Factors in Selection Interview for Core Technical Institutions or Companies (24.01.2025)

Shri M. G. Kelkar, Former Executive Director (Human Resources and KM), NPCIL, Mumbai

❖ Events at CIs/OCCs

National Start-up Day 2025 at IPR

National Start-up Day 2025 was celebrated at Entrepreneurship Development Institute of India (EDII) on January 16, 2025 with a resounding focus on fostering entrepreneurial spirit, technology commercialization, and connecting industry with innovation. The event brought together esteemed dignitaries, entrepreneurial leaders, researchers, and start-up founders to create a vibrant platform for knowledge exchange, networking, and showcasing cutting-edge technologies. Esteemed Guest Speakers included Shri Hitesh S. Makwana, IAS, Surveyor General of India; Shri R. D. Barhatt, Jt. Commissioner of Industries-Govt. of Gujarat; Dr. Arvind C. Ranade, Director-National Innovation Foundation (NIF), Dr. Nirav Jamnapara, Head-AIC-IPR and Dr. Suresh Kumar Mojjada, Chief Technical Officer-Mariculture, ICAR-CMFRI. Dr. Nirav Jamnapara gave an introduction about the technologies developed at the Institute for Plasma Research and the incubation support being offered to start-ups through Atal Incubation Centre of IPR (AIC-IPR). Event witnessed participation from over 100 attendees, including aspiring entrepreneurs, researchers, and industry leaders. It served as a powerful platform for cross-sectoral knowledge exchange, offering participants actionable insights and potential collaborations.



Participants of the National Start-up Day at IPR

Republic Day Celebration at HRI

Republic Day 2025 was celebrated at HRI with great enthusiasm. Institute members participated actively in the event, showcasing patriotism and unity.



Republic Day Celebration with HRI Officials on Campus



Prize Distribution Ceremony on the Occasion of Republic Day at the HRI Campus

Republic Day Celebration at NISER

NISER celebrated the 76th Republic Day of India with pride and enthusiasm, beginning with the hoisting of the national flag on campus amidst great joy. The event featured a spirited parade by NISER's security staff and the heartfelt rendition of the National Anthem, resonating patriotism across the grounds. In his inspiring address, Prof. Hirendra Nath Ghosh, Director of NISER, highlighted the values that unite us as a nation. The occasion also recognized excellence, as awards were presented to outstanding administrative and technical staff for their dedication and contributions to the NISER community. Adding to the celebrations was a vibrant cultural program, where the creativity and talent of students and staff shone through colorful performances and energetic beats. The distribution of medals to the winners of IISM and IICM events further elevated the festive spirit, recognizing excellence and fostering camaraderie. The day was a true reflection of unity, pride, and the enduring spirit of NISER.

National Science Day

NISER celebrated National Science Day 2025 with great enthusiasm by organizing an outreach event aimed at promoting scientific curiosity among school students. The event welcomed approximately 608 students and 30 teachers from 204 government secondary schools of Jajpur district, along with the District Education Officer of Jajpur.

The programme commenced with an inspiring welcome address by the Director, NISER, emphasizing the scientific legacy of Dr. C.V. Raman. This was followed by a series of interactive faculty talks and demonstrations:

Dr. Kartikeswar Senapati demonstrated key physics concepts such as wave motion and light diffraction.

Dr. Chandra Shekhar Purohit spoke on real-life applications of chemistry, both basic and advanced.

Dr. Debasmita P. Alone offered insights into the biological process of development from a single cell.

The event concluded with a vibrant Q&A session, encouraging student engagement and interaction with NISER faculty.

National Science Day 2025 at CPP-IPR

Centre of Plasma Physics-Institute for Plasma Research (CPP-IPR) celebrated the National Science Day on February 5, 2025 with day-long activities. To mark the occasion, several competitions like essay writing, drawing, quiz and extempore speech were organized for school students. Around 70 students and teachers from 8 schools visited the campus and participated in various events. Slogan writing competition was also organized for the CPP-IPR staff. Dr. Rakesh Moulick also gave a popular talk on plasma physics. Prof. Deepali Sarkar, Head, Physics Department, Gauhati University was the Chief Guest for the event.



Participant of National Science Day 2025 at CPP-IPR

International Day of Women and Girls in Science at HRI

International Day of Women and Girls in Science was celebrated at HRI on February 11, 2025 to recognize and honour the contributions of women in the field of science. The event highlighted the importance of gender equality in scientific research and inspired greater participation of women and girls in science fields.



Women faculty members, students, and post-doctoral fellows of HRI participated in the celebration of the International Day of Women and Girls in Science at HRI

Visit of Dr. Jitendra Singh, Honourable Minister of State (DAE) to HRI

Dr. Jitendra Singh, Hon'ble Minister of State for the Department of Atomic Energy (DAE), held an interactive session with institute officials on February 15, 2025. During the meeting, he was briefed on the academic achievements, research initiatives, and administrative developments of the institute. Dr. Singh appreciated the contributions of HRI in advancing scientific research and fostering academic excellence. He engaged in meaningful dialogue with the officials, offering valuable suggestions and encouragement for future initiatives.



Dr. Jitendra Singh, honourable Minister of State for the Department of Atomic Energy (DAE), was received and welcomed by officials of HRI

National Science Day 2025 at IPR

The National Science Day, conducted under the aegis of the Platinum Jubilee Celebrations of the Department of Atomic Energy (DAE) was conducted as an offline event at IPR main campus during February 15-16, 2025. Over 350 students and 60 teachers from 57 schools participated in this 2-day event. The program was inaugurated by Dr. Subroto Mukherjee, Dean Admin, IPR. Seven competitive events were conducted in which 21 prizes were awarded. Apart from the competitive events, the



Few glimpses of NSD 2025 at IPR

NSD also had open house visits to various labs of IPR as well as a solar observation event using the high-resolution solar telescope of IPR outreach. Around 45 students and 7 teachers participated in the science model competition. St Xavier's High School, Gandhinagar was awarded the IPR NSD 2025 Rolling trophy for scoring the maximum points in the competitive events. Over 2000 people visited IPR during the two-day scientific extravaganza.

Swachhata Pakhwada 2025 at IPR

The Institute observed Swachhata Pakhwada from February 16-28, 2025. Various events were organised as a part of this celebration, which were carried out by the Swachhata Committee members in close co-ordination with and active participation of all the staff members. The Pakhwada started with Swachhata Pledge taking ceremony followed by a Plog-a-thon within the campus on February 17, 2025. Other events like Essay competition, Best out of Waste Competition were organized during the fortnight, and Swachhata banners were displayed across all the three campuses to enhance awareness about the campaign. Tree plantation was carried out near the ST Plant behind the second security gate. DAE Joint Secretary - Finance graced the occasion with his presence, and saplings were planted by Swachhata Committee members as well as volunteers. Safai Sevaks (housekeeping and gardening staff) were served refreshment, as a token of appreciation for their continued efforts in maintaining clean and beautiful surroundings. A signature campaign and a sanitation drive were carried out at CPP-IPR Guwahati. The committee members and staff at CPP-IPR also carried out a Swachhata Walkathon. A painting competition was also organized for the children of staff members. The concluding session of Swachhata pakhwada was held on 28th February. Mr. Utsav Modi, Program Officer, CEE (Centre for Environment Education) Ahmedabad, was invited, who delivered a special lecture on "Sustainable Waste Management, RRR (Reduce, Reuse, Recycle) and Circular Economy". During this program, prizes were awarded to the winners of the competitions. Swachhata Committee Chairman Shri Dilip Rawal proposed Vote of Thanks. Dean-Administration in his concluding speech stressed on the importance of cleanliness and praised everyone for successfully organising the Swachhata Pakhwada. He also motivated everyone to continue working for cleanliness.



Swachhata Pakhwada activities at IPR

National Science Day Celebration at HRI

On the occasion of National Science Day, celebrated on February 28, 2025 at the HRI Campus, students observed several astronomical events, including a planetary parade, and the Orion and Gemini constellations. These celestial events were visible in the night sky on the same day, making the celebration both educational and memorable.



Students observed planetary parade, and the Orion and Gemini constellations on Science Day at HRI Campus

National Science Day Celebration at IoP

Institute of Physics commemorated National Science Day 2025 with emphasis on “Empowering Indian Youth for Global Leadership in Science & Innovation for Viksit Bharat”. The aim was to uplift the stature of science and ignite a love for knowledge. The event took place on February 28, 2025 at IoP, Bhubaneswar. The event commenced with the inauguration by Prof. K. K. Nanda, Director, IoP Bhubaneswar, in the presence of Prof. Dinesh Topwal, adviser to NSD-2025, Dr. K. C. Patra, coordinator of NSD-2025, and Chief Guest Dr. Chitta Ranjan Mishra. The event began with the candle-lighting ceremony symbolizing the pursuit of scientific enlightenment. Each flame represented the collective drive for knowledge and innovation, inspiring participants. United by their passion for discovery, they honored the vast realms of science. With curiosity ignited, attendees embarked on a journey to



Participants of NSD-2025 in IoP Auditorium

uncover the universe's mysteries, embodying the true essence of National Science Day. The director's eloquent and passionate words inspired the audience, sparking a sense of purpose and optimism for the scientific journey ahead.

Director IoP, Prof. K. K. Nanda, officially inaugurated the Science Exhibition Hall, ushering in a realm of wonder and discovery for all visitors. Approximately 500 students and educators enthusiastically explored the various stalls, actively engaged in numerous activities, and departed with smiles, enriched by a truly rewarding experience.



Popular talks presented by Dr. C. R. Mishra (left) and Prof. K. K. Nanda (right) during NSD 2025



Students from different schools participating in Science Exhibition at IoP

54th National Safety Week 2025 at IPR

The 54th National Safety Week was celebrated at IPR from March 4-10, 2025. This year's theme was "Safety and Well-being Crucial for Viksit Bharat." During the week, Institute organized various events and competitions to create safety awareness among its employees at IPR, FCIPT & ITER-India. Competitions such as Slogan, Quiz and Essay Writing were conducted in Gujarati, Hindi & English languages, based on the decided theme. Good response was received from the employees for various competitions.

During the week, demonstration of firefighting equipment was conducted at IPR and FCIPT for employees as well as security personnel. A Safety Awareness Talk by Shri Devendra Modi, Safety Officer, was also organised.

The Concluding Session was conducted on March 10, 2025, included a talk on "Safety Measures in High Pressure High Temperature Experimental Helium Cooling Loop at IPR" delivered by Shri Ankit Gandhi. Dr. Subroto Mukherjee, Dean (Admin) shared his thoughts on safety. He emphasized that safety should be an integral part of the working culture. He also informed that appropriate safety measures are to be taken care, if any system does not operate for quite long time. He congratulated the winners of various competitions and safety committee for organizing this event. Safety Pledge was administered by Dr. Rajesh Kumar, Co-Chairperson of the Safety Committee. This was followed by prize distribution to the winners of various competitions. Shri Sudhirsinh Vala, Member, Safety Committee gave the vote of thanks.



Participants during the demonstration of the fire-fighting equipment as part of National Safety Week 2025 at IPR

International Women's Day 2025 at NISER

On March 8, 2025, the NISER community joyfully celebrated International Women's Day, acknowledging the invaluable contributions of women in science, research, education, and society at large. The day served as a tribute to the dedication, innovation, and resilience of women whose efforts continue to inspire and shape a brighter, more inclusive future. The occasion also reaffirmed NISER's ongoing commitment to promoting equality, inclusion, and empowerment across all spheres of life. The celebration stood as a collective reminder that by breaking barriers together, we can foster an environment where every woman is empowered to thrive.

Swachhata Pakhwada at NISER

In adherence to the objectives of the Government of India's Swachhata Pakhwada initiative, the National Institute of Science Education and Research (NISER) conducted the observance of Swachhata Pakhwada from March 11-24, 2025, in lieu of the nationally designated period in February, owing to the pre-scheduled mid-semester examinations during that time. The observance started with the Swachhata Pledge administered by the Director, reaffirming collective commitment to cleanliness and sustainability. A series of impactful events followed:

Swachhata Rath: a mobile exhibit designed with creative and informative displays carrying key messages on the importance of maintaining cleanliness in both public and private spaces, which circulated across campus academic blocks to ensure visibility and engagement.

Plastic Reuse Art Exhibition: Students and staff crafted utility items and artworks from used plastic bottles, promoting recycling and awareness of plastic pollution, which were then showcased in an on-campus exhibition.

Short Documentary Screening ("Clean NISER"): Held on March 22, 2025 student-made short documentaries under the theme "Clean NISER", captured institutional cleanliness efforts and conveyed the importance of individual responsibility.

Campus Cleanliness Drive (March 15, 2025): Over two hours of collective participation from the community to clean walkways and green areas, instilling long-term cleanliness habits.

Cycle Rally to Daya River (March 17, 2025): Volunteers cycled 20 km to raise awareness on river pollution, with a special focus on the Daya River, which holds significant historical and cultural relevance in Odisha but is currently facing ecological degradation. Collecting 1,000+ public signatures for a memorandum to the Hon'ble CM of Odisha, urging immediate and sustained action to restore and protect the river's ecosystem.

