1st Convocation of HBNI

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)

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

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

HBCH & RC, Chandigarh

MPMMCC & HBCH
Varanasi

VECC, Kolkata

HRI, Prayagraj

SINP, Kolkata

RRCAT, Indore

NISER, Bhubaneswar

IPR, Gandhinagar

IoP, Bhubaneswar

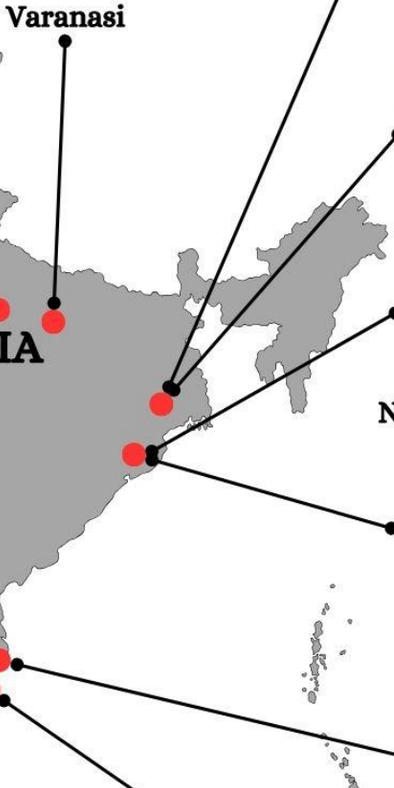
BARC, Mumbai

IMSc, Chennai

TMC, Mumbai

HBNI Central Office, Mumbai

IGCAR, Kalpakkam



nirf

6th Rank in Research Institution
16th Rank in University
27th Rank in Overall

A+ Grade
3.4 Score

nature index

1st in Physical Sciences
2nd in All Publications

Homi Bhabha National Institute

Convocation Day Program Schedule

Monday, 2nd June 2025, 14:30-17:15 hrs
DAE Convention Centre, Anushaktinagar

- **Welcome Address & Presentation of Annual Report 2024-25:**

  Prof. U. Kamachi Mudali, Vice-chancellor, HBNI

- **Chancellor's Address:**

  Dr. Anil Kakodkar, Chancellor, HBNI

- **Special Address:**

  Prof. A. K. Mohanty, Chairman, Council of Management, HBNI

- **Convocation Day Address by the Chief Guest:**

  Prof. P. Balaram, Honorary Prof. JNCASR and Former Director, IISc, Bengaluru

- **Distribution of Outstanding Doctoral Student Awards and Degree Certificates**

Instructions

- **Please occupy your seats by 13:45 hrs.**
- **When the procession enters the venue, please stand-up till members in the procession occupy their seats.**
- **Please keep your mobile phones switched-off during the convocation ceremony.**
- **You are requested to maintain silence at all times.**
- **Until the procession leaves the venue, kindly do not leave your seat for any reason.**
- **The official photographer will be taking photographs which will be made available to all the students after the ceremony. Therefore, please refrain from taking photographs during the ceremony.**
- **Please stand-up during the National Anthem and continue so, until the procession leaves the venue.**
- **Do not bring any eatables and/ or drinks inside the auditorium.**

Thank you for reading the instructions.

Your kind co-operation is solicited.

Contents

- Profile of the Chief Guest, Prof. P. Balaram……..01
- Convocation day address by the Chief Guest, Prof. P. Balaram.....01
- Message by Chairman, CoM, HBNI, Dr. A. K. Mohanty……...06
- Message by Chancellor, HBNI, Dr. Anil Kakodkar……..07
- Message by Vice Chancellor, HBNI, Prof. U. Kamachi Mudali.....08
- Beacons that Guide……..09
- Composition of Council of Management, HBNI……...10
- Composition of Academic Council, HBNI…….....11
- Composition of BoS Convenors, HBNI…….....12
- Welcome Address & Report by Vice Chancellor, HBNI.....14
- Academic Data of HBNI for 2024-25…….…...25
- Outstanding Doctoral Student Awards for 2024-25…….....28
- Ph.D. Degree Awards for 2024-25…….…….....34
- Important Milestones of HBNI…….....55

Prof. P. Balaram

Honorary Professor, JNCASR &
Former Director, Indian Institute of Science, Bengaluru

Profile of the Chief-Guest

Prof. Padmanabhan Balaram presently holds Honorary Professorship at JNCASR, Bengaluru. He did B.Sc. (Chemistry) from Fergusson College (1967), University of Pune and M.Sc. from the Indian Institute of Technology, Kanpur (1969). During his Ph.D. at Carnegie Mellon University, he studied the use of negative Nuclear Overhauser effect signals as probes of macromolecular conformations under Dr. Aksel A. Bothner-By (1972). His post-doctoral studies were at Harvard University with Nobel laureate Dr. Robert Burns Woodward wherein he worked on the synthesis of the antibiotic erythromycin. After returning to India, he joined Prof. G.N. Ramachandran's lab at Indian Institute of Science (IISc), where he served as a faculty member in the Molecular Biophysics Unit. He superannuated from IISc as Director of the Institute, and later he was a Chair Professor at the National Centre for Biological Sciences, Bangalore.

Prof. Balaram is an accomplished protein biologist and his research is primarily focussed on the investigations of the structure, conformation, and biological activity of designed and natural peptides. His team uses high-end structural biology techniques such as Nuclear Magnetic Resonance spectroscopy, Infrared spectroscopy, Circular Dichroism, as well as X-ray crystallography. His important contributions to the field have been the evaluation of factors influencing the folding and conformations of designed peptides and investigations on structural elements playing a key role in the formation of secondary structural motifs such as helices, beta turns, and sheets. His group has also pioneered the use of alpha-amino isobutyric acid to induce and retain helicity and constrain peptide conformations. Prof. Balaram has over 400 research papers to his credit with ~ 24200 citations (h-index of 78 and i-10 index of 414 on Google Scholar). He is a Fellow of the Indian National Science Academy and has been honoured with several awards such as INSA medal for Young Scientists (1977), Shanti Swarup Bhatnagar Award (1986), Padma Shri (2002), The J C Bose Medal (2004), Padma Bhushan (2014), the TWAS Prize (1994) and the R. Bruce Merrifield Award by the American Peptide Society (2021).

Convocation Address

Homi Bhabha National Institute, Mumbai

June 2, 2025

The Honourable Chancellor Dr. Anil Kakodkar, the Chairman, Council of Management of HBNI Professor Ajit Kumar Mohanty, the Vice-Chancellor Professor Kamachi Mudali, members of the faculty, staff, distinguished guests and most importantly, the graduating students of this Convocation.

It is a privilege for me to deliver this address on a very important day for your institution. The great progress the country has made since Independence in the sphere of higher technical education has largely, if not entirely, been the result of public initiatives in the sphere of higher education. It is only in more recent times that private institutions have begun to cater to the huge demand for higher education our country. Yours is a very young institution, different in scope from a conventional University. It bears the name of one of Indian science's immortal figures, Homi Bhabha, a truly great institution builder in post-Independence India. I have spent all my active professional years in one of India's oldest institutions, the Indian Institute of Science, Bengaluru, which is now 116 years old. It is here that Homi Bhabha began his career in India and it is here that his visions for the future were born. In attending this Convocation, I have the rare opportunity of reflecting on how much the world has changed in the last fifty years or more, that I have had the privilege to witness in my scientific career. I can only wonder what Homi Bhabha would have to say if he saw the world as it is today.The century and more for which the Indian Institute of Science has existed is a period which has seen the most dramatic transformations in science, technology and global affairs in all human history. Looking back at the 20th century, those of us who have lived through the second half could scarcely have imagined how the world would change in our lifetime.

When invited by Professor Kamachi Mudali to join all of you on this important day, I wondered what I should say? I have been a scientist all my professional life, cloistered in the laboratories of the Indian Institute of Science. I still spend my time amongst scientists at the National Centre for Biological Sciences, a unit of the Tata Institute of Fundamental Research under the DAE umbrella. I teach whenever I can. To speak at a Convocation is a difficult task, especially as I alone stand between you and the celebration that will inevitably follow the completion of this formal ceremony. Every one of you who graduates today deserves to celebrate the award of the degrees that you so richly merit. I will venture to make some remarks on science and natural history, at a time when memories of the Covid-19 pandemic, remain fresh in our memory. For over two years between 2020 and 2022 a biological organism, a virus, brought the world to its knees. Both politics and religion, two of the dominating influences in all human societies, bowed before a force of nature.

Why is science important? Remember it is the scientific advances of the last two centuries that have driven the modern technological revolution. I am also aware, as you undoubtedly are, that the last four years have seen an upsurge in public awareness of science, driven by the coronavirus and the Covid-19 pandemic. RT-PCR, rapid antigen tests, aerosol transmission, mRNA vaccines and mathematical modelling are terms that are now commonly used in discussions between those unaware of the language of science. Even as I speak, reports of circulating coronaviruses appear in the daily Press.

Nearly fifty-eight years ago, when I graduated from Fergusson College in Pune and went out into the world with a BSc degree, it was indeed a different world. Thirty-nine years ago, when I reached the high point of any academic career, admission to the professorial rank, the world around me was still largely as it was in the late 1960s. But, in this interregnum, unknown to me, major revolutions were underway in science and technology. These upheavals spanned a range of disciplines, genome sequencing and genetic engineering in biology, the explosion of computer technologies and the

communications revolution. The revolution in Artificial Intelligence, spurred by advances in computer science, promise to transform our lives. My generation can only marvel at the way the internet, Google and the cell phone forever transformed the way we live. Social media can influence not only the fate of individuals but also nations. These technological advances rested on fundamental breakthroughs in physics, chemistry, biology, materials science, mathematics, and computer science, often the result of decades of painstaking research. Rarely were they the result of that blinding flash of insight that often makes science look glamorous and romantic from the outside. Think of gene sequencing technologies, reflect on the lithium battery, so central to our lives today, or the electronic processors that drive all our devices and many more and you will realize science and technology are inseparable.

I have sometimes been asked a question: "What is Science". I have responded that Science is the study of Nature. That leads to another question: What is Nature? The best answer that I found was in the editorial in the very first volume of the journal *Nature,* that appeared in 1869. The famous biologist Thomas Huxley was invited to write the editorial, heralding the appearance of a new science journal. Huxley did not write the editorial. Instead, he translated an essay in German, written in the mid-18th century, by the poet von Goethe. In the poet's words: "*Nature! We are surrounded and embraced by her: powerless to penetrate beyond her and powerless to separate ourselves from her*." Think of the subjects you have studied in school. Physics and Biology are with you all the time, even though you may not choose to recognize this fact. Nothing in the world around you (including yourselves) is divorced from chemistry. Of mathematics, I can do no better than remind you that Galileo is reported to have once remarked, that "mathematics is the language in which God wrote the Universe". Paraphrasing Galileo, I might add, Chemistry is the language in which Nature wrote the Book of Life. The biochemist Arthur Kornberg aptly described chemistry as the "*lingua franca of the biological and medical sciences*"

Science requires tools and sometimes we underestimate the role of technology in driving science. The theoretical physicist Freeman Dyson once noted that "*Science is often driven by new technologies rather than new concepts*". In the 17th century two inventions, the telescope and the microscope, forever altered our view of the world. When the Italian, Galileo, pointed the telescope skywards, he opened the field of cosmology, until then restricted by human vision. Today when we celebrate the Chandrayan mission remember all that has gone before and imagine all that might follow. When the Dutchman, Leeuwenhoek, examined water under his microscope, he discovered living organisms too small to be seen with the naked eye. He had uncovered the vast science of microbiology, a field which has really impacted public consciousness during the years of the pandemic. In the 20th century, separated by a span of seven decades, two discoveries revolutionized medicine, making diagnostic radiology indispensable for clinical practice. Both came from physics. The first was Roentgen's discovery of X-rays at the dawn of the century, the second Lauterbur's imaging of two concentric tubes of water, in the 1970s, using nuclear magnetic resonance in inhomogeneous magnetic fields. This was the birth of magnetic resonance imaging (MRI). Can there be better examples to argue the case for basic science? Interdisciplinary science, engineering and manufacturing were the key elements in ensuring that the fruits of fundamental physics reached the clinic. Generations of patients have benefitted from these techniques.

Much of modern technology, that all of us take for granted, is the product of two centuries of scientific advance in physics, chemistry and biology. Remember that the basic sciences, often neglected in our institutions, form the foundations for technological progress. We all know instinctively what light is. But it required Michael Faraday and James Maxwell to establish the connections between electricity, magnetism and light. Today, auctioning the electromagnetic spectrum can be a highly lucrative endeavor. Look with wonder at Mendeleev's Periodic Table, the very same topic that NCERT threatens to remove from the 10th class syllabus. Remember the element silicon is as critical to modern information technology as the element carbon is to life. Think

of what distinguishes human intelligence from the looming spectre of artificial intelligence. The famous neurologist and writer Oliver Sacks called it the "*enchanted garden of Mendeleev*". Willard Gibbs in isolation brought Thermodynamics into being, a subject that forms the foundation of the sciences. Ludwig Boltzmann thought of heat and the atom, the origins of our ideas of entropy, which are to be seen even in Claude Shannon's now immortal work, which laid the foundation for information science and technology. Oswald Avery in 1943 discovered DNA as the material substance responsible for the transfer of genetic information in biology. The Watson -Crick double helix provided the missing link between the 19th century pillars of biology, Mendelian genetics and Darwinian evolution. DNA is a term that even politicians use in public speeches; a tribute to an acronym that is pregnant with meaning. I could go on and on, but on a day when you celebrate your education, I can only say that there is much to learn.

But those amongst us who ceaselessly marvel at the wonders of Nature, have asked the question: Where did everything we see around us come from? This leads to questions which cannot always be answered, questions on the origins of the Universe, questions on the origins of life on earth. All the natural elements in Mendeleef's Periodic Table were the Earths inheritance when it was born. Nucleosynthesis is the prerogative of the stars, our sun amongst them. In his magisterial survey of the *Ascent of Man* Jacob Bronowski describes the formation of carbon so essential for life and I quote: "*… in all the stars there are going on processes which build up the atoms one by one into more complex structures. Matter itself evolves. The word comes from Darwin and biology, but it is the word that changed physics in my lifetime*." Bronowski goes on to reflect on the formation of carbon, so essential for life. "*The formation of carbon atoms happens when three helium nuclei collide for one millionth of a millionth of a second. Every carbon atom in every living creature is the result of such a wildly improbable collision*". Life and biology are indeed improbable, a chance event in our solar system's evolutionary history. To quote Jacques Monod: "The universe was not pregnant with life nor the biosphere with man. Our number came up in the Monte Carlo game."

After centuries of science can one list its most important achievements? But here I must quote, the always eminently quotable physicist, Richard Feynman. In his introductory lecture, in his now immortal course on undergraduate physics at Caltech, he asks: "*If, in some cataclysm, all of scientific knowledge were to be destroyed, and only one sentence passed on to the next generations of creatures, what statement would contain the most information in the fewest words?"* He answers: *"I believe it is the atomic hypothesis (or the atomic fact, or whatever you wish to call it) that all things are made of atoms—little particles that move around in perpetual motion, attracting each other when they are a little distance apart, but repelling upon being squeezed into one another".* Ironically, the cataclysm that must have occupied Feynman's thoughts in the 1950s and 1960s would have been the threat of nuclear war. Sadly, that prospect appears to have once again emerged, as conflicts rage unabated in the Middle East and Eastern Europe and an uneasy calm prevails along other contentious national borders, including our own. In the world of geopolitics, where powerful countries seek to monopolise access to natural elements required for modern technology, there is little time to wonder about the fragile thread by which life on Earth hangs and the importance of preserving the natural world (which of course includes the human species). Unsustainable consumption and development threaten the natural order. Yet, sustainability science, which focusses on environmental conservation and mitigation of hazards, often a consequence of unscientific development, remains a neglected and often, as witnessed by climate change controversies, politically sensitive subject.

