

No. 9(1)/2025-INST

Dated: 07.04.2025

### Ph.D. PROGRAM - August 2025 SESSION

[Institute of Nano Science and Technology](#) (INST), Mohali invites applications from prospective candidates with independent source of fellowship for admission to its Ph.D. Programme in the following three units:

**(i) Energy Environment unit (ii) Quantum Material and Devices unit (iii) Chemical biology unit.**

Applications are invited from students having background in physical sciences, chemical science, biological sciences, pharma, agri sciences and other related fields. **Students with an independent source of fellowship, for example, CSIR/UGC-JRF fellow etc. should apply.** Selected students will be enrolled in the Ph. D. program of the Indian Institute of Science Education and Research (IISER), Mohali, and the Ph. D. degree will be awarded by IISER, Mohali.

Separate unit details are given in the subsequent pages of the document.

In case of queries, email [apply@inst.ac.in](mailto:apply@inst.ac.in)

#### a) ELIGIBILITY

- M. Sc. or M. Pharm. or M. Tech. in Basic or Applied Sciences, Engineering or related areas. Students who have appeared for the final year/semester examinations are also eligible, provided that the degree will be granted by the time of joining.
- Qualified at least one national examination out of CSIR/UGC-NET, ICMR-JRF, DBT-JRF or Project-Funded (as per INST rules).
- Age limit: As per the guidelines of CSIR-UGC and DST.
- **DST INSPIRE** may apply however any selection of such candidate will be on adhoc basis subject to successful activation of inspire fellowship.

#### b) APPLICATION & SELECTION PROCEDURE

1. A hard copy of application (affixing a recent passport size photograph) along with the self-attested copy of certificates providing age, educational qualifications, experience (if any) and reservation category should be sent to "The Director, Institute of Nano Science and Technology, Knowledge City, Sector 81, Mohali 140306 (Punjab). The envelope containing the application form should be super scribed as "Application for the Ph. D. Program – August 2025". **Applicants must also submit an online synopsis** : <https://forms.gle/HWYfKow5xLvSc9Lx5>
2. Eligible candidates will be shortlisted for interview and the date and mode of interview will be communicated to the email address provided by candidate. The list of shortlisted candidates will also be uploaded on INST website.
3. No TA/DA will be paid for attending the interview.
4. After the interview, the list of candidates selected for Ph. D. will be uploaded on INST website and the candidates will be intimated by email.
5. Selection of students shall be done as per the provisions of The Central Educational Institutions (Reservation in Admission) Act, 2006 and amendments made thereto.
6. The candidates are advised to visit INST website frequently to track the latest developments.
7. Number of students required for admission SC/ST (18), OBC (21), EWS (9), and GEN (39).
8. **Candidate interested in applying at more than one unit must submit separate application. Each application must be accompanied with all the necessary documents.**

#### c) APPLICATION FEES

- **With single application fee the students may apply to multiple units. However, separate applications along with all necessary documents and the details of the online fee payment should be submitted for each unit application.**
- Application Fees: Rs.590/ for General, OBC and EWS candidates, and Rs.295/ for SC, ST and PH candidates.
- Application fee may be transferred online to the bank account of INST noted below. Full name of the applicant shall be mentioned as the purpose of transaction.

**Account Name:** Director, INST  
Mohali

**IFS code:** CNRB0002919

**Account number:** 2452201001102

**Bank:** Canara Bank, SECTOR-64, PHASE  
10, MOHALI-160062

#### d) LAST DATE

- The duly filled applications along with the supporting documents should reach INST through Registered/ Speed Post/ Courier/ By Hand on or before **20th May 2025**.
- Applications received after the last date shall not be entertained in any case.