Panel Discussion: To deepen the intellectual discourse on issues related to waste and urban sustainability, a Panel Discussion was organized on March 19, 2025, themed "Challenges of Waste Management in Urban Spaces," with speakers from NISER and Executive Officer of Jatni Municipality Sri Suryamani Pattajoshi sharing insights on sustainable practices and policy challenges.

Competitions: In order to make cleanliness a part of everyday culture, NISER conducted competitions such as Cleanest Office/Hostel, Slogan Writing, Swachhata Quiz, and Graffiti fostered active engagement from students and staff on hygiene and sanitation.

Community Outreach (Padanpur Village): Conducted with student group Zaariya, involving a cleanliness drive and awareness sessions with local residents on waste disposal and hygiene.

The fortnight concluded with a Closing Ceremony on March 24, 2025 featuring prize distribution and speeches by the Director and Faculty-in-Charge of Swachhata Hi Seva Committee. Their address reaffirmed NISER's commitment to Swachh Bharat and highlighted the importance of civic responsibility within the academic community.

International Women's Day Celebration at HRI

International Women's Day was celebrated with enthusiasm at the HRI Auditorium on March 8, 2025. The primary objective of the program was to highlight the importance of women's empowerment and their active participation in all spheres of society, including science, education, leadership, and community development. The celebration included interactive sessions, and cultural performances. Participants discussed key issues related to gender equity, the role of women in scientific research, and the challenges faced by women in both professional and personal spaces. The program served as a platform to encourage dialogue, raise awareness, and inspire action toward building a more inclusive and equitable society.



Participants of International Women's Day celebration at HRI Auditorium

International Women's Day Celebration at IoP

To mark the celebration of International Women's Day, IoP organized two scientific talks by prominent women physicists on March 8, 2025. Prof. Vandana Nanal, Senior Professor at the Department of Nuclear and Atomic Physics, Tata Institute of Fundamental Research (TIFR), Mumbai (India) spoke on the topic "Is neutrino its own antiparticle?" In her talk, Prof. Nanal presented a brief report of ongoing and proposed NDBD experiments and highlighted Indian efforts towards the feasibility study of search for NDBD in ^{124}Sn . She also presented life and work of two prominent women physicists who have played major role in beta decay and double beta decay i.e. C S Wu and Maria Goeppert Mayer.

The other talk was by Dr. Anushree Ghosh, Quantitative analyst, Modefinance S.R.L, Italy who spoke on the title "From Neutrinos to Numbers: A Journey to Finance". In her talk Dr. Anushree Ghosh shared her journey from particle physics to finance, highlighting how the academic experiences-from Ph.D. to postdoc-can provide strong analytical skills, data analysis expertise, and machine learning proficiency. She also discussed the challenges that she faced while transitioning from physics to the fintech industry.

The HRI Badminton Tournament – 2025

The HRI Badminton Tournament-2025 was held from March 20-27, 2025. A total of 30 participants took part in the event, which was organized to promote physical fitness and encourage sporting activities within the campus. The tournament witnessed enthusiastic participation, showcasing competitive spirit, teamwork, and sportsmanship.



Participants of HRI Badminton Tournament-2025

Open Day at IoP

In celebration of the 40th anniversary of the Institute of Physics (IoP) in Bhubaneswar, an “OPEN DAY” was held on March 25, 2025. The inauguration of the Science Model Exhibition was made by Prof. K. K. Nanda, Director, IoP at Block-A Building. Approximately 1000 members of student community and the general public visited the Institute, exploring the campus to discover the exciting scientific initiatives and activities offered by the Institute. On this day, all laboratories and high-end instruments were open to the public and students. The “Open Day” at IoP was a resounding success.



*Inaugural meeting of Open Day at
IoP Auditorium*



IoP scholar Scientific Model presentation

HRIJOYS, The Annual Cultural Program of HRI

HRIJOYS, the annual cultural program of HRI, is one of the institute's most prestigious and eagerly awaited events. It showcases a wide range of artistic performances, including dance, music, drama, and more, reflecting the diverse talents of the HRI community. This year the event was organised on April 5, 2025 and around 70 participants including students and residents took part in it, bringing energy, creativity, and passion to the stage. HRIJOYS not only provides a platform for self-expression but also fosters a strong sense of community and cultural appreciation among students and staff alike.



Participants of HRIJOYS- 2025

Observance of Fire Service Week-2025 at IPR

The Fire Service Week 2025 was observed across IPR, ITER-India, FCIPT from April 14-20, 2025 as per the directives of the DGFS, CD & HG (Fire Cell), Ministry of Home Affairs, Govt. of India to observe Fire Service Week 2025 in a meaningful manner so that fire safety sensitization and awareness could be spread among the public as much as possible. The Fire Service Week was focused on fostering a collective approach towards fire safety awareness and preparedness among employees. This year's theme was "Unite to Ignite, a Fire Safe India". The institute organized various competitions to create fire safety awareness among its employees. Competitions were organized for the employees of IPR, FCIPT & ITER-India on Slogan and Essay Writing in Gujarati, Hindi & English based on the decided theme. Overwhelming response was received from the employees for various competitions. During the week, demonstration of firefighting equipment was conducted at IPR for the employees. Also, a Safety Awareness. Talk was organised on Fire Alarm & Detection System for Security Team by Shri Devendra Modi.



Participants at the Fire Service Week-2025 at IPR, Gandhinagar

A SPIC-MACAY Sitar Recital Cultural Program at HRI

A SPIC MACAY Sitar recital, a cultural program of HRI, was held at the HRI Auditorium on May 16, 2025 as part of a cultural program organized by the Society for the Promotion of Indian Classical Music and Culture Amongst Youth (SPIC MACAY). The audience thoroughly enjoyed the classical sitar performance by Professor Pt. Sahitya Kumar Nayar, a distinguished recipient of the Uttar Pradesh Sangeet Natak Akademi Award.



SPIC-MACAY Sitar Recital Cultural Program at HRI Auditorium

Foundation Day Celebration at VECC

Variable Energy Cyclotron Centre (VECC) commemorates 16th June as its Foundation Day to mark the historic milestone of delivering the first beam from the country's indigenously built cyclotron in 1977. In this year's Foundation Day celebration of VECC, Prof. Avesh Kumar Tyagi, Dean-Academic (HBNI), was the Guest of Honour. In his address, Prof. Tyagi reflected on Dr. Homi Bhabha's enduring legacy in accelerator science. In the celebration Shri Sumitesh Sarkar, Associate Director of the Space Applications Centre, ISRO, was the Chief Guest.



Dignitaries on the dias during VECC's Foundation Day Program



Prof. A. K. Tyagi, Dean HBNI and guest of honour being presented with a souvenir



Prof. A. K. Tyagi, Dean HBNI, planting a mango sapling in front of the Raja Ramanna Research Scholars' Wing



VECC-HBNI students led the National Anthem during the Foundation Day program

International Yoga Day – 2025 at HRI

International Yoga Day was celebrated at HRI on June 21, 2025 with great enthusiasm. A total of 30 participants attended the session, which focused on promoting physical and mental well-being through the practice of yoga. The session included a series of pranayama techniques such as Bhastrika, Anulom Vilom, Kapalbhathi, and Bhramari, along with several yoga asanas, including the Surya Namaskar. The event provided a refreshing and energizing experience, encouraging participants to incorporate yoga into their daily routines for a healthier lifestyle.



Celebration of International Yoga Day 2025 at HRI

HRI Table Tennis Tournament

The HRI Table Tennis Tournament-2025 was held between June 22-26, 2025. A total of 26 participants took part in the event, which was organized to promote physical fitness and encourage sporting activities within the campus. The tournament witnessed enthusiastic participation showcasing competitive spirit, teamwork and sportsmanship.



Winners and Participants of the HRI Table Tennis Tournament – 2025

❖ **Symposia/ Conferences/ Workshops Conducted by CIs/ OCCs**

Foundational Lecture Series on Theoretical Computer Science at IMSc

A six-day school focused on foundational concepts in theoretical computer science was organised between Jan 2-8, 2025. This program was open to second-year and higher undergraduate students, masters, and doctoral students interested in exploring or advancing their knowledge of theoretical computer science. The school featured engaging lectures and interactive sessions led by experts in the field.

Frontiers in Non-Equilibrium Physics – II at IMSc

A conference called Frontiers in Non-Equilibrium Physics - II was organised at IMSc between January 7-10, 2025. While the formalism of equilibrium physics is established in an elegant way within the Boltzmannian description, understanding of non-equilibrium systems remains elusive although they are prevalent in nature. For example, nonequilibrium aspects are essential for fluid motions, material failure or sustenance life in a single cell. This conference brought together leading experts, young scientists, early career researchers and students working in different areas of the broad field of non-equilibrium physics, in the pursuit of cross-talks across disciplines and for fostering collaborations. The conference was focused on a broader theme of random processes and applications, statistical physics, non-equilibrium phenomena in soft and biophysics.



Participants of Frontiers in Non-Equilibrium Physics - II

Processability and Applications of Reticular Advanced Materials (PARAM-2025)

The School of Chemical Sciences at NISER Bhubaneswar hosted a two-day workshop on “Processability and Applications of Reticular Advanced Materials” on January 17, 2025. The event brought together researchers, graduate students, and post-doctoral scholars to discuss recent advancements in reticular chemistry. Key topics included interface engineering, thin films and membranes for separation, theoretical reticular material design, optoelectronics, electrochemistry, and THz spectroscopy. A highlight was the poster presentation session, where students showcased their research, with the best posters receiving awards from RSC and Thieme Publishers.

Workshop to Enhance Knowledge of Quality Assurance at IPR

To strengthen the understanding and implementation of Quality Assurance (QA) practices among IPR staff members, IPR and ITER-IN collaboratively organized a dedicated workshop. The initiative aimed to foster a deeper appreciation for QA principles, standards and practices, critical to achieving excellence in project execution and organizational operations.

As a precursor to the main event, a special Pre-Workshop Session for Division Heads and Section Heads was organized on January 17, 2025. This session provided a comprehensive briefing on the workshop’s objectives, agenda, and the critical role that QA plays across various projects and divisions. The workshop featured two expert speakers: Shri Pankaj Mokaria (QA, ITER-IN) and Shri Jigar Raval (IQS, MESD, IPR). They conducted engaging sessions, explaining key concepts such as Quality Control, Quality Assurance, and the application of QA through real-world case studies. These sessions highlighted the importance of QA in maintaining consistency, ensuring compliance, and achieving operational success.

The main workshop, held during January 20–21, 2025, was specifically designed for SO-C and TO-C staff members to deepen their knowledge of QA methodologies. The program began with opening remarks by Prof. Subroto Mukherjee (Dean-Administration), who emphasized the significance of QA in achieving organizational excellence. Shri Ujjwal Kumar Baruah (Director-ITER-IN) followed with an insightful address, outlining the workshop’s goals and objectives while setting the tone for the



Participants during a session in the workshop to Enhance Knowledge of Quality Assurance at IPR

sessions ahead. Over the course of two days, a total of eight sessions were conducted. A total of 51 staff members attended the workshop, actively participating in discussions and practical exercises designed to build their QA competencies.

The workshop concluded with closing remarks by Dr. Paritosh Chaudhuri (Dean-R&D), who underscored the importance of embedding QA practices into the organization's culture and daily operations. He commended the participants for their enthusiasm and urged them to apply their learnings in their respective roles.

Advances in Modern Complexity Theory – Complexity Theory Update Meeting at IMSc

A Complexity Theory Update Meeting was organised by IMSc during January 23-25, 2025. This event was a community-building effort for computational complexity theorists in India in general, in Chennai in particular. At current count, there are over 40 researchers in faculty positions at institutes across the country, working primarily in computational complexity. More than 10 of these are in Chennai. Along with their graduate students, and with postdoctoral researchers, this is a sizable community. Internationally, there is growing recognition of complexity-theory research originating in India. This event was intended to serve as an update meeting, where Indian researchers gather and present recent advances in the field and where doctoral and postdoctoral researchers get an opportunity to network with their counterparts in other institutes/cities.

16th National Symposium on Radiation & Photochemistry (NSRP-2025)

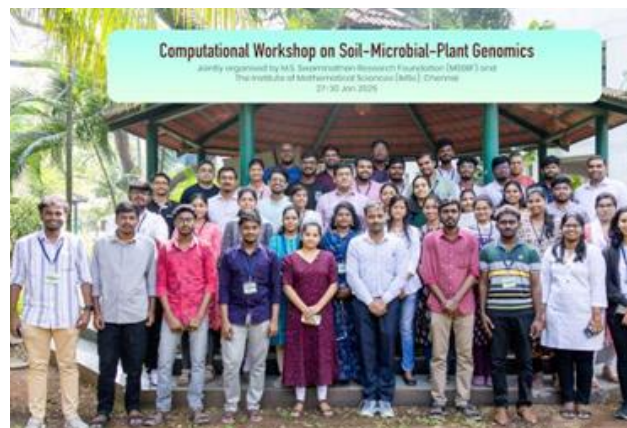
The event was organised by NISER in collaboration with the Bhabha Atomic Research Centre and the Indian Society for Radiation and Photochemical Sciences (ISRAPS) between January 23-25, 2025. While the TSRP attracts eminent scientists working at the forefront of radiation chemistry and photochemistry, the deliberations offer a unified platform for discussing recent advancements in both fields of radiation and photochemical research.

