

## Poster session

### Stacks and Systems Design, Performance and Durability

- P001 Oct.7 **Performances of Cost-Reduced Planar Type SOFC Stacks with Anode-Supported Cell**  
S. Mineta, K. Mizuki, Y. Yoshida, S. Sugita, R. Kobayashi (NTT Energy and Environment Systems Laboratories, Japan)
- P002 Oct.8 **Proposal and Study on Optimum Operation of SOFC CGS with EV Charging Stand**  
H. Kamiko, T. Bando, Z. Ayshah, T. Tanaka, N. Kakimoto (Ibaraki University, Japan), Y. Inui (The University of Shiga Prefecture, Japan)
- P003 Oct.10 **Preliminary Electrochemical Characterization of Planar SOFC Short Stacks Based on  $\text{Pr}_2\text{NiO}_{4+\delta}$  and  $(\text{La,Sr})(\text{Co,Fe})\text{O}_{3-\delta}$  Cathodes**  
S.J. McPhail (ENEA, Italy), C. Boigues-Munoz (Polytechnic University of Marche, Italy), M. La Malfa(ENEA, Italy), D. Montinaro, S. Modena, F. Ghigliazza (SOFCpower, Italy)
- P004 Oct.7 **Micro-tubular Solid Oxide Fuel Cells and Their Stacks Running on Direct Ethanol Fuels**  
X.F. Ye, C. Yuan, Y.P. Chen, C.Y. Zhong, Z.L. Zhan, S.R. Wang (SICCAS, China)
- P005 Oct.8 **Simulation of Velocity Distribution and Pressure Drop in Every Channel in the Printed Circuit Heat Exchanger**  
H.P. Lo, C.H. Hung, C.C. Wang (National Chiao Tung University, Taiwan)
- P006 Oct.10 **Current SOFC R&D activities at CNR-ITAE**  
M. Lo Faro, A.S. Aricò (CNR-ITAE, Italy)
- P007 Oct.7 **Evolution of SOFCpower' Stack Performances**  
S. Modena, S. Ceschini, A. Contino, R. Bini, L. Tognana, M. Bertoldi ( SOFCpower, Italy), Z. Wuillemin (HTceramix, Switzerland)
- P008 Oct.8 **Temperature Effect due to Internal Reforming in Pressurized SOFC**  
C. Willich, A. Tomaszewski, M. Henke, J. Kallo, K.A. Friedrich (German Aerospace Center, Germany )
- P009 Oct.10 **Steady State Analysis of 5kW SOFC System with Novel Configuration**  
JH. Jiang, X. Li (Huazhong University of Science & Technology, China), J. Yang (China University of Geosciences, China), J. Li (Huazhong University of Science & Technology, China)
- P010 Oct.7 **Understanding the Electrochemical Behavior of SOFC Stacks**  
M. Lang, M. Klein, M. Henke, C. Willich, G. Schiller (German Aerospace Center, Germany), F. Hauler (ElringKlinger AG, Germany)
- P011 Oct.8 **Higher Performance, Eco- Friendliness, And Reliability For The "SOFC +  $\mu\text{GTE}$ " Hybrid Engine And A Lower Cost Of The Power Generated**  
A.V. Sudarev (Research Center «Ceramic Engines» named after A.M. Boyko, Ltd., Russia), V.G. Konakov (NTZ «Glass&Ceramics», Ltd., Russia)
- P012 Oct.10 **Development of Anode Off-Gas Recycle Blowers for High Efficiency SOFC Systems**  
Y. Tanaka (AIST, Japan), K. Sato (CAP co., ltd., Japan), A. Yamamoto, T. Kato (AIST, Japan)
- P013 Oct.7 **Performance of an Anode Supported Solid Oxide fuel cell with Indirect Internal Reforming**  
S.T. Park, J. Zou, H.C. Yoon, N.M. Sammes, J.S. Chung (POSTECH, Korea)
- P014 Oct.10 **Testing Microtubular SOFCs in Unmanned Air Vehicles (UAVs)**  
A.D. Meadowcroft (University of Birmingham, UK), S. Howroyd (Loughborough University,UK), K. Kendall, M. Kendall (Adelan Ltd., UK)

### Cell Design, Processing, Performance and Durability

- P015 Oct.7 **Performance Evaluation Technology for Long Term Durability and Reliability of SOFCs**  
Y. Mugikura, K. Yasumoto, H. Morita, M. Yoshikawa, T. Yamamoto (Central Research Institute of Electric Power Industry, Japan )

- P016 Oct.8 **Performance Evaluations for Long Term Durability and Reliability of Segment-in-series Tubular Type SOFCs**  
T. Yamamoto, K. Yasumoto, M. Yoshikawa, H. Morita, Y. Mugikura (Central Research Institute of Electric Power Industry, Japan)
- P017 Oct.10 **Metal-Supported Solid Oxide Fuel Cells with Impregnated Electrodes**  
Y. Zhou, Z. Zhan, S. Wang (SICCAS, China)
- P018 Oct.7 **Application of Low Temperature Ceramic Coating Process for SOFC Electrolyte and Electrode Fabrication**  
J.-J. Choi, J.-H. Choi, D.-S. Park (Korea Institute of Materials Science, Korea)
- P019 Oct.8 **Investigation of Cu-based Infiltration Coatings for Metal-supported SOFC**  
P. Blennow, B.R. Sudireddy, Å.H. Persson, J. Nielsen (Technical University of Denmark, Denmark), R. Sachitanand, J. Froitzheim (Chalmers University of Technology, Sweden)
- P020 Oct.7 **Redox-stability of a Planar Metal-supported SOFC**  
D. Roehrens, O. Büchler, D. Sebold, M. Kappertz (Forschungszentrum Jülich, Germany), W. Schafbauer, Th. Franco (Plansee SE, Austria), N.H. Menzler, H.-P. Buchkremer (Forschungszentrum Jülich, Germany)
- P021 Oct.8 **Reliability of an All Perovskite-Based Solid Oxide Fuel Cell**  
M. Lo Faro, A.S. Aricò (CNR-ITAE, Italy)
- P022 Oct.10 **Optimization of Ceramic Composites in Solid Oxide Fuel Cells by Hierarchical Functional Architecturing of Powder Packing Structure**  
H.-W. Lee, K.J. Yoon, J.-W. Son, J.-H. Lee, B.-K. Kim, H.-J. Je (Korea Institute of Science and Technology, Korea)
- P023 Oct.7 **Synthesis Of Half Fuel Cell Ni-YSZ / YSZ On Porous Metallic Support By Dry Surface Deposition Processes**  
J. Fondard, P. Bertrand, A. Billard (IRTES-LERMPS, UTBM, France), S. Skrabs, Th. Franco (PLANSEE SE, Austria), G. Bertrand (CIRIMAT 5085, ENSIACET, France), P. Briois (IRTES-LERMPS, UTBM, France)
- P024 Oct.8 **Development of a High-Performance Micro-Tubular SOFC based on a Hollow Fiber Support**  
D. Panthi, A. Tsutsumi (The University of Tokyo, Japan)
- P025 Oct.10 **Improvement of Cell Performance and Stability by Optimizing Microstructure of Cathode Contact Materials for Planar-type SOFC**  
J. Duan, D. Yan, J. Pu, B. Chi, J. Li (Huazhong University of Science and Technology, China)
- P026 Oct.7 **Design and Fabrication of Electrolyte-Supported Tubular SOFC Combined with Supercritical Water Oxidation on Biomass Gas**  
H. Kim (POSTECH, Korea), A. Parfitt (Institute for Residential Innovation, USA), S.T. Park, Y.S. Chung, J.S. Chung, N.M. Sammes (POSTECH, Korea)
- P027 Oct.8 **Design and Fabrication of Micro SOFC for the Power Source of Mobile Electric Devices**  
S. Murayama, F. Iguchi, Y. Inagaki, M. Shimizu, S. Tanaka, H. Yugami (Tohoku University, Japan)
- P028 Oct.7 **Durability of SOFC against Thermal and Redox Cycling**  
M. Hanasaki, C. Uryu, S. Taniguchi, Y. Shiratori, K. Sasaki (Kyushu University, Japan)
- P029 Oct.8 **Durability of SOFCs using inexpensive Ca-doped ZrO<sub>2</sub> electrolytes**  
Y. Toyofuku, T. Hosoi, T. Kawabata, Y. Shiratori, S. Taniguchi, K. Sasaki (Kyushu University, Japan)
- P030 Oct.10 **Y<sub>0.08</sub>Sr<sub>0.88</sub>TiO<sub>3</sub>-CeO<sub>2</sub> Composite as a Diffusion Barrier Layer of STS-Supported SOFC**  
K.J. Kim, S.J. Kim, G.M. Choi (POSTECH, Korea)
- P031 Oct.7 **Experimental Investigation of the Effect of Operating Pressure on the Performance of SOFC and SOEC**  
A. Momma, K. Takano, Y. Tanaka, T. Kato, A. Yamamoto (AIST, Japan)
- P032 Oct.8 **Flow Channel Configurations of an Anode-Supported Honeycomb Solid Oxide Fuel Cell**  
S. Kotake, H. Nakajima, T. Kitahara (Kyushu University, Japan)
- P033 Oct.10 **Novel Strategies to Fabricate an Anode Supported-Type Protonic Ceramic Fuel Cells (PCFCs)**  
J.-H. Lee, S.-M. Choi, S.-B. Park, K.J. Yoon, J.-W. Son, H.J. Je, B.-K. Kim, H.-W. Lee (Korea Institute of Science and Technology, Korea)

