SYMPOSIUM EE

Solid-State Ionics

December 2 – 5, 2002

Chairs

Philippe Knauth	Univ Provence-CNRS
Jean-Marie Tarascon	Univ of Picardie-Jules Verne
Enrico Traversa	Univ of Rome Tor Vergata
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* Invited paper

SESSION EE1: THEORY OF IONIC CONDUCTION/
INORGANIC IONIC CONDUCTORS
Chair: Joachim Maier
Monday Morning, December 2, 2002
Commonwealth (Sheraton)

8:30 AM *EE1.1
THE *MIGRATION* CONCEPT FOR IONIC MOTION IN MATERIALS WITH DISORDERED STRUCTURES. Klaus Funke, Radha D. Banhatti, University of Muenster, Institute of Physical Chemistry, Muenster, GERMANY.

9:00 AM EE1.2
BOND VALENCE ANALYSIS OF ION TRANSPORT IN REVERSE MONTE CARLO MODELS OF MIXED ALKALI GLASSES. Stefan Adams, Universität Göttingen, GZG, Crystallography, GERMANY; Jan Swenson, Chalmers University of Technology Göteborg, Department of Applied Physics, SWEDEN.

9:15 AM EE1.3
EFFECT OF SUBSTITUTION ON Li-INTERCALATION IN ANATASE. Marina V. Koudriachova[a], Nicholas M. Harrison[b] and Simon W. de Leeuw[a]; [a]Computational Physics, Delft University of Technology, Delft, THE NETHERLANDS; [b]CLRC, Daresbury Laboratory, Daresbury, Warrington, UNITED KINGDOM.

9:30 AM EE1.4
A FIRST PRINCIPLES STUDY OF NATIVE DEFECTS CONCENTRATIONS, SELF DOPING AND DIFFUSION IN α-QUARTZ. Guido Roma and Yves Limoge, Service de Recherches de Métallurgie Physique, CEA-Saclay, Gif sur Yvette, FRANCE.

9:45 AM EE1.5
THE PHASE DIAGRAM OF YTTRIA-STABILIZED ZIRCONIA ($ZrO_2 - YO_{1.5}$. A. Predith, A. Van der Ven, G. Ceder, Massachusetts Inst of Tech, Dept of Materials Science and Engineering, Cambridge, MA; A. Bogicevic, and C. Wolverton, Scientific Research Laboratories, Ford Motor Co, Dearborn, MI.

10:00 AM BREAK

10:30 AM *EE1.6
NEW RESULTS FOR ELECTRON TRANSPORT, CHEMICAL DIFFUSION AND STABILITY OF SOLID OXYGEN ION CONDUCTORS. Hans-Dieter Wiemhöfer, University of Münster, Inst. Inorganic and Analytical Chemistry, Münster, GERMANY.

11:00 AM EE1.7
MICROSTRUCTURAL ASPECTS OF THE IONIC TRANSPORT PROPERTIES OF STRONTIUM-SUBSTITUTED LANTHANUM COBALTITES. Werner Sitte, Edith Bucher, Wolfgang Preis, University of Leoben, Institute of Physical Chemistry, Leoben, AUSTRIA; Ilse Papst, Werner Grogger, Ferdinand Hofer, Graz University of Technology, Research Institute for Electron Microscopy, Graz, AUSTRIA.

11:15 AM EE1.8
MODIFICATION OF MASS/CHARGE TRANSPORT PROPERTIES OF $BaTiO_3$ BY THE CO-DOPING OF VARIABLE-VALENT ACCEPTORS (Mn_Ti) AND FIXED-VALENT DONORS (Y_Ba). Chung-Eun Lee, Doh-Kwon Lee and Han-Ill Yoo, Seoul National University, School of Materials Science and Engineering, Seoul, KOREA.

11:30 AM EE1.9
SURFACE CONDUCTIVITY OF FUNCTIONALIZED COLLOIDS AND MEMBRANES. D. Carrière, K. Lahlil, M. Moreau, P. Barboux, J.-P. Boilot, Ecole Polytechnique, Laboratoire de Physique de la Matière Condensée, Palaiseau, FRANCE.

11:45 AM EE1.10
ELECTROCHEMICAL PROPERTIES OF BLOCKCOPOLYMER TEMPLATED MESOPOROUS SILICATES WITH HETEROPOLYACIDS CLUSTERS. Itaru Honma, H.S.Zhou, Energy Electronics Institute, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Ibaraki, JAPAN; H.S. Yun, M. Kuwabara, Department of Materials Science, University of Tokyo, Bunkyo-ku, Tokyo, JAPAN.

SESSION EE2: INORGANIC ION CONDUCTORS/
POLYMERS
Chair: Klaus Funke
Monday Afternoon, December 2, 2002
Commonwealth (Sheraton)

1:30 PM EE2.1
SYNTHESIS AND CHARACTERISATION OF APATITE-TYPE OXIDE ION CONDUCTORS. Peter Slater, Jon Sansom, Univ of Surrey, Guildford, UNITED KINGDOM.

1:45 PM EE2.2
PREPARATION OF (La,Li)TiO_3 DENSE CERAMICS USING SOL-GEL AND ION-EXCHANGE PROCESS. Seiichi Suda, Hiroyuki Ishii, Kiyoshi Kanamura, Tokyo Metropolitan Univ, Graduate School of Engineering, Tokyo, JAPAN.

2:00 PM EE2.3
IONIC CONDUCTIVITY IN Li-Na-La-Ti-O PEROVSKITES. A MODEL SYSTEM FOR THE PERCOLATION THEORY. A. Varez, Materials Science Dept., Carlos III Univ., Leganés, SPAIN; A. Rivera, C. León, J. Santamaría, Appl. Phys. Dept., Complutense Univ., Madrid, SPAIN; O. V'yunov, A.G. Belous, Inorg. Chem. Inst., Ukrainian Academy of Sciences, UKRAINE; J.A. Alonso and J. Sanz, Materials Science Inst., CSIC, Madrid, SPAIN.

2:15 PM EE2.4
UNUSUAL FAST CATION CONDUCTION IN THE HIGH-TEMPERATURE PHASE OF LITHIUM SODIUM SULFATE. H. Feldmann, Dirk Wilmer, Institute of Physical Chemistry, Münster University, GERMANY; R.E. Lechner, Hahn-Meitner-Institut, Berlin, GERMANY.

2:30 PM EE2.5
SUPERPROTONIC PHASE TRANSITIONS IN $CS(HSO_4)_{1-X}(H_2PO_4)_X$ (X = 0 TO 1) COMPOUNDS. Dane Boysen, Calum Chisholm, Sossina Haile, Dept of Materials Science, California Institute of Technology, Pasadena, CA.

