



ANNUAL REPORT

2023-2024



होमी भाभा राष्ट्रीय संस्थान HOMI BHABHA NATIONAL INSTITUTE

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

(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)

वार्षिक प्रतिवेदन
2023-2024

47. Ms. Sneha Das, VECC has been awarded with one of the Best Poster Award for her poster titled, “In beam Spectroscopic Study of ^{209}At ” at the DAE Symposium on Nuclear Physics, held at IIT Indore during December 9-13, 2023.

❖ Digital Initiatives

New modules have been added to the IMS software to make it more flexible for assessing all the relevant data of the students and faculty by the staff of the HBNI Central office. New modules for submission of enrolment data / synopsis and result declaration for the PhD/M.Tech/M.Sc. (Engg.) students of HBNI have been added to the Anuvidhya website.

❖ Courses Conducted by HBNI

During the year, three online interactive courses were organized by HBNI. Details of these courses are given below.

(a) Online Course on Advanced Materials Chemistry

An online course on “Advanced Materials Chemistry” was conducted by HBNI from June to August 2023. Prof. A. K. Tyagi, Director, Chemistry Group and Senior Professor HBNI, was the course director. The broad topics covered under the course included general materials chemistry, characterization techniques, chemical, major, trace and ultra-trace analysis techniques, and functional materials. Sixty students from CIs/OCC of HBNI and other educational institutes from all over India attended the course and benefitted from it.

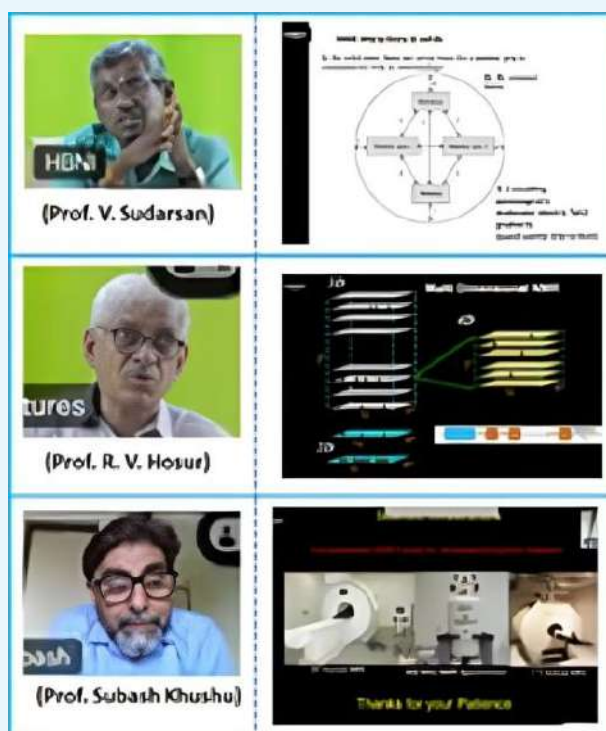
(b) Online course on Research Methodology, Research and Publication Ethics for HBNI Students

University Grants Commission in its 543rd meeting held on August 9, 2019 approved two credit Courses for awareness about publication ethics and publication misconducts entitled “Research and Publication ethics” (RPE) to be made mandatory for all Ph.D. students for pre-registration course work. Accordingly, a course on Research Methodology, encompassing the RPE course has been developed and being offered to the students of all CIs/OCC of HBNI since 2021-2022

academic session. The course consists of 45 lectures and has three modules: (a) Module A: Research design and methods (18 lectures); (b) Module B: Research and Publication ethics (12 lectures); (c) Module C: Computational and experimental methods (minimum 15 lectures). Lectures on Module A and B (4 credits) are being conducted by HBNI Central Office, while Module C (2 credits) is conducted by respective CIs/OCC. The lectures on Module A and B are being delivered by Prof. B. K. Nayak, Prof. Prabuddha Ganguli, (Module A), and Prof. V. Siruguri (Module B). Total 304 Ph.D. students from different CIs/OCC of HBNI have registered for the course in 2023-2024 session.

(c) Online Course on Advanced NMR Spectroscopy Part-II

HBNI conducted Part-II of the online interactive course on “Advanced NMR Spectroscopy” during July to December 2023 (Part-I was conducted during January-May’23). The complete course was coordinated by Prof. Haridas Pal, Associate Dean HBNI and Raja Ramanna Fellow. Four major topics were covered in the Part-II of the Advanced NMR Spectroscopy course, namely, (i) the basic concepts and applications of solid-state NMR, (ii) biomolecular NMR (iii) NMR in drug discovery and (iv) basics & clinical aspects of magnetic resonance imaging (MRI). Research scholars and scientists from different academic institutes across the country participated in this course to get benefit of it for their future scientific endeavours.



