



Issue No. 05 | June 2021



अणुविद्या

HBNI NEWSLETTER

होमी भाभा राष्ट्रीय संस्थान

Homi Bhabha National Institute

(परमाणु ऊर्जा विभाग की एक सहायक 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)

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





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)

Council of Management
(As on June 1, 2021)

Shri K.N. Vyas, Secretary DAE & Chairman, AEC	Chairman
Prof. P.R. Vasudeva Rao, Vice Chancellor	Member
Shri Talleen Kumar, Member (Finance), AEC	Member
Prof. A.K. Mohanty, Director, BARC	Member
Prof. A. K. Bhaduri, Director, IGCAR	Member
Prof. R.A. Badwe, Director, TMC	Member
Prof. Sudhakar Panda, Director, NISER	Member
Prof. Surendra Prasad, Former Chairman NBA & Former Director, IIT Delhi	Member
Prof. Mustansir Barma, Professor Emeritus, TIFR Centre for Inter-Disciplinary Sciences, Hyderabad	Member
Sri S.S. Sandhu, IAS, Additional Secretary, Department of Higher Education, MHRD, New Delhi	Member
Prof. P.D. Naik, Dean, HBNI	Member
Dr. B. Chandrasekar, Registrar	Secretary

Academic Council
(As on June 1, 2021)

Prof. P.R. Vasudeva Rao, Vice Chancellor	Chairperson
Prof. A.K. Mohanty, Director, BARC	Member
Prof. A.K. Bhaduri, Director, IGCAR	Member
Prof. R.A. Badwe, Director, TMC	Member
Prof. Sudhakar Panda, Director, NISER	Member
Prof. S.M. Yusuf, Director, IoP	Member
Shri. D. Das, Director, RRCAT	Member
Dr. Sumit Som, Director, VECC	Member
Prof. Shashank Chaturvedi, Director, IPR	Member
Prof. Gautam Bhattacharyya, Director, SINP	Member
Prof. Pinaki Majumdar, Director, HRI	Member
Prof. V. Arvind/Prof. V. Ravindran, Director, IMSc	Member
Prof. Indranil Manna, IIT Kharagpur	Member
Prof. J.B. Udgaonkar, IISER Pune	Member
Prof. E.D. Jemmis, IISc, Bangalore	Member
Prof. Shishir Deshpande, IPR	Member
Prof. B. Venkatraman, IGCAR	Member
Prof. P.K. Pujari/Prof. Vivekanand Kain, BARC	Member
Prof. P.D. Naik, Dean, HBNI	Member
Prof. R. B. Grover, Convenor, BoS (Applied Systems Analysis)	Member
Prof. S.M. Yusuf, Convenor, BoS (Physical Sciences)	Member
Prof. A. P. Tiwari, Convenor, BoS (Engineering Sciences)	Member
Prof. S. V. Chiplunkar/ Prof. Prasanna Venkatraman, Convenor, BoS (Life Sciences)	Member
Prof. Meena Mahajan, Convenor, BoS (Mathematical Sciences)	Member
Prof. S.D. Banavali, Convenor, BoS (Medical & Health Sciences)	Member
Prof. S. Kannan, Convenor, BoS (Chemical Sciences)	Member
Prof. Bedangadas Mohanty, Convenor, BoS (Integrated Masters Programme)	Member
Dr. B. Chandrasekar, Registrar	Secretary

Planning & Monitoring Board
(As on June 1, 2021)

Prof. P.R. Vasudeva Rao, Vice Chancellor	Chairperson
Prof. A.K. Mohanty, Director, BARC	Member
Prof. P.D. Naik, Dean, HBNI	Member
Prof. R.B. Grover, Professor Emeritus, HBNI	Member
Prof. A.K. Bhaduri, Director, IGCAR	Member
Prof. S. Chaturvedi, Director, IPR	Member
Prof. G. Bhattacharyya, Director, SINP	Member
Prof. Devang Khakhar, Department of Chemical Engineering, IIT Bombay	Member
Dr. Praveen Chaddah, Former Director, UGC-DAE Consortium for Scientific Research	Member
Prof. S. Ramakrishnan, Director, TIFR	Member
Dr. B. Chandrasekar, Registrar	Secretary

OBITUARY



Dr. Srikumar Banerjee

(25.04.1946-23.05.2021)

It is with a sense of profound grief and shock that we record the passing away of Prof. Srikumar Banerjee, Chancellor, HBNI, in the early hours of May 23, 2021.

Prof. Banerjee joined DAE through the 11th batch of BARC Training School, and rose to the position of Director, BARC in April 2004, and took over as Secretary, DAE and Chairman, AEC on 30th November 2009. He demitted his office on April 30, 2012, after 45 years of distinguished career in DAE. During 2012-2017, he was DAE Homi Bhabha Chair in BARC.

As Director, BARC, Prof. Banerjee was a member of the Academic Council of HBNI from the beginning, and participated in all discussions leading to the evolution of the basic framework of HBNI. He was the Chairman of the Council of Management of HBNI from Nov. 2009 till April 2012. He was appointed as Chancellor, HBNI in July 2015 and his tenure as Chancellor was further extended by 5 years w.e.f July 2020. As Chairman of CoM and subsequently as Chancellor of HBNI, Prof. Banerjee played a key role in the shaping of several academic programs; he played several roles including as Chairman of the Standing Academic Committee of BARC and chaired doctoral committees of several students. He delivered courses, authored books, mentored students and thus contributed in every possible manner to the academic activities of HBNI.

Prof. Banerjee was the recipient of several awards including the National Metallurgist Day Award (1981), Shanti Swarup Bhatnagar Prize (1989) and Padma Shri (2005). He was a Fellow of several academies, and several Universities awarded him honorary degrees and gave him visiting positions.

Prof. Banerjee was a rare combination of an excellent researcher, able administrator, excellent mentor and above all, a fine human being with whom everyone enjoyed interacting. His passing away is a great loss for the Indian scientific community in general and HBNI in particular. He will be remembered forever by his students, colleagues and peers.

May his soul rest in peace!

From the Vice Chancellor's Desk



The half year that went by was not only a busy one, but also one that brought sad news. Prof. Srikumar Banerjee, our beloved Chancellor, passed away on April 23, 2021 leaving a big void in the HBNI family that is extremely difficult to fill. As we come to terms with the great loss, we also take a vow to take all measures that would enhance the status of HBNI as a world class research University, taking inspiration from the visionary guidance and advice that Prof. Banerjee had given to HBNI.

The most significant program during the last six months was the visit of the peer review team from NAAC. We had to organise presentations, visits to facilities, meetings with stake holders, preparation of reports, etc., duly respecting the regulations in place due to the pandemic! Thanks to the availability of videoconferencing tools, students, faculty, Deans and Directors at the CIs/OCC could participate effectively and provide the inputs to the NAAC team. We now await the result of the accreditation exercise.

Webinars and online courses have become the order of the day, and we could realise the great impact that they could have on the young minds through our programs. Students and faculty from across the country – not merely the CIs/OCC of HBNI- have shown keen participation in these programs. The release of the book on Physics of Nuclear Reactors – the first such project of HBNI, was another significant development.

This year's foundation day program was especially a memorable one, thanks to the online participation of Nobel Laureate Prof. Lehn as the Chief Guest, and his fascinating address. We hope that the pandemic will recede in the coming months, and the next year's program could be held with physical participation.

Our students and faculty have continued to make a mark in the international arena through high quality publications from outstanding research work. New academic programs and new courses are on the anvil, and as we move into the second half of 2021, there is a glimmer of hope that the improvement in the situation with regard to Covid-19 would enable academic activities to gather momentum and scale greater heights.

A handwritten signature in blue ink, which appears to read 'P.R. Vasudeva Rao'. The signature is fluid and cursive.

