

13P1WPH112 Materials Characterization

Subject Code	13P1WPH112	
Credits	3	Contact Hours:03
Module No.	Subtitle of the Module	Topics
1.	Surface tools for nano-materials	UV and X-ray photoelectron spectroscopy (XPS), Auger electron spectroscopy (AES), Low energy electron diffraction (LEED) and reflection high energy electron diffraction (RHEED), Secondary ion mass spectrometry (SIMS), Rutherford Backscattering (RBS), Medium energy ion scattering, Electron energy loss spectroscopy (EELS) and high resolution EELS
2.	Nanoscale Electrical Spectroscopy	I-V/C-V, Hall, quantum Hall, fractional quantum Hall effects, Transient charge spectroscopy.
3.	Optical spectroscopy	Photoluminescence, Absorption Spectroscopy, Excitation Spectroscopy, Raman Spectroscopy, Time domain spectroscopy.
4.	Nano-Imaging and Local Spectroscopy	Scanning Tunnelling Microscopy, Scanning Force Microscopy (SFM/AFM), image interpretations, Scanning Near-Field Optical Microscopy and scanning ion conductance microscopy. SEM, TEM and STEM.

Recommended Reading (Books/Journals/Reports/Websites etc.: Author(s), Title, Edition, Publisher, Year of Publication etc. in IEEE format)	
1.	Hand book of nanotechnology, By Bhushan
2.	Introduction of nanomaterials, by Cao