

8th European SOFC Forum

Poster Presentations

Modeling

Effect of Radiation in Circular-Planar Type IT-SOFCs Operating in Stack Configuration

Paolo Iora, Stefano Campanari
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Assessment of FC Operating Conditions and Cycle Performance in an SOFC+GT Hybrid Cycle

Stefano Campanari, Paolo Iora
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GenFC - Generic Fuel Cell Modeling Environment

Uwe Reimer, D. Froning, S. Fraser, A. Haas
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Process Analysis of a Liquid Fuel-Based SOFC System

Walter Sawady, H. Timmermann, R. Reimert, E. Ivers-Tiffée
Universität Karlsruhe (TH), Karlsruhe / Germany

On Effects of Anode Microstructures to Cell Performance for Planar SOFC

Chia Ming Huang and Shenqiang Steven Shy
National Central University, Thong-Li City, Tao-Yuan / Taiwan

Development and Validation of a Model for Internal Reforming of Methane Reflecting Anode Characteristics

Mi Hyun Kim, Henrik Timmermann, Rainer Reimert, Ellen Ivers-Tiffée
Universität Karlsruhe (TH), Karlsruhe / Germany

Modeling of Tubular SOFC in Hybrid Power Plant Systems - Cell and Stack Modeling

Florian Leucht, K. Andreas Friedrich
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Rapid Impedance Modeling via Potential Step and Current Relaxation Simulations

Wolfgang G. Bessler
Universität Heidelberg, Heidelberg / Germany

A Particle-Resolved SOFC Cermet Anode Model with Detailed Chemistry

Vaughan Lamar Thomas, David Goodwin, Jeffrey Hanna
California Institute of Technology, Pasadena, CA / USA

Nonlinear, Time-Dependent Modeling of MIECs

Francesco Ciucci, David Goodwin
California Institute of Technology, Pasadena, CA / USA

Modeling and Simulation of a Propane SOFC System with Integrated Fuel Reforming Using Recycled Anode Exhaust Gas

Shaofei Chen, Christian Schlitzberger, Reinhard Leithner, Martin Mönningmann
Technische Universität Braunschweig, Braunschweig / Germany

Simulation of Thermal Stresses in Anode-Supported Solide Oxide Fuel Cell Stacks

Arata Nakajo, Zacharie Wuillemin, Jan van Herle, Daniel Favrat
EPFL - LENI, Lausanne / Switzerland

Impedance Response of LSM/YSZ by Direct Spatio-Temporal Modeling of Porous Electrodes

Kunal Karan, Ben Kenney
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Modeling of Local Cell Degradation in Solid Oxide Fuel Cells: Cumulative Effect of Critical Operating Points

Zacharie Wuillemin, Antonin Faes, Stefan Diethelm, Arata Nakajo, Nordahl Autissier, Jan van herle, Daniel Favrat
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Analysis and Methods

Oxygen Tracer Diffusion in $Ba_{0.5}Sr_{0.5}Co_{0.8}Fe_{0.2}O_{3-d}$

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Automatic Quantitative Image Analysis of Micrographs

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Cathode Overpotential Investigation by Means of "Built-in" Potential Electrode

Ilya Burmistrov, S. Bredikhin
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Separation of Process Contributions in Impedance Spectra by Variation of Test Conditions

Søren Højgaard Jensen, Torben Jacobsen, Mogens Mogensen
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Low Temperture SOFC

Novel Nano-Structure Cathodes Prepared by Wet Impregnation for ITSOFCs

Fengli Liang, Jing Chen, Jian Li
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Effect of Porous GDC Interlayer on Open Circuit Voltage of Cells Based on GDC Electrolyte

Teruhiko Misono, K. Murata, J. Yin and T. Fukui
Hosokawa Powder Technology Research Institute, Nara / Japan

Synthesis and Performance of $\text{La}_{0.5}\text{Ca}_{0.5}\text{Fe}_{0.8}\text{Ni}_{0.2}\text{O}_3$ Material for Intermediate-Temperature SOFC Cathode

