



National Centre for Nanosciences and Nanotechnology, University of Mumbai (NCNNUM)

Vidyanagari, Kalina, Santacruz (E), Mumbai – 400 098

Facility Name: X-ray Diffraction Technique

Contact: Dr. Tushar Sant

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<https://calendar.online/3d1e3cf8332c7ea8fd41>



The X-ray diffraction is the main technique to study the crystalline matter at different level from finding the phases in an unknown powder to a fine description of the



atomic structure of a material. This technique

is very versatile because can applied on different field of physics chemistry, biology and material science.

The X-ray Powder Diffraction laboratory is equipped with a Bruker D8 DISCOVER diffractometer.

The main features of this instrument are:

- Source: Cu X-ray tube with fix anode
- Goniometer radius: 430 mm
- Beam type: divergent beam (Bragg-Bentano geometry), linear parallel beam (Goebel mirror), round parallel beam (polycapillary)
- Eulerian cradle: x, y, z, Psi, Phi motion
- Sample holder: flat plate, wafer chuck, zero background sample holder, rotating capillary, in-vacuum sample holder

The instrument is very flexible and can work on different type of solid materials and sample:

- Inorganics
- Organics
- Powder
- Poly-crystalline
- Thin film
- Minerals
- Industrial materials
- Drugs



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Facility Name: FE-Scanning electron Microscope Technique

Contact: Dr. Bhavesh Sinha

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Scanning electron microscope (SEM) is basically used for surface characterization and element chemical analysis at high vacuum mode. The topics for SEM study and investigation in the center include: microelectronics, agriculture, environmental sciences, materials preparation, optics, electrochemistry, mechanics and micro-machining, and biological sciences.



Electron Optics

- Source: LaB₆
- Voltage: 200 V to 30 kV
- Beam current: up to 100 nA
- Resolution: ≤2 nm gold particle separation on a carbon substrate at 30 kV in high vacuum and ESEM operating modes; ≤3.5 nm at 3 kV in low vacuum mode

Detectors

- Secondary electrons (SE) detector
- Backscattered electrons (BSE) detector
- Oxford Energy dispersive spectroscopy (EDS) detector for chemical element identification and quantitative analysis.