- P034 Oct.7 **X-ray Computed Tomography Investigation of Mechanical Behavior of Anode-Supported SOFCs during the Redox Cycle Using X-ray CT Method**  
T. Kushi, K. Fujita (Tokyo Gas Co., Ltd., Japan)
- P035 Oct.8 **Technological Issues in the Manufacturing of Anode-Supported Half-Cells**  
E. Mercadelli, P. Pinasco, A. Gondolini, A. Sanson (ISTEC-CNR, Italy)
- P036 Oct.7 **Unconventional Approaches for the Production of Large Area SOFC**  
A. Sanson, E. Mercadelli, A. Gondolini, P. Pinasco (ISTEC-CNR, Italy)
- P037 Oct.8 **Processing Effects on Performance and Stability of Anode-Supported Fuel-Cells**  
W. Li, P. Palanisamy, R. Webb (ESL ElectroScience, USA), N. Minh (University of California, USA)
- P038 Oct.10 **Hydrogen Membrane Fuel Cells with Metal/Insulator/Metal Structure**  
Y. Aoki, R. Nonaka, H. Habazaki (Hokkaido University, Japan)
- P039 Oct.7 **Current Distribution Measurement of a Microtubular Solid Oxide Fuel Cell**  
A. Shimizu, H. Nakajima, T. Kitahara (Kyushu University, Japan)
- P040 Oct.8 **Fabrication and Characterization of Intermediate Temperature Solid Oxide Fuel Cells by Pulsed Laser Deposition**  
L. Zhao, K. Sasaki, S.R. Bishop (Kyushu University, Japan)
- P041 Oct.10 **Multilayered Electrolyte-supported SOFC Based on NEVZ-Ceramics Membrane**  
I. Burmistrov, D. Agarkov, S. Bredikhin (Institute of Solid State Physics RAS, Russia), Yu. Nepochatov, O. Tiunova, O. Zadorozhnaya (NEVZ-Ceramics, CJSC, Russia)
- P042 Oct.7 **Integration of Innovative Oxide Materials in an Intermediate Temperature Solid Oxide Fuel Cell**  
A. Morandi, Q. Fu, M. Marrony (EIFER, Germany), J.-M. Bassat (ICMCB, France), O. Joubert (IMN, France)
- P043 Oct.8 **Towards a Fully REDOX Stable SOFC: Cell Development at Ceres Power**  
R. Leah, M. Lankin, A. Bone, A. Selcuk, R. Pierce, L. Rees, D. Corcoran, P. Muhl, Z. Dehaney-Steven, C. Brackenbury, S. Mukerjee (Ceres Power Ltd., UK)
- P044 Oct.7 **Performance of Electrolyte Supported Solid Oxide Fuel Cells with STN Anodes**  
S. Veltzé, B.R. Sudireddy, P.S. Jørgensen, W. Zhang, L.T. Kuhn, P. Holtappels, T. Ramos (Technical University of Denmark, Denmark)
- P045 Oct.8 **Novel Co-Sintering Techniques for Fabricating Intermediate Temperature, Metal Supported Solid Oxide Fuel Cells (IT-m-SOFCs)**  
S.H. Rahul, P.K.P. Rupa, N. Panda, K. Balasubramanian (NFTDC, India), R.V. Kumar (University of Cambridge, UK), V.V. Krishnan (NFTDC, India)
- P046 Oct.10 **Nanostructure Electrodes for Metal-supported Solid Oxide Fuel Cells**  
Z. Zhan, Y. Zhou, S. Wang, X. Liu, X. Meng, T. Wen (SICCAS, China)
- P047 Oct.7 **Evaluation of Elastic and Strength Properties of Ni-YSZ Cermets for Solid Oxide Fuel Cells under Redox Cycling**  
K. Sato, T. Miyasaka, S. Watanabe, T. Hashida (Tohoku University, Japan)
- P048 Oct.8 **Redox Anode Supported Cell Performances Tested with Different Cathode Materials**  
G.D. Domenicantonio, R. Ihringer (Fiaxell Sàrl, Switzerland)

### Electrolyte Materials, Processing and Performance

- P049 Oct.7 **Enhancing the Protonic Conductivity of Tin Pyrophosphates by Increasing Phosphate Content**  
C.R. Kreller, M.S. Wilson, R. Mukundan, E.L. Brosha, F.H. Garzon (Los Alamos National Laboratory, USA)
- P050 Oct.10 **Long Annealing Effect on Stabilities for Electrical Conductivity of  $(\text{ZrO}_2)_{0.89}(\text{Sc}_2\text{O}_3)_{0.1}(\text{CeO}_2)_{0.01}$  Electrolyte at IT-SOFC Operating Temperature**  
M. Mori (Central Research Institute of Electric Power Industry, Japan), T. Itoh (AGC Seimi Chemical Co., Ltd., Japan)
- P051 Oct.8 **Yttrium Doped Barium Cerate and Zirconate Heterostructures: Deposition and Electrochemical Characterization**  
E.Di Bartolomeo, A. D'Epifanio, N. Yang, A. Tebano, G. Balestrino, S. Licoccia (University of Rome Tor Vergata, Italy)

- P052 Oct.10 **Rare Earth Co-doped Nanocrystalline Ceria Electrolytes for Intermediate Temperature Solid Oxide Fuel Cells (IT-SOFC)**  
A.S. Babu, R. Bauri (Indian Institute of Technology Madras, India)
- P053 Oct.7 **Proton Conduction of  $\text{SrZr}_{0.95}\text{Y}_{0.05}\text{O}_{3-\delta}$  Thin Film Prepared by RF Magnetron Sputtering**  
A. Oda, T. Okumura, T. Higuchi (Tokyo University of Science, Japan)
- P054 Oct.8 **Electrical Properties of  $\text{Ba}_3\text{Ca}_{1.18}\text{Nb}_{1.82}\text{O}_{9-\delta}$  Proton-conducting Electrolyte Prepared by a Combustion Method**  
L. Bi, E. Traversa (King Abdullah University of Science and Technology, Saudi Arabia)
- P055 Oct.10 **Oxygen Nonstoichiometry of  $\text{Ce}_{0.6}\text{La}_{0.4}\text{O}_{2-\delta}$**   
H. Sato, S. Hashimoto, T. Nakamura, K. Yashiro, K. Amezawa, T. Kawada (Tohoku University, Japan)
- P056 Oct.7 **Improved Electrolyte Performance in Plasma Sprayed SOFCs by Electrode Modification**  
M. Marr, C. Metcalfe, E.S.C. Fan, O. Kesler (University of Toronto, Canada)
- P057 Oct.8 **Alkaline-earth Doped effect on Oxygen Vacancy Migration in Monoclinic Lanthanum Germanate: First-principles calculation**  
T.P.T. Linh, M. Sakaue, M. Alaydrus, T.D.K. Wungu, S.M. Aspera, H. Kasai (Osaka University, Japan), T. Ishihara (Kyushu University, Japan)
- P058 Oct.10 **Solid Oxide Fuel Cells Using Lanthanum Silicate Electrolyte Films**  
H. Mieda, A. Mineshige, T. Nishimoto, M. Tange, Y. Daiko, T. Yazawa (University of Hyogo, Japan), H. Yoshioka (Hyogo Prefectural Institute of Technology, Japan), R. Mori (Fuji-Pigment.Co., Ltd., Japan)
- P059 Oct.7 **A Tri-layer Proton-conducting Electrolyte for Chemically Stable Operation in Solid Oxide Fuel Cells**  
L. Bi, E. Traversa (King Abdullah University of Science and Technology, Saudi Arabia)
- P060 Oct.8 **Effect of  $\text{Bi}^{3+}$  Doping on the Property and Performance of the  $(\text{La}_{0.9}\text{Sr}_{0.1})_{0.98}\text{Ga}_{0.8}\text{Mg}_{0.2}\text{O}_{3-\delta}$  Electrolyte**  
Q. Zhou, X. Meng, Z. Zhan (SICCAS, China)
- P061 Oct.10 **c-Axis Oriented Apatite-type Silicates as Solid Electrolytes**  
K. Ueda, A. Mineshige, H. Takahashi, A. Saito, Y. Daiko (University of Hyogo, Japan), H. Yoshioka (Hyogo prefectural Institute of technology, Japan), T. Yazawa (University of Hyogo, Japan)
- P062 Oct.7 **Stress Conditions Transition by Thermal Annealing in Barium Zirconate Based Proton Conducting Thin Films Fabricated Using PLD Method**  
T. Fukushige, F. Iguchi, M. Shimizu, H. Yugami (Tohoku University, Japan)
- P063 Oct.8 **Relationship between Electrical Properties and Stress Field in Solid Electrolyte Thin Films**  
Y. Osawa, F. Iguchi, M. Shimizu, H. Yugami (Tohoku University, Japan)
- P064 Oct.10 **Protective Yttrium Doped Barium Zirconate Layer on Yttrium Doped Barium Cerate Proton Conductive Membrane**  
M. Maide, O. Korjus, M. Vestli, E. Lust, G. Nurk (University of Tartu, Estonia)
- P065 Oct.7 **Characterizations of Co-ionic Neodymium-doped Ceria/Carbonate Composite Electrolytes**  
J.-T. Kim, S.-S. Baek, T.-H. Lee (Sejong University, Korea), S.-J. Song (Chonnam National University, Korea), J.-Y. Park (Sejong University, Korea)
- P066 Oct.10 **Characterization of Doped Ceria Films as SOFC Electrolyte Prepared by Using Ultrasonic Spray Pyrolysis Method**  
M. Vestli, M. Maide, G. Nurk, E. Lust (University of Tartu, Estonia)
- P067 Oct.8 **Performance of Atomic-Layer-Deposited Yttria-Stabilized Zirconia Near Room Temperature**  
D.Y. Jang, H. Kim, K. Bae (Korea University, Korea), M.V.F. Schlupp, M. Prestat (ETH Zurich, Switzerland), J.H. Shim (Korea University, Korea)
- P068 Oct.10 **Zirconia Ceramics Effect of  $\text{Fe}_2\text{O}_3$  Addition on Conductivity of YSZ Ceramics**  
V. Barbashov, N. Belousov, E. Nesova, A. Jebel (National Academy of Science of Ukraine, Ukraine)