## Quantum Materials and Devices Unit (For August 2025 session)

S.No.	Faculty Name	Student background Who can apply	Theme
1.	Prof. Abir De Sarkar	<ul style="list-style-type: none"> <li>• Physics</li> <li>• Engineering</li> <li>• Electronics</li> <li>• Chemistry</li> </ul>	<ul style="list-style-type: none"> <li>• Computational Nanoscience</li> <li>• Next-gen electronics: valley, spintronic</li> <li>• Energy: piezoelectricity, photophysics</li> </ul>
2.	Dr. Bhanu Prakash	<ul style="list-style-type: none"> <li>• Physics</li> <li>• Chemistry</li> <li>• Biology</li> <li>• Engineering</li> </ul>	<ul style="list-style-type: none"> <li>• Microfluidics &amp; Lab-on-chip</li> <li>• Sensors and micro devices</li> <li>• Biomedical and POCT devices</li> </ul>
3.	Dr. Chandan Bera	<ul style="list-style-type: none"> <li>• Physics</li> <li>• Chemistry</li> </ul>	<ul style="list-style-type: none"> <li>• Thermoelectric</li> <li>• Computational Nanomaterials</li> <li>• Theory of transport phenomena in solids</li> </ul>
4.	Dr. Dipankar Mandal	<ul style="list-style-type: none"> <li>• Physics</li> <li>• Chemistry</li> <li>• Engineering</li> </ul>	<ul style="list-style-type: none"> <li>• 2D materials, Ferro, piezo &amp; pyroelectric materials</li> <li>• Energy harvesting, AI-ML , Bio-sensors</li> <li>• 3D printing, Nanofibers, E-textile</li> </ul>
5.	Dr. Ehesan Ali	<ul style="list-style-type: none"> <li>• Physics</li> <li>• Chemistry</li> <li>• Bio Sciences</li> </ul>	<ul style="list-style-type: none"> <li>• Single molecule magnets, spintronics</li> <li>• Computational Nanoscience</li> <li>• Bioinformatics, Computational biology</li> </ul>
6.	Dr. Indranil Sarkar	<ul style="list-style-type: none"> <li>• Physics</li> </ul>	<ul style="list-style-type: none"> <li>• Experimental condensed matter physics</li> <li>• Spintronics (Experimental)</li> <li>• Topological and Quantum materials</li> </ul>
7.	Dr. Kaushik Ghosh	<ul style="list-style-type: none"> <li>• Physics</li> <li>• Chemistry</li> </ul>	<ul style="list-style-type: none"> <li>• Memristor, Sensor, Neuromorphic device</li> <li>• Renewable energy, Green H<sub>2</sub>, Perovskite</li> <li>• LIB, Micro &amp; wearable Supercapacitor, Waste-management</li> </ul>
8.	Dr. Kiran Shankar Hazra	<ul style="list-style-type: none"> <li>• Physics</li> </ul>	<ul style="list-style-type: none"> <li>• Physics of low dimension materials</li> <li>• Opto-Electronics</li> <li>• Sensors and Actuators</li> </ul>
9.	Dr. Suvankar Chakraverty	<ul style="list-style-type: none"> <li>• Physics</li> <li>• Chemistry</li> </ul>	<ul style="list-style-type: none"> <li>• Quantum computer and sensing</li> <li>• Oxide electronics</li> <li>• Spintronics</li> </ul>
10.	Dr. Aviru Basu* * (Can act as co-guide/co-supervisor only)	<ul style="list-style-type: none"> <li>• Physics</li> <li>• Engineering</li> <li>• Electronics</li> <li>• Chemistry</li> <li>• Biology</li> </ul>	<ul style="list-style-type: none"> <li>• Gas sensing and Bio-sensing</li> <li>• 2D materials &amp; MEMS/NEMS</li> <li>• Machine learning and 3D Printing</li> </ul>