2:45 PM EE2.6
PHASE TRANSITIONS IN SUPERIONIC $BaSnF_4$ UPON BALL-MILLING AND SUBSEQUENT TREATMENTS. Georges Dénès, Florence Gree and Abdualhafeed Muntasar, Concordia University, Department of Chemistry and Biochemistry, Laboratory of Solid State Chemistry and Mössbauer Spectroscopy, Laboratories for Inorganic Materials, Montreal, Québec, CANADA.

3:00 PM BREAK

3:30 PM *EE2.7
NANOCOMPOSITE PEO-BASED POLYMERIC ELECTROLYTES FOR Li-LiFePO4 SOLID-STATE POLYMERIC CELLS. F. Croce, Dipartimento di Scienze del Farmaco, Universita G. D' Annunzio, Chieti, ITALY.

4:00 PM EE2.8
POLYMER RELAXATIONAL DYNAMICS ASSOCIATED WITH IONIC CONDUCTION IN CONFINED GEOMETRIES. Jean-Marc Zanotti[a,b], Luis J. Smith[c], Emmanuel P. Giannelis[d], Pierre Levitz[e], David L. Price[f] and Marie-Louise Saboungi[c,e]; [a]Argonne National Laboratory, Intense Pulsed Neutron Source, Argonne, IL; [b]Laboratoire Leon Brillouin, CEA Saclay, Gif/Yvette FRANCE; [c]Argonne National Laboratory, Materials Science Division, Argonne, IL; [d]Cornell University, Department of Materials Science and Engineering, Ithaca, NY; [e]Centre de Recherche sur la Matiere Divisee, CNRS, Orleans, FRANCE; [f]Centre de Recherches sur les Materiaux a Haute Temperature, CNRS, Orleans, FRANCE.

4:15 PM EE2.9
CHARACTERIZATION OF POLYMER CLAY NANOCOMPOSITE ELECTROLYTE MOTIONS VIA COMBINED NMR AND NEUTRON SCATTERING STUDIES. Luis J. Smith[a], Jean-Marc Zanotti[b], Giselle Sandi[c], Kathleen Carrado[c], Patrice Porion[d], Alfred Delville[d], David L. Price[e], and Marie-Louise Saboungi[a,d]; [a]Argonne National Laboratory, Materials Science Division, Argonne, IL; [b]Laboratoire Leon Brillouin, CEA Saclay, Gif/Yvette FRANCE; [c]Argonne National Laboratory, Chemistry Division, Argonne, IL; [d]Centre de Recherche sur la Matiere Divisee, CNRS, Orleans, FRANCE; [e]Centre de Recherches sur les Materiaux a Haute Temperature, CNRS, Orleans, FRANCE.

4:30 PM EE2.10
INCREASING THE OPERATING TEMPERATURE OF NAFION MEMBRANES WITH ADDITION OF NANOCRYSTALLINE OXIDES FOR DIRECT METHANOL FUEL CELLS. V. Baglio, A. Di Blasi, A.S. Aricò, V. Antonucci, CNR-TAE Institute, Messina, ITALY; P.L. Antonucci, Univ. of Reggio Calabria, ITALY; F. Serraino Fiory, S. Licoccia, E. Traversa, University of Rome Tor Vergata, Roma, ITALY.

4:45 PM EE2.11
COMPUTATIONALLY DESIGNED, EXPERIMENTALLY VERIFIED, PHOSPHOROUS HETEROPOLYMER ELECTROLYTES FOR RECHARGEABLE LITHIUM BATTERIES. Brian Dixon, R. Scott Morris, Phoenix Innovation, Inc., Wareham, MA.

SESSION EE3: POSTER SESSION
SOLID STATE IONICS - I
Chairs: Philippe Knauth, Jean-Marie Tarascon, Enrico Traversa and Harry L. Tuller
Monday Evening, December 2, 2002
8:00 PM
Exhibition Hall D (Hynes)

EE3.1
HOST CATION TRANSPORT AND SURFACE RECONSTRUCTION IN LANTHANUM DOPED STRONTIUM TITANATE AT HIGH TEMPERATURES. Karsten Gömann, Günter Borchardt, TU Clausthal, Inst für Metallurgie, Clausthal-Zellerfeld, GERMANY; Anissa Gunhold, Wolfgang Maus-Friedrichs, Lars Beuermann, TU Clausthal, Inst für Physik und Physikalische Technologien, Clausthal-Zellerfeld, GERMANY; Bernard Lesage, Univ Paris-Sud, LEMHE, Orsay, FRANCE; Odile Kaitasov, Univ Paris-Sud, CSNSM, Orsay, FRANCE; Horst Baumann, Univ Frankfurt, Inst für Kernphysik, Frankfurt, GERMANY.

EE3.2
PHASE TRANSITIONS OF Pb_2SnF_6: A METHOD FOR PREPARING HIGH PERFORMANCE FLUORIDE-ION CONDUCTORS. Georges Dénès, Morgane Logiou, M. Cecilia Madamba and Josselin Vogel, Concordia University, Department of Chemistry and Biochemistry, Laboratory of Solid State Chemistry and Mössbauer Spectroscopy, Laboratories for Inorganic Materials, Montreal, Québec, CANADA.

EE3.3
INFLUENCE OF THE TIN CONTENT x ON THE PHASE TRANSITION OF SUPERIONIC CUBIC $Pb_{1-x}Sn_xF_2$ SOLID SOLUTION UPON BALL-MILLING. Georges Dénès, Matthieu Kernec, M. Cecilia Madamba and Marc Poizat, Concordia University, Department of Chemistry and Biochemistry, Laboratory of Solid State Chemistry and Mössbauer Spectroscopy, Laboratories for Inorganic Materials, Montreal, Québec, CANADA.

EE3.4
VERY SLOW KINETICS OF PHASE TRANSITIONS OF METASTABLE PHASES OF SUPERIONIC $PbSnF_4$. Georges Dénès, Tristan Lechat, M. Cecilia Madamba and Sébastien Quinio, Concordia University, Department of Chemistry and Biochemistry, Laboratory of Solid State Chemistry and Mössbauer Spectroscopy, Laboratories for Inorganic Materials, Montreal, Québec, CANADA.

EE3.5
IONIC CONDUCTIVITY OF THE NEW FLUORIDE-ION CONDUCTOR $CaSn_2F_6$. Michael F. Bell, Georges Dénès, and Zhimeng Zhu, Concordia University, Department of Chemistry and Biochemistry, Laboratory of Solid State Chemistry and Mössbauer Spectroscopy, Laboratories for Inorganic Materials, Montreal, Québec, CANADA.

EE3.6
COMPOSITIONAL STRESS AND DIFFUSION IN ANATASE AND RUTILE FILMS. Sidharth Bhatia, Eric Cohen, Brian W. Sheldon, Division of Engineering, Brown University, Providence, RI.

