

INSTRUMENT FACILITIES AVAILABLE AT THE INDIVIDUAL SAIFs

Sophisticated Analytical Instrument Facility, IIT-Madras, Chennai

Sl. No.	Instrument	Make/ Model	Major Specifications/ Accessories available	Type of measurement/analysis available
1.	UV-VIS-NIR Spectrometer	Varian Cary-5	Range: 200-3000 nm; Accessories for: Diffuse reflectance, Specular reflectance, Variable temperature and Polarization studies	Absorbance, Transmittance and Reflectance spectra; Polarization studies.
2.	FT- IR Spectrometer	Perkin Elmer Spectrum-1	Range: 4000-450 cm^{-1} ; Resolution: upto 1.0 cm^{-1}	Spectra of liquids/solids; spectral averaging; peak position band width, area analysis.
3.	FT- IR Spectrometer	Bruker IFS 66v	Range: 4000-400 cm^{-1} & 500-50 cm^{-1} ; Resolution: upto 0.1 cm^{-1} ; Reflectance attachment in range 4000-400 cm^{-1}	IR Spectra of liquids (in cell), solids (in KBr pellets); spectral averaging; peak position band width, area analysis.
	FT- Raman Spectrometer		Range: 50-3400 cm^{-1} Resolution: upto 3.0 cm^{-1} Nd:YAG Laser (1064 nm)	Analysis of solids and liquids.
4.	Fluorescence Spectrometer	Horiba Jobin Yuon FLUOROLOG 3-11	Range: 180-1550 nm; Resolution: 0.2 nm Polarization accessory	Fluorescence studies of biological samples, dissolved solids, polymers, membranes, low-dimensional structures, liquid crystals and thin films.
5.	ICP-OES	Perkin Elmer Oplima 5300DV	Range: 165-782 nm; 40 MHz RF generator; Detection limit: Upto ppb level using SCD detector	Elemental analysis of water, soil, rock, effluents, biological, metallurgical and environmental samples in solution.
6.	FT-NMR Spectrometer	Jeol GSX 400	Operating frequency: 400 MHz; Narrow bore; Variable temperature accessory/CP-MAS(RT); Inverse Probe	1D & 2D spectral measurements in ^1H & most of the nuclei in the frequency range 35 to 161 MHz; HMQC/HMBC/DEPT/ INEPT/Variable temp. measurements, CP/MAS(RT).
7.	ESR Spectrometer X/Q Band	Varian E 112	X-band & Q-band; Magnetic field upto 2 Tesla; Room/liquid nitrogen/ variable temp. accessories.	Room temp., liquid nitrogen temp., crystal rotation related ESR measurements.
8.	Mossbauer Spectrometer	Canberra S-100	Fe-source; Liquid He cryostat compatible for liquid nitrogen also	Mossbauer spectroscopic studies/ measurements at room temperature/ variable temperatures.
9.	X-ray Fluorescence Spectrometer	Bruker S4 Pioneer aXS	Sequential XRF spectrometer with 4 KW X-ray tube; Analysing crystals: LiF 200, PET, OVO55, OVOC and OVOB; Hydraulic press; Ball mill	Qualitative, semi-quantative analysis of powder, solid and liquid samples for all elements in the periodic table from Be to U.

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10.	X-ray Diffractometer (single crystal)	Enraf Nonius CAD-4	Mo ($K\alpha$) source; Polarising Microscope	Single crystal X-ray diffraction data to obtain unit cell parameters, space group, morphology, 3-dimensional molecular structure and molecular packing.
11.	X-ray Diffractometer (single crystal)	Bruker aXS KAPPA APEX-II		
12.	GC-Mass Spectrometer	Finnigan MAT MS 8230	Mass range: upto 1200 amu; Resolution: upto 50,000	EI, Analysis of molecules upto 1200 amu.
13.	GC-Mass Spectrometer	Jeol JMS GC-Mate II	High resolution GC-MS/MS system	Under procurement.
14.	Vibrating Sample Magnetometer	Princeton Appl. Res. VSM 155	Magnetic field: upto 1.4 Tesla with facility for crystal rotation	Room temperature magnetic susceptibility measurements.
15.	Thermal Analysis System (DTA/TGA/DSC)	(a) Netzsch STA 409 TGA/DTA (b) Netzsch DSC 204	Temperature range: TGA/DTA: 25 ⁰ C-1500 ⁰ C, DSC: -170 ⁰ C to 700 ⁰ C	Thermal analysis studies including thermal stability, oxidative stability, phase transition, glass transition and decomposition temperatures.