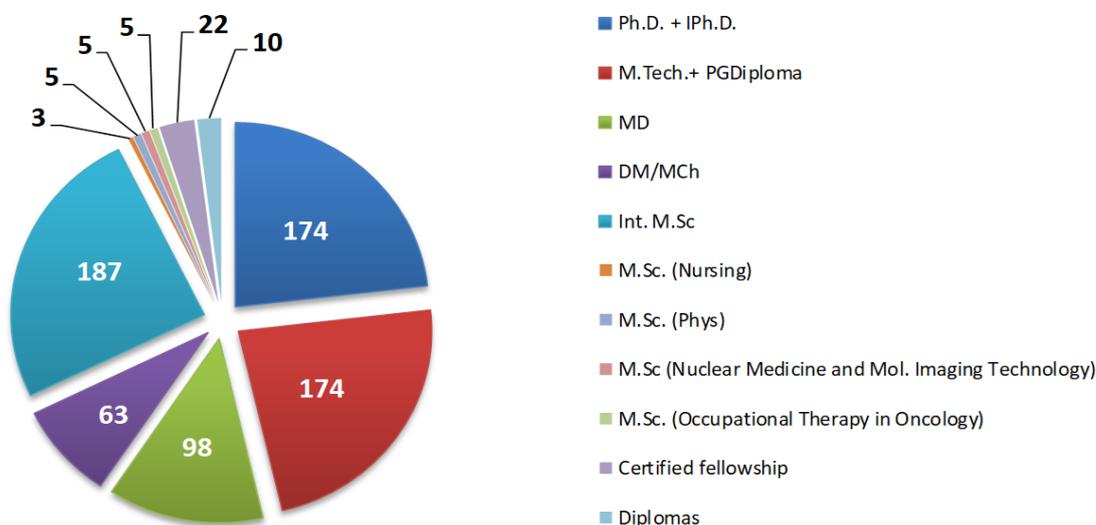
(P.R.Vasudeva Rao)

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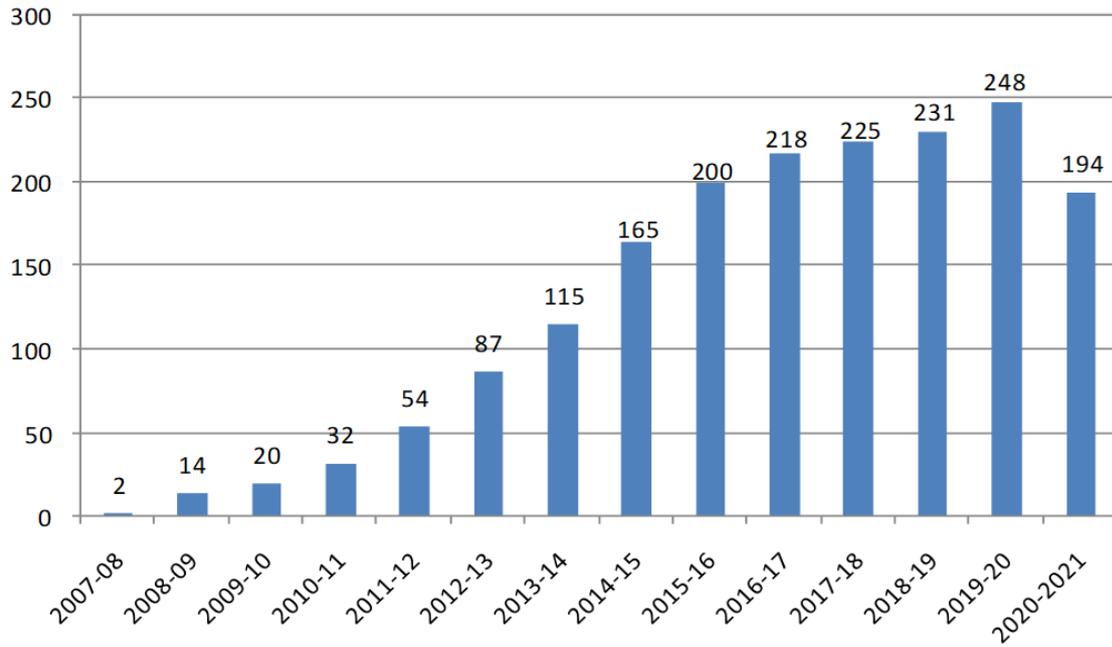
Institute at a Glance

**Programme wise admission details during 2020-21
(Total=746)**

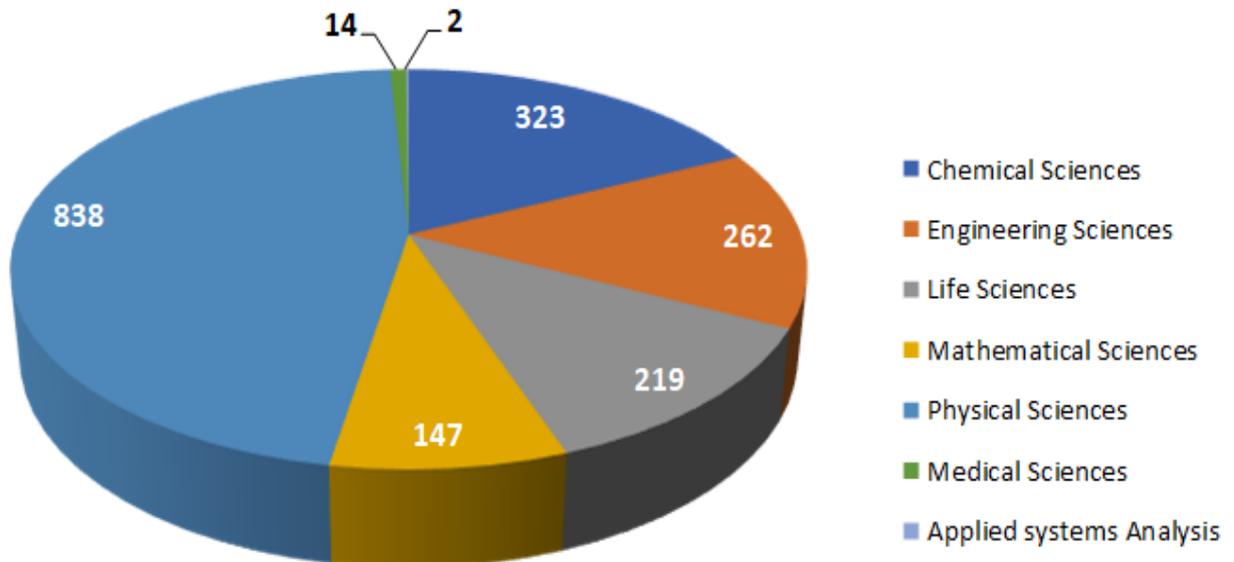


	BARC	IGCAR	RRCAT	VECC	SINP	IPR	TMC	IoP	IMSc	HRI	NISER	Total
Ph.D. + Int. Ph.D.	32	-	12	14	13	11	-	15	13	18	46	174
M.Tech + PG Diploma	131	30	13	-	-	-	-	-	-	-	-	174
MD	6	-	-	-	-	-	92	-	-	-	-	98
DM/MCh	-	-	-	-	-	-	63	-	-	-	-	63
M.Sc. Physics	-	-	-	-	-	-	-	-	-	5	-	5
IntM.Sc	-	-	-	-	-	-	-	-	-	-	187	187
M.Sc. (Nursing)	-	-	-	-	-	-	3	-	-	-	-	3
M.Sc (Nuclear med. and molecular Imaging Tech.)	-	-	-	-	-	-	5	-	-	-	-	5
M.Sc. (Occupational Therapy in Oncology)	-	-	-	-	-	-	5	-	-	-	-	5
Certified fellowship	-	-	-	-	-	-	22	-	-	-	-	22
Diplomas	-	-	-	-	-	-	10	-	-	-	-	10
Total	169	30	25	14	13	11	200	15	13	23	233	746

