

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

NPTEL Video Course - Metallurgy and Material Science - NOC:Corrosion - Part II

Subject Co-ordinator - Dr. Kallol Mondal

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Recap of Electrochemical Polarization  
Lecture 2 - Recap of Electrochemical Polarization - Activation and Concentration Polarization  
Lecture 3 - Electrochemical Polarization  
Lecture 4 - Activation and Concentration Polarization  
Lecture 5 - Concentration Polarization and Mixed Potential Theory  
Lecture 6 - Explanation of Corrosion Processes on the basis of Mixed Potential Theory - Introduction  
Lecture 7 - Explanation of Corrosion Processes on the basis of Mixed Potential Theory - Part 1  
Lecture 8 - Explanation of Corrosion Processes on the basis of Mixed Potential Theory - Part 2  
Lecture 9 - Explanation of Corrosion Processes on the basis of Mixed Potential Theory - Part 2 (Continued...)  
Lecture 10 - Explanation of Corrosion Processes on the basis of Mixed Potential Theory - Part 3  
Lecture 11 - Effect of Exchange Current Density on Corrosion Rate of an Active Metal  
Lecture 12 - Area Effect of the Cathodic and Anodic Component - I  
Lecture 13 - Area Effect of the Cathodic and Anodic Component - II  
Lecture 14 - Explanation of Corrosion Processes on the Basis of Mixed Potential Theory  
Lecture 15 - Galvanic Coupling between Two Active Metals  
Lecture 16 - Theory of Sacrificial Anode for the Protection of Steel Objects  
Lecture 17 - Effect of two Active Metals on Fe-corrosion when they are Galvanically Coupled  
Lecture 18 - Corrosion of Metals when Cathodic Protection is Concentration Controlled  
Lecture 19 - Effect of Velocity on the Corrosion Rate of an Active Metal  
Lecture 20 - Concentration Polarization and Activation Polarization  
Lecture 21 - Numerical Problems and Passivation  
Lecture 22 - Theory of Passivation - I  
Lecture 23 - Theory of Passivation - II  
Lecture 24 - Interaction between Passivation and Pourbaix Diagram - I  
Lecture 25 - Interaction between Passivation and Pourbaix Diagram - II  
Lecture 26 - Passivity  
Lecture 27 - Interaction of Cathodic Polarization with an Active-Passive Metal  
Lecture 28 - Interaction of Anodic Polarization with an Active-Passive Metal  
Lecture 29 - Passivation and Mixed Potential Theory

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- Lecture 30 - Passivation and Mixed Potential Theory
- Lecture 31 - Effect of Galvanic Coupling between an Active-Passive Metal and a Noble Metal
- Lecture 32 - Anodic Protection of an Active-Passive Metal and an Introduction of Linear Polarization
- Lecture 33 - Linear Polarization and Understanding Relative Corrosion Resistance of a Metal
- Lecture 34 - Oxidation of Metals and Alloys
- Lecture 35 - Different Stages of Oxidation and Pilling Bedworth Ratio
- Lecture 36 - Pilling Bedworth Ratio of Different Metal Oxides
- Lecture 37 - Thermodynamics of Oxidation
- Lecture 38 - Construction of Ellingham Diagram - I
- Lecture 39 - Construction of Ellingham Diagram - II
- Lecture 40 - Kinetics of Oxidation
- Lecture 41 - Oxide Structure and Oxidation Mechanism