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अणुविद्या

HBNI NEWSLETTER

होमी भाभा राष्ट्रीय संस्थान

Homi Bhabha National Institute

(परमाणु ऊर्जा विभाग की सहायता प्राप्त संस्था और यूजीसी अधिनियम 1956 की धारा 3 के तहत विश्वविद्यालय माना जाता है)

(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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RRCAT, Indore



BARC, Mumbai



TMC, Mumbai



HBNI Central Office



INDIA



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HBNI Newsletter



Homi Bhabha National Institute

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From the Vice Chancellor's Desk

I am glad to bring this December 2022 issue of HBNI Newsletter. This is the eighth issue of the half-yearly publication that started in June 2019. The newsletter covers the events, highlights and achievements of the last sixth months. The former Vice Chancellor, Prof. P. R. Vasudeva Rao completed his five-year tenure on 3rd October, 2022 and presently I am officiating the post.

During the period a large number of events were organized in Commemoration of Azadi Ka Amrit Mahotsav. The HBNI faculty visited various colleges in and around Mumbai, delivered talks on “Career Opportunities in Science” and interacted with the students to create awareness among graduate and post-graduate science students regarding the opportunities in the fields of Physics, Chemistry and Biology in employment, and encouraging them for a research career. Similar lecture series was conducted for engineering students on online mode.

To accelerate collaborations among the constituent Institutions and the Off-Campus centre of HBNI, HBNI in association with its CIs/OCC organised theme-based discipline-specific meetings, in Condensed Matter Physics at SINP and in Life Sciences at RRCAT. HBNI commissioned an audio-video recording facility for creating course material for the Swayam-NPTEL platform. Recently developed two courses by HBNI, a course on “Accelerator Physics” and a course on “Neutron Scattering for Condensed Matter Studies”, are available on the Swayam-NPTEL platform. Both courses are approved by AICTE as Faculty Development Programme courses. Many learners have enrolled for both courses, with about 2000 enrolled learners, for Accelerator Physics Course.

In continuation of the organization of special lectures/webinars by eminent scientists and engineers, and technologists on various subject areas in the country, HBNI organized a special webinar to celebrate the birth centenary year of Dr. G. N. Ramachandran by Prof. P. Balam, DST-YOS Chair Professor, National Centre for Biological Sciences, Bengaluru and Former Director, IISc, Bengaluru on August 5, 2022, on the topic “G. N. Ramachandran and the Birth of Molecular Biophysics and Structural Biology in India. The talk traced the life and times of Dr. G. N. Ramachandran, a pioneer in the field of biomolecular structure and conformation and highlighted the trail of his research work that has illuminated the understanding of protein structures.

HBNI organized an interactive session on “Gender Sensitization” for HBNI doctoral students on September 29, 2022, with the major objective of raising awareness about gender-related issues and how to promote gender equality among the young generation. The session was conducted by Prof. Meena Gopal, Advanced Centre for Women's Studies, School of Development Studies, Tata Institute of Social Sciences, Mumbai.

We will be glad to receive your comments and suggestions for further improving the newsletter. Jai Hind.

P. D. Naik

Vice Chancellor (Officiating), HBNI

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Events at the Central Office

Independence Day Celebration

The 76th Independence Day was celebrated with enthusiasm and fervour at HBNI on August 15, 2022 by hoisting of the National Flag by Prof. P. R. Vasudeva Rao, VC, HBNI in the presence of HBNI functionalities and staff. The honourable VC congratulated everyone on the special occasion of 75th anniversary of India's independence and addressed the gathering. In his address, Prof. Rao recalled the great sacrifices made by freedom fighters and great national leaders which made it possible for us to live in a free India. He paid homage to pioneers and visionary leaders who by their untiring efforts took the country forward despite several challenges in the last 75 years and made it a global leader in several domains. He also recalled the contributions of founders, mentors and predecessors, who have been instrumental in the birth, growth and successes of the Homi Bhabha National Institute (HBNI). He remarked that though HBNI has been consistently enhancing its academic performance since its inception, there is a need to introduce innovative programs and policies which will help it to work towards achieving its mandate, respond to the emerging challenges not only related to the DAE programs but also in the other frontier areas of science and technology and allow it to contribute towards the economic and technological progress of our country. Prof. Grover, Emeritus Professor, HBNI and Prof. Maity, Associate Dean, HBNI also addressed the gathering. Prof. Dureja, Associate Dean, HBNI recited a patriotic poem titled "Azadi Ka Amrit Mahotsav," on the occasion and the program ended with the recitation of National Anthem.



Prof. P. R. Vasudeva Rao, VC, HBNI, hoisting the National Flag

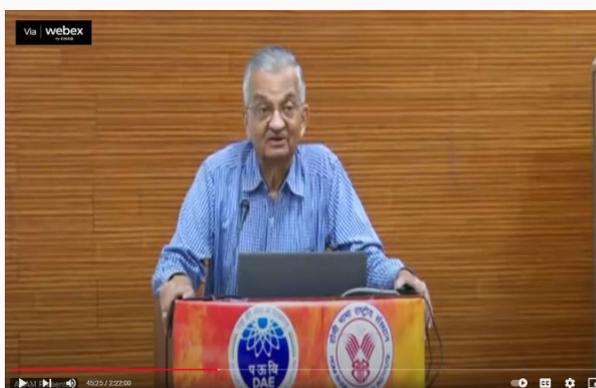
Events Organized in Commemoration of Azadi Ka Amrit Mahotsav

1. Special Webinar on the topic “G. N. Ramachandran and the Birth of Molecular Biophysics and Structural Biology in India” as part of HBNI Eminent Lecture Series

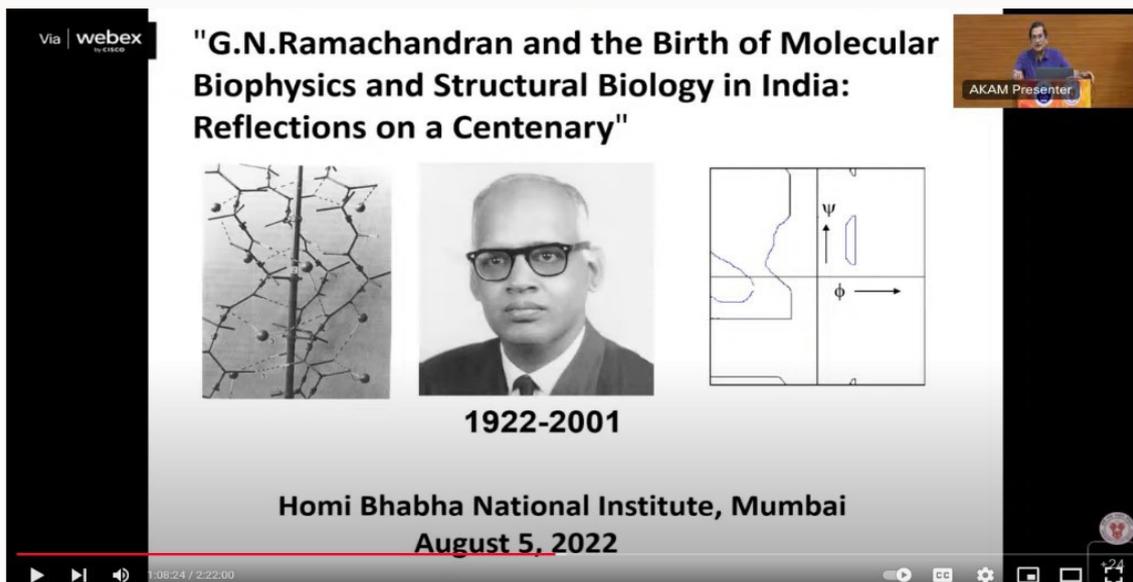
HBNI has been organizing different activities from August 2021 onwards as part of the celebration of “Azadi Ka Amrit Mahotsav,” a country-wide campaign launched by the Government of India as India completes 75 years of independence. The organization of special lectures/webinars by eminent scientists and engineers, and technologists on various subject areas in the country has been one such activity. In continuation of such activities, HBNI organized a special webinar by Prof. P. Balram, DST-YOS Chair Professor, National Centre for Biological Sciences, Bengaluru and Former Director, IISc, Bengaluru on August 5, 2022, on the topic “G. N. Ramachandran and the Birth of Molecular Biophysics and Structural Biology in India.’ The talk traced the life and times of Dr. G. N. Ramachandran, a pioneer in the field of biomolecular structure and conformation and highlighted the trail of his research work that has illuminated the understanding of protein structures. Incidentally, 2022 is the birth centenary year of Dr. G. N. Ramachandran whose birthday falls on October 8, 2022.



