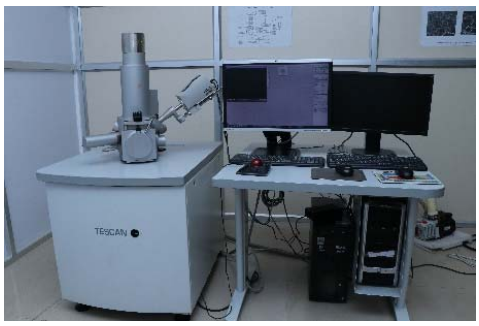
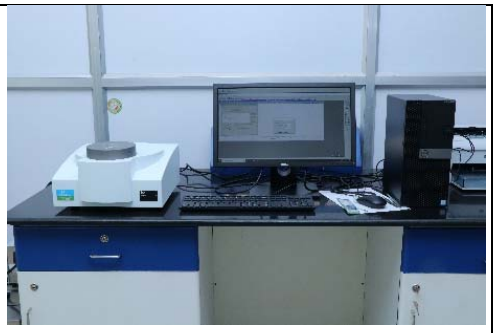
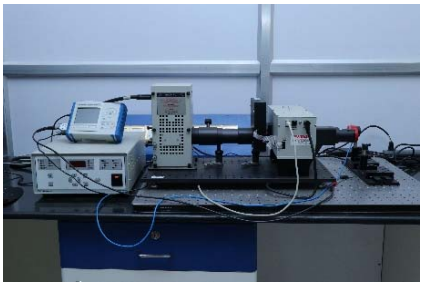
INSTRUMENTAL FACILITIES

The following Instrumental facilities are provided by the CIC, Madurai Kamaraj University

1	**High-Resolution Transmission Electron Microscope (HR-TEM)** The FEI Tecnai G^2 20 S-TWIN TEM is designed to offer an imaging and analysis solution for life sciences, materials sciences, nanotechnology, and the semiconductor and data storage industries. A wide range of functionality and techniques is available and can be combined on the Tecnai G^2 20 S-TWIN TEM, to name a few: high contrast imaging, HR-TEM and SAED, using embedded detectors and components like BF/DF, CCD and corrected optics. **Contact** Prof. S. Murugasen, School of Chemistry Dr. K. Sethuraman, Asst. Prof., School of Physics Dr. B. Ashok Kumar, Assoc. Prof. School of Biotechnology Request form for Analysis	 **Essential specification:** High tension: 200 kV Electron source: LaB_6 or W emitter TEM point resolution: 0.24 nm TEM line resolution: 0.14 nm Minimum focus step: 1.5 nm TEM magnification range: 25X—1030 kX
2.	**Scanning Electron Microscope with EDS Analyzer** The TESCAN VEGA3 SBH is a versatile tungsten thermionic emission SEM system intended for both high- and low vacuum operations. VEGA3 is equipped with modern electron optics. Manufacturer: TSCAN (Floor Model) High tension: 30 kV Electron source: Tungsten filament Resolution: 2 nm Detectors: SE and BSE Magnification Range: up to 1,50,000 EDS Manufacture: EDAX **Contact:** Dr. P. Suresh, Asst. Prof, School of Chemistry Dr. J. Annaraj, Asst. Prof. School of Chemistry	
3.	**Simultaneous Thermal Analyser:** **Thermo Gravimetric analyser with Differential Scanning Colorimetry (TG-DSC)** Manufacturer : Perkin-Elmer Temperature Range : 50 °C to 1300 °C	

	Heating Rate : 2 °C/min. to 30 °C/min Balance resolution : 0.2 μg Atmosphere : Air, N_2, Argon Temperature accuracy: ±0.5 ˚C Calorimetric accuracy : ±5% Samples must be non-toxic, non-corrosive, and non-explosive **Contact:** Dr. A. Siva, Asst. Prof., School of Chemistry	
4.	**UV-vis. Spectrophotometer with Diffused Reflectance (DRS)** Make and model: Shimadzu 2550 with ISR 2200 Wavelength range: 200 to 800 nm Band width: variable bandwidth (0.2 to 4 nm) **Contact:** Dr. R. Ranjith Kumar. Asst. Prof., School of Chemistry Dr. A. Dhakshinamoorthy. Asst. Prof. School of Chem.	
5.	**Spectrofluorometer** Manufacture: Horiba Emission detection wavelength : 185-850 nm **Contact:** Dr. R. Ranjith Kumar. Asst. Prof., School of Chemistry Dr. A. Dhakshinamoorthy. Asst. Prof. School of Chem.	
6.	**Solar Simulator & IPCE System** Solar simulator simulate 1 sun intensity AM 1.5 solar spectrum in the laboratory. The irradiance area is 50 cm X 50 cm. I-V measurement system coupled with this solar simulator measures the photo-voltage and photocurrent characteristics of the newly fabricated solar cells by LSV mode. IPCE system is useful to measure the incident photon to current efficiency of the solar cells. Solar simulator make: Photo Emission Technology IPCE System make: Newport, Oriel QEPVSI-B **Contact:** Dr. G. Gnana Kumar, Asst. Prof., School of Chemistry Dr. M. Jeyanthinath, Asst. Prof. School of Chem.	 
7	**Theoretical and simulations studies:** VASP/Gaussian/Schrodinger softwares installed In high performance computing servers / GPU servers	This facility is available only to the researchers from Madurai Kamaraj University