Human history is often taught as a succession of centuries of unremitting human conflict, with every new age introducing ever more powerful technologies of war; all of them products of an ever-improving understanding of the material world. Science and technology, based on this very same understanding, have driven the course of human history, shaping cultures and civilisations. The 20th century began with Planck and the quantum, catalysing a frenetic pace of advance in physics and chemistry over much of the decades that followed. The revolution in biology began in the mid-

1950s, quietly at first when the structure of the gene was revealed, but grew into an unstoppable flood of information, culminating in the first human genome sequence, announced as the 21st century was born. Today DNA sequences from fossils, ancient DNA, are being used to trace the origins of the human species and the migrations of our ancestors across the Earth. This early human history, pre-history, requires the confluence of many disciplines, archaeology, palaentology, molecular biology and computer science amongst them. The methods of genomics allow us to go even further back in time, as we ask questions about the evolution of life on Earth. I leave you with just a thought that the formation of our universe, our sun, our solar system and our planet must have come first. In the over 4.5 billion years of the Earth's existence, human beings, as we might recognise them, have lived only for about 100 thousand years. Many questions, about chemical evolution, the evolution of single cells, archaea and bacteria, the birth of eukaryotic cells and the oxygenation of the atmosphere after the evolution of photosynthesis about 2 billion years ago, must precede the birth of the first animal life on our planet. We have come a long way since then.

In his book *Sapiens* the Israeli historian Yuval Harari traces the evolution of humankind. He asks an interesting question which I paraphrase: When in the course of human evolution does human behaviour begin to disregard the biological imperatives, survival and reproduction, that dominate animal behaviour, and become increasingly influenced by recent history. In Harari's words: "*The cognitive revolution is accordingly the point when history declared its independence from biology. The immense diversity of imagined realities that Sapiens invented and the resulting diversity of behaviour patterns are the main components of what we call 'cultures'. Once cultures appeared they never ceased to change and develop, and these unstoppable alterations are what we call 'history'. From the Cognitive Revolution onwards historical narratives replace biological theories as our primary means of explaining the development of Homo Sapiens. To understand the rise of Christianity or the French Revolution it is not enough to comprehend the interaction of genes, hormones and organisms. It is necessary to take into account the interaction of ideas, images and fantasies as well".*

In an age dominated by mythology and the religions born from it, we would do well to remember that comparative genomics tells us that human beings are a minor branch in the Tree of Life, budding from the broader branch of *eukarya*. Life on earth is dominated by the microbial branches, *bacteria* and *archaea*. Our closest neighbours are chimpanzees, rats, mice, pigs, horses, cattle, sheep, and dogs. There is a certain comforting unity in biology. Yet human history, driven by civilizational influences and the evolution of culture, appears to be sadly divisive. The coronavirus has breached all political, religious and ethnic boundaries, reminding us that politics and religion, two favourite pastimes, worldwide, afford no protection against a force of Nature. Remember that arrogance, most often a quality possessed in abundance by the very rich and the very powerful, is no defense against a force of Nature.

Why do I draw your attention to such a disparate group of subjects? It is because of the environment, climatic, social, and political, in which we live today. Some reflection on the roles of science in understanding Nature may allow us to introspect on the course of human history and attempt to rationalise why the world today is the way it is. Science is a deeply humbling subject and every day we are reminded of our imperfect understanding of even the subjects of our daily research. It is this humility that is important in any sphere of human activity. Learning is a continuous and never-ending process. Many years ago, I heard a senior and distinguished scientist from the BARC quote from the poet Wordsworth, writing in the immediate aftermath of the French Revolution:

"*Bliss was it in that dawn to be alive*

But to be young was very heaven"

This was a feeling shared by many in the early years following India's independence in a world recovering from the Second World War. Today we stand on the threshold of a much darker age and your generation will face a challenging future. But I am sure that with your energies and enthusiasm these challenges will be met.

There are two qualities that will stand you in good stead in whatever you wish to do, resilience and imagination. In research, and indeed in many other walks of life, failure is more common than success. Overcoming the fear of failure is often the first step towards success. Let your imagination take you forward. It has been a privilege to address you and may I wish all of you the very best in the years to come.

Prof. P. Balaram

Honorary Professor, JNCASR &
Former Director, Indian Institute of Science, Bengaluru

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डॉ. अजित कुमार मोहान्ती
Dr. Ajit Kumar Mohanty

भारत सरकार
Government of India

अध्यक्ष, परमाणु ऊर्जा आयोग
व
सचिव, परमाणु ऊर्जा विभाग
Chairman, Atomic Energy Commission
&
Secretary, Department of Atomic Energy

MESSAGE

Organising the first University Convocation ceremony for the Homi Bhabha National Institute is a moment of pride and privilege for us looking back the glorious past of the Institute. I hereby extend my warmest congratulations to all the 293 graduating students (Ph.D. and Integrated Ph.D.) for the year 2024-2025. Your hard work of the past 4-6 years has finally culminated into the award of a well-deserved degree. The young bright minds have been transformed into accomplished individuals, geared to bring positive change in the society by means of innovative science and technology. A doctorate degree represents the pinnacle of academic achievement and hence you represent the selected few in your field. As we celebrate this significant occasion, I must reiterate the additional responsibility bestowed upon you to carry forward the baton of higher education and the torch of excellence.

Your decision of doing a Ph.D. years ago at HBNI would certainly transform your entire life. The process of earning a doctoral degree develops important traits such as rational and logical thinking, time management, discipline, punctuality and sense of ownership towards something that you created, your Ph.D. thesis. All these traits are crucial for shaping independent scientists for the future of Science and Technology. I must urge all of you to use this achievement of yours not only as a gateway to employment but also foray into the arena of innovation and entrepreneurship.

To all our graduating students, congratulations once again on reaching this milestone. It is through your hard work, dedication and commitment to your studies that you stand here today. As we celebrate the achievements of our graduates, we must also express our gratitude to their parents and families as well as our academic faculty and staff members of HBNI who have been the leaning pillars every time, they needed the support. Last but not the least, you are now ambassadors of HBNI who will fly to new destinations as HBNI alumni. From this day on keep learning, keep growing, and you will certainly bring your alma mater's name to newer heights in the future. All the best and hearty congratulations for a bright future!

Ajit Kumar Mohanty
(Ajit Kumar Mohanty)

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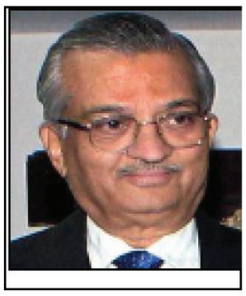
Dr. Anil Kakodkar

Chancellor, Homi Bhabha National Institute



Convocation Day Message

Greetings to all the colleagues, faculty and students of HBNI on the occasion of its first Convocation day. HBNI as a research university was conceptualized in 2005 primarily to strengthen foundational research even as DAE makes forays into new technology domains for national development, leveraging India specific needs and resource endowments. The 20 years that have gone by, though not a long time for a University to expand its wings to the fullest, HBNI has indeed made its mark on the academic landscape of our country as evidenced by its NIRF rankings and publication performance, particularly the Nature Index position. We should however remain conscious of many new dimensions that we are yet to bring-in in this unique experiment in higher education and research space well integrated with our national development aspirations. A convocation is one such dimension, and I wish to congratulate HBNI for incorporating it even though after 20 years of its existence.

Clearly, a convocation is a solemn occasion in the calendar of any University that marks successful culmination of an academic pursuit that students have undertaken at the University. While this thus is an occasion to celebrate, it is also an occasion to look back and into the future and place a vision in front of new graduates. As students transition to alumni status, it is important that they reflect on what they could do to contribute to knowledge based national development as well as to further strengthening of their own alma mater, even as they plan their individual careers. Ongoing engagement between the University and its graduates could strengthen the University as an institution that constitutes perhaps the strongest pillar among the four pillars of an enlightened society. The others three being, the infrastructure, incentives and technology. Convocation thus becomes the starting point of this all important University alumni connect.

I am glad that Prof. P. Balaram, Former Director, IISc, Bengaluru is with us on this occasion as the Chief Guest. My warm welcome to him. His words of advice are very valuable to all of us.

Once again, my heartiest congratulations to all the students graduating today.

Anil Kakodkar

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Homi Bhabha National Institute
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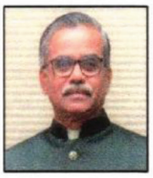
Mumbai – 400 094, India Tel. No. 91-22-69297638 Email: vicechancellor@hbni.ac.in
PLATINUM JUBILEE YEAR 70 Glorious Years 1954-2024
Department of Atomic Energy

Prof. U. Kamachi Mudali
FNAE, FNASc, FNACE, FASM, FAPAM, FIFHTSE
FICS, FIIM, HFECSI, FIIChE, FIE,
FASch, HMIIM, HMUDCTAA
Vice Chancellor



प्रो. यू. कामाची मुदली
FNAE, FNASc, FNACE, FASM, FAPAM, FIFHTSE
FICS, FIIM, HFECSI, FIIChE FIE
FASch, HMIIM, HMUDCTAA
कुलपति

Convocation Day Message

As the Vice Chancellor of Homi Bhabha National Institute, I welcome you all for the 1st Convocation Function of HBNI. At the very outset, I extend my heartiest congratulations to all the students receiving Ph.D. degree on this occasion. This year onwards, HBNI has decided to organize the Convocation Function after due approval of Council of Management and DAE. I am happy to see an energetic pool of young Ph.D. graduates specialized in nuclear science and engineering as well as health science and mathematics, all set to conquer the world. It's a moment of immense joy and pleasure for us at HBNI and also to you to receive your degree certificate which is a result of your scholastic aspirations and astounding perspiration.

HBNI is completing 20 years of academic pursuit since its inception in 2005, and it has been growing by leaps and bounds, year on year, in terms of student enrollment, degrees awarded, number of programs as well as the ranking released by the accreditation bodies such as NIRF. Today we are celebrating the First University convocation and tomorrow i.e 3rd June, we will be celebrating the 20th Foundation Day of HBNI. During the year 2024-25 HBNI enrolled 1017 students out of which 410 were for Ph.D. and Integrated Ph.D. across our Constituent Institution's (CIs) and Off-Campus Centres (OCCs). Total degrees to be awarded during 2024-25 is 897 for all the programs of HBNI out of which 293 degrees are for Ph.D. and Integrated Ph.D. programs. Discipline wise distribution for the doctoral degrees is as follows: 136 Physical Sciences, 41 Chemical Sciences, 50 Life Sciences, 41 Engineering Sciences, 15 Mathematical Science and 07 Applied Systems Analysis. I am happy to share that in the National Institutional Ranking Framework (NIRF)-India Rankings 2024 released by the Ministry of Education (MOE), HBNI has secured **6th** rank in the **Research Institution** category; **16th** rank in the **University** category; and **27th** rank in **Overall** category. Also, HBNI secured **Second Place** in **overall category**, and **First Place** in **Physical Sciences category** of Nature Index rankings 2024. There has been an incredible improvement in our ranking, and the credit goes to the hard-working students and knowledgeable and expert faculty members. This achievement is indeed a moment of joy and pride. However, we now have to strive harder not only to maintain the current status but also to climb further. We are resolute to achieve further excellence in all our endeavors and reach higher rankings in the years to come.

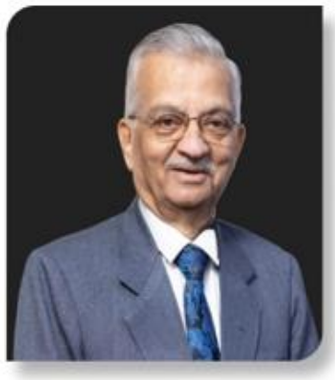
My special congratulations to all the students who have received Outstanding Doctoral Student awards this year. These awardees have performed very well in terms of scientific output and quality of research and hence deserve additional appreciation for their efforts. I am proud of all that you've accomplished this year and I sincerely wish all of you for continuing your effort towards sustainable eminence as HBNI scholars wherever you are going to perform. I am sure that with your commitment, support and contribution, the brand HBNI will scale new heights in the years to come. Hearty congratulations and all the best for your bright future.

U Kamachi Mudali

(U. Kamachi Mudali)

Beacons that Guide

Prof. A.K. Mohanty
Chairman, CoM, HBNI,
Secretary, DAE &
Chairman, AEC



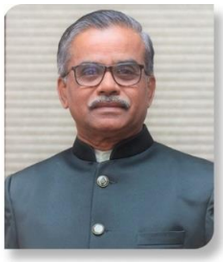
Dr. Anil Kakodkar
Chancellor, HBNI

Prof. U. Kamachi Mudali
Vice Chancellor, HBNI

Prof. A. K. Tyagi
Dean, HBNI

The Council of Management, HBNI

Prof. A.K. Mohanty
Chairman, CoM, HBNI,
Secretary, DAE &
Chairman, AEC



Prof. U. Kamachi Mudali
Vice Chancellor, HBNI

Shri. Vivek Bhasin
Director, BARC

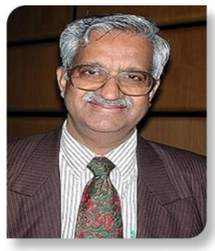
Ms. Seema Jain
Member (Finance), AEC

Dr. Sumit Som
Director, VECC

Dr. Sudeep Gupta
Director, TMC

Prof. H.N. Ghosh
Director, NISER

Prof. Ujjwal Sen
Director, HRI



Dr. V.S. Ramamurthy
Emeritus Professor, NIAS,
Bengaluru

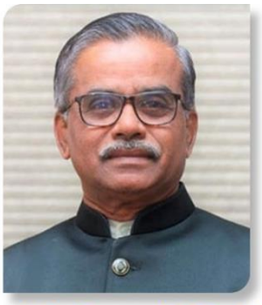
Dr. S. Sivaram
Professor Emeritus
IISER, Pune and Hon.
Professor,
IISER, Kolkata

Prof. A. K. Tyagi
Dean, HBNI

Shri. Hari Narayan Sahu
Registrar, HBNI
Non-Member Secretary

Composition of Academic Council of HBNI

Chairman



Prof. U. Kamachi Mudali
Vice Chancellor, HBNI

Members

Prof. A. K. Tyagi
Dean, HBNI

Shri. Vivek Bhasin
Director, BARC

Shri. C G Karhadkar
Director, IGCAR

Shri. Unmesh D. Malshe
Director, RRCAT

Dr. Sumit Som
Director, VECC

Prof. Gautam Bhattacharyya
Director, SINP

Prof. Shashank Chaturvedi
Director, IPR

Prof. Karuna Kar Nanda
Director, IoP

Prof. V. Ravindran
Director, IMsc

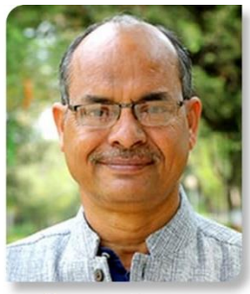
Prof. Ujjwal Sen
Director, HRI

Dr. Sudeep Gupta
Director, TMC

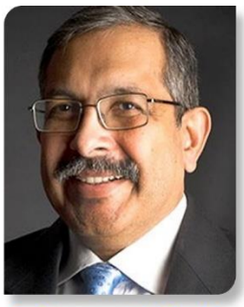
Dr. Satyajit Pradhan
Director, HBCH & MPMMCC

