Cover

Sponsorship & Exhibit

Hotel & Travel Information

Click Here to **Register Online!**



32nd ANNUAL International Battery Seminar & EXHIBIT

The Latest Technological Advances in Energy Systems for Consumer, Automotive, Military & Stationary Battery Applications

Announcing the Distinguished Faculty for the 32nd International Battery Seminar & Exhibit

K.M. Abraham, Northeastern University Kev Adjemian, Idaho National Laboratory J. Norm Allen, Potomac Energy Fund Brian Barnett, TIAX, LLC Ralph Brodd, Broddarp of Nevada Kumar Bugga, NASA Jet Propulsion Laboratory Andrew Burke, University of California-Davis Richard Chamberlain, Boston Power Peter Cheng, HighPower International Yi Cui, Stanford University Jeff Dahn, Dalhousie University Bridget Deveney, Saft Tien Q. Duong, Senior Technical Advisor, Office of Vehicle Technologies, U.S. Department of Energy Kevin Eberman, 3M Michael Fetcenko, BASF Battery Materials - Ovonic Niles Fleischer, Algolion, Ltd. Laurie Florence, UL, LLC Dave Freeman, Texas Instruments Linda Gaines, Argonne National Laboratory

ONGES

Dave Heacock, Texas Instruments Patrick Hurley, A123 Systems, LLC James Kaschmitter, Polystor Energy Corporation George Kerchner, PRBA Franz Kruger, Roland Berger Strategy Consultants Arumugam Manthiram, University of Texas at Austin Takahiro Matsuyama, Sharp Corporation Henry Mao, Youlion Battery Ltd. Ted Miller, Ford Motor Company Surva Moganty, NOHMS Technologies, Inc. Brian Morin, Dreamweaver International Yoshio Nishi, Sony Corporation Odysseas Paschos, BMW Prabhakar Patil, LG Chem Power, Inc. Sebastien Patoux, CEA-Liten Christophe Pillot, Avicenne Energy Rob Privette, XG Sciences Jian-Guo Ren, New Energy Materials Inc. Bob Richard, LabelMaster (formerly U.S. DOT) YB Roh, EIG Ken Rudisuela, IOXUS

Conference Founder and Program Advisor Dr. S.P. Wolsky

Ann Marie Sastry, Sakti3 Francisco Sergi, National Research Council of Italy Kamal Shah, Intel Corporation Xi Shan, BYD Hang Shi, Tianjin Lishen Battery, Ltd. Steve Sloop, On-To Technology Novis Smith, Retriev Technologies Suresh Sriramulu, CAMX Power, LLC Hirohito Teraoka, FDK Corporation Michael Thackeray, Argonne National Laboratory John Turner, Oak Ridge National Lab / UT-Battelle Mark Verbrugge, General Motors Steve Visco, PolyPlus Battery Company David Yaohui Wang, ATL China He Wei, EVE Worldwide Industries, Inc. Jay Whitacre, Aquion Energy; Carnegie Mellon University Ralph Wise, BASF Materials Rachid Yazami, Nanyang Technological University Robert Young, Applications Engineer, Xalt Energy John Zhang, Celgard

Bookmark Our New Website - InternationalBatterySeminar.com

Formerly www.POWERSOURCES.net







FINAL AGENDA

MARCH 9 - 12, 2015 Fort Lauderdale Convention Center Fort Lauderdale, FL

Nelcome

Sponsorship & Exhibit

Keynote Presentations

Tutorials

Monday Agenda

Tuesday Agenda

Wednesday Agenda

Thursday Agenda

Registration Information Hotel & Travel Information

Top Reasons to Attend

Click Here to Register Online! InternationalBatterySeminar.com

ALWEEKS

REGISTER

nternational Battery

Welcome!

In its 32nd year, this seminar is the leader in providing key industry speakers to discuss the state of the art of worldwide energy storage technology developments for portable, automotive and stationary power applications. This meeting provides not only broad perspectives, but also informed insights into significant advances in materials, product development and application for all battery systems and enabling technologies. In addition, this meeting is renowned for offering broad networking and exhibiting opportunities to the international battery community. As the longest running annual battery industry event in the world, this meeting has always been the preferred venue to announce significant new developments and showcase the most advanced battery technology.

In September 2014, CHI and the Knowledge Foundation announced that the International Battery Seminar would join CHI's extensive portfolio of events.



Dr. Shep Wolsky, Founder of the International Battery Seminar & Exhibit

"I'm excited about the opportunity to expand this meeting's presence to a broader market. We believe

we have found an ideal partner with CHI and the Knowledge Foundation and we are looking forward to working together to significantly grow this conference."



Phillips Kuhl, President, CHI "For more than 20 years, all of the conferences organized by CHI were focused on life sciences, but recently we decided it would be important to diversify

with conferences covering advanced battery technology, we quickly realized that there was an opportunity to collaborate with Shep Wolsky, as his conference had an outstanding reputation and track record in this field. We knew that CHI could work closely with Shep to continue all of the strong content the conference was known for, while insuring the long-term future and expansion of the event. We are delighted to work closely with Shep on the 2015 event and hopefully for a number of years to come."



Craig Wohlers, General Manager of the Knowledge Foundation

"This is a great opportunity for us to work with Dr. Wolsky and expand one of the leading battery

and energy storage events in the world. We're excited to leverage Knowledge Foundation's reach and CHI's resources to add value for the attendees and exhibitors at this key industry meeting."

PREMIER SPONSORS





CORPORATE SPONSORS







Hotel & Travel Information

Click Here to **Register Online!**



Podium Presentations – Available within Main Agenda!

Showcase your solutions to a guaranteed, targeted audience through a 15- or 30-minute presentation during a specific conference program, breakfast, lunch, or separate from the main agenda within a pre-conference workshop. Package includes exhibit space, on-site branding, and access to cooperative marketing efforts by International Battery Seminar. Presentations will sell out guickly, so sign on early to secure your talk!

Invitation-Only VIP Dinner/Hospitality Suite

Select specific delegates from the pre-registration list to attend a private function at an upscale restaurant or a reception at the hotel. From extending the invitations, to venue suggestions, International Battery Seminar will deliver your prospects and help you make the most of this invaluable opportunity.

Focus Group

SPONSORSHIP & EXHIBIT OPPORTUNITIES

International Battery Seminar will gladly provide you the opportunity of running a focus group on-site. This exclusive gathering can be useful to conduct market research, collect feedback on a new product idea, and collect marketing intelligence from industry experts on a specific topic.

User Group Meeting/Custom Event

Co-locate your user group meeting or custom event. International Battery Seminar will help market the event, manage logistical operations, develop the agenda, and more. International Battery Seminar can handle the entirety of the meeting or select aspects.

Exhibit

Exhibitors will enjoy facilitated networking opportunities with gualified delegates, making it the perfect platform to launch a new product, collect feedback, and generate new leads. Exhibit space sells out quickly, so reserve vours today!

Additional branding and promotional opportunities are available, including:

- Conference Tote Bags
- Badge Lanyards
- Literature Distribution (Tote Bag Insert or Chair Drop)
- Program Guide Advertisement • Padfolios and More...

For more information, please contact:

Business Development Manager International Battery Seminar, LLC Phone: (+1) 561-367-0193 Email: tdevita@powersources.net

Jay Mulhern **Business Development Manager** International Battery Seminar, LLC Phone: (+1) 781-972-1359 Email: jmulhern@internationalbatteryseminar.com

IAL WEEKS **REGISTER!**

Welcome

Sponsorship & Exhibit

Keynote Presentations

Tutorials

Monday Agenda

Tuesday Agenda

Wednesday Agenda

Thursday Agenda

Registration Information Hotel & Travel Information

Top Reasons to Attend

Marine International International

Click Here to Register Online! InternationalBatterySeminar.com







The Birth of the Li-ion Secondary Battery - A Problem Child?

Yoshio Nishi, Ph.D., Executive Alumni, Sony Corporation

Mr. Yoshio Nishi is retired senior vice president and chief technology officer of the Sony Corporation. He graduated in 1966 from the Faculty of Applied Chemistry of the Department of Technology at Keio University in Tokyo and immediately joined Sony, where he rose through the ranks to become corporate research fellow, vice president, and president of the company's materials laboratories. In 1994 he received technical awards from the Electrochemical Societies of both Japan and the United States in recognition of his contributions to LIB technology. He also received the Kato Memorial Award from Kato Foundation for Promotion of Science (Japan) (1998) and the Ichimura Award from The New Technology Development Foundation (Japan) (2000) in recognition of his contributions to LIB technology and the Technical Award from the Japan Society for Biotechnology and Agrochemistry (1998). In 2014, he received Charles Stark Draper Prize for Excellence in Engineering.