Computational workshop on Soil-Microbial-Plant Genomics at IMSc

This interdisciplinary workshop was jointly organised by M.S. Swaminathan Research Foundation (MSSRF) and The Institute of Mathematical Sciences (IMSc), Chennai between January 27-30, 2025. The workshop was aimed to provide training to Ph.D. and Masters students to undertake research focused on integration of genomic data from soil microorganisms and plants, to better understand and manage our ecosystems. The workshop introduced computational methods to participants which will enable them to explore the complex interactions between plants, soil and the associated microbiome, and moreover, address challenges in agriculture, sustainability, and ecosystem management.



Prof. R. Balasubramanian, former Director, IMSc presenting a memento to Dr. Soumya Swaminathan



Participants of Computational workshop on Soil - Microbial - Plant Genomics

One Day Seminar on Surface Modification using Plasma Technologies (SMPT-2025) at IPR

As a part of ongoing efforts for commercializing plasma-based technologies, Institute for Plasma Research and AIC-IPR Plasmatech Innovation Foundation, in association with Gujarat Chamber of Commerce & Industries (GCCCI) organized one day seminar on the theme “Surface Modification using Plasma Technologies (SMPT-2025)” on February 4, 2025 at FCIPT, Gandhinagar. The aim of the seminar was to give a platform to researchers and industries for showcasing their ongoing activities and results in the field of surface modification using plasma-based technologies. The topics covered in the seminar were Plasma Nitriding, Plasma carburizing process, Plasma assisted physical and chemical vapour deposition, Nano textured surfaces for super hydrophobicity, Plasma surface modification of textiles and polymers and Plasma surface modification for agricultural applications etc.

The seminar was inaugurated by the Chief Guest Shri. R.D. Barhatt, Joint Commissioner of Industries, Government of Gujarat, and the Guest of Honour was Shri. Rajeshbhai Gandhi, Senior Vice-President, GCCCI. In the inaugural session, the guests were felicitated by Dean (Admin), Dr. S. Mukherjee and Dean (R&D) Dr. Paritosh Chaudhuri. Two sessions were held on plasma surface modification for various applications. One additional session covered the funding opportunities for start-ups, AIC-IPR and incubation at AIC-IPR etc. Around 60 participants from industries, universities, research institutes participated in this event. There were 12 invited talks (06 from outside + 06 from IPR) in the seminar. After the technical sessions, panel discussion was organized where delegates representing industries, academic institutes and start-ups actively interacted with the audience and gave valuable feedback and suggestions. A Lab visit was conducted after the panel discussion.



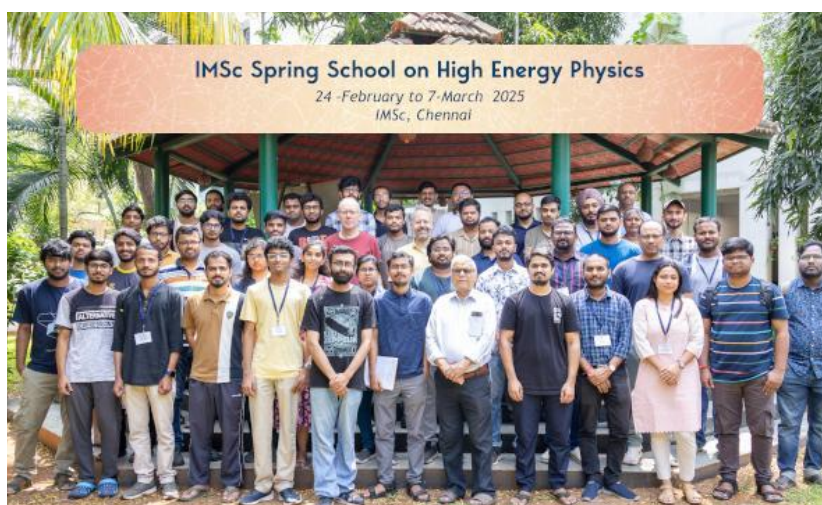
Participants at SMPT-2025

Conference on Interdisciplinary Perspectives on Biomolecular Condensation at IMSc

IMSc organised a workshop during February 18-19, 2025 on “Interdisciplinary Perspectives on Biomolecular Condensation”. The discovery of biomolecular condensates (membrane less organelles) has established a new paradigm in modern biology. There is an upsurge of interest to understand the organizational principles of condensates, and any new insights is likely to emerge from a multidisciplinary approach, based on ideas rooted in polymer and soft matter physics, chemical engineering, as well as molecular and cellular biology. This meeting was aimed to bring together experts from diverse fields, facilitate cross-talk, and chart out a roadmap for the future through research talks and panel discussions.

IMSc Spring School on High Energy Physics 2025

IMSc Spring School on High Energy Physics was a two-week program organized at the Institute of Mathematical Sciences, Chennai between February 24-March 7, 2025. The purpose of this school was to train young Indian PhD scholars on advanced and contemporary topics in HEP, which are not usually covered in a graduate school curriculum in India. The lectures were intended to prepare PhD students to be able to address important problems which are at the frontiers of research in high energy physics. This year the school consisted of lectures from leading researchers on various aspects of theoretical high energy physics on topics including perturbative QCD, thermal field theory, lattice gauge theory, baryogenesis, jet physics and effective field theories in particle physics. Eight lecturers gave a total of 29 lectures. Sixty-eight of the registered participants from institutions across India participated in the school.



Participants of IMSc Spring School on High Energy Physics

Colloquium: The Compact Muon Solenoid (CMS) Odyssey — Run 3 and Beyond

NISER successfully hosted an insightful Institute Colloquium titled “The Compact Muon Solenoid (CMS) Odyssey — Run 3 and Beyond”, delivered by Prof. Gautier Hamel de Monchenault (Spokesperson, CMS Collaboration, CEA-IRFU, Université Paris-Saclay, France) on February 25, 2025. The talk explored the remarkable journey of the CMS experiment at the Large Hadron Collider (LHC), beginning with the historic discovery of the Higgs boson in 2012 to recent advancements in detector technologies for the High-Luminosity LHC (HL-LHC). The colloquium also highlighted key physics measurements from recent LHC runs and provided a glimpse into future prospects of high-energy particle physics.

Advancing Cancer Research: Insights and Applications of PDX Models

A one-day seminar titled “Advancing Cancer Research: Insights and Applications of PDX Models” was organized on March 8, 2025, at NISER, jointly by the National Centre for Animal Research and Education (NCARE) and the School of Biological Sciences (SBS). The event brought together clinicians, veterinarians, and life science researchers on a common platform to deliberate on translational cancer research using Patient-Derived Xenograft (PDX) models. The seminar featured expert talks from leading national and international speakers, topics such as chemo-immunotherapy using PDX models, Innovations in treating high-mortality cancers. Other sessions explored tumor microenvironments, theranostics, and advanced drug delivery systems. Additionally, students from ILS Bhubaneswar and NISER presented their recent work, and a panel discussion on bridging research and clinical applications facilitated ideas for future collaborations. The seminar fostered interdisciplinary collaboration, emphasized the importance of advanced cancer modeling, and opened new avenues for translational research funding and institutional partnerships.

Particle Therapy Masterclass (PTMC 2025) at NISER

Particle Therapy MasterClass (PTMC 2025) conducted on March 07, 2025, targeting the High School Students. The PTMC is a one-day workshop organized for nearby school (10+) students and 1st year NISER students as an outreach programme of CMRP, NISER. In this workshop, we introduce students to the field of Medical and Radiation physics and motivate them to join for research as well as our CMRP M.Sc. course in medical physics. The workshop includes half day lectures on particle therapy, the basics of particle accelerators and related instruments, and a half-day hands-on-session of software (Matrad) training for nearly 100 students. In the hands-on session, 50 desktop computers were equipped with Matrad. It is software used in hospitals for dose calculation while treating the tumour with high energy radiation of photons, electrons and heavy ions (proton, He, C, etc.).

Colloquium: Being Macaque: Our Complex Coexistence with Urban and Synurbising Macaques

On March 13, 2025, NISER hosted an engaging Institute Colloquium featuring Professor Anindya (Rana) Sinha, a renowned behavioural biologist and science philosopher. Held at the Pathani Samanta Auditorium, the session titled “Being Macaque: Our Complex Coexistence with Urban and Synurbising Macaques” delved into the nuanced relationships between humans and primates shaped by rapid urbanization. Prof. Sinha’s interdisciplinary talk bridged biology, sociology, and the humanities, offering fresh perspectives on how macaques are adapting to urban landscapes. The event concluded with an informal interaction, where attendees had the opportunity to further discuss and reflect on the fascinating dynamics of human-animal coexistence.

Expert Talk on “Can a Researcher be a Good Entrepreneur?” at IPR

As part of ongoing efforts to promote innovation and entrepreneurship within the academic community, AIC-IPR Plasmatech Innovation Foundation in association with HBNI Institute Innovation Council organized an insightful talk on the topic “Can a Researcher be a Good Entrepreneur? – A Technology Translation & Design Perspective” on March 13, 2025. The session aimed to spread awareness about the importance of technology translation and the journey from lab-based innovations to market-ready products.

The session was delivered by Dr. Suresh Nair, Managing Director, Amara Raja Design Alpha Pvt. Ltd., an accomplished domain expert and entrepreneur, who shared his extensive experience in the fields of technology development and commercialization. During his address, Dr. Suresh elaborated on the crucial role that researchers play in bridging the gap between laboratory research and market needs. He provided a detailed overview of the product development process, highlighting essential components such as technology readiness, market assessment, design strategies, and the pathways to successful commercialization.

The talk witnessed active and enthusiastic participation from students, faculty members, and staff, who engaged in meaningful discussions and gained valuable insights on how research-driven ideas can be transformed into impactful entrepreneurial ventures. The session served as a valuable platform to encourage researchers to consider entrepreneurial avenues for the practical application of their innovations.

Bits & Scripts: 2nd Workshop on Computational Epigraphy at IMSc

IMSc hosted a two-week hands-on workshop to introduce an interdisciplinary audience from humanities, sciences & engineering to the techniques of computational epigraphy for deciphering scripts, with a special focus on the Indus Civilization inscriptions from March 13-24, 2025. The workshop consisted of lectures, tutorials and training to the participants in applying algorithmic methods to acquire, process and analyze data related to inscriptions in order to eventually reconstruct the underlying language and writing system. The invited talks include Origins & types of writing systems, Deciphering ancient scripts, Corpus database creation, Machine learning fundamentals, Network science tools & computational algorithms, Indus civilization inscriptions: Databases, problems and prospects etc. The workshop was organised by IMSc Computational Epigraphy Lab.



Participants during Bits & Scripts: 2nd Workshop on Computational Epigraphy at IMSc

Plasma Exhibition at IIT Jammu organised by IPR

IPR, Gandhinagar, in association with IIT-Jammu (J&K) organized an exhibition on Plasma, “The Fourth State of Matter” at IIT-Jammu during March 17-21, 2025. This program was a part of IPR’s scientific outreach activity in various states of India under the auspices of “70 years of DAE” celebrations. Over

1500 students and teachers from 19 schools and general public visited exhibition. 30 teachers were trained from host institute to explain the static and working models and resource materials during this exhibition.



Participants at the Plasma Exhibition at IIT Jammu

Third P. K. Parija Lecture in Life Sciences at NISER

On April 01, 2025, NISER hosted the Third P. K. Parija Lecture in Life Sciences, delivered by Professor Shubha Tole, Senior Professor at TIFR, Mumbai. The lecture titled “The Circuits of Sensation” offered an illuminating exploration of how the brain develops, focusing on the formation and function of neurons and glial cells. Prof. Tole explained how disruptions in these processes can result in neurodevelopmental disorders and discussed key research tools including genetic knockouts, RNAi, and stem cell studies. The session was designed to be engaging for both scientific and general audiences, reflecting Prof. Tole’s commitment to accessible science communication. The talk highlighted the importance of developmental neuroscience and was a tribute to the legacy of Prof. P. K. Parija in advancing life sciences.

IMSc Astronomy Series

As part of its new Astro-Series for the general public, IMSc, Chennai, hosted an engaging outreach program titled “Moon Research from Your Rooftop” on April 5, 2025. The event featured a captivating talk by renowned science communicator Samir Dhurde, followed by a public sky-watching session.

Workshop on Prototype/Process Design and Development by HBNI RRCAT IIC

A workshop on Design and Development under (IIC) Initiative was organised by HBNI RRCAT IIC during April 7-9, 2025 at RRCAT, Indore. The primary objective of the workshop was to introduce participants to the structured approach of prototype and process design development. It aimed to bridge the gap between idea and implementation by equipping innovators with essential technical knowledge and hands-on understanding of designing, testing, and refining prototypes. The 3-day workshop witnessed enthusiastic participation from 130 individuals across academic institutions and start-up ecosystems. Through a series of technical sessions, interactive demonstrations, and design sprints conducted by domain experts from RRCAT’s TechSpark team, the participants explored a wide spectrum of prototype and process development frameworks. The sessions covered everything from ideation to design validation and manufacturing considerations, enabling participants to conceptualize and evolve their own projects. The event was a part of the IIC activities and reflected the collaborative strength of HBNI RRCAT and AIC π -Hub in building a vibrant innovation culture.

