

1. Record Nr.	UNINA9910826190403321
Autore	Pu Hongting
Titolo	Polymers for PEM fuel cells // Hongting Pu
Pubbl/distr/stampa	Hoboken, New Jersey : , : Wiley, , 2014 ©2014
ISBN	1-5231-1134-8 1-118-86928-1 1-118-86934-6 1-118-86932-X
Descrizione fisica	1 online resource (431 p.)
Collana	Wiley Series on Polymer Engineering and Technology
Disciplina	621.31/2429
Soggetti	Proton exchange membrane fuel cells Polymers
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 at the end of each chapters and index.
Nota di contenuto	Polymers for PEM Fuel Cells; Contents; Preface; Acknowledgments; 1 Introduction; 1.1 Principles of Fuel Cells; 1.2 Types of Fuel Cells; 1.2.1 AFC; 1.2.2 PAFC; 1.2.3 MCFC; 1.2.4 SOFC; 1.2.5 PEMFC; 1.2.6 DMFC; 1.3 Applications; 1.3.1 Stationary Power; 1.3.2 Propulsion of Vehicles; 1.3.3 Portable Applications; 1.4 Needs of Fundamental Materials for PEM Fuel Cells; 1.4.1 Membranes; 1.4.2 Electrodes; 1.4.3 Polymeric Materials as Components of Fuel Cell Catalytic System; 1.4.4 Bipolar Plates; 1.5 Membranes for PEM Fuel Cells; 1.5.1 Proton Exchange Membranes; 1.5.2 PEMs for DMFCs 1.5.3 Anion Exchange Membranes (AEMs)1.5.4 Organic-Inorganic Composites; 1.6 Testing of PEMs; References; 2 Fluoropolymers for Proton Exchange Membranes; 2.1 Introduction; 2.2 Perfluorosulfonic Acid Resins; 2.2.1 PFSA Polymers with Long Side Chains; 2.2.2 PFSA Polymers with Short Side Chains; 2.2.3 Sulfonimide Membranes; 2.3 Partially Fluorinated Polymers; 2.3.1 Partially Fluorinated Aromatic Polymers; 2.3.2 Partially Fluorinated Graft Copolymers; 2.4 Durability of Fluoropolymers for Proton Exchange Membranes; 2.5 Composite Membranes Based on Fluoropolymers; 2.5.1 Reinforcement by a

Polymer

2.5.2 Organic-Inorganic Composite Membranes 2.5.3

Nafion®/Sulfonated Polymers; 2.5.4 Multilayer Membranes; 2.5.5 Semi-IPN Membranes; References; 3 Nonfluorinated Polymers for Proton Exchange Membranes; 3.1 Introduction; 3.2 Sulfonated Polyimides; 3.2.1 Synthesis of Sulfonated Polyimides; 3.2.2 Structure and Properties of Sulfonated Polyimide; 3.2.3 Modification of Sulfonated Polyimides; 3.2.4 Fuel Cell Performance and Stability of sPI Membranes; 3.3 Sulfonated Poly(ether ether ketone); 3.3.1 Synthesis of sPEEK; 3.3.2 Structure and Properties; 3.3.3 Modification of sPEEK Membranes 3.4 Sulfonated Polysulfone and Poly(ether sulfone) 3.4.1 Polysulfones and Poly(ether sulfone); 3.4.2 Sulfonation and Phosphonation of Polysulfones and Poly(ether sulfone)s; 3.4.3 Poly(arylene thioether sulfone)s; 3.5 Sulfonated Polyphosphazenes; 3.5.1 Synthesis of Sulfonated Polyphosphazenes; 3.5.2 Phenylphosphonic Acid-Functionalized Polyphosphazenes; 3.5.3 Polyphosphazenes with Sulfonamide Side Groups; 3.5.4 Modification of Sulfonated Polyphosphazenes; 3.5.5 Polyphosphazene Membranes for PEMFCs; 3.5.6 Polyphosphazene Membranes for DMFCs; 3.6 Sulfonated Polybenzimidazole 3.7 Sulfonated Poly(phenylene oxide) 3.7.1 Sulfonated PPO for PEMs; 3.7.2 Modification of sPPO; 3.7.3 Fuel Cell Performances of sPPO Membranes; References; 4 Anhydrous Proton-Conducting Polymers for High-Temperature PEMFCs; 4.1 Introduction; 4.2 Phosphoric Acid-Impregnated Polybenzimidazole Membranes; 4.2.1 Synthesis of PBIs; 4.2.2 Membrane Fabrication of PBIs; 4.2.3 Structure and Properties of PBIs; 4.2.4 Modification of PBIs; 4.2.5 Composite Membranes of PBIs; 4.2.6 Fuel Cell Technologies; References; 5 Anion Exchange Membranes for Alkaline Fuel Cells; 5.1 Introduction 5.2 Anion Exchange Membranes for Alkaline Fuel Cells

---

Sommario/riassunto

Including chemical, synthetic, and cross-disciplinary approaches; this book includes the necessary techniques and technologies to help readers better understand polymers for polymer electrolyte membrane (PEM) fuel cells. The methods in the book are essential to researchers and scientists in the field and will lead to further development in polymer and fuel cell technologies. Provides complete, essential, and comprehensive overview of polymer applications for PEM fuel cells Emphasizes state-of-the-art developments and methods, like PEMs for novel fuel cells and polymers for fuel cell catalysts

---