Year wise Ph.D results declared



Discipline wise distribution of Total (1805) Ph.D results declared



CIs/OCC wise declared total PhD results inception

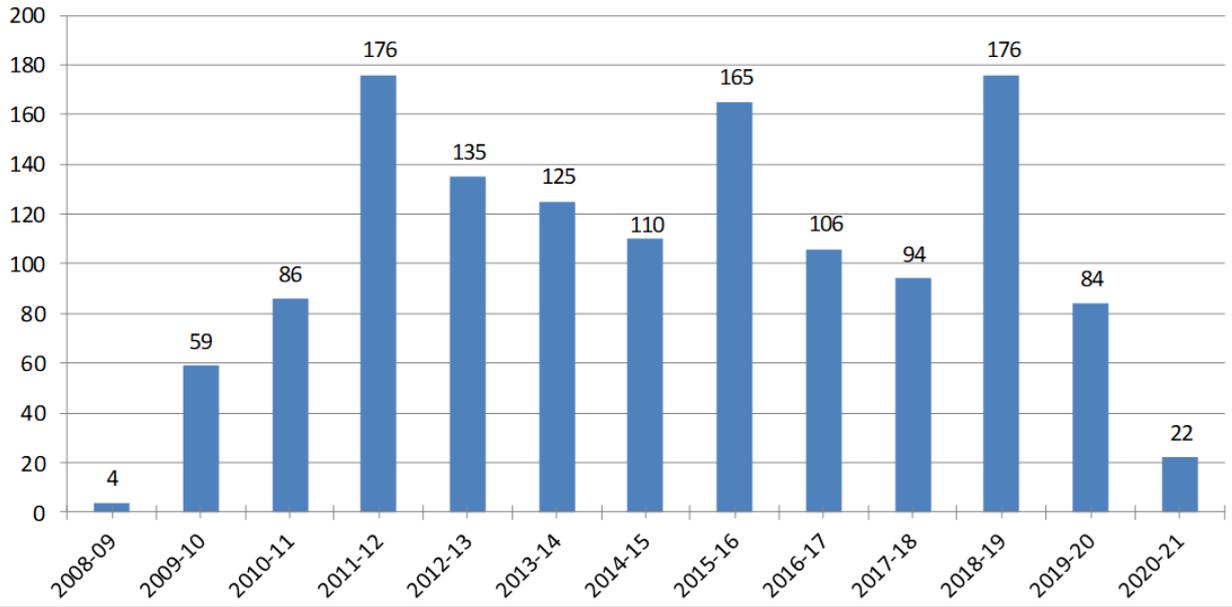
YEAR	BARC	IGCAR	RRCAT	VECC	SINP	NISER	IPR	IoP	HRI	TMC	IMSc	TOTAL
2007-08	-	-	-	-	-	-	-	2	-	-	-	2
2008-09	-	-	-	-	1	-	-	4	2	-	7	14
2009-10	-	-	-	-	1	-	-	2	7	-	10	20
2010-11	5	-	-	-	2	-	-	6	9	-	10	32
2011-12	15	2	2	-	1	-	5	3	9	-	17	54
2012-13	45	7	4	8	2	-	3	4	5	4	5	87
2013-14	34	23	2	7	6	-	8	9	4	6	16	115
2014-15	62	33	15	6	8	-	1	8	5	14	13	165
2015-16	86	29	13	7	13	-	5	10	11	18	8	200
2016-17	71	33	5	10	11	16	7	5	14	23	23	218
2017-18	71	27	10	11	18	16	13	8	16	15	20	225
2018-19	75	30	16	10	13	27	8	10	15	11	16	231
2019-20	68	39	14	16	15	22	12	8	21	13	20	248
2020-21	57	24	12	3	21	23	9	4	10	14	17	194
TOTAL	589	247	93	78	112	104	71	83	128	118	182	1805

#Includes NISER Results till 2015-16

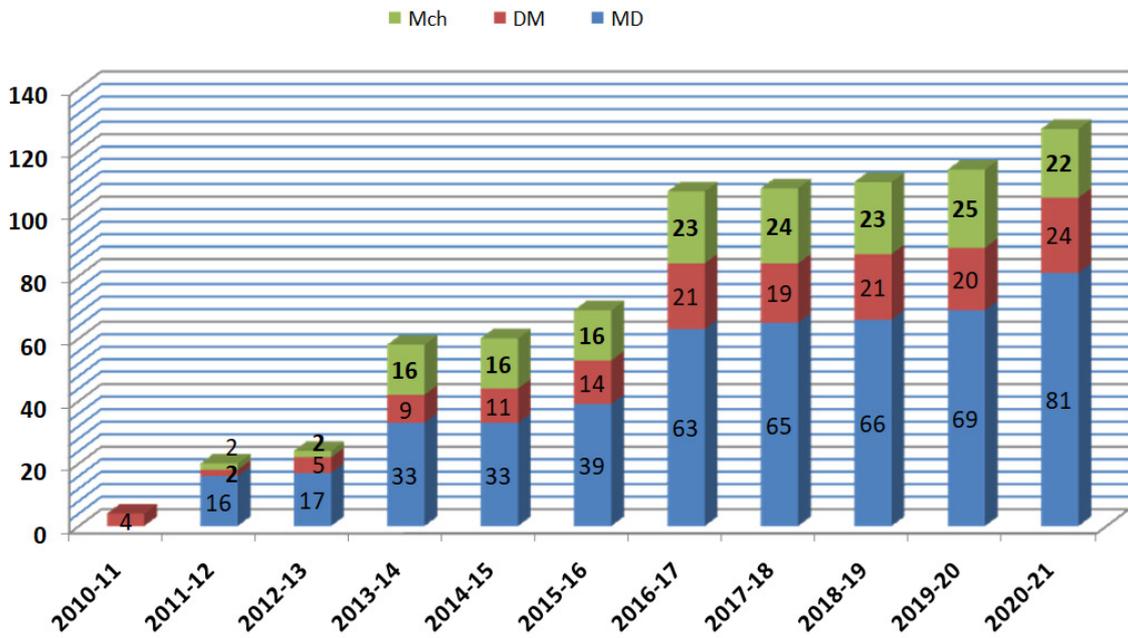
CIs/OCC & Discipline wise PhD results during 2020-21

	BARC	IGCAR	RRCAT	VECC	SINP	NISER	IPR	IoP	HRI	TMC	IMSc	TOTAL
Chemical Sciences	17	1	1	-	1	7	-	-	-	-	-	27
Engineering Sciences	16	15	-	-	-	-	5	-	-	-	-	36
Med. & Health Sciences	-	-	-	-	-	-	-	-	-	2	-	02
Life Sciences	6	-	-	-	2	6	-	-	-	12	1	27
Mathematical Sciences	-	-	-	-	-	2	-	-	6	-	3	11
Physical Sciences	18	8	11	3	18	8	4	4	4	-	13	91
Applied System Analysis	-	-	-	-	-	-	-	-	-	-	-	0
Total	57	24	12	03	21	23	09	04	10	14	17	194

Year wise M.Tech results declared



Year wise MD/DM/M Ch results declared



Events at Central Office

Launch of HBNI Research Scholar Forum

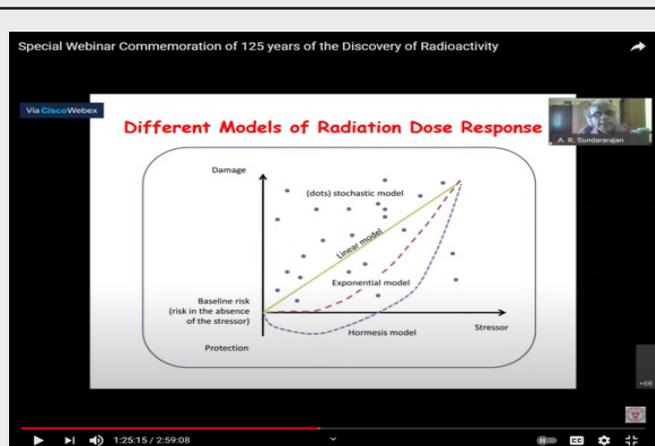
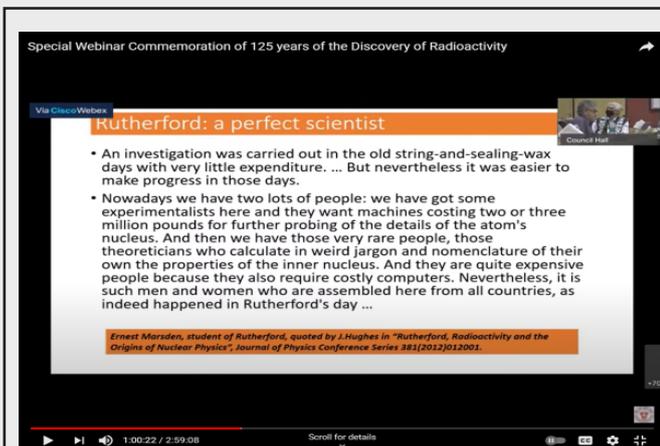
HBNI brings together ten premier DAE institutions established as R&D Centres and grant-in-aid autonomous centres as Constituent Institutions, and one Off Campus Centre under a single research driven framework. In order to advance/promote academic links between the research scholars of HBNI and to provide them a platform to grow their skills in communication, management and organizational domains, HBNI decided to launch “HBNI Research scholar Forum.” The forum was launched on 14th January, 2021 by Prof. Srikumar Banerjee, Chancellor, HBNI in the physical presence of Prof. Vasudeva Rao, VC, HBNI, Prof. P.D. Naik, Dean, HBNI, Prof. R.B. Grover, Emeritus Professor, HBNI, Prof. D.K. Maity, Associate Dean, HBNI and Prof. B. Chandrasekar, Registrar, HBNI. Prof. Maity is also the mentor for the forum. The event was conducted online and Directors, Deans, HBNI faculty and students from other CIs and OCC, joined the event remotely. Prof. P.D. Naik welcomed the gathering followed by the address of Prof. Rao who explained in detail about the objectives behind forming HBNI Research Scholars Forum. Prof. R.B. Grover, in his address to the students explained the concept of HBNI particularly in context of New Education Policy (NEP) - 2020 and also gave tips to students to enhance their writing and communication skills for effective exposure of their research work. Prof. Banerjee in his address lauded the efforts of HBNI for taking efforts to create the HBNI Research Scholar Forum. He remarked that the forum provides a platform for sharing knowledge, research experience as well as research facilities among researchers of different disciplines in different CIs/OC which in turn will boost inter-constitutional collaborations. He said that HBNI RSF provides an opportunity to students across all CIs to get involved in large cooperative research projects involving several CIs. After Prof. Banerjee’s address, the students from different CIs/OCC interacted with HBNI functionalities at central office and offered their comments and suggestions regarding HBNI RSF.

