

## INSTRUMENT FACILITIES AVAILABLE AT THE INDIVIDUAL SAIFs

### Sophisticated Analytical Instrument Facility, Panjab University, Chandigarh

Sl. No.	Instrument	Make/ Model	Major specifications/ Accessories available	Type of measurement/analysis available
1.	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.
2.	FT-IR Spectrometer	Perkin Elmer Spectrum RX1	Range: 4400 to 450 cm <sup>-1</sup> ; Resolution: 1 cm <sup>-1</sup> ; Pellet making Press; Cell for liquid samples	Measurement in the region including IR spectra of liquids (in KBr cell), solids (in KBr pellets).
3.	Atomic Absorption Spectrometer	ECIL 4139	Detection limit: upto 0.3 ppm	Trace element analysis of elements including Na, K, Zn, Cd, Fe, Ni, Co, Ba, Cu, Mn, Pb, Mg etc.
4.	FT-NMR Spectrometer	Bruker Avance II	Operating frequency: 400 MHz; 5 mm multinuclear BBI probe with ATM; 5 mm <sup>1</sup> H and <sup>13</sup> C inverse probe; Auto sample changer with handling capacity of 60 samples; Variable temperature accessory	1D Spectra-normal for <sup>1</sup> H, <sup>13</sup> C, <sup>31</sup> P, <sup>119</sup> Sn, <sup>27</sup> Al, <sup>23</sup> Na, <sup>11</sup> B, <sup>59</sup> 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; <sup>1</sup> H water suppression; Variable temperature studies.
5.	GC-MS Spectrometer	VG 70-250S	Mass Range: upto 2000 a.m.u.; Resolution: >5000	Separation/identification of organic and organometallic compounds/molecules; EI, CI, GC, SIMS.
6.	X-ray Diffractometer (powder)	Philips 1710	Range: 5° to 130° for 2θ;	2θ vs intensity plots/diffractograms;
7.	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.

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8.	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
9.	HPLC coupled with Amino Acid Analyzer	Simadzu LC10AT	Flow rates range: 0.001 to 9.99 ml/min; CLC ODS (C-18), CLC-C <sub>8</sub> , CLC-NH <sub>2</sub> , 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.
10.	Elemental Analyser	Perkin Elmer 2400	Accuracy: $\pm 0.5\%$	Estimation of carbon, hydrogen and nitrogen in the samples.
11.	Liquid Nitrogen Plant	Sulzer-LINIT 10	10 lts./hour	Liquid nitrogen for R&D work.