Prof. Hirendra N Ghosh
Director, NISER

Prof. Siva Umapathy
IISC Bengaluru



Prof. Manoj K Tiwari
Director, IIM



Prof. Devang V. Khakhar
IIT, Mumbai

Prof. D.V. Udupa
BARC, Mumbai

Prof. Pankaj Chaturvedi
TMC, Mumbai

Prof. A. Srinivasan
School of
Chemical Sciences NISER

Dr. Ashish Gulia
Director, HBCH & RC

Shri. Hari Narayan Sahu
Registrar HBNI |
Secretary

And all the BoS Convenors

Convenors, Boards of Studies, HBNI

Chemical Sciences

Prof. C. N. Patra,
BARC

Engineering Sciences

Prof. R. Tewari,
BARC

Medical & Health Sciences

Prof. S. D. Banavali,
TMC

Life Sciences

Prof. S. Gautam,
BARC

Mathematical Sciences

Prof. Manoj Kumar Yadav,
HRI

Physical Sciences

Prof. B. Mohanty,
NISER

Studies for Applied Systems Analysis

Prof. Pranay Swain,
NISER

Integrated Masters Program

Prof. Chidambaram Gunanathan, NISER

Interdisciplinary Science & Engineering

Prof. Mainak Bandyopadhyay, IPR

First Convocation of HBNI

(2nd June 2025)

Welcome Address and Annual Report by Vice Chancellor for 2024-25

Hon'ble Chief Guest for the Convocation, Prof. P. Balaram, Hon'ble Chairman Council of Management Dr. A. K. Mohanty, Hon'ble Chancellor of HBNI, Dr. Anil Kakodkar, Directors of CIs and OCCs of HBNI, Members of CoM, Members of AC, Members of P& MB, Convenors-Co-Convenors of various BoS and Members thereof, Dean-Academics and Dean-Student Affairs, Associate Deans at HBNI Central Office, Faculties, Students, Parents and family members, Distinguished invitees and friends, I am glad to present a brief version of the annual report of HBNI for the period 2024-25. It is my privilege first to begin with a brief overview of the institute.

Homi Bhabha National Institute (HBNI), the academic wing of Department of Atomic Energy (DAE), was setup in 2005 as a deemed-to-be university under section 3 of the UGC act 1956 to boost and accelerate the academic programs in DAE institutions. Today, HBNI has grown into a highly reputed research university with valuable contributions to DAE as well as to the society. HBNI's excellent performance in the last 20 years is reflected in its National Assessment and Accreditation Council (NAAC, 2021) CGPA of 3.4 and a grade of A^+ as well as National Institutional Ranking Framework (NIRF)-2024 rank of 6th in the research category. Since February 2014, HBNI is a fully funded grant-in-aid institute of the DAE.

HBNI has the following 13 units of DAE as its Constituent Institutions (CI; 10 No.)/ Off-Campus Centres (OCCs; 3 No.):

1. Bhabha Atomic Research Centre (BARC), Mumbai;
2. Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam
3. Raja Ramanna Centre for Advanced Technology (RRCAT), Indore
4. Variable Energy Cyclotron Centre (VECC), Kolkata
5. Saha Institute of Nuclear Physics (SINP), Kolkata
6. Institute for Plasma Research (IPR), Gandhinagar
7. Institute of Physics (IoP), Bhubaneswar
8. Harish-Chandra Research Institute (HRI), Prayagraj
9. Tata Memorial Centre (TMC), Mumbai
10. Institute of Mathematical Sciences (IMSc), Chennai
11. National Institute of Science, Education and Research (NISER), Bhubaneswar
12. Mahamana Pandit Madan Mohan Malaviya Cancer Centre and Homi Bhabha Cancer Hospital, (MPMMCC & HBCH), Varanasi
13. Homi Bhabha Cancer Hospital & Research Centre (HBCHRC), New Chandigarh, Punjab

Mission

Encourage the pursuit of excellence in Sciences and Mathematics in a manner that has a major significance for the progress of indigenous nuclear technological capacity.

Vision

To provide an academic framework for integrating basic research with technology development, encourage multidisciplinary research and nurture an environment for attracting high quality manpower to take up a career in Nuclear Science and Technology.

Core Values

Student centric approach, Science for society, World class education & research, Focus on national mission, Promoting excellence, Ethical conduct

The focus of HBNI is on research-based quality education programmes in chemical sciences, engineering sciences, life sciences, medical and health sciences, physical sciences, mathematical sciences and applied systems analysis, including Humanities & Social Sciences. HBNI is presently offering 47 academic programs. The academic programmes of all the thirteen institutions are being conducted under the aegis of HBNI. During this period, new Board of Studies on Interdisciplinary Science and Engineering was formed and new programs like Ph.D. (Environmental Science and Engineering) by BARC; M.Sc. (Patient Navigation) by TMC, Mumbai; and M.Sc. (Mathematics) by HRI, Prayagraj, were started recently in-line with NEP-2020.

The academic Programs offered at HBNI are Ph.D., Integrated Ph.D. (Single and Dual degree), Integrated M.Sc., M.Tech., PGD, DipRP, M.Sc. Engg, M.Sc., Integrated M.S.c, Post graduate Super Specialty medical courses MD - Doctor of Medicine, D.M. – Doctorate in Medicine, M.Ch. - Master of Chirurgiae, Certified Fellowship Programmes.

❖ **Academic Collaborations**

To obtain the benefits from the mutual expertise in various research areas, teaching and learning, to facilitate collaborative research among the faculty members, and to enrich the knowledge-base of the students, HBNI has signed/renewed MoUs with the following eminent academic institutions in the country.

As on date HBNI has MoUs with the following institutions for academic collaborations:

1. Indian Institute of Science, Bangalore
2. Indian Institute of Technology, Bombay
3. Indian Institute of Technology, Kharagpur
4. Indian Institute of Technology, Kanpur
5. Indian Institute of Technology, Madras
6. Indian Institute of Technology, Indore
7. Indian Institute of Technology, Roorkee
8. Institute of Chemical Technology, Mumbai
9. Chennai Mathematical Institute, Chennai
10. Jadavpur University, Kolkata
11. Jawaharlal Nehru University, New Delhi

12. Panjab University, Chandigarh
13. Tata Institute of Fundamental Research, Mumbai
14. University of Calicut, Calicut
15. The Commissariat a l'energie atomique et aux energies alternatives, France
16. Ghent University, Belgium
17. Defence Institute of Advanced Technology, Pune
18. Indian Institute of Management (IIM), Ahmedabad
19. **Confederation of Indian Industry (CII), Mumbai**
20. **Indian Institute of Technology, Delhi**
21. **Indian Institute of Technology, Jammu**
22. **Indian Institute of Technology, Guwahati**
23. **Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore**
24. AIC RRCAT PI-Hub Foundation (AIC π-Hub), Indore
25. Indian Institute of Technology, Hyderabad

5 New MoUs were signed between April 2024 to March 2025. As on date under the MoU, 37 HBNI faculties served in the Doctoral Committee of students of MoU Institutes or vice versa; 16 faculties from MoU institutes served as co-guide for PhD students or vice versa; 16 students from HBNI attended the course work conducted by MoU institutes or vice versa. Also 516 joint papers were published along with MoU institutions.

Academic Records

HBNI has awarded so far 9234 students with degree/diploma/certificate since 2007. This includes 2848 Ph.D., 1690 M. Tech., 822 M.D., 259 M.Ch., 221 D.M., 1032 Int. M.Sc., 606 Skill Based Diploma Programs, 274 Skill Based PG Programs, 126 M.Sc. (Engg.), 259 M.Sc., 875 PGD, etc. (as on 31 March 2025).

During the year 2024-25, 1017 students were admitted in different academic programmes at HBNI, out of which 410 students were enrolled for Ph.D. program.

During the period of report (April 2024-March 2025) results have been declared for 293 Ph.D. degrees, 131 M.Tech. degrees, 260 M.Sc. degrees (in various disciplines), 98 post-graduate & super specialty medical degrees (with specializations in Oncology and nuclear medicine), 70 Post Graduate Diploma (in Nuclear Science and Engineering), and 26 Diploma in Radiological Physics.

Foreign Travel Assistance (FTA) Scheme

HBNI has been providing FTA to eligible students to present their scientific results in Conferences and Symposia abroad. I am happy to share that in 2024, quantam of FTA has been appreciably enhanced for Group A, B and C countries so that HBNI students can meet their major expenses towards the trip. During FY 2024-25, 32 students benefited from the scheme and a total of INR 29.6 lakhs was disbursed towards FTA.

❖ **Implementation of National Education Policy (NEP-2020)**

Academic Bank of Credits (ABC)

UGC has introduced ABC which is a digital identification system with an ABC ID - a unique 12-digit code for all students in India. This is used to digitally store, manage, and access all their

academic credits, including degrees, diplomas, certificates, training details, and co-curricular accomplishments and helps them for easily transfer from one institute to another or to resume their studies if they choose to leave their courses for a while. So far ~ 980 students have enrolled for ABC from the Cis and OCCs.
(http://www.hbni.ac.in/pdf/nep/Academic%20Bank%20of%20Credits%20(ABC)%20System.pdf)

Institutional Innovation Council (IIC)

HBNI has constituted an IIC to promote innovation in the institution through multitudinous modes leading to an innovation promotion eco-system in HBNI as per the requirements of UGC. (http://www.hbni.ac.in/pdf/HILC/EstablismentCertificate_HBNI.pdf)

Multiple Entry/Exit with Academic Break

HBNI has implemented a policy for lateral entry/credit transfer for 2 year M.Sc., Integrated Ph.D. & Ph.D. students. Also, there is an exit provision for 5 year Integrated M.Sc. students after 3 years with B.Sc. degree. Academic break is available for Integrated M.Sc./M.Tech./M.Sc. (Engg) students. (http://www.hbni.ac.in/ordinance.html)
(http://www.hbni.ac.in/pdf/nep/Annexure%20-%20IX%20Academic%20Break.pdf)

Promotion of Indian Languages

In order to promote Indian Languages as per the directives of UGC, HBNI has initiated work on Nuclear Glossaries in four languages i.e., Marathi, Gujarati, Tamil and Bengali, in addition to the Hindi Glossary with 13,000 words which has already been published by HBNI. Language centric programs were organised during 2024-25 such as Hindi Diwas, Bharatiya Bhasha Diwas and Marathi Language Conservation fortnight.

Research & Development Cell (RDC)

All the CIs/OCC of HBNI have been requested to initiate necessary action for the formation of a Research and Development Cell (RDC) as per UGC guidelines in their respective Institute. HBNI has formed an R&D Apex committee comprising of the Directors of CIs and OCC as members; VC, HBNI as the Chairperson and Dean, HBNI as Member Secretary; as per CoM direction, to have centralised decisions. (http://www.hbni.ac.in/pdf/circulars/NEP.pdf)

HBNI Industry Linkage Centre

With a view to facilitate the translation of the R&D in the laboratory to the industry, and for the welfare of the common man, HBNI has set up “HBNI-Industry Linkage Centre (HILC)”. The Center also facilitates skill development of PhD students of HBNI by the way of internship in Industry. Functions of HILC are Student Internship in Industry, Consultancy Services by faculties, R&D Collaboration, Technology Transfer. (http://www.hbni.ac.in/hilc/index.html)

Appointing Professor of Practice (HBNI-PoP)

A PoP in a higher education institute is a faculty member who typically has a non-academic background and is highly successful in his / her field. This would help students in experiential

learning and bridges the industry-society-academia gap. HBNI has requested nominations from all its CI and OCCs to appoint PoP.
(http://www.hbni.ac.in/pdf/circulars/Appointment%20of%20HBNI%20Professor%20in%20Practice.pdf)

Teaching assistantship

Teaching assistantship is available for Ph.D. & Integrated Ph.D. students in HBNI. http://www.hbni.ac.in/pdf/nep/Teaching%20Assistance%20Certificate.pdf)

Multidisciplinary Courses

To encourage the pursuit of multidisciplinary courses, HBNI has formed a new BoS called Interdisciplinary Science and Engineering. The discipline is currently offering a Ph.D. programme in Environmental Science and Engineering. (http://www.hbni.ac.in/bos.html)

Placement & Alumni Activity

HBNI also has an active HBNI placement cell and HBNI Alumni Cell as per NEP guidelines. (http://www.hbni.ac.in/placement/index.html) & (http://www.hbni.ac.in/placement/alm_net.html)

Online Course Conducted by HBNI

An online course on "Advanced Materials Chemistry" was conducted by HBNI from October 14-December 23, 2024. Prof. A. K. Tyagi, Dean, HBNI was the Course Director. The broad topics covered under the course included general materials chemistry, characterization techniques, major trace and ultra-trace chemical analysis techniques, and functional materials.

❖ **Specific Achievements**

- ✓ First Annual Students' cultural program "ANURANG" on June 03, 2024 with participation of students from many CIs/OCCs.
- ✓ NPTEL courses on "An Introduction to Lasers and Laser Systems" & "Risk Based Engineering"
- ✓ Academic programs at MPMMCC& HBCH, Varanasi (2nd OCC of HBNI).
- ✓ Nuclear glossaries in Marathi, Gujarati, Bengali & Tamil following earlier Hindi glossary of HBNI to promote higher education in regional languages.
- ✓ PhD program in "Environmental Science and Engineering" to promote interdisciplinary research.
- ✓ Civil construction of extension building of HBNI for infrastructure development.
- ✓ Webinars by HBNI Alumni and other professionals (11 No.) to promote placement and entrepreneurship among students.
- ✓ Constitution of "HBNI-Institution Innovation Council" to promote innovation and start-ups.
- ✓ Revision of HBNI ordinances and Academic Codes of Practices as on date with NEP-2020 provisions.
- ✓ Formulation of HBNI IPR policy and implementation.
- ✓ First ever University Convocation of HBNI for PhD students on June 02, 2025

❖ Academic and Technical Achievements

• Publications

The total number of journal publications with HBNI affiliation during the calendar year 2024, as indexed by Scopus, was **2711**. Some of the publications have come in high impact journals such as Nature (IF 69.5), Nature Materials (IF 37.2), Nucleic Acid Research (IF 16.7), Nature Chemical Biology (IF 13), etc. Based on the high-quality of publications in the Nature Group of Journals, the Nature Index 2024 has placed **HBNI in the second position among all institutions in India, and in the first position with regard to the publications in Physical sciences.** HBNI faculty and/or students also published 6 books and 166 book chapters.

• National Institute Ranking Framework (NIRF), 2024

The National Institutional Ranking Framework (NIRF) outlines a methodology to rank institutions across the country by a set of parameters. The parameters broadly cover "Teaching, Learning and Resources," "Research and Professional Practices," "Graduation Outcomes," "Outreach and Inclusivity," and "Perception". NIRF was approved by the MHRD and launched by Honourable Minister of Human Resource Development on 29th September 2015.

HBNI obtained **6th rank** in the Research Institution Category, **16th rank** in the University and **27th rank** in overall category in the NIRF 2024 ranking. This is a significant improvement from NIRF 2023 performance wherein HBNI had obtained **15th rank** in the Research Institution Category, **17th rank** in the University and **39th rank** in overall category.

