

About STUTI:

The Scheme 'Synergistic Training program Utilizing the Scientific and Technological Infrastructure' (STUTI) is intended to build human resource and its knowledge capacity through open access S&T Infrastructure across the country. As a complement to the various schemes of DST funding for expansion of R&D Infrastructure at academic institutions, STUTI scheme envisions a hands-on training program and sensitization of the state-of-the-art equipment as well as towards sharing while ensuring transparent access of S&T facilities.

Instruments covered for training:

XRD

ICP-OES

FTIR

X Band ESR

LC-HRMS

SEM

CHNS Analyzer

UV-Vis NIR

Inductively Coupled Plasma Optical-Emission spectroscopy

Make: Agilent Technologies

Model: 700 series

Applications: This technique is used for quantitative and qualitative determination of the metals and metalloids in the following sample



Liquid Chromatography-High Resolution Mass Spectrometry (LC-HRMS)

Make: Agilent Technologies

Model: QTOF 6530

Applications: The molecular structure of petroleum components, industrial products, pharmaceuticals and biomolecules can be judged. The purity of the finished chemical industrial products is established

Fourier Transform Infrared Spectroscopy (FTIR)

Make: Bruker

Model: Alpha-II

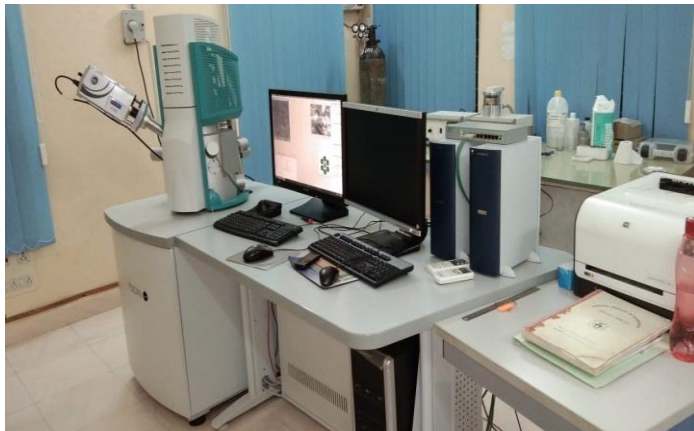
Applications: Quality verification of incoming/outgoing materials

Deformulation of polymers, rubbers, and other materials through thermogravimetric infra-red (TGA-IR) or gas chromatography infra-red (GC-IR) analysis

Microanalysis of small sections of materials to identify contaminants

Analysis of thin films and coatings

Monitoring of automotive or smokestack emissions



Scanning Electron Microscope (SEM)

Make: TESCAN

Model: VEGA3 LMU

Applications: Surface Studies, Nano Particle imaging, Phase transitions, Corrosion products and all kinds of solid material studies.

X-Ray Diffraction (XRD)

Make: Panalytical

Model: X-pert powder

Applications: Powder XRD equipment can be used for the characterization of powder samples for the phase analysis, Identifying crystalline phases and orientation and crystallographic information. This equipment can also capture data from the bulk polycrystalline samples after the required sample preparation. Structural properties such as Lattice parameters, Strain, Grain size, texture and epitaxy can be determined from the data. The XRD diffraction data will be provided to the user and the user can investigate the above materials' properties by analyzing the data





CHNS Analyser

Make: Elementar, Germany

Model: UNICUBE+

Applications: The CHNS(O) Analyzer find utility in determining the percentages of Carbon, Hydrogen, Nitrogen, Sulphur and Oxygen of organic compounds, based on the principle of "Dumas method" which involves the complete and instantaneous oxidation of the sample by "flash combustion".

X Band ESR Spectroscopy

Make: JEOL Resonance Inc., Japan

Model: JES-FA100

Applications: ESR Spectrometer is used for the measurement of species that contain unpaired electrons (Free radicals, transition metal complexes, molecular structure, valence electron wave functions, electron transport, crystal & ligand field splitting, relaxation mechanisms and reaction kinetics, odd-electron molecules, rare earth ions etc. ESR is a powerful non-destructive and non-intrusive analytical method. ESR yields meaningful structural information even from ongoing chemical or physical processes, without influencing the process itself.



UV-Vis-NIR Spectrometer

Make: Agilent Technologies

Model: Carry 5000

Applications: The electronic transitions and band gaps of semiconductors, thin films, etc. can be determined. Electronic structures of polymers, complexes, biomolecules, materials, pharmaceuticals and other products can be evaluated.