Participants expressed a high level of satisfaction, and several teams initiated discussions to incubate their ideas further at AIC π -Hub. Overall, the workshop successfully met its goals of capacity building and hands-on technical education in the field of innovation and product design.



Participants during the workshop at RRCAT

InPTA workshop “Decoding Outliers and Taming Jitters” at IMSc

IMSc Chennai hosted the InPTA workshop “Decoding Outliers and Taming Jitters” between April 7-11, 2025 with active participation from scientists across India. The workshop marked a key step in strengthening IMSc’s central role in InPTA and GW research. The workshop brought together IMSc faculty, postdocs, and students, alongside national collaborators, to work intensively on InPTA data. The main aim was to understand unusual features in the data, especially the impact of solar wind and coronal mass ejections to improve gravitational wave detection.



Participants at the InPTA Workshop at IMSc

A talk on Cyber Security Awareness at IPR

Shri Gigi Joseph, Head Security Electronics & Cyber Technology Division, CISO - BARC gave an awareness talk on cyber security on April 16, 2025. He gave an overview of the importance of cyber security at workplace, the tools which should be in place based on the need of the institute and national security,

and the role of every citizen in contributing to the safety of their beloved ones as well of self from cyber-attacks. The insightful talk provided information on various types of cyber security frauds in general life. He emphasized on the importance of being vigilant while using internet services and digital media including digital arrest, share market fraud, fake ID or duplicate ID etc. He elaborated on the different types of cyber-attacks and mentioned about preventive measures against these attacks.

IP Utsav at IPR

Ministry of Education Innovation Cell (MEI) organized the IP Utsav during April 21-26, 2025. IPR coordinators with and HBNI Institute Innovation Council (HIIC) members, Dr. Mukesh Ranjan (Innovation ambassadors) and Dr. Sudhirsinh J Vala (Innovation ambassadors) coordinated the IP Utsav activity. Various talks about design registration, copyright, trademark, patenting, commercialization etc. were arranged both at IPR, FCIPT and CPP campus. Students, Dean Academic, Academic committee members, HBNI faculties and Postdoctoral fellows participated in the event.

One-Day Training Workshop on Plasma at SP University organised by IPR

A one-day workshop and training session on the topic “Plasma: The Fourth State of Matter” was organized on April 24, 2025 by the District Community Science Center, Sardar Patel University, Vallabh Vidyanagar, with support from GUJCOST, Gandhinagar, and in collaboration with IPR, Gandhinagar. The objective of this special program was to provide guidance and hands-on training to students and researchers on plasma science. The event began with a welcome address by Dr. Vibha Vaishnav, Honorary Director of the Community Science Center, who introduced the guests and outlined the goals of the workshop. The inauguration session was graced by Prof. P. C. Vinodkumar, Former Head of the Department of Physics, Sardar Patel University, and President, IAPT RC07 who was the Chief Guest. The workshop concluded with a hands-on training session, where participants were engaged in practical demonstrations and observed plasma models. The event was attended by around 29 participants, including teachers, trainees, students, and science enthusiasts, all of whom gained valuable knowledge and inspiration for future research and career in plasma science.



Participants of the One-Day Training Workshop on Plasma at SP University organised by IPR, Gandhinagar

Talk: Laser Communications: Bridging Continents in the Blink of an Eye

The Optica Student Chapter of NISER successfully organised a semi-popular talk and tutorial session on April 25, 2025, featuring Dr. Dhruva J. Biswas, former Head of the Laser & Plasma Technology Division at BARC and a distinguished expert in laser science. Held at LH-4, the event began with a talk titled “Laser Communications: Bridging Continents in the Blink of an Eye” from 3:30 PM to 4:30 PM, where Dr. Biswas discussed the transformative impact of laser-based optical communication on global connectivity. This was followed by a tutorial session “What’s a Laser, Really? A Conceptual Introduction”, aimed at undergraduate students, which simplified the core principles of laser technology in an accessible and engaging format.

Chennai String School at IMSc

The IMSc string group organised a five days long school (Chennai String School 2025) on various aspects of String Theory and QFT at IMSc from April 28-May 2, 2025. The program consisted of 16 pedagogical lectures on four different topics in theoretical Physics. The program provided the students, postdocs and faculties at IMSc, IIT Madras and CMI exposure towards current active areas of research in theoretical high energy Physics such as the interplay between quantum information and gravity, real time holography, celestial holography and the mathematical aspects of renormalization in quantum field theory. The speakers were Prof. Onkar Parrikar from TIFR Mumbai, Prof. R. Loganayagam from ICTS Bengaluru, Prof. Shamik Banerjee from NISER Bhubaneswar and Alok Ladhha from CMI. The event was organised by Prof. Suryanarayana Nemani, Prof. Sujay Ashok and Dr. Roji Pius.

Ph.D. - Postdoc Math Meet at HRI

A Ph.D. - Postdoc Math meet was organised between May 3-4, 2025 at HRI. The aim of this meet was to provide a platform for Ph.D. students and postdoctoral researchers to interact and share their ongoing research. The event featured a series of talks delivered by PhD scholars and postdocs, offering an opportunity for academic exchange and collaboration. The event consisted of 16 talks, each lasting 40 minutes, delivered by Ph.D. students and Postdocs. The talks covered a broad spectrum of Mathematics, including Algebra, Number Theory, Manifolds, and Partial Differential Equations.



Participants of Ph.D. & PDF Math Meet at HRI Higgs Lecture Hall

B-Plan Pitch: Demo Day/Exhibition/Poster Presentation of Business Plans & linkage with Innovation Ambassadors/Experts for Mentorship Support at RRCAT

An event called B-Plan Pitch was organised on May 12-13, 2025 as a part of Innovation & Entrepreneurship Activity under IIC Framework at AIC RRCAT PI-HUB Foundation. The objective of the event was to provide a platform for students and early-stage innovators to showcase their business ideas in the form of posters and presentations. The Demo Day aimed to encourage entrepreneurial thinking, validate business concepts, and connect aspiring founders with Innovation Ambassadors and domain experts for mentorship and support. The event also promoted team-based innovation and cross-disciplinary collaboration. 200 participants formed innovation-driven teams and showcased their start-up ideas through posters, models, and conceptual presentations. The event space was transformed into an innovation exhibition zone, where each team explained their business models to a panel of experts, Innovation Ambassadors, and visitors. The initiative effectively nurtured early-stage entrepreneurial capacity and established a pipeline for incubatable projects. Several promising ideas have now been identified for further support under AIC RRCAT PI-Hub's pre-incubation and mentoring programs.



Poster viewing by the participants during B-Plan Pitch at RRCAT

IMSc Summer Writing Workshop

The first IMSc Summer Science Writing Workshop was held during May 12-16, 2025 at the IMSc, Chennai. The workshop trained participants in reading technical papers, writing about mathematical sciences for both technical and general audiences, and creating effective scientific illustrations. The instructors included Dr. Vivek Tewary (SIAS), Sayantan Datta (Krea-CWP), Anusheela Chatterjee (TIFR Hyderabad) and Dr. Shakti Menon (IMSc Chennai). The program brought together diverse expertise to help participants bridge the gap between scientific research and clear, impactful communication.



Participants at the Summer Writing Workshop at IMSc

International Women in Mathematics Day at HRI

Prof. Punita Batra and Prof. Amrita Ghosh, in collaboration with Dr. Mallika Roy, organized a two-day colloquium series titled “International Women in Mathematics Day”, during May 12–13, 2025. There were six talks—two talks were online and four talks were offline. six speakers were from University of Côte d’Azur, France.



Participants of International Women in Mathematics Day Program at HRI

Colloquium: The Quantum Light: Optics as the Foundation of Secure and Efficient Communication at NISER

On May 16, 2025, in celebration of the International Day of Light, the Optica Student Chapter at NISER, Bhubaneswar, hosted an engaging colloquium titled “The Quantum Light: Optics as the Foundation of Secure and Efficient Communication”. The talk was delivered by Dr. Joyee Ghosh, Associate Professor in the Department of Physics at IIT Delhi. Dr. Ghosh explored cutting-edge advancements in quantum optics, including quantum key distribution, entangled photons, and their vital role in shaping the future of secure communication and cybersecurity. The event offered attendees a fascinating glimpse into how light is driving the next frontier in communication technology.

National Technology Day – 2025 at NISER

As part of the National Technology Day 2025 celebrations, NISER Bhubaneswar had the honour of hosting a Distinguished Lecture by Dr. V. Narayanan, Chairman of ISRO and Secretary, Department of Space, Government of India. The event took place on May 21, 2025. In his talk titled “Indian Space Program – Pride of the Nation”, Dr. Narayanan highlighted ISRO’s pioneering achievements and shared key insights into upcoming missions such as Gaganyaan, Chandrayaan-4, the Venus Mission, and the Next Generation Launch Vehicle. The lecture was part of the Distinguished Lecture Series jointly

organized by the INAE Bhubaneswar Chapter in collaboration with SOA University, IIT Bhubaneswar, CSIR-IMMT Bhubaneswar, ICT-IOC Bhubaneswar Campus, IEEE Bhubaneswar Section, and NISER.

CPP-IPR at the 39th Annual Congress of the Assam Academy of Mathematics

CPP-IPR's Outreach Cell participated at the 39th Annual Congress of the Assam Academy of Mathematics, organized at Department of Mathematics, Dibrugarh University on May 17, 2025. Plasma devices, namely glow discharge plasma, Jacob's ladder, plasma globe and plasma thruster were exhibited. Two posters demonstrating the use of mathematics in plasma physics were also displayed. The stall was visited by around 100 participants (students from various schools and research scholars of Dibrugarh University).

Brains, Dynamics & Computation: A Workshop in Network Neuroscience at IMSc

A Workshop in Network Neuroscience titled "Brains, Dynamics & Computation" was organised between May 22-June 4, 2025 at IMSc, Chennai. The workshop was targeted at a multi-disciplinary audience, and aimed to highlight how network-based perspectives can yield significant insights into the workings of the brain. Particular attention was paid to structural and functional connectomes across species, ranging from the nematode *C. elegans* to primates & humans: their roles in mediating brain function and facilitating computation. Participants gained experience in applying a range of theoretical frameworks to address research questions through lectures as well as group projects. The latter spanned topics ranging from modelling collective activity in small networks of neurons to applying network science methods to the analysis of macro-connectomes.

Summer School Program 2025 at IPR

IPR Summer School Program (SSP) 2025 started on May 26, 2025. 23 Students from various universities across the country joined the six weeks program. SSP Coordinator, Dr. Devendra Sharma gave a detailed introduction to the students. Dr. Vipul Tanna gave a motivating speech to the students. After the introductory session, Mr. Saroj Das, Head SIRC gave a talk on the activities and services of the library, including various aspects of scholarly publishing. The students were also given an orientation with a tour of the IPR library.



Group photograph of all the participants of the Summer School Program 2025 at IPR, Gandhinagar

हरीशचंद्र अनुसन्धान संस्थान में वैज्ञानिक हिंदी कार्यशाला

09 -13 जून 2025 के बीच वैज्ञानिक हिन्दी कार्यशाला में हिन्दी माध्यम से अध्ययनरत कक्षा 11 एवं 12 के लगभग 40 विद्यार्थियों ने भाग लिया। कार्यशाला में भौतिकी, गणित और कंप्यूटर विज्ञान में शिक्षा प्रदान करने पर ध्यान केंद्रित किया गया, जिसमें सभी सामग्री हिंदी में दी गई। इस पहल का उद्देश्य वैज्ञानिक शिक्षा और हिंदी भाषा के बीच की खाई को पाटना है, यह सुनिश्चित करना है कि छात्र अपनी मूल भाषा में जटिल अवधारणाओं को अधिक प्रभावी ढंग से समझ सकें। शिक्षा के माध्यम के रूप में हिंदी का उपयोग करके, कार्यशाला ने इन तकनीकी विषयों को छात्रों के लिए अधिक सुलभ और प्रासंगिक बना दिया।



वैज्ञानिक हिंदी कार्यशाला के प्रतिभागी हरीशचंद्र अनुसन्धान संस्थान प्रयागराज परिसर में निर्देशक महोदय के साथ

Women's Cell Talk at IoP

A special seminar was conducted by the IoP Women Cell on June 10, 2025. The speaker, Prof. Soma Bandyopadhyay (Vice-Chancellor of Baba Saheb Ambedkar Education University, Kolkata), delivered a presentation titled "Work-life balance for women: A reality or a myth." She highlighted that the notion of an ideal work-life balance for women is frequently contested, with some perceiving it as a myth while others consider it an attainable goal. Although the pursuit of a flawless balance may be impractical, it is feasible to harmonize work and personal life in a satisfying manner. Achieving success involves prioritizing tasks, establishing boundaries, and cultivating a supportive atmosphere that enables women to excel both personally and professionally. Nevertheless, with strong determination, nothing appears to be unachievable.



