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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 NanoscienceReferences; 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