• Recognitions, Awards and Honours Received by HBNI Faculty Members

Many faculty members of HBNI across all its CIs and OCCs received prestigious awards and honours and became Fellows and Associates of Scientific Bodies. Some representative awards are listed below:

1. Prof. U. Kamachi Mudali, VC, HBNI, has been conferred with the Gold Medal of Chirantan Rasayan Sanstha & Lifetime Achievement Award of Rotary International District 3234, Chennai.
2. Prof. A. K. Tyagi, Dean, HBNI, has been awarded the prestigious Vigyan Shri Puraskar for 2024 by Govt. of India
3. Prof. S. M. Yusuf, BARC has been elected as a Fellow of The World Academy of Sciences (TWAS).
4. Prof. Shripad Dinanath Banavali, TMC has been awarded the prestigious QIMPRO Gold Standard Award 2024 in Healthcare by Qimpro Foundation, Mumbai.
5. Prof. Jyotirmayee Mohanty, BARC has been awarded DEVI Award-2024 in Science Category.
6. Prof. Sukhendu Nath, BARC has been elected as a Fellow of the National Academy of Sciences, India (NASI).
7. Prof. Kathi Sudarshan, BARC has been elected as a fellow of Maharashtra Academy of Sciences.
8. Prof. S.K. Musharaf Ali, BARC has been elected as a fellow of Maharashtra Academy of Sciences.
9. Prof. A. K. Ghosh, BARC has been elected as a fellow of Maharashtra Academy of Sciences.
10. Dr. Celin Acharya, BARC has been elected as a Fellow of NASI in the field of Biochemistry, Biophysics, Biotechnology category for 2024.
11. Prof. Manoj Kumar Yadav, HRI has been elected a Fellow of the National Academy of Science, India from Oct 2024.

12. Dr. Tisita Das, HRI has been conferred with "SMC Emerging Scientist Award-2024 by Society for Materials Chemistry.
13. Prof. S. Ningshen, IGCAR has been elected as a Fellow of the Indian Institute of Metals
14. Dr. Bishnu P Biswal, NISER has been selected as an associate of the Indian Academy of Sciences 2024.
15. Dr. Manas Ranjan Sahoo, NISER has been awarded the INSA Associate Fellows 2024.

- **Awards Received by HBNI Students**

Many students of HBNI across all its CIs and OCCs received awards in scientific proceedings. Some representative awards are listed below:

HBNI Outstanding Student Award & JB Joshi Research Foundation Innovation Award

HBNI Outstanding Student Award 2024							
S. No.	**Name of the Student**	**Enrolment No.**	**Discipline**	**CI/OCC**	**Academic Program**	**MTech/PhD Guide**	**Thesis title**
1	Dr. Sujeesh S	ENGG01201904003	Engineering Sciences	BARC	PhD	Prof. Sulekha Mukhopadhyay	Catalytic Decomposition of Sulphuric Acid in Integrated Reactor: Experimental Study, Modeling & Optimization
2	Dr. Sumit	ENGG03201704002	Engineering Sciences	RRCAT	PhD	Dr. Rahul Shukla	Investigation on shape control methodologies of Piezoactuator-Based X-Ray Deformable Mirror, its Fabrication and Characterization for Adaptive Optics
3	Dr. Ajay Kumar Pandey	ENGG06201804006	Engineering Sciences	IPR	PhD	Prof. S. K. Pathak	Guided and Leaky modes characteristics of Dielectric Loaded Helix Structure
4	Dr. Sourav Sarkar	ENGG01201804015	Engineering Sciences	BARC	PhD	Prof. K. K. Singh	Experimental and computational studies on hydrodynamics and mass transfer in liquid-liquid pulsatile flow in column contactors
5	Dr. Harish Srinivasan	PHYS01201904011	Physical Sciences	BARC	PhD	Prof. Subhankur Mitra	Non-Markovian and Non-Gaussian Behaviour in Molecular Diffusion within Complex Fluids
6	Dr. Prottay Das	PHYS11201705001	Physical Sciences	NISER	PhD	Prof. Bedangadas Mohanty	Studying chiral magnetic wave, hadronic rescattering and $f1(1285)$ production in high energy collisions with ALICE detector

7	Dr. Lakkaraju Leela Ganesh Chandra	PHYS08201904002	Physical Sciences	HRI	PhD	Prof. Aditi Sen	Exploring Variable-Range and Non-Hermitian Systems: From Entanglement Distribution to Quantum Battery
8	Dr. Ankit Kumar Panda	PHYS11202004002	Physical Sciences	NISER	PhD	Dr Victor Roy	Relativistic dissipative causal magnetohydrodynamics from kinetic theory and the effect of electric fields on bulk observables in high-energy heavy-ion collisions
9	Dr. (Ms.) Sneha Das	PHYS04201904002	Physical Sciences	VECC	PhD	Dr Sarmishtha Bhattacharyya	Single particle and collective excitations above Z = 82
10	Dr. Sushil Maruti Patil	CHEM01202004005	Chemical Sciences	BARC	PhD	Dr Ruma Gupta	Synthesis and Characterization of Novel Deep Eutectic Solvent for studying Dissolution, Coordination and Redox Chemistry of Lanthanides and Acitinides
11	Dr. (Ms) Prajnashree Panda	CHEM11201804018	Chemical Sciences	NISER	PhD	Dr Sudip Barman	Fabrication of Hybrid Nanostructured Materials and Porous Carbon for Energy Storage and Gas Adsorption Applications
12	Dr. Ajaya Kumar Sahoo	LIFE10201904002	Life Sciences	IIMs	PhD	Prof. Areejit Samal	Computational data-driven investigation of chemical exposome and its links to human and ecosystem health
13	Dr. (Ms.) Rashi Sanjay Lunia	MATH10201904003	Mathematical Sciences	IIMs	PhD	Prof. Sanoli Gun	Arithmetic and analytic aspects of values of L-functions
14	Mr. B. Vinith	ENGG01202201062	Engineering Sciences	BARC	MTech	Dr Alok Awasthi	Studies on a novel process for recovery of Uranium from Tummalapalle leach liquor
15	Mr. Sandeep Singh Tomar	ENGG01202201056	Engineering Sciences	BARC	MTech	Dr Nirvik Sen	Dissolution of washed and dried frit powder in nitric acid to produce clear zirconium nitrate solution
16	Dr. (Ms.) Shreya Dhingra	HLTH09202109002	Medical and Health Sciences	TMC	MD		

17	Dr. (Ms.) Sumona Kundu	HLTH09202109051	Medical and Health Sciences	TMC	MD		
18	Dr. Aditya Dhanawat	HLTH09202110007	Medical and Health Sciences	TMC	DM		
19	Dr. Anup Srinivas	HLTH09202110059	Medical and Health Sciences	TMC	MCh		
J B Joshi Endowment Innovation Award 2024							
1	Dr. Soumen Das	CHEM01201704055	Chemical Sciences	BARC	PhD	Dr. Sudipta Chakraborty, BARC	Clinical Scale Formulation and Evaluation of Novel Diagnostic Agaents based on 99mTc and 68Ga
2	Dr. Saurabh Srivastava	ENGG01201804011	Engineering Sciences	BARC	PhD	Dr. Anita Topkar, BARC	Study and Optimization of Silicon Photomultiplier-Scintillator Detector based Instrumentation for Radiation Monitoring Applications
3	Dr. Koustav Pal	PHYS05201904011	Physical Sciences	SINP	PhD	Prof. Indranil Das, SINP	Investigation of Exchange Bias and Magnetotransport in Bulk and Thin Film Materials
4	Dr. Milaan Vijaybhai Patel	ENGG06201804009	Engineering Sciences	IPR	PhD	Prof. Jinto Thomas, IPR	Development of Pulsed Supersonic Beam System for Tokamak Edge Diagnostics and Other Applications

Others

1. Mrs. Anusree Dey, BARC has received the Best Young Investigator Award for her presentation titled, “Bromodomain protein 4 regulates radio resistance in breast cancer cells,”
2. Dr. Pooja Negi, BARC has received Best Thesis Award for her thesis titled, “Physiological and molecular insights into radiation induced salt tolerant mutant of sugarcane,”
3. Ms. Sanchita Ghosh, BARC has received Third Prize in poster presentation for her posted titled, “Synthesis of human serum albumin encapsulated [^{188}Re] ReOx nanoparticles: a potential dual modal nanoagent for cancer theragnostic,”
4. Shri D. Bola Sankar, IGCAR has received one of the Best Poster Award for his poster titled, “Development of an efficient method for the separation of ^{90}Sr from the fuel dissolver solution and development of radionuclide generator for ^{90}Y elution
5. Shri Abhinash Maharana, IGCAR has received one of the Best Poster Award for his poster titled, “Optimizing ReO_4^- (Surrogate for $^{99}TcO_4^-$) sequestration: Unravelling multifaceted effects using surfactant free, synthesized-Zeolite Na-A,”
6. Mrs. S. Jayalakshmi, IGCAR has received one of the Best Poster Awards sponsored by The Journal of Physical Chemistry (A), ACS for her poster titled, “Understanding the complexation behavior of tri-n-alkyl phosphorotrithioate ligands with uranyl nitrate,”

7. Ms. Geethika B. R., IPR has received one of the Best Oral presentation Award for her talk titled, "Anisotropic emission from laser produced aluminium plasma,"
8. Ms. Komal, IPR has received one of the Best Poster Award for her poster titled, "Investigating the effect of impurity seeding on the magnetic and electrostatic edge fluctuations in ADITYA-U tokamak"
9. Shri Souvik Mondal, IPR has received Best Poster Award for his poster titled, "The dynamics of blob merging in the tokamak scrape-off layer region
10. Shri Aher Jayesh Bhausaheb, Int. M.Sc., NISER has received the "Biointerphase Best Poster Award"

❖ HBNI Faculty Induction Programmes

As per the university regulations, HBNI conducted faculty induction programs in hybrid mode on September 30, 2024 and December 9, 2024 for the benefit of newly inducted faculty members to brief them about the structure of academic processes and ordinances of HBNI. Fifteen new faculty members and six teaching staff from different CIs/OCCs of HBNI attended the program on September 30, 2024. Twenty-five new faculty members and six teaching staff from different CIs/OCC of HBNI attended the program on December 9, 2024.

❖ Events conducted at the HBNI Central Office, Mumbai

HBNI Central Office, Mumbai conducted several events such as Workshop on "Career on Opportunities in Industry for Chemistry & Chemical Engineering Doctoral Students", National Technology Day, Prof. Srikumar Banerjee Memorial Programme, Nineteenth Foundation Day of HBNI, Independence Day Celebration, Anti-Ragging Week Celebration, Teachers' Day Celebration, National Science Day Celebration, International Women's Day Celebration, Dr. Sekhar Basu Memorial Program, "Swachhata Hi Seva 4.0 Campaign, Hindi Diwas Celebration, Workshop on "IPR and Industry – Academia Linkages", "Marathi Language Conservation Fortnight", Observance of Vigilance Awareness Week - 2024 (VAW-2024), Theme Meeting titled "HBNI: An Enabler to DAE's Academic Programmes", Workshop on Publishing Books and Research Papers, jointly with BARC, Start-up pre-incubation program jointly organized by HBNI and AIC-BARC, Bharatiya Bhasha Utsav at HBNI, Fit India Week Celebration at HBNI.

HBNI has made great progress in a short span of 20 years, thanks to the untiring efforts of the predecessors who have toiled in the foremost years. There are miles to go, and much more is yet to be achieved than what we have so far. Thus, it is important for HBNI to continuously evolve and innovate to reach wider and farther its horizons. It is also equally important to retrospect as well as introspect and fill up the gaps and lacunae, if any. I am confident that with the continuous support from all the stakeholders, HBNI will shape up as one of the best global Higher Educational Institutions with its unique structure. We shall continue to strive hard towards the common goal of making HBNI a leading knowledge hub in the arena of Nuclear Science & Technology and Inter-disciplinary research.

❖ Acknowledgements

It is my pleasure to acknowledge the support and guidance HBNI has always received from DAE, the Council of Management, the Academic Council, Planning & Monitoring Board, Board of Studies, and others. Sincere thanks and heartfelt gratitude to Prof. AK Mohanty, Secretary, DAE & Chairman, AEC for his sustained support to the activities of HBNI, and special thanks to Shri Vivek

Bhasin, Director BARC for providing all logistics and academic support from BARC. Support and encouragement received from Honourable Chancellor of HBNI, Dr. Anil Kakodkar is highly acknowledged. It is my pleasure to acknowledge the support and guidance HBNI has always received from the DAE Secretariat.

A special thanks to Prof. R.B. Grover, Former Emeritus Professor and Prof. JB Joshi, Distinguished Professor Emeritus, for their valuable guidance. Our thanks to and J B Joshi Research Foundation for providing an endowment to encourage academic excellence. The continuous improvement in academic performance of HBNI has been made possible by the efforts put in by the Standing Committee of Deans, Boards of Studies and the Deans (Academic), Deans (Student Affairs) and Nodal Officers at our CIs/OCC, besides the committed efforts of Dean & Associate Deans and colleagues at HBNI Central Office. I am sure that the unique structure of HBNI and the synergy between the different institutions under HBNI would continue to propel us on the growth and success path. HBNI will strive hard to reach greater heights year over year with sustained quality academic output with excellence.

I congratulate all the HBNI faculty members and student awardees for bagging several coveted awards/recognitions. I am very proud of what you've accomplished this year and I sincerely wish all of you for continuing your effort towards sustainable eminence in the coming years. I am sure that with your commitment, support and contribution, the brand HBNI will scale new heights in the years to come.

I also want to take this opportunity to convey my sincere and profuse thanks to the Team HBNI at Mumbai for the hard work put in by them to organize today's program.

Before I conclude, I want to invite all our alumni who are not now with DAE, to remain in touch with your alma mater and convey your suggestions about our programs and processes, based on your post-HBNI degree experience.

Congratulations to all the students who have received their degrees today, and to the HBNI Outstanding student awardees this year.