Commemoration of 125 Years of Discovery of Radioactivity

The phenomenon of Radioactivity was discovered by Henry Becquerel on 1st March, 1896. To commemorate the 125 years of discovery of radioactivity, HBNI organized a Half Day Special Webinar on March 1, 2021 jointly with the Indian Association of Nuclear Chemists and Allied Scientists (IANCAS) over WebEx platform. Prof. B.S. Tomar, Institute Chair Professor and President, IANCAS, welcomed the gathering. Shri K.N. Vyas, Chairman, CoM, HBNI and Secretary, DAE presided over the event. Scientific talks on topics related to radioactivity were delivered by eminent nuclear chemists and physicists from India and abroad on the occasion. Prof. Vasudeva Rao, Vice chancellor, HBNI delivered talk on historical aspects of the radioactivity. Prof. Araceli Lopez Martens, CNRS Universite Paris-Saclay spoke on the topic, “From radioactivity to modern nuclear physics - 125 years of discoveries.” Dr. V. Venugopal, Ex-Director, Radiochemistry and Isotope group talked about how the radiochemistry programme in India evolved and Shri A.R. Sundararajan, Former Director, Radiation Safety Division, AERB gave his talk on the topic “Evolution of Radiation Safety.” Prof. P.D. Naik, Dean HBNI, gave concluding remarks and vote of thanks also.



**Dignitaries present on the occasion of Commemoration of 125 Years of Discovery of Radioactivity. (L)
Shri K.N. Vyas delivering his address on the occasion (R)**



Scientific session in progress during the event

Foundation Day Celebration of HBNI

The Foundation Day of the HBNI was celebrated over WebEx platform and streamed live on YouTube on June 3, 2021. Outstanding students of the institute in various academic programs and winners of Prof. J.B. Joshi Research Foundation innovation awards for the year 2019 and 2020 were also honoured on the occasion. Prof. Jean-Marie Lehn, Noble Laureate and Chair of Chemistry of Complex Systems, Professor, University of Strasbourg Institute for Advanced Study, was the Chief Guest for the function. Secretary, Department of Atomic Energy (DAE), Chairman, Atomic Energy Commission and Chairman, Council of Management, Shri K.N. Vyas presided over the function. Apart from participation of functionaries of HBNI at various CIs/OCC and Central Office, faculty, alumni, students of HBNI, vice-chancellors, directors and students of prestigious institutions across India also participated in the function online.

The proceedings of the Foundation day started with Prof. D.K. Maity, Associate Dean, HBNI paying a tribute to Prof. Srikumar Banerjee, Chancellor, HBNI who passed away on May 23, 2021. Prof. P.D. Naik, Dean, HBNI welcomed the gathering. Prof. Vasudeva Rao, Vice-Chancellor, HBNI, in the beginning of the address expressed sorrow over the recent demise of Prof. Srikumar Banerjee, Chancellor, HBNI and Prof. Sekhar Basu, Former Chairman, AEC and Secretary DAE. He remarked that HBNI will take all the steps and strive hard to enhance the status of HBNI as a unique research university fulfilling the dream seen by both luminaries. He spoke about the recent achievements of HBNI and awards and honors won by HBNI students and faculty. He also mentioned about the measures taken by Central office to smoothly run the academic processes in aftermath of COVID-19 pandemic and various online webinars, special events and courses conducted by HBNI during July 2020-May 2021 to benefit its students and faculty. He informed the participants about the new unique courses launched by HBNI and an MoU signed with IIM, Ahmedabad to organize courses on management aspects for the benefit of senior officers in DAE. A book titled “Physics of Nuclear Reactors”



Prof. D.K. Maity paying tribute to Prof. Srikumar Banerjee



Prof. P.D. Naik giving welcome address on the occasion of HBNI Foundation Day

authored by HBNI faculty members was released on the occasion by Shri K.N. Vyas and he praised the initiative taken by HBNI central office for publishing books in the field of nuclear science and engineering. In his address, Shri Vyas lauded the enormous efforts taken by HBNI to ensure smooth functioning of various academic processes during the pandemic times and organizing several value added online courses. He remarked that the research activities of HBNI encompass a wide range of domains and the outcome leads to furthering the frontiers of knowledge in reactor technologies, accelerators, lasers, robotics, health physics, fuel recycling, waste management, applications of radiation technology in the field of agriculture, healthcare, food preservation and many other associated disciplines. He also congratulated all the award winners and their mentors on their achievement. He further remarked that modern day science education and research requires the integration of knowledge and information across multiple disciplines to be able to make meaningful and path breaking contribution. He suggested that to further grow and enhance its educational reach, HBNI should formulate uniquely blended multi disciplinary courses which cannot be offered by any other conventional university and offer online courses in the subject areas in which its CIs specialize.



Prof. P.R. Vasudeva Rao delivering his address on the occasion of HBNI Foundation Day



Shri K.N. Vyas releasing the book titled "Physics of Nuclear Reactors"



Shri K.N. Vyas delivering presidential address on the occasion of HBNI Foundation Day

Prof. B.K. Dutta, Institute Chair Professor and Chairman of Selection Committee for outstanding student awards, gave a briefing on awards. Prof. P.D. Naik, Dean, HBNI and Chairman, Selection Committee for Prof. J.B. Joshi Research Foundation Innovation Awards gave a briefing on innovation awards. Shri K.N. Vyas conferred the outstanding /innovation awards on the students who were physically present at HBNI and remaining awards were presented online. HBNI congratulates the students on their achievement and wish all of them a great success in their careers ahead.

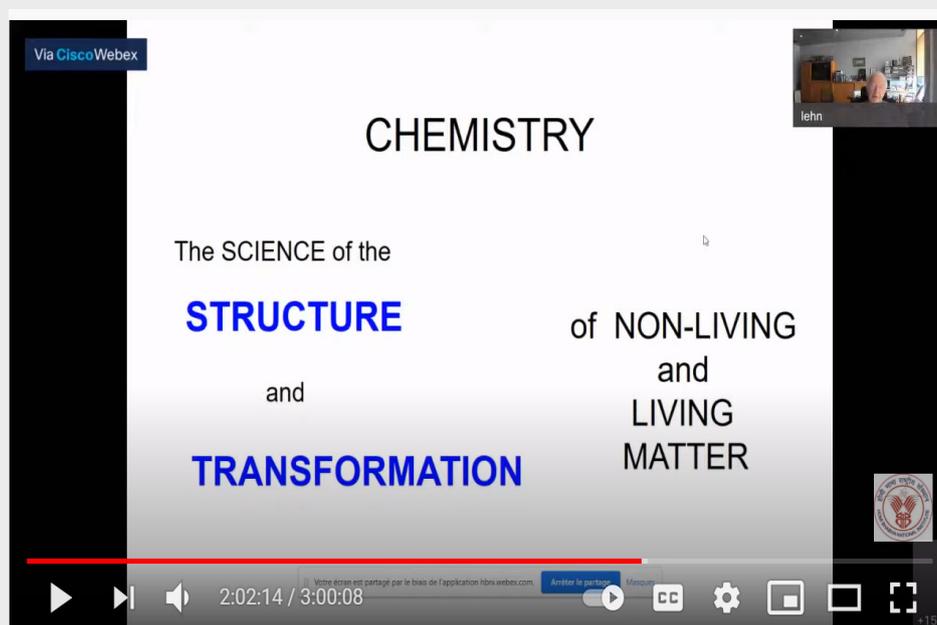
Prof. Jean-Marie Lehn delivered the J.B. Joshi Research Foundation Endowment Lecture on the topic “Steps towards Life: Chemistry.” His talk began with the evolution of the Universe which involved a seamless merging of Physics into Chemistry into Biology along the time axis – right after the Big Bang ! According to Prof. Lehn, mankind is a point in space and time and endowed with the ability to ‘think’. It is with this ability that mankind has evolved towards gradually increasing complex entities. Evolution has been considered to be purely chemical. “Self-organisation is the process by which steps towards life and thought have emerged.” he said. Prof. Lehn discussed how molecular assemblies could function as various molecular devices. He highlighted the lock and key arrangement which forms the basis of molecular recognition, reactivity and transport. He went on to the development of biologically active substances, which involve molecular recognition between a synthetic molecule and a biological target. He also emphasised on ‘biomaterials’ and their importance. He concluded with a quote from the great German mathematician, David Hilbert “We must know and we will know”- an amazing realization! The important take away from his lecture is that – Science shapes the future of humanity!