Speaker with IoP members after the Women's Cell Talk

Foundation Series 2025 in Theoretical Physics at IMSc

The IMSc Foundation Series 2025 in Theoretical Physics was a week-long (June 23-27, 2025) academic event organized by the Outreach Team IMSc, Chennai. The program featured three intensive short-term courses designed for early-stage M.Sc. Physics students from Chennai and surrounding regions. Renowned faculty members from IMSc delivered the courses, offering in-depth lectures that bridged the gap between standard coursework and active research in theoretical physics. The sessions provided participants with valuable insights into Master's level topics through a research-oriented lens, enriching their academic foundation and sparking curiosity in advanced areas of study. The program effectively fulfilled its objective of motivating young physicists and encouraging them to consider careers in academic research. Through this initiative, IMSc continued its commitment to nurturing future scientific talent and fostering a vibrant research culture among emerging scholars. The following lectures were delivered:

(a) Gravitational-Wave Astronomy: Today and Tomorrow

This lecture by Ajith Parameswaran was organised by IMSc on June 25, 2025. The lecture provided an overview of recent breakthroughs in gravitational-wave astronomy. The speaker discussed key results from LIGO and Virgo, which have detected around 100 black hole and neutron star mergers, and highlighted pulsar timing array evidence for a nano-Hz gravitational-wave background. The talk also touched on the exciting future of the field, including improved detector sensitivity, the arrival of new observatories, and international efforts to build next-generation detectors to explore new sources and phenomena across the gravitational-wave spectrum.

(b) Alladi Ramakrishnan Centenary Lecture: Classical gravitational wave tails from quantum soft theorem

IMSc hosted the inaugural Alladi Ramakrishnan Centenary Lecture on **June 26, 2025**. The lecture was delivered by Prof. Ashoke Sen. In his talk, he discussed how quantum soft theorems help explain classical gravitational wave tails, highlighting deep connections between quantum theory and general relativity.



Prof. Ashoke Sen during the inaugural Alladi Ramakrishnan Centenary Lecture: Classical gravitational wave tails from quantum soft theorem at IMSc, Chennai

Summer Programme in Mathematics (SPIM)- 2025 at HRI

An outreach activity of HR called SPIM was undertaken between June 6-July 5, 2025, in which students were selected from all the four zones of India. This was the 23rd SPIM program organised at HRI. This year there were total 45 participants. Out of which, 40 outstation and 5 local participants were there. They were given lectures in Algebra, Analysis and Topology. The students and post-docs of HRI gave them tutorial sessions. Total 10 speakers gave lectures in this program.



Participants of SPIM, An Outreach Activity - 2025 at HRI

❖ Outreach and Other Activities at CIs/ OCCs

HRI Annual Sport Meet – 2025

The HRI Annual Sports Meet – 2025, organised on January 9, 2025, featured a wide range of games and events, organized into multiple categories based on different age groups. The event was conducted with the objective of promoting sportsmanship and encouraging active participation in physical activities among students. Approximately 60 participants enthusiastically took part in the event, making it a successful and spirited occasion.



Participants of HRI Annual Sports Meet – 2025

Annual public event: 'Science at the Sabha' at IMSc

The Institute held the eighth edition of its annual public event 'Science at the Sabha' on February 9, 2025 at the Music Academy, Chennai. This year, it was attended by close to 600 members of the general public who heard talks from four eminent scientists across Indian institutes on topics from ecology to mathematics. The four-course offering gave the audience a taste of research ranging from the challenges of nest relocation in ants, a deceptively simple open problem in number theory, the two sides of Artificial Intelligence, and disordered systems from man-made to natural materials.



Close to 600 people from the general public attending "Science at the Sabha"

HRI Science Talent Search Exam- 2024 Award Distribution

The Harish-Chandra Research Institute (HRI) has consistently made special efforts to inspire students toward scientific research. One of its key outreach activities is the annual HRI Science Talent Search Examination, designed to promote scientific and mathematical aptitude among school students. The examination was conducted in Physics and Mathematics on December 8, 2024, for students of grades IX to XII. A total of 496 students from 25 schools and colleges in and around Prayagraj participated in the two-shift examination. On April 13, 2025, awards were distributed to the top-ranking students across various categories.



Recognition of Excellence: Awardees at the HRI Science Talent Search Examination

Facets: Workshop for school students at IMSc

A week-long academic program covering three intensive short-term topics aimed at advanced B.Sc. and M.Sc. students from Chennai and nearby regions was organised between May 22-23, 2025. The courses aim to bridge the gap between coursework and research; preparing students interested to pursue careers in academic research and teaching.



Participants at the Facets workshop at IMSc, Chennai

Blood Donation Drive at VECC

On June 24, 2025, VECC students embraced the spirit of giving by organizing a blood donation camp, making it a truly meaningful and vibrant day on campus. The event began with an inspiring address by Dr. Sumit Som, Director VECC, setting a positive tone for the day. The camp saw enthusiastic participation from VECC Deans, faculty members, postdoctoral fellows, Ph.D. students, staff, and even the Registrar of the neighbouring Saha Institute of Nuclear Physics. Thanks to the support from the VECC Medical Section, the student-led initiative successfully encouraged 55 individuals to donate blood.



Few glimpses of the Blood Donation Camp organised at VECC, Kolkata

Awards and Academic Honours Received by HBNI Faculty

- 1) Prof. Mainak Bandyopadhyay, IPR has been inducted as a member in the Board of Governors of Indian Institute of Information Technology, Surat.
- 2) Dr. Debayan Chakraborty, IMSc has been awarded Prime Minister's Early Career Research Grant, for 2025, by the Anusandhan National Research Foundation.
- 3) Dr. Debayan Chakraborty, IMSc has been awarded IOCB Sabbatical Fellowship 2025, by the Institute of Organic Chemistry and Biochemistry, Czech Academy of Sciences.
- 4) Dr. Arnab Pal, IMSc, as a part of a team of scientists from India and France, has been awarded an International Research Project (IRP) grant by CNRS, France, in 2024.
- 5) Prof. Dr. Sudipta Chakraborty, BARC received Life Fellowship of Indian Chemical Society in May 2025, conferred by Indian Chemical Society.
- 6) Prof. (Mrs.) Suparna Sodaye, BARC received ISAS Homi Bhabha Award from Indian Society of Analytical Scientists (ISAS) on March 6, 2025
- 7) Prof. Raghunath Acharya, BARC received ISAS Honorary Fellowship from Indian Society of Analytical Scientists on March 7, 2025
- 8) Prof. S.N. Achary, BARC received silver medal from Chirantan Rasayan Sanstha (CRS) on June 17, 2025.
- 9) Dr. Balaji P. Mandal, BARC received silver medal from Chirantan Rasayan Sanstha (CRS) on June 17, 2025.
- 10) Dr. Amit Kunwar, BARC received Dr. J.S. Pruthi Award from Indian Society for Spices- Indian Council of Agricultural Research (IISR-ICAR) on January 7, 2025.
- 11) Dr. Prabhat K. Singh, BARC received CRSI Bronze Medal on July 4, 2025.
- 12) Dr. Prabhat K. Singh, BARC became Fellow of Royal Society of Biology (FRSB) in April, 2025
- 13) Dr. Prabhat K. Singh, BARC became Council Member of ORCID Research Advisory Council in January 2025.
- 14) Prof. Sanjib K. Agarwalla, BARC was selected to deliver the first Prof. Ravipati Raghavarao Memorial Lecture at the Physical Research Laboratory (PRL), Ahmedabad, Gujarat, on February 21, 2025.
- 15) Prof. Satyaprakash Sahoo's (IoP) publication has been selected for the Nature's cross-journal retrospective collections for 2024 Nobel Prize.
- 16) Prof. Aruna Kumar Nayak, IoP became trigger officer in Physics co-ordination in CMS collaboration for Sep 2024 -Aug 2026. [Level-2 position in CMS physics co-ordination]

- 17) Prof. Debasish Chaudhuri, IoP has been honored with a Labex Excellence Chair Professorship by CY Cergy Paris University, Paris, France, with support for a three-month visit from May to July 2025.
- 18) Prof. Kirtiman Ghosh, IoP has been awarded (Co-PI) ANRF Research Grant for 3 Years.
- 19) Dr. Aditi Chandra, SINP received the Emerging Scientist Award at the 49th Annual Meeting of Indian Society of Human in 2025.
- 20) Prof Chandrima Das, SINP received CSIR-ASPIRE Research Grant in Life Sciences in 2024.
- 21) Prof. Subhankar Bedanta, NISER has been invited to join the “Education Committee (EdCom)” of the IEEE Magnetic Society (global) and the “Technical Committee.” He has also been invited to join the IEEE Technical Council for a two-year term.
- 22) Prof. Bedangadas Mohanty, NISER has been honored with the Samanta Chandra Sekhar Award-2023 by the Odisha Bigyan Academy, Science & Technology Department, Govt. of Odisha for his outstanding contributions to physics.
- 23) Prof. Vinita Grover Gupta, BARC became Fellow of Royal Society of Chemistry, U.K. on April 15, 2025.

Awards Received by HBNI Students

1. Ms. Geethika B. R., IPR has received the Award for her talk on “Characteristics of Polarized Emission from Laser Produced Plasma” delivered during 24th National Conference on Atomic and Molecular Physics (NCAMP 2025) organised by Indian Institute of Technology, Dhanbad between January 8-11, 2025.
2. Shri Vishal Kumar, IPR received Best Poster Presentation Award for his poster titled “Experimental Investigation of Microwave Interaction with High-Density Glow Discharge Pulsed Plasma” at 2nd Global Forum and International Conference on Industrial Plasma Processes and Diagnostics 2025 (IPPD 2025) organised by Indian Institute of Technology, Delhi between May 18-20, 2025.
3. Shri Nikhil Chivukula, IMSc received Best Poster Award at the Microplastics Research Innovations & Sustainable Management (MPRISM 2025), held at the Indian Institute of Science Education and Research (IISER) Kolkata, West Bengal, India.
4. Shri Priyotosh Sil, IMSc received Flash Talk Award at the 47th Indian Biophysical Society Meeting (IBS 2025) held at Indian Institute of Technology (IIT) Madras, India.
5. Shri Ashis Kumar Panigrahi, IoP received the Best Poster Award for his poster titled “Resonance Raman process and temperature dependent photoluminescence in MoS₂-WS₂ vertical heterostructure” in the conference Evolution of Electronic Structure Theory & Experimental Realization (EESTER 2025) organised at SRM Institute of Science and Technology, Chennai between January 3-11, 2025.

6. Ms. Ramita Sarkar, IoP received the Best Poster Award for her poster titled “Quantum correlations in neutrino oscillation” at International Conference on Frontiers of High energy Physics (ICFHEP), at Indian Institute of Technology, Bhilai between February 13-15, 2025.
7. Dr. Mousam Charan Sahu, IoP has received the prestigious Marie Skłodowska-Curie Actions (MSCA) postdoctoral fellowship 2024 for his research proposal “SYNAPTRON”. He is currently a postdoc with Prof. Miguel Romera, Physics of Complex Oxides group, Universidad Complutense de Madrid (UCM), Spain.
8. Shri Manish Shingole, BARC received the Best Poster Award from Royal Society of Chemistry for his poster titled “Dual Functionality of Cu@ZIF-67 for accelerating Ammonia Borane Hydrolysis and Capturing Ammonia for Fuel Cell Applications” in a conference organised on February 14, 2025.
9. Shri Adarsh Kumar, BARC received the Best Poster Award at European Material Research Society 2025 Spring Meeting (E-MRS) for his poster titled “Structural Asymmetry and Photocatalytic Activity in Bi-doped Pyrochlores” in France on May 29, 2025.
10. Ms. Debarati Das, BARC received the Best paper Award for her paper entitled “Investigation of Site-selective Doping Induced Defects in CaSnO_3 Perovskite: A Positron Annihilation Spectroscopic Study” in the 17th DAE-BRNS Biennial Symposium on Nuclear and Radiochemistry (NUCAR-2025) organised by Indian Association of Nuclear Chemists and Allied Scientists (IANCAS) at DAE Convention Centre, Mumbai between April 23-26, 2025.
11. Ms. Debarati Das, BARC received the Best Poster Award for her poster entitled “Exploring superior electrocatalytic activity of Co-excess Ni-Co oxide spinel nanowires towards Oxygen Reduction Reaction” in DAE-BRNS Conference on Electrochemistry for Industry, Health and Environment (EIHE-2025) at DAE Convention Centre, Mumbai between January 21-25, 2025.
12. Ms. Annu, BARC received the Young Researcher Award in a conference titled “Advanced doping strategies, defect states and electronic structure of functional oxides” organised by European Materials Research Society (EMRS) on May 29, 2025.
13. Shri Subhamoy Saha, BARC received RSC Best Oral Presentation Prize for his talk titled “Molecular level insights on ageing mixed urea-malonic acid aerosols” from the Journal PCCP at 16th National Symposium on Radiation and Photochemistry (NSRP-2025), organised at NISER, Bhubaneswar between January 23-25, 2025.
14. Dr. Rajata Kumar Sahoo, NISER received the Prof G. B. Behera Best Thesis Award from the Orissa Chemical Society, during the 38th Annual Conference of the Orissa Chemical Society, held at OUTF, Bhubaneswar between December 28-30, 2024.
15. Shri Vanshaj Vidyan, NISER, pitched at DehaadiConnect at LibertyCon 2025’s Shark Tank USA in Washington, D.C. He was among the top five global finalists. Vanshaj delivered a winning pitch, securing \$10,000 in seed funding and mentorship from top industry leaders.
16. Shri Sayantan Mukhopadhyay, NISER, has been honored with the Best Poster Award at the Main-Group Molecules to Materials (MMM-4) conference, held at IIT Bombay between February 9-12, 2025.