EE3.7
ALTERNATING CURRENT CONDUCTION AND IMPEDANCE SPECTROSCOPIC OF LASER-ABLATED $BaZrO_3$ THIN FILMS. V. Rajasekarakumar, P. Victor, R. Ranjith and S.B. Krupanidhi Materials Research Center, Indian Institute of Science, Bangalore, INDIA; S. Rajagopalan and A.K. Tyagi, Materials Science Division, IGCAR, Kalpakkam, INDIA; S.Saha, Materials Science Division, Argonne National Laboratory, Argonne, IL.

EE3.8
DISCUSSION ABOUT NON-ARRHENIUS BEHAVIOR OF HIGH Li-ION CONDUCTOR, $(La,Li)TiO_3$. Tetsuhiro Katsumata, Yoshiyuki Inaguma, Gakushuin Univ, Dept of Chemistry, Tokyo, JAPAN; Ko-ichi Hiraki, Toshihiro Takahashi, Gakushuin Univ, Dept of Physics, Tokyo, JAPAN.

EE3.9
THE HIGH TEMPERATURE ELECTRICAL CONDUCTIVITY BEHAVIOR OF $CaCu_3Ti_4O_{12}$. Chan Young Park, Allan J. Jacobson, Materials Research Science and Engineering Center and Department of Chemistry, University of Houston, Houston, TX.

EE3.10
OXYGEN NON-STOICHIOMETRY AND TRANSPORT PROPERTIES OF STRONTIUM IRON OXIDE. Jiho Yoo, Allan J. Jacobson, Materials Research Science and Engineering Center and Department of Chemistry, University of Houston, Houston, TX.

EE3.11
DESTABILIZATION OF YTTRIA-STABILIZED ZIRCONIA INDUCED BY BORON OXIDE. D.Z. Florio, R. Muccillo, Energy and Nuclear Research Institute, S. Paulo, SP, BRAZIL.

EE3.12
PHASE STABILITY AND ELECTRICAL PROPERTIES OF GALLIUM-INDIUM-TIN-TITANIUM OXIDES.
Malin Charoenwongsa, Doreen Edwards, School of Ceramics Engineering and Materials Science, New York State College of Ceramics at Alfred University, Alfred, NY.

EE3.13
PHASE RELATIONSHIPS IN THE In2O3 : WO3 SYSTEM.
Annette P. Richard, Doreen D. Edwards, Department of Materials Science and Engineering, New York State College of Ceramics at Alfred University, Alfred, NY.

EE3.14
STUDY OF BARE AND FUNCTIONALIZED ZIRCONIA NANOPARTICLES-FILLED POLYMER ELECTROLYTES BASED ON A POLYURETHANE. Paulo Vinícius Souza da Conceicc ao, Adelina Pinheiro Santos, Clascídia Aparecida Furtado, Centro de Desenvolvimento da Tecnologia Nuclear CDTN/CNEN, Belo Horizonte-MG, BRAZIL.

EE3.15
IMPROVEMENT OF GRAIN-BOUNDARY CONDUCTION IN 15 MOL% CALCIA-STABILIZED ZIRCONIA WITHOUT ADDITIVE. Young-Soo Jung, Jong-Heun Lee, Je Hun Lee, Doh-Yeon Kim, School of Materials Science and Engineering and Center for Microstructure Science of Materials, Seoul National University, Seoul, KOREA.

EE3.16
ANATASE NANOCERAMICS BY THE HOT-PRESSING TECHNIQUE. Alicia Weibel, Renaud Bouchet, Philippe Knauth, MADIREL, Univ. Provence-CNRS, Marseille, FRANCE.

SESSION EE4: INTERFACES/NANOCRYSTALLINE MATERIALS
Chair: Philippe Knauth
Tuesday Morning, December 3, 2002
Commonwealth (Sheraton)

8:30 AM *EE4.1
SIZE EFFECTS IN SOLID STATE IONICS. Joachim Maier, Max-Planck-Institut für Festkörperforschung, Stuttgart, GERMANY.

9:00 AM *EE4.2
SPACE CHARGE LAYERS IN POLYCRYSTALLINE CERIUM OXIDE. Andreas Tschoepe, Universitaet des Saarlandes, Technische Physik, Saarbruecken, GERMANY.

9:30 AM EE4.3
THE EFFECT OF ALUMINA ADDITION ON THE SPATIAL DISTRIBUTION OF INTERGRANULAR LIQUID IN 15 MOL% CALCIA-STABILIZED ZIRCONIA: LOCAL IMPEDANCE SPECTROSCOPIC ESTIMATION. Jong-Heun Lee, Doh-Yeon Kim, Seoul National University, School of Materials Science and Engineering and Center for Microstructure Science of Materials, Seoul, KOREA.

9:45 AM EE4.4
ROLE OF THE MICROSTRUCTURE ON THE TRANSPORT PROPERTIES OF Y-DOPED ZIRCONIA AND Gd-DOPED CERIA. G. Petot-Ervas, C. Petot, J.M. Raulot, Structures Propriétés et Modélisation des Solides, CNRS-Ecole Centrale Paris, Châtenay-Malabry, FRANCE; M.J. Graham, G.I. Sproule, Institute for Microstructural Sciences, NRC, Ottawa, CANADA; J. Kusinski, Academy of Mining and Metallurgy, Krakow, POLAND.

10:00 AM BREAK

10:30 AM *EE4.5
CONVERSION AND STORAGE OF SUSTAINABLE ENERGY: THE ROLE OF NANO-IONICS. Albert Goossens, Joop Schoonman, Delft University of Technology, Delft Institute for Sustainable Energy, Laboratory for Inorganic Chemistry, Delft, THE NETHERLANDS.

11:00 AM *EE4.6
IMPEDANCE/DIELECTRIC SPECTROSCOPY OF ELECTROCERAMICS IN THE NANOGRAIN REGIME. Z.J. Homrighaus, N.J. Kidner, G.B. Gonzalez, B.J. Ingram and T.O. Mason, Northwestern University, Dept of Materials Science and Engineering and Materials Research Center, Evanston, IL.

11:30 AM EE4.7
IMPEDANCE SPECTROSCOPY AND DIRECT CURRENT MEASUREMENTS OF YSZ FILMS. T. Petrovsky, H.U. Anderson, and V. Petrovsky, EMARC, UMR, Rolla, MO.

SESSION EE5: LITHIUM BATTERY CATHODE MATERIALS - I
Chair: Jean-Marie Tarascon
Tuesday Afternoon, December 3, 2002
Commonwealth (Sheraton)

1:30 PM *EE5.1
INSULATING REDOX MATERIALS AS ELECTRODES: CHANGING THE RULES AND EXPANDING TOWARDS NEW FAMILIES. Nathalie Ravet, Michel Gauthier[a], Michel Armand[b]; [a]Laboratoire International sur les Matériaux Electroactifs CNRS/UdM UMR 2289, Université de Montréal, Montréal, QC, CANADA; [b]Phostech Lithium Inc, Montréal, QC, CANADA.

