

Symposium 14: Advanced Materials and Technologies for Rechargeable Batteries

Monday, January 23, 2012 Advanced Materials and Designs for Lithium Batteries

1:30 PM-6:10 PM

Room: Coquina Salon H

Session Chair(s): Ilias Belharouak, Kristina Edstrom

1:30 PM

(ICACC-S14-001-2012) The capacity of 3D-structured electrode materials for Li-ion batteries (Invited)

Kristina Edstrom*, Daniel Brandell, Torbjörn Gustafsson, Uppsala University, Sweden

2:00 PM

(ICACC-S14-002-2012) ALD of Al₂O₃ for Highly Improved Performance in Li-ion Batteries (Invited)

Anne C. Dillon*, Yoon Seok Jung, Leah Riley, Chunmei Ban, National Renewable Energy Laboratory, USA; Andrew Cavanagh, Steven George, See-Hee Lee, University of Colorado, USA; Stephen Harris, Pung Lu, General Motors, USA

2:30 PM

(ICACC-S14-003-2012) Sodium or Lithium intercalation in some original FeIII phosphates structures: Lamellar Na₃Fe₃(PO₄)₄, Alluaudites Li_yNa_{1-y}MnFe₂(PO₄)₃ (y = 0, 0.5,

0.75) and Tavorite LiFePO₄.OH / FePO₄.H₂O (Invited)

Dany Carlier*, Khiem Trad, Nicolas Marx, Laurence Croguennec, Alain Wattiaux, ICMCB-CNRS, France; Frederic Le Cras, CEA, France; Mongi Ben Amara, Faculté des sciences de Monastir, Tunisia; Claude Delmas, ICMCB-CNRS, France

3:00 PM

Break

3:20 PM

(ICACC-S14-004-2012) Nanocomposite Materials for Energy Storage Application (Invited)

Donghai Wang*, Zhiping Song, Terrence Xu, Mikhail Gordin, Penn State University, USA

3:50 PM

(ICACC-S14-005-2012) Synthesis, structure and electrochemical Li insertion properties of A₂Ti₆O₁₃ (A=Na,Li,H) (Invited)

Alois Kuhn*, Juan Carlos Pérez-Flores, Flaviano García-Alvarado, San Pablo-CEU University, Spain; Carsten Baehtz, Helmholtz-Zentrum Dresden-Rossendorf, Germany; Markus Hoelzel, University of Technology Munich, Germany; Isabel Sobrados, Jesús Sanz, Institut of Materials Science, Spain

4:20 PM

(ICACC-S14-006-2012) Three-Dimensional Lithium-ion Rechargeable Batteries (Invited)

Amy Prieto*, Colorado State University, USA

4:50 PM

(ICACC-S14-007-2012) Electrospun Nanofiber Networks as Electrode Materials for Li-ion Batteries

Sanjay Mathur, Robin von Hagen*, Ashish Lepcha, Mehtap Büyükyazi, University of Cologne, Germany; Kai-Christian Möller, Henning Lorrman, Hanne Andersen,

Fraunhofer ISC, Germany

5:10 PM

(ICACC-S14-008-2012) Lithium diffusion pathways and possible reaction mechanisms in FeF₃/FeF₂ cathode predicted by variable charge molecular dynamics simulations

Ying Ma*, Glenn Lockwood, Stephen Garofalini, Rutgers University, USA

5:30 PM

(ICACC-S14-009-2012) Synthesis and Electrochemical Analysis of SiCN-MoS₂ Nanosheet Composite for Lithium Ion Battery Anodes

Romil Bhandavat*, Lamuel David, Uriel Banera, Gurpreet Singh, Kansas State University, USA

5:50 PM

(ICACC-S14-010-2012) Li Insertion in SiCO Ceramics - Ab-Initio Simulations

Peter Kroll*, UT Arlington, USA

Tuesday, January 24, 2012

Materials Characterization and Diagnostics For Lithium Batteries

8:00 AM-11:50 AM

Room: Coquina Salon H

Session Chair(s): Dany Carlier, Donghai Wang

8:00 AM

(ICACC-S14-011-2012) Multiscale electronic transport mechanism and true conductivities in amorphous carbon-LiFePO₄ nanocomposites (Invited)

Kalid Seid, Université de Nantes, CNRS, France; Jean-Claude Badot, Chimie ParisTech (ENSCP), CNRS, UPMC Univ Paris 06, France; Olivier Dubrunfaut, Laboratoire de Génie Electrique de Paris, France; Dominique Guyomard,