Prof. P. D. Naik welcoming the gathering (left); Prof. P. R. Vasudeva Rao giving introductory remarks (right)



Prof. Anil Kakodkar giving his address (left); Announcement of results of Poster Competition conducted by HBNI as part of Azadi Ka Amrit Mahotsav Celebrations (right)



Prof. P. Balram delivering his talk

On the occasion, the results of the poster and essay competitions organized by HBNI as part of the “Azadi Ka Amrit Mahotsav” celebration were also announced and an e-book titled “Atomic Energy in India: Achievements since Independence” was released by Prof. Anil Kakodkar, Chancellor, HBNI. The book has been jointly edited by Prof. A. K. Tyagi, Director, Chemistry Group, BARC and Prof. P. R. Vasudeva Rao, Former Vice Chancellor, HBNI.



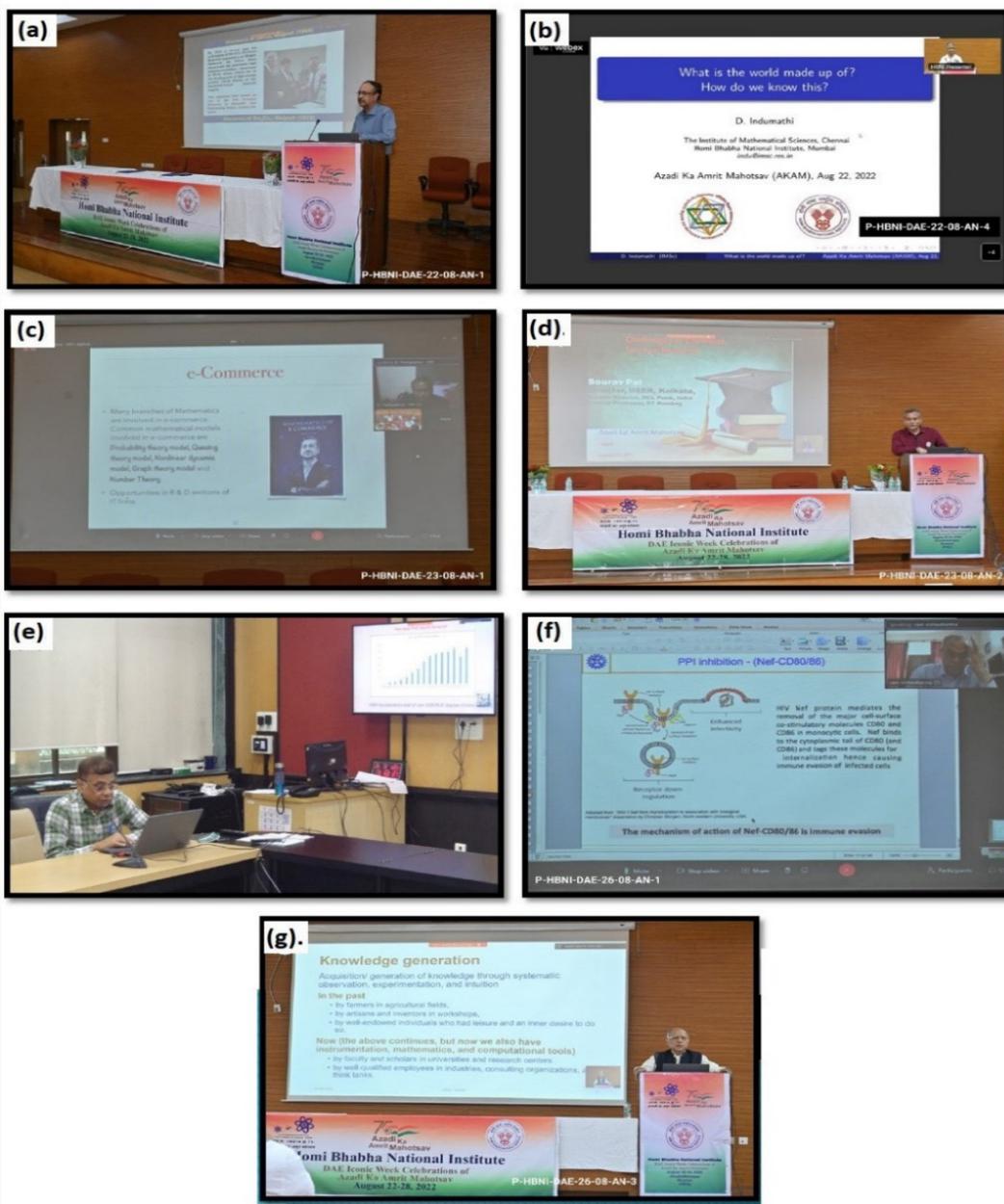
E-book, “Atomic Energy in India: Achievements since Independence,” being released by Prof. Anil Kakodkar, Chancellor, HBNI

2. HBNI-DAE Iconic Week Celebrations of “Azadi Ka Amrit Mahotsav” (August 22-28, 2022)

As part of DAE iconic week celebrations of “Azadi Ka Amrit Mahotsav”, HBNI organized special lectures by eminent speakers on the current research areas and future challenges for the benefit of students/faculty members of educational institutes across all over India at the multipurpose hall of BARC Training School, Mumbai during August 22-28, 2022. The details about the talks held during the week are given in Table 1. The talks were streamed live on the YouTube, and recordings of the talks are available on the YouTube channel of HBNI, HBNI Webinar.

Table 1: Talks held as part of the Celebrations of DAE Iconic Week (August 22-28, 2022)

Date	Topic of the Talk	Speaker
22.08.2022	Opportunities and Challenges on Energy Storage Materials for Electric Vehicle Technology	Dr. R. Gopalan, Regional Director, ARCI, Chennai
	What is the world made up of? How do we know this?	Prof. D. Indumathi, IMSc, Chennai
23.08.2022	Challenges in Number Theory	Prof. R. Thangadurai, HRI, Prayagraj
	Challenges in Chemical Science	Prof. Saurav Pal, Director, IISER, Kolkata
24.08.2022	Research Opportunities Available in HBNI/DAE in the Area of Engineering Sciences	Prof. B. K. Dutta, Institute Chair Professor, HBNI
26.08.2022	Opportunities in Life Science Research	Prof. Ram Viswakarma, Distinguished Scientist, CSIR
	Relating Research to National Development	Prof. R. B. Grover, Emeritus Professor, HBNI



Glimpses of special lectures given by eminent speakers. (a) Dr. R. Gopalan, Regional Director, ARCI, Taramani, Chennai, delivering a talk on “Opportunities and Challenges in Materials for EV Technology.” (b) Prof. D. Indumathi, IMSc, Chennai delivering a talk on “What is world made up of? How do we know this?” (c) Prof. R. Thangadurai, HRI, Prayagraj, delivering an online talk on “Challenges in Number Theory” on WebEx and YouTube platforms. (d) Prof. Sourav Pal, Director, IISER Kolkata, delivering a talk on “Challenges in Chemical Science” at MP Hall of BARC Training School, Mumbai. (e) Prof. B. K. Dutta, Institute Chair Professor, HBNI, delivering a talk on “General Overview of HBNI” during the program entitled “Research Opportunities Available in HBNI/DAE in the Area of Engineering Sciences.” (f) Prof. Ram Viswakarma, Distinguished Scientist, CSIR, delivering an online talk on “Opportunities in Life Science Research” on WebEx and YouTube platforms. (g) Prof. R. B. Grover, Emeritus Professor, HBNI delivering talk on “Relating Research to National Development” at MP Hall of BARC Training School, Mumbai.

