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Titolo	Design of Active Key Interfaces in Fuel Cells / / edited by Toshiyuki Mori, San Ping Jiang, Zongping Shao, Michihisa Koyama, Zhipeng Li, Takayoshi Tanji, Roger Wepf, Fei Ye
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Descrizione fisica	1 online resource (X, 344 p. 247 illus., 178 illus. in color.)
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Soggetti	Fuel cells Materials Electric batteries Surfaces (Technology) Thin films Chemistry, Physical and theoretical Materials - Analysis Fuel Cells Batteries Surfaces, Interfaces and Thin Film Theoretical Chemistry Characterization and Analytical Technique
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Nota di contenuto	Fabrication -- Design of active interfaces in fuel cells by combination of fabrication and modeling on the basis of microanalysis results -- Design of interface between cathode and electrolyte in SOFCs -- Design of HT PEM devices -- Modeling -- Atomistic simulation of the subtle change of microstructure in CeO ₂ based electrolyte and metal alloy for design of the state of the art fuel cells -- Multi-scale multi physics approach for fuel cell reaction -- Modeling for development of fuel cell devices and systems -- Microanalysis -- In situ TEM analysis using

electron holography -- Design and development of operando TEM -- In situ TEM analysis of functional interfaces in energy devices.

Sommario/riassunto

This book focuses on the multidisciplinary teamwork for the design of key interfaces in fuel cell devices. It covers the fabrication, modelling, and operando-microanalysis sections in each chapter. Also, each chapter in the book consists of the introduction of basic theory, representative experimental results, and future prospects in each field. The book is an edited volume, intended to serve as an introductory textbook in multidisciplinary research work for the design and development of fuel cells. To fully enjoy the multidisciplinary research activities in fuel cell field, the beginners need to learn the basic knowledge and experimental data in each field. Compared with the published introductory textbooks in the field of science and engineering of fuel cells, this book has the following advantages. Firstly, it is an introductory textbook of multidisciplinary work for the design and development field of intermediate temperature (IT) solid oxide fuel cells (IT-SOFCs) and high-temperature polymer electrolyte fuel cells (HT-PEFCs) . And at the same time, this book is convenient for practical research implementation in R & D of those IT-SOFC and HT-PEFC devices. Secondly recent research topics with sufficient references are included in each chapter. Scientists and engineers in the fuel cell field will obtain useful knowledge in critical review chapters in the fabrication, modeling, and operando-microanalysis fields. Finally experimental results are closely combined with the cutting edge of scientific research work in the IT-SOFC and HT-PEFC materials and devices field. For all these reasons, this book is a useful start-up in multidisciplinary work for R & D of IT-SOFC and HT-PEFC devices. .
