

Sophisticated Analytical Instrument Facility, Panjab University, Chandigarh

Sl. No.	Instrument	Make/ Model	Major specifications/ Accessories available	Type of measurement/analysis available
1.	Scanning Electron Microscope	Jeol JSM 6100	Resolution: upto 40 °A; Acc. voltage: upto 30 kV; Magnification: upto 3,00,000 (with back scattered electron detector); Cryo-attachment; Carbon coating unit; Sputtering unit; Automatic tissue processor; Critical point dryer; Freeze drying unit	Surface topographic/morphological studies of microstructures on bulk specimens of biological/other materials; Micrographs on 35 mm film; SEI, BEI images; Image analysis.
2.	Transmission Electron Microscope	Hitachi H-7500	Resolution: 0.204 nm Lattice image 0.36 nm point to point; Magnification: 6,00,000X (with HC, HR) with CCD camera and plate film camera	Internal structure of any thin section, film, replica or particulate material
3.	X-ray Diffractometer (powder)	Panalytical X`pert Pro	Range: 0° to 160° for 2θ; Vertical theta-theta , radiation used is Cu Kα, equipped with fast solid-state detector	2θ vs intensity plots/diffractograms; Phase identification through search/match method, particle size and strain determination by Scherer method, The results are given in the form of intensity verses 2-theta position with printed peak position, d-values, FWHM and relative intensity
4.	X-ray Fluorescence Spectrometer (WD-XRF)	Bruker S8 Tiger	Elements: Carbon to Uranium X-Ray Tube: 4 KW Rh anode Detectors: Proportional flow counter and scintillation detector	Qualitative, quantitative analysis using standards and semi-quantitative analysis using standardless software; Accurate elemental analysis from Carbon to Uranium in materials, including trace elements; Samples in solid, pressed powder and liquid form can be analyzed.
5.	FT-NMR Spectrometer	Bruker Avance II	Operating frequency: 400 MHz; 5 mm multinuclear BBI probe with ATM; 5 mm ¹ H and ¹³ C inverse probe; Auto sample changer with handling capacity of 60 samples; Variable temperature accessory	1D Spectra-normal for ¹ H, ¹³ C, ³¹ P, ¹¹⁹ Sn, ²⁷ Al, ²³ Na, ¹¹ B, ⁵⁹ Co; Homo-nuclear decoupling (proton); Hetro-nuclear gated decoupling; Hetro-nuclear inverse decoupling; NOE experiments; 2D spectroscopy with gradients (COSY, NOESY, HMQC, HMBC, OESY, TOCSY, C-H correlation experiments); Editing spectroscopy-DEPT 45, DEPT 90, DEPT135; Gated and inverse gated decoupling experiments; ¹ H water suppression; Variable temperature studies.

6.	LC-MS/MS	Waters Q-TOF Micro	Quadrupole- ToF MS equipped with ESI and APcI Source, Direct Injection , Coupled with Waters 2795 HPLC having quaternary pumping , flow rates , 0.05- 5.0 ml/Min. , mass Range of 4000 amu in quadruple and 20000 amu in ToF	Nominal Mass studies, Accurate mass studies, Fragmentation studies through MS/MS and LC-MS studies
7.	Elemental Analyser	Perkin Elmer 2400	Accuracy: $\pm 0.5\%$	Estimation of carbon, hydrogen and nitrogen in the samples.
8.	HPLC coupled with Amino Acid Analyzer	Simadzu LC10AT	Flow rates range: 0.001 to 9.99 ml/min; CLC ODS (C-18), CLC-C ₈ , CLC-NH ₂ , Diol 150 & 300, and Shampack IC-A & IC-C columns; PDA, Refractive Index, Fluorescence, Electrochemical and Conductivity detectors	Separation and detection of different compounds of complex mixtures in the areas of biochemicals, clinical chemistry, agro-chemistry, environment, food industry and pharmaceutical industry etc.
9.	UV-VIS-NIR Spectrometer	Hitachi 330	Range: 185-2600 nm; Resolution: 0.07 nm; (UV-VIS region); 150 mm DIA integrating sphere accessory for visible range.	Usual measurement/studies in the region.
10.	FT-IR Spectrometer	Perkin Elmer Spectrum RX1	Range: 4400 to 450 cm ⁻¹ ; Resolution: 1 cm ⁻¹ ; Pellet making Press; Cell for liquid samples	Measurement in the region including IR spectra of liquids (in KBr cell), solids (in KBr pellets).
11.	Liquid Nitrogen Plant	Sterling StirLin-1	10 lts./hour	Liquid nitrogen for R&D work, Cryo magnets, Medical Labs./Hospitals, Detectors, Material Characterisation, etc.