17. Ms. Supriya Panda, NISER has been awarded the Certificate of Leadership by the Ministry of Youth Affairs & Sports, GoI for her exceptional contributions, visionary leadership, and path-breaking ideas at the Viksit Bharat Young Leaders Dialogue held at Bharat Mandapam, Delhi, between January 10-12, 2025.
18. Ms. Supriya Samal, NISER has been honored with an Appreciation Award at Evolve 2025, the 1st Annual Meet of the Indian Society for Extracellular Vesicles for her poster titled “Role of the Extracellular Vesicle Cargo in Helicobacter pylori Infection,” held at All India Institute of Medical Sciences (AIIMS), New Delhi, between March 24-26, 2025.
19. Ms. Supriya Samal and Mr. Smaran Banerjee, NISER have jointly secured the Third prize in the Photography (Microscopy) Competition at Evolve 2025, the 1st Annual Meet of the Indian Society for Extracellular Vesicles, held at AIIMS, New Delhi between March 24-26, 2025.
20. Mrs. Swarna Prava Das and Mrs. Subhasmita Swain, NISER have been awarded the Meteoritical Society Travel Award to attend the 87th Annual Meeting of the Meteoritical Society in Perth, Australia.

HBNI Outstanding Student Awardees 2024

Ph.D.



Dr. Sushil Maruti Patil

CHEM01202004005

Thesis Title:

Synthesis and Characterization of Novel Deep Eutectic Solvent for Studying Dissolution, Coordination and Redox Chemistry of Lanthanides and Actinides



The research detailed in Dr. Sushil's thesis addresses the significant environmental and technical challenges associated with traditional petroleum-based energy production and the subsequent shift towards sustainable, low-carbon energy generation. Nuclear energy, utilizing fissile actinides like Uranium (U) and Plutonium (Pu), is a mature technology that currently supplies approximately 10% of the world's electricity. However, a major issue with nuclear energy is the management and reprocessing of spent nuclear fuel (SNF), which generates highly radiotoxic waste. This research explores innovative methods for SNF reprocessing to enhance sustainability and efficiency in nuclear energy. One of the key contributions of his research is the synthesis and characterization of DESs, particularly those based on alkyl triphenylphosphonium bromides combined with decanoic acid.



Dr. Prajnashree Panda

CHEM11201804018

Thesis Title:

Fabrication of Hybrid Nanostructured Materials and Porous Carbon for Energy Storage and Gas Adsorption Applications



The design and development of new earth-abundant-based catalysts that are highly active and stable are important for sustainable and green energy technologies. The major focus of Dr. Prajnashree's thesis is to synthesis introduce hetero-atoms into the carbon matrix. This thesis also delves into the synthesis of various hybrid nanostructured materials and heteroatom-doped porous carbon for applications in electrochemical energy storage and gas adsorption.



Dr. Sourav Sarkar

ENGG01201804015

Thesis Title:

Experimental and Computational Studies on Hydrodynamics and Mass Transfer in Liquid-Liquid Pulsatile Flow in Column Contactors



His thesis delves into the world of pulsed contactor design, specifically focusing on Pulsed Disc and Doughnut Column (PDDC) and Annular Pulsed Disc and Doughnut Column (APDDC) utilized in solvent extraction processes, a crucial step in nuclear fuel reprocessing. The core objective of the research is to gain a fundamental understanding of how liquids behave within these pulsed columns when two immiscible liquids flow together in a pulsating manner.

Furthermore, the research delved into the realm of mass transfer. Mass transfer in pulsed column is investigated using uranium extraction and stripping. A model is developed to predict the rate of mass transfer based on CFD simulations of single droplets. Additionally, a separate axial dispersion model is developed to predict mass transfer and axial concentration profile within the contactor.

In essence, Dr. Sourav's thesis provides a comprehensive set of tools and knowledge to optimize the design and operation of pulsed columns.



Dr. Sujeesh S.

ENGG01201904003

Thesis Title:

Catalytic Decomposition of Sulphuric Acid in Integrated Reactor: Experimental Study, Modeling & Optimization



Decomposition of sulphuric acid (H_2SO_4), is a three-step and energy intensive process in sulphur-based water splitting processes (Iodine-Sulfur (IS) and Hybrid sulphur (HyS) cycles) for hydrogen production. Decomposition of sulphur trioxide (SO_3) is the overall rate-controlling reaction/step in the entire three-step decomposition process. The overall decomposition rate (and conversion) of SO_3 , in heterogeneous catalytic system is controlled by transport (heat and mass transfer) resistances in the catalyst bed (macro-scale) and catalyst particles (micro-scale), together with intrinsic reaction rate. Dr. Sujeesh's research work is on investigation of transport resistances in catalytic decomposition of SO_3 in Packed Bed Reactors (PBRs) using Chromium doped iron oxide ($Cr-Fe_2O_3$) catalyst, through multi-scale modeling and experimentation, and also to maximize SO_3 conversion.



Dr. Ajay Kumar Pandey

ENGG06201804006

Thesis Title:

Guided and Leaky Modes Characteristics of Dielectric Loaded Helix Structure



The electromagnetic characteristics of helical structure owing to its skewed boundary condition, which supports hybrid modes as well as circular rotation of the field, finds various applications starting from microwaves to optical communications. The guided and leaky mode characteristics for planar as well circular rod type dielectric structures are relatively well known. However, the investigation to the leaky modes characteristics coupled with guided modes for a dielectric loaded Helix structure is not explored at all despite the fact that helix structure exhibits unique characteristics. Dr. Ajay's thesis work addresses these critical issues both analytically and experimentally. A generalized analytical and computational numerical theory, for both the guided and leaky modes, has been developed to investigate the dispersion and radiation properties of dielectric loaded helix with and without radial thickness.



Dr. Sumit

ENGG03201704002

Thesis Title:

Investigation on Shape Control Methodologies of Piezoactuator-based X-ray Deformable Mirror, its Fabrication and Characterization for Adaptive Optics



High brightness X-rays at synchrotron radiation (SR) beamlines require adaptive focusing optics which are capable of delivering aberration-free, adjustable micron-size focal spots of high energy SR and providing flexibility to accommodate different experimental geometries for a wide range of applications. Piezo- actuated x-ray deformable mirrors (PXDMs) have capability of providing a beam profile of variable focal length and capable of correcting wavefront distortion introduced by other imperfect optics of beamline. The objective of Dr. Sumit's work is to design and develop a PXDM to achieve the target aspheric and arbitrary shape for focusing of SR beam in sub-micron size at the experimental station of beamlines of Indus-2 SR source.



Dr. Ajaya Kumar Sahoo

LIFE10201904002

Thesis Title:

Computational Data-driven Investigation of Chemical Exposome and its Links to Human and Ecosystem Health



Dr. Ajaya's thesis computationally investigates the structure-activity landscape of environmental chemicals binding to two endocrine receptors, namely the androgen receptor (AR) and the thyroid stimulating hormone receptor (TSHR), revealing the presence of activity cliffs, where structurally similar chemicals exhibit large differences in their activity.

The constructed AOP network reveals key biological events and toxicity pathways, providing insights into chemical-induced adverse health effects in both humans and ecological species. The stressor-species networks for PHs highlight the diverse species or species groups most affected by PH exposure. The species sensitivity distribution of the PHs helps in deriving the hazard concentration of the chemical that is not harmful to a large proportion of species in aquatic environment.

In sum, his thesis systematically examines diverse environmental chemical spaces and their health impacts on humans and ecosystem, presenting a holistic view of the chemical exposome and its implications from a One Health perspective.



Dr. Rashi Sanjay Lunia

MATH10201904003

Thesis Title:

Arithmetic and Analytic Aspects of Values of L-Functions



Her thesis is centered around the study of analytic and arithmetic properties of values of L-functions at "special points". The values of L-functions encode a lot of arithmetic data. The Riemann hypothesis predicts that all non-trivial zeros of the Riemann zeta function lie on the line $\text{Re}(s) = 1/2$. For a non-trivial Dirichlet character, it is expected that the Dirichlet L-function attached to it does not vanish at $1/2$. Though this problem is still wide open, a lot of progress has been made in recent years.

**Dr. Sneha Das**

PHYS04201904002

**Thesis Title:****Single Particle and Collective Excitations Above $Z = 82$**

Dr. Sneha's thesis reports the structures of nuclei in the above Pb region. With the few valence proton particles above $Z = 82$ and below $N = 126$ shell closures, the nuclei exhibit single particle excitation near the ground state while at the higher spins and excitation energies, both the multi-particle and multi-hole configurations become important. The nuclei in this above Pb region offer a vast laboratory to study the different nuclear structural phenomena, such as, the presence of magnetic rotation bands, enhanced $E3$ transitions, neutron core excitation, several isomers as well as it serves as a fertile ground to understand the effective nucleon-nucleon interaction in this region.

**Dr. Lakkaraju Leela Ganesh Chandra**

PHYS08201904002

**Thesis Title:****Exploring Variable-Range and Non-Hermitian Systems: From Entanglement Distribution to Quantum Battery**

Recent research in quantum physics has made significant strides in understanding and harnessing quantum entanglement, a phenomenon central to quantum technologies and fundamental to quantum many-body physics. Dr. Lakkaraju's work spans two frontier areas: long-range interacting systems and non-Hermitian quantum systems, uncovering novel properties of entanglement with potential applications in quantum information processing and advanced quantum technologies.



Dr. Harish Srinivasan

PHYS01201904011

Thesis Title:

Non-Markovian and Non-Gaussian Behaviour in Molecular Diffusion within Complex Fluids



The concept of Brownian motion has been fundamental to advancements in numerous fields, including biology, materials science, finance, and environmental science, offering crucial insights into the stochastic processes underpinning diverse phenomena across these disciplines. Central to Brownian motion are the principles of Markovianity and Gaussianity, valued for their broad applicability in real-world systems. However, with the advent of new experimental and simulation methodologies, we can now critically assess the validity of these assumptions. Frequently, it becomes evident that the Brownian motion model falls short, necessitating the development of models that are not constrained by Gaussian/Markovian assumptions. Dr. Harish's thesis explores various complex fluids which exhibit strong deviation from tenets of Brownian motion and provides comprehensive theoretical models to describe processing involving non-Gaussian and non-Markovian diffusion mechanisms.



Dr. Prottay Das

PHYS11201705001

Thesis Title:

Studying Chiral Magnetic Wave, Hadronic Rescattering and $f_1(1285)$ Production in High Energy Collisions with ALICE Detector





Dr. Ankit Kumar Panda

PHYS11202004002




Thesis Title:

Relativistic Dissipative Causal Magnetohydrodynamics from Kinetic Theory and the Effect of Electric Fields on Bulk Observables in High-Energy heavy-Ion Collisions



In high-energy heavy-ion collisions, two relativistic heavy nuclei undergo Lorentz contraction and collide, forming a Quark Gluon Plasma (QGP), a deconfined state of quarks and gluons. Initially, the QGP exists in a highly non-equilibrium state from which it rapidly evolves towards equilibrium where it can be described well assuming it as a fluid, after which it expands and cools. This fluidic expansion and cooling process is successfully described by relativistic viscous hydrodynamics. As it cools and expands, the QGP transitions into hadrons through hadronization, with these hadrons continuing to interact until they cease collisions and stream freely into detectors. Alongside the QGP, an intense transient magnetic field is generated by spectators—nucleons that are not directly involved in the collision. Theoretical models predict that the magnitude of this magnetic field can reach as high as 10^{14} - 10^{15} Tesla in non-central collisions at RHIC and LHC energies, opening the door to the study of various novel phenomena such as the CME, CSE, and CMW. Since the QGP consists of charged particles, it exhibits finite conductivity and responds to external electromagnetic fields, thus altering these fields themselves. Hence, studying such interactions between the fluid and EM fields becomes crucial, and relativistic magnetohydrodynamics (RMHD) offers a comprehensive framework for such analysis.

M.Tech.




Sandeep Singh Tomar
ENGG01202201056
Thesis Title:
Dissolution of washed and dried frit powder in nitric acid to produce clear zirconium nitrate solution.

A novel process is developed to address the critical challenge of suppressing the co-leaching of silica with zirconium. This is achieved by using Red Fuming Nitric Acid (RFNA), a novel leaching agent composed of approximately 84% nitric acid, 13% dinitrogen tetroxide, and 1-2% water at low temperatures. Investigations revealed that the water content in the reaction system has a significant influence on the leaching of silica. To effectively suppress the co-leaching of silica, it is essential to minimize the water content. Thus, the inherently low water content in RFNA provides a viable solution to this issue. This not only enhances the acid strength but also suppresses the co-leaching of silica and consequently crud/third phase formation in solvent extraction is avoided.

