1. Record Nr. UNINA9910826015803321

Titolo	Topological polymer chemistry : progress of cyclic polymers in syntheses, properties and functions / / edited by Yasuyuki Tezuka, Tokyo Institute of Technology, Japan
Pubbl/distr/stampa	Singapore ; ; Hackensack, NJ, : World Scientific, c2013
ISBN	1-299-28126-5 981-4401-28-5
Edizione	[1st ed.]
Descrizione fisica	1 online resource (365 p.)
Altri autori (Persone)	TezukaYasuyuki
Disciplina	547.28 547.7 547/.28
Soggetti	Cyclopolymerization Topology
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	CONTENTS; General Introduction; References; Part I: Topological Polymer Chemistry - Concepts and Practices; Chapter 1: Systematic Classification of Nonlinear Polymer Topologies Yasuyuki Tezuka; 1. Introduction; 2. Classification of Branched Polymer Topologies; 3. Classification of Cyclic Polymer Topologies; 3.1. Monocyclic polymer topologies; 3.2. Multicyclic polymer topologies; 4. Ongoing Challenges and Future Perspectives; References; Chapter 2: Topological Isomers in Polymer Molecules Yasuyuki Tezuka; 1. Introduction; 2. Constitutional and Stereoisomers in Polymer Molecules 3. Topological Isomers in Polymer Molecules4. Polymeric Topological Isomers and Homologues; 5. Topological Isomers in Dicyclic Polymer Molecules; 6. Ongoing Challenges and Future Perspectives; References; Chapter 3: Telechelics Having Cyclic Onium Salt Groups Yasuyuki Tezuka; 1. Introduction; 2. Telechelics Having Various Cyclic Onium Salt Groups; 2.1. Telechelics having 4-membered cyclic ammonium (azetidinium) salt groups; 2.2. Telechelics having 5-membered cyclic sulfonium salt groups 2.3. Telechelics having 5-membered cyclic ammonium (pyrrolidinium)

and 6-membered bicyclic ammonium (quinuclidinium) salt groups3. Ion-Coupling Reactions with Telechelics Having Cyclic Onium Salt Groups; 3.1. Star polymers and polymacromonomers; 3.2. Model networks; 3.3. Graft copolymers and network copolymers; 4. Ongoing Challenges and Future Perspectives; References; Chapter 4: Electrostatic Self-Assembly and Covalent Fixation (ESA-CF) Process Yasuyuki Tezuka; 1. Introduction; 2. Control of the Reactivity by the Ring Size of Cyclic Onium Salts; 2.1. Ring-opening reactions
2.2. Ring-emitting reactions3. Electrostatic Polymer Self-Assembly and Covalent Fixation for Complex Polymer Topologies; 3.1. Ring (simple cyclic) polymers; 3.2. Multicyclic and cyclic-linear hybrid polymers; 4. Ongoing Challenges and Future Perspectives; References; Chapter 5: Dynamic Control of Polymer Topologies by the ESA-CF Process Yasuyuki Tezuka; 1. Introduction; 2. Dynamic Equilibrium in Electrostatic Polymer Self-Assembly; 3. Tadpole Polymers by Dynamic Selection in Electrostatic Polymer Self-Assembly; 4. Polymeric Topological Isomers of - and Manacle-Forms
5. Co-Polymacromonomers by Reshuffling in Electrostatic Polymer Self-Assembly6. Polymer Catenanes by Orthogonal Electrostatic and Hydrogen- Bonding Polymer Self-Assembly; 7. Ongoing Challenges and Future Perspectives; References; Chapter 6: Cyclic and Multicyclic Polymers Having Functional Groups (Kyklo-Telechelics) Yasuyuki Tezuka; 1. Introduction; 2. Single Cyclic Polymers Having Functional Groups; 3. Cyclic Macromonomers; 4. Tadpole Polymers Having Functional Groups; 5. Multiyclic Polymers Having Functional Groups at the Prescribed Positions
6. Cyclic Polymers Having Non-Reactive Functional Groups

Sommario/riassunto

There are examples aplenty in the macroscopic world that demonstrate the form of objects directing their functions and properties. On the other hand, the fabrication of extremely small objects having precisely defined structures has only recently become an attractive challenge, which is now opening the door to nanoscience and nanotechnology.In the field of synthetic polymer chemistry, a number of critical breakthroughs have been achieved during the first decade of this century to produce an important class of polymers having a variety of cyclic and multicyclic topologies. These developments no