2:00 PM EE5.2
STRUCTURAL-CHEMICAL DISORDER OF MANGANESE DIOXIDES/INFLUENCE ON SURFACE PROPERTIES AT THE SOLID ELECTROLYTE INTERFACE. Benedicte Prelot, Fabien Thomas, Frederic Villieras, L.E.M. ENSGeologie, Nancy, FRANCE; Christiane Poinsignon, LEPMI CNRS INP, Grenoble, FRANCE.

2:15 PM EE5.3
γ-MnO_2 MATERIALS FOR LITHIUM BATTERIES SYNTHESIZED BY THE ELECTROCHEMICAL-HYDROTHERMAL METHOD: INFLUENCE OF STRUCTURAL PARAMETERS AND MORPHOLOGY ON ELECTROCHEMICAL PROPERTIES. Laurie I. Hill, Alain Verbaere, and Dominique Guyomard, Institut des Matériaux Jean Rouxel, Laboratoire de Chimie des Solides, CNRS-Université de Nantes, Nantes, FRANCE.

2:30 PM EE5.4
CATION ORDERING IN SUBSTITUTED $LiMn_2O_4$ SPINELS. P. Strobel[a], A. Ibarra-Palos[a], M. Anne[a], C. Poinsignon[b]; [a]Lab. Cristallographie CNRS, Grenoble, FRANCE; [b]LEPMI, ENSEEG, Saint-Martin-d'Heres, FRANCE.

2:45 PM EE5.5
SONOCHEMICAL SYNTHESIS OF NANOSTRUCTURED MANGANESE OXIDE GEL. Itaru Honma, H. Kawaoka, H.S. Zhou, M. Hibino, National Institute of Advanced Industrial Science and Technology (AIST), JAPAN.

3:00 PM BREAK

3:30 PM EE5.6
H1-3 AND O1-TYPE STRUCTURES FORMED FOR LixCoO2 AT THE END OF THE CHARGE PROCESS. L. Croguennec, S. Levasseur, Institut de Chimie de la Matiere Condensee de Bordeaux-CNRS and Ecole Nationale Superieure de Chimie et Physique de Bordeaux, Universite Bordeaux I, Pessac, FRANCE; M. Morcrette, J.M. Tarascon, Laboratoire de Reactivite et de Chimie des Solides, UMR CNRS 6007, Universite de Picardie Jules Verne, Amiens, FRANCE; C. Delmas, Institut de Chimie de la Matiere Condensee de Bordeaux-CNRS and Ecole Nationale Superieure de Chimie et Physique de Bordeaux, Universite Bordeaux I, Pessac, FRANCE.

3:45 PM EE5.7
CRYSTAL CHEMISTRY OF CHEMICALLY DELITHIATED LAYERED OXIDE CATHODES OF LITHIUM-ION BATTERIES. Arumugam Manthiram, Sivaramakrishnan Venkatraman, University of Texas at Austin, Materials Science and Engineering Program, Austin, TX.

4:00 PM EE5.8
ENHANCED Li DIFFUSION IN THIN-FILM $LiCoO_2$ CATHODES BY Al_2O_3 COATING. Yong Jeong Kim, Byoungsoo Kim, Tae-Joon Kim, Donggi Ahn, Joon-Gon Lee, Dongyeon Son, Byungwoo Park, Seoul National University, School of Materials Science and Engineering, Seoul, KOREA.

4:15 PM EE5.9
LITHIUM ELECTROCHEMICAL DEINTERCALATION FROM O2-$LiCoO_2$: STRUCTURAL STUDY AND FIRST PRINCIPLES CALCULATIONS. Dany Carlier, A. Van der Ven, G. Ceder, Massachusetts Institute of Technology, Materials Science and Engineering Department, Cambrige, MA; L. Croguennec, M. Menetrier and C. Delmas, Institut de Chimie de la Matiere Condensee de Bordeaux-CNRS and Ecole Nationale Superieure de Chimie et Physique de Bordeaux, Pessac, FRANCE.

4:30 PM EE5.10
CLUSTERING OF ALUMINUM IONS IN LAYERED LITHIUM NICKEL OXIDES. Y. Shao-Horn, L. Croguennec, M. Guilmard, Institut de Chimie de la Matiere Condensee de Bordeaux-CNRS, Ecole Nationale Superieure de Chimie et Physique de Bordeaux, Universite Bordeaux I, Pessac, FRANCE; A. Gloter, C. Colliex, Laboratorie de Physique des Solides, Universite Paris-Sud, Orsay, FRANCE; F. Fauth, European Synchrotron Radiation Facility, Grenoble, FRANCE; C. Delmas, Institut de Chimie de la Matiere Condensee de Bordeaux-CNRS, Ecole Nationale Superieure de Chimie et Physique de Bordeaux, Universite Bordeaux I, Pessac, FRANCE.

4:45 PM EE5.11
IN-SITU STUDY OF THE STRUCTURE OF THIN-FILM LITHIUM BATTERIES. Faisal M. Alamgir, Brookhaven National Lab, Upton, NY; Ela Strauss, Marten denBoer, Steve Greenbaum, City University of New York, New York, NY; Jay F. Whitacre, Jet Propulsion Laboratory, Pasadena, CA.

SESSION EE6: POSTER SESSION
SOLID STATE IONICS - II
Chairs: Philippe Knauth, Jean-Marie Tarascon, Enrico Traversa and Harry L. Tuller
Tuesday Evening, December 3, 2002
8:00 PM
Exhibition Hall D (Hynes)

EE6.1
DEVELOPMENT OF NEW CERAMIC DOPED IONOCONDUCTING MEMBRANES FOR BIOMEDICAL APPLICATIONS. Paola Romagnoli, Silvia Licoccia, Enrico Traversa, Dipartimento di Scienze e Tecnologie Chimiche, Universite di Roma Tor Vergata, Rome, ITALY; Marcella Trombetta, Interdisciplinary Center for Biomedical Research (CIR), Laboratory of Biomaterials, Universite Campus Bio-Medico, Rome, ITALY.

EE6.2
PHOTOVOLTAIC PROPERTIES OF SOLAR CELL USING Li DOPED TiO_2 FILMS. Yasusei Yamada, Masahisa Okada, Kazuki Yoshimura, National Institute of Advanced Industrial Science and Technology, Nagoya, JAPAN.

EE6.3
NANOSTRUCTURED FeS_2 AS CATHODE MATERIAL FOR LITHIUM BATTERY. Jinxiang Dai, David Reisner and Danny Xiao, US Nanocorp, Inc, Farmington, CT; Ronald A. Guidotti, Sandia National Laboratories, Albuquerque, NM.

EE6.4
ELECTROCHEMICAL BEHAVIOR OF LAYERED LITHIUM MANGANESE OXIDES AS CATHODES FOR LITHIUM BATTERIES. J. Katana Ngala, Peter Y. Zavalij and M. Stanley Whittingham, Binghamton University, Institute for Materials Science and Dept of Chemistry, Binghamton, NY.