B. Vinith
ENGG01202201062
Thesis Title:
Studies on a novel process for recovery of uranium from Tummalapalle leach liquor

Tummalapalle holds nation's highest uranium reserves; yet the yellow cake from this ore has issues in efficiently producing uranium. A novel process was developed to tackle the issue of muck formation and make Tummalapalle mine sodium diuranate SDU comparable to the yellow cakes from other Indian mines. Also, this process regenerates the liquid effluents at every stage thereby following a closed loop minimizing the waste and leading the way for streamlined yellow cake production.



Doctor of Medicine (M.D.)



Dr. (Ms.) Shreya Dhingra
HLTH09202109002
M.D. in Radiation Oncology

Dr. Shreya Dhingra, TMC is conferred with HBNI Outstanding Award 2024 in the category of MD in Health and Medical Science. Dr Shreya worked on a project title "Memantine to preserve memory and neurocognition following craniospinal irradiation -A phase III randomised controlled trial (MEMENTO)." Her study was aimed to evaluate memantine in the context of Craniospinal irradiation (CSI) as opposed to Whole Brain Radiotherapy (WBRT) or partial brain irradiation.





Dr. (Ms.) Sumona Kundu
HLTH09202109051
M.D. in Anesthesiology

Dr. Sumona Kundu, TMC, is conferred with HBNI Outstanding Award 2024 in the category of MD in Health and Medical Science. Dr. Kundu worked on a project titled "A randomised controlled double blinded study to test the efficacy of protective one lung ventilation bundle in prevention of post-operative pulmonary complications following elective major lung resection surgeries in a tertiary care cancer institutes." This study contributes to evidence-based optimization of intraoperative ventilation strategies during thoracic surgery




Doctorate of Medicine (D.M.)




Dr. Aditya Dhanawat
HLTH09202110007
DM Medical Oncology

Dr. Aditya Dhanawat, TMC is conferred with HBNI Outstanding Award 2024 in the category of DM, in Health and Medical Science. Dr. Aditya worked on a project title "Impact of HER2 low on demographic profile and survival outcomes of Hormone Positive Breast Cancer (HER-IMPACT)." The study investigates the clinical significance of HER2-low expression in hormone receptor-positive (HR+) breast cancer patients. This study underscores the necessity to reconsider existing classification systems for HER2 expression (positive or negative), advocating for a more refined stratification to guide therapy selection




Master of Chirurgiae (M.Ch.)




Dr. Anup Srinivas
HLTH09202110059
M.Ch. Head & Neck Surgery

Dr. Anup Srinivas, TMC is conferred with HBNI Outstanding Award 2024 in the category of M. Ch. Health and Medical Science. Dr. Srinivas is specialised in Head and Neck Oncology. He has shown extraordinary surgical precision during this period with dedicated service for cancer patients in TMC





J B Joshi Foundation Innovation Awards for the year 2024



Dr. Soumen Das
CHEM01201704005

Thesis Title:
Clinical Scale Formulation and Evaluation of Novel Diagnostic Agents based on ^{99m}Tc and ^{68}Ga


Cardiovascular diseases and cancer remain the leading causes of death worldwide, necessitating early and accurate detection for improved survival rates. In this connection, the research carried by Dr. Soumen Das focuses on the development of novel radiopharmaceuticals based on technetium-99m (^{99m}Tc) and gallium-68 (^{68}Ga) which were strategically designed to act as highly specific molecular probes for single-photon emission computed tomography (SPECT) and positron emission tomography (PET) imaging of these abnormalities. One of the key innovation part of this research is the pioneering application of 'click chemistry' towards the development of a myocardial metabolism marker.

Dr. Saurabh Srivastava
ENGG01201804011

Thesis Title:
Study and Optimization of Silicon Photomultiplier-Scintillator Detector based Instrumentation for Radiation Monitoring Applications

Environmental gamma monitoring with a network of miniaturised open-field systems having online data communication is important for real-time identification of atmospheric radiation levels and possible radionuclides in case of a radiological/nuclear emergency. Dr. Saurabh has carried out extensive simulation and experimental studies on silicon photomultipliers (SiPM) optically coupled with indigenously developed GGAG:Ce,B scintillator crystals for its potential utilization in the development of environmental gamma radiation monitors. The investigation encompasses Monte Carlo simulation studies of various inorganic scintillators (NaI:TI, CsI:TI, and GGAG:Ce,B) as well as SPICE simulation studies of SiPM to design the signal processing electronics. Two systems were subsequently developed based on the simulation and experimental studies conducted in this work, namely: (i) a SiPM-GGAG:Ce,B based gamma dose rate monitor and (ii) a SiPM-GGAG:Ce,B based gamma spectrometer.





Dr. Milaan Vijaybhai Patel

ENGG06201804009

Thesis Title:

Development of Pulsed Supersonic Beam System for Tokamak Edge Diagnostics and Other Applications

Dr. Milaan's work presents the development of a pulsed Supersonic Molecular Beam Injection (SMBI) system designed for edge plasma diagnostics in tokamaks. This SMBI system generates a beam of neutral helium atoms, which is injected into a localized region at the edge of the tokamak plasma. When these atoms interact with the plasma, they emit light at characteristic wavelengths, which can then be used to estimate plasma temperature and density.

The supersonic molecular beam is created by extracting the core of a supersonic jet within a vacuum chamber. To maintain a high particle flux and low divergence, crucial for avoiding plasma contamination and preserving integrity of the tokamak vacuum, the system must operate in a pulsed mode. This introduces additional challenges due to the transient nature of the pulsed SMBI. While the generation of molecular beams has been demonstrated previously, the detailed physical processes of beam extraction under realistic conditions were not understood due to non-existing measurement techniques.



Dr. Koustav Pal

PHYS05201904011

Thesis Title:

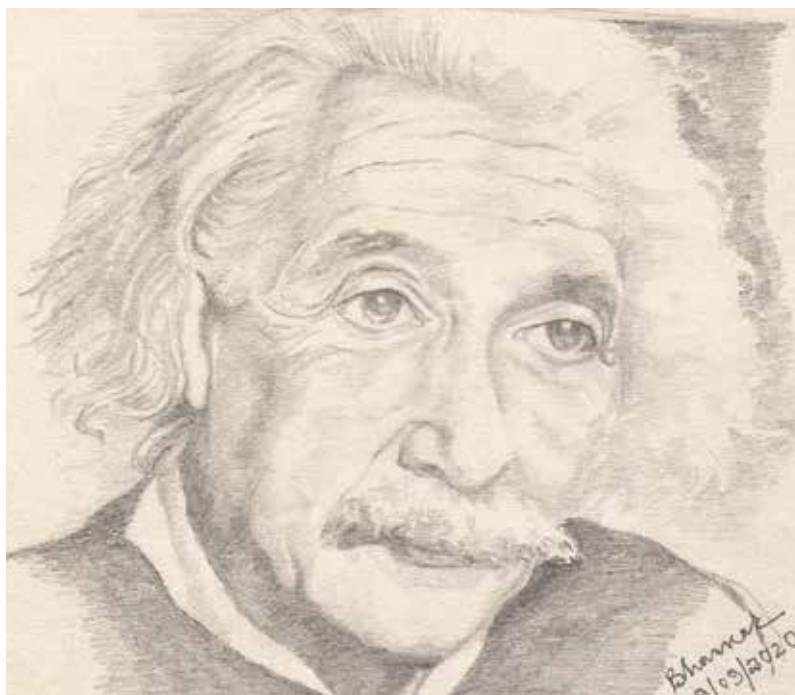
Investigation of Exchange Bias and Magnetotransport in Bulk and Thin Film Materials

Dr. Koustav's research has led to significant advancements in magnetoresistive and exchange bias (EB) materials, crucial for next-generation spintronic devices, high-density magnetic storage, and sensor applications. By strategically engineering defects, disorder, and interfacial interactions, the nominee has pioneered novel methods to enhance EB and magnetotransport properties in various material systems, including perovskites, intermetallics, and thin films. One of the key innovations involves oxygen-deficient perovskites, where the nominee demonstrated that controlled oxygen vacancies in $\text{SrFe}_{0.5}\text{Co}_{0.5}\text{O}_{3-\delta}$ could induce charge redistribution and enhance EB without conventional ionic doping. Furthermore, by introducing non-magnetic Ir doping, the nominee achieved an unprecedented EB value of 1.86 T, optimizing magnetic cluster interactions. In addition, he also discovered a giant EB of 2.36 T in $\text{Sr}_2\text{CoRuO}_6$, a material with pinned ferromagnetic clusters within an antiferromagnetic matrix, driven by strong Co-Ru exchange coupling. These findings redefine the design principles for EB materials and provide new pathways for tuning magnetic interactions through controlled structural modifications.



Creative Corner

Faculty
Sketches & painting



Dr. Bhaskar Sanyal
Associate Professor, HBNI
Life Science



Dr. Dhiraj Kumar Hazra
Assistant Professor, HBNI
Physical Science, IMSc, Chennai

होमी भाभा राष्ट्रीय संस्थान

Faculty
Poetry

राष्ट्र का गौरव, देश का मान, परमाणु शक्ति सज्जित अभिमान,
नाभिकीय क्षेत्र का ज्ञान सरोवर, होमी भाभा राष्ट्रीय संस्थान।

गिरि पयोधि मध्य सुशोभित, प्रकृति छटा कण-कण अभिराम,
दो हजार पांच जन्म लिया, सिरमौर बना चल कर अविराम।

विस्तार हुआ गतिविधियों का, विश्वविद्यालय की नयी पहचान
परमाणु शोध की सभी विधाएं, उन्नत हुआ नाभिक विज्ञान,

राष्ट्र का गौरव, देश का मान, परमाणु शक्ति सज्जित अभिमान,
नाभिकीय क्षेत्र का ज्ञान सरोवर, होमी भाभा राष्ट्रीय संस्थान।

परमाणु विज्ञान के हर क्षेत्र में, अविरल बहती ज्ञान की धारा,
नाभिकीय प्रौद्योगिकी क्षमता में, सानी नहीं है कोई हमारा।

कृषि, चिकित्सा, उद्योग, ऊर्जा, विकिरण का अमूल्य योगदान,
है सर्वोपरि मानव कल्याण, विश्व गा रहा गौरव गान।

राष्ट्र का गौरव, देश का मान, परमाणु शक्ति सज्जित अभिमान,
नाभिकीय क्षेत्र का ज्ञान सरोवर, होमी भाभा राष्ट्रीय संस्थान।

स्नातकोत्तर, डाक्टरेट उपाधि, मुख्य विश्वविद्यालय के काम,
अदृश किरणों से नित काम, सार्धें विविध विज्ञान आयाम।

वृहत विज्ञान, त्वरक, टोकामक, लेजर, प्लाज्मा, जैव विज्ञान,
खाद्य सुरक्षा, उत्परिवर्तन, उपलब्ध सभी में अनुसंधान।

राष्ट्र का गौरव, देश का मान, परमाणु शक्ति सज्जित अभिमान,
नाभिकीय क्षेत्र का ज्ञान सरोवर, होमी भाभा राष्ट्रीय संस्थान।

वृहत छलांग लगाई हमने, दो दशकों में बहुत है पाया,
परमाणु विज्ञान के हर क्षेत्र में, परचम ऊंचा फहराया।

विशेषज्ञों की भरमार यहां, बहु-विषयक पर अनुसंधान,
सदा रहें आगे प्रगति पथ, भाल मुकुट भारत अभिमान।

राष्ट्र का गौरव, देश का मान, परमाणु शक्ति सज्जित अभिमान,
नाभिकीय क्षेत्र का ज्ञान सरोवर, होमी भाभा राष्ट्रीय संस्थान।

डॉ. कुलवंत सिंह

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“नाविक की जुबानी”

मैं चलता जा रहा था,
किनारे की चाह में,
लहरें निरंतर आती रही,
ईस पथ की राह में।

दिन की रोशनी में तो,
चलना सरल था मगर,
कठिन था डगर नाव का,
अँधेरो की छाँव में ।

मुसाफिर तो बहुत थे,
इस राह में शुरुआत से,
मगर छुटते गये लोग,
अपनों की बाँह में।

बीतता जा रहा था समय,
प्रभु के ही सहारे,
जब सिमट रही थी जिंदगी,
कभी दर्द में कभी कराह में ।

आखिर मैं किनारे पर पहुँच तो गया मगर,
आया था एक प्रश्न मेरे ख्याल में,
क्यों चल रहा था मैं,
किनारे की चाह में ।

डॉ. विशाल जैन
एसोसिएट प्रोफेसर
एचबीएनआई
इंजीनियरिंग विज्ञान
आईपीआर, गांधीनगर

A Comic (S)trip on Food Irradiation Technology

Mr. and Mrs. Sharma are shopping at the supermarket. Mrs. Sharma, a health-conscious buyer, always checks labels and expiry dates. At the pulses aisle, she is puzzled by an unfamiliar label.