## Energy and Environment Unit (For August 2025 session)

S. No.	Faculty Name	Student background who can apply	Theme
1.	Prof. Akash Deep	<ul style="list-style-type: none"> <li>Chemistry, Physics</li> <li>Nanotechnology</li> <li>Biotechnology</li> </ul>	<ul style="list-style-type: none"> <li>Electrochemical and bio photonic sensors</li> <li>Energy storage devices, Gas capture and storage</li> <li>Hydrometallurgical processes for critical metals</li> </ul>
2.	Dr. Amit Kumar Mondal	<ul style="list-style-type: none"> <li>Chemistry</li> <li>Physics</li> <li>Nanoscience &amp; Nanotechnology</li> </ul>	<ul style="list-style-type: none"> <li>Organic and inorganic nanomaterials for room temperature spintronic applications</li> <li>Inorganic Chemistry / Supramolecular Chemistry</li> </ul>
3.	Prof. Debabrata Patra	<ul style="list-style-type: none"> <li>Chemistry</li> <li>Biological Science</li> <li>Pharmaceutical Chemistry</li> </ul>	<ul style="list-style-type: none"> <li>Organic Supramolecular Chemistry</li> <li>Enzyme-powered Propulsion</li> <li>Self-powered Sensors and Catalysis</li> </ul>
4.	Prof. Kamalakannan Kailasam	<ul style="list-style-type: none"> <li>Chemistry</li> <li>Physics</li> <li>Materials &amp; Environment</li> </ul>	<ul style="list-style-type: none"> <li>Photocatalytic and Piezo catalytic H<sub>2</sub> generation</li> <li>CO<sub>2</sub> photoreduction and Biomass valorisation</li> <li>COFs and Heptazine based Organic chemistry</li> </ul>
5.	Dr. Monika Singh	<ul style="list-style-type: none"> <li>Chemistry</li> </ul>	<ul style="list-style-type: none"> <li>Organic - inorganic hybrid materials for Sensing</li> <li>Electro and photo catalysis</li> <li>CO<sub>2</sub> Conversion</li> </ul>
6.	Prof. Prakash P. Neelakandan	<ul style="list-style-type: none"> <li>Chemistry</li> <li>Pharmaceutical chemistry</li> <li>Nanoscience &amp; Nanotechnology</li> </ul>	<ul style="list-style-type: none"> <li>Stimuli-responsive luminescent organic molecules</li> <li>Flexible optoelectronic sensors &amp; energy harvesters</li> <li>Plasmonic therapeutics &amp; catalysis</li> </ul>
7.	Dr. Ramendra Sundar Dey	<ul style="list-style-type: none"> <li>Chemistry</li> <li>Physics</li> <li>Materials science and Nanotechnology</li> </ul>	<ul style="list-style-type: none"> <li>Materials electrochemistry and electro catalysis</li> <li>Electrochemical Ammonia and Urea synthesis</li> <li>Energy storage: Supercapacitors, Metal- air battery</li> </ul>
8.	Dr. Sanyasinaidu Boddu	<ul style="list-style-type: none"> <li>Chemistry</li> <li>Physics</li> <li>Forensic Science</li> </ul>	<ul style="list-style-type: none"> <li>Luminescence Spectroscopy, Anti-counterfeiting</li> <li>Hydrogen Generation, O<sub>2</sub> Evolution, CO<sub>2</sub> Reduction</li> <li>Fingerprint Development, Toxic &amp; Explosive Sensing</li> </ul>
9.	Dr. Sonalika Vaidya	<ul style="list-style-type: none"> <li>Chemistry</li> <li>Physics</li> </ul>	<ul style="list-style-type: none"> <li>Structural parameter analysis on electro catalysis</li> <li>Ordered assemblies on solid surfaces &amp; applications</li> </ul>
10.	Dr. Tapasi Sen	<ul style="list-style-type: none"> <li>Chemistry / Physics</li> <li>Biotechnology</li> <li>Nanoscience &amp; Nanotechnology</li> </ul>	<ul style="list-style-type: none"> <li>Inorganic and Nano-biomaterials for sensing</li> <li>Photocatalysis and electro catalysis</li> <li>DNA origami based nanostructures for SM imaging</li> </ul>
11.	Dr. Vivek Bagchi	<ul style="list-style-type: none"> <li>Chemistry</li> <li>Physics</li> <li>Materials science</li> </ul>	<ul style="list-style-type: none"> <li>Electrocatalysis and Energy conversion reactions</li> <li>Energy Storage (Batteries/Supercapacitors)</li> <li>CO<sub>2</sub> Reduction/Utilization and Catalysis</li> </ul>

