SYMPOSIUM FF

Materials for Fuel Cells and Fuel Processors

December 2 – 4, 2002

Chairs

Levi T. Thompson	Univ of Michigan
Hubert A. Gasteiger	General Motors
Thomas A. Zawodzinski	Los Alamos National Laboratory
Brant A. Peppley	Royal Military College
Larry R. Pederson	Pacific Northwest National Lab

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* Invited paper

SESSION FF1: MICRO FUEL CELLS
Chairs: Levi T. Thompson and Robert F. Savinell
Monday Morning, December 2, 2002
Liberty (Sheraton)

8:30 AM *FF1.1
ON ELECTROCATALYSTS AND OTHER FUEL CELL MATERIALS. Shimshon Gottesfeld, MTI MicroFuel Cells, Albany, NY.

9:00 AM FF1.2
Abstract Withdrawn

9:15 AM FF1.3
Abstract Withdrawn

9:30 AM FF1.4
CHARACTERIZATION OF POTENTIAL CATALYSTS FOR CARBON MONOXIDE REMOVAL FROM REFORMATE FUEL FOR PEM FUEL CELLS. Peter A. Adcock, Eric Brosha, Fernando Garzon, Francisco A. Uribe, Los Alamos National Laboratory, Los Alamos, NM.

9:45 AM FF1.5
ENHANCED GRAPHITE FIBER ELECTRODES FOR MICROBIAL FUEL CELL EMPLOYING MARINE SEDIMENTS. Gregory Konesky, Bovie Medical Corp, Hampton Bays, NY.

10:00 AM BREAK

SESSION FF2: PROTON EXCHANGE MEMBRANES
Chairs: Levi T. Thompson and Shimshon Gottesfeld
Monday Morning, December 2, 2002
Liberty (Sheraton)

10:30 AM *FF2.1
PBI/ACID FOR HIGH-TEMPERATURE (100-200C) POYMER ELECTROLYTE FUEL CELLS. Robert F. Savinell and Jesse S. Wainright, Department of Chemical Engineering and the Yeager Center for Electrochemical Sciences, Case Western Reserve University, Cleveland, OH.

11:00 AM FF2.2
MEMBRANE FAILURE ISSUES IN PEM FUEL CELL MEMBRANE ELECTRODE ASSEMBLIES. Bhaskar Sompalli, Hubert A. Gasteiger, Brian Litteer, GM, Global R&D, Global Alternative Propulsion Center, Honeoye Falls, NY.

11:15 AM FF2.3
AMPHIPHILIC ORGANIC/INORGANIC NANO-HYBRID PROTON CONDUCTING ELECTROLYTE MEMBRANES FOR HIGH TEMPERATURE PEFC. Itaru Honma, Hitoshi Nakajima, National Institute of Advanced Industrial Science and Technology (AIST), Ibaraki, JAPAN.

11:30 AM FF2.4
PROTON-EXCHANGE MEMBRANES BASED UPON HYBRID ORGANIC-INORGANIC COMPOSITES. Chris J. Cornelius, Catalysis and Chemcial Technologies, Sandia National Laboratories, Albuquerque, NM.

11:45 AM FF2.5
ORGANIC/INORGANIC NANOCOMPOSITES IN DIRECT METHANOL FUEL CELL. Xiaofeng Xie, Zongqiang Mao, and Jingming Xu, Institute of Nuclear Energy Technology, Tsinghua University, Beijing, CHINA.

SESSION FF3: SOLID OXIDE FUEL CELLS
Chairs: Brant A. Peppley and Larry R. Pederson
Monday Afternoon, December 2, 2002
Liberty (Sheraton)

1:30 PM *FF3.1
SOLID OXIDE FUEL CELL TECHNOLOGY. Nguyen Minh, Hybrid Power Generation Systems, General Electric Power Systems, Torrance, CA.

2:00 PM FF3.2
CERIA-BASED COMPOSITE ANODE FOR SOLID OXIDE FUEL CELLS. Steven E. Weiss, Jackie Y. Ying, Massachusetts Institute of Technology, Department of Chemical Engineering, Cambridge, MA.

2:15 PM FF3.3
SYNTHESIS AND SINTERING OF $Ce_{1-x}Gd_xO_{2-x/2}$ NANOPOWDERS VIA CHEMICAL ROUTES. A. Sin, M. Seregni, A. Tavares, Y. Doubitski, A. Zaopo, Pirerlli Labs, Milan, ITALY; A. Arico, V. Antonucci, L. Gullo, D. La Rosa, S. Siracusano, Institute C.N.R.-T.A.E for Transformation and Storage of Eneregy, S. Lucia Messina.