4.7V Li-ion cells: Nonsense or Possibility

Jeff Dahn, Ph.D., Professor, Department of Chemistry, Dalhousie University

Jeff Dahn is recognized as one of the pioneering developers of the lithium-ion battery that is now used worldwide in laptop computers and cell-phones. Dahn's recent work has concentrated on the application of Combinatorial Materials Science methods to battery and fuel cell materials problems. He is the author of over 500 refereed journal papers and co-inventor of 58 inventions with patents issued or filed. He obtained his B.Sc. in Physics from Dalhousie University (1978) and his Ph.D. from the University of British Columbia in 1982. Dahn then worked at the National Research Council of Canada (82-85) and at Moli Energy Limited (85-90) before taking up a faculty position in the Physics Department at Simon Fraser University in 1990. He returned to Dalhousie University in 1996.

Solid State Energy Storage: Game-Changing Technology for the 21st Century

Ann Marie Sastry, Ph.D., Chief Executive Officer & Founder, Sakti3 Ann Marie Sastry brings over 25 years' leadership and technical experience to her role at Sakti3, building a management team with >100y of experience in finance, manufacturing and technology. She personally trained the core technical team. Sastry has co-authored over 70 awarded and filed patents, over 100 scientific publications, and delivered over 100 invited lectures at research, government and private institutions globally. She has received several of the highest technical honors in her field, including the 2011 ASME Frank Kreith Energy Award, 2007 ASME Gustus Larson Award and the NSF's PECASE (1997). She holds Ph.D. and M.S. degrees from Cornell University, and a BS from the University of Delaware, in Mechanical Engineering.

Safety and Ceramic Coated Separators

John Zhang, Ph.D., Chief Technology Officer, Celgard

Dr. Zhang is recognized as the leading authority on Li-ion batteries safety and separators. Via IEEE, he leads and helps the establishment of Li-ion battery industry standards (P1625, P1725 and CTIA). He has chaired and/or organized

more than 50 international conferences and delivered more than 50 invited plenary (or keynote) speeches at various international conferences. He has published more than 100 patents, papers and books, including the first ceramic coating separator patent (US 6, 432, 586) and some of the most cited papers (Chem. Reviews, 2004 and Li-ion safety papers 2006-now).

AREAS OF FOCUS

- In-depth worldwide analysis of battery markets and technologies
- Government battery program developments
- Battery safety enhancement and regulatory status
- Consumer and large format batteries
- Thermal and power management systems for consumer and electric, plug-in and hybrid vehicles
- Battery development for the grid
- Advances in new and improved materials for anode, cathode, electrolyte, separators.
- Advances in battery packs, charging and testing
- Battery recycling for regulatory and resource recovery purposes
- Status and future outlook for other energy storage technologies



Welcome

Sponsorship & Exhibit

Keynote Presentations

Tutorials

Monday Agenda

Tuesday Agenda

Wednesday Agenda

Thursday Agenda

Registration Information Hotel & Travel Information

Top Reasons to Attend

Click Here to Register Online! nternationalBatterySeminar.com



PLENARY KEYNOTE PRESENTATIONS

Towards Online Assessment of Battery State of Health and State of Safety



Rachid Yazami, Ph.D., Professor, School of Materials Science & Engineering, Director of Battery Programs, Energy Research Institute, Nanyang Technological University, Singapore

Dr. Rachid Yazami, a native of Fez, Morocco, received his MS in electrochemistry and PhD in graphite intercalation compounds for lithium batteries at France's Grenoble Institute of Technology, and then began his career at the Centre National de la Recherche Scientifique (CNRS), also in Grenoble, where he rose to research director. He has been a visiting associate in materials science and chemistry at Caltech, in collaboration with JPL/NASA, for 10 years, and in 2010 joined the Nanyang Technological University (NTU) in Singapore as a visiting professor in materials science. In 2014, he received Charles Stark Draper Prize for Excellence in Engineering.

U.S. DOE Vehicle Battery R&D Progress and Future Plans



Tien Q. Duong, Senior Technical Advisor, Office of Vehicle Technologies, U.S. Department of Energy Tien Duong is currently Senior Technical Advisor and Manager for the Advanced Batteries Materials Research (BMR) Program, formerly known as the Batteries for Advanced Transportation Technologies (BATT) Program at the U.S. Department of Energy (http://batt.lbl.gov/). Tien is a member of the United States Advanced Battery Consortium (USABC) Technical Advisory Committee (TAC) and Management Committee (MC). Tien has been a part of the Energy Storage R&D Effort within the Vehicle Technologies Program since 1994. Tien managed the Energy Storage R&D Effort from 1999 to 2003, and led the Hybrid and Electric Systems Team from 2004 to 2008. Tien studied Chemistry at the University of Saigon, Vietnam before emigrating to the United States in 1979. He holds a B.S. in Electrical Engineering and an M.S. in Civil Engineering, both from Virginia Tech. Tien is a licensed Professional Engineer in the state of Virginia.

From Gallium Nitride to Silicon Carbide; Power Management Advancements Enabling Battery Market Growth



Dave Heacock, Ph.D., Senior Vice President and General Manager, Silicon Valley Analog Business, Texas Instruments Dave Heacock is senior vice president and manager of Texas Instruments Silicon Valley Analog (SVA). Based *in Silicon* Valley, Heacock provides strategic leadership to develop game-changing solutions that solve the real-world analog signal chain and power management problems facing global system manufacturers.

Materials, Chemistries & Technologies

Peter Cheng Ph.D., Chief Scientist, HighPower International, China

Dr. Cheng has over 10 years experience in polymer cell R&D, cell materials, electrochemical systems, new product design, manufacturing processes and equipment engineering technology. He has been involved in several cooperative projects with global tier one customers such as Apple, Moto, Samsung, Nokia and Microsoft. Dr. Cheng has many research achievements with polymer electrochemical systems and materials research, with many approved patents.

Rechargeable Energy Storage System Safety Performance and Modeling

Ted Miller, Senior Manager of Energy Storage and Materials Strategy and Research, Ford Motor Company Ted Miller is Ford's Senior Manager of Energy Storage Strategy and Research. His team is responsible for energy storage strategy, research, development, and implementation for hybrid electric vehicles, battery electric vehicles, plug-in hybrid electric vehicles and fuel cell hybrid electric vehicles.

Vehicle Electrification Market Trends and Battery Technology Status Update

Prabhakar Patil, Chief Executive Officer, LG Chem Power, Inc., Kore

Prabhakar Patil is chief executive officer (CEO) of LG Chem Power Inc. (LGCPI), the North American subsidiary of lithium-ion batterymaker, LG Chem (LGC), Korea. In this position, he has overall responsibility for the strategic direction, engineering and business development activities of the business. Prior to joining LGCPI in 2005, Dr. Patil spent his entire professional career of 27 years at Ford Motor Company in various engineering and management positions. He served as chief engineer for Ford's Hybrid Technologies during 2003 and was also chief engineer for the Ford Escape Hybrid from 1998 to 2003. Dr. Patil received his undergraduate degree from IIT, Bombay, and his PhD in Aerospace Engineering from The University of Michigan, Ann Arbor. He has 12 patents, published 22 articles and received the Henry Ford Technology Award in 1991 for his work in Electric Vehicle Powertrain Development.

Welcome

Sponsorship & Exhibit

Keynote Presentations

Tutorials

Monday Agenda

Tuesday Agenda

Wednesday Agenda

Thursday Agenda

Registration Information

Top Reasons to Attend

Click Here to Register Online!



International Battery

MONDAY, MARCH 9 TUTORIALS*

7:30 am Tutorial Registration and Morning Coffee

8:30 – 10:00 am

T1: Materials Selection and Design for Batteries with High Energy Density, Ultralong Cycle Life and Excellent Safety

Yi Cui, Ph.D., Associate Professor, Materials Science & Engineering, Stanford University

This tutorial gives an overview on materials selection and design in order to increase the energy density of batteries, extend the cycle life and enhance the safety significantly. It targets the application from portable electronics, electric vehicles to grid-scale storage. Topics include 1) Si, Li metal, and P anodes and S cathodes for high energy batteries, which offers 7-10 times higher lithium ion storage capacities; 2) Low cost Prussian-blue based materials and Li metal-polysulfide semiflow batteries for grid scale storage; and 3) A novel idea of smart separator to enhance battery safety.

