

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

NPTEL Video Course - Chemistry and Biochemistry - NOC:Fundamentals of Spectroscopy

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Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Introduction to Spectroscopy
- Lecture 2 - Introduction to Quantum Mechanics - I
- Lecture 3 - Introduction to Quantum Mechanics - II
- Lecture 4 - A Simple Quantum Mechanical System
- Lecture 5 - Spectroscopic Transitions
- Lecture 6 - Intensity of a Transition Depends on the Transition Dipole Moment - I
- Lecture 7 - Intensity of a Transition Depends on the Transition Dipole Moment - II
- Lecture 8 - Comparison between Chemical Reactions and Spectroscopic Transitions
- Lecture 9 - Lineshape Analysis
- Lecture 10 - Different Forms of Spectroscopy
- Lecture 11 - Spectroscopic Timescales
- Lecture 12 - Correspondence between Linear Motion and Rotational Motion
- Lecture 13 - Diatomic Rigid Rotor
- Lecture 14 - Selection Rules and Rotational Spectrum
- Lecture 15 - Isotope effect
- Lecture 16 - Degeneracy
- Lecture 17 - Intensities of Rotational Lines
- Lecture 18 - Non Rigid Rotor
- Lecture 19 - Polyatomic Molecules - I
- Lecture 20 - Polyatomic Molecules - II and Numericals
- Lecture 21 - Origin of the Rotational Selection Rule
- Lecture 22 - Simple Harmonic Oscillator
- Lecture 23 - Energy Levels
- Lecture 24 - Selection Rules
- Lecture 25 - Anharmonicity
- Lecture 26 - Effects of Anharmonicity
- Lecture 27 - Ro-vibrational Spectrum - I
- Lecture 28 - Ro-vibrational Spectrum - II
- Lecture 29 - Harmonic Oscillator Eigenvalues and Eigenfunctions - I

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- Lecture 30 - Harmonic Oscillator Eigenvalues and Eigenfunctions - II
- Lecture 31 - Vibration of a Diatomic Molecule and Derivation of the Vibrational Selection Rule
- Lecture 32 - Ro-vibrational Spectrum - III
- Lecture 33 - Vibration of Polyatomic Molecules - I
- Lecture 34 - Vibration of Polyatomic Molecules - II
- Lecture 35 - Vibration of Polyatomic Molecules - III
- Lecture 36 - Normal Mode Coordinates
- Lecture 37 - Introduction to Raman Spectroscopy
- Lecture 38 - Quantum theory of Raman effect
- Lecture 39 - Rotational Raman Spectroscopy
- Lecture 40 - Nuclear Spin Statistics
- Lecture 41 - Polarizability and Polarizability Ellipsoid
- Lecture 42 - Raman Activity of Vibrations
- Lecture 43 - Vibrational Raman Spectroscopy
- Lecture 44 - Polarization Effects and Numericals
- Lecture 45 - Resonance Spectroscopy - Introduction 1
- Lecture 46 - Resonance Spectroscopy - Introduction 2
- Lecture 47 - NMR Spectroscopy - 1
- Lecture 48 - NMR Spectroscopy - 2
- Lecture 49 - NMR Spectroscopy - 3
- Lecture 50 - NMR Spectroscopy - 4
- Lecture 51 - NMR Spectroscopy - 5
- Lecture 52 - NMR Spectroscopy - 6
- Lecture 53 - ESR Spectroscopy - 1
- Lecture 54 - ESR Spectroscopy - 2
- Lecture 55 - ESR Spectroscopy - 3
- Lecture 56 - ESR Spectroscopy - 4
- Lecture 57 - Electronic Spectroscopy - 1
- Lecture 58 - Electronic Spectroscopy - 2
- Lecture 59 - Electronic Spectroscopy - 3
- Lecture 60 - Electronic Spectroscopy - 4
- Lecture 61 - Electronic Spectroscopy - 5