

1. Record Nr.	UNINA9911020075003321
Autore	Freund Michael S
Titolo	Self-doped conducting polymers // Michael S. Freund and Bhavana A. Deore
Pubbl/distr/stampa	Chichester, England ; ; Hoboken, NJ, : Wiley, c2007
ISBN	9786612345753 9781282345751 1282345753 9780470061725 0470061723 9780470061732 0470061731
Descrizione fisica	1 online resource (340 p.)
Altri autori (Persone)	DeoreBhavana
Disciplina	547.7 547.70457 547/.70457
Soggetti	Conducting polymers Doped semiconductors Polymerization Electric apparatus and appliances - Materials
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	Self-Doped Conducting Polymers; Contents; About the Authors; Preface; 1 Introduction; 1.1 Conducting Polymers; 1.1.1 History of Conjugated Conducting Polymers; 1.1.2 Concept of Doping in Intrinsically Conducting Polymers; 1.1.3 Conduction Mechanism; 1.1.4 Synthesis; 1.1.5 Processability; 1.2 Self-Doped Conducting Polymers; 1.3 Types of Self-Doped Polymers; 1.4 Doping Mechanism in Self-Doped Polymers; 1.4.1 p-Type Doping; 1.4.2 n-Type Doping; 1.4.3 Auto Doping; 1.5 Effect of Substituents on Properties of Polymers; 1.5.1 Solubility; 1.5.2 DC Conductivity; 1.5.3 Molecular Weight 1.5.4 Redox Properties 1.5.5 Electronic and Spectroscopic Properties; 1.5.6 Mechanical and Thermal Properties; 1.6 Applications of Self-

Doped Polymers; 1.6.1 Molecular Level Processing; 1.6.2 Transistors; 1.6.3 Biosensors; 1.6.4 e-Beam Lithography; 1.6.5 Electrochromic Devices; 1.6.6 Ion Exchangers; 1.6.7 Rechargeable Batteries; 1.6.8 Dip-Pen Nanolithography; References; 2 Self-Doped Derivatives of Polyaniline; 2.1 Introduction; 2.2 Chemical Synthesis of Sulfonic Acid Derivatives; 2.2.1 Post-Polymerization Modification; 2.2.2 Polymerization of Monomers  
2.3 Electrochemical Synthesis of Sulfonic Acid Derivatives 2.3.1 Aqueous Media; 2.3.2 Non-Aqueous Media; 2.4 Enzymatic Synthesis of Sulfonic Acid Derivatives; 2.5 Properties of Sulfonic Acid Derivatives; 2.5.1 Solubility; 2.5.2 Conductivity; 2.5.3 pH Dependent Redox Behavior; 2.5.4 Electronic and Spectroscopic Properties; 2.5.5 Molecular Weight; 2.5.6 Thermal Stability; 2.5.7 Morphology; 2.6 Synthesis and Characterization of Carboxylic Acid Derivatives; 2.6.1 Chemical Synthesis; 2.6.2 Electrochemical Synthesis; 2.7 Synthesis and Characterization of Phosphonic Acid Derivatives  
2.8 Self-Doped Polyaniline Nanostructures References; 3 Boronic Acid Substituted Self-Doped Polyaniline; 3.1 Introduction; 3.2 Synthesis; 3.2.1 Electrochemical Synthesis; 3.2.2 Chemical Synthesis; 3.3 Properties of Self-Doped PABA; 3.3.1 pH Dependent Redox Behavior; 3.3.2 Spectroscopy; 3.3.3 Molecular Weight; 3.4 Self-Crosslinked Self-Doped Polyaniline; 3.4.1 Introduction; 3.4.2 Synthesis and Characterization; 3.4.3 Mechanical Properties; 3.4.4 <sup>11</sup>B NMR; 3.4.5 Thermal Properties; 3.4.6 Temperature Dependent Conductivity; 3.5 Applications; 3.5.1 Saccharide Sensor; 3.5.2 Nucleotide Sensors  
3.5.3 Amine Sensors 3.5.4 Molecular Level Processing for Controlled Release of RNA; References; 4 Self-Doped Polythiophenes; 4.1 Sulfonic Acid Derivatives; 4.1.1 Electrochemical Polymerization; 4.1.2 Chemical Polymerization; 4.1.3 Post Polymerization Modification; 4.2 Carboxylic Acid Derivatives; 4.3 Phosphonic Acid Derivatives; References; 5 Miscellaneous Self-Doped Polymers; 5.1 Self-Doped Polypyrrole; 5.1.1 Electrochemical Polymerization; 5.1.2 Chemical Polymerization; 5.1.3 Polycondensation; 5.2 Carboxylic Acid Derivatives; 5.3 Self-Doped Poly(3,6-(carbaz-9-yl)propanesulfonate)  
5.4 Self-Doped Poly(p-phenylene)s

---

## Sommario/riassunto

Self-Doped Conducting Polymers provides an introduction to conducting polymers in general and self-doped conducting polymers in particular. This is followed by an in depth exploration of the synthesis, properties and utilization of several types of self-doped polymers. Optimization of self-doped polymers is also discussed.

---