EE6.5
STUDY OF THE SODIUM BY LITHIUM IONIC EXCHANGE IN P2-Na0.7CoO2. L. Croguennec, F. Tournadre, D. Carlier, Institut de Chimie de la Matiere Condensee de Bordeaux-CNRS and Ecole Nationale Superieure de Chimie et Physique de Bordeaux, Universite Bordeaux I, Pessac, FRANCE; I. Saadoune, Departement de Chimie, Faculte des Sciences et Techniques, Marrakech, MAROC; Y. Shao-Horn, Institut de Chimie de la Matiere Condensee de Bordeaux-CNRS and Ecole Nationale Superieure de Chimie et Physique de Bordeaux, Universite Bordeaux I, Pessac, FRANCE; P. Willmann, Centre National dietudes Spatiales, Toulouse, FRANCE; C. Delmas, Institut de Chimie de la Matiere Condensee de Bordeaux-CNRS and Ecole Nationale Superieure de Chimie et Physique de Bordeaux, Universite Bordeaux I, Pessac, FRANCE.

EE6.6
Abstract Withdrawn

EE6.7
ELECTROCHEMICAL BEHAVIOUR OF TERNARY OXIDES $MMoO_4$ (M = Fe, Ni, Cu, Zn) AS CATHODE MATERIALS IN LITHIUM BATTERIES. N.N. Leyzerovich, Th. Buhrmester, K.G. Bramnik, H. Ehrenberg, Darmstadt Univ of Technology, Darmstadt, GERMANY.

EE6.8
DOPING WITH Mg AND Al IMPROVES THE STABILITY OF $LiNi_{1-y}Co_yO_2$ Li-ION CATHODE MATERIALS. Alessandra D'Epifanio, Enrico Traversa, Univ of Rome Tor Vergata, Dept of Chemical Science and Technology, Rome, ITALY; Fausto Croce, Univ "G. D'Annunzio", Dept of Pharmacology Science, Chieti, ITALY; Fabio Ronci, Valerio Rossi Albertini, CNR, Istituto di Struttura della Materia, Rome, ITALY; Bruno Scrosati, Univ. Rome La Sapienza, Dept of Chemistry, Rome, ITALY.

EE6.9
THIN FILMS OF LITHIUM INTERCALATION MATERIALS FOR BATTERY CATHODE. A. Hidalgo, R.E. Melgarejo, M.S. Tomar, University of Puerto Rico, Physics Department, Mayaguez, PR.

EE6.10
ENTHALPY OF FORMATION OF $LiCoO_2$, $LiNiO_2$ AND THEIR SOLID SOLUTIONS. Miaojun Wang, Alexandra Navrotsky, University of California at Davis, Department of Chemical Engineering and Materials Science, Davis, CA.

EE6.11
THE STUDY ON THE FABRICATION OF $LiMn_2O_4$ CATHODE BY SCREEN PRINTING AND CHARACTERISTICS OF LiAl ANODE. Min Park, Jong-Hyuk Park, Hunjoon Jung, Seung-Ki Joo, Seoul National University, Seoul, KOREA.

EE6.12
EMULSION PREPARATION AND ELECTROCHEMICAL CHARACTERISTICS OF COBALT-ION DOPED SPINEL LITHIUM MANGANESE OXIDE. Hsien-Cheng Wang and Chung-Hsin Lu, Department of Chemical Engineering, National Taiwan University Taipei, Taiwan, R.O.C.

EE6.13
PLATED COMPOSITES: ANODE MATERIALS FOR LITHIUM ION BATTERIES. T.A. Hugener, F. Galasso, S.L. Suib, Univ Connecticut, Dept of Chemistry, Storrs, CT; P. Russell, J.F. DiCarlo, Yardney Technical Products, Pawcatuck, CT.

EE6.14
CARBON COATED SILICON POWDERS AS ANODE MATERIALS FOR LITHIUM ION BATTERIES. M. Gulbinska, F. Galasso, S.L. Suib, S. Iaconetti, P.G. Russell, J.F. DiCarlo.

EE6.15
Abstract Withdrawn

EE6.16
SYNTHESIS AND CHARACTERIZATION OF $LiFePO_4$ FOR LITHIUM-ION BATTERIES. Alessandra D'Epifanio, Francesca Serraino Fiory, Silvia Licoccia, Enrico Traversa, Univ of Rome Tor Vergata, Dept of Chemical Science and Technology, Rome, ITALY; Fausto Croce, Univ "G. D'Annunzio", Dept of Pharmacology Science, Chieti, ITALY; Bruno Scrosati, Univ. Rome La Sapienza, Dept of Chemistry, Rome, ITALY.

EE6.17
TITANIUM-BASED POLYANIONIC MATERIALS AS ELECTRODE MATERIALS FOR Li BATTERIES. Sebastien Patoux and Christian Masquelier, Laboratoire de Reactivite et Chimie des Solides, UMR CNRS, Universite Picardie Jules Verne, Amiens, FRANCE.

EE6.18
ENHANCED IONIC CONDUCTION OBSERVED FOR ORDERED-MESOPOROUS ALUMINA-IONIC CONDUCTOR COMPOSITES. Hideki Maekawa, Ryo Tanaka, Tsutomu Yamamura, Tohoku Univ, Dept of Metallurgy, Sendai, JAPAN; Also with PRESTO, JST, JAPAN.

SESSION EE7: LITHIUM BATTERY CATHODE MATERIALS - II
Chair: Michel B. Armand
Wednesday Morning, December 4, 2002
Commonwealth (Sheraton)

8:30 AM *EE7.1
NEXT GENERATION POSITIVE ELECTRODE MATERIALS ENABLED BY NANOCOMPOSITES. F. Badway, I. Plitz, N. Pereira, M. Bervas, and G. Amatucci, Telcordia Technologies, Red Bank, NJ.

9:00 AM EE7.2
NANOSTRUCTURED AMORPHOUS TRANSITION METAL OXIDES FOR RECHARGEABLE LITHIUM BATTERIES. Jun John Xu, Gaurav Jain, Jingsi Yang, Dept. of Ceramic and Materials Engineering, Rutgers, The State University of New Jersey, Piscataway, NJ .

9:15 AM EE7.3
XAS AND XPS STUDY OF $Li_{1+\alpha}V_3O_8$. Nelly Bourgeon, Joel Gaubicher, Vincent Fernandez, Dominique Guyomard and Guy Ouvrard, Institut des Matériaux Jean Rouxel, Laboratoire de Chimie des Solides, CNRS-Université de Nantes, Nantes, FRANCE.

9:30 AM EE7.4
CHARACTERIZATION OF VANADIUM OXIDE BASED BATTERY MATERIALS BY SOLID-STATE NMR. G.P. Holland, D.A. Buttry, J.L. Yarger, University of Wyoming, Department of Chemistry, Laramie, WY.