T2: Battery Management Solutions & Strategies: Present & Future

Dave Freeman, Ph.D., Chief Technologist, High Voltage Power Systems, Texas Instruments

Managing batteries in portable or mobile applications has three basic concerns: recharge, run time and replacement. End users are painfully aware of how these issues affect battery performance over its lifetime. The tutorial will discuss these issues and describe current solutions and strategies to improve performance. The tutorial will present solutions that can be implemented today and improvements that are expected in coming years.

10:30 am - 12:00 pm

T3: Rechargeable Battery Market Trends 2015-2025

Christophe Pillot, Ph.D., Battery Survey Manager, Avicenne Energy, France

- 10 year automotive market forecasts from Avicenne and other analysts (micro|Hybrid|P-HEV|EV)
- Car makers' strategies
- Advanced Energy Storage (Advanced lead acid|Supercap|NiMH|LIB)

T4: The Dynamics of Lithium Battery Shipping: Will the Changes Keep Coming?

Bob Richard, Vice President, Regulatory Affairs, LabelMaster

This tutorial will provide an update of the recently implemented US DOT lithium battery regulations and will discuss the continuing efforts of International Civil Aviation Organization Dangerous Goods Panel to implement more restrictions and changes to the requirements for shipping lithium batteries in the ICAO Technical Instructions on the Safe Transport of Dangerous Goods by Air.

*Separate registration required for tutorials

MONDAY, MARCH 9 - PLENARY KEYNOTE SESSION

11:00 Main Seminar Registration

12:45 pm Chairperson's Opening Remarks

Mark Verbrugge, Ph.D., Director, Chemical and Materials Systems Laboratory, General Motors

1:00 The Birth of the Li-ion Secondary Battery - A Problem Child?

Yoshio Nishi, Ph.D., Executive Alumni, Sony Corporation

The first commercial Li-ion secondary battery was introduced in 1991 by Sony Corporation. We met many difficulties in developing the Li-ion secondary battery and I would like to describe how we overcame them. We believed that the resulting newborn had sufficient characteristics. Our customers, however, were not satisfied with them and severe comments were made on them. The key factors that they claimed will be presented here, and it will be emphasized that it is essential to appreciate what characteristics are required by the customer.

1:30 4.7V Li-ion Cells: Nonsense or Possibility

Jeff Dahn, Ph.D., Professor, Department of Chemistry, Dalhousie University

One way to improve the energy density of Li-ion cells is to use high voltage positive electrode materials like LiNi0.5Mn1.5O4 [LNMO] or simply increase the upper cut off potential when positive electrodes like Li[NixMnxCo1-2x]O2 [NMC] are used. This sounds simple, but there are numerous problems to overcome before high voltage Li-ion cells are a reality. In this talk, I discuss the problems and describe partial solutions we have developed. These encouraging results provide hope that high voltage Li-ion cells can be a reality one day. Time will tell.

- LIB design for P-HEV & EV markets (Cylindrical, prismatic, pouch|Wounded, stacked, Z fold cells)
- LIB cell, module & pack cost structure 2015-2025

Welcome

Sponsorship & Exhibit

Keynote Presentations

Tutorials

Monday Agenda

Tuesday Agenda

Wednesday Agenda

Thursday Agenda

Registration Information Hotel & Travel Information

Top Reasons to Attend

Click Here to Register Online!



International Battery SEMINAR & EXHIBIT

MONDAY, MARCH 9 - PLENARY KEYNOTE SESSION (Continued)

2:00 Solid State Energy Storage: Game-Changing Technology for the 21st Century

Ann Marie Sastry, Ph.D., Chief Executive Officer & Founder, Sakti3

Recently, Sakti3, a University spinout founded by researchers and engineers with decades of experience in battery research and thin film and other manufacturing, developed an approach for production of cells which offers all of the benefits of the theoretically highest energy density materials available. These massively replicable, cheap and reliable production methods enable cell manufacturing in a single, unified line and produce product that is ready to ship.

2:30 Safety and Ceramic Coated Separators

John Zhang, Ph.D., Chief Technology Officer, Celgard

3:00 Networking Refreshment Break

3:30 Towards Online Assessment of Battery State of Health and State of Safety

Rachid Yazami, Ph.D., Professor, School of Materials Science & Engineering; Director, Battery Programs, Energy Research Institute, Nanyang Technological University, Singapore

Lithium ion batteries (LIB) provide excellent performances in terms of energy density, power density and cycle life. After remarkable success in mobile electronics application, the rapidly growing market is in electro-mobility (EM) and in energy storage ES). We have developed a universal technology based on thermodynamics data collection and analysis, which enables to monitor battery SOH and SOS

4:00 U.S. DOE Vehicle Battery R&D Progress and Future Plans

Tien Q. Duong, Senior Technical Advisor, Office of Vehicle Technologies, U.S. Department of Energy

This presentation provides an overview of DOE vehicle battery R&D progress and the associated initiatives for accelerating commercialization. It also includes highlights of many significant research breakthroughs resulting from VTO-funded R&D. A discussion of electric drive vehicle technology performance targets, gaps, and future research directions is also included.

4:30 From Gallium Nitride to Silicon Carbide; Power Management Advancements Enabling Battery Market Growth

Dave Heacock, Ph.D., Senior Vice President and General Manager, Silicon Valley Analog Business, Texas Instruments

Wide bandgap devices and advance semiconductor materials are becoming more mainstream. With this shift, traditional power management topologies are giving way to new capabilities and architectures within power management systems. By combining these architectures with the expanding capabilities of rechargeable batteries, new growth markets are appearing. This paper looks at the relationship between these technologies and examines some of the possible growth areas for batteries and power management devices.

5:00 Vehicle Electrification Market Trends and Battery Technology Status Update

Prabhakar Patil, Chief Executive Officer, LG Chem Power, Inc., Korea

This presentation will provide an overview of the automotive market and specifically focusing on the BEV, PHEV/EREV, 48V and 12V Systems. Key highlights include: 200 mile vehicle for <\$35K for BEVs; 30+ mile electric range for PHEV/EREV; Chinese CO2 Regulation achievement for 48V systems at 95 g/km; Cost and compatibility for 12V systems.

5:30 Grand Opening Reception in the Exhibit Hall with Poster Viewing

7:00 End of Day One

Welcom

Sponsorship & Exhibit

Keynote Presentations

Tutorials

Monday Agenda

Tuesday Agenda

Wednesday Agenda

Thursday Agenda

Registration Information Hotel & Travel Information

Top Reasons to Attend

Click Here to Register Online!



International Battery

TUESDAY, MARCH 10

7:30 am Battery Breakout Discussion Groups with Continental Breakfast

Grab a cup of coffee and join a discussion group. These are moderated discussions with brainstorming and interactive problem solving, allowing conference participants from diverse backgrounds to exchange ideas and experiences and develop future collaborations around a focused topic.

PLENARY KEYNOTE SESSION

8:30 Chairperson's Opening Remarks

Jeff Dahn, Ph.D., Professor, Department of Chemistry, Dalhousie University

8:40 The Technology and Application of Cylindrical Soft Polymer Lithium-Ion Battery

He Wei, Ph.D., EVE Worldwide Industries, Inc., China

Cylindrical Li ion batteries, such as 14500, 18650 and 26650 etc, have been in mass production & wide applications for many years. However, it was difficult to find products with size of less than 14500 in the application. In order to meet

TRACK 1

FUTURE TRENDS

9:45 Chairperson's Opening Remarks

Jeff Dahn, Ph.D., Professor, Department of Chemistry, Dalhousie University

9:50 Recent Progress of BYD EV Program *Xi Shan, Ph.D., Senior Director, BYD, China*

10:20 Polymer Lithium Ion Cells Performance, Testing and Application David Yaohui Wang, ATL China

10:50 Coffee Break in the Exhibit Hall with Poster Viewing

11:45 Chairperson's Remarks

Jeff Dahn, Ph.D., Professor, Department of Chemistry, Dalhousie University

11:50 Electrochemical Performance of High Purity Graphite From the Lac Knife Flake Graphite Deposit in Quebec, Canada



Joseph E. Doninger, Ph.D., MSc, Director, Manufacturing and Technology, Focus Graphite Inc.

Drill testing by Focus Graphite conducted on the Lac Knife graphite deposit identified the presence of 7.9 million MT of proven and probable reserves grading at 15% C. Pilot plant flotation tests confirmed that the large >80 mesh flake could be upgraded to 98.3% C and further purified to a level of 99.98% C. CR2016 Li-lon coin cell battery tests conducted on the standard and fine grades of carbon coated, spherical graphite resulted in achieving reversible capacities of 364 and 365 mAh/g and first cycle irreversible capacity losses of 1.44% and 1.01%.

steady increase of both quality & quantity demand, EVE has made a lot of efforts to improve performance of products & production capabilities. Now, EVE has independently developed the first world-wide fully automatic production line of cylindrical Li ion batteries with soft package. Therefore, it is believed that demand of cylindrical Li ion batteries with soft package will be much increased in the near future.

