New Courses of MS Chemistry

Course Title: Advanced Organometallic Chemistry

Course Code: CH-809

Credit Hours: 3-0

Prerequisite: Nil

Course Objectives

The field of Organometallic Chemistry combines aspects of traditional Inorganic and Organic Chemistry. Organometallic compounds are widely used both stoichiometrically in research and industrial chemical reactions, as well as in the role of catalysts to increase the rates of such reactions (e.g., as in uses of homogeneous catalysis), where target molecules include polymers, pharmaceuticals, and many other types of practical products.

Course Outcomes

The student who has met the objectives of the course will be able to:

i. Know the classification of organometallic compounds & demonstrate an understanding of the structure, bonding and reactivity of transition metal organometallic complexes.
ii. Demonstrate the knowledge of some of the most relevant industrial processes in the environment of Organometallic Chemistry.
iii. Demonstrate the ability to develop synthetic routes for organic molecules by means of integrated application of organometallic compounds.

Course Contents

Introduction of Organometallic Compounds, Introduction of Transition metal Compounds, Synthesis of Organometallic, Synthesis of Organometallic & transition metal Complexes, Reactivity and reactions, Grignard‘s reagents, Applications: of alkylithium., Alkylithium as metalating agents in organic synthesis, Synthesis Organo Palladium compounds, Organo Palladium compounds, Synthesis of Cupperates, Organo zinc compounds, Industrial Applications.

Recommended Books

1. Gielen, R. Willem and B. Warckmeyer (Eds.) Physical Organometallic Chemistry, Vol, 3, John Willey and Sons, New York (2002).
2. **L. S. Heqedus and L.G. Wade, Transition metals in the Synthesis of Complex Organic Molecules, 2nd ed.,** John Willey and Sons, New York (1999).

3. **M. Schlosser, Organometallics in Synthesis** John Wiley & Sons, Ltd Singapore (1996).
4. Clayden, N. Greeves, S. Warren and P. Worthers, Organic Chemistry, Oxford University (2001).