

- Prefaces
- List of Symbols.
- 1 Introduction
  - Basic Terms
  - History of Plastics
  - Economic Importance
  - Chemical Structure Of Polymers
  - Constitution
    - Molecular Weights
    - Stereoisomerism
- 3 Polymer Syntheses
  - Introduction
  - Chain Polymerization
  - Polycondensation and Polyaddition
  - Polymer Reactions
- 4 Physical Structure Of Polymers
  - Solubility of Polymers
  - Dilute Solutions
  - Concentrated Solutions and Melts
  - Non-crystalline States
  - Crystalline Polymers
  - Mesophases
  - Gels
  - Polymer Surfaces
- 5 Polymer Adjuvants
  - Introduction
  - Compounding
  - Demixing
  - Modifiers
  - Colorants
  - Stabilizing Agents
  - Processing Aids
- 6 Thermophysical Properties
  - Introduction
  - Thermal Transformations
  - Molecular Motions
  - Transport
- 7 Flow Properties
  - Types of Flow
  - Newtonian Viscosities
  - Non-Newtonian Shear Viscosities
  - Extensional Viscosities
- 8 Plastics Processing
  - Properties and Operations
  - Processing of Viscous Materials
  - Processing of Viscoelastic Materials

- Solid-State Processing
- Fabricating
- Surface Treatment
- 9 Mechanical Properties
  - Basic Terms
  - Energy Elasticity
  - Entropy Elasticity
  - Viscoelasticity
  - Dynamic Behavior
  - Strength
  - Surface Mechanics
- 10 Electrical Properties
  - Fundamentals
  - Dielectric Properties
  - Electrical Conductivity
  - Photoconductivity
- 11 Optical Properties
  - Refraction
  - Reflection
  - Perviousness
- 12 Polymers For Plastics
  - Introduction
  - Carbon Chain Thermoplastics
  - Carbon-Oxygen Chain Thermoplastics
  - Carbon-Sulfur Chain Thermoplastics
  - Carbon-Nitrogen Chain Thermoplastics
  - Thermosets
  - Biopolymer-Based Plastics
- 13 Polymer Composites
  - Basic Considerations
  - Moduli
  - Strengths
  - Fracture Elongation
  - Thermal Properties
  - Rheological Properties
  - Macrocomposites
- 14 Polymer Blends
  - Overview
  - Plasticized Polymers
  - Polymer Blends
  - Thermoplastic Elastomers
  - Expanded Plastics
- 15 Disposal And Recycling
- 16 Appendix
  - Appendix 1 Physical Quantities and Units
  - Appendix 2 Concentrations

- Appendix 3 Ratios of Physical Quantities
- Appendix 4 Polymer and Plastics Abbreviations and Acronyms
- Appendix 5 ISO Codes for Thermoplastic Materials
- 17 Subject Index