HBNI also organized talks for the popularization/promotion of science in association with four higher educational institutions in and around Mumbai city, viz., Birla College, Kalyan, VG Vaze College, Mulund, Sophia College, Churchgate, and Wilson College, Chowpatty to create awareness among graduate and postgraduate science students regarding the career opportunities in basic science, i.e., physics, chemistry, biology and to encourage them for pursuing a research career. In these sessions, lectures were delivered by HBNI faculty members from Bhabha Atomic Research Centre on the topics, (a) Department of Atomic Energy-An overview, (b) Career opportunities in Basic Sciences, (c) Career Opportunities in Chemical Sciences, (d) Chemistry for Energy, (e) Chemistry for Healthcare, (f) Spectroscopy: Shaping the world, (g) Research areas in Condensed Matter Physics, (h) Some unresolved problems in Physics, (i) Career opportunities in Biological Sciences, (j) Research in Life Sciences & Computational Biology, (k) Basic and Applied Research in Life Sciences-Case of Diabetes.



Glimpses of the college visits conducted by HBNI faculty members. (a) Dr. Adish Tyagi, BARC, delivering a talk at B.K. Birla College of Arts, Science and Commerce, Kalyan, on “Career opportunities in Chemical sciences.” (b) A student receiving Quiz Prize from Dr. Dimple P Dutta, Associate Professor, HBNI. (c) HBNI resource persons along with the Quiz competition winners of V. G. Vaze College. (d) Dr. Anand G. Majumdar, BARC delivering lecture on “Research in Life Sciences & Computational Biology”, at Sophia College. (e) Dr. Dimple Dutta, HBNI Faculty member, BARC, delivering the lecture on “Department of Atomic Energy-An overview” at the event held at Wilson College. (f) HBNI resource persons along with student volunteers from Wilson College.

A Quiz competition was also conducted for the participating students by the HBNI faculty members. The winners were given a cap embossed with the emblems of AKAM, DAE and HBNI as prize.

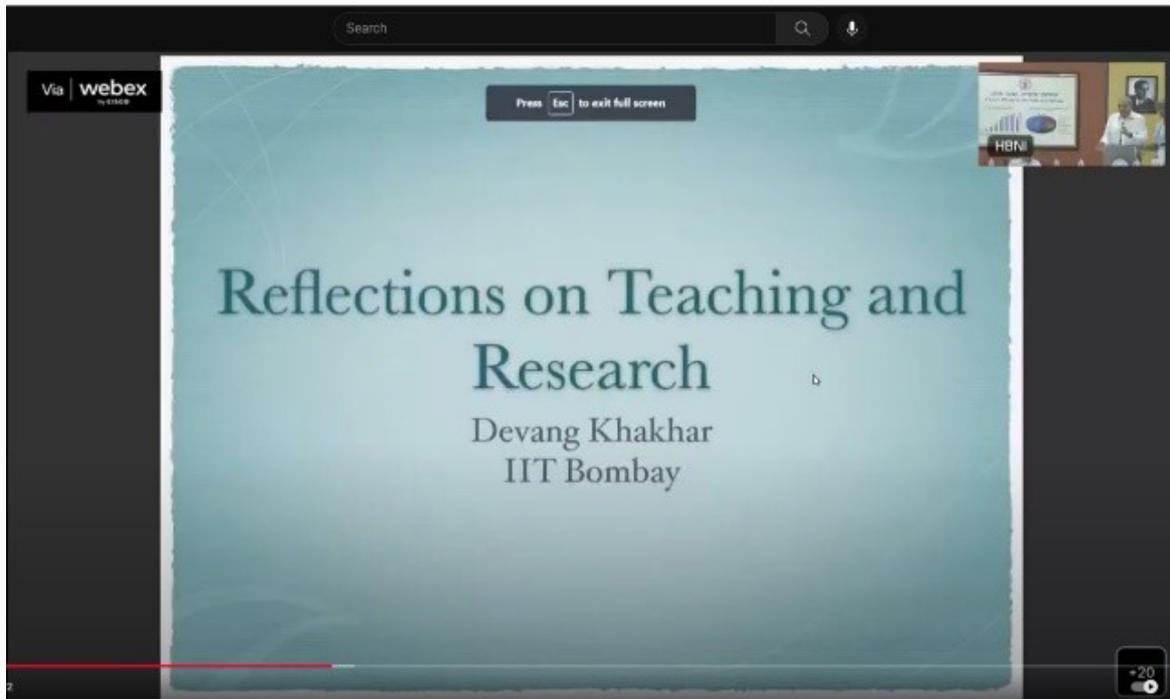
Teacher's Day Celebration

Teachers' Day was celebrated at the HBNI Central Office on September 5, 2022, in a hybrid mode. Prof. Devang Khakhar, Professor, Department of Chemical Engineering, IIT Bombay and Former Director, IIT Bombay graced the occasion as chief guest. Professor R. B. Grover, and Prof. J. B. Joshi, Emeritus Professors, HBNI participated in the event besides other HBNI functionaries and faculty members.

Prof. P. D. Naik, Dean, HBNI welcomed the gathering. A PowerPoint presentation highlighting the life and works of Dr. S. Radhakrishnan, whose birth anniversary is celebrated as Teacher's Day every year on September 5, was shown on the occasion. Speaking on the occasion, Prof. Grover said that Dr. Radhakrishnan was a great teacher and visionary and how the recommendation that the Universities must develop the qualities of synthesizing the knowledge – a 'Samanavaya' of the different items of the knowledge made by the Radhakrishnan Commission set up in 1948 under his chairmanship is even more relevant in the present scenario where the inter-disciplinary approach to research is essential for the advancement of science and technology.



Prof. P. D. Naik welcoming the gathering (top left); Prof. P. R. Vasudeva Rao (top right) and Prof. R. B. Grover (bottom) addressing the gathering



Prof. Devang Khakhar delivering his talk on the occasion of celebration of Teacher's Day at HBNI

Prof. Devang Khakhar gave a very relevant talk on the occasion on the topic, “Reflections on Teaching and Research.” In his talk, he highlighted the importance of teaching, elements of good teaching, the role of technology in education and discussed about the close connection between teaching and research. He also talked about the increasing importance of computational approaches in research.

Celebration of Engineer's Day at HBNI

HBNI celebrated Engineer's Day on September 15, 2022, at Multipurpose Hall, Training School Hostel, Anushaktinagar in a hybrid mode. Shri B. C. Pathak, Chairman & Managing Director, NPCIL, was the Chief Guest on the occasion, and Shri G. Nageswara Rao, Chairman, AERB, presided over the function.

Prof. P. D. Naik, Dean, HBNI, welcomed the gathering. In his introductory remarks, Prof. Vasudeva Rao, VC, HBNI, spoke about how engineering provides solutions to a wide range of industries like medicine, space, transport, environment, etc. He further remarked that Scientists use their research to generate knowledge, and the knowledge therein can be used to help us understand and make predictions about the natural world. The engineers use scientific knowledge, innovation, and creativity to create technologies impacting the world. An audio-visual feature highlighting the life and works of Sir M. Visvesvaraya, a visionary Engineer, whose birth anniversary is celebrated as Engineer's Day every year on September 15, was shown on the occasion.



Prof. P. D. Naik welcoming the gathering (left); Prof. P. R. Vasudeva Rao giving introductory remarks (right)

In his Presidential Address, Shri G. Nageswara Rao dwelled upon the challenges faced by engineers while executing the DAE mission programme related to the development of nuclear power & technology, viz., facing embargo, challenges faced during plant commissioning and operation and how they overcame them. Through the concerted efforts of the departmental engineers, India is in a strong position on the world nuclear map. India ranks third in terms of electricity production worldwide by producing 1207 TWh of electricity. Nuclear energy is the fifth-largest source of electricity for India. India also stands at seventh position in terms of the number of nuclear reactors, with over 23 nuclear reactors in 7 power plants across the country which produces 6780 MW of nuclear power. He also spoke about the future challenges in nuclear power capacity enhancement and how these can be addressed.



Shri G. Nageswara Rao giving Presidential Address



Shri B. C. Pathak giving his talk

Shri B. C. Pathak gave a talk on the topic “Role of Nuclear Power in the Development of Nation,” giving an overview of the Indian nuclear power program conceived by great visionary Dr. Homi Jehangir Bhabha to meet the security and energy demands of the country, its progress so far, the challenges faced in its execution, how to overcome them and the way forward. He remarked that nuclear energy is environmentally the most benign compared with other options for electricity generation and is economically competitive with alternate sources of energy. India has acquired the comprehensive capability to design, build and operate power reactors and manage complete fuel cycles through the untiring efforts of departmental engineers. Technologies have been developed indigenously for decommissioning and radiation waste management. He also spoke about the Environment Stewardship Programme (ESP) undertaken by NPCIL around nuclear power plant sites for their habitat conservation and nurturing of flora and fauna. Prof. A. K. Dureja, Associate Dean, HBNI, proposed vote of thanks.

