Plastics play a very important role in our daily lives. Throughout the world the demand for plastic, particularly plastic packaging, continues to rapidly grow. Polymer technology deals with the manufacture and production of polymer and synthetic substances. Plastic is incredibly versatile and can be made from different ingredients, moulded into any shape, and put to a huge range of uses across industry and the rest of society, from carrier bags to electrical cables. Polymer energy system is an award winning, innovative, proprietary process to convert waste plastics into renewable energy. Some of the important example of polymers and plastics are polytetra fluoroethylene (PTFE), polyether sulphone (PES), phenol-formaldehyde (PF), polyolefins, vinyl polymers, thermoplastic polyesters, polysulfones, poly(phenylene sulfide), etc. Polymers are the most rapidly growing sector of the materials industry. The Indian plastic industry has taken great strides. In the last few decades, the industry has grown to the status of a leading sector in the country with a sizable base. The material is gaining notable importance in different spheres of activity and the per capita consumption is increasing at a fast pace. Continuous advancements and developments in polymer technology, processing machineries, expertise, and cost effective manufacturing is fast replacing the typical materials in different segments with plastics. On the basis of value added, Indian share of plastic products industry is about 0.5% of national GDP.

The major contents of the book are properties and applications of speciality plastics, thermoset plastics, applications of recycle plastics, introduction of polymer science, polymer additives, blends and composites, commodity thermoplastics and fibres etc. This book also consists of raw material suppliers for plastic and plastic products, manufacturers of plastic, processing machinery, plastics processing machinery and equipment (foreign), machinery and equipment for plastic converting, extruders and extrusion lines, injection moulding machines, presses and accessories, blow moulding and thermoforming machines etc. The book has been designed with the idea of blending and integrating basic polymer science and the technology of plastics into a composite structure. This book is an outcome of an endeavour in the direction of polymer and plastic processing. It would be of immense use to entrepreneurs, consultants, students and libraries etc.

Contents
1. PROPERTIES AND APPLICATIONS OF SPECIALITY PLASTICS

Polytetra Fluoroethylene (PTFE)
Characteristics
Applications
Thermoplastic Polyurethanes (TPU)
Characteristics
Applications
Polysulphones (PSO)
Characteristics
Applications
Polyether Sulphone (PES)
Characteristics
Applications
Polyphenylene Sulphide (PPS)
Characteristics
Applications
Polyphenylene Ether (PPE)
Characteristics
Applications
Polyether Etherketone (Peek)
Characteristics
Applications
Polyarylates
Characteristics
Applications
Polyamide-Imide (PAI)
Characteristics
Applications
Polyether-Imide (PEI)
Characteristics
Applications
Liquid Crystal Polymers (LCP)
Characteristics
Applications

2. PROPERTIES AND APPLICATIONS OF THERMOSET PLASTICS

Phenol-Formaldehyde (PF)
Characteristics
Applications
Amino Plastics
Characteristics
Applications
Melamine Formaldehyde
Urea Formaldehyde
Epoxy Resins
Characteristics
Applications
Unsaturated Polyester Resins
Characteristics
Applications
Polyurethane
Characteristics
3. APPLICATIONS OF RECYCLED PLASTICS

Introduction
Recycled LDPE
Recycled HDPE
Recycled Polypropylene
Recycled PVC
Recycled PS
Recycled PET
Recycled Commingled Plastics Waste

4. INTRODUCTION TO POLYMER SCIENCE

Classification of Polymers
Thermoplastics and Thermosets
Classification Based upon Polymerization Mechanism
Classification Based upon Polymer Structure
Polymer Structure
Copolymers
Tacticity
Geometric Isomerism
Nomenclature
Molecular-Weight Distribution
Molecular-Weight Averages

5. POLYMER ADDITIVES, BLENDS AND COMPOSITES

Additives
Plasticizers
Fillers and Reinforcements
Other Important Additives
Polymer Blends
Interpenetrating Networks
Mechanical Properties
Composite Fabrication
Reference