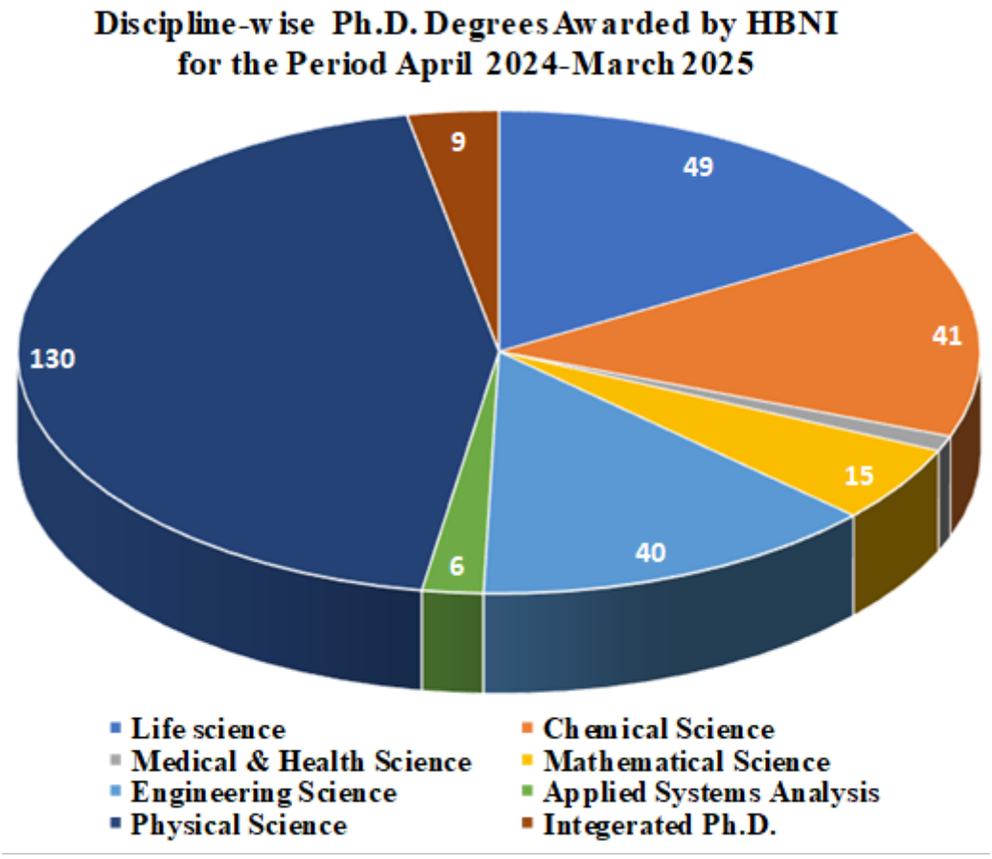
Thank you!!

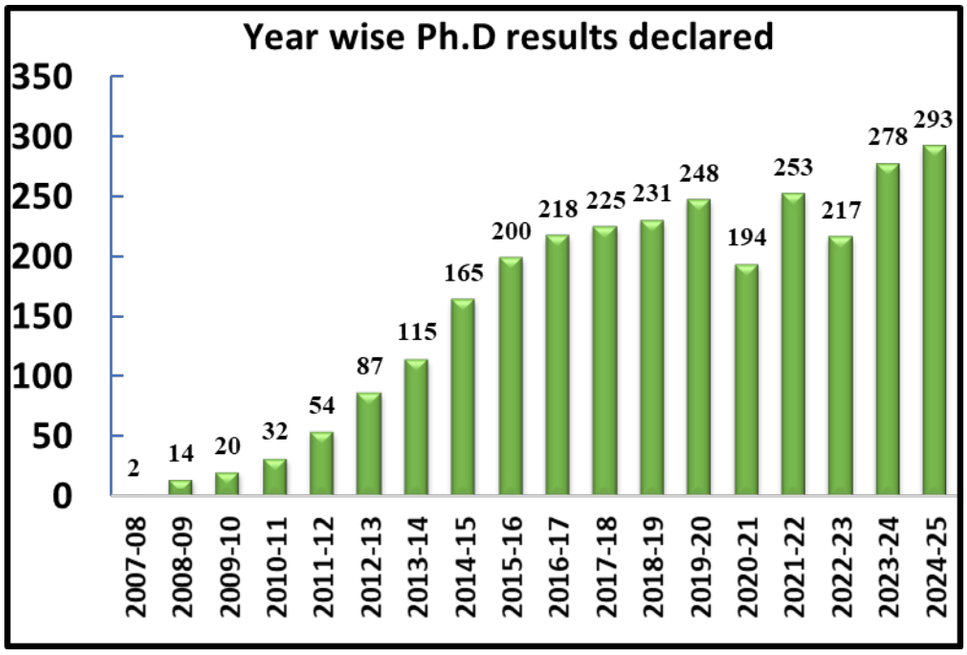
For more information, readers are requested to visit our website:
www.hbni.ac.in

HBNI's Academic Data for 2024-25

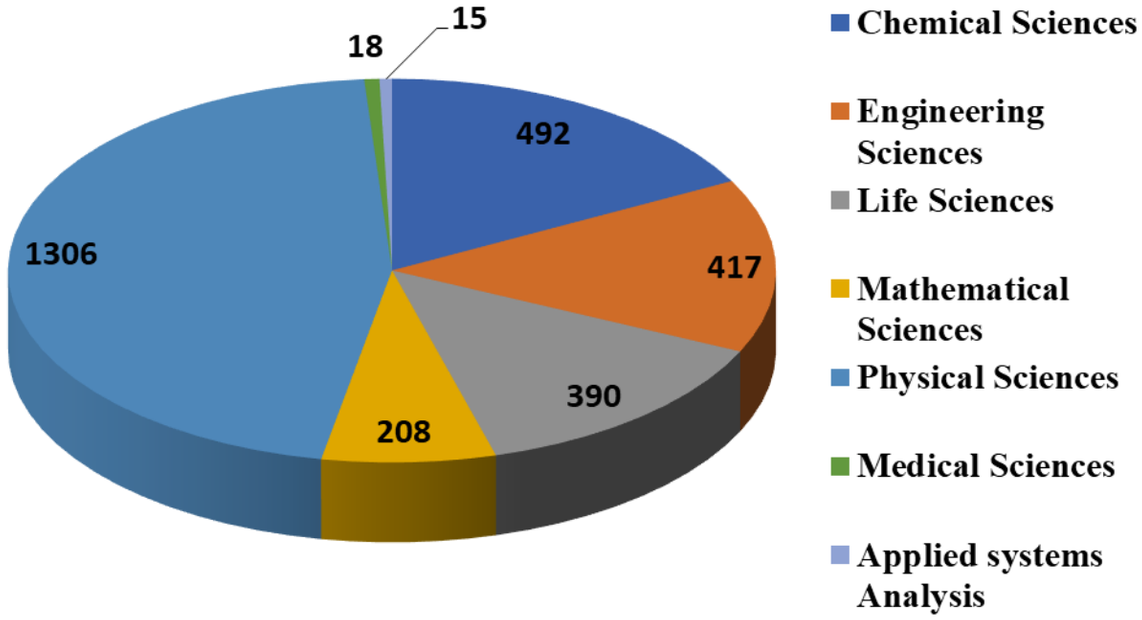
Discipline wise-total number of the students who have been awarded Ph.D./ Integrated Ph.D. degree during the year 2024-25

Discipline	No. of Students
Life Science	49
Chemical Science	41
Medical & Health Science	3
Mathematical Science	15
Engineering Science	40
Studies for Applied Systems Analysis	6
Physical Science	130
Integrated Ph.D.	9
Total	**293**

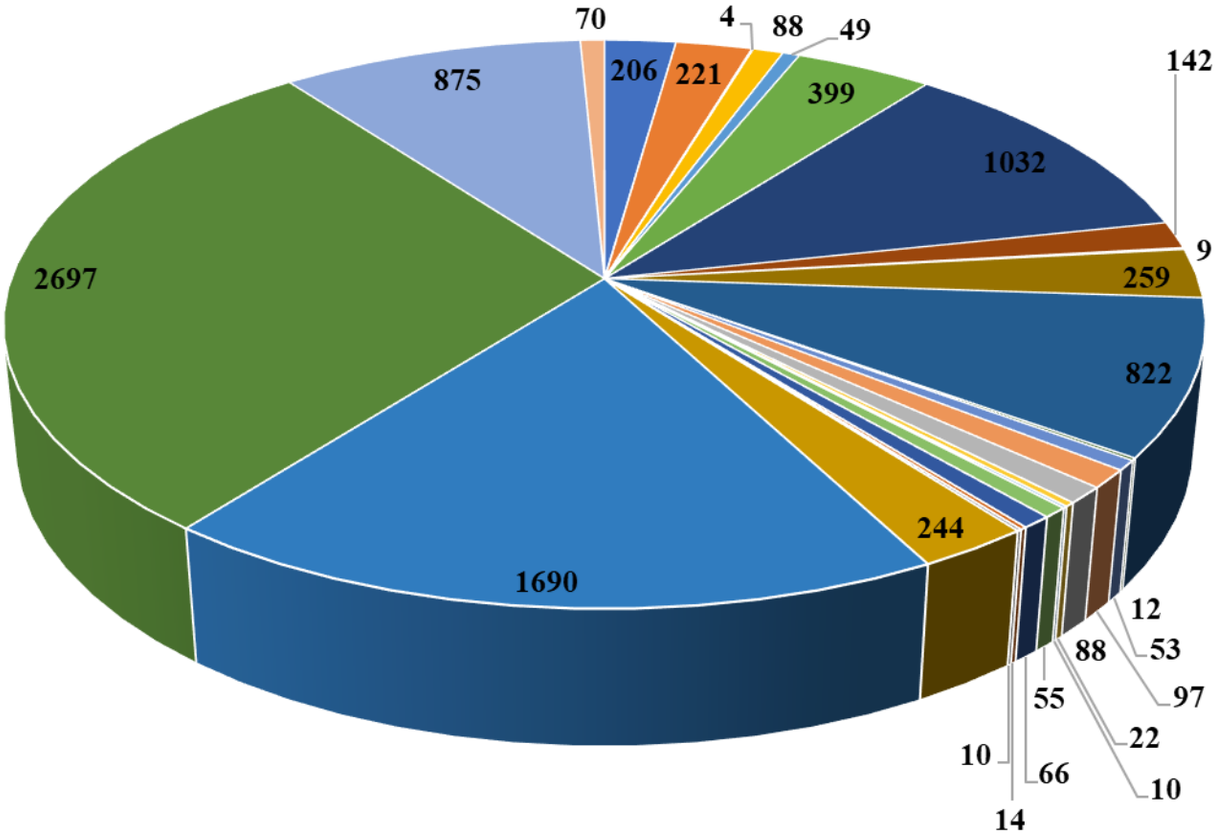




Discipline wise distribution of Total (2846) Ph.D results declared since inception



Total no. of results declared for various academic programs of HBNI till date



- Certified Fellowship
- D.M.
- DA-Dip. In Medicine(Anaesthesia)
- Diploma in Medical Radio-Isotope Tehniques (DMRIT)
- Diploma in Radiation Medicine (DRM)
- Diploma in Radiological Physics (Dip.RP)
- Integrated M.Sc. (Five Years)
- Integrated Ph.D. (Dual Degree)
- Integrated Ph.D. (Single Degree)
- M.Ch.
- M.D.
- M.Phil.
- M.Sc.
- M.Sc. (Clinical Research)
- M.Sc. (Engg)
- M.Sc. (Hospital Radiopharmacy)
- M.Sc. (Medical and Radiological Physics)
- M.Sc. (Nuclear Medicine and Molecular Imaging Technology)
- M.Sc. (Nursing)
- M.Sc. (Occupational Therapy in Oncology)
- M.Sc. (Public Health at Epidemiology)
- M.Sc. Degree of Int Ph.D. (Dual Degree)
- M.Tech.
- Ph.D.
- Post Graduate Diploma (PGD)
- Post Graduate Diploma in Fusion Imaging Technology

Outstanding Doctoral Student Awards for 2024-25

Dr. Sushil Maruti Patil

CHEM01202004005

Thesis Title:

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

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

Dr. Prajnashree Panda

CHEM11201804018

Thesis Title:

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

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

Dr. Sourav Sarkar

ENGG01201804015

Thesis Title:

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

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

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

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

Dr. Sujeesh S.

ENGG01201904003

Thesis Title:

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

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

Dr. Ajay Kumar Pandey

ENGG06201804006

Thesis Title:

Guided and Leaky Modes Characteristics of Dielectric Loaded Helix Structure

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

Dr. Sumit

ENGG03201704002

Thesis Title:

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

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

Dr. Ajaya Kumar Sahoo

LIFE10201904002

Thesis Title:

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

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

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

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

Dr. Rashi Sanjay Lunia

MATH10201904003

Thesis Title:

Arithmetic and Analytic Aspects of Values of L-Functions

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

Dr. Sneha Das

PHYS04201904002

Thesis Title:

Single Particle and Collective Excitations Above Z = 82

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

Dr. Harish Srinivasan

PHYS01201904011

Thesis Title:

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

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

Dr. Lakkaraju Leela Ganesh Chandra

PHYS08201904002

Thesis Title:

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

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

Dr. Ankit Kumar Panda

PHYS11202004002

Thesis Title:

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

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

Dr. Prottay Das

PHYS11201705001

Thesis Title:

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

Ph.D./ Integrated Ph.D. degree during the year 2024-25

Studies for Applied Systems Analysis

NISER, Bhubaneswar

S. No.	Student Name	Enrollment No.	Title of the thesis
1	Isha Bihari	APSA11201804001	Esports as a New Age Profession and its Socio-Cultural Appeal in India: A Systemic Inquiry into the New Normative Practice in Operational Working Hours
2	Debasish Mishra	APSA11201904001	The Quest for a Home in the Jesus Trilogy of J.M. Coetzee
3	Laxmikanta Gual	APSA11201904002	Institutions and Intra-State Development Disparity within Democracy: Evidence from an Indian State
4	Maheshwar Kumar	APSA11201904003	Performance as Text: Reconceptualizing the Performing Art Tradition of Purulia Chhau
5	Suchismita Pramanik	APSA11201904005	Development of a Psychometric Instrument for Unconditional Self-acceptance and Exploring its Correlates
6	Prachi Parimita Rout	APSA11201704004	Sociological Aspects of Sex Reassignment Surgery: An Empirical Study of Lived Experiences of Transgender People in Odisha

Chemical Sciences

BARC, Mumbai

S. No.	Student Name	Enrollment No.	Title of the Thesis
1	Koushik Bhandari	CHEM01201704003	Complex Oxides as Host in Inert Matrix Fuel: Structural and Thermo-physical Investigations
2	Atanu Jha	CHEM01201704006	Surface and Interface Modification of Single/Multi-Component Polymeric Systems by Radiation Technology for Industrial and Environmental Applications
3	Rahul Agarwal	CHEM01201804003	Electrochemical Determination and Recovery of Uranium and Plutonium in Aqueous Medium
4	Aranyak Sarkar	CHEM01201904005	Investigation of Molecular Interaction with Advanced Fluorescence Correlation Spectroscopy and Super-resolution Orientation Imaging

5	Pasupati Nath Khan	CHEM01201904007	Development of Supramolecule Based Extractants and Suitable Diluents for the Separation of Radio Toxic Elements
6	Sudeshna Saha	CHEM01201904008	Studies on Advanced Materials for e-Waste Management
7	Saparya Chattaraj	CHEM01201904009	Evaluation of Soft Donor Ligands for the Separation of Alpha Emitting Nuclides from Nuclear Waste
8	Prabhath Ravi K	CHEM01201904011	Chemical and Chronological Characterization of Some Nuclear and Other Radioactive Materials for Nuclear Forensic Applications
9	Piyali Banerjee	CHEM01201904013	Studies on the Extraction Chromatography of Actinides using Resins containing Aza-Crown Based Diglycolamide Ligands
10	Annadasankar Roy	CHEM01201904016	Hydrological investigation of regional aquifer systems in contrasting climatic regions of North West India using isotope–geochemical modeling approaches
11	Kanagala Sandeep Rao	CHEM01202004004	Development of High Energy Density Electrode Materials for Advanced Lithium Based Batteries
12	Sushil Maruti Patil	CHEM01202004005	Synthesis and Characterization of Novel Deep Eutectic Solvent for Studying Dissolution, Co-ordination and Redox Chemistry of Lanthanides and Actinides
13	Naveen Kumar	CHEM01202004007	Exploring the Potential of Novel Radiolabeled Biomolecules and Biomolecule-Drug Conjugates for Imaging and Therapy of Cancers
IGCAR, Kalpakkam			
14	Suvendu Kumar Barik	CHEM02201604004	Development of Sodium Aluminium Phosphate Glass, as a Host Matrix for Immobilization of Minor Actinides-a Simulation Study with Lanthanides (Ce, Pr, Nd and Gd) as Surrogates
15	Muthukumaran T.	CHEM02201604013	Preparation, Characterization and Applications of Silicon Carbide and Phosphate- Capped Magnetic Nanoparticles
16	Srinivas Manepalli	CHEM02201604014	Pitting Corrosion Studies on as Welded and Thermally Aged 316SS Weld with Different Nitrogen and 316LN SS

