About SIF

The Sophisticated Instrumentation Facility (SIF) of NIT Tiruchirappalli has been setup with a vision to become a pioneering hub of cutting- edge research and innovation. The Centre operates with a mission to advance the Instrumentation & technical expertise to facilitate quality research, offer comprehensive training, foster collaboration and ensure ethical practices and responsible usage of testing equipment. SIF aims to ignite a culture of excellence, enabling groundbreaking advancements and scientific exploration & technological development.

List of Instruments

- Inductively Coupled Plasma- Mass Spectroscopy (ICP-MS)
- Atomic Force Microscope (AFM)
- Differential Scanning Calorimetry(DSC)
- Thermo Gravimetric Analyzer (TGA)
- Trident C - Therm
- Electrochemical workstation
- FTIR Spectroscopy
- Rheometer
- Contact Angle Measurement
- Laser Flash Apparatus
- KD2 Pro-Thermal Conductivity Analyzer
- Force Tensiometer
- Thermal Cycling Chamber
- UV - Visible Spectroscopy
- LCR Meter

Visit us

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SCAN ME

National Institute of Technology Tiruchirappalli

Sophisticated Instrumentation Facility (SIF)

Equipment

Inductively Coupled Plasma- Mass Spectrometer (ICP-MS)

Make: Thermo Scientific
Model: iCAP-Q
ICP-MS is the most sensitive elemental analysis technique and is used for trace and ultra-trace element analysis in a variety of fields, including environmental, food, medical, life science, materials science, and manufacturing.

Atomic Force Microscope (AFM)

Make: Park Systems
Model: NX10
Image surfaces at near-atomic resolution, and measure surface roughness. It can also assess the mechanical properties of materials at the nanoscale and study the properties of polymers

Thermogravimetric Analyzer (TGA)

Make: SETARAM
Model: LABSYS EVO
Used for the determination of mass change in mg and wt.% with Temperature, and study of thermal stability of the material Temperature: RT to 1000 C
Sample type: Solid, Liquid, Powder

Rheometer

Make: Anton Paar
Model: MCR 92
It measures Viscosity as a function of time, Shear rate and temperature. Strain sweep, Frequency sweep and Temperature Sweep, 3iTT analysis in oscillation method is also possible.
Temperature: 20 C to 180 C
Sample type: Liquid, gel, paste, dough

Differential Scanning Calorimetry (DSC)

Make: SETARAM
Model: Setline
Measurement of heat flow, glass transition temperature (Tg), and Specific Heat Capacity at constant pressure (Cp) from -30 C to 550 oC
Sample type: Solid, Liquid, Powder

FTIR Spectrometer

Make: PerkinElmer
Model: Spectrum Two
Used to identify functional groups in organic and inorganic compounds.
Sample type: Solid, Liquid, Powders, Thin films

Laser Flash Apparatus (LFA)

Make: Netzsch
Model: LFA 457
Measurement of Thermal diffusivity at various Temperature up to 500 oC
Sample: Solid 25.4mm dia & 2-3 mm Thickness

Force Tensiometer

Make: Decagon
Model: KD2 Pro
Measurement of Surface Tension, Interfacial Tension, Density of Liquid and Adhesion force for liquid samples

Contact Angle Meter

Make: Apex Instruments
Model: ACAM-D3
Measurement of contact
angle with water or other liquid for thin film or solid with flat surface and Surface tension by pendant drop method

UV-Visible Spectroscopy

Make: PerkinElmer
Model: LAMBDA 365
Measurement of Absorbance, % Transmittance, % reflection for Solid and Liquid samples

Opportunities @SIF

Internship Programs
SIF offers internship program for students having/ undergoing UG,PG, Diploma degrees . For application procedure and more details, please contact the office.

Workshops
SIF conducts hands-on training on sophisticated equipment in frequent intervals. Any student/faculty/Industry professional from a recognized institution may apply.

C-Therm Thermal Conductivity Analyzer

Make: C-Therm
Model: Trident
Measurement of thermal conductivity and effusivity.
Sample: Powder, Liquid, Metals, Pellets

KD2 Pro - Thermal Conductivity Analyzer

Make: Decagon
Model: KD2 Pro
Measurement of Thermal conductivity measurement at RT for liquid samples

Electrochemical Workstation

Make: Prinston Applied Research
Model: PARSTAT MC 1000
Measurement under the following modes are available: Cyclic Voltametry (CV), Open Circuit Voltage (OCV), the Zero Resistance Ammeter (ZRA) and by the Electrochemical Impedance Spectroscopy (EIS), Tafel etc.

Thermal Cycling Chamber

Make:CME Bangalore
Model: PAC-120-A-7K
To perform Thermal cycling tests with temperature range between - -40 oC to 180 oC

LCR Meter

Make: HIOKI
Model: PAC-120-A-7K
Measurement of Inductance, Capacitance and Resistance and other factors