Outstanding Student Awardees receiving awards from Shri K.N. Vyas



Prof. J.B. Joshi introducing the Chief Guest Prof. Jean-Marie Lehn



Prof. Jean-Marie Lehn delivering Prof. J.B. Joshi Research Foundation Endowment Lecture

Outstanding Doctoral Student Awards for the Year 2020

BARC



Dr. Ananya Kundu

Study of Electric Multipole Transition Probabilities and Their Importance In Reaction Dynamics

PHYS01201504021

IGCAR



Dr. Raktima Basu

Mechanism of Phase Transitions in Vanadium Oxides and Its Applications

PHYS02201504013

RRCAT



Dr. Subhomoy Haldar

Magneto-optical Transport Studies On Ultra Low Disordered Semiconductor Quantum Wells Grown by MOVPE

PHYS03201404012

VECC



Dr. Soumik Bhattacharya

Yrast And Near-yrast Structure of Nuclei Around $A \sim 200$ Involving High-j Orbitals

PHYS04201404003

SINP



Dr. Avik Banerjee

Aspects of Ads/CFT With Fundamental Flavors

PHYS05201404004

Outstanding Doctoral Student Awards for the Year 2020

BARC



Dr. Santosh L. Gawali

Interfacial Modification of Nanoparticles for Biomedical Applications

CHEM01201504019

NISER



Dr. S. Thiagarajan

Catalysis based on Ruthenium Pincer Complexes

CHEM11201504016

Ph.D (Chemical Sciences)

BARC



Dr. Mayur Ramesh Darekar

Liquid - Liquid Two - Phase Flow And Mass Transfer in Microchannels

ENGG01201404004

BARC



Dr. Ravi Kiran Akella

Risk Based Seismic Performance Assessment of Pressurized Piping Systems Considering Ratcheting

ENGG01201504016

IPR



Dr. Priti Kanth

Nuclear Activation Studies In Fusion Systems: New Methods And Algorithms

ENGG06201504009

Ph.D (Engineering Sciences)

Outstanding Doctoral Student Awards for the Year 2020

BARC



Dr. Dhiman Chakravarty

Physiological and Structural Characterization of a Manganese Catalase (KatB) From The Filamentous, Heterocystous, N₂-fixing Cyanobacterium *Anabaena* PCC 7120
LIFE01201504005

TMC



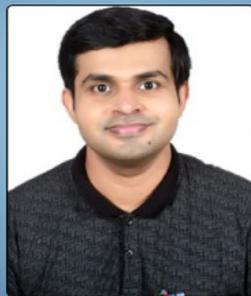
Dr. Rathod Maitreyi Amit

Identifying Mechanisms That Regulate Human Sodium Iodide Symporter (NIS) Gene Expression In Breast Cancer
LIFE09201404007

Ph.D (Life Sciences)

Outstanding DM & M.Ch Awards for the Year 2020

TMC



Dr. George Abraham

DM in Medical Oncology

HLTH09201710035

TMC



Dr. Shravan Nadkarni

M.Ch in Surgical Oncology

HLTH09201710011

Outstanding MD Student Awards for the Year 2020

TMC



Dr. Manikandan M. V

MD in Nuclear Medicine

HLTH09201709022

TMC



Dr. Anurag Gupta

MD in Radio-Diagnosis

HLTH09201709059

TMC



Dr. Prathiba Thiagarajan

MD in Anaesthesiology

HLTH09201709001

J. B. Joshi Research Foundation Innovation Awards for the Year 2019 & 2020

BARC



Dr. Eaglekumar G. Tarpara

Real-Time Ultrasonic Viewing of Immersible Structures and Components

ENGG01201404023

BARC



Dr. Shalini Dimri

BRET based STAT3 Phosphorylation Sensor

LIFE09201304001

Course on Design of Multiphase Reactors/Contactors

An online course on “Design of Multiphase Reactors/Contactors” was conducted by HBNI during January 2021 to May 2021. The course program was inaugurated by Prof. M.M. Sharma, Emeritus Professor of Eminence, ICT Mumbai, on January 21, 2021 who also delivered Inaugural address. In his address, Prof. Sharma traced the history of evolution of multiphase reactions and reactors and illustrated the importance of the subject by giving examples of several industrial processes. The course was delivered by Prof. J.B. Joshi, Emeritus Professor, HBNI and the lectures were streamed live on HBNI YouTube channel, (HBNI Webinar). The course saw good participation from a variety of educational institutes across the country.



Prof. Vasudeva Rao, (top left), Prof. M.M. Sharma (top right), Prof. S. Banerjee (bottom left) and Prof. J.B. Joshi (bottom right) delivering their addresses during Inauguration of online course on “Design of Multiphase Reactors/Contactors”

Valedictory Function of Online Course on Neutron Scattering

The Valedictory function of Online Course on Neutron Scattering was held on February 9, 2021 over Webex platform. Prof. Gautam Bhattacharyya, Director, SINP, Kolkata was the Chief Guest for the occasion and delivered Valedictory address. The course saw participation from 60 students from various educational institutes across the country who were given participation certificates.



Prof. Saibal Basu, coordinator for the “Advanced course on Neutron Scattering” addressing the virtual gathering (L) and Prof. Vasudeva Rao, VC, HBNI, presenting the certificate to a student during the valedictory function of the course (R).

Course on Nuclear Science and Technology

An online course on “Nuclear Science and Technology” was conducted by HBNI during February 2021 to May 24, 2021. The course was inaugurated by Prof. A.K. Mohanty, Director, Bhabha Atomic Research Centre Mumbai, on February 5, 2021 who also delivered Inaugural address. The course was coordinated by Prof. B.S. Tomar, Institute Chair Professor, HBNI and the lectures were streamed live on HBNI YouTube channel, (HBNI Webinar). The online course imparted basic knowledge about nuclear science to students followed by an overview of the applications of nuclear energy in nuclear power generation as well as applications of radiation and radioisotopes in different fields such as healthcare, industry, agriculture and food technology. The course saw good participation from a variety of educational institutes across the country.

Course on Nuclear Law and Policy (NULAP)

An online course on Nuclear Law and Policy is being organized by HBNI for professionals in various units of DAE such as BARC, AERB, IGCAR, HWB, BRIT, NFC, NPCIL, and DAE starting from May 11, 2021. The course is coordinated by Prof. R.B. Grover, Emeritus professor, HBNI and Prof. Ramkumar, Former Head, NCPW, DAE.

The course is intended to disseminate knowledge of evolution of nuclear laws and policies, and covers topics such as nuclear safeguards, export controls, civil nuclear liability, resumption of civil nuclear trade and cooperation, atomic energy act, role of nuclear energy in India’s electricity mix, choice of nuclear fuel cycle, importance of following a closed fuel cycle, uranium exploration and mining, uranium resources in India, back end of the nuclear fuel cycle, radiation protection in practice, nuclear safety, nuclear security, economics of nuclear power, and disaster management to senior and middle level managers in the department. More than 150 participants from NPCIL, BARC, AERB, IGCAR, NFC, HWB, BRIT, DAE, in addition to three participants from TISS are attending the course.

Visit of NAAC Peer Team to HBNI for Second cycle of Accreditation

NAAC peer team consisting of six members from different educational institutions in India visited HBNI during March 3, 2021 to March 5, 2021. The inaugural meeting was conducted on March 3, 2021 and Prof. Vasudeva Rao, VC, HBNI gave a detailed presentation about different aspects of HBNI. Directors of CIs/OCC, BoS conveners and Deans from all CIs/OCC joined virtually. During the course of their visit, the peer team members had interactions with students, faculty, alumni and management. The team members also visited CIs of HBNI located in Mumbai, viz., BARC, TMC and ACTREC to get an overview of research and infrastructure facilities available in these institutes to conduct research in the various disciplines of sciences.

During the exit meeting held on March 5, 2021 the NAAC team expressed satisfaction about all the arrangements made for visits, inspection and interactions.