## Chemical and Biology Unit (For August 2025 session)

S. No.	Faculty Name	Student background Who can apply	Theme
1.	Dr. Asifkhan Shanavas	<ul style="list-style-type: none"> <li>• Chemistry</li> <li>• Pharmaceutical</li> <li>• Biotechnology</li> </ul>	<ul style="list-style-type: none"> <li>• Metal nanocluster synthesis</li> <li>• Drug-drug conjugates</li> <li>• Nano drug delivery</li> </ul>
2.	Dr. Asish Pal	<ul style="list-style-type: none"> <li>• Chemistry / Pharmacy</li> <li>• Zoology/Biotechnology</li> <li>• Microbiology</li> </ul>	<ul style="list-style-type: none"> <li>• Peptide Hydrogel for Tissue engineering</li> <li>• Smart chiroptical Polymers metamaterials</li> <li>• Peptide self-assembly</li> </ul>
3.	Dr. Jiban Jyoti Panda	<ul style="list-style-type: none"> <li>• Biotechnology</li> <li>• Pharmacy / Biomedical</li> <li>• Engineering / Life Science/Chemistry</li> </ul>	<ul style="list-style-type: none"> <li>• Brain Nano therapeutics</li> <li>• Cancer Nano therapeutics</li> <li>• Nano Biotechnology and Bio sensing</li> </ul>
4.	Dr. Manish Singh	<ul style="list-style-type: none"> <li>• Biology,</li> <li>• Pharma</li> <li>• Toxicology,</li> </ul>	<ul style="list-style-type: none"> <li>• Neuroregeneration</li> <li>• Nano plastics /Nanomaterials Toxicity and environmental Fate, Nanomedicine</li> </ul>
5.	Dr. Rahul K. Verma	<ul style="list-style-type: none"> <li>• Pharmacy</li> <li>• Biotechnology</li> <li>• Medicinal chemistry</li> </ul>	<ul style="list-style-type: none"> <li>• Nanomedicine</li> <li>• Drug Delivery</li> <li>• Peptide therapeutics</li> </ul>
6.	Dr. Rehan Khan	<ul style="list-style-type: none"> <li>• Biology</li> <li>• Pharmacy</li> </ul>	<ul style="list-style-type: none"> <li>• Inflammatory disease therapeutics</li> <li>• Drug delivery</li> </ul>
7.	Dr. Sangita Roy	<ul style="list-style-type: none"> <li>• Chemistry</li> <li>• Biotechnology</li> <li>• Biochemistry</li> <li>• Pharmacy</li> </ul>	<ul style="list-style-type: none"> <li>• Supramolecular Chemistry</li> <li>• Hydrogels and Biomaterials</li> <li>• Peptides and Biopolymers for healthcare</li> </ul>
8.	Dr. Sharmistha Sinha	<ul style="list-style-type: none"> <li>• Biology</li> <li>• Chemistry</li> <li>• Biophysics</li> </ul>	<ul style="list-style-type: none"> <li>• Liquid-liquid phase separation</li> <li>• Synthetic Biology- Gene repositioning</li> <li>• Drug resistance: Hacking Pharmaceuticals</li> </ul>
9.	Dr. Subhasree Roy Choudhury	<ul style="list-style-type: none"> <li>• Life Sciences</li> <li>• Chemistry/Pharmacology</li> <li>• Nanoscience &amp; Nanotechnology</li> </ul>	<ul style="list-style-type: none"> <li>• Nanotherapy for epigenetic regulation of cancer, neurodegenerative disorders</li> <li>• Immunotherapy for cancer</li> </ul>
10.	Dr. Surajit Karmakar	<ul style="list-style-type: none"> <li>• Life Sciences</li> <li>• Chemistry/Pharmacology</li> <li>• Nano biotechnology</li> </ul>	<ul style="list-style-type: none"> <li>• CRISPR and CAR-T based Nano therapy</li> <li>• Nano therapy for cancer</li> <li>• Nano therapy for neurodegeneration</li> </ul>
11.	Dr. P. S. Vijayakumar	<ul style="list-style-type: none"> <li>• Biology</li> <li>• Chemistry</li> </ul>	<ul style="list-style-type: none"> <li>• Fertilizer</li> <li>• Agri Sensor</li> <li>• Food science</li> </ul>