

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

NPTEL Video Course - Chemistry and Biochemistry - NOC:Chemistry and Physics of Surfaces and Interfaces

Subject Co-ordinator - Prof. Thiruvancheril G. Gopakumar

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Intro-Chemistry and Physics of Surfaces and Interfaces  
Lecture 2 - Historic perspective to surface science  
Lecture 3 - Creating surfaces from bulk lattices  
Lecture 4 - Reconstruction of surfaces  
Lecture 5 - Hexagonal lattice and miller bravais indices  
Lecture 6 - Introduction to ultra-high Vacuum and Preparation of Clean Surfaces  
Lecture 7 - Adsorption and the Energetic of Adsorption  
Lecture 8 - Nomenclature and types of Adlayers  
Lecture 9 - Thermal Desorption Spectroscopy  
Lecture 10 - Different types of Preparation methods for Thin Films  
Lecture 11 - Examples of PVD and CVD  
Lecture 12 - Moire Pattern at Solid-Solid Interface  
Lecture 13 - Growth Modes of Adlayers  
Lecture 14 - Energies that Control the Growth of Adlayers  
Lecture 15 - Kinetic and Thermodynamic Control in Adlayer Growth  
Lecture 16 - Molecular Adsorbates: Preparation  
Lecture 17 - Molecular Adsorbates: Factors Controlling Molecular Adlayer Formation - I  
Lecture 18 - Molecular Adsorbates: Factors Controlling Molecular Adlayer Formation - II  
Lecture 19 - Molecular Adsorbates: Factors Controlling Molecular Adlayer Formation - III  
Lecture 20 - Scanning Tunneling Microscopy  
Lecture 21 - Tip-vacuum Tunneling Junction  
Lecture 22 - Scanning Tunneling Spectroscopy - I  
Lecture 23 - Scanning Tunneling Spectroscopy - II  
Lecture 24 - Scanning Tunneling Spectroscopy: Applications - I  
Lecture 25 - Scanning Tunneling Spectroscopy: Applications - II  
Lecture 26 - Imaging Molecules and Atom Manipulation on Surfaces  
Lecture 27 - Single Molecule Manipulation on Surfaces  
Lecture 28 - Inelastic Tunneling Spectroscopy  
Lecture 29 - Ultra-violet Photo-electron Spectroscopy (UPS)

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- Lecture 30 - Ultra-violet Photo-electron Spectroscopy (UPS): Applications
- Lecture 31 - X-ray Photo-electron Spectroscopy (XPS)
- Lecture 32 - X-Ray Photo-electron Spectroscopy (XPS): Applications - 1
- Lecture 33 - X-Ray Photo-electron Spectroscopy (XPS): Applications - 2
- Lecture 34 - 2D Molecular Materials on Surface - 1
- Lecture 35 - 2D Molecular Materials on Surface - 2
- Lecture 36 - Atomic Force Microscopy (AFM) - I
- Lecture 37 - Atomic Force Microscopy (AFM) - II
- Lecture 38 - Atomic Force Microscopy (AFM) - III
- Lecture 39 - Dynamics of Atoms on Surfaces
- Lecture 40 - Summary