Prof. Vasudeva Rao addressing the NAAC Peer Team during the Inaugural Meeting



NAAC Peer Team member interacting with HBNI Student



NAAC Peer Team visiting BARC



Cultural Program being presented by HBNI students during the visit of NAAC Peer Team



NAAC Peer Team members interacting with Dr. R.A. Badwe during their visit to TMC



NAAC Peer Team members interacting with Shri K.N. Vyas, Chairman, Council of Management, HBNI and Secretary, DAE



NAAC Peer Team members during their visit to ACTREC-TMC, Kharghar



NAAC Peer Team Members with HBNI Functionaries during the Exit Meeting



Prof. P.R. Vasudeva Rao, VC, HBNI receiving the report from Chairman, NAAC Peer Team

Republic Day Celebration

The 72nd Republic Day was celebrated with great fervour by HBNI on January 26, 2021 adhering to all the protocols due to Covid-19 pandemic. Prof. Vasudeva Rao, VC, HBNI unfurled the National Flag followed by singing of National Anthem by HBNI functionaries and staff. Prof. Rao also addressed the gathering. In his address, he explained about the significance of the day. Recalling the year gone by as one of the most challenging, he mentioned about the steps taken by HBNI to ensure the smooth running of its various academic processes in the aftermath of COVID-19 pandemic. Other HBNI functionaries present on the occasion included Prof. R.B. Grover, Prof. P.D. Naik, Prof. B. Chandasekar, Prof. D.K. Maity and Prof. A.K. Dureja.



Prof. Vasudeva Rao, VC, HBNI unfurling National Flag (L) and HBNI staff at Republic Day Celebration (R)

National Science Day

National Science Day (NSD) is celebrated on February 28 every year to commemorate the discovery of Raman Effect by Sir C. V. Raman. HBNI celebrated NSD on March 1, 2021 by organizing a webinar by Prof. B.N. Jagtap, IIT Bombay and Ex-Director, Chemistry Group, BARC on the topic “Seeking Convergence of Science, Education and Society in new India”, keeping in mind the theme for NSD-2021 which was ‘Future of Science, Technology and Innovation: Impact on Education Skills and Work’.

International Women’s Day Celebration

International Women’s Day was celebrated by HBNI online over Webex platform and streamed live on Youtube on March 9, 2021. Prof. Rohini Godbole, Centre for High Energy Physics, Indian Institute of Science, Bengaluru, was the guest speaker on the occasion. The event was organized by Women’ cell of HBNI and attended by a large no. of students, staff and faculty of HBNI. Smt. Bharati Suvarna, Assistant Registrar, HBNI and Convener welcomed the gathering. Prof. Vasudeva Rao, VC, HBNI gave introductory remarks. Dr. Umasankari, Chairperson, Women’s Cell, HBNI introduced the guest speaker of the day, Prof. Rohini Godbole, who is an avid supporter of women pursuing careers in science and technology. She gave a webinar on the topic “Life in Science”. The essence of her talk was that to increase the participation of Indian women in the fields of science, technology, and engineering particularly in leadership positions, a lot needs to be done by institutions, society and policymakers. She remarked that just as science is important for women, they too are important to science and expressed hope that a day will soon come when we will just speak of scientists/ engineers and not their gender.



Prof. Vasudeva Rao, VC, HBNI addressing the gathering (L) and Prof. Rohini Godbole delivering her talk (R) on the occasion of International Women’s Day Celebration at HBNI

Webinars Conducted by HBNI

Webinars conducted using online platforms have become an excellent way of dissemination of knowledge to a wide range of students, particularly in view of existing situation due to COVID-19 pandemic. HBNI has conducted several webinars by eminent scientists over WebEx platform for the benefits of its research scholars and students across all CIs/OCC during the period January 2021 to June 2021. The list of the webinars conducted by HBNI is given below:

S.No	Webinar Topic	Speaker	Date
1.	Multifaceted Radiopharmaceuticals : The Vital Component of Nuclear Medicine for Molecular Targeting	Prof. Meera Venkatesh, Ex-BARC	06.01.2021
2.	Understanding Intellectual Property	Shri Arun Shrivastava, Secretary, AEC, Head ICPD, NCPW & Chairman, DAE IPR Cell	20.01.2021
3.	Applications of Mathematics in Cryptography	Dr. R. Balasubramanian, Former Director, IMSc, Chennai	10.02.2021
4.	Rapid non-destructive methods for microbial quality monitoring of refrigerated perishables foods	Ms. Vanshika, Ph.D. Scholar, Life Sciences, BARC	24.02.2021
5.	National Science Day	Prof. B.N. Jagtap, IIT Bombay and Ex-Director, Chemistry Group, BARC	01.03.2021
6.	Some Historical Aspects of the Discovery of Radioactivity	Prof. P.R. Vasudeva Rao, VC, HBNI	01.03.2021
7.	From Radioactivity to Modern Nuclear Physics: 125 years of discoveries	Prof. A. Lopez-Martens Irène Joliot Curie Laboratory	01.03.2021
8.	Evolution of Radiochemistry Research Programme in India	Dr. V. Venugopal, Former Director, RC&IG, BARC	01.03.2021
9.	Evolution of Radiation Safety	Shri A.R. Sundararajan, Former Director, RSD, AERB and SRI	01.03.2021
10.	Life in Science	Prof. Rohini M. Godbole IISC. Bengaluru	09.03.2021
11.	Quantum Computing - Part I	Prof. R. Vijayaraghavan, Department. of Condensed Matter Physics & Material Science, TIFR	22.03.2021
12.	Quantum Computing - Part II	Prof. R. Vijayaraghavan, Department. of Condensed Matter Physics & Material Science, TIFR,	23.03.2021
13.	Coronavirus diseases (COVID-19) pandemic and vaccination	Dr. (Smt). A. R. Kulkarni, Head, Medical Division, BARC Hospital	25.03.2021
		Dr. (Smt.) Alpa Amin, Head, Pediatric Department, BARC Hospital	
		Dr. Yogesh Sejul, Medical Department, BARC Hospital	
14.	Static and Dynamic Properties of Magnetic Solitons	Dr. Sougata Mallick, HBNI Alumunus from NISER	04.05.2021
15.	Talking about Cancer : Reducing Risk, Early Detection and Treatment	Dr. R.A. Badwe, Director, TMC	21.05.2021
		Dr. Pankaj Chaturvedi, Dy. Director, Center for Cancer Epidemiology, TMC	
		Dr. S.D. Banavali, Director (Academics), TMC	
16.	The quest for room-temperature superconductivity	Dr. Maddury Somayazulu, HPCAT-XSD, Advanced Photon Source, ANL, Ar- gonne, USA	10-06-2021

The power point presentations of the listed webinars are available on website, www.anuvidhya.in. HBNI webinars are also streamed live on its YouTube channel, ([HBNI Webinar](#)) and recordings of webinars are available on the channel for the benefit of students/faculty across all educational institutions in India and abroad.

Forthcoming Courses

HBNI is set to organize two new courses in coming months. The details are given below:

- The online course on “Advanced Materials Chemistry” designed by Prof. A.K. Tyagi, Senior Professor, HBNI and Associate Director, Chemistry Group BARC will start from June 14, 2021. Researchers, doctoral students and faculty members involved in conducting research in various aspects of materials chemistry can participate in the course. The major topics to be covered under the course include general materials chemistry, characterisation techniques, chemical, major, trace and ultratrace analysis and functional materials.
- The online course on “Emerging Trends in Biophysics” coordinated by faculty from Saha Institute of Nuclear Physics (SINP) will start from August 2021. PhD students, researchers and faculty members from disciplines of physical, chemical, engineering and life sciences can participate in the course. The major topics to be covered under the course include multi-dimensional NMR, macromolecular crystallography, multiscale modelling and simulations of biological systems, bioinformatics applications, single molecule spectroscopy, membrane biophysics & membrane proteins, X-ray & neutron scattering applications, mass spectrometry & Omics, space bioengineering & synthetic biology, mechanobiophysics and nanobiophysics.

It is to be noted that, the students successfully completing the courses (meeting attendance and assignment requirements and passing the examination to be conducted at the end) can avail course credits. All participants meeting attendance requirements will be given participation certificates.

News Update

An agreement has been signed between HBNI and Commission for Scientific and Technical terminology, Government of India, M/O Education, Department of Higher Education, New Delhi in April 2021 for the preparation/updation of Nuclear Glossary.

Events at Constituent Institutions

National Science Day at BARC

National Science day was celebrated in BARC during February 26-28, 2021 in virtual mode. The theme for this year celebration was “Synchrotron Science & Technology.” The program consisted of lectures delivered by eminent scientists and engineers working in the area of Synchrotrons. It included popular lectures, educational films and interactive sessions benefiting students of classes IX-XII as well as graduate students from Science & Engineering disciplines and a few faculty members. More than 800 students from schools and colleges all over India had participated in the event spread out over three days. The program included a popular lecture by the chief guest, Dr. Chidambaram, eight technical lectures by experts, videos and animation display on the various aspects of Synchrotron Science and Technology, quiz as well as question and answer sessions.

