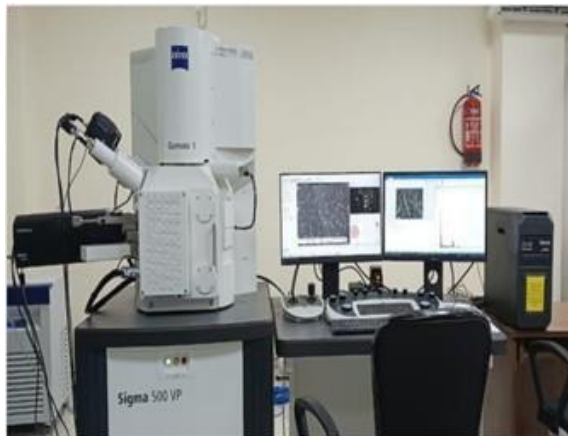


### **Instruments covered for training:**

- Field Emission Scanning Electron Microscope
- Powder X-Ray Diffractometer
- Rapid Chloride Permeability Tester (RCPT)
- Differential Scanning Calorimetry
- Atomic Absorption Spectrophotometer
- Triple Quadrupole ICP-MS
- PARTICLE SIZE ANALYZER
- ION CHROMATOGRAPH
- 100 kN/250 kN Close Loop Servo-controlled Actuator System
- PARTICLE SIZE ANALYZER
- MTS Servo Hydraulic 250 kN Fatigue Testing System
- Concentrated Solar Air Heater with Passive Tracking Mechanism and Corrugated Receiver
- Tower Type Hybrid Vapour Compression Refrigeration (VCR) and Humidification-Dehumidification (HDH) Desalination Plant
- Hybrid Micro Electro Chemical Machining



### **Field Emission Scanning Electron Microscope**

**Make:** ZEISS

**Model:** SIGMA 500VP

**Applications:** It is used for Microscopic feature measurements, Corrosion evaluations, Striation measurements for high-cycle fatigue fractures, Coating evaluations, Characterization of very fine specimen features and surface contamination analysis

### Powder X-Ray Diffractometer

**Make:** PANalytical

**Model:** Empyrean

**Applications:** This instrument is used to determine phase identity, crystal structure. Approximate percentage phase composition etc. characteristics of crystalline compound.



### Rapid Chloride Permeability Tester (RCPT)

**Make:** GERMANN INSTRUMENTS

**Model:** ASTM 1202

**Applications:** It is used to measure the resistance offered by concrete to penetration of chloride ions. The resistance to chloride ions is measured in terms of charge passed through the concrete specimen in terms of 'Coulombs'.

### Differential Scanning Calorimetry

**Make:** Perkin Elmer

**Model:** DSC 8000

**Applications:** This instrument is used to study the phase transition temperatures, glass transition in polymers, composites metals, and other mixtures, thermodynamic reactions.



### Triple Quadrupole ICP-MS

**Make:** The Agilent 8900 triple quadrupole ICP-MS (ICP-QQQ) is the world's most successful and widely used tandem ICP mass spectrometer.

**Applications:**

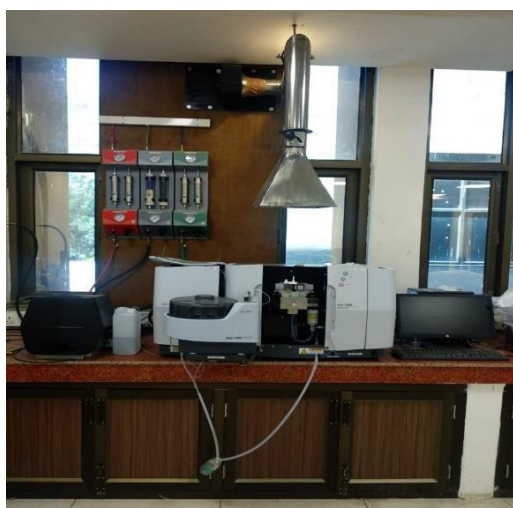
1. Analysis of radioactive iodine-129 using MS/MS with oxygen reaction mode
2. Study on the analysis of radioisotopes
3. Determination of trace and Measurement of neptunium in the presence of uranium