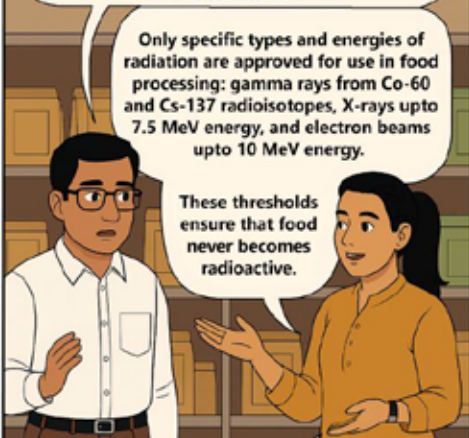
Excuse me - the label on this dal says it's radiation treated. We've never seen this before. Can you tell us more? Is it safe to buy?



Dr. Vidhya Krishnan, an expert on food irradiation, happens to be shopping in the same aisle. Sensing Mr. and Mrs. Sharma's confusion, she decides to step in.



It's really nice of you to help us out, Ma'am! Can I ask you something - if food is treated with radiation, won't it contain some of the leftover radiation or become radioactive? Then, how can it be safe to eat?



These radiation pass through the food during processing without getting trapped in it. Therefore, no radiation remains afterwards. It's just like getting an X-ray scan - the radiation goes through your body during the scan, but you don't carry it with you when you leave!

The safety of irradiated food is established by decades of research. Food irradiation in India is also endorsed by FSSAI. A detailed chart listing the purposes for which radiation processing of food can be carried out is even published in their gazette notification. It's right here on their webpage!



Wow, this kind of global recognition is indeed reassuring. But can you explain how exactly food irradiation works? How does it help extend shelf life?



That's a very good question! Food irradiation is really 'one technology with many applications'. The reason lies in how it works.

When high-energy radiation like gamma rays pass through food, chemical bonds are broken. This barely has any effect on the food's nutritional content, taste, or smell - but it disrupts the DNA of live cells present in sprouting tissues and ripening fruits as well as in the microbes and insect eggs that contaminate food.

DNA is the blueprint for biological processes like sprouting, ripening, microbial growth, and insect hatching. By disrupting it, radiation is able to arrest all of them through a single mechanism. Thus, food irradiation is a gentle and additive-free preservation method that retains the wholesomeness of the food.

FOOD IRRADIATION

ONE TECHNOLOGY WITH MANY APPLICATIONS

GAMMA RADIATION

DNA

MICROBIAL DECONTAMINATION

DELAY RIPENING

SPROUT INHIBITION

INSECT DISINFESTATION

Food irradiation technology has enabled India to meet quarantine requirements and export mangoes to international markets such as US and other countries since 2007. The mango stone weevil - an invasive pest hidden deep within the seed - is inaccessible and challenging to control with conventional treatments like fumigation. But gamma radiation, with its penetrating ability, can effectively eliminate it.

Wow - chemical free and nutritionally intact! I am really impressed by this technology. We want to start buying irradiated food. How can we spot it in the store?

Just look for this green symbol on the packaging - it's called the 'Radura'. All irradiated food will have it. And if you're curious to learn more, just browse the websites of BARC, FSSAI, or MOFPI - you can find authentic information on food irradiation there.

Remember to encourage your friends to embrace food irradiation without fear! Bye!



This creative content was developed at Food Technology Division, BARC to aid public awareness and acceptance of food irradiation technology

Created by:

Kaarunya Dhevi G. G.
Bhaskar Sanyal
S. Gautam

Note: Characters in the illustrations were generated using free AI-tools from scratch using original inputs. Narrative, dialogue, and visual depictions are entirely original creations of the authors.

Students

Sketches & painting



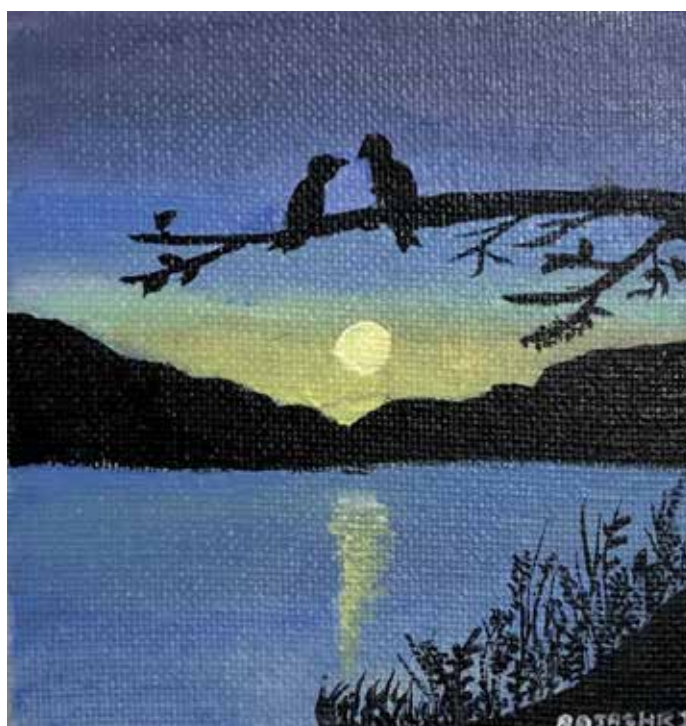
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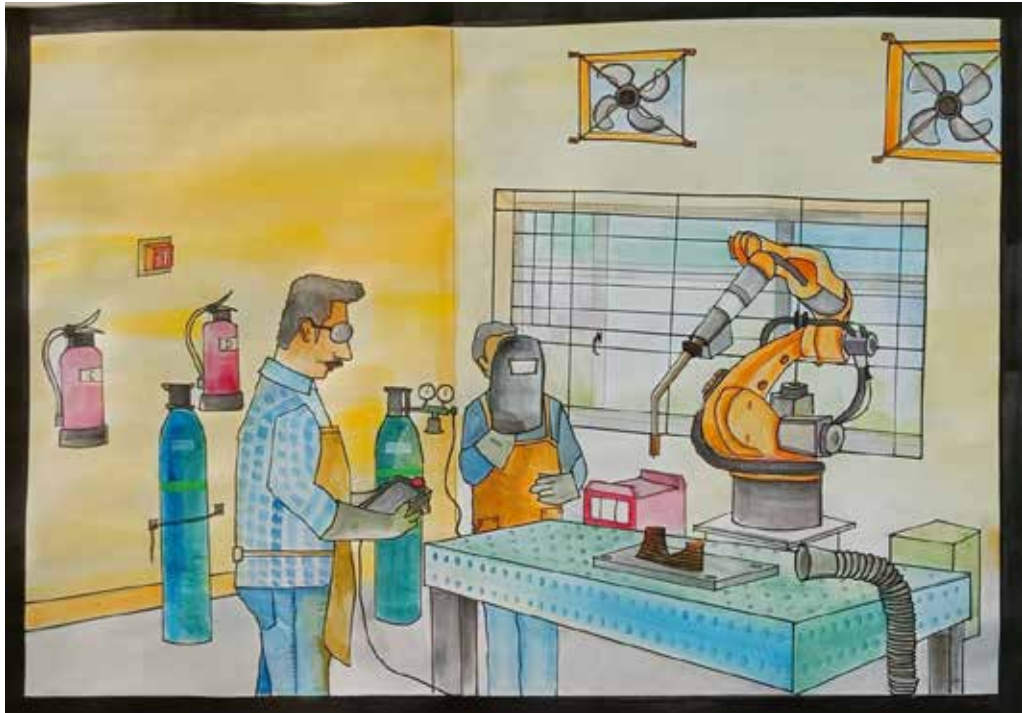


Ms. Bristisnata Kashyap
Ph.D. Chemical Science
BARC, Mumbai
CHEM01202204011



Dr. Rajashri Kulkarni
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The Gift

Students
Creative writing

It was already 9 o' clock.

He ran his eyes frantically through the shops he could still find open at this hour. Rings — his father had enough of those. Shirts — too costly to buy. Flowers — Do men even like that?

He jumped from one item to the next, looking for anything within the range of a hundred rupees to suit his father.

He was getting desperate. He recalled his friends' mockery that day, words like: "You won't get anything decent in such a small amount," "Even a breakfast costs more than that," and so on. He had cried when he'd heard them. But it couldn't be helped. This was all he had managed to save from the past six months.

He ran into another store. The shopkeeper looked at him with disgust in his eyes, but the boy failed to notice that.

He browsed through the items. The same old stuff again, either the common ones, or out of his expenditure bracket – mostly the latter.

And then something caught his eye.

It wasn't something fancy. It wasn't even something one expects at a gift store.

It was a small set of plastic glasses, hanging sadly beside the key chains.

It looked weak yet showed a lot of promise. It was a little brown at the edges, but he was sure that polishing it would make it sparkly clean.

Carefully, he lifted it from the hook.

He went to the shopkeeper, carrying it tenderly in his arms.

The shopkeeper was amused by the boy's choice. "Eighty rupees," he said, without even paying him a glance. He also charged an extra five rupees for packing it.

The boy bought some biscuits with the remaining fifteen rupees and then skipped happily to his home.

His father would not be back before the next 15 minutes. He cleaned the house and kept the few items they had at the proper places. He arranged the biscuits on a paper plate and prepared some tea to go along with it. He arranged it on the stool, and sat down, waiting eagerly for his father.

There was a knock at the door. It was his father.

He ran towards the front door, hugged his father and welcomed him inside. His father saw the usually empty stool bearing biscuits and hot tea and was surprised. He saw his son's shiny eyes, full of satisfaction, and excused himself for a bath, wondering what was going on.

When he returned after bathing, he noticed a new addition to the table.

"It's your gift, Papa," said the boy with his sparkling eyes, "Now, you don't have to worry about the dust getting in your eyes when you work in the evening."

His father opened the package, wondering what was inside. He felt the glasses and then inspected the strength of the frame. He then placed it on his eyes, and the boy shouted with glee at how perfectly it fit his father.

"I'll clean the edges, Papa, and then you can wear it to work," promised his son, his eyes still sparkling.

They ate the biscuits and the muffins he'd brought together. He tucked his son to sleep, did some chores and then inspected his gift under the light.

He was sure the edges could not be cleaned. After all, he had been at it for two days, and had even been yelled at by the shop-owner for being unable to do so.

He lied down. He glanced at his son, who was now sleeping peacefully. He kissed his son's forehead, and then dozed off to sleep, holding his precious child under his arms.

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सिया राम संघ खेलन होरी

Students
Poetry

सिया राम संघ खेलन होरी
देखी-देखी भर आवे अखियाँ मोरी
चरणन मा गुलाल लगावें
ओहि गुलाल के मांग भरी जावें
हो कहाँ देखन होई अईसन होरी
सिया राम संघ खेलन होरी।

दशरथ महल मा उमंग भयो भरी
हर्ष मा नाचत हैं सब नर नारी
सिया के राम चरणन से उठवां
अध्दभूत रूप सिया राम नयनन मा बसवां
प्रभु देखि हृदय भयो है उपकारी
सिया राम दर्शन भयो हम आभारी
हो कहाँ देखन होई अईसन होरी
सिया राम संघ खेलन होरी।

लक्ष्मन जी आये उर्मिला भी आई
भरत-मांडवी संघ शत्रुघ्न श्रुतकृति भी आई
सबे सिया राम के चरणन मा गुलाल लगावे
तीन लोक के सुख एक छन में पावे
धन्य भयो है अयोध्या नगरी
अध्दभूत तेज छायो है सगरी
अबके देखन होई अईसन होरी
चलो रे सखी अयोध्या की होरी
सिया राम संघ खेलन होरी।

चारो भाई चारो लुगाई
गये दशरथ कण हाथ जोड़ी
सबे कौशल्या के पाव पड़त है
कैकई और सुमित्रा के चरण धरत है
बोले आशीष दे दो मैया मोरी
हो कहाँ देखन होई अईसन होरी
सिया राम संघ खेलन होरी।

दशरथ राम के समीप बुलावा
चरण से उठावा हृदय मा लगावा
मुस्कावें देखि मैया मोरी
दशरथ नयनन मा राम छवि तोरी
धन्य अयोध्या धन्य सब नर नारी
जो देखत है अईसन होरी
सिया राम संघ खेलन होरी।

ऋषिगण आवें राम शीश झुकावें
वशिष्ठ चरण धुरी राम माथे से लगावें
सब जग मा यही बात समझावें
प्रभु से पहिले गुरु भजन गावें
धन्य हो दशरथ कौशल्या तोरी
भाग्य मा लिखन है सिया राम संघ होरी
काश अईसन होत भाग्य मोरी
हमहू खेलत सिया राम संघ होरी
सिया राम चरण धुरी माथे लगावा
जनम जनम के दुःख कटि जावा
हो सखी कहाँ होत है अईसन भाग्य मोरी
हमहू खेलत सिया राम संघ होरी।

- सूरज साव
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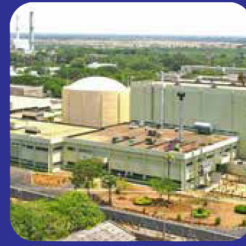




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Cancer Centre (HBCH & MPMMCC)



National Institute of Science
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(NISER)



Tata Memorial Centre
(TMC)



Homi Bhabha Cancer Hospital &
Research Centre,
(HBCH & RC)

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