National Technology Day at BARC

National Technology Day was celebrated in BARC on May 11, 2021. The program was organized by Physics Group, BARC and highlighted the achievements of BARC in the field of Synchrotron Technology. The inaugural address was given by Shri K.N. Vyas, Secretary DAE and Chairman, AEC. Prof. A.K. Mohanty, Director, BARC gave welcome address. Prof. S.M. Yusuf, Associate Director, Physics Group gave Introductory Remarks. Dr. R. Chidambaram, Homi Bhabha Chair Professor, delivered Keynote Address on the occasion. Shri K. Jayakumar, Head P&CD, and Controller, BARC announce the names of recipients of DAE awards on the occasion.



National Technology Day Function at BARC

International Women's Day Celebration at IGCAR

The International Women's Day was celebrated in IGCAR, Kalpakkam at Sarabhai Auditorium. Special speeches were given by Smt. Adhilakshmi Logamurthy Advocate, High Court, Chennai on "Awareness of Laws & Accessibility of the Courts to women in India"; by Dr. S.A. Jemima Kingsley Director, Orbito Asia Diagnostics, Coimbatore on the topic "Courage or Comfort – Choice is yours" and by Smt. Ananthi Raghupathy, Founder and Director, Happy Motherhood, Chennai on the topic "Balancing a Healthy and Happy Life." Faculty and students participated in large numbers and had excellent interaction with the speakers during the programme.



International Women's Day Celebration at IGCAR

Swachhata Pakhwada-2021 at IoP

Responding to the Nation's call by the Prime Minister Narendra Modi, the institute has taken the lead in launching the "Swachhata Abhiyan Pakhwada" in the campus from February 16-28, 2021. The mission has been launched on the concept of Mahatma Gandhi's vision, "Sanitation is more important than independence" The Abhiyan was formally initiated by Prof. Shikha Verma, Director I/c of the Institute on 16.02.2021 with the oath of cleanliness by all the employees and scholars of the institute. It was envisaged that such activities will help to make the environment clean and keep us healthy. An appeal was made to keep the office and colony premises clean to avoid incidences of diseases. An awareness campaign has also been initiated for nearby villages and school students of the institute which will help in spreading the importance of cleanliness.

During the Swachhata Pakhwada many swachhata drives were also conducted inside and outside of the IOP campus. Many areas including the colony area of the campus were cleaned. The area of Indian Overseas Bank situated in the campus was also cleaned by the staff members as well as bank employees.



Prof. Shikha Verma, Director I/c, Sri R. K. Rath, Registrar, Branch Manager, IOB and other members sweeping the bank premises during the the Swachhata Pakhwada

Outreach activities by CIs

Outreach activities conducted by Harish-Chandra Research Institute, Prayagraj

In view of COVID-19 the Harish Chandra Research Institute carried its outreach activities in the online mode. Various talks were organized for high school students in Mathematics and Physics disciplines in March 2021. The talks were streamed live on the YouTube link

<https://www.youtube.com/channel/UCArkeAUqzwKZT8khGbvDyTQ>

Outreach activities conducted by Institute of Mathematical Sciences, Chennai

IMSc. Chennai organized 31 webinars on Computational Biology during the period July - December 2020. The webinars were conducted by speakers from both national and international educational institutes. The detailed information on the webinars is available at the link

<https://www.imsc.res.in/~asamal/CBwebinar/CBwebinar.html>

Awards and Honors

1. **Dr. (Smt.) Sanoli Gun**, Prof. Mathematical Sciences, IMSc, Chennai, has been elected as fellow of Indian Academy of Sciences.
2. **Dr. Dimple Dutta**, BARC has been selected for CRSI bronze medal for the year 2021.
3. **Prof. Archana Sharma**, BARC has been elected as fellow of The Institution of Engineering and Technology (IET), UK.
4. **Dr. Sharmistha Dutta Choudhury**, BARC has been selected as Fellow, National Academy of Sciences (NASI).
5. **Dr.R. Balasubramaniam**, BARC has been elected as Fellow of National Academy of Engineering (FNAE) in November 2020.
6. **Dr. Prasenjit Mal**, NISER has been awarded CRS (Chirantan Rasayan Sanstha) Bronze Medal for 2021.
7. **Dr. V. Sudarsan, BARC, Dr. (Smt.) J. Mohanty, BARC, Dr. J.K. Chattopadhyay, BARC, Dr. S. Dhara, IGCAR, Dr. Sumit Som, Director, VECC**, all Faculty of HBNI have received the prestigious Homi Bhabha Science and Technology Award for the year 2019.
8. **Dr. Sunil Verma**, RRCAT has received “Prof. P. Ramasamy National Award for Crystal Growth” for his significant contributions in crystal growth and applications for the year 2020.
9. **Dr. Amit Kunwar**, BARC has been awarded Farha Deeba Haq Award by Indian Academy of Biomedical Sciences for his outstanding contributions in the field of Cancer Research.
10. **Dr. Jhilam Sadhukhan**, VECC has been awarded Buti Foundation Award 2020 by the Indian Physics Association.
11. **Dr. Mohd. Saleem**, NISER has been awarded the DBT/Wellcome Trust Intermediate Fellowship in the area of Basic Biomedical Research by the India Alliance.
12. **Dr. Subrata Mukherjee**, IPR has been inducted as a member of “Governing Council of Indian Institute of Geomagnetism, a DST Institute, Navi Mumbai”.
13. **Dr M. Vasudevan**, IGCAR has been selected as the Editorial Board member, International Journal of Pressure Vessels and Piping. He has also been selected as Editor Transactions of the Indian Institute of Metals.
14. **Dr. (Ms.) Debarati Bhattacharya**, BARC has achieved IOP trusted reviewer status in recognition of an exceptionally high level of peer review competency.
15. **Dr. R.N. Singh**, BARC has been appointed as Council Member of Indian Institute of Metals.
16. **Dr. C. Gunanathan**, NISER has received Thieme Chemistry Journals Award for the year 2020.
17. **Dr. Arvind Ingle**, ACTREC, TMC has received Outstanding Contribution to Animal Science Award-2020 of the Dr. B Vasantharaj David Foundation, Chennai. He has been selected as Chairman, Education and Training Committee, International Council for Laboratory Animal Science (ICLAS), Brussels, Belgium, 2020-23. He has also been selected as Member, Asia Regional Committee, ICLAS, Brussels, Belgium, 2020-23, Member of Board of Studies in Veterinary Pathology, MAFSU, Nagpur 2020-23 and Member, College Council, Indian College of Veterinary Pathologists, 2020-23. He is also Founder President, Indian College of Laboratory Animal Medicine, 2020.
18. **Dr. Shailesh V. Shrikhande**, TMC has received COVID-19 Yoddha Award by “Dadasaheb Phalke Icon Award Films- DPIAF- 2020”, Mumbai. He was appointed as the Indian on the Steering and Program Committee of American Society of Clinical Oncology (ASCO), for the ASCO GI Meeting in 2020.
19. **Dr. Gaurav Malhotra**, RMC has been conferred fellowship Indian College of Nuclear Medicine in 2020.
20. **Dr. P.B. Wagh**, BARC has received Special Contribution Award in 2020 for excellence in work in development of Laboratory at EHPPL, Kalyan for year 2019.

21. **Dr. Shishir P. Deshpande**, IPR has been appointed on the Board of Editors of the Journal “Nuclear Fusion” until December 2023.
22. **Ms. Ayushi Vashistha**, IPR received Best Presentation Award at the 15th Kudowa Summer School “Towards fusion energy”, Virtual Edition, Institute of Plasma Physics and Laser Microfusion, Poland, 29 June-3 July 2020 for her paper, “Absorption of laser energy by generation of an electrostatic mode in plasma.”
23. **Shantanu Kumar Karkari**, IPR received an appreciation award (USD 250) for his invited Talk titled, “Negative Ion Research in Laboratory Devices: Physics and Modeling” presented at the e-Conference: 4th Asia-Pacific Conference on Plasma Physics (AAPPS-DPP2020) on 27 October 2020
24. **Mainak Bandyopadhyay**, Jervis R Mendonca and Shantanu Kumar Karkari were Awarded IOP Trusted Reviewer Award. It indicates a high level of peer review competence and the ability to constructively critique scientific literature to an exceptional standard.
25. **Dr. Devendra Sharma**, IPR has been recognized as an Outstanding Reviewer for the IOP Journal “Plasma Research Express” for the year 2019.



