

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

NPTEL Video Course - Metallurgy and Material Science - NOC:Aluminium based Alloys and Metal Matrix Composites

Subject Co-ordinator - Prof. Ranjit Bauri

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Pure Aluminium  
Lecture 2 - Extraction of Aluminium  
Lecture 3 - Alloy Designations  
Lecture 4 - Cast Aluminium Alloys  
Lecture 5 - Hypo and Hyper eutectic alloys  
Lecture 6 - Modifying Al-Si alloys and Decoding Alloy Designation  
Lecture 7 - Solid Solution Hardening - 1  
Lecture 8 - Solid Solution Hardening - 2  
Lecture 9 - Yield point phenomena and Strain aging  
Lecture 10 - Cottrell-Bilby theory of strain aging  
Lecture 11 - Portevinâ Le Chatelier (PLC) effect  
Lecture 12 - Dynamic Strain Aging (DSA)  
Lecture 13 - Features of Serrated Flow - 1  
Lecture 14 - Features of Serrated Flow - 2  
Lecture 15 - Precipitation hardening - 1  
Lecture 16 - Precipitation hardening - 2  
Lecture 17 - Precipitation hardening - 3  
Lecture 18 - Precipitation hardening - 4  
Lecture 19 - Precipitation hardening - 5  
Lecture 20 - Precipitation hardening - 6  
Lecture 21 - 7XXX and 8XXX Series Alloys  
Lecture 22 - Strain Hardening - 1  
Lecture 23 - Strain Hardening - 2  
Lecture 24 - Recovery and Recrystallization  
Lecture 25 - Recrystallization Mechanism  
Lecture 26 - Recrystallization: Nucleation and Growth  
Lecture 27 - Dynamic Recrystallization  
Lecture 28 - Discontinuous and Continuous Dynamic Recrystallization  
Lecture 29 - Continuous Dynamic Recrystallization

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- Lecture 30 - Geometric Dynamic Recrystallization (GDRX)
- Lecture 31 - Grain boundary strengthening
- Lecture 32 - Grain refinement methods
- Lecture 33 - Homogeneous vs Heterogeneous Nucleation
- Lecture 34 - Grain refinement by Melt inoculation
- Lecture 35 - Mechanisms of grain refinement by melt inoculation - 1
- Lecture 36 - Mechanisms of grain refinement by melt inoculation - 2
- Lecture 37 - Melt inoculation: Fading and Poisoning
- Lecture 38 - Grain refinement by melt vibration
- Lecture 39 - Severe Plastic Deformation (SPD)
- Lecture 40 - Dynamic recrystallization in SPD
- Lecture 41 - Metal Matrix Composites
- Lecture 42 - Processing of Metal Matrix Composites
- Lecture 43 - Two-phase process, Insitu composites
- Lecture 44 - Particle wetting and Bonding
- Lecture 45 - Particle Distribution in MMCs - 1
- Lecture 46 - Particle Distribution in MMCs - 2
- Lecture 47 - Rule of Mixture - 1
- Lecture 48 - Rule of Mixture - 2
- Lecture 49 - Strengthening Mechanism in MMCs - 1
- Lecture 50 - Strengthening Mechanism in MMCs - 2
- Lecture 51 - Fracture Behavior of Fiber Reinforced Composites
- Lecture 52 - Ductile Fracture of Metals
- Lecture 53 - Fracture Behavior of Discontinuously Reinforced Composites
- Lecture 54 - Fatigue
- Lecture 55 - Fatigue Crack propagation and Growth
- Lecture 56 - Fatigue Behavior of MMCs - 1
- Lecture 57 - Fatigue Behavior of MMCs - 2
- Lecture 58 - Fatigue Behavior of MMCs - 3
- Lecture 59 - Fatigue Behavior of MMCs - 4
- Lecture 60 - Fatigue Behavior of MMCs - 5