NPTEL Video Course - Metallurgy and Material Science - NOC:Fundamentals of X-ray Diffraction and Transmissior

Subject Co-ordinator - Dr. S. Sankaran

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Basics of X-ray emission from source, electron excitation and X-ray interaction with materials ir
Lecture 2 - Properties of X-rays
Lecture 3 - Bragg's law derivation
Lecture 4 - Diffraction relationship with reciprocal space
Lecture 5 - X-ray scattering
Lecture 6 - Factors affecting intensities of X-ray peaks
Lecture 7 - Factors affecting intensities of X-ray peaks (Continued...)
Lecture 8 - Effect of crystallite size and strain on intensity of X-rays
Lecture 9 - Profile fit, Factors affecting peak brodening
Lecture 10 - Indexing of diffraction pattern, Quantitative analysis
Lecture 11 - Indexing and Quantitative analysis-continuation, Residual stress measurements
Lecture 12 - XRD and Residual stress measurement - lab demonstration
Lecture 13 - XRD Tutorial - 1
Lecture 14 - XRD tutorial - 2
Lecture 15 - Introduction to Transmission Electron Microscopy (TEM)
Lecture 16 - Fundamentals of Transmission Electron Microscopy (TEM)
Lecture 17 - Fundamentals of X-ray diffraction and Transmission electron microscopy
Lecture 18 - Basics of Diffraction - 2
Lecture 19 - TEM Imaging - 1
Lecture 20 - TEM Imaging - 2
Lecture 21 - TEM instrument demonstration
Lecture 22 - TEM sample preparation - 1
Lecture 23 - TEM sample preparation - 2
Lecture 24 - TEM Tutorial - 1
Lecture 25 - TEM Tutorial - 2
Lecture 26 - TEM Tutorial - 3
Lecture 27 - TEM Tutorial - 4