

208th Meeting - Los Angeles, California

October 16 - October 21, 2005

PROGRAM INFORMATION

Y1 - Three-Dimensional Micro- and Nanoscale Battery Architectures

Battery/Industrial Electrolysis and Electrochemical Engineering/Physical Electrochemistry

Monday, October 17, 2005

3-D Concepts and Structures

Co-Chairs: B. Dunn

Time	Abs#	Title and Authors
10:00		Electrochemistry in Nanometer Wide Electrochemical Cells H. White, C. Smith and R. White (University of Utah)
10:40		Three-Dimensional Thin-Film Li-ion Microbatteries Formed in Perforated Substrates E. Peled, M. Nathan, D. Golodnitsky, V. Yufit, .. Strauss, T. Ripenbein, I. Shechtman and S. Menkin (Tel Aviv University)
11:20		Three-Dimensionally Interpenetrating Battery Nanoarchitectures D. Rolison, C. Rhodes (Naval Research Laboratory), J. Lytle (University of Minnesota), J. Long, K. Pettigrew and R. Stroud (Naval Research Laboratory)

3-D Integrated Components

Co-Chairs: H. White and D. Scherson

Time	Abs#	Title and Authors
14:00		Developing Electrode Arrays for 3D Battery Architecture B. Dunn, Y. Yeh, F. Chamran, H. Min, E. Falcao, D. Sun, S. Tolbert, F. Wudl and C. Kim (University of California, Los Angeles)
14:40		Anode and Cathode Templated Three-dimensional Lithium Ion Batteries Based on Nano-fibrous Electrodes K. White, A. Newman, J. Boehme, C. Middleton, R. Pawle, E. Middleton, J. Lennhoff, Q. Horn (Physical Sciences Inc.) and Y. Horn (Massachusetts Institute of Technology)
15:20		Atomic Level Simulation of a 3D Micro Battery J. Thomas and H. Kasemegi (Uppsala University)
16:00		Intermission (20 Minutes)

- 16:20 [Strategies Towards Solid State Li-Ion Batteries Assembled from Interpenetrating Nanostructured Battery Materials: Coating Monolithic Macroporous Carbon Electrodes with Polymeric and Inorganic Electrolytes](#) A. Stein, J. Lytle, N. Ergang (University of Minnesota) and K. Lee (Seoul National University)
- 17:00 [Three Dimensionally Ordered Composite of LiCoO₂ and Solid Electrolyte](#) K. Kanamura, N. Akutagawa, Y. Issiki, K. Hoshina and K. Dokko (Tokyo Metropolitan University)
- 17:20 [3-Dimensional Nickel-Zinc Microbattery Fabrication](#) F. Chamran, H. Min, B. Dunn and C. Kim (University of California, Los Angeles)
- 17:40 [Synthesis and Characterization of Multifunctional Polymers and Insertion Oxides Electrodeposited within Confined Nanoarchitectures](#) J. Lytle (University of Minnesota), C. Rhodes, J. Long, K. Pettigrew, R. Stroud and D. Rolison (Naval Research Laboratory)

3-D Microbatteries

Co-Chairs:

- | Time Abs# | Title and Authors |
|-----------|---|
| o | Poster Session |
| o | Investigation of Surface Forces between Battery Materials for the Development of Self-Organizing Devices Y. Cho, Y. Cho, R. Wartena (MIT), M. Spencer (Massachusetts Institute of Technology) and Y. Chiang (MIT) |

Tuesday, October 18, 2005

3-D Microscale Structures

Co-Chairs: D. Rolison and J. Thomas

- | Time Abs# | Title and Authors |
|-----------|---|
| 08:20 | Preparation and Performances of Three Dimensional Structured Cathode Films for Lithium Batteries S. Koike (UBIQEN) and K. Tatsumi (National Institute of Advanced Industrial Science and Technology) |
| 08:40 | Recent Developments in C-MEMS Technology for Li Ion Microbatteries M. Madou (UC Irvine) |
| 09:20 | Use of Carbon Microrods in 3D Electrodes E. Falcao, Y. Yeh, H. Min, B. Dunn and F. Wudl (University of California, Los Angeles) |
| 09:40 | Intermission (20 Minutes) |
| 10:00 | Elaboration of nano-architected electrodes/current collectors by electrochemically assisted template synthesis J. tarascon (UPJV & UMR CNRS 6007), J. Taberna (CIRIMAT), P. Simon (CIRIMAT, UMR CNRS 5085), S. mitra, A. finke, P. poizot and C. guery (LRCS) |