इंदौर 05-03-2021

रिसर्च... पटरी उखड़ने, कोच में आग की सूचना तुरंत पहुंचेगी कंट्रोल रूम

आरआर कैट की तकनीक से सुरक्षित होंगी देश की ट्रेनें

पहली बार पूर्णतः स्वदेशी तकनीक से तैयार किए गए फाइबर ब्रैग ग्रेटिंग सेंसर



भास्कर संवाददाता | इंदौर

राजा रामन्ना प्रगत प्रौद्योगिकी केंद्र (आरआर कैट) के वैज्ञानिकों ने देश में पहली बार पूर्णतः स्वदेशी तकनीक से फाइबर ब्रैग ग्रेटिंग (एफबीजी) तकनीक वाले ऑप्टिकल सेंसर तैयार किए हैं। ये सेंसर किसी भी जगह या वस्तु के तापमान में बदलाव और विकृति की जानकारी तुरंत उपलब्ध कराने में सक्षम हैं। इनका उपयोग रेलवे सुरक्षा प्रणालियों में किया जाएगा। अब तक ये सेंसर आयात किए जाते थे।

आरआर कैट के लेसर ग्रुप के डायरेक्टर एसवी नाखे बताते हैं कि ट्रेनों को सुरक्षित बनाने का काम आईआईएससी बंगलुरु का स्टार्टअप विंग लैब टू मार्केट कर रहा है। लैब टू मार्केट द्वारा एफबीजी सेंसर का परीक्षण रेलवे की सुरक्षा प्रणाली के लिए तैयार किए गए साइबर फिजिकल सिस्टम में सफलतापूर्वक किया जा चुका है। ये टूटी हुई पटरी, निकली हुई फिश प्लेट, पहिए जाम होने, बोगी के नीचे किसी कलपुर्जे के निकलने, टूटने या खराब होने के साथ बोगी के तापमान में आग या किसी अन्य वजह से होने वाले परिवर्तन का पता लगाकर वायरलेस तकनीक से रेलवे के सर्वर सहित जिम्मेदार अधिकारियों को मोबाइल पर अलर्ट भेजने में सक्षम है।



ये सेंसर किसी भी जगह या वस्तु के तापमान में बदलाव और विकृति की जानकारी तुरंत पहुंचाएंगे।

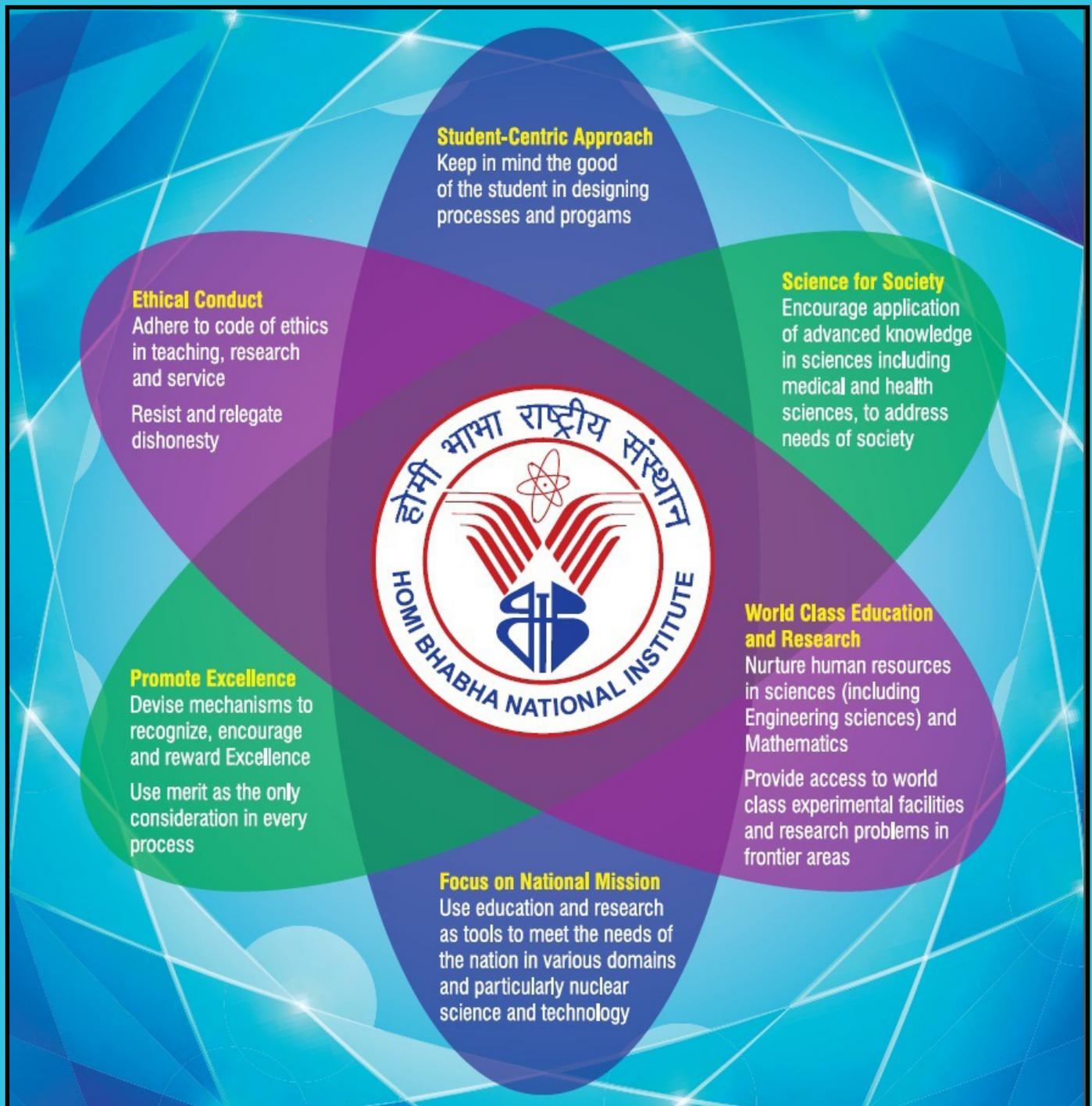
खदान में जहरीली गैस, सड़क और पुल की दरारों का पता लगाने में भी सक्षम

आरआर कैट के इन्व्यूबेशन सेंटर संयोजक डॉ. सीपी पॉल बताते हैं कि इन सेंसरों का इस्तेमाल स्ट्रक्चरल मॉनिटरिंग, यानी भवन, पुल, सड़क, बांध सहित अन्य बड़े निर्माणों में आने वाली दरारों, कंपन और कमजोरी का पता लगाने के लिए भी किया जा सकता है। खदानों में काम करने वाले मजदूरों की जहरीली गैसों से सुरक्षा, जहरीले रसायनों का पता लगाने में भी ये उपयोगी।

परमाणु ऊर्जा विभाग के देशभर में चार इन्व्यूबेशन सेंटर, एक कैट में

भारत सरकार के परमाणु ऊर्जा विभाग ने देशभर में चार स्थानों पर इन्व्यूबेशन सेंटर स्थापित किए हैं। मुंबई, गांधी नगर, कलपक्कम के साथ आरआर कैट, इंदौर को भी चुना गया है। कैट के निदेशक देवाशीष दास के मार्गदर्शन में तैयार इन्व्यूबेशन सेंटर के जरिए कई तकनीकों आने वाले कुछ महीनों में इन्व्यूबेशन के साथ उद्यमियों के लिए उपलब्ध होंगी।

Core Values of Homi Bhabha National Institute





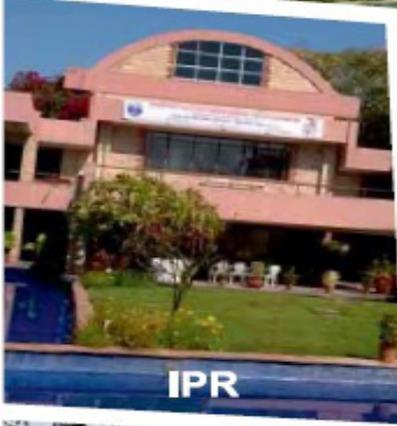
HRI



VECC



RRCAT



IPR



HBNI



SINP



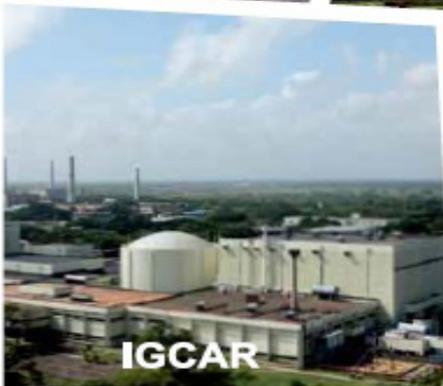
IoP



BARC



TMC



IGCAR



NISER



IMSc

होमी भाभा राष्ट्रीय संस्थान Homi Bhabha National Institute

(परमाणु ऊर्जा विभाग की एक सहायक 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)