

SYMPOSIUM 6: Advanced Materials and Technologies for Energy Generation, Conversion, and Rechargeable Energy Storage

Monday, January 27, 2014

Li-ion Battery Technology - Advanced Electrodes I

1:30 PM-3:20 PM

Room: Ponce De Leon

Session Chair(s): Bradley Fahlman, Valerie Pralong

1:30 PM

(ICACC-S6-001-2014) Strategies for the synthesis of new materials for Li ion batteries (Invited Speaker)

Valerie Pralong*, CNRS CRISMAT, France

2:00 PM

(ICACC-S6-002-2014) High performance Li₇MnN₄ as negative electrode material for lithium-ion batteries

Jean-Pierre Pereira-Ramos*, Eddie Panabiere, Nicolas Emery, Stephane Bach, Patrick Willmann, CNRS, France

2:20 PM

(ICACC-S6-003-2014) Hydrothermal Synthesis and Characterization of LiMnPO₄ Cathode Material for Li-ion Battery

Esin Camci*, Kadri Aydinol, Middle East Technical University, Turkey

2:40 PM

(ICACC-S6-004-2014) Capacity Enhancement of doped Li₄Ti₅O₁₂ Anode for Li Battery Application

Kuan-Zong Fung*, Shu-Yi Tsai, Chung-Ta Ni, Mei-Han Chen, National Cheng Kung University, Taiwan; Antanas Orliukas, Vilnius University, Lithuania; Gunars Bajars, University of Latvia, Latvia

3:00 PM

Break

Li-ion Battery Technology - Advanced Electrodes II

3:20 PM-5:20 PM

Room: Ponce De Leon

Session Chair(s): Bradley Fahlman, Valerie Pralong

3:20 PM

(ICACC-S6-005-2014) Reversible Lithium Capacities of Partially Oxidized Graphene Nanostructures (Invited Speaker)

Chananate Uthaisar, Aleks Antic, Phillip A Medina, David Hicks, Veronica Barone, Bradley Dean Fahlman*, Central Michigan University, USA

3:50 PM

(ICACC-S6-006-2014) Investigation of the electrode / electrolyte interphase in lithium-ion batteries using MAS NMR (Invited Speaker)

Nicolas Dupré*, Marine Cuisinier, Institut des Matériaux Jean Rouxel CNRS, France; Masaaki Hirayama, Ryoji Kanno, Interdisciplinary Graduate School of Science and Engineering, Tokyo Institute of Technology, Japan; Dominique Guyomard, Institut des Matériaux Jean Rouxel CNRS, France

4:20 PM

(ICACC-S6-007-2014) Fabrication of all-solid-state rechargeable lithium batteries using a Li-rich solid solution cathode material

Hirokazu Munakata*, Keisuke Ando, Mao Shoji, Kiyoshi Kanamura, Tokyo Metropolitan University, Japan

4:40 PM

(ICACC-S6-008-2014) One-step approach of a Fe₂O₃/carbon composite for use in a high-performance lithium ion battery

Yao Li*, Di Zhang, Qinglei Liu, Wang Zhang, Jiajun Gu, Shenmin Zhu, State Key Laboratory of Metal Matrix Composites, China

5:00 PM

(ICACC-S6-009-2014) Preparation of cubic Li₇La₃Zr₂O₁₂ film by chemical vapor deposition
Hirokazu Katsui*, Takashi Goto, Tohoku University, Japan

Tuesday, January 28, 2014

Li-ion Battery Technology - Diagnostics and Characterization

8:00 AM-10:00 AM

Room: Ponce De Leon

Session Chair(s): Dean Miller, Dewei Chu

8:00 AM

(ICACC-S6-010-2014) What can we learn from measurement and characterization of Li-ion battery single particles? (Invited Speaker)
Dean J. Miller*, Christian Proff, Jianguo Wen, Zhenzhen Yang, Lynn Trahey, Robert P Winarski, Benjamin Stripe, Argonne National Laboratory, USA

8:30 AM

(ICACC-S6-011-2014) In Situ Transmission Electron Microscopy of Anode Materials for Li ion Batteries (Invited Speaker)
Reza Shahbuzian-Yassar*, Michigan Technological University, USA

9:00 AM

(ICACC-S6-012-2014) Experimental Confirmation of Low Surface Energy in LiCoO₂ and Implications for Lithium Battery Electrodes
Pardha Saradhi Maram*, Gustavo Costa, Alexandra Navrotsky, University of California Davis, USA