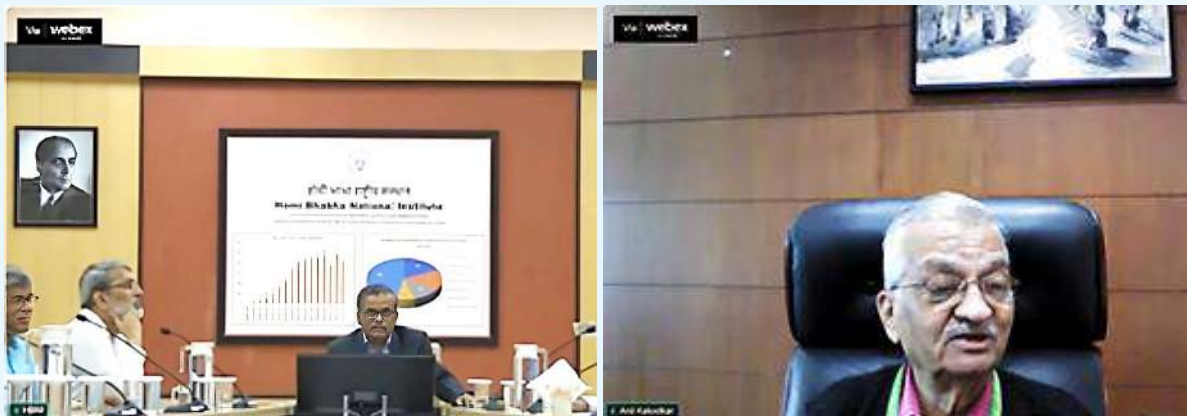
Screenshot of the inaugural function of Advanced NMR Spectroscopy Course

(d) Online Course on Disaster Management - Challenges in Chemical, Biological, Radiological and Nuclear (CBRN) Emergencies

An online course on “Disaster Management - Challenges in CBRN Emergencies” is being conducted by HBNI in two parts from October 2023-April 2024. The course is intended to contribute to Chemical, Biological, Radiological & Nuclear Emergency Management (CBRN EM) by imparting education, knowledge, techniques, and the means to attain the right approach for accomplishing the CBRN Disaster Resilient set up. Part-I of the course was conducted from October to December 2023 and Part-II is being conducted from January to April 2024. Part-I covered the basic aspects of disaster management with emphasis laid mainly on Indian CBRN framework and emergency management. and Part-II is covering the advanced aspects. Prof. H. Mishra, Raja Ramanna Fellow, HBNI is the course director.

The course was formally inaugurated by Prof. Anil Kakodkar, Chancellor, HBNI and Former Chairman, AEC and Secretary, DAE on October 17, 2023. Prof. Kakodkar appreciated the

HBNI initiative to conduct a course on CBRN Emergency Management and stressed for an in-depth research and risk analysis on the subject. Speaking on the occasion, Prof. U. Kamachi Mudali, VC, HBNI mentioned about the provisions of Disaster Management Act 2005 and the need for percolation of knowledge and information on a wider scale. Eighty participants including science & engineering graduates, emergency handlers from nuclear plants, cement industries, professionals and scientists from CIs and OCC of HBNI and two foreign participants are attending the course presently.



Prof. U. Kamachi Mudali giving introductory remarks (left); Prof. Anil Kakodkar giving inaugural address (right)

(e) Course on “Structural Integrity Assessment of Mechanical Components: Concepts & Procedures”

An advanced course on “Structural Integrity Assessment of Mechanical Components: Concepts & Procedures” was organized by Homi Bhabha National Institute (HBNI) jointly with National Institute for Nuclear Science and Technology (INSTN), France in hybrid mode during March 11-15, 2024. The course was jointly coordinated by Prof. Naveen Kumar, Associate Dean, HBNI and Prof. Nihed Chaabane, CEA Saclay, INSTN, France. The course was inaugurated by Shri Dinesh Kumar Shukla, Chairman, Atomic Energy Regulatory Board. In his inaugural address, Shri Shukla emphasized the role of structural integrity assessment for life extension of existing systems. Mr Xavier Perrette, Vice President International Relations, INSTN, and Mr. Thomas Mieusset, Counsellor, French Embassy in India were also present on the occasion.

The target students for the course were Masters-PhD students and young engineers/researchers. The course imparted ample knowledge on structural integrity assessment of mechanical components specific to pressure vessels and piping. The course was covered in seventeen lectures of ninety minutes duration each which were delivered over five days by international experts in the field from HBNI-DAE and INSTN-CEA, France. In total ninety-two participants from India and abroad (42 attending in person and 50 online) including research scholars, working professionals from academia, industry, public sector units, regulatory bodies, and R&D centers of HBNI attended the course and benefitted from it.



Prof. Naveen Kumar, Associate Dean, HBNI giving welcome address during inauguration of course



Participants of the course with dignitaries