# TABLE OF CONTENTS

**Hydration and Proton Transfer in 3M™ PEM Ionomers: An Ab Initio Study** ................................................................. 1

*Jeffrey K. Clark II, Stephen J. Paddison*

**Properties of Composite Membranes of SPEEK and Nanodiamond** .................. 13

*Hongying Hou, Bruna Maranesi, Mustapha Khadhraoui, Philippe Knauth, Riccardo Polini, M. Luisa Di Vona*

**Improvement of Electrochemical Activity of Pt/MWCNT Catalyst for Proton Exchange Membrane Fuel Cell** .............................................. 19

*Battsengel Baatar, Bayardulam Jamiyansuren, Munkhshur Myakhlai, Baasandorj Myagmarsuren*

**Lattice Boltzmann Simulation of Transport Phenomena in Nanostructured Cathode Catalyst Layer for Proton Exchange Membrane Fuel Cells** ............................................ 25

*Christopher D. Stiles, Yongqiang Xue*

**New Hybrid Inorganic-organic Proton Conducting Membranes Based on Nafton and a \([ZrO_2] (Ta_2O_5)_{0.119}\) Oxide Core-shell Nanofiller** ............................................. 31

*Vito Di Noto, Matteo Piga, Enrico Negro, Guinevere A. Giffin, Sandra Lavina*

**Elaboration of Nanostructured and Highly Proton Conductive Membranes for PEMFC by Ion Track Grafting Technique** .................................................. 43

*Enrico Gallino, Marie-Claude Clochard, Emmanuel Balanzat, Gerard Gebel, Arnaud Morin*

**Synthesis, Structure and Properties of LnBa(Co,Me)_{2}O_{5+δ} (Ln = Nd, Sm, Ho and Y; Me = Fe, Ni, Cu) as Potential Cathodes for SOFCs** ........................................ 50

*Vladimir A. Cherepanov, Ludmila Ya. Gavrilova, Tat’yana V. Aksenova, Anastasiya S. Urusova, Nadezhda E. Volkova*

**Optimization of Alloy-Coating Compositions for Use as Solid Oxide Fuel Cell Interconnects** .................................................. 56

*Jeffrey W. Fergus, Yu Zhao, Yingjia Liu*

**Gas Diffusion Media for Proton Exchange Membrane Fuel Cells Made from Carbon Fibers with Controlled Conductivity** .......................................... 62

*Paul Nicotera, Robert Evans, Christopher Weaver, Po-Ya Abel Chuang*

**Synthesis of Mesoporous Gadolinium Doped Ceria - Platinum Composite** .................. 69

*Hoi Yung, Kwong-Yu Chan, Frank Leung-Yuk Lam*

**Proton-Conducting Cross-Linked Sulfonated Aromatic Polymers for Fuel Cells Application** ................................................................. 75

*B. Maranesi, L. Pasquini, M. Khadhraoui, P. Knauth, M. L. Di Vona*

**First-principles Transition State Study of Oxygen Reduction Reaction on Pt (111) Surface Modified by Subsurface Transition Metals** ............................... 81

*Zhiyao Duan, Aditi Datia, Guofeng Wang*
PVDF-based Polymer Blend Films for Fuel Cell Membranes

Wenwen Huang, Meng Zhao, Fan Yang, Lorne Farovitch, Parisa Haghighi, Leonard James Macisco, Tyler Swob, Thomas Smith, Peggy Cebe

Face to Face with Enemy – Analysis of Aqua Carbonate Hydroxide Second Surface Phases in Proton Conducting Perovskite Ceramic Electrolytic Membrane

Aneta Slodczyk, Caroline Tran, Philippe Colomban

Author Index