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Sinterability and Electrical Conductivity of $\text{Ce}_{1-x}\text{Gd}_x\text{O}_{2-x/2}$ for Low Temperature SOFC Applications

Saheli Patra¹, Atanu Dutta¹, Vinila Bedekar², A.K. Tyagi² and Rajendra Nath Basu¹

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Investigation of Ruddlesden Popper Based Materials for Cathode Applications in IT-SOFCs

Ruth Sayers, J. Kilner, S. Skinner
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Anodes

Performance Improvement of Anode Supported Cell by Optimisation of Anode Substrate Porosity

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High Performance Anode-Supported SOFC with Lanthanum Ferrite-Based Cathode and Ceria-Based Interlayer

Atanu Dutta, J. Mukhopadhyay and Rajendra Nath Basu
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Studies on Pattern Anode Stability for SOFC

Annika Utz, A. Weber, E. Ivers-Tiffée, H. Störmer
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Electrochemically Active Anode for Low-Temperature SOFC Derived from Nanocrystalline NiO/YSZ Composite

Kazuyoshi Sato, Go Okamoto, Makio Naito, Hiroya Abe
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Characterisation of Sulfur Poisoning of Anodes in Single-Cell SOFC Stacks Using Impedance Spectroscopy

Sena Kavurucu Schubert, Mihails Kusnezoff, Christian Wunderlich
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Solid Oxide Fuel Cells Based on Y-Substituted SrTiO₃ Ceramic Anodes

Qianli Ma, Frank Tietz

Forschungszentrum Jülich GmbH, Jülich / Germany

Development of Low-Cost Anode Material for Solid Oxide Fuel Cells

Sophie Menzer¹, Grover Coors¹, Dan Storjohann², and Dustin Beeaff¹

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Directed Dry-Assembly of Nanocomposites for Active SOFC Electrodes

Hiroya Abe, Hirofumi Shimoda, Kazuyoshi Sato, Makio Naito

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Nano-structured Electrode Materials Synthesized via Co-Precipitation with Nanocrystalline YSZ

Hiroya Abe, Tooru Kinoshita, Kazuyoshi Sato, Makio Naito

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Rare Earth Metal Oxide Modified Nickel Anodes for SOFC

Baofeng Tu, Lin Liu, Yonglai Dong, Mojie Cheng

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Preparation and Characterisation of Ni-Cermet / BCY10 and Ni-cermet / BCY10 : BZY10 Core-Shell Assemblies

Abdel Essoumhi, Zohreh Khani, Gilles Taillades, Melanie Taillades-Jacquin, Deborah Jones, Matthieu Marrony, Jacques Rozière

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SOFC Anode Performance Enhancement through Nano-Structured Heterojunction Formation

Ivan Bredikhin, V. Sinitsyn, V. Kveder, S. Bredikhin

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Doped Lanthanum Strontium Titanates for Use as Fuel Flexible Anode Materials in SOFCs

David N. Miller, John T.S. Irvine

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The Mechanical Properties of Ni/YSZ Anode Support for Solid Oxide Fuel Cells

Chang Rong He, Tao Chen, Wei Guo Wang

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Intrinsically Robust Anodes

Jan Pieter Ouweltjes, Marc van Tuel, Bert Rietveld

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Surface Diffusion and Adsorbate Spillover at Ni/YSZ and Pt/YSZ Catalysts

Marcel Vogler, Christian Hellwig, Wolfgang G. Bessler

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Stability of the Ni-base Anode for Hydrocarbon Fuels Containing Sulfur

Haruo Kishimoto, Katsuhiko Yamaji, Teruhisa Horita, Yue-Ping Xiong, Manuel E. Brito and Harumi Yokokawa
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One-Step Cofiring of Anode-Supported Planar SOFCs

Kyung J. Yoon, Srikanth Gopalan and Uday B. Pal

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Anode Materials for IT SOFC Based on NIO/YSZ (ScCeSZ) Doped with Complex Oxides and Promoted by Ru: Properties and Catalytic Activity in the Steam Reforming of CH₄