2:30 PM FF3.4
NANOPHASIC LaCoO3 SOL-GEL THIN FILMS. Lidia Armelao, D. Barreca, ISTM-CNR and INSTM, Department of Chemistry, University of Padova, ITALY; L. Bertolo, G. Bottaro, E. Pierangelo, E. Tondello, Department of Chemistry and INSTM, University of Padova, ITALY.

2:45 PM FF3.5
SYNTHESIS OF AURIVILLIUS PHASES BY THE POLYMERIZED COMPLEX METHOD. Brian Luisi, Scott Misture, Alfred University, College of Ceramic Engineering and Materials Science, Alfred, NY.

3:00 PM BREAK

3:30 PM FF3.6
MATERIALS AND STRUCTURES FOR A THIN FILM FUEL CELL WITH APPLICATIONS IN PORTABLE POWER GENERATION. Joshua Hertz, Todd Stefanik, Harry Tuller, Massachusetts Institute of Technology, Cambridge, MA; Jyrki Lappalainen, University of Oulu, Oulu, FINLAND.

3:45 PM FF3.7
CHARACTERIZATION OF PLASMA SPRAYED SOLID OXIDE FUEL CELLS FOR INTERMEDIATE TEMPERATURES. Xinqing Ma, Heng Zhang, Jinxiang Dai, Jeff Roth, John Broadhead, Danny Xiao, David Reisner, and Shiqiang (Rob) Hui, US Nanocorp, Inc., Willington, CT.

4:00 PM FF3.8
NUCLEATION AND GROWTH OF YTTRIA-STABILIZED ZIRCONIA THIN FILMS USING COMBUSTION CHEMICAL VAPOR DEPOSITION. Zhigang Xu, Jag Sankar, Sergey Yarmolenko, Qiuming Wei, NSF Center for Advanced Materials and Smart Structures, North Carolina A&T State University, Greensboro, NC.

4:15 PM FF3.9
ELECTRICAL PROPERTIES OF ELECTROLYTE THIN FILMS ON NANO-POROUS SUBSTRATE. Yong-il Park, Suk-Won Cha, Yuji Saito, Sang-Joon J. Lee, Fritz B. Prinz, Rapid Prototyping Laboratory, Dept of Mechanical Engineering, Stanford University, Stanford, CA.

4:30 PM FF3.10
IMPROVEMENTS IN MECHANICAL BEHAVIOR OF SOFC ANODES. O. Kesler, R.L. Landingham, L.P. Martin, A.Q. Pham, Lawrence Livermore National Laboratory, Livermore, CA.

SESSION FF4: POSTER SESSION
Chairs: Larry R. Pederson and Brant A. Peppley
Monday Evening, December 2, 2002
8:00 PM
Exhibition Hall D (Hynes)

FF4.1
IONIC CONDUCTIVITY AND PHASE STABILITY STUDY OF THE AURIVILLIUS SYSTEM: $Bi_2Sr_2Nb_{(2-x)}Ta_xAl_{(1-y)}Ga_yO_{11.5}$ AND $Bi_2Sr_2Nb_2(Nb_xAl_{(1-x)})O_{(12.5-x)}$. Christopher Say, Doreen Edwards, David Earl, Scott Misture, School of Ceramic Engineering and Materials Science at Alfred University, Alfred, NY.

FF4.2
METAL DUSTING PROBLEM OF METALLIC INTERCONNECTS FOR SOFC. Zuotao Zeng, Ken Natesan, Argonne National Laboratory, Energy Technology Department, Argonne, IL.

FF4.3
SEALING FOR IMPROVED PERFORMANCE THERMAL SPRAY ZIRCONIA ELECTROLYTE FOR SOLID OXIDE FUEL CELLS. Andreas Kaiser, Rajiv J. Damani, Sulzer Innotec, Sulzer Markets and Technology Ltd., Winterthur, SWITZERLAND.

FF4.4
DEVELOPMENT OF A BRAZE FOR USE IN HERMETICALLY SEALING SOLID OXIDE FUEL CELLS AND OTHER HIGH TEMPERATURE ELECTROCHEMICAL DEVICES. K. Scott Weil and John S. Hardy, Pacific Northwest National Laboratory, Dept of Materials Science, Richland, WA.

