1. Record Nr. UNINA9910800075003321

Titolo	PEM fuel cell diagnostic tools / / edited by Haijiang Wang, Xiao-Zi Yuan, Hui Li
Pubbl/distr/stampa	Boca Raton, Fla. : , : CRC Press, , 2012
ISBN	0-429-10625-4 1-283-27951-7 9786613279514 1-4398-3920-4
Descrizione fisica	1 online resource (554 p.)
Collana	PEM fuel cell durability handbook PEM fuel cell diagnostic tools
Altri autori (Persone)	WangHaijiang Henry YuanXiao-Zi LiHui <1964->
Disciplina	621.31/24290287
Soggetti	Proton exchange membrane fuel cells - Testing Proton exchange membrane fuel cells - Testing - Equipment and supplies
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	pt. 1. In situ diagnostic tools -- pt. 2. Ex situ diagnostic tools.
Sommario/riassunto	Compared to other electrochemical power devices such as the battery, the PEM fuel cell is much more complicated. Its complexity derives from the following aspects: 1) Most of the components are composite materials. 2) Porous materials must be used for gas and water transport. 3) Nanomaterials have to be used to achieve high electrochemical activity. 4) Complicated processes take place within the fuel cell in addition to the electrochemical reactions, such as the transport of electrons, protons, reactant gases, product water and vapor, and heat. 5) The electrode reaction occurs at a multi-phase boundary and transport may occur across multiple boundaries. 6) Multi-phase flow happens in flow field channels and porous media. 7) The scale at which researchers have to look ranges from nanometers to meters. 8) Three-dimensional architecture is vitally important to performance and durability, due to the large size of PEM fuel cell stacks. 9) Local performance can seriously affect the system's

performance and durability. 10) There are complicated operating conditions, such as load, temperature, pressure, gas flow, and humidification--