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and Nomenclature; 3.3 Characteristics of Ziegler-Natta Catalysts; 3.4 Early Commercial Ziegler-Natta Catalysts 3.5 Supported Ziegler-Natta Catalysts 3.6 Prepolymerized Ziegler-Natta Catalysts; 3.7 Mechanism of Ziegler-Natta Polymerization; 3.8 Questions and Exercises; References; 4 Propylene Polymerization Catalysts; 4.1 Introduction; 4.2 Zero Generation Ziegler-Natta Catalysts; 4.3 First Generation ZN Catalysts; 4.4 Second Generation ZN Catalysts; 4.5 Third Generation ZN Catalysts; 4.6 Fourth Generation ZN Catalysts; 4.7 Fifth Generation ZN Catalysts; 4.8 ZN Catalysts for Atactic Polypropylene; 4.9 Metallocenes and Other Single Site Catalysts; 4.10 Cocatalysts for ZN Catalysts 4.11 Kinetics and ZN Catalyst Productivity 4.12 Concluding Remarks; 4.13 Questions; References; 5 Aluminum Alkyls in Ziegler-Natta Catalysts; 5.1 Organometallic Compounds; 5.2 Characteristics of Aluminum Alkyls; 5.2.1 Basic Physical and Chemical Properties; 5.2.2 Hydride Content; 5.2.3 Other R₃Al Impurities; 5.2.4 Analysis of Aluminum Alkyls; 5.2.5 Impurities Resulting from Exposure to Minute Concentrations of Water and Oxygen; 5.2.6 Assays of Aluminum Alkyls; 5.2.7 Reactivity with Organic Substrates; 5.2.8 Reactivity with CO₂ and CO; 5.2.9 Distillation; 5.2.10 Association of Aluminum Alkyls 5.2.11 Storage Stability 5.2.12 Thermal Stability; 5.3 Production of Aluminum Alkyls; 5.4 Reducing Agent for the Transition Metal; 5.5 Alkylating Agent for Creation of Active Centers; 5.6 Scavenger of Catalyst Poisons; 5.7 Chain Transfer Agent; 5.8 Safety and Handling of Aluminum Alkyls; 5.9 Questions; References; 6 Single Site Catalysts and Cocatalysts; 6.1 Introduction; 6.2 The Structures of Metallocenes and SSCs; 6.3 Non-Metallocene Polymerization Catalysts; 6.4 Cocatalysts for SSCs; 6.4.1 Aluminoxanes; 6.4.2 Organoboron Cocatalysts; 6.4.3 Activated Supports; 6.5 Supports for SSCs 6.6 Characteristics of mPP

Sommario/riassunto

This introductory text is an important resource for new engineers, chemists, students, and chemical industry personnel to understand the technical aspects of polypropylene which is the 2nd largest synthetic polymer in manufactured output. The book considers the following topics: What are the principal types of polypropylene and how do they differ? What catalysts are used to produce polypropylene and how do they function? What is the role of cocatalysts and how have they evolved over the years? How are industrial polypropylene catalysts tested and