## Anode Materials, Processing and Performance

- P069 Oct.7 **Understanding the Relationship between Ink Rheology and Film Properties for Screen-Printed Nickel/Scandia-Stabilized-Zirconia Anodes**  
M.R. Somalu, A. Muchtar, M.G. Baboli (Universiti Kebangsaan Malaysia, Malaysia), V. Yufit (Imperial College London, UK), I.P. Shapiro, P. Xiao (University of Manchester, UK), N.P. Brandon (Imperial College London, UK)
- P070 Oct.8 **Comparison of Performance of Ni-CeO<sub>2</sub>-YSZ and Ni-Nb<sub>2</sub>O<sub>5</sub>-YSZ Anodes for Solid Oxide Fuel Cell**  
P.K. Tiwari, S. Basu (Indian Institute of Technology Delhi, India)
- P071 Oct.7 **Evaluation of Electrolyte Breakdown Condition in an Anode-Supported SOFC due to Ni-Zirconia Cermet Anode Reoxidation**  
Y. Tahara, H. Orui, K. Watanabe, S. Sugita, R. Kobayashi (NTT Corp., Japan)
- P072 Oct.8 **Raman Spectroscopy Study of SOFC Electrode Surfaces**  
X. Li, J.-P. Lee, K. Blinn (Georgia Institute of Technology, USA), S. Park (Ulsan National Institute of Science and Technology, Korea), M. Liu (Georgia Institute of Technology, USA)
- P073 Oct.10 **Quantitative Analysis of SOFC Anode Microstructure Change During Redox Cycles**  
T. Shimura, N. Shikazono (The University of Tokyo, Japan)
- P074 Oct.7 **A Novel Concept for In Situ Gas-Phase Laser Raman Spectroscopy for SOFC**  
G. Schiller, C. Auer, Z. Ilhan, P. Szabo, H. Ax, B. Kapadia, W. Meier (German Aerospace Center, Germany)
- P075 Oct.8 **Simulation of Solid Oxide Fuel Cell Anode Microstructure Evolution Using Phase Field Method**  
Z. Jiao, N. Shikazono (The University of Tokyo, Japan)
- P076 Oct.10 **Comparative Study on Performance Stability of Ni-Oxide Cermet Anodes under Humidified Atmospheres in Solid Oxide Fuel Cells**  
H. Muroyama, R. Kishida, T. Matsui, K. Eguchi (Kyoto University, Japan)
- P077 Oct.7 **Characterization of a Novel Ni-impregnated GDC Electrode for Solid Oxide Fuel Cell and Electrolysis Cell Applications**  
M. Lomberg, E. Ruiz-Trejo, G. Offer, J. Kilner, N. Brandon (Imperial College London, UK)
- P078 Oct.8 **Transmission Electron Microscopy Observation of Nickel-Yttria Stabilized Zirconia Catalyst for Solid Oxide Fuel Cells in Methane Atmosphere**  
T. Tokunaga, H. Tasugi, N. Iwamoto (Nagoya University, Japan), T. Yamaguchi, H. Sumi, Y. Fujishiro (AIST, Japan), K. Sasaki, T. Yamamoto (Nagoya University, Japan)
- P079 Oct.10 **The Effect of Coexisting Oxides upon Carbon Formation on Ni Surface**  
T. Shindo, S. Watanabe, S. Hashimoto, K. Yashiro, T. Kawada (Tohoku University, Japan), T. Taniguchi, T. Kudo, Y. Sato, (JX Nippon Oil and Energy Corp., Japan)
- P080 Oct.7 **Inkjet Printing of Direct Carbon Solid Oxide Fuel Cell Components**  
R.I. Tomov (University of Cambridge, UK), M. Dudek (AGH University of Science and Technology, Poland), S.C. Hopkins (University of Cambridge, UK), M. Krauz (Institute of Power Engineering, Poland), H. Wang (Tsinghua University, China), C. Wang (University of Cambridge, UK), Y. Shi (Tsinghua University, China), P. Tomczyk (AGH University of Science and Technology, Poland), B.A. Glowacki (University of Cambridge, UK)
- P081 Oct.8 **La(Sr)Fe(Mn)O<sub>3</sub> Thin Film Anode for Improving Power Generating Property with Enhancing Electric Conductivity and Oxidation Activity**  
Y.-W. Ju, S. Ida, T. Ishihara (Kyushu University, Japan)
- P082 Oct.10 **Effect of PH<sub>3</sub> on Stability of LST Ceramic Anode in Coal Syngas**  
G. Chen, H. Kishimoto, K. Yamaji, K. Kuramoto (AIST, Japan), M.Y. Gong, X.B. Liu (West Virginia University, USA), G. Hackett, K. Gerdes (National Energy Technology Laboratory, USA), T. Horita (AIST, Japan)
- P083 Oct.7 **Spin-coated La<sub>0.8</sub>Sr<sub>0.2</sub>Ga<sub>0.8</sub>Mg<sub>0.2</sub>O<sub>3-δ</sub> Electrolyte on Infiltrated Anodes for Direct Methane Fuel Cells**  
Z. Salehi (University of Rome Tor Vergata, Italy), I. Luisetto (Roma Tre University, Italy), F. Basoli, A. D'Epifanio, S. Licocchia (University of Rome Tor Vergata, Italy), S. Tuti (Roma Tre University, Italy), E. Di Bartolomeo (University of Rome Tor Vergata, Italy)