9:20 AM

(ICACC-S6-013-2014) Electrochemical Performance of Large Area Graphene Films Prepared by Rapid Heating and Quenching at Ambient Pressures

Lamuel David*, Gurpreet Singh, Kansas State University, USA

9:40 AM

Break

Li-ion Battery Technology - Characterization and Design

10:00 AM-12:00 PM

Room: Ponce De Leon

Session Chair(s): Dean Miller, Dewei Chu

10:00 AM

(ICACC-S6-014-2014) Synchrotron x-ray and neutron studies of nanocomposite materials for energy applications (Invited Speaker)
Yang Ren*, Argonne National Laboratory, USA

10:30 AM

(ICACC-S6-015-2014) Self-discharge phenomenon of a high voltage Li(MnNi)O spinel investigated by Raman spectroscopy
Rita Baddour-Hadjean*, Jean-Pierre Pereira-Ramos, Yosra Dridi, CNRS, France

10:50 AM

(ICACC-S6-016-2014) Material and Interface Characterization of Complete Li-ion Coin Cells Using Differential Scanning Calorimetry
Peter J Ralbovsky, Bob Fidler*, Netzsch Instruments, USA

11:10 AM

(ICACC-S6-017-2014) Stable Electrochemical Performance of Graphene/SiBCN Layered Composite Electrode for Lithium Ion Battery Applications
Lamuel David*, Gurpreet Singh, Kansas State University, USA

11:30 AM

(ICACC-S6-018-2014) Self-assembled Metal Oxide Nanomaterials for Energy Efficient Nanoelectronics and Future Energy Storage Nanodevices (Invited Speaker)

Dewei Chu*, Adnan Younis, The University of New South Wales, Australia

Li-ion Battery Technology - Applications

1:30 PM-3:30 PM

Room: Ponce De Leon

Session Chair(s): Charles Sorrell, Shoji Mao

1:30 PM

(ICACC-S6-019-2014) Micro Battery Development: from Fundamental Research to Manufacturing (Invited Speaker)

Jie Xiao*, Honghao Chen, Samuel S Cartmell, Qiang Wang, Terence Lozano, Thomas Carlson, Zhiquan Deng, Pacific Northwest National Laboratory, USA

2:00 PM

(ICACC-S6-020-2014) Nanocrystalline TiO₂ Thin Films on Poly(Ethylene Terephthalate) at ≤130°C (Invited Speaker)

C. Pham, D. Hanor, J. Cox, Charles Sorrell*, University of New South Wales, Australia

2:30 PM

(ICACC-S6-021-2014) Properties of the Solid Ionic Conductor: Li₇La₃Zr₂O₁₂

Jeff Wolfenstine*, Jan Allen, Jeff Read, Army Research Laboratory, USA; Travis Thompson, Isabel David, Jeff Sakamoto, Michigan State University, USA

2:50 PM

(ICACC-S6-022-2014) The Effect of Processing and Microstructural Variables on the Li-ion Conductivity of Li_{0.29}La_{0.57}TiO₃

Jeff Wolfenstine*, Chris Cooper, Claire Brennan, Anthony Sutorik, Army Research Laboratory-APG, USA

3:10 PM

Break

Li-ion Battery Technology - Design and Solar Application

3:30 PM-6:00 PM

Room: Ponce De Leon

Session Chair(s): Charles Sorrell, Shoji Mao

3:30 PM

(ICACC-S6-023-2014) Design and fabrication of all-solid-state rechargeable lithium batteries for future applications (Invited Speaker)

Mao Shoji*, Jungo Wakasugi, Ryo Osone, Teruaki Nishioka, Hirokazu Munakata, Kiyoshi Kanamura, Tokyo Metropolitan University, Japan

4:00 PM

(ICACC-S6-024-2014) Broadband Dielectric Spectroscopy of Materials for Lithium Batteries: From Low Frequencies to Microwaves (Invited Speaker)

Jean-Claude Badot*, Chimie ParisTech, CNRS, France; Kalid Ahmed Seid, Adama Science and Technology University, Ethiopia; Olivier Dubrunfaut, SUPELEC, UPMC Univ Paris 06, Univ Paris-Sud, CNRS, France; Patrick Soudan, Bernard Lestriez, Université de Nantes, CNRS, France

4:30 PM

(ICACC-S6-025-2014) Photovoltaic Properties of (Bi, Na)TiO₃-BaTiO₃ Ferroelectric Ceramics Prepared by Spark Plasma Sintering (Invited Speaker)

