Co-ordination chemistry (chemistry of transition elements)

COURSE OUTLINE:

It will give an excellent opportunity to study and use the century old Nobel prize winning knowledge of coordination chemistry. The study will also lead to understanding the difference between a coordinated ligand and charge balancing ion in a coordination compound. Complexation reactions, stability constants, structures, geometrical and optical isomerism, bonding, reactions and reactivity will be discussed. Color and electronic, and magnetic properties will be delineated with respect to their application in analytical chemistry, industry and medicine.

INSTRUCTOR:

Prof. Debashis Ray
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ABOUT INSTRUCTOR:

Prof. Debashis Ray is an M. Sc. (Gold Medalist) from Burdwan University in 1985 and did his Ph. D. from IACS (degree from Jadavpur University) in 1989 and in faculty roll of IIT Kharagpur from 1990. Specialization: Inorganic Chemistry, Coordination Chemistry, Bioinorganic Chemistry, Analytical Chemistry.

COURSE PLAN:

Week 1 : Introduction - Definitions and Classification of Ligands
Week 2 : Nomenclature
Week 3 : Coordination Number and Stereochemistry
Week 4 : Structures, Symmetries Isomerism and Coordination Equilibria
Week 5 : Bonding in Complexes
Week 6 : Jahn-Teller Effect and Spin Crossover
Week 7 : Colors and Optical Spectra
Week 8 : Orgel and Tanabe Sugano Diagrams
Week 9 : Applications of CFT and Spinels
Week 10 : Magnetochemistry
Week 11 : Ligand Field Theory – Sigma and Pi Orbitals
Week 12 : Reactions, Reactivity and Biological Inorganic Chemistry Applications of Chemical Analysis