FF4.5
THE STRUCTURE OF PLASMA THERMAL SPRAY ELECTROLYTE LSGM AND ITS EVOLUTION WITH TEMPERATURE. Heng Zhang, Xinqing Ma, Jinxiang Dai, Shiqiang (Rob) Hui, Jeff Roth, T.D. Xiao, John Broadhead and David E. Reisner, US Nanocorp Inc., Farmington, CT.

FF4.6
STRUCTURAL AND ELECTRONIC PROPERTIES OF THE SURFACES OF YTTRIA-STABILIZED CUBIC ZIRCONIA: AN AB-INITIO STUDY. G. Ballabio[a], M. Bernasconi[a], and S. Serra[b]; [a]Dipartimento di Scienza dei Materiali and Istituto Nazionale di Fisica per la Materia, Universita' di Milano-Bicocca, Milano, ITALY; [b]Pirelli Labs S.p.a., Milano, ITALY.

FF4.7
PERFORMANCE OF Sc-DOPED ZIRCONIA ELECTROLYTE FUEL CELL WITH OXIDES MIXED CATHODE AND ANODE. Akihiko Yamaji, Toshihiko Kishimoto and Tadaharu Adachi, Department of Mechanical Sciences and Engineering, Tokyo Institute of Technology, Meguroku, Tokyo, JAPAN.

FF4.8
OPTIMIZATION OF THE SINTERING OF AURIVILLIUS PHASES USING D-OPTIMAL STATISTICAL DESIGN. Myles S. Peterson, Scott T. Misture, New York State College of Ceramics at Alfred University, Alfred, NY.

FF4.9
CHARACTERIZATION OF $LaCrO_3$ PEROVSKITE COATING DEPOSITED BY MAGNETRON SPUTTERING ON AN IRON BASED CHROMIUM CONTAINING ALLOY. Nina Orlovskaya, Drexel Univ, Dept. of Materials Engineering, Philadelphia, PA; Christopher Johnson, Randall Gemmen, National Energy Technology Laboratory, Morgantown, WV.

FF4.10
A MULTI-PROCESS COST MODEL FOR SOLID OXIDE FUEL CELLS. Heather Benson, Mark Koslowske, Isa Bar-On, Worcester Polytechnic Institute, Dept of Mechanical Engineering, Worcester, MA; Randolph E. Kirchain, Massachusetts Institute of Technology, Dept of Materials Science and Engineering and Engineering Systems Division, Cambridge, MA.

FF4.11
COMBUSTION SYNTHESIS OF NITRIDES AND CARBIDES. Akhil Jain, Justin Bender, Juan Gonzalez, Kenneth Brezinsky, University of Illinois at Chicago, Dept. of Chemical Engineering, Chicago, IL.

FF4.12
CANDIDATE SOLID ELECTROLYTES FOR AN INTERMEDIATE TEMPERATURE SOFC: LSXM; (X = Fe, Ga). Cinar Oncel, Mehmet A. Gulgun, Sabanci University, FENS, Orhanli, Tuzla, Istanbul, TURKEY.

SESSION FF5: ELECTROCATALYSTS - I
Chairs: Hubert A. Gasteiger and Michael R. Wixom
Tuesday Morning, December 3, 2002
Liberty (Sheraton)

8:30 AM *FF5.1
ULTRA CO TOLERANT PtMo/PtRu ANODES FOR PEMFCs. Sarah Ball, David Thompsett, Johnson Matthey Technology Centre, Sonning Common, Reading, UNITED KINGDOM.

9:00 AM *FF5.2
ANODE PROCESSES AND MATERIALS FOR PEM FUEL CELLS. P. Liu, A. Logadottir, and J.K. Norskov, Center for Atomic-scale Materials Physics, Department of Physics, Technical University of Denmark, Lyngby, DENMARK.

9:30 AM FF5.3
ESR STUDY OF THE INTERACTION OF HYDROGEN WITH Pt SUPPORTED ON NANOPOROUS CARBON FOR PEM FUEL CELL ELECTRODES. Ramakrishnan Rajagopalan, Juan M. Coronado, Henry C. Foley, M. Albert Vannice, Department of Chemical Engineering, University Park, PA.

9:45 AM FF5.4
A SIMPLE METHOD TO PREPARE HIGHLY LOADED, HIGHLY DISPERSED Pt ON CARBON SUBSTRATES. Xianghong Hao and John R. Regalbuto, Dept. of Chemical Engineering, Univ. of Illinois at Chicago, Chicago, IL.

