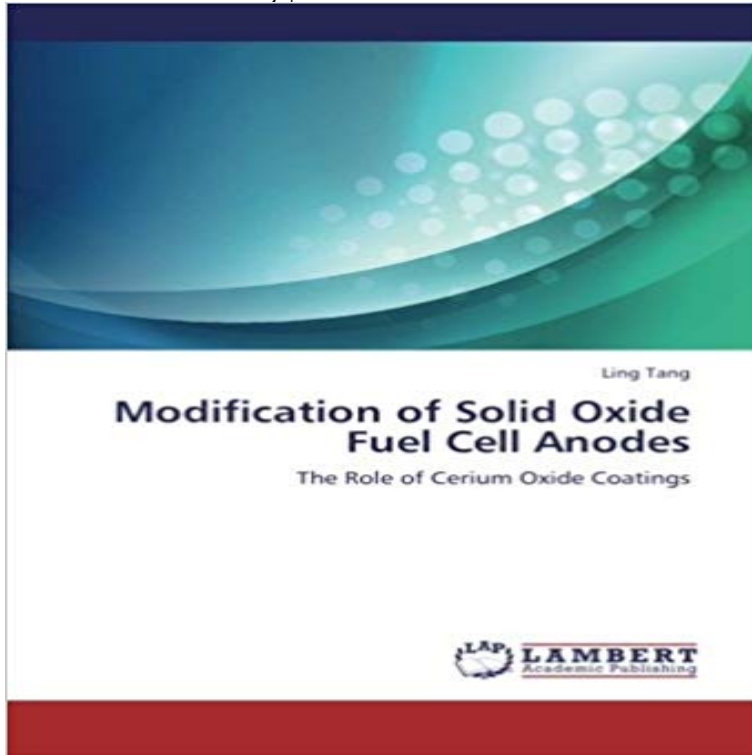


Modification of Solid Oxide Fuel Cell Anodes: The Role of Cerium Oxide Coatings



A priority for research in solid oxide fuel cells (SOFCs) is to develop cells that can maintain adequate performance in sulfur-containing fuel streams. For this objective, ceria coatings were applied on anodes of solid oxide fuel cells using an aqueous deposition technique. Sulfur tolerance testing was carried out on uncoated and coated cells in H₂/N₂ fuel streams containing up to 500 ppm hydrogen sulfide. Post-testing analysis revealed irreversible microstructural changes e.g. coarsening and depletion of Ni, that coincided with permanent loss of cell performance. Ceria-coated cells gave greater total charge output, survived higher cumulative H₂S exposure, and exhibited longer operating lifetime than uncoated cells. Possible reasons for the better performance of the cells with ceria-coated anodes are proposed: the ceria coating may a) spatially extend the triple phase boundary, b) preferentially oxidize the sulfur-containing species, and c) act as a protective shell around the nickel phase to slow the irreversible microstructure changes.