9:45 AM EE7.5
MOLECULAR DYNAMICS SIMULATIONS OF Li ION DIFFUSION IN RAPID TRANSPORT PATHS IN NANOSTRUCTURED VANADIA CATHODES. Stephen H. Garofalini and Weiqun Li Department of Ceramic and Materials Engineering, Rutgers University Piscataway, NJ.

10:00 AM BREAK

10:30 AM *EE7.6
TRANSITION METAL PHOSPHATES AS HOSTS MATERIALS FOR Li INSERTION: A REVIEW. Christian Masquelier, Mathieu Morcrette, Sebastien Patoux, Calin Wurm, Sylvain Gwizdala, and Priscilla Reale[a], Laboratoire de Reactivite et Chimie des Solides, UMR CNRS 6008, Amiens, FRANCE; [a]Dipartimento Di Chimica, Universita La Sapienza, Roma, ITALY.

11:00 AM EE7.7
NEW IRON (III) HYDROXYL-PHOSPHATE WITH ROD-PACKING STRUCTURE AS INTERCALATION MATERIALS. Yanning Song, Peter Y. Zavalij, M. Stanley Whittingham, Department of Chemistry and Institute for Materials Research, State University of New York at Binghamton, Binghamton, NY.

11:15 AM EE7.8
$Li_{3-x}V_2(PO_4)_3$ AS PROMISING POSITIVE ELECTRODES IN Li BATTERIES: AN IN-SITU X-RAY DIFFRACTION STUDY. Mathieu Morcrette, Jean-Bernard Leriche, Sebastien Patoux, Calin Wurm, Christian Masquelier, Laboratoire de Reactivite et Chimie des Solides, UMR CNRS 6008, Universite Picardie Jules Verne, Amiens, FRANCE.

11:30 AM EE7.9
SYNTHESIS AND ELECTROCHEMICAL BEHAVIOUR OF RAMSDELLITE $LiTiCrO_4$. Flaviano García-Alvarado, María Martín Gil and Alois Kuhn, Universidad San Pablo-CEU, Departamento de Ciencias Químicas, Boadilla del Monte, Madrid, SPAIN.

11:45 AM EE7.10
STRUCTURE AND EVOLUTION OF THE $MoO_3(010)$ SURFACE DURING LITHIATION. Joseph W. Bullard III and Richard L. Smith, Massachusetts Institute of Technology, Dept of Materials Science and Engineering, Cambridge, MA.

SESSION EE8: LITHIUM BATTERY ANODE MATERIALS/OXYGEN PERMEATION MEMBRANES
Chair: Joop Schoonman
Wednesday Afternoon, December 4, 2002
Commonwealth (Sheraton)

1:30 PM EE8.1
LITHIUM INSERTION MECHANISMS IN ANODE MATERIALS FOR Li-ION BATTERIES. Pierre-Emmanuel Lippens, Josette Olivier-Fourcade and Jean-Claude Jumas, Laboratoire des Agregats Moleculaires et Materiaux Inorganiques, CNRS UMR 5072, Universite Montpellier II, Montpellier, FRANCE.

1:45 PM EE8.2
THE ELECTROCHEMISTRY OF GERMANIUM NITRIDE WITH LITHIUM. N. Pereira, Telcordia Technologies, Red Bank, NJ, Rutgers University, Dept of Ceramics and Materials Engineering, Piscatway, NJ; M. Balasubramanian, Brookhaven National Laboratory, Upton, NY; L. Dupont, Universite de Picardie Jules Verne, Laboratoire de Reactivite et Chimie des Solides, Amiens, FRANCE; J. McBreen, Brookhaven National Laboratory, Upton, NY; L.C. Klein, Rutgers University, Dept of Ceramics and Materials Engineering, Piscatway, NJ; G.G. Amatucci, Telcordia Technologies, Red Bank, NJ.

2:00 PM EE8.3
MARCASITE-TYPE FeX_2 (X=P, Sb) AS NEGATIVE ELECTRODES FOR LITHIUM ION BATTERIES. O. Crosnier, D.C.S. Souza, L.F. Nazar, Department of Chemistry, University of Waterloo, ON, CANADA; J.E. Greedan, Department of Chemistry and Brockhouse Institute for Materials Research, McMaster University, Hamilton, ON, CANADA.

2:15 PM EE8.4
ANODES FOR LITHIUM BATTERIES: TIN REVISITED. Shoufeng Yang, Lubov Zavalij, Peter Y. Zavalij, Eric Cotts, M. Stanley Whittingham, Institute for Materials Research, SUNY at Binghamton, Binghamton, NY.

2:30 PM EE8.5
BALL-MILLING: AN ALTERNATIVE WAY FOR THE PREPARATION OF ANODES FOR LITHIUM-ION BATTERIES. Raphaël Janot and Daniel Guerard.

2:45 PM EE8.6
MICROSTRUCTURAL DESIGN OF RECHARGEABLE LITHIUM ION BATTERIES. R. Edwin Garcia, Catherine M. Bishop, W. Craig Carter, MIT, Dept. of Materials Science and Engineering, Cambridge, MA; Stephen A. Langer, NIST, Gaithersburg, MD; Pimpa Limthongkul, and Yet-Ming Chiang, MIT, Dept. of Materials Science and Engineering, Cambridge, MA.

3:00 PM BREAK

3:30 PM *EE8.7
OXIDE ION TRANSPORT IN BISMUTH-BASED MATERIALS. Rose-Noëlle Vannier, Edouard Capoen, Caroline Pirovano, César Steil, Guy Nowogrocki, Gaëtan Mairesse, Laboratoire de Cristallochimie et Physicochimie du Solide, CNRS UMR 8012, ENS-Chimie Lille, Villeneuve d'Ascq, FRANCE; Richard J. Chater, Stephen J. Skinner, John A. Kilner, Centre for Ion Conducting Membranes (CICM), Department of Materials, Imperial College of Science Technology and Medicine, London, UNITED KINGDOM.

4:00 PM EE8.8
OXYGEN PERMEATION THROUGH $CaTi_{0.8}Fe_{0.2})O_{3-\delta}$ CERAMIC MEMBRANES WITH ACTIVATED SURFACE. F.M. Figueiredo, Universidade Aberta, Science and Technology Dept., Lisbon, PORTUGAL, and University of Aveiro, Ceramics and Glass Eng. Dept., CICECO, Aveiro, PORTUGAL; V.V. Kharton, J.R. Frade, University of Aveiro, Ceramics and Glass Eng. Dept., CICECO, Aveiro, PORTUGAL; A.P. Viskup, E.N. Naumovich, Belarus State University, Institute of Physicochemical Problems, Minsk, BELARUS.

4:15 PM EE8.9
IEDP STUDIES OF SUBSTITUTED LANTHANUM FERRITES IN REDUCING AND OXIDIZING ATMOSPHERES. Nader Bayani, Department of Chemical Engineering and Applied Chemistry, University of Toronto, Toronto, CANADA; Paul van der Heide and Allan Jacobson, University of Houston, Department of Chemistry, Houston, TX; Charles A. Mims, Department of Chemical Engineering and Applied Chemistry, University of Toronto, Toronto, CANADA.