Interactive Session on Gender Sensitization

HBNI organized an interactive session on “Gender Sensitization” for HBNI doctoral students on September 29, 2022, with the major objective of raising awareness about gender-related issues and how to promote gender equality among the young generation.

The session was conducted by Prof. Meena Gopal, Advanced Centre for Women’s Studies, School of Development Studies, Tata Institute of Social Sciences, Mumbai. The session was attended by fifty HBNI students pursuing their Ph.D. degrees in varied science disciplines.

Prof. Meena Gopal started the session by explaining the concept of gender, gender equality and inequality, major reasons for gender discrimination and its variance etc. A lively interactive session followed, in which students were divided into five groups and were given case studies on different topics to discuss, deliberate and later share their views with all present. This group activity based on case studies opened up stimulating and engaging discussions on gender bias, social problems and how these can be handled.



Prof. Meena Gopal addressing the participants (left); HBNI students engaged in discussion (right)



A student from the group sharing her views on a case study

Dr. Sekhar Basu Memorial Program

HBNI organized a Memorial Program in honour of Dr. Sekhar Basu, Former Secretary, Department of Atomic Energy and Former Chairman, Council of Management, HBNI, on September 23, 2022. Dr. K. Kasturirangan, Member, Atomic Energy Commission and Former Chairman, ISRO, was the chief guest on the occasion. Eminent personalities present on the occasion included, Dr. R. Chidambaram, Former Principal Scientific Advisor, GoI and Former Secretary, DAE, Prof. Anil Kakaodkar, Chancellor, HBNI, Prof. R. B. Grover, Emeritus Professor, HBNI, Shri A. K. Anand, Former Director Reactor Projects Group and Technology & International Relations, BARC, and Shri K.V. Ravi, Chief Executive, Nuclear Recycle Board. The program was also attended by Mrs. Basu, who has helped HBNI to institute awards in memory of Dr. Sekhar Basu.



Dignitaries present on the occasion of Dr. Sekhar Basu Memorial Program (left); An audio-visual feature on Dr. Basu being shown on the occasion (right)

Dr. Kasturirangan delivered Dr. Sekhar Basu Memorial lecture. In his lecture he gave an overview of the Indian space program, highlighting the contribution of three pioneering and visionary Chairmen of ISRO, viz., Dr. Vikram Sarabhai, Dr. Satish Dhawan and Dr. U. R. Rao in shaping and evolution of the Indian space program from 1960-1990 and how it was carried forward by different successors. He also talked about the transformative nature of higher education as elucidated in National Education Policy (NEP) 2020 and its possible influence on the future evolution of HBNI. During the program, Dr. Sekhar Basu Memorial awards were also presented to the outstanding young engineers who have shown excellent performance in the Training School and M.Tech program and also made exemplary contributions to the DAE projects.



Prof. K. Kasturirangan delivering his talk



Shri Bipin Nailwal, BARC



Ms. Sonal Gupta, BARC



Shri Sayantan D. Banik, BARC



Shri Ashish Kumar, IGCAR



Shri Lokesh Kumar, BARC

Prof. K. Kasturirangan presenting Dr. Sekhar Basu Memorial award to the awardees

Theme Meetings Conducted by HBNI

HBNI organized a Discussion Meeting on Basic Sciences in April 2022 with the main objective of providing a platform for interaction and catalysing the academic/research collaborations among faculty members of different constituent institutions and the off-campus centre of HBNI. The meeting was very well received by all the participants and during the concluding session it was decided to hold discipline-specific meetings with an aim to facilitate knowledge and resource sharing among CIs/OCC of HBNI in that particular area.

In this context, Homi Bhabha National Institute organised an interaction meeting among faculty and PhD students in Condensed Matter Physics at Saha Institute of Nuclear Physics (SINP), Kolkata, during June 23-24, 2022 and a Theme meeting on Life Sciences and Associated Technologies at Raja Ramanna Centre for Advanced Technology (RRCAT) Indore during September 7-10, 2022. The details about the meetings are given below:

1. Interaction Meeting on Condensed Matter Physics

The meeting on “Condensed Matter Physics,” held at Saha Institute of Nuclear Physics (SINP) during June 23-24, 2022 was inaugurated by Prof. Gautam Bhattacharyya, Director, SINP and Prof. P. R. Vasudeva Rao, VC, HBNI. Prof J. V. Yakhmi graced the occasion as the Chief Guest. In his address, Prof. Yakhmi emphasized on carrying out interdisciplinary research in the areas of physics, chemistry and biology to come up with innovations and solutions for societal needs.



Inaugural session of the interaction meeting on “Condensed Matter Physics” in progress

The meeting was attended by faculty members and students from CIs/OCC of HBNI, viz., BARC, IGCAR, RRCAT, VECC, SINP, IPR, IOP, HRI, IMSc, and NISER. During the scientific sessions held over two days, faculty members and doctoral students from different CIs/OCC of HBNI presented their research work in the area of condensed matter physics. In addition, a poster session was also held in which young research scholars got the opportunity to showcase their research work to expert faculty members from different CIs/OCC of HBNI and learn from them.

In the concluding session of the meeting, possible research collaboration, joint course development and joint student guideship among different CIs/OCC of HBNI were discussed. All the participants appreciated the initiative and suggested holding this type of meeting every year in different CIs of HBNI.



Participants of the Interaction Meeting on Condensed Matter Physics held at SINP

2. Theme Meeting on Life Sciences

The first meeting of Homi Bhabha National Institute Theme Meeting in Life Sciences (HBNI-TM-LS) was held at Raja Ramanna Centre for Advanced Technology (RRCAT), Indore during September 7-10, 2022. The meeting was inaugurated on September 7, 2022, by Dr. Shankar V. Nakhe, Director, RRCAT in the presence of Chief Guest Prof. Amlan J. Pal, Director, UGC-DAE Consortium of Scientific Research, Indore. Other dignitaries present on the occasion included Prof. P. D. Naik, Dean, HBNI, Prof. Sunil K. Ghosh, Associate Dean, HBNI, Prof. S. R. Mishra, Dean, HBNI-RRCAT and Prof. Shovan Kumar Majumder, Convener of the Meet and Head, Laser Biomedical Applications Division, RRCAT.

In his address, Prof. Amlan Pal emphasized the importance of independent thinking in research. The keynote address was delivered by Prof. Q. Annie Hasan, Head, Department of Genetics, Kamineni Hospital, Hyderabad, who emphasized the importance of genetic testing and counselling in the current genomic era.

The participants from different CIs/OCC of HBNI, viz., BARC, RRCAT, SINP, IMSc, TMC-ACTREC, and NISER actively participated in the theme meeting.



Dignitaries on the dais during the inauguration of the Theme Meeting on Life Sciences

The four-day meeting had lectures by expert faculties invited from different CIs/OCC of the HBNI. The deliberations covered nearly all-important topics related to Life Sciences such as biophotonics, genomics and cell biology, novel research and clinical aspects related to diagnostics as well as therapeutic modalities of diseases like cancer, and current research directions in the broad areas of basic and applied biological sciences.

In addition, there were about 50 posters presented by young research scholars on the topic of their research in Life Sciences. The poster session gave the opportunity to the research scholars to showcase their work to the experts, who held in-depth discussions with them and also provided valuable guidance for their future work.



Poster Session in progress during the Theme Meeting on Life Sciences

During the meeting, two special evening lectures were also held. Prof. M.B. Behera from Sant Longowal Institute of Engineering and Technology, Longowal, Punjab, gave a lecture on the topic, “Designing Healthy Food Products,” and Prof. H. S. Subramanya, Director, Institute of Bioinformatics and Applied Biotechnology, Bengaluru gave a talk on the topic, “Industrial Roadmap of Drug Discovery.”

Prof. P. R. Vasudeva Rao, VC, HBNI was the chief guest for the valedictory session. In his address, he expressed his views on different areas of research being done in HBNI. He emphasized that such theme meetings should also be held in other CIs of HBNI on different areas of basic sciences and engineering. He congratulated RRCAT for organizing the 1st Theme Meeting on Life Sciences, which was appreciated by one-and-all present at the valedictory function. A Cultural program followed the valedictory session.