17	Rongali Hareesh	CHEM02201704010	High Temperature Oxidation and Corrosion Behavior of Pyrolytic Graphite under Simulated Pyrochemical Reprocessing Conditions.
18	PuchakayalaRajani	CHEM02201804001	Experimental and Theoretical Studies on the Extraction of Actinides by Organophosphorus Compounds.
19	K. Subhashree	CHEM02201804003	A Study on Tris (2-methylbutyl) Phosphate as an Extractant for the Processing of Nuclear Materials
20	Rini Kumari Vishwakarma	CHEM02201804004	Surface Modified, N-Functionalized and Composite Graphene Oxide Membranes for Efficient Separation of Strontium from Aqueous Solutions
21	Sanjit Kumar Parida	CHEM02201804009	Rational Design of Non-precious Metal and Carbon Based Electrocatalysts for Oxygen reduction Reaction
22	Abhiram Senapati	CHEM02201804011	Evaluation of Structural and Thermo-Physical Properties of Sodium Niobium Phosphate Glass for Nuclear Waste Immobilization Application with CeO_2 as an Actinide Simulant
23	Anushree Chintaparthi	CHEM02201804012	Synthesis of Bifunctional Magnetic Nanostructures and Their Applications in Dye and Oil Removal
24	Gopinath Shit	CHEM02201804014	Corrosion Assessment of Type 304L SS in Simulated Spent Fuel Reprocessing Environment
25	Nair Afijith Ravindranath	CHEM02201804015	Investigation on the Influence of Polarization Resistance for Low Temperature Operation of Multilayered Thin Film YSZ Oxygen Sensors
26	Sachin Aditya Ramesh	CHEM02201904003	Electronic Structure and Complexation Behavior of Phosphine Oxide Ligands with Lanthanides and Actinides.
27	Nandalal Mahapatra	CHEM02201904005	Nitrogen as a Pnicogen in π-hole Driven Pnicogen Bonding: Matrix Isolation Infrared Spectroscopic and Computational Studies
28	Parvathy Narayanan	CHEM02201904006	Probing and maneuvering the third phase formation in diglycolamide/n-dodecane systems

NISER, Bhubaneswar			
29	Anwesha Bhattacharya	CHEM11201704009	Selective C–N, C–S & C–C Bond Formation of Substituted Thioamides & Nitriles
30	Tanmoy Pain	CHEM11201804008	Design, Modification, and Diverse Applications of Tetrapyrrolic Macrocycles: Exploring both Free-Base and Metallated Variations
31	Amit Akhuli	CHEM11201804010	Understanding the Interaction of Luminescent Coinage Metal Nanaoclusters with Target Analytes using Various Spectroscopic and Microscopic Techniques
32	Amita Mahapatra	CHEM11201804011	Understanding the Intermolecular Interaction and Structural Organization in Some Imidazolium and Pyrrolidinium-based Ionic Liquids: Implications in Biological and Electrochemical Applications
33	Ayendrila Das	CHEM11201804012	Ultrafast and Single-Molecule Studies of Photo-Physical Processes in Quantum-Confined Materials
34	Pradeep N.	CHEM11201804017	5-Aminopyrazoles as Versatile Building Blocks for the Synthesis of Functionalized Pyrazoles, Pyrazolines and Spiroheterocycles using Sustainable Synthetic Strategies
35	Prajnashree Panda	CHEM11201804018	Fabrication of Hybrid Nanostructured Materials and Porous Carbon for Energy Storage and Gas Adsorption Application
36	Sonali Panigrahy	CHEM11201804021	Carbon Supported Nanomaterials for Electrochemical Energy Applications
37	Subhashini V S	CHEM11201804022	Selective Functionalization of Arenes, Heteroarenes and Dinitriles using Hypervalent Iodine Reagents and Nickel Salts
38	Subhashree Subhadarshini Panda	CHEM11201804023	Synthesis and Biochemical Evaluation of Unnatural Aromatic Amino Acids/ Peptides/ DNA Comprising Salicylic-Picolamide and Aminotropone Scaffolds
39	Surajit Panda	CHEM11201804025	Development of Iridium Catalyst for α-Alkylation using Alcohol as Alkylating Partner and Utilization of Cobalt Catalyst for Hydrosilylative Reduction

40	Ratnakar Saha	CHEM11201904003	Base Metal (Ni, Cu and Fe)-Catalyzed C(sp^3)–H Alkylations with Alcohols as Coupling Partners Employing Borrowing Hydrogen Approach and Post Functionalizations
SINP, Kolkata			
41	Arpita Nandy	CHEM05201804001	Designing Electrocatalysts for Sustainable Future: Applications Toward Electrolyzers and Fuel Cells

Engineering Sciences

S. No.	Student Name	Enrollment No.	Title of the thesis
BARC, Mumbai			
1	Satendra Kumar	ENGG01201304047	Experimental Study and Optimization of Process Parameters in Electro-Magnetic Welding of Tubular Geometries
2	Sushil Kumar Bahuguna	ENGG01201404009	Compressed Sensing Distributed Artificial Neural Network for Core Flux Distribution Monitoring in Nuclear Reactor
3	Jadhav Pankaj Shankarrao	ENGG01201404021	Time-Frequency Domain Machine and Deep Learning Approaches for Automated Detection of Sleep Stages using EEG Recordings
4	Rehim N. Rajan	ENGG01201504004	Electromagnetic Interference in Accelerators
5	Pavanraj H. R.	ENGG01201504013	Development of Moving Window Based State and Parameter Estimation Schemes under Bayesian Frameworks
6	R. Rakesh Radhakrishnan	ENGG01201504026	Phase Transformation and Oxidation Behaviour of Uranium-Molybdenum Based Ternary Alloys
7	Hitesh Choudhary	ENGG01201604005	Studies on Pulsed Electromagnetic Expansion and Dissimilar Metal Joining
8	Sherry Rosily	ENGG01201604011	Study and Analysis of Supersonic Gas Jet Based Beam Profile Monitoring Systems for A High Intensity Linear Proton Accelerator
9	Satendra Pal Chauhan	ENGG01201604014	Investigation on Thermo-Vibrational Convection in Large Pools under Design Seismic and Thermal Loads
10	Gyanendra Kumar	ENGG01201604018	Pulse Power Application in Cell Biology and Cancer Treatment
11	Kapil Bodkha	ENGG01201704003	Investigations on Thermal-Hydraulic Characteristics of Supercritical Fluid Under Natural Circulation

12	Hitesh Mohanlal Kewlani	ENGG01201704007	Characterization of ECR Plasma and Ion Beam in Continuous and Pulse Modes
13	Saurav Sunil	ENGG01201704009	Thermo-Mechanical Processing of AISI 304L to Achieve an Ultrafine Grained Microstructure and its Correlation With Mechanical Properties
14	Binu Kumar	ENGG01201704010	Interaction of Thermo-Mechanical Hydraulic Processes in Deep Geological Disposal System: Predictive Modelling and Experimental Validation
15	Harshit Jain	ENGG01201804002	Study, Simulation, Experimental Validation and Flaw Characterization Using Ultrasonic Instrumentation for Concrete Material
16	Priyanshu Gupta	ENGG01201804003	Multiscale Processing of Seismic Ambient Noise with Application to Imaging Earth's Interior
17	Saurabh Srivastava	ENGG01201804011	Study and Optimization of Silicon Photomultiplier - Scintillator Detector Based Instrumentation for Radiation Monitoring Applications
18	Kaushal Jha	ENGG01201804012	Friction Stir Welding of Cu-Cr-Zr Alloy
19	Md Serajjudin	ENGG01201804013	Studies on Optimization of Processing Parameters of Grinding and Solid Liquid Separation for Limestone Ore
20	Sourav Sarkar	ENGG01201804015	Experimental and Computational Studies on Hydrodynamics and Mass Transfer in Liquid-Liquid Pulsatile Flow in Column Contactors
21	Shrishma Paik	ENGG01201804017	Study on Ultrasound Assisted Precipitation of Yellow Cakes
22	Kanchi Sunil	ENGG01201804024	Study, Design and Experimental Verification of Plasma Opening Switch for High Current Applications
23	Deeksha Gupta	ENGG01201804026	Development of Advanced Electroluminescence System for Solar Cell Application
24	Rajnesh Kumar Chaurasiya	ENGG01201804030	Experimental and Computational Studies on Microfluidic Solvent Extraction
25	Nida Khan	ENGG01201804031	Synthesis and Characterisation of Lithium Titanate for Tritium Breeding Application
26	Swetha K	ENGG01201804032	Identification of Contaminant Sources in Groundwater using Simulation Optimization Models with Uncertainty Analysis
27	Sujeesh S	ENGG01201904003	Catalytic Decomposition of Sulphuric Acid in Integrated Reactor: Experimental Study, Modeling & Optimization

28	Priti Singh	ENGG01201904031	Investigation and Characterisation of Electron Beam Generated High Density Plasma and Separations of Ions from Plasma
IGCAR, Kalpakkam			
29	Satya Prakash Pathak	ENGG02201604005	Investigations into Water Flow Instability and Thermo-Mechanical Damage of Once-Through Steam Generators Used in SFR
30	Ramesh Sanga	ENGG02201604008	Studies on Development of Quasi Digital Sensors and Instrumentation for Online Analysis of the Lubricant Oil Quality of Rotating Machinery
31	Anoop K. Unni	ENGG02201604015	Numerical Simulation and Experimental Validation of Fusion Welding of 316LN Stainless Steel
32	Kalvala Rajakrishna	ENGG02201604016	Novel Thin Film Coated Polystyrene or Epoxy Based Plastic Scintillators Loaded with Microparticles of Inorganic Compounds
33	Parthkumar Rajendrabhai Patel	ENGG02201604019	Severe Accident Source Term Mechanistic Model Development for SFR
34	N. V. Adinarayana Karibandi	ENGG02201904010	Numerical Investigations on the Performance of Coupled Natural Circulation Loops with Application to Nuclear Reactor Safety
IPR, Gandhinagar			
35	Piyush Prajapati	ENGG06201604001	An Engineering Study of Concepts for Heat Extraction and Power Conversion from Tokamak Fusion Reactors
36	Sebin Augustine	ENGG06201804002	Development of SERS Substrates Based on Self-Organized Nanoparticles for the Molecular Sensing Applications
37	Rawat Bharatsingh Bhupendrasingh	ENGG06201804007	Studies on Extraction of An Ion Beam and its Transport from A Multi-Cusp Gridded Ion Source
38	Ram Krushna Mohanta	ENGG06201804008	Investigation of Thermal Plasma Jet for Low-Pressure Plasma Spraying
39	Milaan Vijaybhai Patel	ENGG06201804009	Development of Pulsed Supersonic Beam System for Tokamak Edge Diagnostics and Other Applications.
40	Patel Kirankumar Ganeshbhai	ENGG06201804010	FPGA Based Real Time Density Feedback Contol System for ADITYA-U Tokamak

Medical and Health Sciences

S. No.	Student Name	Enrollment No.	Title of the thesis
TMC, Mumbai			
1	Vaishakhi Sharadkumar Trivedi	HLTH09201504003	Characterization of Therapeutically Relevant Alterations in Human Thyroid Cancers
2	Harshini Sriram	HLTH09201804003	Evaluation of Role of miRNA Dysregulation in the Prognostication of Newly Diagnosed Multiple Myeloma
3	Smriti Sharma	HLTH09201804006	Quality Audit in Flattening Filter Free Beams of High Precision Radiotherapy

Life Science

S. No.	Student Name	Enrollment No	Title of the Thesis
BARC, Mumbai			
1	Babita Singh	LIFE01201504003	Identification of Druggable Targets and New Therapeutics for Improving the Outcome of Radiotherapy
2	Vikash Kumar	LIFE01201504010	Studies on the Stage-specific Mechanisms of Salt Tolerance and Contribution of Signaling Pathway Components in Rice (*Oryza sativa L.*)
3	Gautam Vishwakarma	LIFE01201504011	Identification and Analysis of Stem Rust Responsive Genes in Wheat.
4	Megha Sodani	LIFE01201704005	A CRISPR Based Analysis of Essential Genes in Mycobacteria
5	Rahul Singh	LIFE01201704006	Molecular Investigations into the Process of Plasmodial Protein-mediated Hemozoin Production and its Inhibition by Chloroquine.
6	Krupa Thankam Philip	LIFE01201704010	Functional Role of RECQL5 Helicase in Regulating Replication Stress Response in Cancer
7	Rohit Sharma	LIFE01201804005	Studies on Development of Radioimmunotherapy Agents and Understanding their Mechanism of Action
8	Pooja Negi	LIFE01201804008	Physiological and Molecular Insights into Radiation Induced Salt Tolerant Mutant of Sugarcane
9	Ganesh Pai B.	LIFE01201804009	Interplay of DNA Damage Repair, Replication Stress and Autophagy under the Functional Deficiency of PARPs in Cancers
10	Archita Rai	LIFE01201804010	Modification of Nrf-2 Activity in Radio-resistance and Inflammatory Responses

IMSc, Chennai			
11	Reshma	LIFE10201504001	Modeling Active Transport in Axons
12	T. S. Sreevidya	LIFE10201704001	Effects of Charged Mutations and Phosphorylation on Binding Pocket Dynamics in Proteins
13	S. Pavitra	LIFE10201704004	Evolution and its Role in DNA, Centromeres and Speciation
14	Subbaroyan Ajay	LIFE10201904001	Elucidating and Leveraging Design Principles Towards Realistic Boolean Models of Gene Regulatory Networks
15	Ajaya Kumar Sahoo	LIFE10201904002	Computational Data-driven Investigation of Chemical Exposome and its Links to Human and Ecosystem Health
NISER, Bhubaneswar			
16	Aranyadip Gayen	LIFE11201604002	Exploring the Function of Zinc-binding Domain of eIF2 Complex in Translation Initiation Fidelity
17	Ram Prasad Sahu	LIFE11201604006	Importance of TRPV3 in the Regulation of Sub-cellular Organelles and their Functions: Implications in Health Disorders
18	Tathagata Mukherjee	LIFE11201604008	Regulation of Cell-Mediated Immune (CMI) Responses Associated with Experimental Immunosuppression
19	Dhyanendra Singh	LIFE11201704002	The Impact of Altered Light-dark Cycle on Gut Microbiota in a Mouse Model
20	Uday Pandey	LIFE11201704012	Gut Microbial Regulation of Intestinal Epithelial Development in Mice and Organoid Models- A Postnatal Temporal Study
21	Deep Shikha	LIFE11201804004	Importance of TRPM8 Ion Channel in Cellular, Sub-Cellular-Organelle Functions in Neuronal and Immune Cells, and its Implications in Health as well as Diseases
22	Patel Saket Awadhesbhai	LIFE11201804007	Unlocking the Therapeutic Potential of EEF1A2 in Breast Cancer: Unravelling Molecular Mechanisms, Crosstalk, and Small Molecule Inhibitors for Effective Treatment Strategies
23	Ananya Palo	LIFE11201804011	Investigating the Regulatory Dynamics of FRG1: Characterization of cis-acting Regions, Downstream Pathways, and its Role in Nonsense-Mediated Decay
24	Alena Patnaik	LIFE11201804022	Correlating Light Signaling and GIGANTEA with Auxin in Patterning the Root and Shoot Development in Plants