- 10:40 [Toward a 3-D Nanostructured Battery](#) C. Martin, C. sides and F. Xu (University of Florida)
- 11:20 [The Development of 3-D Nickel-Zinc Microbatteries](#) H. Min, Y. Yeh, F. Chamran, C. Kim and B. Dunn (University of California, Los Angeles)
- 11:40 [The High Power and High Energy Densities Li Rechargeable Battery by Nanocrystalline and Mesoporous Ni/NiO Covered Structure](#) E. Hosono (National Institute of Advanced Industrial Science and Technology), S. Fujihara (Keio University), I. Honma and H. Zhou (National Institute of Advanced Industrial Science and Technology)

3-D Nanoscale Structures

Co-Chairs: S. Tolbert and M. Anderson

- | Time Abs# | Title and Authors |
|------------------|--|
| 14:00 | Synthesis of 3-D nanoporous functional materials for Li storage device with high power and high energy densities H. Zhou (National Institute of Advanced Industrial Science and Technology) |
| 14:40 | Colloidal-Scale Self-Organized Lithium Batteries Y. Chiang, R. Wartena and Y. Cho (MIT) |
| 15:20 | Intermission (20 Minutes) |
| 15:40 | Self-Assembly as a Route to Complex Architectures with Applications for 3-Dimensional Nanoscale Batteries S. Tolbert (University of California, Los Angeles), E. richman, A. clark (ucla), D. Sun, B. Dunn, F. Wudl (University of California, Los Angeles) and R. jost (ucla) |
| 16:20 | Templated Nanocomposite Electrodes for Rechargeable Lithium Batteries E. Olivetti (Massachusetts Institute of Technology), J. Kim (Yonsei University), A. Mayes and D. Sadoway (Massachusetts Institute of Technology) |
| 16:40 | Microstructural Modeling and Design of Advanced Three-Dimensional Batteries R. Garcia (Purdue University) and Y. Chiang (MIT) |

Wednesday, October 19, 2005

New Directions for 3-D Nanoscale Systems

Co-Chairs: J. Long

- | Time Abs# | Title and Authors |
|------------------|---|
| 10:00 | New Concept and Chemistries for Self Assembled 3D Microbatteries G. Amatucci (Rutgers, the State University of New Jersey), I. Plitz (Rutgers University) and F. Badway (Rutgers, the State University of New Jersey) |
| 10:40 | Single-Particle Electrode Aqueous Microbatteries D. Scherson and A. Palencsar (Case Western Reserve University) |

11:20 [Qualitatively Different Behavior of Electrode Materials at the Nanoscale – Implications for 3D Battery Nanoarchitectures](#) J. Xu (Rutgers University), G. Jain (Rutgers, The State University of New Jersey), M. Balasubramanian (Argonne National Laboratory) and J. Yang (Rutgers, The State University of New Jersey)

2-D Microbatteries

Co-Chairs: V. Srinivasan and Y-M Chiang

Time	Abs#	Title and Authors
14:00		Materials and Fabrication Approaches for Microbatteries K. Swider-Lyons and A. Stux (Naval Research Laboratory)
14:40		Modeling and Stencil/Screenprint Fabrication of Thick Film Lithium Polymer Ion MicroBatteries for Smart Dust Applications D. Steingart, C. Ho, J. Evans and P. Wright (UC Berkeley)
15:20		Intermission (20 Minutes)
15:40		A New Architecture of Thin Film Battery with Organic Radical Plastic Cathode K. Nakahara (NEC Corporation), J. Iriyama, S. Iwasa, M. Suguro and M. Satoh (NEC)
16:00		Fabrication of Lithium Micro-array Battery by Sol-Gel Process J. Sugaya, K. Dokko and K. Kanamura (Tokyo Metropolitan University)
16:20		Three-Dimensional, Nanostructured Electrochemical Energy Storage Devices H. In, S. Kumar (Massachusetts Institute of Technology), Y. Shao-Horn (MIT) and G. Barbastathis (Massachusetts Institute of Technology)