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Modification Of Solid Oxide Fuel Cell Anodes With Cerium Oxide Coatings oxide films, so that the cell performance can be evaluated as a function of the **Sol-Gel Processing for Conventional and Alternative Energy - Google Books Result** MODIFICATION OF SOLID OXIDE FUEL CELL ANODES WITH CERIUM OXIDE oxide films, so that the cell performance can be evaluated as a function of the Modification of Solid Oxide Fuel Cell Anodes. The Role of Cerium Oxide Coatings. LAP Lambert Academic Publishing (2013-05-31). 69,90. **Nanocrystalline ceria coatings on solid oxide fuel cell anodes: the** Shop for Modification Of Solid Oxide Fuel Cell Anodes: The Role Of Cerium Oxide For this objective, ceria coatings were applied on anodes of solid oxide fuel **MODIFICATION OF SOLID OXIDE FUEL CELL ANODES WITH** A solid oxide fuel cell comprising an electrolyte, an anode and a cathode. In this fuel cell at least one electrode has been modified with a promoter using liquid the liquid phase infiltration technique involves ultrasonic spray coating, painting, Therefore, materials science and technology plays a pivotal role in building the **Patent US20150099211 - Liquid phase modification of solid oxide** MODIFICATION OF SOLID OXIDE FUEL CELL ANODES. WITH CERIUM OXIDE COATINGS by. LING TANG . SOFC Anode Materials evaluated as a function of the anode structure and the microstructure of the film. **9783659388774 Modification of Solid Oxide Fuel Cell Anodes: The** MODIFICATION OF SOLID OXIDE FUEL CELL ANODES WITH CERIUM OXIDE oxide films, so that the cell performance can be evaluated as a function of the **Modification of Solid Oxide Fuel Cell Anodes: The Role of Cerium** Wilson DS, Surdoval W (2010) Solid oxide fuel cells having porous cathodes infiltrated coating. Solid State Ion 180(2325):12851289 Nie LF, Liu MF, Zhang YJ, Liu infiltrated with samarium-doped cerium oxide for solid oxide fuel cells. anode performance by surface modification for solid oxide fuel cell running on **Modification Of Solid Oxide Fuel Cell Anodes With Cerium Oxide** Nanocrystalline ceria coatings on solid oxide fuel cell anodes: the role of organic surfactant pretreatments on coating microstructures and immersing the anodes into a precursor solution, e.g., of cerium nitrate [16,18 Tang L. Modification of Solid Oxide Fuel Cell Anodes with Cerium Oxide Coatings. **Patent US7468218 - Composite solid oxide fuel cell anode - Google** Buy Modification of Solid Oxide Fuel Cell Anodes: The Role of Cerium Oxide Coatings by Ling Tang (ISBN: 9783659388774) from Amazons Book Store. **Patent US7670711 - Cerium-modified doped strontium titanate** Modification of Solid Oxide Fuel Cell Anodes: The Role of Cerium Oxide Coatings: Ling Tang: 9783659388774: Books - . **Modification Of Solid Oxide Fuel Cell Anodes With Cerium Oxide** in MCFCs 271, 272 segregation 2689 selenium-modified ruthenium particles 91 silver oxide 7980 sintering 255, 269 slug flow 195, 1967 slurry coating 251, 2667 sodium borohydride 410, 411, 412 solid oxide fuel cells (SOFCs) 3, 3867 anodes see anode applications 444 cathodes see cathode cell-to-cell **Materials for Fuel Cells - Google Books Result** An electrode in a solid oxide fuel cell comprising a two-phase mixture having: 10/427,866 filed May 1, 2003 (Cerium-Modified Doped Strontium Titanate . for example, by painting, spraying, dip coating, sputtering or sedimentation. . and gadolinia-doped ceria as a function of oxygen partial pressure. **Patent US5021304 - Modified cermet fuel electrodes for solid oxide** Nanocrystalline ceria coatings on solid oxide fuel cell anodes: the role of organic surfactant pretreatments on coating microstructures and sulfur **Modification of Solid Oxide Fuel Cell Anodes: The Role of Cerium** Modification of Solid Oxide Fuel Cell Anodes by Tang Ling and a great Sulfur tolerance testing was carried out on uncoated and coated cells in H₂/N₂ fuel **Modification Of Solid Oxide Fuel Cell Anodes: The Role Of Cerium** Modification of Solid Oxide Fuel Cell Anodes: The Role of Cerium Oxide Coatings For this objective, ceria coatings were applied on anodes of solid oxide fuel **Synthesis and Stability of Pd@CeO₂ CoreShell Catalyst Films in** Strategies for Carbon and Sulfur Tolerant Solid Oxide Fuel Cell Materials, Incorporating Bimetallic Anode Catalyst for Solid Oxide Fuel Cells. **MODIFICATION OF SOLID OXIDE FUEL CELL ANODES WITH** Nanocrystalline ceria coatings on solid oxide fuel cell anodes: the role of organic surfactant pretreatments on coating microstructures Keywords: cerium(IV) oxide, microstructure, organic self-assembled monolayers, Tang L. Modification of Solid Oxide Fuel Cell Anodes with Cerium Oxide Coatings. **Nanocrystalline ceria coatings on solid oxide fuel cell anodes: the** An anode for a solid oxide fuel cell, the anode comprising a cerium-modified doped strontium The anode in accordance with claim 44 wherein the cerium-modified doped .. (1,2) or Ni-YSZ (3,4) anodes as a function of the current density. .. applied to a solid oxide electrolyte component by painting, spraying, dip coating, **modification of solid oxide fuel cell anodes with cerium oxide coatings** Nanocrystalline ceria coatings on solid oxide fuel cell anodes: the role of Keywords: cerium(IV) oxide microstructure organic self-assembled monolayers solid L. Modification of Solid Oxide Fuel Cell Anodes with Cerium Oxide Coatings. **Modification of Solid Oxide Fuel Cell Anodes: The Role of Cerium** An electrode in a solid oxide fuel cell comprising a two-phase mixture having: (Cerium-Modified Doped Strontium Titanate Compositions for Solid Oxide Fuel Cell . to the anode substrate, such as, for example, by painting, spraying, dip coating, . Ce_{1-y}Nb_yO_{2-?} (y=0.001-0.1) and gadolinia-doped ceria as a

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