9:10 Materials, Chemistries & Technologies

Peter Cheng, Ph.D., Chief Scientist, HighPower International, China Different kinds of cathodes and anodes with special stable and safety material coating can improve battery safety performance in some content, especially for high temperature short-circuit tests. Polyoxometalates (POMs) cathode material capacity is 2-3 times with better safety performance compared with traditional cathode material, which had been made by chemical synthesis method and completely different from traditional cathode material Roasting method. The cell energy density with this kind of cathode material is higher, and can be used in consumer market in coming days firstly.

9:40 Move to Tracks

TRACK 2

BATTERY RECYCLING

9:45 Chairperson's Remarks

Shep Wolsky, Ph.D., Founder, International Battery Seminar & Exhibit

9:50 How Can We Make EV Battery Recycling Happen?

Linda Gaines, Ph.D., Systems Analyst, Argonne National Lab This presentation will contain more questions than answers. It is expected that in developing answers, it will become clear what technologies will make the most sense for recycling lithium-ion automotive propulsion batteries. Recycling technology must produce a viable product at a reasonable cost, in a way that complies with all health and safety regulations that might get implemented.

10:10 Green Li-Ion Battery Production from Recycled Li-Ion Batteries

Novis Smith, Ph.D., Vice President, Technology, Retriev Technologies Retriev recycles over 1 million pounds of li-ion battery per year. We are in development of a technology to capture the recycled cathode material in its functional state maintaining >95% of the energy and entropy that went in to the production. We will manufacture green li-ion batteries from the material and presently have sufficient supply for more than 10 million 18650 format cells or the equivalent cathode materials for prismatic and other format cells. Supply of recycled materials will soon double.

10:30 Cycle Life Capability of Batteries Made from Recycled Electrode Material

Steve Sloop, Ph.D., President, On-To Technology

Recycling spent cells offers an advanced battery material source that is low impact, non-critical, and energy efficient. This paper demonstrates successful life cycle capabilities in lithium-ion cells manufactured from rejuvenated

Welcom

Sponsorship & Exhibit

Keynote Presentations

Tutorials

Monday Agenda

Tuesday Agenda

Wednesday Agenda

Thursday Agenda

Registration Information Hotel & Travel Information

Top Reasons to Attend

Click Here to Register Online!



International Battery

TRACK 1

12:05 Novel Noncarbonate Electrolyte Formulations Sponsored by for Silicon Anodes

Dee Strand, Ph.D., CSO, Wildcat Discovery Technologies Today's carbonate electrolytes provide inadequate SEI

formation in lithium ion batteries containing silicon anodes. Silicon's large volumetric changes during cycling require more robust SEIs to achieve high reversible capacity and long cycle life. This presentation will focus on the development of novel electrolyte formulations that result in longer cycle life of full cells containing silicon alloy anodes. Key highlights include carbonate-free electrolytes that outperform standard EC/EMC formulations.

12:20 pm Connected Mobile Device Usage Study

Kamal Shah, Manager, Mobile Platforms, Intel Corporation

This study, conducted of users with multiple mobile devices, traces how these users use various mobile devices during their typical day. These devices consist of laptops, tablets, and smartphones. The study provides interesting insight into user perceptions and requirements of battery life, charging, and adapter characteristics.

12:50 Luncheon in the Exhibit Hall

BATTERY SAFETY

2:20 Chairperson's Remarks

Kamal Shah, Manager, Mobile Platforms, Intel Corporation

2:25 Technologies for Detection of Internal Short Circuits in Li-Ion Batteries and Options for Intervention

Brian Barnett, Ph.D., Vice President, TIAX, LLC

CAMX Power is commercializing two distinct, non-invasive and chemistry agnostic technologies for detection of internal shorts in Li-ion batteries. Detection of developing shorts using these technologies occurs at levels far below the point at which a thermal runaway occurs. Prototype test systems have been supplied to major automakers and are now in advanced stages of demonstration for automotive applications. Results and pathways for intervention will be presented.

2:55 Early Warning Predictive Intelligence Algorithms for Enhancing Lithium Ion Battery Safety

Alex Nimberger, Ph.D., Founder & Chief Technology Officer, Algolion, Ltd., Israel Niles Fleischer, Ph.D., Founder & Chief Executive Officer, Algolion, Ltd., Israel We will present results regarding our development of predictive intelligence algorithms for solving the critical thermal runaway problem of lithium ion and lithium ion polymer batteries (LIBs) caused by internal short circuits. This breakthrough technology (patents pending) is the first to use proactive protocols that have the unique capability for identifying early markers of internally developed shorts well before they mature into thermal runaway reactions. This method probes the battery during its operation using the existing electrical connections between it and the BMS or charger unit and then analyzes the response to diagnose the state-of-safety. Since the diagnosis detects early precursors of developing cell failures, it will enable for the first time sufficient advance warning so that corrective action can be taken to avoid fires and cell explosions. ALGOLION's technology is compatible for all LIB chemistries and cell designs with particular focus for large pack applications in the EV, ESS and aircraft markets, as well as for portable electronic devices.

TRACK 2

material produced through OnTo's patented technology. OnTo's recycling technology reduces costs and extends the life of important battery materials

10:50 Coffee Break in the Exhibit Hall with Poster Viewing

BATTERY MANAGEMENT SYSTEMS

11:45 Chairperson's Remarks

Shep Wolsky, Ph.D., Founder, International Battery Seminar & Exhibit

11:50 Battery and Advanced Vehicle Testing at Idaho National Lab

Kev Adjemian, Ph.D., Department Manager, Energy Storage and Transportation Systems, Idaho National Laboratory

The Energy Storage & Transportation Systems department at Idaho National Laboratory (INL) has two major thrusts of activities which will be highlighted in this talk. The first, as the Department of Energy (DOE), Office of Energy Efficiency and Renewable Energy's (EERE) primary center for battery technology testing is to independently test and verify battery performance and durability at the cell, module and pack level. The second is the Advanced Vehicle Testing Activity (AVTA) whose primary goal is to provide benchmark data for technology modeling, and research and development programs, by benchmarking and validating the performance of light-, medium-, and heavy-duty vehicles that feature one or more advanced technologies primarily featuring batteries and electric drives.

12:20 pm A Precision Stress Sensor for Monitoring Li-Ion Swelling

James Kaschmitter, Chief Executive Officer, Polystor Energy Corporation Excessive swelling in Li-Ion pouch cells can be caused by high levels of lithiation in new high capacity anode materials, or by internal failure mechanisms in the cell that cause gas generation. MicroMetrics, Inc. has developed an ultra-thin siliconbased Contact Stress Sensor (CSS) for use in monitoring swelling in Li-Ion pouch cells. The ultra-thin form factor allows the CSS to be placed between cells, or cells and pack casing, to monitor pressure changes with cycling. The high accuracy of the CSS allows it to detect even minor increases in pressure due to cell gassing. *Sponsored by*

12:50 Luncheon in the Exhibit Hall



ENERGY STORAGE AND THE GRID

2:20 Chairperson's Remarks

Steve Visco, Ph.D., Chief Executive Officer and Chief Technology Officer, PolyPlus Battery Company

2:25 Advanced Technology of LTO Battery for Micro-Hybrid and Stationary Power Applications

Y.B. Roh, Ph.D., Chief Technology Officer, EIG, Ltd., South Korea This presentation will compare and contrast the development of two different LTO cells for two different applications with very different energy and power requirements. This 20Ah-LTO cell also allows high-speed charging (4 minutes) and discharging (3 minutes) with high capacity retention of over 80%. Also, this cell has endured at -20°C and -30°C while operated cold-cranking tests under SAE J537.



Sponsored by

EVE

Welcom

Sponsorship & Exhibit

Keynote Presentations

Tutorials

Monday Agenda

Tuesday Agenda

Wednesday Agenda

Thursday Agenda

Registration Information Hotel & Travel Information

Top Reasons to Attend

Market International International

Click Here to Register Online!



International Battery SEMINAR & EXHIBIT

TRACK 1

3:25 Manufacturing Solutions for Intrinsically Safe All-Solid-State Thin-Film Lithium Secondary Batteries *Koukou Suu, Ph.D., ULVAC Fellow, ULVAC, Inc.*

Manufacturing solutions such as production tools, methods and processes for all solid-state thin-film lithium batteries will be introduced. All solid-state thin-film batteries, which are produced by thin-film deposition technology, have special advantages, that is, intrinsically safe, thin and flexible, thanks to their unique thin-film shape.