Danyang Wang*, Lu Chen, The University of New South Wales, Australia; Ngai Yui Chan, The Hong Kong Polytechnic University, Hong Kong; Bing Cheng Luo, The University of New South Wales, Australia; Jiyun Dai, The Hong Kong Polytechnic University, Hong Kong

5:00 PM

(ICACC-S6-026-2014) Towards the Conversion of a Solid Oxide Cell into a High Temperature Battery

Cornelius M Berger*, Oleg A Tokariev, Peter Orzessek, Andreas Hospach, Norbert H Menzler, Martin Bram, Willem J Quadackers, Hans P

Buchkremer, Forschungszentrum Juelich, Germany

5:20 PM

(ICACC-S6-027-2014) Electro spray Deposition of CuAlO₂ Thin Film and Possibility of Y Doping

Yin Liu*, Yiquan Wu, Alfred University, USA

5:40 PM

(ICACC-S6-028-2014) Modelling and Simulation of Lithium Bromide-Water solar-powered absorption cooling system for Riyadh

Esa Dube Kerme*, King Saud University, Saudi Arabia

Wednesday, January 29, 2014

Energy Storage Technology (Sodium Battery and Beyond)

8:00 AM-10:10 AM

Room: Ponce De Leon

Session Chair(s): Do Kyung Kim

8:00 AM

(ICACC-S6-029-2014) Ultrahigh performance of Sulfur Nanowire array for Lithium Sulfur battery (Invited Speaker)

San Moon, YoungHwa Jung, Wook Ki Jung, Do Kyung Kim*, KAIST, Republic of Korea

8:30 AM

(ICACC-S6-030-2014) Organic Electrode Materials for Sodium Ion Batteries (Invited Speaker)

Ali Abouimrane*, Wei Weng, Yanjie Cui, Khalil Amine, Argonne National Laboratory, USA

9:00 AM

(ICACC-S6-031-2014) Sodium insertion properties of titanates and related materials as negative electrodes for sodium ion batteries (Invited Speaker)

Alois Kuhn*, Juan Carlos Pérez-Flores, Universidad San Pablo-CEU, Spain; Markus Hoelzel, TU München, Germany; Carsten Baehtz, Helmholtz-Zentrum Dresden-Rossendorf, Germany; Flaviano García-Alvarado, Universidad San Pablo-CEU, Spain

9:30 AM

(ICACC-S6-032-2014) Crystallization behavior of sodium iron phosphate glass-ceramic cathode for sodium ion batteries

Tsuyoshi Honma*, Atsushi Sato, Noriko Ito, Takuya Togashi, Takayuki Komatsu, Nagaoka University of Technology, Japan

9:50 AM

Break

Advanced Materials for Energy Harvesting and Storage

10:10 AM-12:10 PM

Room: Ponce De Leon

Session Chair(s): Sean Li

10:10 AM

(ICACC-S6-033-2014) Enhancement of Thermoelectric Properties of Ca₃Co₄O₉ based Oxides (Invited Speaker)

Sean Li*, The University of New South Wales, Australia

10:30 AM

(ICACC-S6-034-2014) Comparative study on thermoelectric properties of polycrystalline Ca_{0.9}Yb_{0.1}MnO₃: effects of processing method and sintered density

Rezaul Kabir*, Tianshu S Zhang, The University of New South Wales, Australia; Richard Donelson, CSIRO, Australia; Sean Li, The University of New South Wales, Australia

10:50 AM

(ICACC-S6-035-2014) Electrical and Thermal Transport Properties of Hf doped In₂O₃

BeiBei Zhu*, Tianshu Zhang, University of New South Wales, Australia; Richard Donelson, Commonwealth Scientific and Industrial Research Organisation, Australia; Sean Li, University of New South Wales, Australia

11:10 AM

(ICACC-S6-036-2014) Thermal Stability and Evolved Gas Analysis of Selected Semiconductor Materials by a Simultaneous Thermal Analysis Instrument with Mass Spectrometer Skimmer System

Ekkehard Post*, NETZSCH Geraetebau GmbH, Germany; Bob Fidler, NETZSCH Instruments, USA

11:30 AM

(ICACC-S6-037-2014) Hierarchical Nanostructured Porous Carbons for Energy-related Applications

Kisung Chae, Liping Huang*, Rensselaer Polytechnic Institute, USA

11:50 AM

(ICACC-S6-038-2014) Overview of High Energy Solid State Capacitor (HESSCAP) Development at Marshall Space Flight Center

Lee Allen*, Curtis Hill, Terry Rolin, Mark Strickland, NASA MSFC, USA