25	Avrajjal Ghosh	LIFE11201904004	Biogeography and Systematics of Three Wet-zone Skink Genera (Family: Scincidae) from the Indian Subcontinent
26	Swati Sagarika Panda	LIFE11201904013	The Role of Gut Microbiota in Maintaining Health via Gut-Adipose-Brain Axis
RRCAT, Indore			
27	Kinkar Omkar Umesh	LIFE03201704001	Molecular Characterization of Bacterial Insecticidal Proteins
SINP, Kolkata			
28	Priyadarshani Suchismita Sethy	LIFE05201604007	Role of Untranslated Region in Regulation of Human δ-Tubulin Expression at Post-Transcriptional Level
29	Sk Ramiz Islam	LIFE05201704001	Understanding Metabolic and Epitranscriptomic Reprogramming Associated with Nutritional and Therapeutic Stress Response in Liver Cancer Cells
30	Aditya Singha Roy	LIFE05201704002	Post-transcriptional Regulation of Gene Expression in Eukaryotes by RNA Sequence and Structural Elements
31	Palamou Das	LIFE05201804002	Mitochondrial Fission-fusion Dynamics and Effect on mtDNA Release
32	Rupasree Brahma	LIFE05201804004	Gating-related Structural Dynamics of MgtE Homologs from *Thermus thermophilus* and *Bacillus firmus*
33	Anuradha Roy	LIFE05201804005	Exploring Clinical Prospects of Noble Metal-Based Investigation of Dengue Virus Infection and its Mechanical Profiling
34	Swagata Adhikari	LIFE05201804008	Remodelling of Extracellular Matrix by Chromatin Regulator UBR7 in Triple-negative Breast cancer: Insight into Chemoresistance
TMC, Mumbai			
35	Joel Parsottam Christie	LIFE09201504002	Quantitative Proteomic Approach to Characterize the Functions and the Regulatory role of Proteasomal Assembly Chaperones
36	Mayuri Bhimrao Inchanalkar	LIFE09201504003	Genome Wide DNA Methylation in Leukoplakia and Oral Cancers
37	Dipti Kamalkant Sharma	LIFE09201504009	Assessment of Cellular and molecular alteration associated with acquirement of radiation resistance in oral cancers
38	Swapnil Sudhir Oak	LIFE09201604002	Exploring mutant p53-associated functions and pathways that promote tumorigenesis

39	Sayoni Roy	LIFE09201604007	Understanding the Role of Wnt Signaling pathways in Epidermal Homeostasis and Stem Cell regulation
40	Shreosi Chatterjee	LIFE09201604009	Study of Size, Shape and Dynamics of the Nucleolus
41	Sushant Shirish Navarange	LIFE09201604010	Molecular Profiling to Understand the Regulation and Maintenance of Oral Cancer Stem Cell
42	Shruti Sham Kandekar	LIFE09201604021	CD26 and Adenosine Signaling Pathway Molecules as Regulators of Immune Reconstitution in Human Hematopoietic Stem Cell Transplantation
43	Mujawar Aaiyas Abdulhamid	LIFE09201704004	Developing *in vivo* Bio-imaging Methods using Fungal Luciferase
44	Megha Garg	LIFE09201704007	Investigating the Molecular Basis of Altered Pharmacokinetics and Toxicity of Anticancer Drugs Under Conditions of Malnutrition
45	Neha Mishra	LIFE09201704016	Structural and Functional Characterization of Different Domains of BRCA1 and its Interacting Proteins
46	Kalyani Abhiram Natu	LIFE09201704018	Investigating the Molecular Basis of c-FLIP/Calmodulin Interaction for Modulating Apoptosis
47	Tarang Gaur	LIFE09201704020	Molecular and Functional Characterization of Small Molecule Inhibitors to Evaluate Anti-tumor Activity in Acute Myeloid Leukemia
48	Shubhashish Chakraborty	LIFE09201804005	Structural Basis of Eph Receptor and Ephrin Ligand to Understand Cell-Cell Signalling and Pathogenicity of Mutations Identified in Cancer
49	Bhawna Singh	LIFE09201804008	Elucidating the Role of BCCIP in Cancer Pathogenesis and Development of Resistance

Mathematical Science

S. No.	Student Name	Enrollment No.	Title of the thesis
HRI, Prayagraj			
1	Parul Keshari	MATH08201704006	Invariants of Moduli Spaces and (Semi) Tannakian Categories of Twisted Quiver Bundles
2	Srijonee Shabnam Chaudhury	MATH08201804005	Some Problems in Quadratic Forms Over Number Fields and Related Topics
IMSc, Chennai			
3	Piyasa Sarkar	MATH10201704003	On Multi-Parameter CCR Flows
4	Tanmoy Bera	MATH10201804002	Poissonian Pair Correlation in Higher Dimensions
5	Manas Mandal	MATH10201804004	Cohomology of Generalized Dold

			Manifolds
6	Siddheswar Kundu	MATH10201804007	Demazure Crystal Structure for Flagged Skew Tableau and Flagged Reverse Plane Partitions
7	Aritra Bhattacharya	MATH10201804008	Haglund'S Conjecture and Clebsch-Gordan Rule for Macdonald Polynomials
8	Sathish Kumar V.	MATH10201804009	On Factorization Results for Tensor Products and Twisted Characters
9	Yogesh Dahiya	MATH10201804010	Exploring Size Complexity and Randomness in the Query Model
10	Dhananjaya Sahu	MATH10201904002	On Holomorphy and Special Values of Artin L-Functions
11	Rashi Sanjay Lunia	MATH10201904003	Arithmetic and Analytic Aspects of Values of L-Functions
NISER, Bhubaneswar			
12	Rucha Bhalchandra Joshi	MATH11201904003	Graph Neural Networks: Privacy and Applications
13	Shivansh Pandey	MATH11201904008	Nonvanishing of L-functions and Differential Operators for Jacobi Forms
14	Suman Mukherjee	MATH11201904009	Weighted Inequalities for Multilinear Operators in Dunkl Setting
15	Susobhan Bandopadhyay	MATH11202004002	Parameterized Algorithms for Constrained Graph Problems

hysical Sciences

S. No.	Student Name	Enrollment No.	Title of the thesis
BARC, Mumbai			
1	Alok Kumar	PHYS01201404015	Thermal Hydraulic Coupling with Neutron Kinetics in 540 MWe PHWR Reactors at TAPS-3&4
2	Meghraj Singh	PHYS01201704001	Development of a Computational Framework for Estimation of Gamma Dose, Absorbed in Product Irradiated in Gamma Irradiator
3	Mangla Nand	PHYS01201704006	Development of an UHV-PLD System and Studies on PLD Deposited Y Doped HFO_2 Thin Films
4	Devesh Raj	PHYS01201704008	Investigation of Light Water Lattices for Thorium Utilisation
5	Yogesh Kumar	PHYS01201704010	Electronic, Structural and Vibrational Properties of Monazite and Zircon Host Materials for Nuclear Waste
6	Nilesh Subhash Tawade	PHYS01201704013	Measurement of Fast Neutron Induced Reaction Cross-Section for Elements Relevant to Reactor Technologies

7	Jim M. John	PHYS01201704015	Improvements to INO-RPC Detector and the Charge Dependent Muon Flux at Madurai
8	V. B. Jayakrishnan	PHYS01201804004	Crystal Structure and Electrical Properties of Lead-Free Ferroelectric Materials
9	Rathod Tejas Damjibhai	PHYS01201804005	Optical Properties of Carbonaceous Aerosol and its Radiative forcing Potential at an Urban Site in Mumbai, India
10	Sangeeta Ashok Anupama Dhuri	PHYS01201804006	Probing Shell Effects in Fission of Nuclei with A ≈ 200
11	Telagasetti Santhosh	PHYS01201804008	Measurement of Nuclear Level Density through Fast Neutron Spectroscopy
12	Deepa Sathian	PHYS01201804014	Design and Development of New Neutron Detectors for Criticality Accident Dosimetry
13	Avijit Das	PHYS01201804021	Study of Neutron-Gamma Coupled Methodologies for Effective Shield Design
14	Rashbihari Rudra	PHYS01201904005	Modeling and Characterization of Emission and Transport from Large Area Field Emitters
15	Arghya Chattaraj	PHYS01201904006	Studies on Stochastic Distributions of Energy Deposition at Cellular and Sub-Cellular Levels in Neutral and Charged Particles Environment
16	Sandipan Dawn	PHYS01201904007	Neutron Spectrometry and Dosimetry in Diverse Radiation Environments
17	Harsh Bhatt	PHYS01201904010	Interface Driven Magnetization in Complex Oxide Heterostructures
18	Harish Srinivasan	PHYS01201904011	Non-Markovian and Non-Gaussian Behaviour in Molecular Diffusion within Complex Fluids
19	Rajasree R.	PHYS01201904013	Curvature Effects on Electron Emission
20	Subodha Sahoo	PHYS01201904017	High Pressure Magnetic, Transport and Spectroscopic Investigations on some Cu Based Insulators and Layered Metallic Systems.
21	Swati Mehta	PHYS01201904020	Electrostatic Complexation of Charged Nanoparticle-Polyelectrolytes and their Evaporation-Induced Assembly
22	Vidha Bhasin	PHYS01201904021	Investigations on Thin Film Electrode Based Lithium Ion Battery
23	Raj Kumar	PHYS01202004001	Characterizing the Spectral and Timing Properties of Black Hole Systems in High Energies
24	Komal Kumari	PHYS01202004005	Towards Controlled and Tunable Quantum Computation: Theoretical Design and Development

25	Abharana N	PHYS01202004013	In-Situ Structural investigation on Novel Electrode Materials for Rechargeable Lithium Ion Battery
HRI, Prayagraj			
26	Divyansh Shrimali	PHYS08201804005	Tight Bounds with Capacity of Entanglement and for Charging of Quantum Battery
27	Kajal Singh	PHYS08201804006	Unveiling the Statistical Correlation Between the Cosmological Constant and Susy Breaking Scale in Flux Vacua
28	Kornikar Sen	PHYS08201804008	Energy Extraction from Quantum Batteries
29	Ratul Banerjee	PHYS08201804011	Measurement - Based Entanglement Generation in Quantum Network
30	Sachin Grover	PHYS08201804012	Unitary/Non-Unitary Correspondence, and Defects in 2D CFTS.
31	Vivek Pandey	PHYS08201804019	Measurement of Entanglement and Limitations on its Production
32	Lakkaraju Leela Ganesh Chandra	PHYS08201904002	Exploring Variable-Range and Non-Hermitian Systems: From Entanglement Distribution to Quantum Battery
33	Rivu Gupta	PHYS08201904004	Quantum information Processing with Random States
IGCAR, Kalpakkam			
34	Usha Pujala	PHYS02201504004	Effect of Aerosol Morphology and Charging Over the Dynamics of Aerosols in a Closed Chamber in the Context of Sodium Cooled Fast Reactor (SFR) Safety analysis
35	Julie S.	PHYS02201704003	The Impact of Ion Irradiation on the Texture, Grain Boundary Characteristics, Void Swelling Behavior and Surface Morphology of Nanocrystalline Ni
36	Sreelakshmi N.	PHYS02201704008	Ion Irradiation induced Defect Production, Recovery and Blistering Mechanism in 3C-SiC
37	Choudhury Abinash Bhuyan	PHYS02201804003	Effect of Heat Dissipation on Photoluminescence Quantum Yield in Large-Area Monolayer MoS_2 and its Applications
38	R. S. Mrinaleni	PHYS02201804005	Studies on Magnetic and Magnetotransport Properties of $Nd0.6Sr0.4MnO_3$ Thin Films and $Nd0.6Sr0.4MnO_3/SrRuO_3$ Heterostructures
39	Venkateswara Reddy Karrevula	PHYS02201804010	Investigation of Humidity Effects on I-V Characteristics and Alpha Spectra of Commercial Non-Hermetically Sealed

			Silicon Pin Diodes
40	Papiya Saha	PHYS02201904010	Structure and Physical Property Correlations in Ru, Cu and Co Based Double Perovskite Oxides
IMSc, Chennai			
41	Arpan Kundu	PHYS10201504004	Studies on Pulsed Electromagnetic Expansion and Dissimilar Metal Joining
42	Surabhi Tiwari	PHYS10201704008	Next-To-Soft Virtual Resummed Corrections to Processes at the LHC
43	Subashri V.	PHYS10201804002	Rare Events in Cluster-Cluster Aggregation
44	Nishant Gupta	PHYS10201804009	Aspects of Chiral Symmetries in Holography
IoP, Bhubaneswar			
45	Sudarshan Saha	PHYS07201604009	Studies on Topological Aspects of Generalized Haldane Model in Two and Three Dimensions
46	Vinaya Krishnan M. B.	PHYS07201604010	Thermo-Mechanical Processing of AISI 304L to Achieve an Ultrafine Grained Microstructure and its Correlation with Mechanical Properties
47	Rupam Mandal	PHYS07201704008	Tailoring Resistive Switching Properties of Metal Oxide Memristors for Neuromorphic Applications
48	Siddharath Prasad Maharathy	PHYS07201804003	Collider Phenomenology of Charged Higgs in Neutrino Mass Models
49	Sandhyarani Sahoo	PHYS07201804005	Studies of Gate-Bias Controlled 2D Material-Based Devices for Photodetector Applications
50	Abhishek Roy	PHYS07201804007	Exploring Particle Physics Models: Implications for Dark Matter Phenomenology
51	Mousam Charan Sahu	PHYS07201804008	Studies of Metal Oxide and Chalcogenide Thin Film Based Memristors for Memory and Neuromorphic Computing Applications
52	Chitrak Karan	PHYS07201804010	Activating Semiflexible Filaments: Impact of Motor Protein Drive and inertia
53	Pritam Chatterjee	PHYS07201804012	Topological Superconductivity in Magnet/Superconductor Heterostructures
54	Sudipta Das	PHYS07201804013	Probing Beyond the Standard Model Scenarios in Long-Baseline and Astrophysical Neutrino Experiments