- P084 Oct.8 **Nanostructured Ni/YSZ Anodes: Fabrication and Performance Analysis**  
J. Szász, D. Klotz, H. Störmer, D. Gerthsen, E. Ivers-Tiffée (Karlsruhe Institute of Technology, Germany)
- P085 Oct.10 **Exchange Current Density of SOFC Anodes**  
T. Hosoi, T. Yonekura, K. Sasaki (Kyushu University, Japan)
- P086 Oct.7 **Identification of Ni-YSZ Anode Creep Property Using PSO for Multiscale Simulation**  
S. Watanabe, F. Iguchi, K. Sato (Tohoku University, Japan), K. Yamamoto (Cybernet Systems Co., Ltd., Japan), T. Hashida, K. Terada, T. Kawada (Tohoku University, Japan)
- P087 Oct.8 **H<sub>2</sub> Oxidation on Doped Yttrium Chromites Anode of Solid Oxide Fuel Cell**  
W. Li, M. Gong, X. Liu (West Virginia University, USA)
- P088 Oct.10 **In-plane Distribution of Carbon Deposition on SOFCs**  
T. Nishimura, T. Kawabata, Y. Tachikawa, Y. Shiratori, S. Taniguchi, K. Sasaki (Kyushu University, Japan)
- P089 Oct.7 **Non-Stoichiometry in Oxide Thin Films Operating Under Anodic Conditions: A Chemical Capacitance Study of the Praseodymium-Cerium Oxide System**  
D. Chen (Massachusetts Institute of Technology, USA), S.R. Bishop (Kyushu University, Japan), H.L. Tuller (Massachusetts Institute of Technology, USA)
- P090 Oct.8 **Performance of LSTN (La<sub>0.2</sub>Sr<sub>0.8</sub>Ti<sub>1-x</sub>Ni<sub>x</sub>O<sub>3-δ</sub>) Alternative Anode for SOFC in H<sub>2</sub> and CH<sub>4</sub>**  
B.H. Park, G.M. Choi (POSTECH, Korea)
- P091 Oct.10 **Material Selection Impact on Cell Performances**  
N. Pétigny, S. Pétigny, F. Josseaux, G. Pattarkine, Y. Narendar (Saint-Gobain, France, USA)
- P092 Oct.7 **Effect of Ceria Addition in SOFC Anodes on Sulfur Poisoning**  
J. Sugimoto, T. Kawabata, Y. Shiratori, S. Taniguchi, K. Sasaki (Kyushu University, Japan)
- P093 Oct.8 **Preliminary Studies about Carbon Deposition Behavior of Ni-metal/YSZ Bimetallic Cermet Anode of SOFC**  
Y.S. Chung, H. Kim, H. Yoon, J.S. Chung, N.M. Sammes (POSTECH, Korea)
- P094 Oct.10 **XRD and Raman Spectroscopy Study of Mn Solubility in Cerium Oxide**  
L. Zhao, J. Hyodo, T. Ishihara, K. Sasaki, S.R. Bishop (Kyushu University, Japan)
- P095 Oct.7 **Microstructure Observation of Ni/YSZ Boundary by TEM and STEM**  
S.S. Liu, S. Toh, T. Daio, M. Koyama, S. Matsumura (Kyushu University, Japan)
- P096 Oct.8 **Doped Samarium Ferrite Perovskites as Carbon and Sulfur Resistant Anodes for Low Temperature Solid Oxide Fuel Cells**  
S.M. Bukhari, W.D. Penwell, J.B. Giorgi (University of Ottawa, Canada)
- P097 Oct.10 **Pattern Electrodes for Studying SOFC Electrochemistry**  
H.C. Patel, N. Biradar, V. Venkataraman, P. V. Aravind (Technical University of Delft, Netherlands)
- P098 Oct.7 **Molecular Dynamics Study for Sintering Property Analysis of Ni-YSZ Cermet**  
K. Nakao, H. Kohno, T. Ishimoto, M. Koyama (Kyushu University, Japan)
- P099 Oct.8 **Effect of Steam-to-Carbon Ratio on Degradation of Ni-YSZ Anode Supported Cells**  
H. Madi, S. Diethelm, J. Van herle (Ecole Polytechnique Fédérale de Lausanne, Switzerland), N. Petigny (Saint-Gobain, France)
- P100 Oct.10 **In-operando Raman Characterization of Carbon Deposition on SOFC Anodes**  
R.C. Maher, V. Duboviks, G. Offer, L.F. Cohen, N.P. Brandon (Imperial College London, UK)
- P101 Oct.7 **A Solid Oxide Fuel Cell with Lanthanum and Calcium Co-Doped Strontium Titanate as Support**  
L.Y. Lu, M.C. Verbraeken, M. Cassidy, J.T.S. Irvine (University of St Andrews, UK)
- P102 Oct.8 **Calculation of a Standard Reformed Biogas Composition and Testing on SOFC Anode Powders**  
S.R. Gamble, D. Neagu, J.T.S. Irvine (University of St Andrews, UK)
- P103 Oct.10 **Optimization of Infiltration Techniques Used to Construct Ni/YSZ Anodes**  
P. Keyvanfar, V. Birss (University of Calgary, Canada)
- P104 Oct.7 **Synthesis and Properties of Perovskite Anode for SOFC Applications**  
K.-Z. Fung, S.-Y. Tsai, C.-Y. Liu (National Cheng Kung University, Taiwan)
- P105 Oct.8 **Lithium Iron Oxide – An Anode Material for Intermediate Temperature Solid Oxide Fuel Cell**  
T.T. Muhl, J.T.S. Irvine (University of St. Andrews, UK)

- P106 Oct.10 **The Mechanism of Ammonia Oxidation at Ni-Fe-SDC Anode in Ammonia-Fueled SOFCs**  
W. Akimoto, M. Saito, M. Inaba (Doshisha University, Japan), H. Yoshida, T. Inagaki (The Kansai Electric Power Co., Inc., Japan)
- P107 Oct.7 **Electroless Deposited Cu on the Ni/YSZ Anode for the Direct CH<sub>4</sub>-SOFC**  
A. Rismanchian, S. SC. Chuang (The University of Akron, USA)
- P108 Oct.10 **Oxygen Non-stoichiometry, Defect Equilibrium and Electrical Properties of La<sub>0.8</sub>Sr<sub>0.2</sub>Sc<sub>0.2</sub>Mn<sub>0.8</sub>O<sub>3±δ</sub>**  
S. Sengodan, J. Kim (Ulsan National Institute of Science and Technology, Korea), J. Shin (Dong-Eui University, Korea), G. Kim (Ulsan National Institute of Science and Technology, Korea)
- P109 Oct.8 **Structural Changes of Ni/YSZ Cermet for Solid Oxide Fuel Cells in Hydrocarbon Gas Containing Atmospheres**  
T. Nakamura, N. Ohmura, K. Yashiro, K. Amezawa (Tohoku University, Japan)
- P110 Oct.10 **Preliminary Studies about Synthesis and Electrical Properties of Ruthenium Doped Lanthanum Strontium Titanate as a Potential Anode of Solid Oxide Fuel Cells**  
H. Yoon, J. Zou, S. Park, N.M. Sammes, J.S. Chung (POSTECH, Korea)

### Cathode Materials, Processing and Performance

- P111 Oct.7 **Boron Poisoning of (La, Sr)(Co, Fe)O<sub>3</sub> Cathodes of Solid Oxide Fuel Cells**  
K. Chen (Curtin University, Australia), J. Hyodo (Kyushu University, Japan), L. Zhao, N. Ai (Curtin University, Australia), T. Ishihara (Kyushu University, Japan), S.P. Jiang (Curtin University, Australia)
- P112 Oct.8 **Electrochemical Investigation of Composite Nano La<sub>0.6</sub>Sr<sub>0.4</sub>Co<sub>0.2</sub>Fe<sub>0.8</sub>O<sub>3-δ</sub> Infiltration into a LSGM Scaffold Cathode on a LSGM Electrolyte**  
B.Y. Yoon, J. Bae (Korea Advanced Institute of Science and Technology, Korea)
- P113 Oct.10 **Optimisation of Water-Based Cathode Inks for Solid Oxide Fuel Cells**  
K.S. Howe, Z.H. Song, T.H. Kueh, R. Steinberger-Wilckens, A. Dhir (University of Birmingham, UK)
- P114 Oct.7 **An SOFC Cathode Infiltrated with Pr<sub>6</sub>O<sub>11</sub>**  
R. Chiba, H. Aono, K. Kato (Nihon University, Japan)
- P115 Oct.8 **Spray Pyrolysis Assisted Synthesis of Doped Barium Ferrite and Lanthanum Barium Ferrite-based SOFC Cathodes with Tailored Particulate Size and Morphology**  
J. Mukhopadhyay, R.N. Basu (CSIR-Central Glass and Ceramic Research Institute, India)
- P116 Oct.10 **Electrochemical Analysis of Nanoscaled Ba<sub>0.5</sub>Sr<sub>0.5</sub>Co<sub>0.8</sub>Fe<sub>0.2</sub>O<sub>3-δ</sub> Thin-film Cathodes**  
K. Asano (Central Research Institute of Electric Power Industry, Japan), D. Klotz, J. Hayd, J. Szász, E. Ivers-Tiffée (Karlsruhe Institute of Technology, Germany)
- P117 Oct.7 **Changes in LSC and LSCF Cathode Crystallographic Parameters Measured by Electrochemical in situ High-Temperature XRD**  
I. Kivi, J. Aruväli, K. Kirsimäe, A. Heinsaar, G. Nurk, E. Lust (University of Tartu, Estonia)
- P118 Oct.8 **Oxygen Ion Diffusion in Dense SrZrO<sub>3</sub> Layer on YSZ**  
M. Nishi (AIST, Japan), H. Yokokawa (The University of Tokyo, Japan), H. Kishimoto, K. Yamaji, T. Horita (AIST, Japan)
- P119 Oct.10 **Development of Novel LSM/GDC Composite Cathode Material for Cathode-Supported Direct Carbon Fuel Cells**  
B. Ahmed, S.B. Lee, R.H. Song, J.W. Lee (KIER, Korea), T.H. Lim, S.J. Park (University of Science and Technology, Korea)
- P120 Oct.7 **Controllable Impregnation via Inkjet Printing for the Fabrication of Solid Oxide Cell Air Electrodes**  
E.H. Da'as (King Abdullah University of Science and Technology, KSA), J.T.S. Irvine (University of St. Andrews, UK), E. Traversa, S. Boulfrad (King Abdullah University of Science and Technology, KSA)

