

NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Metallurgy and Material Science - NOC:Scanning Electron-Ion-Probe Microscopy in Material

Subject Co-ordinator - Prof. Debabrata Pradhan

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

- Lecture 1 - Introduction to Microscopy
- Lecture 2 - Scanning Electron Microscopy
- Lecture 3 - SEM and Its Capabilities
- Lecture 4 - Main Components of SEM - Electron Guns
- Lecture 5 - Main Components of SEM - Electron Guns and Electromagnetic Lenses
- Lecture 6 - Electron Probe Diameter Verses Electron Probe Current
- Lecture 7 - Electron Beam - Specimen Interaction
- Lecture 8 - Detectors
- Lecture 9 - BSE Detector and Sample Preparation for SEM
- Lecture 10 - Parameters Need to be Considered to obtain a Good SEM Image
- Lecture 11 - How to Get a Good SEM Image
- Lecture 12 - Additional Capabilities of SEM
- Lecture 13 - Additional Capabilities of SEM (Continued...)
- Lecture 14 - Additional Capabilities of SEM (Continued...)
- Lecture 15 - Scanning Ion Microscopy - An Introduction
- Lecture 16 - Ions Versus Electrons as Source for Microscopy
- Lecture 17 - Ions Source in HIM
- Lecture 18 - GFIS Properties and Ion Optical Column
- Lecture 19 - Ion Optical Column
- Lecture 20 - Ion-Solid Interactions and Signal Generation
- Lecture 21 - Signal Generation and Contrast Mechanism
- Lecture 22 - Contrast Mechanism and Imaging Modes
- Lecture 23 - Scanning Transmission Ion Microscopy and Microanalysis with HIM
- Lecture 24 - Creation and Modification of Materials by HIM
- Lecture 25 - Introduction to Scanning Probe Microscopy
- Lecture 26 - STM Instrumentation
- Lecture 27 - Main Components of STM
- Lecture 28 - Main Components of STM (Continued...)
- Lecture 29 - Main Components of STM (Continued...)

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- Lecture 30 - Working Principle of STM
- Lecture 31 - Operating Modes
- Lecture 32 - Scanning Tunneling Spectroscopy
- Lecture 33 - SPM - Atomic Force Microscopy (AFM)
- Lecture 34 - Force Between Tip and Sample in AFM
- Lecture 35 - Atomic Force Microscope - Parts
- Lecture 36 - Modes of AFM Operation
- Lecture 37 - Modes of AFM Operation (Continued...)
- Lecture 38 - AFM Imaging
- Lecture 39 - Phase Imaging, Noises and Resolution
- Lecture 40 - Surface Properties Measurements using Other Forces
- Lecture 41 - Surface Properties Measurements using AFM
- Lecture 42 - Manipulation of Atoms, Molecules and Industrial Applications
- Lecture 43 - Summary