10:00 AM BREAK

10:30 AM *FF5.5
MATERIALS CHALLENGES IN PREPARING PLATINUM-TRANSITION METAL ALLOY ELECTROCATALYSTS. Hanwei Lei, Devon Renock, Alex Schechter, Suzanne Nirmalan, Katherine Plass[a], David J. Tarnowski, and Michael R. Wixom, T/J Technologies, Inc., Ann Arbor, MI; [a]Department of Chemistry, The University of Michigan, Ann Arbor, MI.

11:00 AM FF5.6
TUNGSTEN CARBIDES AS POTENTIAL ELECTROCATALYSTS. Jingguang G. Chen, Henry H. Hwu, Michael B. Zellner, Center for Catalytic Science and Technology, Dept. of Materials Science and Engineering, University of Delaware, Newark, DE.

11:15 AM FF5.7
PREPARATION AND CHARACTERIZATION OF METAL SULFIDE ELECTRO-CATALYSTS FOR PEM FUEL CELLS. Hua Zhang, Allan J. Jacobson, Department of Chemistry, University of Houston, TX; Alejandra Ramirez, Russell R. Chianelli, Materials Research and Technology Institute, University of Texas at El Paso, El Paso, TX.

11:30 AM FF5.8
FUEL CELL APPLICATIONS OF NANOTUBE-METAL SUPPORTED CATALYSTS. Thomas Gennett, Ryne P. Raffaelle, Jeffrey M. Elich, Brian J. Landi, Rochester Institute of Technology, NanoPower Research Laboratory, Rochester, NY; Jeffrey L. Alleman, Michael J. Heben, National Renewable Energy Laboratory, Golden, CO.

11:45 AM FF5.9
ENHANCED REACTIVITY OF FUEL CELL REACTIONS AT AEROGEL-BASED NANOSTRUCTURED ELECTRODES. Wendy S. Baker, Jeffrey W. Long, and Debra R. Rolison, Naval Research Laboratory, Surface Chemistry Branch, Washington, DC.

SESSION FF6: ELECTROCATALYSTS - II
Chairs: Thomas A. Zawodzinski and David Thompsett
Tuesday Afternoon, December 3, 2002
Liberty (Sheraton)

1:30 PM *FF6.1
ENHANCEMENT MECHANISM OF CO AND CH_3OH OXIDATION ON Pt, Pt-Ru, AND Pt-Fe ELECTRODES. Masahiro Watanabe, Yamanashi University, Clean Energy Research Center, Kofu, JAPAN.

2:00 PM FF6.2
CHARACTERIZATION OF CORE-SHELL NANOPARTICLE CATALYSTS FOR METHANOL ELECTRO-OXIDATION. Mathew M. Maye, Jin Luo, Li Han, Chuan-Jian Zhong, Department of Chemistry, State University of New York at Binghamton, Binghamton, NY; Yuehe Lin, Mark H. Engelhard, Environmental and Molecular Science Laboratory, Pacific Northwest National Laboratory,

Richland, WA; Maria Hepel, Department of Chemistry, SUNY-Potsdam, Potsdam, NY.

2:15 PM FF6.3
IN SITU X-RAY ABSORPTION EXPERIMENTS IN A PEM FUEL CELL IN HYDROGEN AND METHANOL OPERATION MODE. Ch. Roth, Th. Buhrmester, N. Martz, H. Fuess, Department of Materials Science, Darmstadt University of Technology, Darmstadt, GERMANY.

2:30 PM FF6.4
THE EFFECT OF THE NANO AND MICROSTRUCTURE OF PtRu/C ELECTROCATALYSTS TOWARDS METHANOL AND CARBON MONOXIDE OXIDATION. Wataru Sugimoto, Tomoyuki Kawaguchi, Yasushi Murakami, Yoshio Takasu, Shinshu Univ, Faculty of Textile Science and Technology, Dept of Fine Materials Engineering, Ueda, Nagano, JAPAN.

2:45 PM FF6.5
THE ELECTROCHEMICAL PROMOTION OF NO REDUCTION BY CO ON PALLADIUM. Patrick Fox, Gary Haller, Yale University, Dept of Chemical Engineering, New Haven, CT.

