1. Record Nr. UNINA9910827319003321

Titolo	Polymers for energy storage and conversion / / edited by Vikas Mittal
Pubbl/distr/stampa	Hoboken, N.J., : John Wiley & Sons, Inc. Salem, Mass., : Scrivener Pub., 2013
ISBN	9781118734087 1118734084 9781118734162 1118734165 9781118734209 1118734203
Edizione	[1st ed.]
Descrizione fisica	1 online resource (272 p.)
Collana	Polymer Science and Plastics Engineering
Altri autori (Persone)	MittalVikas
Disciplina	541/.372
Soggetti	Conducting polymers Polyelectrolytes Electric insulators and insulation - Polymers Polymers Polymers - Electric properties Electric batteries
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	Cover; Title Page; Copyright Page; Contents; Preface; List of Contributors; 1 High Performance Polymer Hydrogel Based Materials for Fuel Cells; 1.1 Introduction; 1.2 Hydrogel Electrolyte; 1.3 Poly(vinyl alcohol) Hydrogel; 1.3.1 Chitosan-based Hydrogel in Fuel Cells; 1.3.2 Chitosan Membrane for Polymer Electrolyte Membrane Fuel Cell; 1.3.3 Chitosan Membrane for Alkaline Polymer Electrolyte Fuel Cell; 1.3.4 Chitosan for Fuel Cell Electrode; Summary; References; 2 PVAc Based Polymer Blend Electrolytes for Lithium Batteries; 2.1 Introduction; 2.1.1 Polymer Electrolytes 2.1.2 Role of Polymers in Electrolyte 2.1.3 Polymers; 2.1.4 Advantages of Polymer Electrolytes in Battery; 2.1.5 Poly Vinyl Acetate (PVAc); 2.1.6 PVAc Based Polymer Electrolytes; 2.1.7 Surface and Structural Analysis;

Conclusion; References; 3 Lithium Polymer Batteries Based on Ionic Liquids; 3.1 Lithium Batteries; 3.1.1 Introduction; 3.1.2 Lithium Polymer Batteries; 3.2 Lithium Polymer Batteries Containing Ionic Liquids; 3.2.1 Ionic Liquids; 3.2.2 Ionic Liquid-Based Polymer Electrolytes; 3.2.3 Ionic Liquid-Based, Lithium Polymer Battery Performance; Glossary; References
4 Organic Quantum Dots Grown by Molecular Layer Deposition for Photovoltaics 4.1 Introduction; 4.2 Molecular Layer Deposition; 4.3 Concept of Solar Cells with Organic Quantum Dots; 4.4 Polymer Multiple Quantum Dots; 4.4.1 Fabrication Process and Structures; 4.4.2 Structural Confirmation of Polymer MQDs; 4.4.3 Photocurrent Spectra; 4.4.4 MLD on TiO2 Layer; 4.5 Molecular Multiple Quantum Dots; 4.5.1 Fabrication Process and Structures; 4.5.2 Structural Confirmation of Molecular MQDs; 4.5.3 Photocurrent Spectra; 4.6 Waveguide-Type Solar Cells; 4.6.1 Proposed Structures
4.6.2 Photocurrent Enhancement by Guided Lights 4.6.3 Film-Based Integrated Solar Cells; 4.7 Summary; References; 5 Solvent Effects in Polymer Based Organic Photovoltaics; 5.1 Introduction; 5.2 Solar Cell Device Structure and Preparation; 5.3 Spin-Coating of Active Layer; 5.4 Influence of Solvent on Morphology; 5.4.1 Crystallization Process and Cluster Formation; 5.4.2 Lateral Structures; 5.4.3 Vertical Material Composition; 5.4.4 Mesoscopic Morphology; 5.5 Residual Solvent; 5.5.1 Absolute Solvent Content in Homopolymer Films; 5.5.2 Lateral Solvent Distribution; 5.6 Summary; Acknowledgment
References 6 Polymer-Inorganic Hybrid Solar Cells; 6.1 Introduction; 6.1.1 Hybrid Solar Cell; 6.1.2 Semiconducting Conjugated Polymers; 6.1.3 Inorganic Semiconductors; 6.1.4 Solar Cell Device Characterization; 6.2 Hybrid Conjugated Polymer-Inorganic Semiconductor Composites; 6.2.1 Inorganic Semiconductor in a Bilayer Structure; 6.2.2 Inorganic Semiconductor as a Blend with Conjugated Polymer; 6.2.3 Inorganic Metal Oxide as Charge Transport Layer; 6.3 Conclusion; References; 7 Semiconducting Polymer-based Bulk Heterojunction Solar Cells; 7.1 Introduction
7.2 Optical Properties of Semiconducting Polymers

Sommario/riassunto

Polymers are increasingly finding applications in the areas of energy storage and conversion. A number of recent advances in the polymer molecular structure control thereby tuning of the polymer properties have led to these applications. This book assimilates these advances in the form of a comprehensive text which includes the synthesis and properties of a large number of polymer systems for applications in the areas of lithium batteries, photovoltaics, solar cells, etc. Polymers for Energy Storage and Conversion describes: PVAc-based polymer blend electrolytes for