

## INSTRUMENT FACILITIES AVAILABLE AT THE INDIVIDUAL SAIFs

### Sophisticated Analytical Instrument Facility, NEHU, Shillong

Sl. No.	Instrument	Make/ Model	Major Specifications/ Accessories available	Type of measurement/analysis available
1.	UV-VIS-NIR Spectrometer	Varian Cary 2390	Range : 185-3150 nm; Specular reflectance (for solid state and thin films), variable temp. accessories	Measurement/studies in the region including functional groups, Metal complexes, Specific bonds such as d-orbital participations, charge transfer complexes, Kinetic studies, Different electronic transitions etc.
2.	FT-IR Spectrometer	Bomen DA 8.02	Range: 10-7000 cm <sup>-1</sup> ; Resolution: 0.01 cm <sup>-1</sup> ; In-line diffuse reflectance; Variable angle ATR with KRS 5 crystals; Variable angle specular reflectance; Micro-sampling microscope accessories	Measurement/studies in the region including IR spectra of solids, phase transformation, Hydrogen-bond studies, vibration-rotation spectra, structure of metal complexes, polymer studies etc.
3.	Atomic Absorption Spectrometer	Perkin Elmer 3110	Detection limit: ppm/ppb; Graphite Furnace; Mercury Hydride System	Trace element analysis of about 25 elements in rock/ore, oil plants, biological samples, water etc.
	Graphite Furnace (transversely heated)	Analytik Jena AAS6 Vario EA	Range: 190 to 870 nm	Direct analysis of solid samples. Mercury hydride analysis in Graphite Furnace for better detection limits. Flame analysis.
4.	ICP-Atomic Emission Spectrometer	Labtam 8440 M	Range: 160-820 nm; Polychromator: 15 fixed wave length of following elements: Y, La, Ce, Nd, Sm, Eu, Gd, Dy, Er, Yb, Lu, W, Th, U	Elemental analysis of almost all elements.
5.	NMR Spectrometer (90 MHz)	Varian EM-390	Frequency: 90 MHz; Spin decoupler	NMR spectra of <sup>1</sup> H; Study of molecular structure and dynamics.
6.	FT-NMR Spectrometer	Bruker ACF-300	Frequency: 300 MHz; Variable temp. accessory	1D and 2D NMR Spectroscopy of NMR active nuclei <sup>1</sup> H, <sup>13</sup> C, <sup>15</sup> N, <sup>31</sup> P, <sup>51</sup> V, <sup>55</sup> Mn, <sup>11</sup> B etc.; NOE; Solvent suppression, homo and hetero decoupling experiments; COSY & NOESY; DEPT.
7.	LC-Mass Spectrometer	Waters, Micromass		
8.	Scanning Electron Microscope	Jeol JSM 35 CF	Magnification: upto 1,80,000x; Resolution: 50 <sup>o</sup> A; Gold coating unit	Surface topographic studies of microstructures on bulk specimens of biological/non-biological nature; Orientation pattern of single crystal specimen.

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9.	Scanning Electron Microscope	Jeol JSM 6360	Magnification: upto 3,00,000x; Resolution: 3 nm; Acc. voltage: upto 30 kV (55 steps); Specimen size -152.4 nm; Fully computer controlled	Studies as above. The SEM can accommodate 125 nm diameter specimen and allows observing full coverage of specimen with X, Y and R (rotation) movements of the specimen stage.
10.	Transmission Electron Microscope	Jeol JSM 100 CX	Magnification: upto 4,50,000; Resolution: upto 3 <sup>0</sup> A; Ultramicrotome	Study of ultrastructures of biological/non-biological samples; Normal TEM image/micrographs on 35 mm film.
11.	Microscope with Image Analyzer	Leica	Field of view: 28 mm; Magnification range: upto 250x Contrast: Bright field, dark field, phase contrast, interference contrast and fluorescence	Measurement of proteins, lipids and DNA, reflectivity, reflectance, fluorescence; Grain counting, size and shape analysis; 3 dimensions reconstruction of slices; Liquid crystal and nuclear track measurements.
12.	CHNSO Elemental Analyzer	Perkin Elmer 2400	Accuracy: $\pm 0.3\%$ ; Autosampler; Ultra-microbalance; Liquid sample handling kit; Volatile sample sealer	Simultaneous determination of C,H,N; C,H,N,S and/or the determination of Oxygen in the samples.
13.	Liquid Nitrogen Plant	Philips PLN 106 MNP	10 lit/hr.	Liquid nitrogen for R&D work.