3:40 Sponsored Presentation (Opportunity Available)

3:55 Refreshment Break in the Exhibit Hall with Poster Viewing

4:45 Chairperson's Remarks

Brian Barnett, Ph.D., Vice President, TIAX, LLC

4:50 2015-2016 Regulatory Outlook on Primary and Secondary Batteries

George Kerchner, Executive Director, Rechargeable Battery Association (PRBA) There are a number of key regulatory issues that could have a significant impact on primary and secondary battery manufacturers in 2015 and 2016. These include, but are not limited to, battery product stewardship state legislation in the U.S., new restrictions on shipping lithium ion and lithium metal batteries by air, new battery labeling requirements for large format lithium ion batteries and changes to the lithium battery testing requirements in the UN Manual of Tests and criteria.

5:20 Advanced Crash Testing and Simulations for Automotive Batteries

John Turner, Ph.D., Group Leader, Computational Engineering & Energy Sciences Group (CEES), Oak Ridge National Laboratory (ORNL) We report results of an integrated computational and experimental program to simulate a battery's electrochemical, thermal, and structural response under mechanical abuse. ORNL has developed the Virtual Integrated Battery Environment (VIBE), a high-resolution transient coupled-physics simulation environment for batteries, with emphasis on Li-ion but extensible to other chemistries. The model is being used to analyze and correlate with existing mechanical test data from ORNL and others, with new experimental tests on cells and cell-stacks developed and conducted by ORNL to support model development and validation.

FUEL CELLS

5:50 Natural Gas as a Bridge to Hydrogen Fuel Cell Light-Duty Vehicles

Andrew Burke, Ph.D., Institute of Transportation Studies, University of California, Davis In this paper, detailed comparisons are made between various types of lightduty vehicles fueled with natural gas and hydrogen. The natural gas vehicles are designed as charge sustaining hybrid vehicles and the hydrogen fueled vehicles are powered by a fuel cell. All the vehicles have a range of 400 miles between refueling stops. The paper discusses the on-board storage of natural gas (3600 psi) and hydrogen (10000 psi) in terms of the volume and weight of the tanks required and how fuel storage affects the vehicle design.

6:20 Networking Reception in the Exhibit Hall with Poster Viewing

7:30 End of Day Two

TRACK 2

2:55 Li-ion Case Studies Across Industries from Automotive to Grid Scale

Robert Young, Applications Engineer, Xalt Energy

XALT Energy, a leading global manufacturer and supplier of advanced lithiumion technology and fully integrated energy storage solutions (ESS), will describe how our core technology is powering the next generation of ESS systems. In this presentation, XALT Energy will both explain our technology as well as offer up several examples and case studies of how our cells are quickly becoming a key partner in Energy Storage Solutions.

3:25 Stationary Energy Storage Systems – Understanding the Safety and Regulatory Environment



Laurie Florence, Ph.D., Principal Engineer, UL, LLC

The presentation will outline hazards and safety challenges associated with stationary energy storage systems (ESS) and developments in ESS standards including UL's new 9540 ESS safety standard. In addition, the presentation will cover the work taking place in International Electrotechnical Commission (IEC) Technical Committee No. 120 to develop ESS standards.

3:55 Refreshment Break in the Exhibit Hall with Poster Viewing

4:45 Chairperson's Remarks

Steve Visco, Ph.D., Chief Executive Officer and Chief Technology Officer, PolyPlus Battery Company

4:50 Second Generation Aqueous Electrolyte Electrochemical Cells for Scaled Stationary Energy Storage

Jay Whitacre, Founder & Chief Technology Officer, Aquion Energy; Associate Professor, Carnegie Mellon University

This presentation will cover the design and function of next-generation aqueous electrolyte dual-intercalation energy storage devices and systems. These devices use largely unexplored electrode interactions that exploit muti-cation reactions. Further data will show that packs of these batteries in the multi-kWh range have been effectively implemented in field-testing around the world.

5:20 PANEL DISCUSSION: Challenges of Commercializing Energy Storage

Moderator: J. Norm Allen, Operating Partner, Potomac Energy Fund Panelists: Richard Baxter, Chairman, Energy Storage Association; President, Mustang Prairie Energy

Jim Falsetti, Director, BQ Energy

Reyad Fazzani, Chairman and CEO, Regenerate LLC

Energy storage before and after the customer meter has been nascent in the US until recently. Now the rapid reduction in solar system pricing, coupled with significant reduction in battery system pricing makes energy storage practical and attractive, especially on the customer side of the meter for residential and commercial building applications. This panel will discuss, from a venture capital perspective, whether grid energy storage is at a tipping point toward rapid growth spurred on especially by the rapid growth of solar energy. Or, are there still substantial obstacles to rapid growth of grid energy storage?

6:20 Networking Reception in the Exhibit Hall with Poster Viewing

7:30 End of Day Two

Welcome

Sponsorship & Exhibit

Keynote Presentations

Tutorials

Monday Agenda

Tuesday Agenda

Wednesday Agenda

Thursday Agenda

Registration Information Hotel & Travel Information

Top Reasons to Attend

Click Here to Register Online!



International Battery

8:00 am Morning Coffee

PLENARY KEYNOTE SESSION

8:30 Chairperson's Opening Remarks

Rachid Yazami, Ph.D., Professor, School of Materials Science & Engineering; Director, Battery Programs, Energy Research Institute, Nanyang Technological University, Singapore

8:40 Rechargeable Energy Storage System Safety Performance and Modeling

TRACK 1

ELECTRIC VEHICLE & LARGE FORMAT BATTERY TECHNOLOGY

9:10 Chairperson's Opening Remarks

Rachid Yazami, Ph.D., Professor, School of Materials Science & Engineering; Director, Battery Programs, Energy Research Institute, Nanyang Technological University, Singapore

9:15 BASF Advanced Li-Ion Battery Materials and NiMH Battery Technology

Michael Fetcenko, Ph.D., Vice President, Managing Director, BASF Battery Materials – Ovonic

BASF is uniquely positioned as a global supplier to the battery industry with major investments in NCM and LFP cathode materials and electrolytes for Li-lon batteries, as well as licensing of NiMH battery technology and development of next generation Li-S chemistry. This presentation will highlight recent advances in NiMH technology, already in widespread use for consumer and hybrid vehicle applications with over 7 million vehicles on the road since introduction in 1997, demonstrating extraordinary safety, cost and durability.

9:40 Research and Application Challenges in Lifetime Requirements of Automotive Batteries

Odysseas Paschos, Ph.D., Research Battery Technology, BMW, Germany BMW is strongly committed to sustainable mobility and has dedicated a great effort in research and development efforts to enable innovative technologies in future Li-Ion automotive cells. One of the main hurdles that needs to be overcome to realize future materials is their lifetime requirements. This talk will outline and showcase the efforts of BMW to understand ageing and cycling fade mechanisms of materials currently used in Li-Ion cells, as well as predict the potential of future candidates.

10:05 Sponsored Presentation (Opportunity Available)

10:30 Development of Highly Durable and Long Life Ni-MH Batteries for Energy Storage System

Hirohito Teraoka, Senior Manager, Technical Marketing Department, Ni-MH Group, FDK Corporation

WEDNESDAY, MARCH 11

Ted Miller, Senior Manager, Energy Storage and Materials Strategy and Research, Ford Motor Company

Advanced lithium ion rechargeable energy storage systems (RESS) are critical to vehicle electrification. However, there are technology challenges which must be mastered in order to ensure RESS safety. This talk will consider an approach to assessing RESS safety performance within the context of vehicle safety qualification, testing results, and plans for safety performance modeling tools. The range of efforts undertaken by the Ford Energy Storage and Materials Research Team will be presented.