Dignitaries on the dais during the valedictory session of the Theme meeting on Life Sciences

Discussion Meet on Spectroelectrochemistry

A one-day discussion meeting on Spectroelectrochemistry was organized in hybrid mode by Homi Bhabha National Institute (HBNI) in collaboration with the Indian Society for Electroanalytical Chemistry (ISEAC) and Bhabha Atomic Research Centre on July 16, 2022, at Multipurpose Hall, Training School Hostel, Anushakti Nagar. The meeting was inaugurated by Prof. A. K. Tyagi, Director, Chemistry Group, BARC. Prof. C. N. Patra, Head, Analytical Chemistry Division, BARC welcomed the gathering and Prof. P. D. Naik, Dean, HBNI gave the Presidential Address.

The discussion meeting focused on both the fundamental and applied nature of spectro-electrochemistry, an important analytical tool for the characterization of the interfacial processes in several important materials used in catalysis and sensing. The spectro-electrochemical techniques are also utilized in the analytical determination of drugs and biomolecules and to evaluate their interactions. Several renowned electrochemists from all over India gave talks on the fundamental aspects of electrochemical processes and their applications in sensors, electrodeposition, energy harvesting, storage, carbon dioxide reduction, etc. Talks were also presented on practical applications of electrochemical sensors, hydrogen generation through electrolysis of water, related technology developments and commercialization. The meeting was well received by all the participants.



Participants of the discussion meeting on Spectroelectrochemistry held at Mumbai

NPTEL Courses by HBNI

1. Course on Neutron Scattering for Condensed Matter Studies

The short-range strong interaction of neutron with matter and the inherent magnetic moment of neutron, makes neutron scattering a unique probe in condensed matter research. An important advantage of neutrons is that they carry no charge and can penetrate the bulk of materials. They interact via strong force with the nuclei of the material and the scattering cross section varies randomly between various elements and even between two isotopes of the same element. This allows one to observe light atoms such as hydrogen in the presence of heavier ones and distinguish neighbouring elements in the periodic table easily. Notably, hydrogen and deuterium have large contrast with respect to neutrons. One can exploit isotopic substitution and contrast variation methods in such studies. Since neutron also carries a magnetic moment of $-1.9 \mu\text{N}$, it also interacts with magnetic moment in atoms, making it a unique probe for determination of microscopic magnetic structure. Wavelength and energy of thermal neutron match with the lattice spacing and excitations in condensed matter and makes it an indispensable tool to study both structure and dynamics in condensed matter. Using neutron scattering techniques with varying momentum transfer and energy transfer range and resolution one is capable of understanding the structure and dynamics in materials at various length and time scales.

2. Course on Accelerator Physics

Accelerators have an important role both in basic and applied research, eg., medical science, industry, national security, environmental science etc Electron accelerators are built for food irradiation, and as Synchrotron Radiation Source for material science research. Depending on how particles are accelerated, accelerators are categorized as DC accelerators, Linear and Cyclic accelerators and Laser-Plasma accelerators. Today, accelerators in the energy range of keV to TeV have been designed, built and used. In order to design, operate and utilise them efficiently, the physics of the accelerators should be well understood. The course aims to discuss physics of DC, Linear and Cyclic accelerators and review high energy accelerators.

Events at the CIs/OCC

DAE Iconic Week Celebrations at the CIs/OCC

As part of DAE's iconic week celebrations, the CIs/OCC of HBNI organized a series of activities which included (i) organization of lectures/popular science talks by eminent speakers for school, UG and PG students, (ii) educational visits of school, UG and PG students to CIs, (iii) outreach programs promoting awareness of nuclear power as a source of green energy and the applications of nuclear technologies for societal benefits including industrial applications, healthcare, environment and agriculture. In addition, CIs/OCC also organized tree plantations drive, blood donation and health camps, photo exhibitions, film shows, quizzes and several competitions, viz., essay competitions, poster competitions and poetry competitions, etc. Glimpses of the DAE Iconic Week Celebrations by CIs/OCC of HBNI are given below.



Glimpses of DAE Iconic Week Celebrations at IGCAR (a) Sand sculpture illustrating the contribution of the nuclear power created on the beaches of IGCAR, Kalpakkam; (b) Anu Walkathon; (c) & (d) Outreach activities at nearby colleges in Chennai



Glimpses of DAE Iconic Week Celebrations at RRCAT (a) Visit of students to RRCAT Light Exploratorium; (b) & (c) Outreach activities conducted by RRCAT; (d) Organization of blood donation camp; (e) Interaction meeting with farmers



Glimpses of DAE iconic week celebrations at IPR. (a) Plantation drive; (b) Lecture by Prof. Surendra Pal for students; (c) & (d) Visit of Students from Schools & Colleges to IPR



Glimpses of DAE iconic week celebrations at IoP (a) Tree Plantation drive; (b) Blood donation camp; (c) Academic program for junior college students; (d) Academic program for senior science students; (e) Health camp on Cardiology, Orthopaedics and Diet subjects; (f) Special session of Physics Open Discussion (POD) in progress on August 27, 2022.



Glimpses of DAE iconic week celebrations at SINP (a) Outreach program for students (b) Health camp (c) Photo exhibition; (d) Poetry recitation on “Azadi”; (e) Tree plantation drive

Independence Day Celebrations at IPR

The 76th Independence Day was celebrated at IPR on 15th August 2022. Director, IPR received a guard of honour from the IPR security staff and hoisted the National Flag. He also addressed the gathering giving glimpses of some of the scientific achievements of IPR in the past year.



Shri S. Chaturvedi, Director, IPR addressing the gathering on the occasion of 76th Independence Day of India

Celebration of Bhartiya Bhasa Utsav at VECC

VECC celebrated the Bhartiya Bhasa Utsav to mark the birth anniversary of Mahakabi Subramaniam Bharati. Dr. Sumit Som, Director, VECC inaugurated the event with the opening of a multilingual exhibition with a display of books in different Indian languages (Sanskrit, Ben-gali, Odiya, Santhali, Hindi, Marathi, Tamil, Telegu, Kashmiri, and English among others) and a beautiful flower-rangoli & alpna depicting Indian tradition of unity in diversity. The event saw enthusiastic participation from HBNI students and faculty members who took part in a multilingual cultural afternoon which saw the reverberations of songs, poetry recitations and skits in different Indian languages. The event was indeed a celebration of Indian rich linguistic harmony among diversity.



Glimpses of celebration of Bhartiya Bhasha Utsav at VECC, December 12, 2022



News Update

- Prof. P. D. Naik, Dean, HBNI, took over the charge as Officiating Vice Chancellor in the afternoon of October 4, 2022, from the outgoing Vice Chancellor, Prof. P. R. Vasudeva Rao, who completed his five-year tenure as Vice Chancellor, HBNI on October 3, 2022.



*Prof. P. D. Naik taking charge as Officiating Vice Chancellor
from Prof. Vasudeva Rao, Outgoing Vice Chancellor*

- HBNI conducted an online faculty induction program for the benefit of newly inducted faculty members to brief them about the structure of academic processes and ordinances of HBNI. A total of forty-three new faculty members from different CIs/OCC of HBNI attended the program.

Scientific Outreach Activities conducted by CIs/OCC

Scientific Outreach Activities conducted by IPR

During the period July 2022 to November 2022, IPR organized several outreach activities for students of various schools all over India as part of “Azadi Ka Amrit Mahotsav” celebrations with a main objective to create awareness about plasma and its applications among the students.



