

# Contents

---



---

Preface	vii
Introduction	ix
Solid Oxide Fuel Cell (SOFC) Based Power Systems for Mobile Applications R. M. Miller and T. L. Reitz	1
Micro-Tubular Solid Oxide Fuel Cells with Embedded Current Collector Marco Cologna, Ricardo De La Torre, Vincenzo M. Sglavo, and Rishi Raj	15
Durability Improvement of Segmented-in-Series Cell Stacks for Small Scale SOFCs T. Ito and Y. Matsuzaki	23
Perovskite Materials for Use as Sulfur Tolerant Anodes in SOFCs X. Dong, P. Gardner, T. L. Reitz, and F. Chen	31
Preparation and Characterization of LSCF ( $\text{La}_{0.58}\text{Sr}_{0.4}\text{Co}_{0.2}\text{Fe}_{0.8}\text{O}_{3-\delta}$ )/GDC ( $\text{Ce}_{0.8}\text{Gd}_{0.2}\text{O}_2$ ) Cathode for IT-Solid Oxide Fuel Cell Na Li, Alevtina Smirnova, Atul Verma, Prabhakar Singh, and Jeong-Ho Kim	43
Effects of Geometrical and Mechanical Properties of Various Components on Stresses of the Seals in SOFCs W. N. Liu, B.J. Koepfel, X. Sun, and M. A. Khaleel	53
Stability of Materials in High Temperature Water Vapor: SOFC Applications E. J. Opila and N. S. Jacobson	63

Oxygen Diffusion in $\text{Bi}_2\text{M}_4\text{O}_9$ ( $\text{M} = \text{Al}, \text{Ga}, \text{Fe}$ ) Systems and the Effect of Sr Doping in $\text{Bi}_{2-2x}\text{Sr}_{2x}\text{M}_4\text{O}_{9-x}$ Studied by Isotope Exchange Experiments and IR Absorption	81
T. Debnath, C. H. Rüscher, Th. M. Gesing, P. Fielitz, S. Ohmann, and G. Borchardt	
Aqueous Processing for Self Standing YSZ Films for SOFC Studies	91
Srinivasan Ramanathan	
Synthesis and Sintering of Yttrium-Doped Barium Zirconate	99
Ashok K. Sahu, Abhijit Ghosh, Soumyajit Koley, and Ashok K. Suri	
Use of Hydrocarbon Fuel for Micro Tubular SOFCs	107
Toshio Suzuki, Md. Z. Hasan, Toshiaki Yamaguchi, Yoshinobu Fujishiro, Masanobu Awano, Yoshihiro Funahashi, and Nigel. Sammes	
Phase Diagram of Proton-Conducting $\text{Ba}(\text{Zr}_{0.8-x}\text{Ce}_x\text{Y}_{0.2})\text{O}_{2.9}$ Ceramics by <i>In Situ</i> Micro-Raman Scattering and X-Ray Diffraction	113
C.-S. Tu, C.-C. Huang, S.-C. Lee, R. R. Chien, V. H. Schmidt, and J. Liang	
Electrical Conductivity of Composite Electrolytes Based on $\text{BaO-CeO}_2\text{-GdO}_{1.5}$ System in Different Atmospheres	121
A. Venkatasubramanian, P. Gopalan, and T.R.S. Prasanna	
3D CFD Analysis for Solid Oxide Fuel Cells with Functionally Graded Electrodes	131
Junxiang Shi and Xingjian Xue	
Fabrication and Properties of Nano-Structural $\text{Bi}_2\text{O}_3\text{-Y}_2\text{O}_3\text{-ZrO}_2$ Composite	153
Jingde Zhang, Kangning Sun, Jun Ouyang, Jian Gao, Han Liu, Tao An, and Lijuan Xing	
Author index	163