9:10 Move to Tracks

TRACK 2

ADVANCED BATTERY MATERIALS

9:15 Chairperson's Opening Remarks

Kev Adjemian, Ph.D., Department Manager, Energy Storage and Transportation Systems, Idaho National Laboratory

9:20 Development of Carbon-Coated SiO Anodes for Lithium-Ion Battery

Jian-Guo Ren, Ph.D., Director, BTR New Energy Technology Institute, BTR New Energy Materials Inc., China

Developing new cathode and anode materials with increased energy density and extended cycle life is of critical importance to address the ever-increasing energy storage demands. Graphite has a theoretical capacity of 372 mAh g-1 and is lithiated only by Li+ intercalation process. In contrast, Si, the second most abundant element in the Earth's crust, has a maximum capacity of 3579 mAh g-1 because a Si atom can accommodate 3.75 Li atoms at room temperature. In this work, SiO-carbon composite was prepared by pitch solid-phase coating and chemical vapor deposition gas-phase coating, respectively. In this work, SiO-carbon composite was prepared by pitch solidphase coating and chemical vapor deposition gas-phase coating, respectively. In this work, SiO-carbon composite was prepared by pitch solidphase coating and chemical vapor deposition gas-phase coating, respectively. Uniformly carbon-coated SiO particles (D50 = $6\pm1 \mu$ m) were successfully prepared and used as anode materials for lithium ion battery, which shows a reversible capacity of 1600 mAh/g and an initial Coulombic efficiency of 77%. The preparation details, electrochemical performance and surface structure's evolution with cycles will be discussed in this presentation

9:40 3M Si-Alloy Materials for Commercially-Relevant High Energy Density Full Cells

Kevin Eberman, Ph.D., Product Development Manager, 3M

3M has been engaged in the study of alloys (Si, Sn, etc...) as anodes for Li ion batteries for over 15 years. During this time 3M's interest in Sibased anode materials has grown from laboratory experiments to MT/ mth capability. 3M's development strategy focuses on low surface area, nanocrystalline or amorphous active/inactive alloys, which are compatible with existing battery infrastructure and enable full cells with high energy densities and long cycle life. 3M is now producing Si-based alloys at full scale. This talk will focus on the performance achieved by commerciallyrelevant full cells with negative electrodes comprising 3M Si alloys.

Welcome

Sponsorship & Exhibit

Keynote Presentations

Tutorials

Monday Agenda

Tuesday Agenda

Wednesday Agenda

Thursday Agenda

Registration Information Hotel & Travel Information

Top Reasons to Attend

Click Here to Register Online! InternationalBatterySeminar.com



International Battery

TRACK 1

FDK is the only Ni-MH manufacturer in Japan and is responsible for the highest advancements in Ni-MH technology. We are developing more high durability and long life cell using optimized CoOOH layer nickel hydroxide and other technology. In this presentation, we introduce highly durable and long life cell for energy storage system.

10:50 Coffee Break in the Exhibit Hall with Poster Viewing

11:30 Chairperson's Remarks

Rachid Yazami, Ph.D., Professor, School of Materials Science & Engineering; Director, Battery Programs, Energy Research Institute, Nanyang Technological University, Singapore

11:35 Electrochemistry and Transport Phenomena of the Lithium-Silicon System–Modeling and Open Questions

Mark Verbrugge, Ph.D., Director, Chemical and Materials Systems Laboratory, General Motors

We first address the influences on the automotive industry that motivate the pursuit of high capacity negative electrode materials, including Li-Si. Thin-film electrodes are particularly helpful in terms of clarifying phenomena of the Li-Si electrode in the absence of binders, conductive diluents, and other complications associated with porous electrodes. The approach we take comprehends the systems thermodynamics, charge-transfer reactions at the electrode surface, irreversible thermodynamics for the treatment of transport with the electrode, and volume changes during electrode operation. Last, we highlight the most pressing open questions that must be addressed to better understand the Li-Si system.

12:05 pm Boston-Power Ensemble™ Module System for EV Battery Packs

Richard Chamberlain, Ph.D., Chief Technology Officer, Boston Power Boston-Power has developed the highly configurable Ensemble™ Module System, a series of interconnected Li-ion Swing cells in a robust mechanical enclosure that enables advanced module and battery pack designs. This solution combines the safety and performance advantage of Boston-Power's Swing cell technology with the high capacity, ease of implementation, and cost effectiveness required for large format energy systems such as EV and ESS platforms.

12:35 Luncheon in the Exhibit Hall



BATTERY MANUFACTURING

2:05 Chairperson's Remarks

Ted Miller, Senior Manager, Energy Storage and Materials Strategy and Research, Ford Motor Company

TRACK 2

10:00 High Rate Lithium Rich Layered MNC Cathode Materials for Li-Ion Batteries

K.M. Abraham, Ph.D., Research Professor, Northeastern University Center for Renewable Energy Technologies, Northeastern University

Lithium-rich layered metal oxides of the formula xLi2MnO3.(1-x)LiMO2, where M is a transition metal and 0<x<1, represent the next generation of cathode materials for Li-ion batteries with capacities of 250 – 300 mAh/gram. However, poor rate capability and excessive capacity fade during cycling have limited their practical implementation. We report here several breakthrough discoveries to overcome these limitations, including: i) judicious modification of the crystal structure through metal doping; ii) preparation of a material with open porous morphology and higher electronic conductivity via a new synthetic method; and, iii) a layered electrode architecture utilizing multi-wall carbon nanotubes. Discharge capacities of 200, 250, and 300 mAh/g at C, C/4 and C/20 rates, respectively, and little capacity fade during long-term cycling, properties unprecedented for this class of Li-ion cathode materials, will be reported.

10:20 Cell Performance Evaluation of Commercial Si Materials

Hang Shi, Ph.D., Chief Technology Officer, Tianjin Lishen Battery, Ltd., China Several commercially available Si-based materials have been evaluated in lithium ion cells to identify the usefulness of these materials as anode in lithium ion cell. Si contained anodes is one of most actively researched topic because of its potential to increase cell energy density beyond graphite.

10:50 Coffee Break with Exhibit and Poster Viewing

11:30 Chairperson's Remarks

Kev Adjemian, Ph.D., Department Manager, Energy Storage and Transportation Systems, Idaho National Laboratory

11:35 Progress and Challenges in Designing High Capacity Cathodes for Lithium-Ion Cells

Michael Thackeray, Ph.D., Distinguished Fellow and Senior Scientist, Electrochemical Energy Storage Department, Chemical Sciences and Engineering Division, Argonne National Laboratory

Composite cathode structures with layered and spinel domains are of interest for arresting the voltage fade that occurs when high capacity (~250 mAh/g), lithium- and manganese-rich 'layered-layered' xLi2MnO3•(1-x)LiMO2 (M=Mn, Ni, Co) cathodes are cycled in lithium-ion cells. These Li2MnO3-based electrodes require an electrochemical activation step above 4.5 V that involves the participation of the oxygen ions during the initial redox reactions of the cell. Control of the composition and the spinel content in 'layered-layered-spinel' cathode structures, can enhance the capacity of the electrode, while regulating the electrochemical voltage window of the cells can significantly reduce voltage fade. Recent advances in designing cathode materials by seeking a compromise between capacity, cycling stability and voltage fade will be discussed; the relationship that exists between the reactions of these cathode materials in lithium-ion cells and those that occur in transition metal oxide electrode/electrocatalyst materials in Li-O2 cells will be highlighted.

12:05 pm Implementation of High Capacity Cathode Material in High Power and in High Energy Li-Ion Cells

Welcome

Sponsorship & Exhibit

Keynote Presentations

Tutorials

Monday Agenda

Tuesday Agenda

Wednesday Agenda

Thursday Agenda

Registration Information Hotel & Travel Information

Top Reasons to Attend

Click Here to Register Online!



TRACK 1

2:10 Progress in Lithium Ion Chemistries for Specialty and Mobility Applications

Bridget Deveney, Ph.D., Lithium Ion Cell Development Manager, Saft As Lithium Ion has matured as a technology, it has pushed into a wider range of applications and environments. The design challenges of Lithium ion chemistries for extreme temperature range applications, high reliability applications, and extended fast rate cycle applications will be discussed.

2:40 China's Answer to The Gigafactory

International Battery

SEMINAR & EXHIBI7

Henry Mao, Ph.D., CEO, Youlion Battery Ltd., China

Reducing battery cost to levels affordable by mass markets is critical to the success of electric vehicles. Over the past decade, China has become the world's leader in lithium-ion manufacturing, creating huge cost-efficiencies across a vertically integrated, domestically-sourced supply chain. This talk will describe a new lower-cost cell technology and a ½ GWhr factory, that Youlion Battery Ltd., recently completed.

3:10 Market and Technology Overview on Automotive Start-Stop and Mild-Hybrid Batteries

Franz Kruger, Senior Advisor, Roland Berger Strategy Consultants This presentation will cover global market forecast on automotive batteries, start-stop battery technologies, mild-hybrid battery technologies, future trends and market forecast on xEV powertrains.

3:40 Refreshment Break in the Exhibit Hall with Poster Viewing

4:30 Chairperson's Remarks

Battery Cost

Safety and Reliability

Cell Costs

Ted Miller, Senior Manager, Energy Storage and Materials Strategy and Research, Ford Motor Company

4:35 The Drive for Higher Power in Vehicle Electrification

Patrick Hurley, Chief Technology Officer, A123 Systems, LLC

A123 has always focused on Power, Safety, and Life across a broad range of products in the transportation, commercial, power tool, and grid industries. This presentation will highlight new approaches, leveraging success in motorsports, HEV, and power tool segments to accelerate chemistries which will be excel in the high power Start-Stop arena.