Scientific outreach activity at Amreli, Gujarat, July 4-8, 2022



Scientific outreach activity at Mandvi, Gujarat, July 11-13, 2022



Scientific outreach program "Aurora-2022" at Kochi, Kerala, September 19-24, 2022



IPR stall at "Vision Rajasthan" exhibition at Sirohi, Rajasthan, November 1-3, 2022

Awards and Honors received by HBNI Faculty

1. Prof. Sudhakar Panda, NISER, has been conferred the coveted 'Biju Patnaik Award for Scientific Excellence' for the year 2020 in recognition of his outstanding life-time contribution in the field of Science and Technology by Odisha Bigyan Academy, Govt. of Odisha.
2. Prof. B. Venkataraman, IGCAR, has been conferred the Honorary Fellowship of the Indian Society of Analytical Scientists, Mumbai.
3. Prof. John Philip, IGCAR, has been conferred the Honorary Fellowship of the Indian Society of Analytical Scientists, Mumbai. Prof. Philip has been appointed as Associate Editor of Frontiers in Nanotechnology (Nanomaterials), Frontiers Publishing, UK. He has also been selected as an Editorial board member of Smart Materials in Medicine, Elsevier, Netherland and, Materials Futures, Institute of Physics (IOP), UK.
4. Prof. S. M. Yusuf, BARC, has been elected as a Fellow of Indian National Science Academy w.e.f. 01.01.2023. He has also received the Distinguished Lectureship Award of the Materials Research Society of India (MRSI).
5. Prof. Aditi Sen De, HRI, has been elected as a fellow of Indian National Science Academy w.e.f. 01.01. 2023
6. Prof. A. K. Tyagi, BARC, has become a Fellow, Indian National Academy of Engineering. He has received Honorary Professorship from Jawahar Lal University, Delhi and also received NETZSCH - ITAS Award from Indian Thermal Analysis Society in 2022.
7. Prof. V. Gopika, BARC, has been elected as a Fellow of Indian National Academy of Engineering.
8. Prof. Sandip Dhara, IGCAR, has become a Senior Member of OPTICA (Optical Society of America) in 2022.
9. Prof. J. Mohanty, BARC, has become a member of Royal Society of Chemistry. She has also been selected for SERB POWER Fellowship from SERB, DST.
10. Prof. Shikha Verma, IoP, has become Endowment Chair Professor of Dr. K. C. Patel Research & Development Center (KRADLE), CHARUSAT, Gujarat.
11. Prof. T. Som, IoP, has become a member of the Review Committee for the IEST Solar PV Hub at IEST, Shibpur.
12. Prof. Sanjib Kumar Agarwalla, IoP, has been appointed as an Honorary Fellow of the Physics Department, University of Wisconsin-Madison, Madison, USA.



13. Dr. Ajit C. Balram, IMSc., has been elected as an Associate of Indian Academy of Sciences.
14. Dr. Sangram Bagh, SINP, has become a Fellow of the Royal Society of Chemistry in 2022.
15. Dr. Amit Kunwar, BARC, has been elected as a Fellow of Maharashtra Academy of Sciences in 2022.
16. Dr. Pratap Roy, VECC, has been awarded the IPA “Aswini Kumar Rath Memorial Award” in Nuclear Physics for the year 2022.
17. Dr. R. S. Ningthoujam, BARC, has been awarded MRSI medal for the year 2022.
18. Prof. Ranjan Mittal, BARC, received MRSI Materials Science Annual Prize for the year 2021.
19. Dr. M. Vasudevan, IGCAR, is co-recipient of W. H. Hobart Memorial Award from the American Welding Society National Award for the year 2021.
20. Dr. Rubel Chakravarty, BARC, has received SMC Bronze medal for the year 2022.
21. Dr. Shiba Prasad Acharya, SINP, received “International Best Researcher Award” in the field of nonlinear dynamics and plasma physics. The award has been instituted by ISSN International Science & Technology Awards and Congress (IISTAC-2022) in association with World Research Council (WRC).
22. Dr. Sunita Sonawane, RMC-BARC, has won Women Researcher Award in the International Scientist Award on Engineering, Science and Medicine, held during October 7-8, 2022, organised by VDGOD Professional association.
23. Prof. B. N. Pandey, BARC, has become Vice President, Asian Association for Radiation Research.
24. Prof. Veerendra K. Sharma, BARC, has been elected as a core-committee member in Indian National Young Academy of Sciences (INYNAS), INSA, New Delhi.
25. Prof. Venkatesh Raman, IMSc., Has been elected President of ACM India for the year 2022.
26. Prof. Arnab Pal, IMSc, has been awarded SERB Start-Up Research Grant (2022-24) by DST SERB to work on applications of first passage processes in natural sciences.
27. Dr. Subhankar Bedanta, NISER, has been appointed as Associate Editor for the journals Frontiers in Physics and Frontiers in Nanotechnology.
28. Prof. Manimala Mitra, IoP, has received Subham Memorial Award, 2022 by the NGO AWTE, Bhubaneswar.
29. Dr. Debasish Chaudhuri, IoP, was invited to visit LPTM CY Cergy Paris University, Paris, France with a Visiting Professorship from 26 September to 7 October, 2022.

Awards received by HBNI Students

1. Ms. Sukiriti Hans, IPR, got the best Oral presentation Award for her paper titled “Role of Ion Beam Parameters in the Evolution of Self-organized Nanoripple Superimposed by Triangular Features” in the prestigious 22nd International Conference on Ion Beam and Materials Modifications held at Lisbon, Portugal during July 10-15, 2022.
2. Dr Neena G. Shetake, BARC, has received Asian Association for Radiation Research Young Scientist Award for the year 2022 during the 5th Asian Congress of Radiation Research and 3rd Biennial Meeting of Society for Radiation Research (SRR) held at DAE Convention Centre, Anushaktinagar, during November 17-20, 2022.
3. Shri Santosh Kumar Sahoo, NISER, received Chanakya Fellowship from i-Hub Quantum Foundation, Pune to pursue his Master’s thesis on the topic, “Spin-Seebeck Effect in manganese LSMO/Pt heterostructure.”
4. Shri Pushpendra Gupta, NISER, won the best Poster Award for his poster titled, “Frequency dependent inverse spin Hall effect in $\text{La}_{0.67}\text{Sr}_{0.33}\text{MnO}_3/\text{Pt}$ bilayer system,” in the Conference on “Frontiers In Materials for Technological Applications (FIMTA 2022),” held at CSIR-IMMT, Bhubaneswar during August 03-05, 2022.
5. Shri Sourab Kumar Das, BARC, received best Poster Prize during the 5th Asian Congress of Radiation Research and 3rd Biennial Meeting of Society for Radiation Research (SRR) held at DAE Convention Centre, Anushaktinagar, during November 17-20, 2022.
6. Ms. Iлина Bhattacharya, NISER, received best poster award at the 1st HBNI theme meeting on Life Sciences by HBNI, held at RRCAT, Indore during September 07-10, 2022.
7. Mr Omkar Kinkar, RRCAT, received Second Prize in Oral presentation of his research work at 37th MP Young Scientist Congress held during March 14-17, 2022.
8. Mr. Sanu Varghese, IoP, has been selected as convener of STEAM group (Level-2 convener in CMS Trigger coordination) for the period September 2022 to August 2024.
9. Ms. Rojaline Padhan, IoP, has received prestigious Fulbright-Nehru Doctoral Research Fellowship for the period 2022-2023.

Interview of Prof. P. R. Vasudeva Rao, Vice Chancellor, HBNI

Introduction

Prof. P. R. Vasudeva Rao is the Vice Chancellor, Homi Bhabha National Institute (HBNI). He was formerly the Director of Indira Gandhi Centre for Atomic Research. He is a specialist in the chemistry of nuclear fuel cycle, and was responsible for the development of several facilities for R&D on fast reactor fuel cycle at IGCAR.



Dr. Rao obtained his B.Sc. (Chemistry) degree from Madras University and thereafter joined the Department of Atomic Energy in the year 1972 through the 16th batch of BARC Training School. He worked in the Radiochemistry Division of BARC till August 1978. He obtained his Ph.D. degree in Chemistry from University of Bombay in 1979 for his work on chemistry of actinide elements. He shifted to Indira Gandhi Centre for Atomic Research (IGCAR) at Kalpakkam in 1978 and rose to the position of Director, IGCAR and superannuated in August 2015. He has over 300 publications in peer reviewed international journals. Dr. Rao has guided 15 students for their Ph.D. degree. He founded the Southern Regional Chapter of IANCAS and through IANCAS has organised and taken part in a large number of programs in schools and colleges to educate the students regarding radioactivity and its applications. He also founded the Society for Advancement of Chemical Sciences and Education (SACSE) at Kalpakkam and was its first President.

