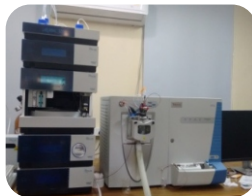
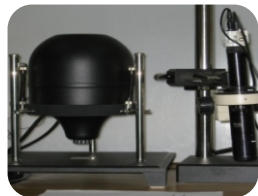


Welcome to the Central Instrumentation Facility

**BIRLA INSTITUTE OF TECHNOLOGY
MESRA, RANCHI**



Central Instrumentation Facility (CIF)

**Birla Institute of Technology
Mesra, Ranchi - 835215**

www.bitmesra.ac.in | E-mail: cif@bitmesra.ac.in

Ph.: 0651-2275444 | Ext. 4596/4552 | Fax : 6051-2275401

NOVEMBER 2022



Equipments and Services

Sl. No.	Name of Instrument	Make & Model	Utility
1	FTIR Spectrophotometer (MIR)	Shimadzu Co, Japan; IR Prestige 21	Identification of functional groups, quantitative and qualitative analysis of organic, inorganic and polymer samples.
2	FTIR Spectrophotometer (MIR & FIR)	Perkin Elmer, USA; Frontier	
3	FTIR Spectrophotometer (NIR)	Perkin Elmer, USA; Frontier	
4	UV- Visible Spectrophotometer	Perkin Elmer, USA; Lambda- 25	Adsorption and reflectance spectroscopy in UV and Visible region of the electromagnetic spectrum.
5	Spectrofluorophotometer	Shimadzu, Japan ; RF 5301 PC	Measurement of Fluorescence properties of samples.
6	Sub-micron Particle Size, Zeta Potential & Molecular Weight Analyzer	Malvern Inst. UK; Zeta Sizer Nano ZS	Particle size and Zeta potential Analysis and Molecular weight of Polymer samples.
7	Laser Diffraction based Particle Size Analyzer with Wet Dispersion Unit	Malvern Inst. UK; Master Sizer 3000	Measurement of Particle Size (0.01 to 3500µm)
8	Colorimeter	Hunter Lab, USA ; Color Flex	Measurement of Color of solid and liquid samples in a three-dimensional scale.
9	Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES)	Perkin Elmer, USA; Optima 2100 DV	Metal estimation at a low level (ppm) in rock, soil, fly ash, environmental, Biological, Polymer and Pharmaceutical samples
10	Inductively Coupled Plasma Mass Spectrometer (ICPMS)	Thermo Fischer Scientific USA; iCAPRQ	Metal estimation at a low level (ppb) in rock, soil, fly ash, environmental, Biological , Polymer and Pharmaceutical samples.
11	Nuclear Magnetic Mass Spectrometer (NMR)	JEOL, Japan; JNM ECZ400S/LI	Identification and analysis of organic compounds
12	X- Ray Diffractometer (XRD)	Rigaku, Japan; Smart Lab 9KW	Phase identification, Crystal structure & grain size determination and measurement of residual stresses.
13	Single Crystal X-Ray Diffraction	Rigaku, Japan; X Calibur	Identification of molecular structure of the crystal.
14	Thermo Gravimetric & Differential Thermal Analyzer(TGA/DTA)	Shimadzu Corporation, Japan; DTG-60	Thermal Stability of the Samples
15	Simultaneous TGA-DTA-DSC	Waters, USA; Discovery SDT 650	Simultaneous determination of changes of mass (TG) and caloric reactions (DSC) of a sample in the temperature range from RT up to 1400°C
16	Differential Scanning Calorimeter(DSC)	TA Instruments, USA; Q 10	Studying phase transitions, such as melting, glass transitions, exothermic decompositions, Degree of crystallinity, Cross-linking reactions, Oxidative stability and Specific heat capacity.
17	Differential Scanning Calorimeter(DSC)	Make: Waters, USA; Discovery 25	
18	Thermal Conductivity Analyzer	Netsch, Germany; LFA 467	Determination of thermal conductivity, thermal diffusivity and specific heat capacity of the material.
19	Scanning Electron Microscope With EDS	Jeol, Japan ; JSM 6390 LV	Surface morphology, composition, and topography analysis.
20	FESEM	Carl Zeiss Microscope Ltd., Germany ; Sigma 300	Study of Surface morphology, compositional, topographical as well as elemental analysis
21	Atomic Force Microscope (AFM)	NT-MDT, Russia; Solver Pro 47	Surface morphological, topographical, texture, magnetic and adhesive force-related studies
22	Flash Chromatograph	Bonna-Agela; Cheetah (MP-200)	Isolation of chemical compound.
23	HPTLC	Camag, Switzerland;	Identification and quantification of marker compounds, fingerprinting of formulations, and checking for adulterants in the formulations.