5:05 PANEL DISCUSSION: Giga Battery Manufacturing: The Wave of the Future?

Moderator: Ralph Brodd, Ph.D., President, Broddarp of Nevada Panelists: Henry Mao, Ph.D., CEO, Youlion Battery Ltd., China Prabhakar Patil, Chief Executive Officer, LG Chem Power, Inc., Korea John Zhang, Ph.D, Chief Technology Officer, Celgard Joe Fisher, Vice President, A123 Systems, LLC.

This panel discussion will explore the benefits and pitfalls of giga battery manufacturing. The assembled expert panel will focus on the following areas:

Battery Life Manufacturing Processes – US vs World Work Force Training

TRACK 2

Suresh Sriramulu, Ph.D., Chief Technology Officer, CAMX Power, LLC CAMX Power is commercializing its CAM-7 cathode material with stateof-the-art capacity and characteristics that render it an attractive option for high energy portable applications, EV applications and high power startstop applications. It is now being evaluated for implementation in each of these areas. In this presentation, we will discuss key attributes of material development and properties for each of these applications and describe commercial implementation activities.

12:35 Luncheon in the Exhibit Hall



ADVANCED BATTERY MATERIALS

2:05 Chairperson's Remarks

Michael Thackeray, Ph.D., Distinguished Fellow and Senior Scientist, Electrochemical Energy Storage Department, Chemical Sciences and Engineering Division, Argonne National Laboratory

2:10 Development of Ultra-Light Lithium-Air, Lithium-Water, and Lithium-Sulfur Batteries based on Protected Lithium Metal Electrodes

Steve Visco, Ph.D., Chief Executive Officer and Chief Technology Officer, PolyPlus Battery Company

In the early 2000's PolyPlus Battery Company invented water-stable, solid electrolyte protected lithium metal electrodes. This enabled the development of unique high energy density batteries utilizing lithium metal in combination with aqueous electrolytes. Since that time PolyPlus has installed a pilot line in its Berkeley, California facility to fabricate protected lithium electrodes (PLEs) using semi-automated production tools. PolyPlus is currently developing rechargeable aqueous lithium-sulfur batteries that we project will deliver energy densities in the range of 700 Wh/l and 400 Wh/kg. All of these advanced technologies use a protected lithium electrode core.

2:40 Lithium Sulfur Batteries: Challenges and Prospects

Arumugam Manthiram, Ph.D., Director, Texas Materials Institute, Director, Materials Science and Engineering Program, University of Texas at Austin Sulfur offers an order of magnitude higher capacity than the conventional insertioncompound cathodes, but the commercialization of lithium-sulfur batteries has been hampered by various challenges. This presentation will focus on high-performance sulfur-carbon nanocomposite cathode structures, novel cell configurations with interlayers, and coated separators to realize high electrochemical utilization and good static and dynamic stability with lithium-sulfur batteries.

3:10 Next Generation Batteries with High Energy Density and Better Control



Yimin Zhu, Ph.D., CTO, OneD Material LLC

OneD Material, LLC has proven a battery technology based on Si nanowireon-graphite composite anode (SiNANOdeTM). Combining our SiNANOde technology and high capacity cathode we have demonstrated high energy density and good cycle life in lithium ion cells. However, it was recognized that the cell performance faded faster, for example, ca. 10%, in the first 50 cycles though a desired electrolyte has been used to form appropriate and stable SEI on silicon-carbon anode. Once the cell becomes stable there is only ca.

Nelcome

Sponsorship & Exhibit

Keynote Presentations

Tutorials

Monday Agenda

Tuesday Agenda

Wednesday Agenda

Thursday Agenda

Registration Information Hotel & Travel Information

Top Reasons to Attend

Click Here to Register Online!



International Battery

CONFERENCE PARTNERS



CHARGED ELECTRIC VEHICLES MAGAZINE





NAVIGANT

TACTICAL DEFENSE Media









Shmuel De-Leon Energy Ltd 🐌

TRACK 2

10% fading in the following several hundreds of cycles. It is critical to design a unique diagnosis method to accurately monitor the cell operation, e.g. anode and cathode potentials during battery operation and cycling. More importantly, a novel cell design is required so that a cell can be initially cycled by controlling anode potential or/and cathode potential to avoid mis-cycling a cell with high polarization and to mitigate gas generation. Consequently, a stable SEI can be quickly formed and then the cell can be operated in a regular full cell mode that can be charged and discharged in an appropriate voltage window, which is able to realize high energy density under a safe control. We will discuss a pouch cell design strategy, which accelerates cell conditioning to quickly achieve a stable performance via a safe approach. Therefore, the high energy density Li ion battery can be a safer device for its applications. At the same time, the cycling performance can be dramatically improved.

3:40 Refreshment Break in the Exhibit Hall with Poster Viewing

4:30 Chairperson's Remarks

Michael Thackeray, Ph.D., Distinguished Fellow and Senior Scientist, Electrochemical Energy Storage Department, Chemical Sciences and Engineering Division, Argonne National Laboratory

4:35 Development of Lithium Iron Phosphate Cathode Materials for Super Long Life Lithium Ion Battery

Takahiro Matsuyama, Supervisor, Material and Energy Technology Laboratories, Sharp Corporation, Japan

In order to extend the cycle life of LIB, we have used first principal calculations to investigate the effect of various substitute elements into LiFePO4(LFP). These calculations indicate that certain compositions reduce the volume change, and low volume change LFP enhances the cell cycle life remarkably. The discharge performance of substituted LFP at 0.1C and 1.0C are almost same as LFP.

5:05 New High Capacity Silicon-Graphene Anode for Li-Ion Batteries

Rob Privette, Ph.D., Vice President, Energy Markets, XG Sciences XG Sciences (XGS) is launching a second generation of its SiG silicongraphene anode material. The new generation of material delivers substantial improvements in cycle life and volumetric expansion compared to the first generation material. The new anode incorporates several changes to the material physical properties and manufacturing process that are responsible for the performance improvements. This presentation will include details of the new SiG nanocomposite anode material, dispersion and mixing developments using industrial scale equipment and full cell cycling performance information.

5:35 Lithium Ion Battery Separators Compared Across Cathode Chemistries

Brian Morin, Ph.D., President, Dreamweaver International

Different types of battery separators used in lithium ion batteries are compared, highlighting formation, self-discharge, rate capability and cycle life across different cathode types, including LFP, NMC, LMO and LCO. Testing: Cells were tested for formation behavior, self-discharge, rate capability and cycle life. Results: The results will be compared showing the different performance behavior for all of the separator types across different cathode chemistry.

Welcom

Sponsorship & Exhibit

Keynote Presentations

Tutorials

Monday Agenda

Tuesday Agenda

Wednesday Agenda

Thursday Agenda

Registration Information Hotel & Travel Information

Top Reasons to Attend

Click Here to Register Online!



International Battery

THURSDAY, MARCH 12

8:00 am Morning Coffee

PLENARY SESSION

8:30 Chairperson's Opening Remarks

Franz Kruger, Senior Advisor, Roland Berger Strategy Consultants

8:40 High Energy Density, Long-Life Li-S Batteries for Aerospace Applications

Kumar Bugga, Ph.D., Principal Member Technical Staff, Battery Scientist and Team Lead, NASA Jet Propulsion Laboratory

Li-ion batteries are being successfully utilized in various NASA missions. However, some of the future missions, for example, Astronaut's Portable Life Support System (PLSS) for Extra-Vehicular Activities require batteries with enhanced performance characteristics. We at the Jet Propulsion Laboratory are teaming with researchers from Oak Ridge National Laboratory, Liox Power and Eagle-Picher Technologies, Inc., to develop high energy and long-life rechargeable lithium-sulfur cells for aerospace applications. Our proposed development is based on several advanced cell components: i) Protecting Li anode with new polymer and/or solid electrolytes, ii) Hierarchical porous carbon cathode structure for sequestering sulfur and its reduced products and iii) New electrolytes which will minimize polysulfide-related shuttle effects while promoting sulfur kinetics. In this talk, we will briefly describe our recent results on the performance of these various materials.

9:10 Shock and Vibration Test and Analysis of Ultracaps for Transportation Applications

Ken Rudisuela, Ph.D., Chief Technical Officer, IOXUS

The increasing market for ultracapacitors in bus, truck, train and heavy equipment applications, demands rigorous design of both cells and modules. The paper will discuss the requirement for each application, test results and analysis.