4:30 PM EE8.10
PREPARATION AND OXYGEN PERMEABILITY OF La-Sr-Co-Fe OXIDE THIN FILMS BY A CHEMICAL SOLUTION DEPOSITION PROCESS. Hirofumi Kakuta, Takashi Iijima, Smart Structure Research Center, National Institute of Advanced Industrial Science and Technology, Tsukuba, JAPAN; Hitoshi Takamura, Tohoku University, Dept of Materials Science, Sendai, JAPAN.

4:45 PM EE8.11
PREPARATION AND OXYGEN PERMEABILITY OF Gd-DOPED CERIA AND SPINEL-TYPE FERRITE COMPOSITES. Hitoshi Takamura, Masashi Kawai, Atsunori Kamegawa, Masuo Okada, Tohoku Univ, Dept of Materials Science, Sendai, JAPAN.

SESSION EE9: POSTER SESSION
SOLID STATE IONICS - III
Chairs: Philippe Knauth, Jean-Marie Tarascon, Enrico Traversa and Harry L. Tuller
Wednesday Evening, December 4, 2002
8:00 PM
Exhibition Hall D (Hynes)

EE9.1
COULOMETRIC TITRATION STUDIES OF PRASEODYMIUM CERIUM OXIDE. Todd Stefanik, Harry Tuller, Massachusetts Inst of Technology, Dept of Materials Science and Engineering, Cambridge, MA.

EE9.2
PREPARATION AND ELECTRICAL PROPERTIES OF $Nd_x(SiO_4)_6O_{1.5x-12}$ WITH APATITE STRUCTURE. Keishi Nishio, Takashi Nakajima, Tadashi Ishigaki and Toshio Tsuchiya, Department of Materials Science and Technology, Tokyo University of Science, Noda-shi, Chiba, JAPAN.

EE9.3
IMPEDANCE SPECTROSCOPY AND MOTT-SCHOTTKY ANALYSIS OF A $Pr_{0.15}Ce_{0.85}O_{2-x}$ SOLID SOLUTION. R. Bouchet, P. Knauth, MADIREL, Univ. Provence-CNRS, Marseille, FRANCE; T. Stefanik, H.L. Tuller, Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA.

EE9.4
KINETICS OF OXYGEN EXCHANGE IN $Sr(Ti_{0.65}Fe_{0.35})O_3$. Thomas Schneider, Stefan Friedrich Wagner, Wolfgang Menesklou, Ellen Ivers-Tiffée, Universitaet Karlsruhe (TH), Institute of Materials for Electrical Engineering, Karlsruhe, GERMANY.

EE9.5
INVESTIGATION OF NANOCRYSTALLINE ANATASE FOR CHEMICAL SENSORS. E. Di Bartolomeo, N. Kaabbuathong, E. Traversa, Univ. Rome Tor Vergata, Dept. Chem. Sci. Technol., Roma, ITALY; A. Weibel, R. Bouchet, O. Schäf, P. Knauth, MADIREL, Univ. Provence-CNRS, Marseille, FRANCE.

EE9.6
SENSOR RESPONSE OF MICROPOROUS MATERIALS UNDER IN-SITU CONDITIONS. Oliver Schaef, Habib Ghobarkar, Philippe Knauth, MADIREL, Univ. Provence-CNRS, Marseille, FRANCE.

EE9.7
HIGH LITHIUM CONDUCTIVITY IN NOVEL PEROVSKITE-TYPE SOLID SOLUTIONS. Ainhoa Morata-Orrantia, Susana García-Martín and Miguel Á. Alario-Franco Departamento de Química Inorgánica, Facultad de Ciencias Químicas, Universidad Complutense de Madrid, Madrid, SPAIN.

EE9.8
DFT CALCULATIONS OF THE SPIN DENSITY IN LAYERED OXIDES CORRELATED TO $^{6,7}Li$ NMR PARAMAGNETIC SHIFT MEASUREMENTS. Dany Carlier, Massachusetts Institute of Technology, Materials Science and Engineering Department, Cambridge, MA; Michel Menetrier, Institut de Chimie de la Matiere Condensee de Bordeaux-CNRS and Ecole Nationale Superieure de

Chimie et Physique de Bordeaux, Pessac, FRANCE; Clare P. Grey, State University of New York at Stony Brook, Department of Chemistry, Stony Brook, NY; Claude Delmas, Institut de Chimie de la Matiere Condensee de Bordeaux-CNRS and Ecole Nationale Superieure de Chimie et Physique de Bordeaux, Pessac, FRANCE; Gerbrand Ceder, Massachusetts Institute of Technology, Materials Science and Engineering Department, Cambridge, MA.

EE9.9
PEROVSKITE MATERIALS FOR HIGH TEMPERATURE RESISTIVE OXYGEN SENSORS. J.C. Luna-Urzua, D. Gomez-Salazar, C.R. Michel, C.C. Luhrs, Departamento de Quimica, Centro Universitario de Ciencias Exactas e Ingenierias, Universidad de Guadalajara, Guadalajara, MEXICO.

EE9.10
INITIAL GROWTH STAGES OF CeO_2 NANOSYSTEMS BY PLASMA-ENHANCED CHEMICAL VAPOR DEPOSITION. Davide Barreca, Alberto Gasparotto, Eugenio Tondello, ISTM-CNR and INSTM, Dept CIMA, Padova Univ, Padova, ITALY; Stefano Polizzi, Alvise Benedetti, Cà Foscari Univ, Dept of Physical Chemistry, Venice, ITALY; Cinzia Sada, INFM and Dept of Physics, Padova Univ, Padova, ITALY; Giovanni Bruno, Maria Losurdo, IMIP-CNR, Bari, ITALY.

EE9.11
NANOCOMPOSITE SOFC ELECTRODE MATERIALS FROM MESOPOROUS MATERIALS. Marc Mamak, Neil Coombs, Geoff A. Ozin, Materials Chemistry Research Group, Chemistry Department, University of Toronto, Toronto, CANADA.

EE9.12
DEFECTS AND VACANCIES IN NANOSTRUCTURED V_2O_5: CONTROLLED MODIFICATION AND SPECTROELECTRO-CHEMICAL CHARACTERIZATION. Christopher P. Rhodes, Winny Dong, Jeffrey W. Long, Debra R. Rolison, Naval Research Laboratory, Surface Chemistry Branch, Washington, DC.

EE9.13
CHOICE OF STARTING MATERIALS AND FIRING ATMOSPHERE ON THE SOLID STATE SYNTHESIS OF O-$LiMnO_2$ FOR CATHODE MATERIALS OF RECHARGEABLE LITHIUM ION BATTERY VIA A SOFT-MECHANOCHEMICAL ROUTE. Yuko Nakahara, Kenji Hamada, Nara Machinery Co., Ltd., Tokyo, JAPAN; Mamoru Senna, Faculty of Science and Technology, Keio University, Yokohama, JAPAN.

