

Inorganic Chemistry Courses

Course Title: Organometallics

Semester: VII

Course Code: CH-450

Credit Hours: 3-0

Pre-requisite: Nil

Course Objectives

1. Students will acquire knowledge about chemistry of organometallics especially with reference to their types and bonding, and reactivity of organometallic compounds.

Text Book

2. A. Yamamoto, *Organotransition Metal Chemistry: Fundamental Concepts and Applications*, John Wiley & Sons (1986).

Recommended Books

3. R.H. Crabtree, *The Organometallic Chemistry of the Transition Metals*, John Wiley & Sons (2014).

4. M. Bockmann, *Organometallic Chemistry 1 & 2*, Oxford Chemistry Primers (1994).

Detailed Contents

5. Introduction: historical background and current trends. 18-Electron rule: rationalization, limitations. Types of ligands. Chemistry and bonding of metal-sigma and pi-complexes: metal carbonyls and related compounds, metal alkyls, metal hydrides, complexes of molecular nitrogen, oxygen and hydrogen, metal phosphines and complexes of pi-bond ligands. Applications of organometallic chemistry. Metal cluster and rationalization of their structures: electron counting schemes in clusters.

Course Outcomes

6. At the end of the course, students will be able to understand the introduction to organometallics, various types of ligands, sigma and pi-complexes and applications of organometallic chemistry.