Université de Nantes, CNRS, France; Stéphane Levasseur, UMICORE Cobalt & Specialty Materials, Belgium; Bernard Lestriez*, Université de Nantes, CNRS, France

8:30 AM

(ICACC-S14-012-2012) In-situ high-energy synchrotron x-ray study of Li-Air and Li-ion rechargeable batteries (Invited)

Yang Ren*, Chi-Kai Lin, Naba Karan, Lynn Trahey, Mahaling Balasubramanian, Zonghai Chen, Argonne National Laboratory, USA

9:00 AM

(ICACC-S14-013-2012) Synthesis of Li-La-Ba-Ta-O electrolyte by RF magnetron sputtering for micro battery

Seung Hyun Jee*, Seok Hee Lee, Young Soo Yoon, Yonsei Univ, Republic of Korea

9:20 AM

(ICACC-S14-014-2012) Lithium Intercalation in Low Dimensional Materials as Anodes for Li-ion Batteries (Invited)

Reza Shahbazian Yassar*, Hessam Ghassemi, Qi Gao, Michigan Technological University, USA; Ming Au, Savannah River National Laboratory, USA; Patricia Heiden, Ning Chen, Michigan Technological University, USA

9:50 AM

Break

10:10 AM

(ICACC-S14-015-2012) Electrode/Electrolyte Interphase Studies in Lithium Batteries Using High Field Multinuclear NMR (Invited)

Marine Cuisinier*, Nicolas Dupré, Jean-Frédéric Martin, Zhongli Wang, Institut des Matériaux Jean Rouxel - Université de Nantes - CNRS, France; Kouta Suzuki, Masaaki Hirayama, Ryoji Kanno, Tokyo Institute of Technology, Japan; Dominique Guyomard, Institut des Matériaux Jean Rouxel - Université

de Nantes - CNRS, France

10:40 AM

(ICACC-S14-016-2012) Electrolytes for Rechargeable Lithium batteries (Invited)

Yaser Abu-Lebdeh*, National Research Council Of Canada, Canada

11:10 AM

(ICACC-S14-017-2012) Surface and Subsurface Damage Characterization of Graphite Anodes Electrochemically Cycled in Lithium-ion Cells

Sandeep Bhattacharya*, A. Reza Riahi, Ahmet T. Alpas, University of Windsor, Canada

Ceramics for Electric Energy Generation, Storage, and Distribution

1:30 PM-5:10 PM

Room: Coquina Salon H

Session Chair(s): Hua-Tay Lin, Michael Lanagan

1:30 PM

(ICACC-S14-018-2012) High Energy Glass Composites for Pulse Power and Power Electronic Applications (Invited)

Michael Lanagan*, Penn State University, USA

2:00 PM

(ICACC-S14-019-2012) Thermoelectric Properties of Selected Phases in the System $Zn_xIn_yO_{x+1.5y}$

Matin Amani*, Ian M Tougas, Otto J Gregory, Department of Chemical Engineering, USA

2:20 PM

(ICACC-S14-020-2012) Flexible Zn_2SnO_4/MnO_2 Core/shell Nanocable - Carbon Microfiber Hybrid Composites for High Performance Supercapacitor Electrodes

Lihong Bao, Jianfeng Zang, Xiaodong Li*, University of South Carolina, USA

2:40 PM

(ICACC-S14-021-2012) Highly efficient spectrally selective solar thermal absorbers by solution processing

Gunnar Westin*, Uppsala University, Sweden; Kjell Jansson, Stockholm University, Sweden

3:00 PM

Break

3:20 PM

(ICACC-S14-022-2012) Mesoporous Pseudocapacitive Electrode Materials

Bilge Saruhan-Brings*, Selda Özkan, Yakup Gönüllü, German Aerospace Center, Germany

3:40 PM

(ICACC-S14-023-2012) Thermal conductivity reduction and thermoelectric performance of ZnO by Multinary Doping

Michitaka Ohtaki*, Yuki Iwano, Kyushu University, Japan

4:00 PM

(ICACC-S14-024-2012) Nanoscale Defect Engineering for High Critical Currents in Epitaxial High Temperature Superconducting (HTS) Tapes

Venkat Selvamani*, University of Houston, USA; Yimin Chen, SuperPower, USA; Goran Majkic, Shi Tuo, Yao Yao, Yuanfei Bi, Xin Tao, Narayan Khatri, Eduard Galtsyan, University of Houston, USA; Senthil Sambandam, SuperPower, USA