Vladislav Sadykov¹, Nathalia Mezentseva¹, Rimma Bunina¹, Vladimir Pelipenko¹, Lyudmila Bobrova¹, Nadezhda Vernikovskaya¹, Oleg Smorygo², Alevtina Smirnova³, Bert Rietveld⁴

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Cathodes

Annealed Thin-Film Silver Cathodes

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Performance and Activation of La_{0.8}Sr_{0.2}MnO_{3-δ} Thin-Film Cathodes

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Stabilization of Nanopowders in Organic Suspensions and Their Application as SOFC Cathode Layers by Screen Printing

Peter Ried¹, D. Burnat¹, P. Holtappels¹, A. Heel¹, W. Sitte² and T. Graule¹

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Structural Distortion of the Perovskite Structure: a Key to Make Cathode Material for SOFC with Desired TEC and Transport Properties

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Comparison of (La_{0.8}Sr_{0.2})_{0.95}Fe_{0.8}Ni_{0.2}O_{3-δ} and Pr_{0.58}Sr_{0.4}Fe_{0.8}Co_{0.2}O_{3-δ} Cathodes Prepared by Screen Printing

Peter Holtappels, Sophie Duval, Thomas Graule

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Development and Characterization of Doped Ceria Buffer Layers

Stefano Modena, Sergio Ceschini, Dario Montinaro, Massimo Bertoldi

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Investigation of the Physical Properties of the $\text{La}_4\text{N}_{3-x}\text{B}_x\text{O}_{10+\delta}$ System (B = Cu, Fe) for Solid Oxide Fuel Cell Cathodes

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Novel Electrode Materials for Solid Oxide Fuel Cells and Electrolysers

Miguel Laguna Bercero, Stephen J Skinner, John A Kilner
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A Numerical Method for the Optimization of MIEC Cathode Microstructure

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Characterisation of $\text{La}_{1-x}\text{Sr}_{1+x}\text{Fe}_{1-y}\text{Al}_y\text{O}_{4-\delta}$ as IT-SOFC Cathode Materials

Pedro Nunez, Juan Pena-Martnez, David Marrero-Lopez, Juan Carlos Ruiz-Morales
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Nanoscale Gd-Doped CeO_2 Buffer Layer for a High Performance Solid Oxide Fuel Cell

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Optimization of the Ceria Interlayer for Co-Containing Cathodes

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Cathode Development for Metal Supported SOFC Technology

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Performance Optimisation of Chromium Resistant LNF Cathode

Frans van Berkel, M. Stodolny, M. Sillessen, J.P. Ouweltjes
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Chemical Reactivity of LSF-(SDC/GDC)-YSZ for Solid Oxide Fuel Cells

Ana Martnez-Amesti (1), Aitor Larraaga (1), Lide M. Rodriguez-Martnez (2), Maria Luisa No (1), Ander Laresgoiti (2) and Maria Isabel Arriortua (1)

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The Effect of the Interaction between LSM and YSZ in Composite Cathode on Oxygen Reduction

Min Zhang, Bin Liu, Yonglai Dong, Mojie Cheng
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Performance of $\text{La}_{1.75}\text{Sr}_{0.25}\text{NiO}_{4+\delta}$ Cathode on $\text{Ce}_{0.8}\text{Ln}_{0.2}\text{O}_{2-\delta}$ (Ln = La, Nd), LSGM and YSZ Electrolytes

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Influence of A- and B-Site Substitutions on ABO_3 Perovskites on the Electrical Conductivity

Ulrich F. Vogt, J. Sfeir, C. Soltmann, J. Richter, A. Braun, P. Holtappels
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Hydrogen Production Using $\text{La}_{0.5}\text{Sr}_{0.5}\text{CoO}_{3-\delta}$ Reduced as Catalyst for Fuel Cell Applications

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The Surface Characterisation of Perovskite SOFC Cathode Materials and Its Relationship to Oxygen Exchange Kinetics

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Effects of Electrode-Electrolyte Interface Extension by Mesoscale Structures on SOFC Performance