3:00 PM BREAK

SESSION FF7: BIPOLAR PLATES
Chairs: Thomas A. Zawodzinski and Masahiro Watanabe
Tuesday Afternoon, December 3, 2002
Liberty (Sheraton)

3:30 PM *FF7.1
OPTIMIZATION OF A CARBON COMPOSITE BIPOLAR PLATE FOR PEM FUEL CELLS. Theodore M. Besmann, John J. Henry Jr., James W. Klett, Oak Ridge National Laboratory, Oak Ridge, TN; David Haack, Ken Butcher, Porvair Fuel Cell Technology, Hendersonville, NC.

4:00 PM FF7.2
CORROSION-RESISTANT TANTALUM COATINGS FOR PEM FUEL CELL BIPOLAR PLATES. Leszek Gladczuk, Chirag Joshi, Anamika Patel, Zafar Iqbal, Marek Sosnowski, New Jersey Institute of Technology, Newark, NJ; Jim Guiheen, Honeywell Intl. Inc, Morristown, NJ.

4:15 PM FF7.3
THERMAL NITRIDATION TO PROTECT METAL BIPOLAR PLATES IN PEM FUEL CELLS. Michael Brady, Oak Ridge National Laboratory, Oak Ridge, TN; Kirk Weisbrod, Christine Zawodzinski, Los Alamos National Laboratory, Los Alamos, NM; Irene Paulauskas, Raymond Buchanan, University of Tennessee, Dept of Materials Science and Engineering, Knoxville, TN; L.R. Walker, K.L. More, D.F. Wilson, P.F. Tortorelli, Oak Ridge National Laboratory, Oak Ridge, TN.

4:30 PM FF7.4
BIPOLAR PLATE-SUPPORTED SOLID OXIDE FUEL CELLS FOR AUXILIARY POWER UNITS. J. David Carter, Terry A. Cruse, Joong-Myeon Bae, James M. Ralph, Deborah J. Myers, Michael Krumpelt, Romesh Kumar, Chemical Technology Division, Argonne National Laboratory, Argonne, IL.

SESSION FF8: FUEL PROCESSING - I
Chairs: Larry R. Pederson and Don F. Gervasio
Wednesday Morning, December 4, 2002
Liberty (Sheraton)

8:30 AM *FF8.1
LASER-ACTIVATED MEMBRANE INTRODUCTION MASS SPECTROMETRY FOR HIGH-THROUGHPUT EVALUATION OF METHANOL REFORMING CATALYSTS AND WATER-GAS-SHIFT CATALYSTS. Yongtae Kim, Amit Nayer, Illinois Institute of Technology, Dept of Chemical Engineering, Chicago, IL; Eugene S. Smotkin, University of Puerto Rico at Rio Piedras, Department of Chemistry, San Juan, PR.

9:00 AM FF8.2
DEACTIVATION MECHANISMS FOR SUPPORTED GOLD WATER GAS SHIFT CATALYSTS. Chang Hwan Kim, Shyamal K. Bej, Levi T. Thompson, Dept of Chemical Engineering, University of Michigan, Ann Arbor, MI.

9:15 AM FF8.3
METHANOL STEAM REFORMING OVER CARBIDE AND NITRIDE SUPPORTED CATALYSTS. Shyamal K. Bej, Easwar S. Ranganathan and Levi T. Thompson, Department of Chemical Engineering, University of Michigan, Ann Arbor, MI.

9:30 AM FF8.4
FUNCTION OF CARBIDE AND NITRIDE WATER GAS SHIFT REACTION CATALYSTS. Jeremy J. Patt, Shyamal K. Bej, Levi T. Thompson, University of Michigan, Dept of Chemical Engineering, Ann Arbor, MI.

9:45 AM FF8.5
COMBINATORIAL STUDIES OF THE PREFERENTIAL OXIDATION OF CO FOR THE FUEL PROCESSOR FOR FUEL CELLS. F. Gracia and E.E. Wolf, Dept of Chemical Engineering, Univ of Notre Dame, Notre Dame, IN.

10:00 AM BREAK

10:30 AM *FF8.6
OPPORTUNITIES FOR NEW MATERIALS IN HYDROCARBON FUEL PROCESSING. Richard Bellows, HydrogenSource, South Windsor, CT.

11:00 AM FF8.7
STUDY OF AMMONIA FORMATION DURING THE AUTOTHERMAL REFORMING OF HYDROCARBON BASED FUELS. A.R. Khan, James Zhao, O.Y. Polevaya, Nuvera Fuel Cells, Acorn Park, Cambridge, MA.

