



Spinel oxide layers for high temperature fuel cell applications

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VDM Verlag Mai 2009, 2009. Taschenbuch. Book Condition: Neu. 220x150x9 mm. This item is printed on demand - Print on Demand Neeware - In the last decades, Solid Oxide Fuel Cells (SOFCs) gained an important place among the alternative energy production sources. This is due to SOFCs wide operation temperature range (600-1000 °C) and to the possibility of using many types of fuels, including various hydrocarbons. The ferritic stainless steel interconnect is one of the main components of a SOFC stack. Interconnects require high electrical conductivity coatings with blocking properties against Cr transport from the steel substrate. This book provides a study of the oxides with spinel structure obtained by thermal oxidation of Mn-Co-Fe metallic thin films. The films were deposited by magnetron co-sputtering on ZMG232L (Hitachi Metals Ltd.®) ferritic stainless steel. The coatings properties were studied as a function of annealing parameters (atmosphere, temperature and time). The most promising results to be used for stack applications were obtained for 1 μm Mn-Co coatings deposited on pre-annealed ZMG232L. Low resistivity, no Cr diffusion and no undesired oxide phases were detected for these coatings. Based on the electrical properties, the estimated lifetime of SOFCs using these coated interconnects is 22000 h....



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