Dr. Rao was selected for the MRSI medal lecture in 1998, and the MRSI Senior Superconductivity and Materials Award in 2011. He was also selected for the silver medal of the Chemical Research Society of India in 2011. He was given the INS award in the year 2007 for his outstanding contributions to nuclear fuel cycle. He was one of the Vice Presidents of MRSI during 2015-2018. He was elected as a Fellow of INAE in 2018 and as a Fellow of National Academy of Sciences, India, in 2019.

Interview

We have been working with him for last five years. Before he demitted his office of Vice Chancellor on October 3, 2022, we had a chance to interview him for sharing his valuable experience in a Research Institution and a Higher Education Institute.



1. Congratulations Sir, for completing 50 years in DAE. Please share some of the golden moments and your fond memories with us: (Dr. H. Mishra)

Yes, indeed I feel very proud to say that I have been associated with DAE now for over 50 years – I joined the BARC Training School in August, 1972. The Golden years of my youth were those which I spent in Radiochemistry Division, BARC (1973-1978). I was able to concentrate fully on my research work that led to my Ph.D. degree, with no other assignments or responsibilities. I vividly remember my travel to PREFRE, Tarapur along with my section Head and Guru, Dr. S. K. Patil, to bring a few samples of the dissolver solution for analysis of U, Np and Pu by a spectrophotometric method. I used to reach the laboratory around 8 a.m, and work till 7 or 8 p.m, along with a few other colleagues who were also pursuing Ph.D. With the labs we could combine work with pleasure – singing or discussing old Hindi film songs!

In fact, whatever Hindi I know, I learnt it during this period through Hindi film songs!

During the mid-seventies, a large number of young graduates were recruited for chemical analysis work related to carbide fuel development for FBTR. There was youthful exuberance in the environment, and it was a lot of fun!

I shifted to Kalpakkam in 1978, and I vividly recall that I submitted my Ph.D thesis to Bombay University in the morning of the day of my departure to Chennai ! One unforgettable moment at Kalpakkam was the opening of the container with plutonium oxide that was received in my laboratory at IGCAR for starting radioactive work: the handling of plutonium at IGCAR for the first time. Our laboratory at IGCAR was also perhaps the first to receive a cask with a container having actual high-level radioactive waste generated during reprocessing of FBTR fuel at the CORAL facility. Transporting a cask with high level liquid waste was a one-of-a kind activity.

After a stint of two years as Raja Ramanna Fellow, I got an opportunity to once again serve DAE in the capacity of Vice Chancellor, HBNI. While there are many golden moments and fond memories of my association with HBNI, the memory that I will treasure most will be the organisation of the first ever gathering of faculty from all the CIs/OCC of HBNI in a meeting to discuss activities in basic sciences towards enhancing collaborations and synergy. I felt extremely satisfied when a number of faculty from different DAE institutes conveyed to me that this unique meeting also ignited a spark in them.

2. As Director IGCAR, you had successfully steered India's R&D programme on Fast Breeder Reactors. What are your first hand impressions on successful implementation of the technology? And why it is important for us ?

In the years to come, nuclear energy is bound to be a key element of the green energy strategy of our country, and also several other countries. India cannot indigenously sustain a large nuclear energy program without focusing on effective utilisation of its uranium resources. Fast reactors, forming stage II of the three-stage program envisioned by Dr. Bhabha, will thus be a vital link in India's energy supply chain. There are very few countries that have developed or are developing fast reactor technology, and therefore, there is not much international experience to learn from. India therefore needs to put in concerted efforts on its own, if it has to take fast reactor program to a commercial platform.

IGCAR has successfully built and operated the Fast Breeder Test Reactor, and reached international benchmarks in many respects. It has also mastered the reprocessing of mixed carbide fuel discharged at high burn-up. DAE has state-of-art fuel fabrication facilities at BARC and Tarapur; NFC as well as the Indian industry have mastered the technology for fabrication of various components. DAE has also embarked on building of an integrated fast reactor fuel cycle facility. Thus, comprehensive development of all aspects of a fast reactor program has been undertaken. Therefore, India will soon emerge as one of the few countries in the world with facilities and expertise to handle all requirements of a fast reactor programme.

Of course, such development comes with its own challenges, but I am confident that BHAVINI, with the support of IGCAR, BARC and other DAE units, can overcome all these challenges.



3. As Vice Chancellor of HBNI, what has been your major motivation and driving experience? Please share some major highlights and achievements of HBNI in last 5 years.

HBNI is unique among the deemed to be Universities in the country, both in terms of its organisational structure and its programmes. As you are aware, HBNI has under its academic umbrella 11 of the world-renowned organisations of DAE: four DAE R&D units (BARC, IGCAR, RRCAT and VECC) and seven grant-in-aid institutions (HRI, IMSc, IoP, IPR, NISER, SINP, TMC). Of these eleven, ten are Constituent Institutions (CIs) of HBNI, and NISER is an Off-campus Centre (OCC). The main aim of establishing HBNI was to provide a platform to integrate the strengths in basic sciences in the Grant-in-aid institutes with the strengths in technology development available in the DAE R&D units. Such integration has great potential to enhance the progress of indigenous nuclear technological capability. One of my endeavours was to facilitate such integration through academic programs and value-added courses. The experience gained in organising online courses and webinars, which was indeed a compulsion due to the pandemic, translated into an effective tool for the integration I spoke about. To gain further momentum in this endeavour, HBNI is now bringing together faculty of HBNI in various disciplines, by providing a forum of Theme Meetings. The Meetings held so far have thrown open several possibilities, including utilisation of the world class research infrastructure across the institutions under HBNI for collaborative research and joint academic programs.

HBNI organised online courses on unique subjects that are dealt with by just a few institutions in the country – e.g., neutrons as probes for condensed matter, high pressure physics, and accelerator physics. These courses had a large percentage of students from institutions outside DAE, giving the happy feeling that HBNI was able to contribute to human resource development across the country.

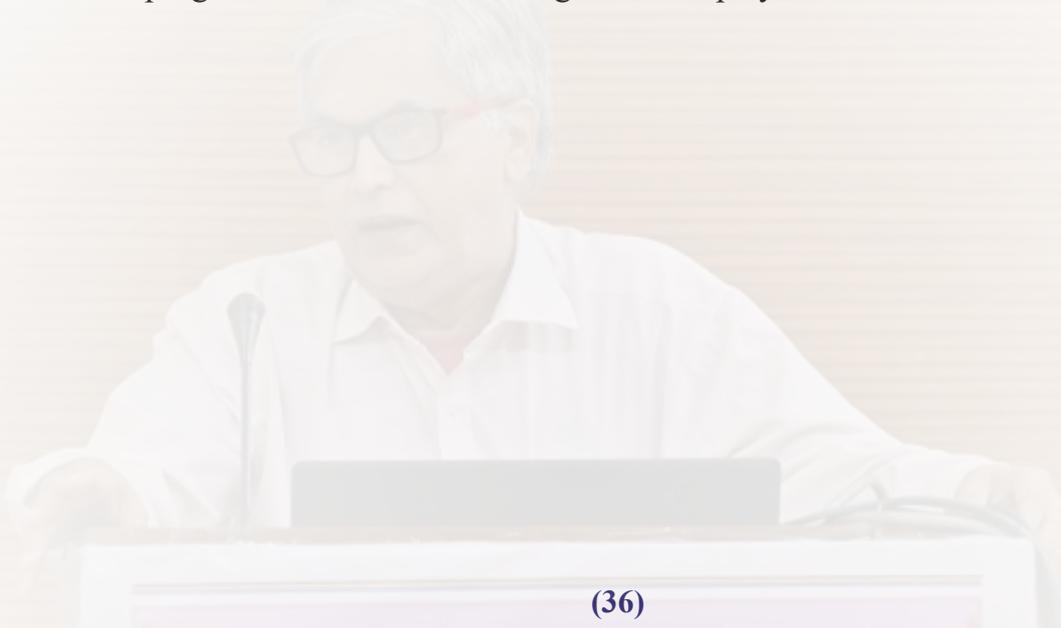
HBNI also added many academic programs in medical and health sciences, and also increased the intake in oncology related speciality and superspeciality programs. Programs such as MD-Ph.D which are on the anvil, will further add to the strong presence of HBNI in the development of medical experts for the country.

