

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

NPTEL Video Course - Chemical Engineering - NOC:Colloids and Surfaces

Subject Co-ordinator - Prof. Basavaraj Madivala Gurappa

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Introduction and motivation
- Lecture 2 - Colloidal dispersions, terminology and classification
- Lecture 3 - Stability in colloids
- Lecture 4 - Source, synthesis and characterisation of colloids
- Lecture 5 - Characterisation of colloidal particles - I
- Lecture 6 - Characterisation of colloidal particles - II
- Lecture 7 - Introduction to forces acting on an individual colloidal particle
- Lecture 8 - Introduction to interaction between colloidal particles
- Lecture 9 - Application of Brownian force
- Lecture 10 - Radiation used to study colloidal systems
- Lecture 11 - Radiation used to study colloidal systems
- Lecture 12 - Molecular origin of Van der waals forces
- Lecture 13 - Vanderwaal interactions between particles
- Lecture 14 - Problem on scaling of Vanderwaal interactions
- Lecture 15 - Calculation of Vanderwaal's forces between semi-infinite blocks and Hamaker constant - I
- Lecture 16 - Calculation of Vanderwaal's forces between semi-infinite blocks and Hamaker constant - II
- Lecture 17 - Theories of Vanderwaal forces based on bulk properties and calculation of Hamaker constant using
- Lecture 18 - Effect of medium on Vanderwaal's interactions - I
- Lecture 19 - Effect of medium on Vanderwaal's interactions - II
- Lecture 20 - Colloid Polymer mixtures
- Lecture 21 - Colloid polymer mixtures
- Lecture 22 - Colloid polymer mixtures
- Lecture 23 - Colloid polymer mixtures
- Lecture 24 - Depletion interactions
- Lecture 25 - Steric interactions/osmotic repulsion
- Lecture 26 - Tutorial problem on depletion interactions
- Lecture 27 - Colloidal Interactions
- Lecture 28 - Introduction to models of electrical double layer
- Lecture 29 - Review and summary of Helmholtz model (or capacitor model) of electrical double layer

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- Lecture 30 - Models of electrical double layer
- Lecture 31 - Potential distribution near planar surfaces
- Lecture 32 - Potential distribution near planar surfaces
- Lecture 33 - Potential distribution near spherical surfaces
- Lecture 34 - Comparison of Capacitor model and Diffuse double layer model
- Lecture 35 - Models of electrical double layer
- Lecture 36 - Models of electrical double layer
- Lecture 37 - Structure of Electrical double layer
- Lecture 38 - Force of Repulsion between interacting surfaces
- Lecture 39 - Potential Energy of repulsion between Planar double layers and DLVO Theory
- Lecture 40 - Zeta Potential and Electrophoretic mobility of an ion
- Lecture 41 - Electrokinetic Phenomena
- Lecture 42 - Relation between Electrophoretic mobility and Zeta potential - I
- Lecture 43 - Relation between Electrophoretic mobility and Zeta potential - II
- Lecture 44 - Colloidal particles at interfaces
- Lecture 45 - Characterization of Particles at interface
- Lecture 46 - Experimental Observations -Concept of Electrostatic interactions and Stability at interfaces
- Lecture 47 - Implications from Surface energy balances and Estimation of energy required for detachment
- Lecture 48 - Colloidal interactions at interface