

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

NPTEL Video Course - Chemistry and Biochemistry - NOC:Introduction to Polymer Science

Subject Co-ordinator - Dr. D. Dhara

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Importance of Polymer Science and Brief Historical background
Lecture 2 - Definitions/Terminologies, Classifications
Lecture 3 - Classifications, Nomenclature
Lecture 4 - Classification by Polymerization Mechanism, Nomenclature
Lecture 5 - Molecular Weight, Big Picture of Polymer Science, Common Polymers
Lecture 6 - Examples of Step Polymers, Linear Step Polymerization
Lecture 7 - Linear Step Polymerization
Lecture 8 - Linear Step Polymerization
Lecture 9 - Linear Step Polymerization
Lecture 10 - Types of Chain polymerization, Mechanism and Kinetics of Radical Chain Polymerization
Lecture 11 - Kinetics of Radical Chain Polymerization (Continued...), Various Types of Initiators
Lecture 12 - Thermal Initiation (Continued...), Molecular Weight and Kinetic Chain Length, Other Types of Rad
Lecture 13 - Transfer Reactions, Effect of Temperature on Rate and MW, MW Distribution, ceiling Temperature
Lecture 14 - Energetics and Thermodynamics of Chain Polymerization, MW Distribution, Common Polymers
Lecture 15 - Thermodynamics of Chain Polymerization, MW Distribution, Common Polymers
Lecture 16 - Process Conditions, Emulsion Polymerization
Lecture 17 - Emulsion Polymerization (Continued...), Common Polymers by Radical Chain Polymerization, RDRP
Lecture 18 - Reversible - Deactivation Radical Polymerizations (RDRP)
Lecture 19 - RAFT Polymerization (Continued...), Ionic Polymerization
Lecture 20 - Polymer Stereochemistry and Zeigler - Natta Coordination Polymerization
Lecture 21 - Ring Opening Polymerization, Copolymers
Lecture 22 - Copolymerization (Continued...)
Lecture 23 - Polymers in Solution
Lecture 24 - Polymers in Solution
Lecture 25 - Polymers in Solution
Lecture 26 - Polymers Chain Dimensions
Lecture 27 - Frictional Properties of Polymer Molecules in Dilute Solution, Determination of Polymer MW (Over
Lecture 28 - Membrane Osmometry, End Group Analysis, Dilute Solution Viscometry
Lecture 29 - Dilute Solution Viscometry, Light Scattering Techniques for MW

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- Lecture 30 - Gel Permeation Chromatography
- Lecture 31 - Light Scattering Techniques for MW and Size Measurements (Continued...)
- Lecture 32 - Mass Spectroscopy of Polymers
- Lecture 33 - Polymer Processing
- Lecture 34 - Mechanical Properties, Amorphous State
- Lecture 35 - Thermal Properties
- Lecture 36 - Thermal Properties
- Lecture 37 - Thermal Properties
- Lecture 38 - Thermomechanical Properties, Viscoelasticity
- Lecture 39 - Thermomechanical Properties, Viscoelasticity (Continued...)
- Lecture 40 - Optical, Electrical, Barrier Properties; Chemical Resistance and Weathering of Polymers
- Lecture 41 - Polymer Additives
- Lecture 42 - Polymer Blends, Concluding Remarks