Hiroshi Iwai, Motohiro Saito, Hideo Yoshida, Kuniaki Yoshikata
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Properties of Thin Film LSCF Cathodes

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Electrolytes

Effect of the Doping Method on the Sintering Characteristics of Gadolinium-Doped Ceria

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Effect of Microstructure on the Stability and Conductivity of $\text{La}_2\text{Mo}_2\text{O}_9$

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Oxygen Diffusion in Bi_2O_3

Sotirios Kotsantonis, R. Chater, J. A. Kilner

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Preparation of Thin Graded YSZ Layers via Sol Gel Route

Feng Han, Tim Van Gestel, Robert Mücke, Hans Peter Buchkremer
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Lanthanum Silicate Coating Obtained by Direct Current Magnetron Sputtering Processes on Porous Substrate Cells

Pascal Briois, Frederic Lapostolle, Fabrice Mauvy, Alain Billard
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Sprayed and Constrained-Sintered Zirconia Based Electrolytes

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The Effect of Hydrogen Sulphide on SOFC Anodes Studied Using ex-situ Raman Spectroscopy

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Oxygen Diffusion Studies on $(Y_2O_3)_2(Sc_2O_3)_9(ZrO_2)_{89}$

Edwin S. Raj, Alan Atkinson, John A. Kilner
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Low Temperature Sintering Process of YSZ Electrolyte Films

Minfang Han, Lingzhi Cheng
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Fabrication of ScSZ Based Electrolyte Layer with High Triple Phase Boundary for Solid Oxide Fuel Cell

Dong-Hyun Peck (1), Young-Hoon Choi (1,2), Dong-Soo Suhr (2), Juergen Wackerl (3) and Torsten Markus (3)

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Interconnects and Coatings

Development of a Thermally Sprayed Insulation Layer for SOFCs

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Protection of the SOFC Current Collectors by Spinel Layers Deposited by Electrostatic Spray Technique

Sergey Bredikhin, A. Jokhov, E. Korovkin, V.Sinitsyn
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Numerical Study of Thermal Stresses in an SOFC Stack with Mica Seals

Chih-Kuang Lin, An-Hsin Chen, Lieh-Kwang Chiang, Yau-Pin Chyou
National Central University, Jhong-Li / Taiwan

Investigation of Breakaway Oxidation of Thin Film Interconnect Materials for Automotive SOFC Applications

Georg Kunschert, Andreas Venskutonis
Plansee SE, Reutte / Austria

Investigation of Mn-Based Coatings on Crofer22APU for Reduction of Chromium Evaporation

René Trebbels, Torsten Markus
Research Centre Juelich GmbH, Juelich / Germany

Oxidation and Impact of Thermal Exposure on SOFC Interconnector Alloys

Pertti Auerkari, Sanni Yli-Olli, Juha Veivo, Petra Jauhiainen, Stefan Holmström and Jari Kiviaho
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Investigation of the Protective Properties of Mn-Co-Fe Spinel Films Deposited by Magnetron Sputtering on Ferritic Stainless Steel for SOFC Applications

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Oxygen Diffusivity in Oxide Scales of Fe-Cr Alloy Interconnects

Teruhisa Horita¹, Haruo Kishimoto¹, Katsuhiko Yamaji¹, Yueping Xiong¹, Manuel E. Brito¹, Harumi Yokokawa¹, Yoshitaka BaBa², Kei Ogasawara², Harukuni Kameda², Yoshio Mastuzaki², Satoshi Yamashita², Nobutaka Yasuda³, Toshihiro Uehara³
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Oxidation Behaviour of Slurry-Coated SOFC Interconnect Alloys

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Analysis of Metallic Interconnects Using Secondary Ion Mass Spectrometry, Focused Ion Beam Microscopy, Raman Spectroscopy and Electrochemical Impedance Spectroscopy

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Characterization of La_{0.8}Sr_{0.2}(Co,Cu,Fe)O₃ Perovskites as a Cathode Contact Material for Solid Oxide Fuel Cells