4. Your Vision of HBNI?

I firmly believe that HBNI has high potential to contribute not only to DAE programmes but also to the country as a whole. The institutions under the academic umbrella of HBNI have a great tradition of excellence and can boast of world class research infrastructure. A doctoral student enrolling with HBNI therefore will have excellent research opportunities, challenging problems to work on and guidance from some of the best minds in the country. As compared to the beginning years when most of the doctoral students were DAE employees, today, a majority of HBNI doctoral students are non-employee students. I am sure that in the years to come, the range of facilities, programmes and opportunities offered by HBNI would make it a preferred destination for research students.

HBNI also has unique skill development programmes; the speciality and super-speciality programmes offered by HBNI in the subject of oncology are already providing to the country valuable human resources for cancer treatment and cancer research. With further expansion in the academic programmes under medical and health sciences, HBNI would also emerge as one of the best contributors to the country's fight against cancer.

As the nuclear industry expands to the private sector, providing quality human resources to engage in various aspects of power production will also be an important requirement, for which HBNI academic programmes will have a large role to play.



5. Your hobbies and your role model please?

Reading science history, and especially history of nuclear technology, has for quite some time, been a favorite pastime for me. I also love music and particularly Hindi and Tamil film music. As I slip into a more relaxed way of life in the coming years, I also hope to spend time on understanding astrology and practicing homeopathy.

As for role models, I have many of them, but if you ask me whether I could emulate any of them, the answer would be not enough success! I would like to mention two people with whom I have had the longest professional association, and who have influenced my thinking. The first role model is Dr. S. K. Patil, who was Head of Process Chemistry Section of Radiochemistry Division and my Ph.D. supervisor. His simplicity, vast knowledge, excellent communication skills and fantastic memory have always amazed me, and if I could imbibe any one of his qualities, it will be his interest in science history. He continues to be a source of great inspiration for me.

Dr. C. K. Mathews, who established the Radiochemistry Programme at IGCAR is another visionary whose scientific rigor, readiness to undertake challenging assignments, precise communication skills and ability to design and set up unique experimental facilities made working with him a great period of learning for me. After joining HBNI, I had regular interactions with Prof. R. B. Grover, who was the founder-Director and the first VC of HBNI. Each interaction with him was a source of learning for me, and I could appreciate the deep thinking that had gone into designing various aspects of the structure and processes of HBNI.

6. You spent major part of your career in Kalpakkam and your stay in Mumbai has been also significant. Would you like to share some salient points on life pattern of two major centres of DAE.

I had stayed at DAE Township, Kalpakkam for over 35 years. The stay at Anushaktinagar township was only five years, of which over two years went in pandemic; so I could not explore and enjoy Anushaktinagar township adequately. However, both townships have excellent amenities and ambience. The kind of safe and carefree life that you enjoy in both places is just priceless, and DAE employees are truly blessed to be able to enjoy such a life. Of course, closeness to the heart of the city is a big plus point for Anushaktinagar; on the other hand, Kalpakkam community being smaller and more “closed”, perhaps provides more opportunities for interactions and lasting relationships. For example, the villages adjacent to the township at Kalpakkam were the main venues for day to day shopping, and over a period of time, the shop keepers share a familiarity and bonding with the residents that transcends business interests!

7. Your message to the younger colleagues of DAE

DAE is indeed one of the best institutions to work with. It provides immense opportunities for intellectual growth, and you can have the pride that you are contributing to the national interests. As I mentioned before, thanks to the amenities (including the CHSS facility) and ambience that we are provided, I think that the DAE employees have the best standard of living in every way.

It is very important that in the early stages of career, one tries to learn across disciplines, make reading a habit and develop a variety of skills, in addition to contributing to his official assignments. Those who have joined through the BARC training schools develop unique bonds with their batchmates, and it will be very rewarding for batchmates to remain in touch independent of where they work. It is also very important for DAE colleagues (this applies to other Government institutions as well) to constantly remind themselves that they are growing through the programs set up with taxpayers' money. A sense of national commitment should therefore be a core value for every DAE colleague.

8. Your message to the younger minds, science students of HBNI please?

Much of what I said for the young DAE colleagues also applies to HBNI students. The problems chosen for doctoral research and the rigor emphasised by the academic governance system could sometimes put pressures on the student, but the student would sooner or later realise the benefits of working in an environment that emphasises excellence. For example, when some students approached me to ask why some supervisors were insisting on more publications, I told them that they should only complain if the problem assigned to them is trivial or uninteresting, or if they do not get adequate guidance and mentoring, and being asked to be more productive should never be a cause for complaint! I have also often advised students to pay high degree of attention to the quality of their thesis; I used to say that the “thesis is like your baby- you need to be proud of it.. years or decades later, you should be able to proudly show off your thesis to your children, your students or other younger colleagues, so never compromise with the quality of your thesis”.

Like I mentioned in the case of young DAE colleagues, I also advise students to take interest in subjects beyond those that involve research problem. It will only enrich them and contribute to the success in future career. Also, students need to put more emphasis on communication – a domain where I often feel the need for improvement. After all, whether you are defending your thesis, or appearing for job interview, or explaining your work to a non-specialist, your communication skill will definitely contribute to your success!

Students should also know that today, there are immense opportunities in the country in various domains and roles. I would like to urge students to explore such possibilities adequately, before deciding on migrating to another country. We have numerous examples of how science leaders at their prime of performance decided to stay back in India in spite of bright prospects abroad, and made a great difference to the country through their contributions- the most important example is Dr. Homi Bhabha himself!

Creative Corner

Poem Title: *Be content with what you have*

Writer: *Dr. Pooja Gupta, Faculty, HBNI,*

RRCAT, Indore

*Be content with what you have
No matter more or no matter less
God gracefully gave u and blessed
Desires are infinite and limitless
But greed should not be your impetus
Be satisfied and focused
Be content with what you have
No matter more or no matter less
Work continuous on your goal
For this you have to hold control
You are lucky to have good health
Do not worry about the wealth
Be content with what you have
No matter more or no matter less
If you are not happy with what you have
You are a coward and not the brave
Appreciate, focus and work harder
This will make you happy and smarter*

Poem Title: *The whorls of Mumbai*

Prompt: *A flower that reminds me of something*

Writer: *Samyukta Shivshankar, PG Student, TMC.*

Enrolment No.: *HLTH09202121004*

Flowers have always been a method to describe something;

That is their ultimate charm

More than their colourful whorls

And fashionable frills.

You would say she is as pretty as a primrose

For the woman to whom you want to give a ring.

You would say our country is a lotus

For it bloomed into independence

From the muck of slavery.

While a majority constantly chimes

About the beauty of the rose,

I turn my head

Towards outside the window of the old BEST bus

And smile,

And gleam,

At the clusters of the bougainvillaea shrub

That shimmer in the streetlights at dusk,

Poem Title: *SHE*

Writer: *Shipra Upadhyay, M. Tech. Student, HBNI.*

Enrolment No.: *ENGG02202101014*

Waves pass by and the wind gushes

The land is still but she rushes

Towards the land of unknowns, she goes

She can be stopped by neither friends nor foes

Her feet are numb and eyes are sore

But her mind pushes her to fetch more

'What an unfulfilling life' she thinks

She gathers herself again, not caring that she stinks

Once again, the grass is green and the day is bright.

But she does not stop to think the wrong and right.

On and on she travels, without fearing about her decision

After all who is there to question her sense of precision?

Until now she had never been on her own

Confident strides and a raised head, she has really grown.

A sense of victory begins to tickle down her spine

And she smiles with the thought 'Life is unpredictable,

why to whine?'

Bougainvillaeas are fake,

Some might say

Just full of show off

A vibrant dress to hide an uninteresting soul.

Well, I'd say

It's your fault,

You noticed just the covering

And not the seemingly uninteresting soul

That is actually kind and loving.

They remind me of the place I was born in,

They remind me of where I live,

They remind me that there is something more to Mumbai

Than just business and Bollywood blitz.

Core Values of Homi Bhabha National Institute





होमी भाभा राष्ट्रिय संस्थान

Homi Bhabha National Institute

(परमाणु ऊर्जा विभाग की सहायता प्राप्त संस्था और यूजीसी अधिनियम 1956 की धारा 3 के तहत विश्वविद्यालय माना जाता है)

(An Aided Institution of the Department of Atomic Energy and a Deemed-to-be University Under Section 3 of the UGC Act. 1956)