55	Sameer Kumar Mallik	PHYS07201804016	Development of Large Scale CVD Grown Two Dimensional Materials for Field-Effect Transistors, thermally-Driven Neuromorphic Memory, and Spintronics Applications
56	Arpan Sinha	PHYS07201804017	Active Nematics: Exploring Reciprocity and its Absence
IPR, Gandhinagar			
57	Janmejay Umeshbhai Buch	PHYS06201604007	Study of Edge Plasma Dynamics in Tokamak Aditya-U
58	Nitin Bairagi	PHYS06201704007	Study of MgB_2 Based Superconducting Current Feeders System for Fusion Devices
59	Varsha Siju	PHYS06201704009	Study of Electron Dynamics in tokamak Plasma Through Electron Cyclotron (EC) Emission Using Radiometer
60	Purvi Dave	PHYS06201704010	Surface Modification of Silicone Catheters to Mitigate Bacterial Adhesion and Biofilm formation
61	Sagar Agrawal	PHYS06201704011	Study of Process Parameters Affecting Secondary Phase formation and Grain Size in Cu_2ZnSnS_4 Thin Film for Solar Cell Application
62	Pawandeep Singh	PHYS06201804001	Sheath Effects on the Resonance Hairpin Probe in Negative Ion Diagnostics
63	Suruj Jyoti Kalita	PHYS06201804002	Molecular Dynamics Study of Subcritical Transition to Turbulence in a 3D Yukawa Liquid
64	Vijay Shankar	PHYS06201804003	Control of Edge and Scrape - off Layer tokamak Plasma Turbulence
65	Kalyani Swain	PHYS06201804009	Laser Cluster interaction in Strong External Magnetic Field
66	Shrish Raj	PHYS06201804011	Effect of Impurity Gas Seeding in Boundary Region of a tokamak
67	AnjanbKumar Paul	PHYS06201804012	Vlasov-Maxwell Simulations of Whistler Mode interaction with Bulk and Beam Plasma
68	Shishir Biswas	PHYS06201804013	Turbulent Dynamo Action in a 3-Dimensional Magnetohydrodynamic Plasma
69	Anshika Chugh	PHYS06201804015	Ratchet Effects and Collective Dynamics in Passive and Active Systems
70	Swati	PHYS06201804016	Studies on Magnetic Field Effects on a Capacitive Coupled Cylindrical Radio Frequency Plasma Device
NISER, Bhubaneswar			

71	Laxmipriya Nanda	PHYS11201704003	Fabrication of $NiBi_3$ Nanostructures and Studies of Quantum Transport in the Resistive State of $NiBi_3$ Nanowires
72	Bidyadhar Das	PHYS11201704009	Impact of Impurities and Synthesis Techniques on Superconducting and Ferromagnetic Properties of NiBi3 Thin Films
73	Brindaban Ojha	PHYS11201704011	Domain Wall and Skyrmion Dynamics in Perpendicular Magnetic Anisotropic Thin Films.
74	Dola Chakrabartty	PHYS11201704012	Stabilization of Magnetic Skyrmion Bubbles and Anomalous Magneto-Transport Properties in Centrosymmetric Hexagonal Magnets
75	Esita Pandey	PHYS11201704013	Strain-Driven Tuning of Properties in Magnetic Thin Films: Towards Flexible Spintronics
76	Jobin Sebastian	PHYS11201704015	Anisotropic Aspects of Heavy Quarkonium Potential in Thermal QCD Medium
77	Tapas Ranjan Senapati	PHYS11201704025	Spintronics with Josephson Nano-Devices
78	Tribeni Mishra	PHYS11201704026	Searches for SUSY and HCal Performance Studies with CMS Run 2 Data
79	Prabhakar	PHYS11201804002	Fock Space Recursive Green's Function Technique: A Novel Method to Study Strongly Correlated Systems
80	Sujit Garain	PHYS11201804005	Quantum Sensing of Magnetic Field Using Thermal and Cold Atomic Vapor
81	Abhisek Mishra	PHYS11201804007	Spin Pumping with Quantum Materials
82	Mouli Chaudhuri	PHYS11201804008	Characterization of Low-Threshold Cryogenic Detectors and Study of Backgrounds for Rare Event Searches
83	Shaktiranjan Mohanty	PHYS11201804009	Synthetic Antiferromagnets for Spintronics
84	Utkalikappriyadarsini Sahoo	PHYS11201804012	Defect Induced Tunable Charge Density Wave Ordering and Optical Properties in 2D -$TiSe_2$ TMDS Materials
85	Subhashree Sahoo	PHYS11201804013	Bandgap Engineering in Phase Selective TiO2 Microflowers for Photonic Applications
86	Sadaf Madni	PHYS11201904006	Transport Coefficients of Deconfined Nuclear Matter by Gribov Prescription
87	Subhadip Pradhan	PHYS11201904008	First Principle Studies on Magnetic topological Semimetals and their Transports

88	Ankit Kumar Panda	PHYS11202004002	Relativistic Dissipative Causal Magnetohydrodynamics from Kinetic theory and the Effect of Electric Fields on Bulk Observables in High Energy Heavy Ion Collisions
RRCAT, Indore			
89	Yashveer Singh	PHYS03201604002	Raman Spectroscopy and Optical Trap Based Studies on Human Red Blood Cells Subjected to External Stress
90	Vikas Kumar Sahu	PHYS03201604007	Studies on Resistive Switching in TiO_2 Thin Films for Non-Volatile Memory Applications
91	Pradeep Kumar Gupta	PHYS03201704002	Studies on Multimode interference and Pulse Shaping in Fiber Lasers
92	Aniket Chowdhury	PHYS03201704003	Development of Novel Techniques Using Optical Tweezers for Investigating Disease and Stress Mechanisms in Human Red Blood Cells
93	Deepak Daiya	PHYS03201704004	Studies on Tiled Grating Pulse Compression Along with Diagnostics for Alignment and Spatio-Temporal Characterization of Ultra-Short Laser Pulses
94	Geetanjali	PHYS03201704005	Impact of Charge Carrier Localization on the Optoelectronic Properties of inasp/inp and Ingaas/Gaas Quantum Wells and Devices
95	Ranjana Rathore	PHYS03201704006	Ultrafast Probing of Photo-induced Thermal Strain Propagation in Semiconductors Using Time Resolved X-Ray Diffraction
96	Partha Sarathi Padhi	PHYS03201704010	Studies on Al_2O_3/TiO_2 Nano-Laminates for Energy Storage Applications
97	Rajeev Dutt	PHYS03201704012	First-Principles Calculations to Study Effects of Substitution on Thermoelectric and Spintronic Properties of Heusler Alloys
98	Sourabh Sarkar	PHYS03201804001	Studies on Trapping and Manipulation of Cold Atoms Using Magnetic, Radio-Frequency and Laser Fields
99	Sonali Pradhan	PHYS03201804003	Multifunctional Nanocomposite Systems for Energy Harvesting, Sensor Applications and Exchange Bias Investigations

100	Ankur Sharma	PHYS03201804004	Structure-Property Correlation in Niobium Doped (Na0.41K0.09Bi0.5) TiO3: A Lead-Free Ferroelectric Material
101	Joydipto Bhattacharya	PHYS03201804006	First-Principles Studies on Electronic, Magnetic, and Spin Transport Properties of Bulk and Heterostructures of Heusler Alloys
SINP, Kolkata			
102	Pritam Nanda	PHYS05201704002	A Study on the Symmetry of Quasilocal Horizon and Hawking Radiation
103	Dipali Basak	PHYS05201704003	Study via Statistical and Optical Model of the Measured Low Energy Reaction and Scattering Cross-Sections Involving P - Nuclei
104	Tanmoy Bar	PHYS05201704019	High Current Ion Beam Reaction Studies and Heat Generation in Targets
105	Ashish Gupta	PHYS05201804007	Study of Proton induced Reactions on Er-Isotopes
106	Lalit Kumar Sahoo	PHYS05201804010	Charge Particle Emitting Reaction in Nuclear Astrophysics
107	Subhendu Das	PHYS05201804011	Particle Tracking with Gaseous Detectors and Development of Related Readouts
108	Subhadip Chowdhury	PHYS05201804012	Study of Structure and Optical Properties of Two Dimentional Hybrid Lead Perovskite Materials
109	Shubharaj Mukherjee	PHYS05201804017	Defects Characterisation of Certain Lanthanides Doped Multiferroic Compounds using Positron Annihilation and Other Supportive Methods
110	Priyabrata Das	PHYS05201804021	Study of Exotic Decay Near Proton Drip Line
111	Mousri Paul	PHYS05201804023	Studies on Structural and Transport Properties of Cerium Oxide Thin Film
112	Maudud Ahmed	PHYS05201804026	Defect Characterization of Certain Oxide Based Nanocrystalline Compounds using Positron Annihilation and Supportive Methods
113	Siba Prasad Acharya	PHYS05201804028	Nonlinear Waves and Chaos in Plasmas
114	Sk Md Adil Imam	PHYS05201904003	Deciphering the Cold Dense Matter Eos: Integrating Nuclear Theory, Experiments and Astrophysical Observations
115	Suman Das	PHYS05201904006	Toy Model of Quantum Black Holes and Correlation Functions
116	Anindita Karmakar	PHYS05201904009	Nuclear Structure Studies at High Angular Momentum
117	Koustav Pal	PHYS05201904011	Investigation of Exchange Bias and Magnetotransport in Bulk and Thin Films

			Materials
118	Soma Chatterjee	PHYS05201904015	Magnetic, Magnetocaloric, Electrical Transport, and Polarization Study on Various Bulk and Nanocrystalline Oxide Compounds
119	Suman Dey	PHYS05201904020	Synthesis and Characterization of Assembled Nanostructures for Surface Enhanced Raman-Scattering and Electrochemistry Applications
120	Tukai Singha	PHYS05201904022	Synthesis and Characterizations of Metal Nanostructures for Application in Direct Alcohol Fuel Cells
VECC, Kolkata			
121	Santanu Paul	PHYS04201504001	Phase Space Studies for Optimum Beam Transpo11 and Matching During Injection and Extraction in Cyclotrons
122	Jayanta Debnath	PHYS04201504006	Correction of Magnetic Field and Study of Orbit Stability in K500 Superconducting Cyclotron
123	Singh Vivek Kumar Rajeshwar	PHYS04201704004	Study of Beauty Hadrons using Heavy Flavour Decay Electrons with Alice Detectors at LHC
124	Kirti Atreya	PHYS04201704005	Study of Fusion Fission Dynamics of Heavy Nuclei
125	Argha Dutta	PHYS04201804001	Microstructural Characterisation of Ion Irradiated Niobium and its Alloy Using X-Ray Diffraction Line Profile analysis and Electron Back Scattered Diffraction Technique
126	Sneha Das	PHYS04201904002	Single Particle and Collective Excitations Above Z =82
127	Sansaptak Basu	PHYS04201904005	Experimental Investigation of the Structure of Nuclei with Z, N~2
128	Sudip Bhowmick	PHYS04201904007	Growth and Properties of Nano-Dot and Wire Structures Developed by Ion-Implantation on Pre-Fabricated Nano-Templates
129	Nilanjan Chaudhuri	PHYS04201904009	Strongly Interacting Hot and Dense Matter in Background Electromagnetic Field
130	Vinay Shukla	PHYS04201904015	Studies on Coherence in Ladder System and its Extension to Atomic Beam

Integrated Ph.D.				
S. No.	**Student Name**	**Enrollment No.**	**Title of the thesis**	**Discipline**
BARC, Mumbai				
1	Mukesh Kumar Sharma	ENGG01201718001	Design, Optimisation and Performance Evaluation of Portable Triple to Double Coincidence Ratio (TDCR) System as an Absolute Standard for Radioactivity Measurement	Engineering Sciences
2	Ponangi Hanumath Thyagaraju	APSA01201818001	A Study of Technology Transfers from BARC	Studies on Applied System Analysis
HRI, Prayagraj				
3	Tanaya Ray	PHYS08201405007	Non-linearity as a Resource in Quantum Advantage	Physical Sciences
4	Sohail	PHYS08201505004	Nonseparability and Channel-state Duality in Quantum Information	Physical Sciences
IMSc, Chennai				
5	Pavan Dharanipragada	PHYS10201705004	Applications of Renormalisation Group in Holography	Physical Sciences
6	Farhina Mozaffer	LIFE10201718001	Studies in Disease Dynamics	Life Sciences
NISER, Bhubaneswar				
7	Prottay Das	PHYS11201705001	Studying Chiral Magnetic Wave, Hadronic Rescattering and $f_1(1285)$ Production in High Energy Collisions with ALICE Detector	Physical Sciences
8	Shuvayu Roy	PHYS11201705004	Black Holes and Relativistic Fluids from the Perspective of Near-Equilibrium Dynamics	Physical Sciences
9	Sourav Bhakta	PHYS11201705005	Ion Bean-Induced Defect Phenomena in Rock-Salt Crystals (MgO, NiO) for Optical and Electronic Device Applications	Physical Sciences

Important Milestones of HBNI

S.No.	Milestone	Date
1	Constituting a steering committee to set up HBNI	21-Apr-03
2	Submission of documentation to the MHRD by the DAE	14-Jan-04
3	Constitution of the first Council of Management, designating individuals to the post of Director and Dean	18-Nov-04
4	Registration of HBNI as a Society	18-Nov-04
5	Visit of an expert committee appointed by the UGC to HBNI	28-Mar-05
6	Registration of HBNI as a trust	02-Jun-05
7	Notification by the MHRD declaring HBNI as a deemed to be University	03-Jun-05
8	Approval of first set of results by the CoM	14-Jul-08
9	First review of the functioning of HBNI by a review committee set up by the MHRD	19-Sep-09
10	Review by a committee appointed by the UGC	02-Apr-10
11	Second review of the functioning of HBNI by a task force constituted by the MHRD	21-Aug-12
12	Notification by the DAE declaring HBNI as a "Grant-in-Aid Institution	19-Feb-14
13	Review of HBNI by the National Assessment and Accreditation Council (NAAC)	Apr 25-May 2, 2015
14	Accreditation of HBNI as a "A+" grade University by NAAC (second cycle)	16-Mar-21
15	15th rank among all Indian Research Universities, 17th in University Category, 30th in Overall Category by National Institutional Ranking Framework (NIRF) of MoE	05-Jun-23
16	Notification of Ministry of Education approving HBNI, Mumbai to start its 2ndoff-campus Centre at Varanasi consisting of Mahamana Pandit Madan Mohan Malviya Cancer Centre and Homi Bhabha Cancer Centre.	20-May-24
17	Notification of Ministry of Education approving HBNI, Mumbai to start its 3rd Off-Campus Centre called Homi Bhabha Cancer Hospital and Research Centre at New Chandigarh, Punjab	07-Apr-25

HBNI Ranked 6 in Research Institution Category

HBNI Ranked 16 in University Category

HBNI Ranked 27 in Overall Category

Homi Bhabha National Institute (HBNI)

Bhabha Atomic Research Centre (BARC)

Indira Gandhi Centre for Atomic Research (IGCAR)

Raja Ramanna Centre for Advanced Technology (RRCAT)

Variable Energy Cyclotron Centre (VECC)

होमी भाभा राष्ट्रीय संस्थान

HOMI BHABHA NATIONAL INSTITUTE

Institute of Mathematical Sciences (IMSc)

Saha Institute of Nuclear Physics (SINP)

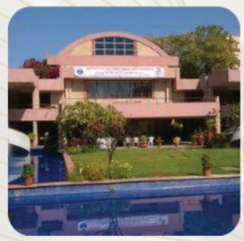
Harish-Chandra Research Institute (HRI)

होमी भाभा राष्ट्रीय संस्थान
Homi Bhabha National Institute

(An aided Institute of the Department of Atomic Energy and a Deemed to be University u/s 3 of UGC Act 1956)

www.hbni.ac.in

Institute of Physics (IoP)



Institute for Plasma Research (IPR)

Tata Memorial Centre (TMC)

Mahamana Pandit Madan Mohan Malaviya Cancer Centre & Homi Bhabha Cancer Hospital (MPMMCC & HBCH)

National Institute of Science Education and Research (NISER)

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

होमी भाभा राष्ट्रीय संस्थान

Homi Bhabha National Institute

ट्रेनिंग स्कूल परिसर / Training School Complex

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