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Sealings and Flows

Evaluation and Fabrication of Rigid Sealants of Solid Oxide Fuel Cell by Solid Casting

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Electrolysis and Proton Conductors

Three-Dimensional Computational Fluid Dynamics Modeling of Solid Oxide Electrolysis Cells and Stacks

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Anode Supported Proton Conducting SOFC

Steven McIntosh, Maria A. Azimova, David T. Johnson
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Proton Conduction in Re_3NbO_7 Oxides

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A Novel Preparation Route to Optimised Core-Shell Electrolyte Materials for Proton Ceramic Fuel Cells

Zohreh Khani, D. J. Jones, M. Marrony, J. Rozière
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Investigation of Metal Diffusion Processes in Solid Oxide Electrolyser Cells

Daniel Wiedenmann, Christian Soltmann, Ulrich F. Vogt, Olaf Patz, Günter Schiller
EMPA, Dübendorf / Switzerland

Structural and Electrical Characterisation of Barium Zirconate Protonic Conductor Co-Sputter Deposited Coatings

Mohammad Arab Pour Yazdi, Pascal Briois, Alain Billard
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Synthesis, Structural Study and Proton Conduction of Y-Doped BaSnO_3

Yanzhong Z. Wang, A. Chesnaud, E. Bevillon, G. Geneste, G. Dezanneau
Ecole Centrale de Paris, Châtenay-Malabry / France

Demonstration and System Analysis of High Temperature Steam Electrolysis for Large-Scale Hydrogen Production using SOFCs

Michael G. McKellar, James E. O'Brien, Carl M. Stoots, J. Stephen Herring
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Industrial Experience

Status of SOFC Stack and Material Development at Hexis

Josef Sfeir¹, Andreas Mai¹, Boris Iwanschitz¹, Ueli Weissen¹, Roland Denzler¹, Dirk Haberstock¹, Thomas Hocker², Markus Roos³

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Optimised High Temperature Insulation for Fuel Cell Applications

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Microtherm NV, Sint Niklaas / Belgium

Innovative Applications and Designs

Design of Heat Exchanger Network for Solid Oxide Fuel Cell System Integrated with a Distillation Column

Wasana Jamsak¹, Peter L. Douglas², E. Croiset², N. Laosiripojana³, R. Suwanwarangkul⁴, S. Charojrochkul⁵, Suttichai Assabumrungrat¹

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Experimental Model of a 5 kW Tubular SOFC System Operating in the Canteen of a Workshop

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Manufacturing

New Fabrication Technique for Improvement of Micro-Tubular SOFC Stacks

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Comparative Study of Ni-ZrO₂ SOFC Anodes Made by Conventional Ceramic and with Impregnation Routes

Oleksandr Vasylyev, Leonid Ushkalov, Yegor Brodnikovskiy, Valeriy Chedryk

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Fabrication and Characterization of Anode-Supported Planar Solid Oxide Fuel Cell Manufactured by a Tape Casting Process Aided by Co-Sintering Process

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Synthesis and Characterisation of Y, Sc or Gd Stabilised ZrO₂ and CeO₂ Electrolyte Nanopowders by Flame Spray Synthesis

Andre Heel, Peter Holtappels, Andri Vital, Thomas Graule

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Constrained Sintering of SOFC Electrolytes

Jung-Sik Kim, Robert Rudkin, Alan Atkinson

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Tape Casting of Anode Substrate for SOFCs

Wolfgang Schafbauer, Ralf Kauert, Norbert H. Menzler, Hans Peter Buchkremer

Forschungszentrum Jülich GmbH, Jülich / Germany

Deformations During Sintering of Solid Oxide Fuel Cells Produced by Sequential Tape Casting of Water-Based Suspensions

Marco Cologna, Massimo Bertoldi, Vincenzo M. Sglavo

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Low Temperature Sintering of Zirconia Electrolyte through Transition Metal Ion Addition

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Environmental Impact Assessment of the Manufacture of SOFC Active Components by Screen Printing

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Cost-Effective Microstructural Engineering of Solid Oxide Fuel Cell Electrodes for Planar and Tubular Designs