4:20 PM

(ICACC-S14-025-2012) Fabrication of 2D/3D Nanostructures using Polymer/Inorganic Nanospheres for Energy Conversion Applications (Invited)

Kuan-Zong Fung*, Chung-Ta Ni, National Cheng Kung University, Taiwan

4:40 PM

(ICACC-S14-026-2012) Improvement of Calcium Cobaltate Thermoelectric Performance by Silver Doping

Jiri Selig, Sidney Lin*, Lamar University, USA;
Hua-Tay Lin, Hsin Wang, Oak Ridge National Laboratory, USA

Symposium 14: Poster Session

5:00 PM-8:00 PM

Room: Exhibition Hall, Ocean Center

(ICACC-S14-P133-2012) Si nanowires fabricated by noble metal catalytic etching for Li-ion anodes

Jae Hyun Kim*, Seong Ho Baek, Jung-Soo Park, Bum Young Noh, Daegu Gyeongbuk Institute of Science & Technology, Republic of Korea

(ICACC-S14-P134-2012) Effects of Al₂O₃ Addition on Phase Transition and Ionic Conductivity of The NASICON-type Li_{1+x}Al_xTi_{2-x}(PO₄)₃ Solid Electrolyte

Kuan-Zong Fung*, Chung-Ta Ni, National Cheng Kung University, Taiwan

(ICACC-S14-P135-2012) 3D Characterization of Li-ion Batteries and other Porous Composites with Lab and Synchrotron X-ray Microscopes

P. R Shearing, Imperial College London, United Kingdom; R. Bradley, University of Manchester, United Kingdom; S. H. Lau*, J. Gelb, Xradia, Inc., USA; N. P Brandon, Imperial College London, United Kingdom; P. J Withers, University of Manchester, United Kingdom

Wednesday, January 25, 2012
Lithium Metal Air Batteries and Beyond Lithium Batteries

8:00 AM-12:10 PM

Room: Coquina Salon H

Session Chair(s): Reza Shahbazian Yassar, Bernard Lestriez

8:00 AM

(ICACC-S14-027-2012) Exploring the active electrochemistry in lithium-oxygen batteries using gas-phase mass spectrometry (Invited)

Bryan D McCloskey*, IBM, USA

8:30 AM

(ICACC-S14-028-2012) Understanding Reactions in Lithium-Air Batteries (Invited)

Gabriel M Veith*, Nancy J Dudney, Jagjit Nanda, Jane Howe, Oak Ridge National Laboratory, USA

9:00 AM

(ICACC-S14-029-2012) Effect of Al on the phase stability and conductivity of Li₇La₃Zr₂O₁₂

Jeff Wolfenstine*, Jan Allen, Army Research Laboratory, USA; Jeff Sakamoto, Ezhiyl Rangasamy, Ryan Malony, Michigan State University, USA

9:20 AM

(ICACC-S14-030-2012) Li₄SiO₄-Li₃PO₄ solid solution ion conducting layers for lithium batteries

Lei Cheng*, Liying Zhang, Jordi Cabana, Guoying Chen, Marca Doeff, Thomas Richardson, Lawrence Berkeley National Laboratory, USA

9:40 AM

Break

10:00 AM

(ICACC-S14-031-2012) Analytical tools for advanced Li-S batteries (Invited)

Robert Dominko*, Manu Patel, National Institute of Chemistry, Slovenia; Rezan Demir-Cakan, ALISTORE-ERI, France; Miran Gaberscek, National Institute of Chemistry, Slovenia; Mathieu Morcrette, Jean-Marie Tarascon, ALISTORE-ERI, France

10:30 AM

(ICACC-S14-032-2012) Non-Aqueous Single-Metal Redox Flow Batteries (Invited)

Charles W Monroe*, Aaron A Shinkle, Alice Sleightholme, Levi T Thompson, University of Michigan, USA

11:00 AM

(ICACC-S14-033-2012) In-situ Fabrication of Porous Carbon Supported alpha-MnO₂ Nanoparticles at Room Temperature: Application for Rechargeable Li-air Battery (Invited)

Jun Lu*, Yan Qin, Zonghai Chen, Yang Ren, Khalil Amine, Argonne National Laboratory, USA

11:20 AM

(ICACC-S14-034-2012) The Spinel Block Integrity in the β'' -Alumina Structure

Dunbar P. Birnie*, Rutgers University, USA

11:40 AM

(ICACC-S14-035-2012) Exploration of Enhanced Beta Alumina Sintering using Microwave Assist Technology

Morgana Fall*, Shawn Allan, Holly Shulman, Frank Cabe, Ceralink Inc, USA