NPTEL Video Course - Chemistry and Biochemistry - NOC:Symmetry and Group Theory

Subject Co-ordinator - Prof. Anindya Datta

Co-ordinating Institute - IIT - Bombay

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

Lecture 1 - Symmetry point group
Lecture 2 - Symmetry point group
Lecture 3 - Symmetry point group
Lecture 4 - Symmetry point group
Lecture 5 - Symmetry point group
Lecture 6 - Transformation matrices and Matrix representation
Lecture 7 - More on Matrix representation
Lecture 8 - Matrix representation
Lecture 9 - Introduction to Group Theory
Lecture 10 - Group Multiplication Tables
Lecture 11 - Groups and subgroups
Lecture 12 - Classes, Similarity transformations
Lecture 13 - Introduction to Matrices
Lecture 14 - Application of matrices in solution of simultaneous equations
Lecture 15 - Matrix eigenvalue equation
Lecture 16 - Matrix eigenvalue equation
Lecture 17 - Similarity Transformations
Lecture 18 - Back to transformation matrices
Lecture 19 - Matrix representation revisited
Lecture 20 - Function space and Transformation Operators
Lecture 21 - Transformation Operators form the same group as transformation matrices
Lecture 22 - Transformation Operators form a unitary representation for orthonormal basis
Lecture 23 - Transformation Operators
Lecture 24 - Equivalent representations
Lecture 25 - Unitary Transformation
Lecture 26 - Unitary Transformations (Continued...)
Lecture 27 - Reducible and Irreducible Representations
Lecture 28 - Irreducible Representations and Great Orthogonality Theorem
Lecture 29 - Character Tables

Lecture 30 - Character Tables
Lecture 31 - Practice Session
Lecture 32 - Reducible to Irreducible Representations
Lecture 33 - Character Tables of Cyclic Groups
Lecture 34 - Symmetry of Normal Modes
Lecture 35 - Symmetry of Normal Modes
Lecture 36 - Symmetry of Normal Modes
Lecture 37 - Recap
Lecture 38 - Contribution of internal motion to normal modes
Lecture 39 - Normal mode analysis
Lecture 40 - Infrared and Raman spectroscopy
Lecture 41 - IR and Raman activity
Lecture 42 - IR and Raman activity
Lecture 43 - Symmetry Adapted Linear Combinations (SALC)
Lecture 44 - SALC
Lecture 45 - SALC
Lecture 46 - SALC
Lecture 47 - Projection Operators
Lecture 48 - Projection Operators (Continued...)
Lecture 49 - Generating SALCâ s using Projection Operators
Lecture 50 - Generating SALCâ s using Projection Operators (Continued...)
Lecture 51 - Oh complex and Group-subgroup relation
Lecture 52 - Group-Subgroup Relation
Lecture 53 - SALCs as Pi-MO andCyclopropenyl group
Lecture 54 - SALCs as Pi-MO, Cyclopropenyl group
Lecture 55 - SALCs as Pi-MO, Benzene
Lecture 56 - LCAO Huckel approximation
Lecture 57 - Huckel approximation
Lecture 58 - Stationary states, Multiplicity, Ethylene
Lecture 59 - Napthalene - I
Lecture 60 - Napthalene - II
Lecture 61 - Napthalene - III
Lecture 62 - Transition Metal Complexes
Lecture 63 - Jahn-Teller Theorem, Tetragonal Distortion MOT
Lecture 64 - MOT approach of bonding,H2O,Ferrocene
Lecture 65 - MOT approach of bonding,H2O,Ferrocene
Lecture 66 - Derivation
Lecture 67 - Derivation
Lecture 68 - Derivation