

1. Record Nr.	UNINA9910830923403321
Titolo	Molecular recognition and polymers [[electronic resource]] : control of polymer structure and self-assembly // edited by Vincent M. Rotello, S. Thayumanavan
Pubbl/distr/stampa	Hoboken, N.J., : Wiley, c2008
ISBN	1-281-75213-4 9786611752132 0-470-38405-0 0-470-38404-2
Descrizione fisica	1 online resource (492 p.)
Altri autori (Persone)	RotelloVincent M ThayumanavanS (Sankaran)
Disciplina	547 547.1226
Soggetti	Biomimetic polymers Molecular recognition Supramolecular chemistry
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	MOLECULAR RECOGNITION AND POLYMERS; CONTENTS; Preface; Acknowledgments; List of Contributors; List of Figures; List of Tables; Editor Biographies; PART I FUNDAMENTALS OF SUPRAMOLECULAR POLYMERS; 1. A BRIEF INTRODUCTION TO SUPRAMOLECULAR CHEMISTRY IN A POLYMER CONTEXT; 1.1. Introduction and Background; 1.2. Main-Chain Versus Side-Chain Supramolecular Polymers; References; 2. MOLECULAR RECOGNITION USING AMPHIPHILIC MACROMOLECULES; 2.1. Introduction; 2.2. Amphiphilic Block Copolymers; 2.2.1. Nonspecific Interactions; 2.2.2. Specific Interactions; 2.3. Amphiphilic Homopolymers 2.3.1. Container Properties2.3.2. Recognition of Protein Surfaces; 2.3.3. Protein Sensing; 2.3.4. Recognition and Detection of Peptides; 2.4. Amphiphilic Dendrimers; 2.5. Conclusions; Acknowledgment; References; 3. SUPRAMOLECULAR CONTROL OF MECHANICAL PROPERTIES IN SINGLE MOLECULES, INTERFACES, AND MACROSCOPIC

MATERIALS; 3.1. Introduction and Background; 3.2. Mechanical Properties of Linear SPs; 3.3. Mechanical Properties of SP Networks; 3.4. Mechanical Properties in SPs at Interfaces; 3.5. Mechanical Forces and Supramolecular Interactions; 3.6. Conclusions; References

PART II POLYMER FORMATION AND SELF-ASSEMBLY

4. HYDROGEN BOND FUNCTIONALIZED BLOCK COPOLYMERS AND TELECHELIC OLIGOMERS;

4.1. Scientific Rationale and Perspective; 4.2. Hydrogen Bonding Interactions in Macromolecular Design; 4.2.1. Fundamentals of Hydrogen Bonding; 4.2.2. Performance Advantages of Hydrogen Bond Containing Polymers; 4.3. Hydrogen Bond Containing Block Copolymers; 4.3.1. Block Copolymers Involving Single Hydrogen Bonding Groups; 4.3.2. Nucleobase Containing Hydrogen Bonding Block Copolymers; 4.3.3. Block Copolymers Containing DNA Oligonucleotides 4.3.4. Block Copolymers Containing Other Hydrogen Bonding Arrays

4.3.5. Order-Disorder Transitions (ODTs) in Hydrogen Bonding Block Copolymers; 4.4. Telechelic Hydrogen Bond Functional Polymers; 4.5. Combining Hydrogen Bonding with Other Noncovalent Interactions; 4.6. Reversible Attachment of Guest Molecules via Hydrogen Bonding; 4.7. Conclusions and Summary; References;

5. NONCOVALENT SIDE CHAIN MODIFICATION; 5.1. Introduction; 5.1.1. Supramolecular Polymers; 5.2. Strategies Toward Noncovalent Side Chain Functionalization of Polymeric Scaffolds

5.2.1. Side Chain Functionalization Using Hydrogen Bonding 5.2.2. Side Chain Functionalization Using Metal Coordination; 5.2.3. Side Chain Functionalization Using Coulombic Interactions; 5.3. Noncovalent Multifunctionalization of the Side Chains of Polymeric Scaffolds; 5.3.1. Combination of Hydrogen Bonding and Metal Coordination Interactions; 5.3.2. Combination of Hydrogen Bonding and Coulombic Charges; 5.3.3. Multiple Hydrogen Bonding Interactions: Self-Sorting on Polymers

5.3.4. Terpolymer Functionalization Strategies: Combining Hydrogen Bonding, Metal Coordination, and Pseudorotaxane Formation

Sommario/riassunto

State-of-the-art techniques for tapping the vast potential of polymers. The use of specific non-covalent interactions to control polymer structure and properties is a rapidly emerging field with applications in diverse disciplines. Molecular Recognition and Polymers covers the fundamental aspects and applications of molecular recognition-in the creation of novel polymeric materials for use in drug delivery, sensors, tissue engineering, molecular imprinting, and other areas. This reference begins by explaining the fundamentals of supramolecular polymers; it progresses to cover poly
