

EQUIPMENT LIST

1. Energy dispersive X-Ray Fluorescence (ED-XRF) Spectrometer

- a. Make: Thermo Fishers (ARL Quant' X) & Rigaku (NexDe)
- b. User Charges: Rs. 500 per sample
- c. Applications: Analysis of inorganic/organic metal materials, soil, ceramic and glass materials. The direct solid sample is used for analysis.



2. Inductively Coupled Plasma - Optical Emission Spectrometer (ICP-OES)

- a. Make: Agilent Technologies (700 series ICP-OES)
- b. User Charges Rs. 250 per element in liquid sample and Rs. 500 per element in solid sample
- c. Applications: Analysis of trace metal impurities in ppm and ppb.



3. UV-Visible spectrophotometer

- a. Make: Shimadzu (UV-2450)
- b. User Charges: Rs. 500 per sample
- c. Applications: UV spectroscopic analysis of inorganic, organic and glasses.



4. Ion chromatography

- a. Make: Metrohm (850 professional IC)
- b. User Charges: Rs. 1000 per sample
- c. Applications: Analysis of cations and anions.



5. Gas Chromatography Mass Spectrometry (GC-MS)

- a. Make: Thermo Fisher Scientific (Trace GC Ultra with DSQ-II)
- b. User charges: Rs. 2000 per sample
- c. Applications: Analysis of organic compounds and inorganic anions like sulfate, phosphate and halides.



6. Laser Raman Spectrometer

- a. Make: Renishaw (Invia Raman Microscope)
- b. User charges: Rs. 1000 per sample
- c. Applications: Analysis of molecular structure



7. Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES)

- a. Make: Perkin Elmer (Avio- 220 max)
- b. User charges: Rs. 500 per element
- c. Applications: Elemental analysis in ppm or % levels



8. Fourier Transform Infrared Spectrometer (FT-IR) with diamond ATR

- a. Make: Bruker (Invenio R)
- b. User charges: Rs. 1000 per sample
- c. Applications: To find out the functional groups



9. Field Emission-Scanning Electron Microscope (FE-SEM) with EDAX

- a. Make: Zeiss (Gemini1)
- b. User charges: Rs. 5000 per hour
- c. Applications: To measure the particle size, morphology and also composition



10. Particle size Analyser

- a. Make: Microtrac MRB (Sync)
- b. User charges: Rs. 2000 per sample
- c. Applications: To measure the particle size distribution, minimum 2 nm.



11. High Resolution Glow Discharge Mass Spectrometer (HR-GDMS)

- a. Make: Mass Spectrometry Instruments, UK-GD90 Trace
- b. User Charges: Rs. 43000 per sample
- c. Applications: Trace impurity analysis in ppb levels and also depth profile analysis of metal, semiconductors and metal oxide samples.



12. Thermogravimetric analysis

- a. Make: Seiko Instruments Inc.
- b. User charges: Rs. 2000 per sample
- C. Applications: Thermogravimetric and Differential Thermal analysis to study the phase transformations in the sample at different temperatures up to 1200°C

