1. Record Nr. UNINA9910130907303321

Titolo	Green polymerization methods [[electronic resource]] : renewable starting materials, catalysis and waste reduction / / edited by Robert T. Mathers and Michael A.R. Meier
Pubbl/distr/stampa	Weinheim, Germany, : Wiley-VCH Verlag [Chichester, UK, : John Wiley, distributor], c2011
ISBN	1-283-86965-9 3-527-63617-X 3-527-63618-8 3-527-63616-1
Descrizione fisica	1 online resource (381 p.)
Altri autori (Persone)	MathersRobert T MeierMichael A. R
Disciplina	668.9 668.92
Soggetti	Polymerization - Environmental aspects Chemical reactions - Environmental aspects Electronic books.
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	Green Polymerization Methods; Contents; List of Contributors; Part I Introduction; 1 Why are Green Polymerization Methods Relevant to Society, Industry, and Academics?; 1.1 Status and Outlook for Environmentally Benign Processes; 1.2 Importance of Catalysis; 1.3 Brief Summaries of Contributions; References; Part II Integration of Renewable Starting Materials; 2 Plant Oils as Renewable Feedstock for Polymer Science; 2.1 Introduction; 2.2 Cross-Linked Materials; 2.3 Non-Cross-Linked Polymers; 2.3.1 Monomer Synthesis; 2.3.2 Polymer Synthesis; 2.4 Conclusion; References 3 Furans as Offsprings of Sugars and Polysaccharides and Progenitors of an Emblematic Family of Polymer Siblings3.1 Introduction; 3.2 First Generation Furans and their Conversion into Monomers; 3.2.1 Furfural and Derivatives; 3.2.2 Monomers from Furfural; 3.2.3 Hydroxymethylfurfural; 3.3 Polymers from Furfuryl Alcohol; 3.4

Conjugated Polymers and Oligomers; 3.5 Polyesters; 3.6 Polyamides; 3.7 Polyurethanes; 3.8 Furyl Oxirane; 3.9 Application of the Diels-Alder Reaction to Furan Polymers; 3.9.1 Linear Polymerizations; 3.9.2 Non-Linear Polymerizations; 3.9.3 Reversible Polymer Cross-Linking
3.9.4 Miscellaneous Systems3.10 Conclusions; References; 4 Selective Conversion of Glycerol into Functional Monomers via Catalytic Processes; 4.1 Introduction; 4.2 Conversion of Glycerol into Glycerol Carbonate; 4.3 Conversion of Glycerol into Acrolein/Acrylic Acid; 4.4 Conversion of Glycerol into Glycidol; 4.5 Oxidation of Glycerol to Functional Carboxylic Acid; 4.5.1 Catalytic Oxidation of Glycerol to Glyceric Acid; 4.5.2 Oxidative-Assisted Polymerization of Glycerol; 4.5.2.1 Cationic Polymerization; 4.5.2.2 Anionic Polymerization; 4.6 Conversion of Glycerol into Acrylonitrile
4.7 Selective Conversion of Glycerol into Propylene Glycol4.7.1 Conversion of Glycerol into Propylene Glycol; 4.7.1.1 Reaction in the Liquid Phase; 4.7.1.2 Reaction in the Gas Phase; 4.7.2 Conversion of Glycerol into 1,3-Propanediol; 4.8 Selective Coupling of Glycerol with Functional Monomers; 4.9 Conclusion; References; Part III Sustainable Reaction Conditions; 5 Monoterpenes as Polymerization Solvents and Monomers in Polymer Chemistry; 5.1 Introduction; 5.2 Monoterpenes as Monomers; 5.2.1 Terpenic Resins Overview; 5.2.2 Concepts of Cationic Olefin Polymerization
5.2.3 Cationic Polymerization of -Pinene5.2.4 Cationic Polymerization of Dipentene; 5.2.5 Cationic Polymerization of -Pinene; 5.2.6 Characteristics of Terpenic Resins; 5.2.7 Applications of Terpenic Resins; 5.2.8 Commercial Production and Markets of Terpenic Resins; 5.2.9 Environmental Aspects of Terpenic Resin Production; 5.3 Monoterpenes as Solvents and Chain Transfer Agents; 5.3.1 Possibilities for Replacing Petroleum Solvents; 5.3.2 Ring-Opening Polymerizations in Monoterpenes; 5.3.3 Metallocene Polymerizations in Monoterpenes; 5.4 Conclusion; Acknowledgments; References
6 Controlled and Living Polymerization in Water: Modern Methods and Application to Bio-Synthetic Hybrid Materials

Sommario/riassunto

This first book to cover the topic in such great detail summarizes and evaluates the latest developments in green polymerization methods. Leading experts in the field discuss new every aspect -- from renewable materials to waste reduction, and from biocatalysis to solvent-free methods.Of high interest to polymer, synthetic and material scientists in academia and industry.