

Advanced Inorganic Chemistry (I)

Credits: 3

Lecturer: Liu, Ling-Kang 劉陵崗教授

Classroom: R121, Dept. of Chemistry, NTU

Class hour: Tuesday 9:10-10:00 & Thursday 10:20-12:10

Outline

I. Symmetry & Bonding

Molecular Geometry, Symmetry Elements & Operations, Point Groups, Representation & Character Tables, Applications to Spectroscopies
Symmetry-adapted Linear Combinations
Linear Combination of Atomic Orbitals
Molecular Orbital Theory for AB_n Type Molecules
Tanabe and Sugano Diagrams, Walsh Diagrams

II. Transition Metal Chemistry

Electronic Configuration, Spectroscopy, Magnetism
Coordination Chemistry
Bonding, Structures, Reactivity & Reaction Mechanisms

III. Main Group Chemistry

Ionic & Covalent Bond, Chemical Forces, H-Bonding & Acid-Base Chemistry
Structures & Reactivity
Supramolecular Chemistry & Organometallic Chemistry
A Brief Introduction on Modern Development

Pre-requisites

1. General Chemistry
2. Inorganic Chemistry, Undergraduate Level

Reference

1. F. Albert Cotton; "Chemical Applications of Group Theory"; Wiley-Interscience; 1990; 3rd Edition.
2. James E. Huheey, Ellen A. Keiter, Richard L. Keiter; "Inorganic Chemistry: Principles of Structure and Reactivity"; Benjamin Cummings; 1997; 4th Edition.
3. F. Albert Cotton, Geoffrey Wilkinson, Carlos A. Murillo, Manfred Bochmann, Russel Grimes; "Advanced Inorganic Chemistry"; Wiley-Interscience; 1999; 6th Edition.
4. Gary L. Miessler, Donald A. Tarr, "Inorganic Chemistry", Pearson Prentice Hall, 2004, 3rd Edition.