- P121 Oct.8 **Orientation Control of Layered Perovskite  $\text{La}_2\text{NiO}_4$  Using Strong Magnetic Field for High Performance Cathode of SOFC**  
C. Hai, M. Hashimoto, C. Matsunaga (Kumamoto University, Japan), T. Uchikoshi, T.S. Suzuki, Y. Sakka (National Institute for Materials Science, Japan), M. Matsuda (Kumamoto University, Japan)
- P122 Oct.10 **Influence of LSC Cathode Microstructure on the Electrochemical Behavior at the Intermediate Temperature SOFC**  
P. Möller, R. Kanarbik, I. Kivi, G. Nurk, E. Lust (University of Tartu, Estonia)
- P123 Oct.7 **Microscopic Observation on Deposited Chromium near the Cathode Reaction Site of SOFCs and Influence of Cathode Polarization Change**  
E. Park, S. Taniguchi, T. Daio, J.-T. Chou, K. Sasaki (Kyushu University, Japan)
- P124 Oct.8 **Investigation of Redox Kinetics by Simultaneous *In Situ* Optical Absorption Relaxation and Electrode Impedance Measurements: Pr Doped Ceria Thin Films**  
J.J. Kim, S.R. Bishop, N.J. Thompson, H.L. Tuller (Massachusetts Institute of Technology, USA)
- P125 Oct.10 **Mixed Nickelates  $\text{Pr}_{2-x}\text{La}_x\text{NiO}_{4+\delta}$  Used as Cathodes in Metal Supported SOFCs**  
V. Vibhu, A. Rougier, J.-C. Grenier, J.-M. Bassat (CNRS, University of Bordeaux, ICMCB, France)
- P126 Oct.7 **Evaluation of the Cathode Performance and the Distribution of Deposited Cr Species in the LSCF6428 Cathode by Cr Poisoning**  
D.-H. Cho, H. Kishimoto, K. Yamaji, M.E. Brito, K. Develos-Bagarinao, M. Nishi, T. Shimonosono, F. Wang (AIST, Japan), H. Yokokawa (The University of Tokyo, Japan), T. Horita (AIST, Japan)
- P127 Oct.8 **Cathodic Reaction of Perovskite Oxide Electrodes on a Proton Conducting Electrolyte**  
K. Suzuki, S. Hashimoto, K. Yashiro, K. Amezawa, T. Kawada (Tohoku University, Japan)
- P128 Oct.10 **Evaluation of Power Generation Performance, Durability, Adhesive Strength and Firing Temperature of SOFC Cells**  
Y. Ogura, J. Shimano, K. Hisada (TOHO GAS CO., LTD., Japan)
- P129 Oct.7 **Electrochemical Performance and Reaction Mechanism of  $\text{LaNi}_{0.6}\text{Fe}_{0.4}\text{O}_{3-\delta}$  –  $\text{Ce}_{0.9}\text{Gd}_{0.1}\text{O}_{1.95}$  Composite Electrode for Solid Oxide Fuel Cell**  
R.A. Budiman, S. Hashimoto, K. Yashiro, K. Amezawa, T. Kawada (Tohoku University, Japan)
- P130 Oct.8 **Optimization of Transport Properties of A-site Ordered  $\text{LnBa}_{1-x}\text{Sr}_x\text{Co}_{2-y}\text{Fe}_y\text{O}_{5+\delta}$  Perovskite-type Cathode Materials**  
K. Świerczek, K. Zheng, A. Klimkowicz (AGH University of Science and Technology, Poland)
- P131 Oct.10 **Defect Equilibria of  $(\text{Pr}_{0.6}\text{Sr}_{0.4})(\text{Co}_{0.2}\text{Fe}_{0.8})\text{O}_{3-\delta}$**   
C.S. Barclay (University of the West Indies, Jamaica), L. Zhao, S. R. Bishop (Kyushu University, Japan), K.L. Duncan (University of the West Indies, Jamaica)
- P132 Oct.7 **Isolating the Role of Charge Localization in Chemical Expansion:  $(\text{La,Sr})(\text{Ga,Ni})\text{O}_{3-x}$  Case Study**  
N.H. Perry (Kyushu University, Japan), J.E. Thomas (Massachusetts Institute of Technology, USA), D. Marrocchelli (Trinity College Dublin, Ireland), S.R. Bishop, H.L. Tuller (Kyushu University, Japan)
- P133 Oct.8 **Compensation for Oxygen Exchange Rate Limiting Impurities on a  $\text{Pr}_{0.1}\text{Ce}_{0.9}\text{O}_{2-\delta}$  SOFC Electrode Material**  
S.R. Bishop, J. Druce, J. Kilner, T. Ishihara, K. Sasaki (Kyushu University, Japan)
- P134 Oct.10 **Factors that Influence Cation Segregation at the Surfaces of Perovskite Oxides**  
W. Lee, B. Yildiz (Massachusetts Institute of Technology, USA)
- P135 Oct.7 **Influence of Thin Films Structure of  $\text{Gd}_{0.5}\text{Sr}_{0.5}\text{CoO}_3$  Cathode on Impedance Spectroscopy**  
T. Mukai, S. Tsukui (Osaka Prefecture University, Japan), K. Yoshida (Tokyo Metropolitan College of Industrial Technology, Japan), M. Adachi (Osaka Prefecture University, Japan), K.C. Goretta (Air Force Office of Scientific Research Arlington, USA)



- P136 Oct.8 **Synthesis and Characterization of  $\text{La}_{0.6}\text{Sr}_{0.4}\text{Co}_{0.2}\text{Fe}_{0.8}\text{O}_3$  Nanofiber/ $\text{Ce}_{0.9}\text{Gd}_{0.1}\text{O}_2$  Nanoparticle Composite as Cathode Material for Intermediate Temperature Solid Oxide Fuel Cells**  
C.L. Gao, Y.J. Liu, R.V. Kumar (University of Cambridge, UK)
- P137 Oct.10 **Structural, Thermal and Electrical Study of  $\text{Ca}^{2+}$ ,  $\text{Sr}^{2+}$  Substituted  $\text{BiFeO}_3$  for IT-SOFC**  
S. Thakur, O.P. Pandey, K. Singh (Thapar University, India)
- P138 Oct.7 **Oxygen Nonstoichiometry and Electrochemical Properties in a Thin Film of Nickel Substituted Lanthanum Cobaltite for SOFCs**  
Y. Uzumaki, S. Hashimoto, T. Nakamura, K. Yashiro, K. Amezawa, T. Kawada (Tohoku University, Japan)
- P139 Oct.8 **Electrode Properties of Bi-Sr-Fe-based Perovskite-type Oxides Coated with Nano-structured  $\text{PrBaCo}_2\text{O}_{5+\delta}$**   
D. Baek, I. Oikawa, A. Kamegawa, H. Takamura (Tohoku University, Japan)
- P140 Oct.10 **Electrical conductivity and defect structure of  $\text{LaNi}_{1-x}\text{Fe}_x\text{O}_{3-\delta}$**   
E. Niwa, C. Uematsu (Nihon University, Japan), J. Mizusaki (Tohoku University, Japan), T. Hashimoto (Nihon University, Japan)
- P141 Oct.7 **Preparation of Cathode Material for Co-sintering with Electrolyte at High Temperature**  
T. Kon, A. Kamegawa, H. Takamura (Tohoku University, Japan)
- P142 Oct.8 **Long-term Stability of LSM-YSZ Based Cathodes**  
L.C. Baqué, P.S. Jørgensen, K.V. Hansen, M. Søggaard (Technical University of Denmark, Denmark)
- P143 Oct.10 **Silver-based Current Collectors for Industrial Applications**  
A. Stoeck, S. Mnich, S. Kühn (eZelleron, Germany)
- P144 Oct.7 **The Effects of Minor Components in LSCF Cathode on Oxygen Reduction Reaction**  
J. Oishi, J. Otomo, Y. Oshima (The University of Tokyo, Japan), M. Koyama (Kyushu University, Japan)
- P145 Oct.8 **Performance of Nickel, Platinum, and Lanthanum Strontium Cobaltite as Electrodes for Intermediate-Temperature Solid Oxide Fuel Cells**  
H. Jung, D.Y. Jang, K. Bae, J.H. Shim (Korea University, Korea)
- P146 Oct.10 **Enhanced Oxygen Reduction Reaction Kinetics in Nanocrystalline IT-SOFC Cathodes**  
L. Baqué (Technical University of Denmark, Denmark), A. Soldati, H. Troiani (CONICET, Centro Atómico Bariloche-CNEA, Argentina), A. Schreiber (Helmholtz-Zentrum Postdam, Germany), A. Caneiro, A. Serquis (CONICET, Centro Atómico Bariloche-CNEA, Argentina)
- P147 Oct.7 **Stability of Composite Cathode Consisting of Doped Bismuth Oxide ( $\text{Y}_{0.25}\text{Bi}_{0.75}\text{O}_{1.5}$ ) and Conducting Perovskite  $\text{La}_{1-x}\text{Sr}_x\text{MeO}_{3-\delta}$  (Me=Mn, Cu)**  
K.-Z. Fung, S.-Y. Tsai, Y.-J. Chang (National Cheng Kung University, Taiwan), W.C. Jung, S.M. Haile (California Institute of Technology, USA)
- P148 Oct.10 **Strontium Effect of Lanthanum Doped Ordered Perovskite Composite Cathode on Electrochemical Characteristics for IT-SOFCs**  
S. Choi, S. Park (Ulsan National Institute of Science and Technology, Korea), J. Shin (Dong-Eui University, Korea), G. Kim (Ulsan National Institute of Science and Technology, Korea)
- P149 Oct.7 **Direct Evaluation of Oxygen Chemical Potential Distribution in an SOFC Cathode by *In Situ* X-Ray Absorption Spectroscopy**  
Y. Fujimaki, H. Watanabe (Tohoku University, Japan), Y. Terada (JASRI, Japan), T. Nakamura, K. Yashiro, S. Hashimoto, T. Kawada, K. Amezawa (Tohoku University, Japan)
- P150 Oct.8 **Electronic Structures of  $\text{LaCoO}_3$ -Based Oxides Studied by Soft X-ray Absorption Spectroscopy under Controlled Temperatures and Oxygen Partial Pressures**  
R. Oike, K. Amezawa (Tohoku University, Japan), Y. Tamenori (JASRI, Japan), K. Yashiro, T. Nakamura, T. Kawada (Tohoku University, Japan)
- P151 Oct.10 **Enhanced Chromium Tolerance of  $\text{Gd}_{0.1}\text{Ce}_{0.9}\text{O}_{1.95}$  Impregnated  $\text{La}_{0.6}\text{Sr}_{0.4}\text{Co}_{0.2}\text{Fe}_{0.8}\text{O}_{3-\delta}$  Electrode of Solid Oxide Fuel Cells**  
L. Zhao (Curtin University, Australia), S. Amarasinghe (Ceramic Fuel Cells Ltd., Australia), S.P. Jiang (Curtin University, Australia)
- P152 Oct.7 **Enhancing SOFC Electrode Performance through Surface Modification**  
D. Ding, M. Liu, M. Liu (Georgia Institute of Technology, USA)

