

JML 306(310)**Advanced Inorganic Chemistry**

Instructor: Tapas Kumar Maji

Bioinorganic Chemistry: Metalloporphyrin (hemoglobin, myoglobin, chlorophyll), metalloenzymes (electron transfer protein), Na/K ion pump, Iron-Sulfur protein, VitaminB12, Nitrogen fixation.

Organometallic Chemistry: Synthesis and characterization of different types of organometallic compounds, catalytic reactions (hydrogenation, hydroformylation, Ziegler- Natta polymerization etc.)

Metal carbonyls and other transition metal complexes with pi-acid ligands.

Supramolecular Chemistry: Introduction, Noncovalent interactions, Concepts of supramolecular synthons, Supramolecules and supermolecules, Host guest chemistry, applications in molecular biology and materials chemistry, catenation and interpenetration compounds, Metallo-supramolecular aggregation, and gels.

Materials: Zeolites (Silicates, aluminosilicates) and its various applications, Inorganic-organic hybrid materials; metal-organic frameworks and its applications.

Magnetism of the Coordination Compounds: Origin of magnetic properties; Ground Term and Microstates; Russell Saunders Term and Hole equivalency Theorem, Curie equation, Van Vleck equation; Magneto-structural correlations of some compounds.

Reference Books:

1. James E. Huheey, Ellen A. Keiter, R. L. Keiter, Inorganic Chemistry: Principles of Structure and Reactivity (Fourth Edition).
2. D. F. Shriver and P. W. Atkins, Inorganic Chemistry (Third Edition).
3. F. A. Cotton, G. Wilkinson, Advanced Inorganic Chemistry.
4. I. S. Butler, J. F. Harrod, Benjamin Cummings, Inorganic Chemistry: Principles and applications.