1. Record Nr. UNINA9910841396803321

Titolo	Epoxy polymers [[electronic resource]] : new materials and innovations / / edited by Jean-Pierre Pascault and Roberto J.J. Williams
Pubbl/distr/stampa	Weinheim, : Wiley-VCH Verlag GmbH, c2010
ISBN	1-282-47229-1 9786612472299 3-527-62870-3 3-527-62871-1
Descrizione fisica	1 online resource (389 p.)
Classificazione	660 VK 8000 ZM 5300
Altri autori (Persone)	PascaultJean-Pierre <1943-> WilliamsRobert J. J
Disciplina	620.192 668.4226
Soggetti	Epoxy compounds Polymers
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Epoxy Polymers: New Materials and Innovations; Contents; Preface; List of Contributors; 1: General Concepts about Epoxy Polymers; 1.1 Polymerization Chemistry of Epoxy Monomers; 1.1.1 Typical Epoxy Monomers and Polymer Growth Mechanisms; 1.1.2 Step Growth Polymerization; 1.1.3 Chain Homopolymerization; 1.1.4 Chain Copolymerization; 1.1.5 Dual Polymerization Systems; 1.2 Transformations During the Formation of an Epoxy Network; 1.2.1 General Considerations; 1.2.2 Gelation; 1.2.3 Vitrification; 1.2.4 Reaction-Induced Phase Separation; 1.2.5 Transformation Diagrams 1.3 General Properties of Epoxy NetworksReferences; Part One: New Polymers/Materials; 2: Thermoplastic Epoxy Polymers; 2.1 Introduction; 2.2 Synthesis and Characterization of Epoxy Thermoplastics; 2.2.1 Poly (hydroxy ethers) and Poly(hydroxy ether sulfides); 2.2.2 Poly(hydroxy ether sulfonamides); 2.2.3 Poly(hydroxy ester ethers); 2.2.4 Poly (hydroxy amino ethers); 2.3 Fundamental Properties of Epoxy

Thermoplastics; 2.3.1 Mechanical Behavior; 2.3.2 Adhesive Characteristics; 2.3.3 Optical Properties of Poly(hydroxy amino ether) 19b; 2.3.4 Gas Barrier Properties of Epoxy Thermoplastics
2.4 ConclusionsAcknowledgments; References; 3: Epoxy Functional Acrylic Polymers for High Performance Coating Applications; 3.1 Introduction; 3.2 Epoxy Functional Acrylic Polymers (Epoxy Acrylates); 3.3 Synthesis of Epoxy Acrylates; 3.3.1 Semi-Batch Process; 3.3.2 Mass Polymerization; 3.3.3 Suspension Polymerization; 3.3.4 Polymerization in Supercritical Carbon Dioxide; 3.4 Design of Epoxy Acrylates as Film-forming Components in Coatings; 3.4.1 Glass Transition Temperature; 3.4.2 Molar Mass; 3.4.3 Choice of Co-monomers; 3.4.4 Epoxy Acrylates with a Dual-Cure
3.4.5 Structure of the Polymer: Block Copolymers3.4.6 Structure of the Polymer: Branched Epoxy Acrylates; 3.5 Cross-linking Reactions in Coating Systems; 3.5.1 Epoxy Acrylates in Etch-resistant One-Component Liquid Coatings; 3.5.2 Epoxy Acrylates in Powder Coatings; 3.5.3 Epoxy Acrylates in Water - Borne Coatings; 3.6 Conclusions; References; 4: Epoxy Polymers Based on Renewable Resources; 4.1 Introduction; 4.2 Synthesis and Polymerization of Monomers and Macromonomers Bearing Multiple Epoxy Functions; 4.2.1 Vegetable Oils; 4.2.2 Natural Rubber; 4.2.3 Lignin; 4.2.4 Cellulosics and Wood
4.2.5 Sugars4.2.6 Terpenes; 4.3 Synthesis and Polymerization of Monomers Bearing a Single Epoxy Group; 4.3.1 2-Furyloxirane; 4.3.2 Other Monomers; 4.4 Conclusions; References; Part Two: (Nano) Structured Epoxy Networks; 5: Nanostructured Epoxies by the Use of Block Copolymers; 5.1 Introduction; 5.2 Formation Mechanisms of Nanostructures in Thermosets; 5.2.1 Self-Assembly Approach; 5.2.2 Reaction-Induced Microphase Separation; 5.3 Morphologies of Epoxy Thermosets Modified With Block Copolymers; 5.3.1 Selection of Block Copolymers; 5.3.2 Nanophase Behavior of Epoxies Containing Block Copolymers
5.3.3 Demixing Behavior of Epoxy-Miscible Blocks Induced by Curing Reaction

Sommario/riassunto

In the only book to focus on new developments and innovations in this hot field international experts from industry and academia present everything scientists need to know.The first section provides general concepts of the synthesis and properties of epoxy polymers and serves as a basis for the subsequent chapters. The second section includes new types of epoxy polymers recently commercialized or not yet present on the market, while the third section includes chapters related to the capacity of generating controlled nanostructures in epoxy-based materials. A fourth section is devoted to in