

JCL 302 (Jan) 4:0

Polymer and Supramolecular Chemistry

Instructor: Subi Jacob George

Part I. Fundamentals of Polymer chemistry and Polymeric materials

Fundamentals - Introduction, Molecular weight, Dispersity, stereochemistry, characterization, Step growth and chain polymerization. Types of polymerization - Condensation polymerization, Addition polymerization (cationic, anionic, free radical), Ring opening polymerization, ROMP. Living Polymerization- GTP, ATRP. Copolymerization - random, alternating and block copolymers Functional Polymeric materials - Conducting polymers- liquid crystals/Liquid crystalline polymers- dendrimers/dendritic polymers- Hyper branched/star polymers- supramolecular polymers-Biodegradable polymers-block copolymer lithography.

Part II. Supramolecular Chemistry and Materials: Concepts and Basic Principles - Molecular Recognition, Pre-organization, Non-Covalent Interactions, Co-operativity, Multivalency, Analytical Methods in Supramolecular Chemistry

Reference Books:

1. George Odian, "Principles of Polymerization"
2. Jonathan W. Steed, Jerry L. Atwood, "Supramolecular Chemistry"
3. Hans-Jorg Schneider and Anatoly Yatsimirsky, "Principles and Methods in Supramolecular Chemistry"
4. Fred W. Billmeyer, "Textbook of Polymer Science"
5. Hans-Jorg Schneider and Anatoly Yatsimirsky, "Principles and Methods in Supramolecular Chemistry"