11:15 AM FF8.8
CATALYST DISPERSION TECHNOLOGY USING A PARTIAL REDUCTION REACTION. Seiichi Suenaga, Takayuki Fukasawa, Yasuhiro Goto, Toshiba Corporation, Corporate Research & Development Center, Kawasaki, JAPAN.

11:30 AM FF8.9
MICROEMULSION-TEMPLATED SYNTHESIS OF HIGHLY ACTIVE HIGH-TEMPERATURE STABLE PARTIAL OXIDATION CATALYSTS. Mark Kirchhoff[a], Ullrich Specht[a], Stefan Kaskel[a], and Götz Veser[a,b], [a]Max-Planck-Institut für Kohlenforschung, Mülheim an der Ruhr, GERMANY; and [b]Chemical Engineering Department, University of Pittsburgh, Pittsburgh PA.

11:45 AM FF8.10
SOL-GEL INFILTRATION OF NANOSTRUCTURED CATALYST SUPPORT LAYERS IN MICROCHANNELS AND EVALUATION OF THERMAL STABILITY. Haibiao Chen, Sang Park, Woo Lee, and Adeniyi Lawal, Stevens Institute of Technology, Dept of Chemical, Biochemical, and Materials Engineering, Hoboken, NJ.

SESSION FF9: FUEL PROCESSING - II
Chairs: Levi T. Thompson and Richard Bellows
Wednesday Afternoon, December 4, 2002
Liberty (Sheraton)

1:30 PM *FF9.1
MICROCHEMICAL REACTORS FOR THERMALLY EFFICIENT FUEL PROCESSING. Leonel Arana, Chelsey Baertsch, MIT, Dept. Chemical Engineering, Cambridge, MA; Ole Nielsen, Martin Schmidt, MIT, Microsystems Technology Laboratories, Cambridge, MA; Klavs Jensen, MIT, Dept. Chemical Engineering, Cambridge, MA.

2:00 PM FF9.2
MINIATURE FUEL PROCESSORS FOR PORTABLE FUEL CELL POWER SUPPLIES. Evan Jones, Jamelyn Holladay, Daniel Palo, Max Phelps, Ya-Hui Chin, Robert Dagle, Jianli Hu, Yong Wang, and Ed Baker, Battelle, Northwest Division, Richland WA.

2:15 PM FF9.3
SILICON MICROREACTOR WITH SOL-GEL BASED $Pt/CeO_2/Al_2O_3$ CATALYST FOR METHANOL REFORMING. Sujit Srinivas, James C. Brown, Erdogan Gulari, Department of Chemical Engineering, The University of Michigan, Ann Arbor, MI.

2:30 PM *FF9.4
A MINIATURE METHANOL FUEL CELL SYSTEM OPERATING NEAR 200°C. Don Gervasio, Motorola Labs, Motorola, Inc., Tempe, AZ.

3:00 PM BREAK

3:30 PM *FF9.5
AMMONIA DRIVEN FUEL CELLS. David Bloomfield. Analytic Energy Systems, LLC, Woburn, MA.

4:00 PM FF9.6
EFFECTIVE HYDROGEN SEPARATION FROM CARBON MONOXIDE USING ION BEAM MODIFIED POLYMERIC MEMBRANES. Maria Coleman, Xinglong Xu, J. Ilconich, J. Richie, and Ling Hu, Univ. of Toledo, Dept of Chemical & Environmental Engineering, Toledo, OH.

4:15 PM FF9.7
UNDERSTANDING THE LIMITS OF HYDROGEN STORAGE IN METALS. G. Ceder, D. Morgan, A. Van der Ven, A. Predith, D. Morgan, C. Marianetti, Massachusetts Institute of Technology, Cambridge, MA; H. Smithson, Cambridge University, UNITED KINGDOM.

4:30 PM FF9.8
HYDROGEN STORAGE IN NANOSTRUCTURED AMORPHOUS CARBON FILMS. Laura Zoppi, Luciano Colombo, INFM and Department of Physics, University of Cagliari, Monserrato (CA), ITALY.

4:45 PM FF9.9
ULTRA-DEEP DESULFURIZATION OF GASOLINE AND DIESEL FOR FUEL CELL APPLICATIONS BY SARS ADSORBENT AND PROCESS. Xiaoliang Ma, Michael Sprague, Lu Sun, and Chunshan Song, The Pennsylvania State Univ, The Energy Institute, University Park, PA.