## PARTICLE SIZE ANALYZER

**Make:** Kruss Scientific

**Model:** DSA-25

**Applications:** Used to determine the hydrophilicity and hydrophobicity of the surface by the measurement of the contact angle of a sessile drop and the surface tension of a pendent drop. Almost all type of surfaces including polymers, metals, thin films and nanoparticles



## ATOMIC ABSORPTION SPECTROPHOTOMETER

**Make:** Shimadzu AA-7000 with flame, graphite furnace and hydride vapour generator for trace level analysis

**Applications:** LAW and REGULATORY BODIES – To determine concentration of 16 toxic heavy metals like As, Hg, Cr, Cd, Pb, Co, Cu, Mn, Zn, etc. in groundwater.  
2. CHEMICAL and DYE INDUSTRIES – To estimate concentration of various chemical elements in aqueous solutions

## ION CHROMATOGRAPH

**Make:** Metrohm IC Flex 930

**Applications:** It is used to measure the concentration of cations (sodium, lithium, calcium, etc.) and anions (bromide, fluoride, sulfate, chloride, etc.) and polar substances in the range of 100µg/L to 20g/L.





### 100 kN/250 kN Close Loop Servo-controlled Actuator System

**Make:** Materials Test System, USA

**Applications:** It is a versatile system used for conducting static and cyclic flexural and compression tests. The system can run in displacement/strain/load control modes.

### PARTICLE SIZE

### ANALYZER

**Make:** Microtrac S3500

**Applications:** The Microtrac S3500 is a widely preferred Laser diffraction analyzer, ideally suited for various particle characterization needs. It is the foremost particle size analyzer that uses three precisely placed red laser diodes with multi detection and multi angle optical capability, to accurately characterize particles



### MTS Servo Hydraulic 250 kN Fatigue Testing System

**Make:** MTS Systems USA

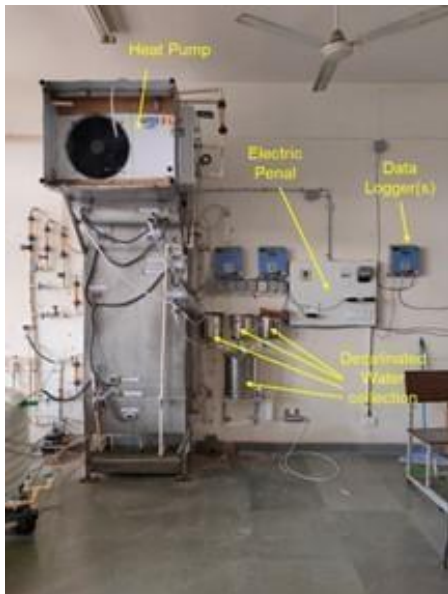
**Applications:** The machine has the capability to carry out static as well as fatigue tests on a range of materials like Metals, Composites, Ceramics, Polymers etc. It is a high end research equipment with acceptability and installations in industries all over the world.



**Concentrated Solar Air Heater  
with Passive Tracking Mechanism  
and Corrugated Receiver**

**Make: Fabricated setup**

**Applications:** This tracking mechanism has been developed to drive the linear focused solar thermal collectors without the use of electricity for accurate, continuous and smooth operation.



**Tower Type Hybrid Vapour  
Compression Refrigeration (VCR)  
and Humidification-  
Dehumidification (HDH)  
Desalination Plant**

**Make: Fabricated setup**

**Applications:** It has been developed for the simultaneous generation of heating, cooling, and freshwater.

**Hybrid Micro Electro Chemical  
Machining**

**Make: Fabricated setup**

**Applications:** Hybrid Micro Electro Chemical Machining (HECMM) is one of the types of advanced manufacturing practices successfully employed for machining of materials that are difficult to cut. This method has been applied in modern manufacturing to enable high precision machining, slice complicated form and enhance surface conditions.