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- P153 Oct.7 **Influence of Chromium Evaporation and Oxidation on Interconnect Steels at 650-850°C**  
H.F. Windisch, J. Froitzheim, J.-E. Svensson (Chalmers University of Technical, Sweden)
- P154 Oct.8 **Long Term Resistivity Behavior of SOFC Interconnect/Ni-mesh/Anode Interfaces**  
V. Sarda (Forschungszentrum Jülich, Germany), S. Auvinen (VTT Technical Research Center of Finland, Finland), V. Shemet, W.J. Quadackers (Forschungszentrum Jülich, Germany), M. Pihlatie, J. Kiviaho (VTT Technical Research Center of Finland, Finland), L.G.J. de Haart (Forschungszentrum Jülich, Germany)
- P155 Oct.10 **Syntheses of  $\text{La}_{1-x}\text{Sr}_x\text{MnO}_3$  Nanopowders by Hydrothermal Method**  
J. Yun (Fine Chemical and Material Technical Institute, Korea), J.-W. Lee, R.-H. Song (Korea Institute of Energy Research, Korea), W.-P. Tai (Fine Chemical and Material Technical Institute, Korea)
- P156 Oct.7 **Diffusion of Nickel into Ferritic Steel Interconnects of Solid Oxide Fuel/Electrolysis Stacks**  
S. Molin, M. Chen, J.R. Bowen, P.V. Hendriksen (Technical University of Denmark, Denmark)
- P157 Oct.8 **Development of a Porous Metal Substrate for Metal Supported SOFCs using a Fe-Cr-Al Stainless Steel**  
H.C. Pham, E. Park, S. Taniguchi, K. Sasaki (Kyushu University, Japan)
- P158 Oct.10 **Precoated AISI441 for SOFC Interconnectors Studied By TEM Methods**  
M.W. Lundberg, L.S. Karlsson, R. Berger, N. Folkesson, J. Westlinder, H. Holmberg (AB Sandvik Materials Technology, Sweden)
- P159 Oct.7 **Kinetics of Stainless Steel 441 Initial Oxidation at 600 ~ 950°C in Different Oxygen Pressures**  
Z.Y. Chen, L.J. Wang, F.S. Li, K.C. Chou, L.F. Li (University of Science and Technology Beijing, China), Z.H. Sun (Suzhou Hua Tsing Power Sci. &Tech. Co., Ltd., China)
- P160 Oct.10 **Identification of Second Phases for  $\text{Sr}_{1-x}\text{La}_x\text{TiO}_3$  Perovskites Synthesized by Citric-Gel Method**  
M. Fujikawa, Y. Higashi, Y. Nomura, T. Ueki, S. Sugano, K. Murai, T. Moriga (The University of Tokushima, Japan), M. Mori (Central Research Institute of Electric Power Industry, Japan)
- P161 Oct.7 **Degradation of Ferritic Steel Interconnects in SOEC Environments**  
P. Alnegren, J. Froitzheim, J.-E. Svensson (Chalmers University of Technology, Sweden)
- P162 Oct.8 **Mechanochemical Synthesis of Manganese Cobalt Spinel as Interconnector Protective Coating Material. First experimental findings**  
M. Bellusci, S.J. McPhail (ENEA, Italy), S. Modena, D. Montinaro (SOFCPOWER, Italy), F. Padella(ENEA, Italy), F. Puleo (University of Palermo, Italy), P. Reale (ENEA, Italy)
- P163 Oct.10 **Copper Based Conversion Coatings on Ferritic Stainless Strip Steel as Solid Oxide Fuel Cell Interconnects: Oxidation Performance and Chromium Evaporation**  
J.G. Grolig (Chalmers University of Technology, Sweden), H. Abdesselam, M. Gas (ESIREM University of Bourgogne, France), H.F. Windisch, J. Froitzheim, J.-E. Svensson (Chalmers University of Technology, Sweden)
- P164 Oct.7 **Progress in SOFC Metallic Interconnect Coating**  
X. Du(Suzhou HuaTsing Power Sci. & Tech. Co., Ltd., China), M. Han (China University of Mining & Technology, China), Z. Sun (Suzhou Hua Tsing Power Sci. & Tech. Co., Ltd., China)
- P165 Oct.10 **Development of Protective Coatings for SOFC Metallic Components**  
N.J. Kidner, G. Arkenberg, S. Ibanez, K. Smith (NexTech Materials, USA), S.R. Akanda (The Ohio State University, USA), M.M. Seabaugh (NexTech Materials, USA), M.E. Walter (The Ohio State University, USA)
- P166 Oct.7 **The Development of Sealant for Planar SOFC**  
J. Tong (China University of Mining & Technology, China), X. Du (SuZhou Hua Tsing Power Sci & Tech Co., Ltd., China), M. Han (China University of Mining & Technology, China)

- P167 Oct.8 **Effect of Coatings on a Commercial Stainless Steel for SOEC Interconnect Application in Anode Atmosphere**  
M.R. Ardigo, I. Popa, S. Chevalier (CNRS-University of Burgundy, France), V. Parry, A. Galerie (CNRS-INP Grenoble-UJF, France), P. Girardon (APERAM Centre de Recherche Isbergues, France), F. Perry (PVDco sarl, France), R. Laucournet, A. Brevet (CEA, France)