Juan Carlos Ruiz-Morales, David Marrero-López, Juan Peña-Martínez and Pedro Núñez

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Solid Oxide Fuel Cells with Stabilized Zirconia Electrolyte Film Prepared by Spin-Coating

Ji Haeng Yu, Hee Lak Lee, San Kook Woo

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Process and Apparatus for Cutting Holes into Sintered Electrolyte- and Anode-Supported Cells

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Fabrication of Thin Film SOFC by Using AAO as Electrode Template

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Stacks and Cell Design

Metallic Support SOFC Development in Ikerlan

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Materials Development for CFCL's Metal-Ceramic Stack

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Performance of Cerium Doped Neodymium Cuprates as SOFC Cathodes in Composite Structures

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Using Equivalent Circuit Models in Understanding the Performance Change of Metal-Supported SOFCs in Static and Dynamic Conditions

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Recent Developments in Plasma Sprayed Metal Supported Solid Oxide Fuel Cells at DLR

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Ceramic-Based Electrodes for SOFCs

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Development of 1kW Class Anode-Supported Tubular SOFC Stack

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Characterization of Structural and Electrochemical Properties of Sr-Deficient $\text{Ba}_{0.5}\text{Sr}_{0.5-x}\text{Co}_{0.8}\text{Fe}_{0.2}\text{O}_{3-\delta}$ Electrodes for Solid Oxide Fuel Cell

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Micro-SOFC

Fabrication and Power Characterization of Micro Solid Oxide Fuel Cell Membranes

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Characteristics and Fabrication of Anode-Supported Tubular Solid Oxide Fuel Cell with YSZ/CGO Electrolyte and LSFC Cathode

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Single-Chamber Methane-Fed Intermediate Temperature SOFC Based on Gd-Doped Ceria Electrolytes

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Microstructure and Electrical Conductivity of Spray Pyrolysis YSZ Thin Films for Micro-Solid Oxide Fuel Cells

Barbara Scherrer, Thomas Ryll, Henning Galinski, René Tölke, Jennifer L. M. Rupp, Anja Bieberle-Hütter and Ludwig J. Gauckler
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Micro-Solid Oxide Fuel Cells: Microstructures and Electrochemical Properties of Low Temperature Cathode Thin Films

Thomas Ryll, Barbara Scherrer, Henning Galinski, René Tölke, Jennifer L. M. Rupp and Ludwig J. Gauckler
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An Isothermal Numerical Model of Single-Chamber Solid Oxide Fuel Cells

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Micro Fiber Solid Oxide Fuel Cells by Dip-Coating

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Testing

Progress in Quality Assurance and Standardisation of SOFC Testing at FZJ

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Harmonisation of SOFC Test Procedures under FCTESqa

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Thermal Behaviour of SOFC Single Cells in Operation with Dynamic Loads

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Effect of Operation Parameters on the Temperature Distribution in an Intermediate Temperature SOFC Cell

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SOFC Stack Testing at Staxera

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Durability and Integrity

Degradation Study of SOFCs under Cycling Current Load Conditions

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Investigation of Local Electrochemical Performance and Local Degradation in an Operating Solid Oxide Fuel Cell

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Life Cycle Assessment of Two SOFC Stack Technologies

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SOFC Fuels and Reforming

Influence of Oxygen Stoichiometry on Hydrocarbon Oxidation Activity of Ceramic SOFC Anodes

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Impregnation of Ni/CeO₂ on Alumina Support as a Reforming Catalyst

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Production Cost Analysis for an Autothermal Reformer

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Performance Analysis of Butane Direct Internal Reforming SOFC at Intermediate Temperature

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Tar Conversion in SOFCs

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SOFC Demonstrator for Portable Power Supply Running on Commercial Propane Gas

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Electrochemical Performance of Anode-Supported SOFCs Operated with Higher Hydrocarbon Fuels

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Systems and General Topics

Portable SOFC System Type Evaluation and Optimization

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Fuel Cell System Investigation for Future SOFC Aircraft Applications

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