BITS
Pilani

Sophisticated Instrumentation Facility (SIF)
Birla Institute of Technology and Science (BITS), Pilani, Pilani Campus, Rajasthan

https://web.bits-pilani.ac.in/pilani/sif/home

The Central Instrumentation Facility (CIF) of BITS Pilani, Pilani Campus houses wide range of equipment that cater to the need of both course work and research. It consists of Sophisticated Instruments Facility (SIF) and Central Analytical Laboratory (CAL). The SIF is well equipped with a number of high end analytical instruments for facilitating high end research. The following instruments are available for services.

1. Field Emission Scanning Electron Microscope, FESEM (Make: FEI, Model: Apreo LoVac)

Applications:
i) Topographical morphology & Microstructural analysis of materials including biological cell.
ii) Particle size measurement of nanomaterials.
iii) Chemical composition analysis of materials with EDS detector.

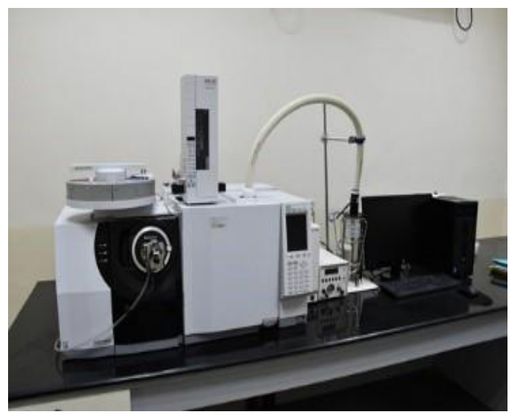
2. Fully Spectral Confocal Laser Microscope with Airyscan (Make: Carl Zeiss, Model: LSM 880)

Applications:
i) Multi-colour, live/fixed cell and DIC imaging.
ii) Z- stacks, 3D image reconstruction, Tile scan.
iii) Time series (with or without Z-stack), Co-localization analysis, bleaching, Airyscan, FCS.
iv) Topography analysis, surface roughness and Z-height profiling.

3. Nuclear Magnetic Resonance, NMR (Make: Bruker, Model: AV NEO (400MHz)

Applications:
i) Analysis of 1D NMR: Proton (1H), Carbon (13C), Fluorine (19F), Phosphorus (31P).
ii) Analysis of 2D NMR: COSY, NOESY, HMBC, HSQC.

4. Gas Chromatography–Mass Spectroscopy, GC-MS/MS (Make: Shimadzu, Model:TQ8040 CI/NCI)



Applications:
i) Qualitative and quantitative analysis of organic compounds.
ii) Mechanistic study of fragmentation process under mass spectrometric condition.
iii) Molar mass and structural analysis of small biomolecules.

5. X-Ray Photoelectron Spectrometer, XPS (Make: Thermo Scientific, Model: K Alpha)

Applications:
i) Surface chemistry analysis of the materials.
ii) Measurement of depth profile.
iii) Measuring the energies of the valence states of metallic, semiconducting and adsorbate-covered metal and semiconducting surfaces.

6. BET-Chemisorption Analyzer (Make: Anton Paar, Model: Autosorb iQ-C-XR-XR-XR)

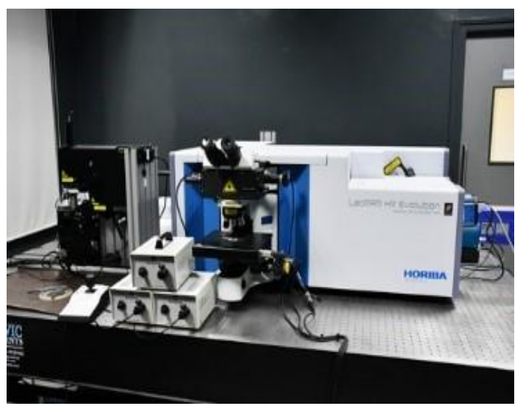
Applications:
i) Measurement of specific surface area of micro/nano particles.
ii) Measurement of pore size, pore volume and pore size distribution of micro/nano particle.

BITS
Pilani

Sophisticated Instrumentation Facility (SIF)
Birla Institute of Technology and Science (BITS), Pilani, Pilani Campus, Rajasthan

https://web.bits-pilani.ac.in/pilani/sif/home

7. Raman Spectrometer- Atomic Force Microscope (Make: Horiba/AIST-NT, Model: LabRam HR Evolution, Omega Scope)



Applications:

Raman:

i) Phase identification of polymorphic solids.

ii)Polymer identification, Composition determination.

iii) Determination of residual strain and crystallographic orientation.

AFM:

i) Surface morphology at atomic scale.

ii) Roughness and grain size measurement of thin films.

8. Single Crystal XRD (Make: Rigaku, Model: XtaLAB Pro2 Mo)

Applications:

i) Measures internal lattice of crystalline substances, including unit cell dimensions, bond-lengths, bond-angles and details of site-ordering.

ii) With single-crystal refinement, one can interpret and refine the data to obtain the crystal structure.

9. Nano-particle Analyzer with Rheometer (Make: Anton Paar, Model: Litesizer 500)

Applications:

i) Measurement of particle size distribution.

ii) Measurement of Zeta potential.

10. Impedance Analyzer (Make: Keysight Technologies, Model: E4990A)

Applications:

i) Measures impedance against frequency and temperature of materials & nanocomposites.

ii) Measurement of dielectric primitivity and conductivity over a large frequency range.

11. Semiconductor Parameter Analyzer (Make: Convergent Technology, Model: Keithley 4200A-SCS)

Applications:

Advanced measurement hardware for DC I-V, C-V, and pulsed I-V measurement types.

Contact for enquiries:

Email: cifservices@pilani.bits-pilani.ac.in

Phone: +91-1596-515516/5299 (O)

Coordinator:

Prof. Prabhat Nath Jha (CIF)

Co-coordinator:

Prof. S. Murugesan (SIF)

Technical Assistants:

Mr. Sandip Ruidas (+91 7384477834)

Mr. Abhishek K. Gautam (+91 7838471971)

For charges & other details, please visit :
https://web.bits-pilani.ac.in/pilani/sif/home
(Click with Alt button)

Office hours:

Monday to Friday : **9 AM to 5 PM**

Saturday: **9 AM to 1 PM**