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C.-K. Lin, K. Anam (National Central University, Taiwan), S.-H. Wu, R.-Y. Lee (Institute of Nuclear Energy Research, Taiwan)
- P169 Oct.8 **Model Based Interpretation of Coupled Gas Conversion and Diffusion in SOFC-Anodes**  
H. Geisler, A. Kromp, S. Hirn, A. Weber, E. Ivers-Tiffée (Karlsruher Institut für Technologie, Germany)
- P170 Oct.10 **Atomistic Modeling and *Ab Initio* Calculations of Yttria-Stabilized Zirconia**  
Y. Umeno, A.M. Iskandarov, A. Kubo (The University of Tokyo, Japan), J.-M. Albina (Ruhr-University Bochum, Germany)
- P171 Oct.7 **Optimal Operational Strategies for Degrading Solid Oxide Fuel Cells**  
M.C. Williams (URS, USA), R. Gemmen, K. Gerdes (DOE NETL, USA)
- P172 Oct.8 **Dynamic Modeling and Control Design for a Planar Solid Oxide Fuel Cell**  
D.D. Yu, R.Y. Lee (Institute of Nuclear Energy Research, Taiwan)
- P173 Oct.10 **DFT Investigations on Sintering behavior of Gadolinia-Doped Ceria with Lithium Oxide additives**  
L. Yu, M. Han (China University of Mining & Technology Beijing, China)
- P174 Oct.7 **Nonlinear Oscillatory Dynamics in Solid Oxide Fuel Cells**  
J.D. Sands, D.J. Needham, J. Uddin (University of Birmingham, UK)
- P175 Oct.8 **First Principles Study on the Electronic Structure and Properties of Sr- and Mg-Doped LaGaO<sub>3</sub>**  
T.D.K. Wungu, M. Sakaue, S.M. Aspera, T.L.P. Thuy, M. Alaydrus, H. Kasai (Osaka University, Japan), T. Ishihara (Kyushu University, Japan)
- P176 Oct.10 **Development of Interatomic Potential for Molecular Dynamics Simulation of Ni/YSZ Anode in Solid Oxide Fuel Cells**  
A.M. Iskandarov, A. Kubo, Y. Umeno (The University of Tokyo, Japan)
- P177 Oct.7 **Improvement of SOFC System Efficiency by Incorporating Thermoelectric Power Generation Heat Exchanger**  
T. Terayama (Tokyo University of Science, Japan), S. Nagata, Y. Tanaka, A. Momma, T. Kato, A. Yamamoto (AIST, Japan)
- P178 Oct.8 **Density Functional Theory Study on the Catalytic Properties of BaTiO<sub>3</sub> as Solid Oxide Fuel Cell Anode**  
D.S. Rivera, T. Ishimoto, M. Koyama (Kyushu University, Japan)
- P179 Oct.10 **Detailed Transport-Reaction Models for SOFC Ni-YSZ Patterned Anodes: A Critical Inquiry**  
H. Kohno (Kyushu Institute of Technology), S. Liu, T. Ogura, T. Ishimoto (Kyushu University, Japan), D.S. Monder (Indian Institute of Technology Hyderabad, India), K. Karan (University of Calgary, Canada), M. Koyama (Kyushu University, Japan)
- P180 Oct.7 **Modeling and Simulation the Influence of Solid Carbon Formation on SOFC Performance and Degradation**  
V. Yurkiv, A. Latz (German Aerospace Centre, Germany), W.G. Bessler (Offenburg University of Applied Sciences, Germany)
- P181 Oct.8 **First-principles Study of the Lattice Strain Effects on the Ionic Migration Barrier of Sm-doped Ceria**  
M. Alaydrus, M. Sakaue, S.M. Aspera, T.D.K. Wungu, T.P.T. Linh, H. Kasai (Osaka University, Japan), T. Ishihara (Kyushu University, Japan)
- P182 Oct.10 **Modelling a Methane Fed Solid Oxide Fuel Cell with Anode Recirculation System**  
T.-I. Tsai, S. Du, A. Dhir (University of Birmingham, UK), A.A. Williams (University of Nottingham, UK), R. Steinberger-Wilckens (University of Birmingham, UK)

- P183 Oct.7 **Molecular Dynamics Simulation Studies of H Diffusion in SOFC Anode Using Reactive Force Field**  
L.C. Saha, K. Nakao, H. Kohno, T. Ishimoto, M. Koyama (Kyushu University, Japan)
- P184 Oct.8 **Kinetics of Internal Methane Steam Reforming in Solid Oxide Fuel Cells and Its Influence on Cell Performance– Coupling Experiments and Modeling**  
L. Fan, M. Pourquie, A.T. Thattai, A.H.M. Verkooijen, P.V. Aravind (Delft University of Technology, Netherlands)
- P185 Oct.10 **Computational Study of Performance Drop Phenomena Based on Sulfur Adsorption and Desorption Model in Planar-Type SOFCs**  
Y. Tachikawa, T. Hosoi, T. Nishimura, Y. Shiratori, S. Taniguchi, K. Sasaki (Kyushu University, Japan)
- P186 Oct.7 **Density Functional Theory Calculation of Spin-State Transition in LaCoO<sub>3</sub>**  
T. Ishimoto, Y. Ito, H. Kohno, M. Koyama (Kyushu University, Japan)
- P187 Oct.8 **Investigations on the Structural and Electronic Properties of Pure and Doped Bulk Pr<sub>2</sub>NiO<sub>4</sub> through First Principles Calculations**  
S.M. Aspera, M. Sakaue, M. Alaydrus, T.D.K. Wungu, T.P.T. Linh, H. Kasai (Osaka University, Japan), T. Ishihara (Kyushu University, Japan)
- P188 Oct.10 **Static Performance Model for ASCs with Different Sizes and its Experimental Validation**  
D. Klotz, J.P. Schmidt, A. Weber, E. Ivers-Tiffée (Karlsruher Institut für Technologie, Germany)
- P189 Oct.7 **Numerical Prediction of System Efficiency of Solid Oxide Redox Flow Battery During Charge/Discharge Process**  
H. Iwai (Kyoto University, Japan), H. Ohmori (Konica Minolta, Inc., Japan), K. Itakura, M. Saito, H. Yoshida (Kyoto University, Japan)
- P190 Oct.8 **Theory for the Conductivity of Nanoparticle-infiltrated SOFC Electrode**  
M. Chen, T. Liu, Z. Lin (University of Science and Technology of China, China)
- P191 Oct.10 **Monte Carlo Study on the Constraint Effect of YSZ Phase on Ni Sintering in Ni-YSZ Composite System**  
S. Hara, K. Shikata, N. Shikazono, S. Izumi, S. Sakai (The University of Tokyo, Japan)
- P192 Oct.7 **Microstructural Analysis of an LSCF Cathode Using In-Situ Tomography and Simulation**  
S.J. Cooper, M. Kishimoto, F. Tariq (Imperial College London, UK), R.S. Bradley (University of Manchester, UK), A.J. Marquis, N.P. Brandon, J. Kilner (Imperial College London, UK), P.R. Shearing (University College London, UK)
- P193 Oct.8 **Atomistic Investigation of the Second Phase Precipitation in (Sr,La)TiO<sub>3</sub> Interconnect Material**  
K. Nakamura, M. Mori, T. Ohnuma (Central Research Institute of Electric Power Industry, Japan)
- P194 Oct.10 **Detailed Kinetic Modeling for SOFC Ni Pattern Anodes Fuelled by Methane**  
T. Ogura (Kyushu University, Japan), H. Kohno (Kyushu Institute of Technology, Japan), S. Liu, T. Ishimoto, M. Koyama, H. Tsukikawa, M. Tajima (Kyushu University, Japan)
- P195 Oct.7 **Phosphine Induced Anode Performance Degradation in a Planer SOFC: A Numerical Study**  
H. Sezer, S.R. Pakalapati, I.B. Celik (West Virginia University, USA)
- P196 Oct.8 **First Principle Researches on Component Optimization Mechanism for the SOFC Solid Electrolyte Materials**  
M.Y. Fang, N. Chen, F.S. Li, L.J. Wang, H.L. Zhao (University of Science and Technology Beijing, China)
- P197 Oct.10 **Three-Dimensional Performance Simulation of SOFC Anodes Using FIB-Tomography Reconstructions**  
A. Häffelin, J. Joos, A. Weber, E. Ivers-Tiffée (Karlsruhe Institute of Technology, Germany)

### Operation on Alternative Fuels

- P198 Oct.7 **Investigation of a Solid Oxide Fuel Cell Coupled to a Tri-reforming Process**  
M. Lo Faro, A. Vita, L. Pino, A.S. Aricò (CNR-ITAE, Italy)

