

1. Record Nr.	UNINA9911018787203321
Titolo	Block copolymers in nanoscience // edited by Massimo Lazzari, Guojun Liu, Sebastien Lecommandoux, editors
Pubbl/distr/stampa	Weinheim, : Wiley-VCH Chichester, : John Wiley [distributor], c2006
ISBN	9786610921553 9781280921551 1280921552 9783527610570 352761057X 9783527610563 3527610561
Descrizione fisica	1 online resource (450 p.)
Classificazione	35.80
Altri autori (Persone)	LazzariMassimo LiuGuojun LecommandouxSebastien
Disciplina	547.7 547.84
Soggetti	Block copolymers Nanoscience
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	Block Copolymers in Nanoscience; Contents; Preface; List of Contributors; 1 An Introduction to Block Copolymer Applications: State-of-the-Art and Future Developments; References; 2 Guidelines for Synthesizing Block Copolymers; 2.1 Introduction; 2.2 Free-radical Polymerization; 2.3 Coupling Reactions of Homopolymers; 2.4 Sequential Anionic Polymerization; 2.5 Sequential Group Transfer Polymerization; 2.6 Sequential Cationic Polymerization; 2.7 Non-radical Metal-catalyzed Polymerization; 2.8 Controlled Radical Polymerization; 2.8.1 Atom Transfer Radical Polymerization (ATRP) 2.8.2 Nitroxide-mediated Polymerization (NMP)2.8.3 Reversible Addition Fragmentation Chain Transfer (the RAFT Process); 2.9

Switching from One Polymerization Mechanism to Another; 2.10 Use of "Dual" Initiators in Concurrent Polymerization Mechanisms; 2.11 Chemical Modification of Pre-formed Block Copolymers; 2.12 Methods for the Synthesis of Block Copolymers with a Complex Architecture; 2.13 Conclusion; References; 3 Block Copolymer Vesicles; 3.1 Introduction; 3.2 Chemistry of Vesicle-forming Block Copolymers; 3.3 Block Copolymer Vesicle Formation in Water 3.4 Block Copolymer Vesicle Formation in Organic Solvents 3.5 Properties of Polymer Vesicles; 3.5.1 Morphology and Size of Polymer Vesicles; 3.5.2 Membrane Properties; 3.5.2.1 Polymer Membrane Thickness; 3.5.2.2 Mechanical Properties of Polymer Vesicles; 3.5.2.3 Adhesion of Polymer Vesicles; 3.5.2.4 Fusion and Fission of Polymer Vesicles; 3.6 Functional Polymer Vesicles; 3.7 Biohybrid Polymer Vesicles; 3.7.1 Polypeptide-based Copolymer Vesicles; 3.7.2 Protein Incorporation into Polymer Vesicles; 3.8 Potential Applications of Polymer Vesicles; 3.9 Concluding Remarks; References 4 Block Copolymer Micelles for Drug Delivery in Nanoscience References; 5 Stimuli-responsive Block Copolymer Assemblies; 5.1 Introduction; 5.2 Stimuli-sensitive Micellization; 5.2.1 Temperature-sensitive Micellization; 5.2.2 pH-sensitive Micellization; 5.2.3 Ionic Strength Sensitive Micellization; 5.3 Stimuli-responsive Micelles; 5.4 Multi-responsive Micellar Systems; 5.5 Stimuli-responsive Thin Films from Block Copolymers; 5.6 Stimuli-responsive Block Copolymers in the Bulk; 5.7 Conclusions and Outlook; References; 6 Self-assembly of Linear Polypeptide-based Block Copolymers; 6.1 Introduction 6.2 Solution Self-assembly of Polypeptide-based Block Copolymers 6.2.1 Aggregation of Polypeptide-based Block Copolymers; 6.2.1.1 Polypeptide Hybrid Block Copolymers; 6.2.1.2 Block Copolypeptides; 6.2.2 Polypeptide-based Hydrogels; 6.2.3 Organic/Inorganic Hybrid Structures; 6.3 Solid-state Structures of Polypeptide-based Block Copolymers; 6.3.1 Diblock Copolymers; 6.3.1.1 Polydiene-based Diblock Copolymers; 6.3.1.2 Polystyrene-based Diblock Copolymers; 6.3.1.3 Polyether-based Diblock Copolymers; 6.3.1.4 Polyester-based Diblock Copolymers; 6.3.1.5 Diblock Copolypeptides 6.3.2 Triblock Copolymers

Sommario/riassunto

This first book to take a detailed look at one of the key focal points where nanotechnology and polymers meet provides both an introductory view for beginners as well as in-depth knowledge for specialists in the various research areas involved. It investigates all types of application for block copolymers: as tools for fabricating other nanomaterials, as structural components in hybrid materials and nanocomposites, and as functional materials. The multidisciplinary approach covers all stages from chemical synthesis and characterization, presenting applications from physics and chemistry to bio