SESSION EE10: SOLID OXIDE FUEL CELLS AND DEVICES
Chair: Harry L. Tuller
Thursday Morning, December 5, 2002
Commonwealth (Sheraton)

8:30 AM *EE10.1
STABLE LOW-TEMPERATURE BILAYER SOLID OXIDE ELECTROLYTES BASED ON UNSTABLE MATERIALS. Eric D. Wachsman, Jun-Young Park, Keith Duncan, University of Florida, Dept. of Materials Science and Engineering, Gainesville, FL.

9:00 AM EE10.2
THE CURRENT DISTRIBUTION IN MIXED CONDUCTING POROUS SOFC CATHODES. Juergen Fleig, Max-Planck-Institute for Solid State Research, Stuttgart, GERMANY.

9:15 AM EE10.3
ELECTRODE POLARIZATION STUDY FOR ANODE-SUPPORTED SOLID OXIDE FUEL CELLS. Ai Quoc Pham, Robert Glass, Lawrence Livermore National Laboratory, Livermore, CA.

9:30 AM EE10.4
CHARACTERIZATION OF MULTILAYER ANODES FOR SOFC. A.C. Müller, A. Krügel, A. Weber, E. Ivers-Tiffée, Institute of Materials for Electrical and Electronic Engineering, University of Karlsruhe (TH), GERMANY.

9:45 AM EE10.5
THIN, FLEXIBLE SELF-SUPPORTING ELECTROLYTE SOFC. Michael Badding, Jacqueline Brown, Thomas Ketcham, Dell St. Julien, Raja Wusirika, Corning Incorporated, Inorganic Research Division, Corning, NY.

10:00 AM BREAK

10:30 AM EE10.6
STRUCTURAL BEHAVIOR OF ZICONIA THIN FILMS WITH DIFFERENT LEVEL OF YTTRIUM SUBSTITUTION AT THE SINTERING PROCESS. V. Petrovsky, H.U. Anderson, T. Petrovsky, and E. Bohannan, EMARC, UMR, Rolla, MO.

10:45 AM EE10.7
MIXED IONIC – ELECTRONIC CONDUCTION AND OXYGEN PERMEATION IN Ba-In-BASED OXIDES DOPED WITH TRANSITION METALS. Yusuke Aizumi, Hitoshi Takamura, Atsunori Kamegawa, Masuo Okada, Tohoku Univ, Dept of Materials Science, Sendai, JAPAN.

11:00 AM EE10.8
ELECTRICAL CONDUCTIVITY IN PRASEODYMIUM CERIUM OXIDE. Todd Stefanik, Harry Tuller, Massachusetts Institute of Technology, Dept of Materials Science and Engineering, Cambridge, MA.

11:15 AM EE10.9
THE ROLE OF DEFECTS IN THE PERFORMANCE OF LANGASITE IN HIGH TEMPERATURE RESONANT DEVICES. Huankiat Seh, Harry Tuller, Massachusetts Institute of Technology, Dept of Materials Science and Engineering, Cambridge, MA; Holger Fritze, TU Clausthal, Institut für Metallurgie, AG Thermochemie und Mikrokinetik, Clausthal-Zellerfeld, GERMANY.

11:30 AM EE10.10
LOW CURRENT DENSITY OF NOVEL ELECTROCHEMICAL CELLS FOR NO DECOMPOSITION. Masanobu Awano, S. Katayama, S. Bredikhin, Synergy Materials Research Center, Nagoya, JAPAN.

SESSION EE11: CHEMICAL SENSORS
Chair: Enrico Traversa
Thursday Afternoon, December 5, 2002
Commonwealth (Sheraton)

1:30 PM *EE11.1
MATERIAL AND STRUCTURAL ASPECTS IN THE DEVELOPMENT OF AUTOMOTIVE EXHAUST GAS SENSORS. Thomas Wahl, Harald Neumann, Johann Riegel, Robert Bosch GmbH, Gasoline Systems Division, Exhaust Gas Sensor Development GS/ESV, Stuttgart, GERMANY.

2:00 PM *EE11.2
HIGH-TEMPERATURE POTENTIOMETRIC NO_x SENSORS BASED ON STABILIZED ZIRCONIA WITH OXIDE SENSING ELECTRODES. E. Di Bartolomeo, Dept. of Chemical Science and Technology, University of Rome Tor Vergata, Rome, ITALY.

2:30 PM EE11.3
ELECTROCHEMICAL NO_x SENSORS FOR AUTOMOTIVE DIESEL EXHAUST. L.P. Martin, Ai-Q. Pham, and R.S. Glass, Lawrence Livermore National Laboratory, Livermore, CA.

2:45 PM EE11.4
THIN FILM STOICHIOMETRY DETERMINATION BY HIGH TEMPERATURE MICROBALANCE TECHNIQUE. H. Fritze, O. Schneider, G. Borchardt, Technische Universität Clausthal, Department of Physics, Metallurgy and Materials Science, Clausthal-Zellerfeld, GERMANY; H. Seh, H.L. Tuller, Massachusetts Institute of Technology, Department of Materials Science & Engineering, Cambridge, MA.

3:00 PM BREAK

3:30 PM *EE11.5
NANOSCALE METAL OXIDE HETEROSTRUCTURES FOR ELECTROCHEMICAL SENSORS. X.Q. Pan, J.E. Dominguez, W.W. Kim, and H.P. Sun, Department of Materials Science & Engineering, The University of Michigan, Ann Arbor, MI.

4:00 PM *EE11.6
THERMOELECTRIC EFFECTS IN SOLID ELECTROLYTE SENSORS. R. Vasant Kumar, Department of Materials Science & Metallurgy, University of Cambridge, UNITED KINGDOM.

4:30 PM EE11.7
PROTONIC CONDUCTION IN POLYBENZIMIDAZOLE AND APPLICATION IN HYDROGEN GAS SENSORS. Renaud Bouchet, MADIREL, Univ. Provence-CNRS, Marseille, FRANCE; Sebastien Rossini, Gerard Vitter, Jean-Louis Souquet, Elisabeth Siebert, LEPMI, ENSEEG, Grenoble, FRANCE.

4:45 PM EE11.8
ROOM TEMPERATURE AMMONIA SENSING USING COPPER

BROMIDE FILMS. Pascal Lauque, Marc Bendahan, Jean-Luc Seguin, Christian Jacolin, Laboratoire Materiaux et Microelectronique de Provence, Faculte des Sciences et Techniques de St. Jerome, Marseille, FRANCE; Philippe Knauth, Laboratoire Materiaux Divises, Revitements, Electroceramiques, Univ. Provence, Marseille, FRANCE.