Sl. No.	Name of Instrument	Make & Model	Utility
24	Analytical Cum Semi Preparative HPLC	ThermoScientific, USA; Ultimate 3000	Fractionation of natural products to analysis of impurities
25	Analytical HPLC	ThermoScientific, USA;Vanquish	Separation, identification and quantification of component in organic and natural products.
26	Gel Permeation Chromatography (GPC)	Waters, USA; M515, M 2414, M2487	Molecular weight of polymers.
27	Ion Chromatography(IC)	Thermo Scientific, USA ; IC 5000	Separation and quantitative analysis of anions and cations.
28	Liquid Chromatograph Mass Spectrometer (LCMS)	ThermoScientific,USA ; Ultimate 3000, LTQ XL	Separation and determination of the molecular weight of non-volatile compounds
29	Electro Chemical Analyzer (ECA)	CH Instruments, USA; 680 B	Current vs Voltage of electrolyte solutions, Tafel plot, Linear Sweep Voltameter, AC Voltammetry, Potentiometric Stripping Analysis, etc.
30	Anodic Stripping Voltammetry (ASV)	Metrohm; 884 Professional VA	Detection and quantification of a variety of metal ion species at very low concentrations in aqueous media.
31	CHNS Analyzer	Elemental Analyzer, Germany; Vario EL III	Determination of C, H, N, S and O of organic and Coal samples
32	Ellipsometer	Nano View Inc.,Korea ; SE MG -VIS	Measurement of film thickness and refractive index of polymer photoresist and anti-reflective coatings.
33	Impedance Analyzer	Novo Control, Germany ; ALPHA A	Dielectric properties measurement
34	Porosity Analyzer	Thermo Scientific, Italy; PASCAL 440	Pore size characterization
35	BET Surface Area Analyzer	Quantachrome, USA;LXNova TouchLXI	Surface area & pore size characterization
36	Surface Tensiometer (A), OCA	Data Physics, Germany; OCAH 230	Measurement of Contact Angle and Surface Free Energy
37	Surface Tensiometer (B), DCA	Data Physics, Germany; DCAT 21	Measurement of surface tension, interfacial tension, Critical micelle concentration, Contact angle of powder, fibers and the adsorption behaviour of liquids.
38	Rheometer	Anton Paar, Austria; MCR 320	Measurement of viscosity and flow behaviors of materials w. r. t. shear stress, shear modulus, and deformation conditions.
39	Tribometer	Ducom Instruments, Bangalore; TR705	Determination of Wear, Friction, Coefficient of Friction, Adhesion of materials in humid, lubricant and temperature conditions.
40	Universal Testing Machine (UTM)	Instron UK ; 8801	Determination of tensile, fatigue and 3-points bending tests of metallic, alloys and composite samples .
41	Pulse Analyzer	OROS S.A. France; OR 38/OROS	Measurement of vibration produced by systems or machinery
42	Machinery Fault Simulator (MFS)	SpectraquestInc, USA; MFS2010	Study of machinery defects found in gearboxes, belt drives, reciprocating mechanisms, induction motors, pumps, and compressors.
43	Microwave Digestion System	AntonPaar, Austria; Multiwave 3000 Solv	Digestion of ore, soil, plant and food materials prior to analysis by ICPOES, AAS.
44	Microwave Digestion System	AntonPaar, Austria; Multiwave 5000	
45	Water Lab	Water and soil analysis related instruments.	Analysis of physicochemical properties of water and soil samples.

Central Instrumentation Facility (CIF)

Central Instrumentation Facility (CIF) at Birla Institute of Technology, Mesra, Ranchi, established in the year 2006 under technical Education Quality Improvement Programme (TEQIP), funded by World Bank and Government of Jharkhand, has an objective to provide sophisticated instrumentation facilities for advanced research to the faculty and students of Birla Institute of Technology, as well as as other Institutions in the region.

Details of Charges and procedure of sending samples for analysis, please refer Website www.bitmesra.ac.in or contact

Central Instrumentation Facility (CIF)

Birla Institute of Technology

Mesra, Ranchi - 835215

www.bitmesra.ac.in | E-mail: cif@bitmesra.ac.in

Ph.: 0651-2275444 | Ext. 4596/4552 | Fax : 6051-2275401

