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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

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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

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## 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

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