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Poly(fluorene vinylene)s; 1.4.2.2 Anionic Poly(fluorene vinylene)s; 1.5 Conclusion; References; 2 All-Conjugated Rod-Rod Diblock Copolymers Containing Conjugated Polyelectrolyte Blocks 2.1 Introduction 2.2 All-Conjugated, Cationic Polyfluorene-b-Polythiophene Diblock Copolymers; 2.2.1 Synthesis; 2.2.2 Optical Properties; 2.2.3 Aggregation Behavior of Cationic PF-b-PT Diblock Copolymers; 2.2.4 Atomic Force Microscopy; 2.2.4.1 Confocal Microscopy; 2.2.4.2 Complexation with Anionic Surfactants; 2.2.4.3 Complexation with DNA; 2.2.4.4 Incorporation of PF2/6-b-P3TMAHT into Organic Electronic Devices; 2.3 All-Conjugated Cationic Polyfluorene-b-Polyfluorene Diblock Copolymers; 2.3.1 Synthesis; 2.3.2 Optical Properties; 2.3.3 Atomic Force Microscopy; 2.4 Conclusion; Acknowledgments References 3 Ionically Functionalized Polyacetylenes; 3.1 Introduction; 3.2 Polymers from Ionically Functionalized Cyclooctatetraenes; 3.2.1 Synthesis and General Properties; 3.2.2 Electrochemistry; 3.2.2.1 Electrochemical Doping; 3.2.2.2 The Donnan Potential; 3.2.2.3 Internal Compensation; 3.2.3 Polyelectrolyte-Mediated and Self-Limiting Electrochemistry; 3.2.4 Junctions; 3.2.4.1 In situ Electrochemical Manipulation and the Tunable Diode; 3.2.4.2 Internally Compensated p-n Junctions; 3.2.4.3 Undoped Ionic Junctions; 3.3 Polymers from Ionically Functionalized Acetylenes 3.3.1 General Properties and Synthetic Approaches 3.3.2 Polymer Chain Structure; 3.3.3 Poly(IA)s with Extended Conjugations; 3.4 Summary; Acknowledgment; References; 4 Aggregation Properties of Conjugated Polyelectrolytes; 4.1 Introduction; 4.2 Aggregation: from Disordered Clusters to Structured Vesicles; 4.3 Experimental Studies on Aggregation; 4.3.1 What Scattering Techniques Tell Us; 4.3.2 Microscopy Studies in Solution and Films; 4.3.3 Spectroscopic and Photophysical Studies; 4.3.4 Aggregation as Seen by Electrical Conductivity and NMR Spectroscopy; 4.3.5 Molecular Dynamics Simulations 4.4 Conjugated Polyelectrolyte Aggregation in Solution

Sommario/riassunto

This is the first monograph to specifically focus on fundamentals and applications of polyelectrolytes, a class of molecules that gained substantial interest due to their unique combination of properties. Combining both features of organic semiconductors and polyelectrolytes, they offer a broad field for fundamental research as well as applications to analytical chemistry, optical imaging, and opto-electronic devices. The initial chapters introduce readers to the synthesis, optical and electrical properties of various conjugated polyelectrolytes. This is followed by chapters on the applica
