

PCE6J003 POLYMER TECHNOLOGY

Module I:

History of polymers, classification and types of polymers, chemistry, kinetics, and methods of polymerization. Introduction to reactor design for polymerization.

Module II:

Properties of plastics and macromolecular structure. Polymer degradation. Molecular weight of polymers and its determination by viscometry, light-scattering, and osmotic pressure methods.

Module III:

Monomers and their manufacture. Manufacture and uses of important polymers: polyethylene, polypropylene, polystyrene, polyvinyl chloride, nylons, polyesters, polyvinyl alcohol, polyvinyl acetate, polymethyl-methacrylate, polyacrylic acid, polylactic acid, phenol formaldehyde, urea formaldehyde, polycarbonate, and Teflon.

Module IV:

Polymer additives, compounding of plastics. Casting and moulding of plastics, equipments, design of moulds. Plastic materials and elastomers as materials of construction in chemical equipments.

Text and Reference Books:

1. *Polymer Science and Technology, 3rd ed. by J R Fried, PHI.*
2. *Textbook of Polymer Science by F W Billmeyer, Wiley.*
3. *Principles of Polymerization, 4th ed. by G Odian, Wiley.*
4. *Polymer Science, 2nd ed. by VRGowarikar, JSreedhar, and NVViswanathan, New Age.*
5. *Contemporary Polymer Chemistry, 3rd ed. by Hallcock, FLDeceased, and JMark, PHI.*
6. *Introduction to Polymer Science and Technology by N B Singh and S S Das, New Age.*