6. COMMODITY THERMOPLASTICS AND FIBERS

Thermoplastics
Polyolefins
Vinyl Polymers
Thermoplastic Polyesters
Fibers
Natural and Synthetic Fibers
Cellulose
Noncellulosics
Fiber-Spinning Operations

7. ENGINEERING AND SPECIALTY POLYMERS

Engineering Plastics
Polyamides
ABS
Polycarbonates
Modified Poly(phenylene oxide)
Acetal
Polysulfones
Poly(phenylene sulfide)
Engineering Polyesters
Fluoropolymers
Specialty Polymers
Polyimides and Related Specialty Polymers
Ionic Polymers
Polyaryletherketones
Specialty Polyolefins
Inorganic Polymers
Liquid-Crystal Polymers
Conductive Polymers
High-Performance Fibers
Other Specialty Polymers

8. POLYMER PROCESSING AND RHEOLOGY
Extrusion
Molding
Calendering
Coating
Non-Newtonian Flow
Viscosity of Polymer Solutions and Suspensions
Constitutive Equations
Elastic Properties of Polymeric Fluids
Pressure (Poiseuille) Flow
Drag Flow
Capillary Rheometer
Couette Rheometer
Cone-and-Plate Rheometer
Rheometric Characterization of Polymer Solutions and Melts
Introduction to the Modeling of Polymer-Processing Operations: Extrusion
Appendices

9. COMPONENTS OF A THERMOPLASTIC STRUCTURAL COMPOSITE
Thermoplastic Matrix Resins
Chain Extendable Resins
Amorphous Thermoplastics
Orientable Polymer Matrices
Semi-crystalline Thermoplastic Polymers
Polymer Blends and Compounds
The 'Victrex' Range of Aromatic Polymers
This allows for easy crystallization of the polyetherketone family.
Polyetheretherketone
Reinforcing Fibres
Organic Polymeric Fibres
Inorganic Filaments
Carbon Fibres
High Strength Carbon Fibres
Interfaces and Interphases
Wetting of the Fibre by the Resin
Chemical Bonding
Mechanical Interlocking
Crystalline Interactions
Thermoplastic Structural Composite Materials

10. PROCESSING SCIENCE AND MANUFACTURING TECHNOLOGY
Processing Science
Chemical Change
Thermophysical Properties
Rheology
The Analysis of Processing Operations
Manufacturing Technology
Consolidation
Continuous Consolidation
Tape Placement
Continuous Forming
Stamping
Diaphragm Forming
Incremental Processing
Machining
Assembly Technologies
Fasteners
Adhesive Bonding
Solvent Bonding
Fusion Bonding
Interlayer Bonding
Rework, Repair and Reclaim
Quality in Processing

11. DIRECTORY
Raw Material Suppliers for Plastic and Plastic Products
Manufacturers of Plastic Processing Machinery
Plastics Processing Machinery and Equipment (Foreign)
Machinery and Equipment for Plastic Converting
Extruders and Extrusion Lines
Injection Moulding Machines
Presses and Accessories
Blow-Moulding and Thermoforming Machines
Machinery for converting Reaction Resins (Unsaturated Polyesters, Epoxies)
Coating Lines
Other Plastics Converting Machines
Miscellaneous Plastic Machineries

About NIIR

NIIR PROJECT CONSULTANCY SERVICES (NPCS) is a reliable name in the industrial world for offering integrated technical consultancy services. NPCS is manned by engineers, planners, specialists, financial experts, economic analysts and design specialists with extensive experience in the related industries.

NPCS also publishes varies process technology, technical, reference, self employment and startup books, directory, business and industry database, bankable detailed project report, market research report on various industries, small scale industry and profit making business. Besides being used by manufacturers, industrialists and entrepreneurs, our publications are also used by professionals including project engineers, information services bureau, consultants and project consultancy firms as one of the input in their research.