- P199 Oct.10 **SOFC Long Term Operation in Pure Methane by Gradual Internal Reforming**  
S. Georges, N. Bailly, M.C. Steil, Y. Bultel (CNRS-Grenoble INP- Université de Savoie-UFJ, France), A. Hadjar, J.P. Viricelle, M. Rieu (SPIN-EMSE, Saint-Etienne, France)
- P200 Oct.8 **Copper-Iron-Ceria-YSZ Anode for Direct Utilization of Hydrocarbons in Solid Oxide Fuel Cells**  
G. Kaur, S. Basu (Indian Institute of Technology Delhi, India)
- P201 Oct.10 **Study of Ceria-Nickel Composites for Anode Catalytic Layer for Direct Ethanol SOFC**  
F.C. Fonseca, F.N. Tabuti (IPEN, Brazil), F.B. Noronha, B.L. Augusto (INT, Brazil), L.V. Matos (Universidade Federal Fluminense, Brazil)
- P202 Oct.7 **Operation of Metal-Supported SOFC with Charcoal Fuel**  
M.C. Tucker, C. Taylor, M. LaBarbera, C.P. Jacobson (Point Source Power, USA)
- P203 Oct.8 **The Effect of Carbon Fiber Growth on the Deactivation of Nickel-Based Anode for Solid Oxide Fuel Cells Operated on Methane**  
J. Xiao, Y. Xie, L. Zhang, J. Liu (South China University of Technology, China)
- P204 Oct.10 **An Al<sub>2</sub>O<sub>3</sub>-doped YSZ Electrolyte-supporting Solid Oxide Fuel Cell Fabricated by Dip-coating and Its Direct Operation on Carbon Fuel**  
Y.M. Xie, Y.B. Tang, J. Liu (South China University of Technology, China)
- P205 Oct.7 **Effect of Operational Condition on Performance and Durability of Solid Oxide Fuel Cell Fueled By Natural Gas**  
H. Aslannejad, S. Bozorgmehri, A. Babaei, H. Mohebbi, A. Ghobadzadeh, A. Haghparast, S. Davari (Niroo Research institute, Iran )
- P206 Oct.8 **Co-generation of Electricity and CO from Syngas via Proton-conducting Solid Oxide Fuel Cells**  
N. Yan, X.Z. Fu, J.L. Luo, K.T. Chuang (University of Alberta, Canada)
- P207 Oct.10 **Performance Analysis of Integrated Coal Gasification Fuel Cell Combined Power Generation System**  
R. Nii, Y. Komatsu, S. Kimijima (Shibaura Institute of Technology, Japan)
- P208 Oct.8 **An Application of Generalized Least Squares Method to an Analysis of Methane/Steam Reforming Process on a Ni/YSZ Catalyst**  
A. Sciazko (AGH University of Science and Technology, Poland), Y. Komatsu (Shibaura Institute of Technology, Japan), G. Brus (AGH University of Science and Technology, Poland), S. Kimijima (Shibaura Institute of Technology, Japan), J.S. Szymd (AGH University of Science and Technology, Poland)
- P209 Oct.10 **Development of Direct Internal Reforming SOFC Integrated with Paper-Structured Catalyst Fuelled by Biofuels**  
Y. Shiratori, M. Sakamoto, Y. Takahashi, Y. Wakita, M. Takada, T. Ogura, H. Nakajima, K. Sasaki (Kyushu University, Japan)
- P210 Oct.7 **Performance Improvement of Ni-YSZ-Based Solid Oxide Fuel Cell with the Anode Functional Layer Synthesized by Co-precipitation Method**  
J.G. Lee, M.-G. Park (Yonsei University, Korea), K.H. Ryu (LTC Co., Ltd., Korea), R.H. Song, S.J. Park (Korea Institute of Energy Research, Korea), S.H. Min (LTC Co., Ltd., Korea), S.-H. Hyun (Yonsei University, Korea), C.S. Kim, D.R. Shin (Korea Institute of Energy Research, Korea), Y.G. Shul (Yonsei University, Korea)
- P211 Oct.8 **Study on Fuel Composition for the Performance Enhancement of Solid Oxide Fuel Cell Operated with Biodiesel Fuel**  
Q.T. Tran, Y. Shiratori, Y. Kakihara, T. Kitaoka, K. Sasaki (Kyushu University, Japan)
- P212 Oct.10 **Atomic Layer Deposition of Ruthenium on Platinum Anode for Direct Methanol Solid Oxide Fuel Cells**  
H.J. Jeong, J.W. Kim, K. Bae, H. Jung, J.H. Shim (Korea University, Korea)
- P213 Oct.7 **Sorbents for Bio-Fueled SOFCs**  
G. Alptekin, A. Jayaraman, M. Schaefer (TDA Research, Inc., USA), J. Hunt (FuelCell Energy, USA)
- P214 Oct.10 **Electrochemistry of Reformate Fueled Ni/8YSZ Anodes for Solid Oxide Fuel Cells**  
A. Kromp, A. Weber, E. Ivers-Tiffée (Karlsruher Institut für Technologie, Germany)
- P215 Oct.8 **Hybrid Direct Carbon Fuel Cells with Different Types of Mineral Coal**  
C. Jiang, J. Ma (University of St Andrews, UK), A. Arenillas (Instituto Nacional del Carbon INCAR-CSIC, Spain), J.T.S. Irvine (University of St Andrews, UK)

- P216 Oct.10 **Impact of Trace H<sub>2</sub>S Contained in a Simulated Coal Derived Syngas or Hydrogen-Enriched Fuel Gas on Performance of Ni-YSZ SOFC Anode**  
K. Kuramoto, T. Fukushima, S. Hosokai, K. Matsuoka, Y. Suzuki, H. Kishimoto, K. Yamaji, T. Horita, H. Yokokawa (AIST, Japan)

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M. Reytier, J. Cren, M. Petitjean, A. Chatroux, G. Gousseau, S. Di Iorio, A. Brevet, I. Noirot-Le Borgne, J. Mougin (CEA, France)
- P218 Oct.8 **Degradation Study of the La<sub>0.6</sub>Sr<sub>0.4</sub>Co<sub>0.2</sub>Fe<sub>0.8</sub>O<sub>3</sub> Solid Oxide Electrolysis Cell (SOEC) Anode after High Temperature Electrolysis Operation**  
E. Lay-Grindler, J. Laurencin (CEA, France), J. Villanova (ESRF, France), I. Kieffer (ESRF-FAME, France), F. Usseglio-Viretta, T. Le Bihan, P. Bleuet, A. Mansuy, G. Delette (CEA, France)
- P219 Oct.10 **Cross Validation of Current-Potential Sweep and Impedance Measurement of SOFCs and SOECs Implementing CO<sub>2</sub>/CO as Fuels**  
H. Chen, J. Yan, E. Dogdibegovic, X.-D. Zhou (University of South Carolina, USA)
- P220 Oct.8 **SmBaCo<sub>2</sub>O<sub>5+δ</sub> as High Efficient Oxygen Electrode of Solid Oxide Electrolysis Cells**  
B. Wei, K. Chen, L. Zhao, N. Ai (Curtin University, Australia), Z. Lü (Harbin Institute of Technology, China), S.P. Jiang (Curtin University, Australia)
- P221 Oct.10 **Reversible Performance of Anode-Supported Proton-Conductive Solid Oxide Cell in Lower Temperature Range**  
T. Yamaguchi, H. Sumi, K. Hamamoto, T. Suzuki, Y. Fujishiro (AIST, Japan)
- P222 Oct.7 **Computational Fluid Dynamics Modeling of Solid Oxide Electrolysis Cell**  
H.-W. Choi, J.G. Pharoah (Queen's University, Canada), D. Ryland, A. Kettner, N. Gnanapragasam (Atomic Energy of Canada Limited., Canada)
- P223 Oct.8 **Influence of the Anode Gas Flow Rate and Composition on Solid Oxide Electrolysis Cell Performance**  
A. Nechache, M. Cassir, A. Ringuedé (CNRS, ENSCP Chimie-Paristech, PSL, France)
- P224 Oct.10 **Electrode Performance in a Solid Oxide Electrolyzer Cell (SOEC)**  
K.J. Lee, J.W. Seo, J.S. Yoon, H.j. Hwang (Inha University, Korea)
- P225 Oct.8 **Modeling of Solid-Oxide Electrolyser Cells: From H<sub>2</sub>, CO Electrolysis to Co-Electrolysis**  
V. Menon (Karlsruhe Institute of Technology, Germany), V.M. Janardhanan (IIT Hyderabad, India), O. Deutschmann (Karlsruhe Institute of Technology, Germany)
- P226 Oct.10 **Efficiency Calculations for SOFC/SOEC Reversible System and Evaluations of Performances of Button-size Anode-supported Cell**  
M. Shiraki, H. Yakabe (Tokyo Gas Co., Ltd., Japan), H. Uchida (University of Yamanashi, Japan)
- P227 Oct.7 **La<sub>0.6</sub>Sr<sub>0.4</sub>Fe<sub>0.9</sub>Mn<sub>0.1</sub>O<sub>3</sub> Oxide Cathode for the High Temperature CO<sub>2</sub> Electrolysis Using LSGM Electrolyte**  
S. Wang, T. Ishihara (Kyushu University, Japan)
- P228 Oct.8 **Biogas Upgrading Using SOEC with a Ni-ScYSZ Electrode**  
S.D. Ebbesen (Technical University of Denmark, Denmark), J.B. Hansen (Haldor Topsøe A/S, Denmark), M.B. Mogensen (Technical University of Denmark, Denmark)
- P229 Oct.10 **Relating Electrochemical Performance Measurements and Surface Analyses of Pr<sub>2-x</sub>La<sub>x</sub>NiO<sub>4+δ</sub> Electrode Materials**  
J. Druce, J.A. Kilner, T. Ishihara (Kyushu University, Japan)
- P230 Oct.8 **Durability of Solid Oxide Electrolysis Cell and Interconnects for Steam Electrolysis**  
X. Sun, M. Chen, Y.-L. Liu, P.V. Hendriksen, M.B. Mogensen (Technical University of Denmark, Denmark)