

1. Record Nr.	UNINA9910141603703321
Titolo	Materials for high-temperature fuel cells [[electronic resource] ] / edited by San Ping Jiang and Yushan Yan
Pubbl/distr/stampa	Weinheim, : Wiley-VCH, c2013
ISBN	1-5231-1090-2 3-527-64426-1 3-527-64428-8 3-527-64427-X
Descrizione fisica	1 online resource (403 p.)
Collana	Materials for sustainable energy and development
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Disciplina	621.312429
Soggetti	Fuel cells - 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	Materials for High-Temperature Fuel Cells; Contents; Series Editor Preface; Preface; About the Series Editor; About the Volume Editor; List of Contributors; 1 Advanced Anodes for Solid Oxide Fuel Cells; 1.1 Introduction; 1.2 Ni-YSZ Anode Overview; 1.3 Insights from Real Ni-YSZ Microstructures; 1.4 Mechanistic Understanding of Fuel Oxidation in Ni-Based Anodes; 1.4.1 Hydrogen Oxidation; 1.4.2 Hydrocarbon Fuels in Ni-Based Anodes; 1.5 Poisoning of Ni-Based Anodes; 1.6 Alternative Anode Materials for Direct Hydrocarbon Utilization; 1.6.1 Electronic Conductivity of Alternative Materials 1.6.2 Electrocatalytic Activity of Alternative Anode Materials 1.6.3 Poisoning of Alternative Anode Materials; 1.7 Infiltration as an Alternative Fabrication Method; 1.8 Summary and Outlook; References; 2 Advanced Cathodes for Solid Oxide Fuel Cells; 2.1 Introduction; 2.2 Cathodes on Oxygen-Ion-Conducting Electrolytes; 2.2.1 Cathodes on Doped Ceria Electrolytes; 2.2.1.1 Perovskite; 2.2.1.2 Double Perovskites; 2.2.2 Cathodes on Stabilized Zirconia Electrolytes; 2.2.2.1 La <sub>1-x</sub> Sr <sub>x</sub> MnO <sub>3</sub> -Based Perovskites; 2.2.2.2 Doped La <sub>0.8</sub> Sr <sub>0.2</sub> MnO <sub>3</sub> ; 2.2.2.3 Cobalt-Containing Cathodes with a Buffering Layer 2.3 Cathodes on Proton-Conducting Electrolytes 2.3.1 Cobaltite; 2.3.2

Ferrite; 2.3.3 Bismuthate; 2.4 Advanced Techniques in Cathode Fabrication; 2.4.1 Wet Impregnation; 2.4.1.1 Alleviated Phase Reaction; 2.4.1.2 Optimized Microstructure; 2.4.1.3 Matched Thermal Expansion Coefficient; 2.4.1.4 Reduced Cost of Metal Catalyst; 2.4.2 Surfactant-Assisted Assembly Approach; 2.4.3 Spray Pyrolysis; 2.5 Summary; References; 3 Oxide Ion-Conducting Materials for Electrolytes; 3.1 Introduction; 3.2 Oxide Ion Conductivity in Metal Oxide; 3.2.1 Fluorite Oxides; 3.2.1.1 Stabilized ZrO<sub>2</sub>; 3.2.1.2 Doped CeO<sub>2</sub>; 3.2.2 Perovskite Oxide; 3.2.3 Perovskite-Related Oxide; 3.2.4 New Class of Oxide Ion-Conducting Oxide; 3.3 Electrolyte Efficiency; 3.4 Strain Effects on Oxide Ion Conductivity; 3.5 Degradation in Conductivity; 3.6 Concluding Remarks; References; 4 Proton-Conducting Materials as Electrolytes for Solid Oxide Fuel Cells; 4.1 Introduction; 4.2 The Principle of Proton-Conducting Oxides; 4.3 Proton-Conducting Materials for Solid Oxide Fuel Cells; 4.3.1 BaCeO<sub>3</sub>- and BaZrO<sub>3</sub>-Based Proton-Conducting Oxides; 4.3.2 Other Perovskite-Related Proton-Conducting Oxides; 4.3.3 Niobate- and Tantalate-Based Proton-Conducting Oxides; 4.3.4 Proton Conduction in Typical O<sub>2</sub>- Ion Conducting Materials; 4.3.5 Other Proton-Conducting Materials; 4.4 Solid Oxide Fuel Cells Based on Proton-Conducting Electrolytes; 4.5 Electrode Materials and Anode Reactions for SOFCs Based on Proton-Conducting Electrolytes; 4.6 Conclusion; References; 5 Metallic Interconnect Materials of Solid Oxide Fuel Cells; 5.1 Introduction; 5.2 Oxidation Behaviors of Candidate Alloys; 5.2.1 Oxidation in Cathode Atmosphere; 5.2.2 Oxidation in Anode Atmosphere; 5.2.3 Oxidation in Dual Atmospheres; 5.2.4 Chromium Evaporation from Metallic Interconnects

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Sommario/riassunto

There are a large number of books available on fuel cells; however, the majority are on specific types of fuel cells such as solid oxide fuel cells, proton exchange membrane fuel cells, or on specific technical aspects of fuel cells, e.g., the system or stack engineering. Thus, there is a need for a book focused on materials requirements in fuel cells. Key Materials in High-Temperature Fuel Cells is a concise source of the most important and key materials and catalysts in high-temperature fuel cells with emphasis on the most important solid oxide fuel cells. A related book will cover key mater

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