9:40 Battery Components for High Energy and High Safety Application

Sebastien Patoux, Ph.D., Research Scientist, CEA-Liten, France With 250 people working on Lithium batteries, CEA-LITEN institute covers various activities from materials R&D to pack manufacturing and integration into vehicles and other systems. In the presentation, we will focus on our latest developments on active materials and electrolytes for high energy Li-ion and Li/Sulfur battery giving some examples at cell level. We will also address our strategies to reinforce battery safety, and more specifically, our ongoing results on gel and solid electrolytes.

10:10 Networking Coffee Break

10:40 Chairperson's Remarks

Franz Kruger, Senior Advisor, Roland Berger Strategy Consultants

10:45 A Nanoscale C-Coated Aluminum Foil Current Collector for High-Power Lithium-Ion Batteries

Kevin Eberman, Ph.D., Product Development Manager, 3M In lithium-ion batteries, the interface between the aluminum foil current collector and the positive electrode can, in some cases, make a large contribution to the total cell impedance. This is especially the case for electrode materials with relatively high electrode resistance, such as LiFePO4. The reason for the high resistance at the interface is due to the large constriction resistance of the electrode materials on the surface of the hard aluminum foil substrate. The constriction resistance can be minimized with a carbon-coating on the surface of the aluminum foil, which was found to benefit cells made with LiFePO4 electrodes. Typically, carbon-coated aluminum foil has a coating in the range of 1-3 μ m, which will have an effect on the cell volumetric capacity. In this talk, we present a current collector with a nanoscale carbon-coating layer.

11:15 Ionic Liquid Electrolytes for Li-ion Battery Applications

Surya Moganty, Ph.D., Director, Technology, NOHMS Technologies, Inc. NOHMs Technologies is developing non-flammable, non-volatile, ionic liquid-hybrid electrolytes that overcome safety concerns in Li-ion batteries. Ionic liquids (ILs) are a unique class of organic salts with negligible vapor pressure, non-flammability, good room-temperature ionic conductivity, wide electrochemical windows, and favorable chemical and thermal stability. They are ideal candidates for safer electrolytes in Li-ion batteries. While ILs show great promise, their use as electrolytes for Li-ion batteries have been limited for two reasons: first, the fraction of the ionic conductivity of the electrolyte arising from mobile lithium ions (i.e. the lithium transference number) is typically low, making cells using IL electrolytes prone to polarization; Second, most ILs exhibit only moderate total ionic conductivity at and below freezing temperatures. NOHMs strategy for designing ILs with enhanced Li+ transference numbers and widening the operation liquid temperature range is to reinforce the materials with inorganic filler particles that interact selectively with the cation and/or anion species. Tethering ILs to nanoparticles and crafting electrolytes based on the single-component, self-suspended materials or suspensions of the tethered-ILs in an IL or other host provides a path towards IL-based electrolytes with higher lithium transference numbers and improved stability. These hybrid electrolytes simultaneously overcome the poor thermal & electrochemical stability and safety problems that have plagued lithium battery electrolytes for years while still maintaining high conductivity. They provide a platform for engineering electrolytes with both chemical and interfacial tunability that beyond improving safety, expand the range of available battery form factors.

11:45 Characterization and Comparison among Different Lithium-Based Batteries: LiFeMgPO4, LiFePO4 and Lithium-Polymers

Francisco Sergi, Ph.D., Researcher, National Research Council of Italy, Institute of Advanced Energy Technologies, Italy

Electrochemical storage systems are increasingly employed in stationary, automotive and naval applications. The lithium-ion battery is the technology that now has the best features and future development prospects. Battery details that allow a right choice in relation to final application are not always available in literature. Among the most used Lithium technologies in stationary and automotive sectors, the CNR-ITAE of Messina (Italy) has selected three different Lithium technologies: Lithium-Iron-Magnesium-Phosphate (LiFeMgPO4), Lithium-Iron-Phosphate(LiFePO4) and Lithium-Polymers to be tested and compared. Different characterization tests were carried out in order to investigate the features of each technology. In particular, the work reports the results coming from tests where different C-rate values were applied, cycling tests with fast charging and discharging using the maximum admitted power, tests with deep charging using different C-rate values, relax tests and working tests without a BMS (Battery Management System). The batteries were subjected to different load profiles mainly used in stationary and automotive applications. These tests have allowed our group to analyze the batteries' performance in different load conditions and to point out electrochemical performance reductions or packing damage caused by tests reported above. A final analysis was carried out, comparing the main performance indicators (Capacity, Amperometric and Energetic Efficiency, working temperatures, etc.)

12:15 pm Closing Remarks & End of the 32nd International Battery Seminar and Exhibit

Welcome

Sponsorship & Exhibit

Keynote Presentations

Tutorials

Monday Agenda

Tuesday Agenda

Wednesday Agenda

Thursday Agenda

Registration Information

Top Reasons to Attend

Click Here to Register Online! nternationalBatterySeminar.com



International Battery

Visit InternationalBatterySeminar.com to Register Online

SEMINAR PRICING (Excludes tutorials)		Commercial	Academic/Govt
Registrations after February 13, 2015 and on	site \$1599	\$1099	
Track 1 Sessions	Track 2 Sessions		
Future Trends (T1a)	Battery Recycling (T2a)		
Future Trends (T1b)	Battery Management Systems (T2b)		
Battery Safety/Fuel Cells (T1c)	Energy Storage and the Grid (T2c)		
Electric Vehicle & Large Format Battery Technology (W1a)	Advanced Battery Materials (morning) (W2a)		
Battery Manufacturing (W1b)	Advanced Battery Materials (afternoon) (W2b)		
FUTORIAL PRICING		Commercial	Academic/Govt
1 Tutorial		\$349	\$249
2 Tutorials		\$599	\$449
March 9 8:30 - 10:00 am	March 9 10:30 am - 12:00 pm		
T1: Materials Selection and Design for Batteries with High Energy Density, Ultralong Cycle Life and Excellent Safety	T3: Rechargeable Battery Market Trends 2015-2025		
T2: Battery Management Solutions & Strategies: Present & Future	T4: The Dynamics of Lithium Battery Shipping: Will the Changes Keep Coming?		

POSTERS

The International Battery Seminar & Exhibit encourages attendees to gain further exposure by presenting their work in the poster sessions. To secure a poster board and inclusion in the conference materials, your abstract must be submitted, approved and your registration paid in full by **February 6, 2015**.

Reasons you should present your research poster at this conference:

- · Network with interested attendees and speakers during six poster sessions
- Your poster abstract will be published in our conference materials
- Your research will be seen by leaders from top commercial, academic and government institutes

HOTEL & TRAVEL

CONFERENCE VENUE:

The Greater Ft. Lauderdale / Broward County Convention Center 1950 Eisenhower Boulevard Fort Lauderdale, FL 33316 www.ftlauderdalecc.com

HEADQUARTER HOTEL:

Hilton Fort Lauderdale Marina 1881 SE 17th Street Fort Lauderdale, FL 33316 Phone: 954-463-4000 **Discounted Room Rate: \$195 s/d*** **Room rate includes a basic Continental Breakfast for up to two (2) People (each day)* **Discounted Room Rate Cut-off Date: January 27, 2015**

Please visit the hotel & travel page of **InternationalBatterySeminar.com** to book your hotel room, and for additional hotel and travel information.



Top Reasons to Stay at The Hilton Fort Lauderdale Marina Hotel

- Take advantage of the discounted group rate which includes Basic Continental Breakfast for two people
- Headquarter hotel for the Greater Fort Lauderdale Convention Center in Broward County
- Home to one of the newest restaurants in Fort Lauderdale – Nanking, which offers Asian fusion cuisine
- Only 1.5 miles to world-famous Fort Lauderdale Beach via a complimentary beach shuttle
- Nine minutes to Fort Lauderdale Hollywood International Airport (FLL)

Sponsorship & Exhibit

Hotel & Travel Information

Click Here to **Register Online!**



NAL WEEKS REGISTER

TOP REASONS TO ATTEND

ATTENDEE DEMOGRAPHICS: **PARTICIPATING INDUSTRIES**

ATTENDEE JOB TITLES

32nd ANNUAL International Battery SEMINAR & EXHIBIT Fort Lauderdale

The Latest Technological Advances in Energy Systems for Consumer, Automotive, Military & Stationary Battery Applications

Convention Center

Fort Lauderdale, FL



How to Register: InternationalBatterySeminar.com

Info@internationalbatteryseminar.com | Tel. 561-367-0193 Please use keycode FBC F when registering

International Battery Seminar & Exhibit 250 First Avenue Suite 300 Needham, MA 02494 USA

MARCH 9 - 12, 2015