

Battery Chemistries for Automotive Applications 2018

Held at AABC 2018

San Diego, California, USA
4 - 7 June 2018

ISBN: 978-1-5108-6740-6

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2018) by Cambridge EnerTech
All rights reserved.

Printed by Curran Associates, Inc. (2018)

For permission requests, please contact Cambridge EnerTech
at the address below.

Cambridge EnerTech
Cambridge Innovation institute
250 First Avenue
Suite 300
Needham, MA 02494
USA

Phone: 781-972-5400
Fax: 781-972-5425

ce@cambridgeenertech.com

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

PRESENTATIONS

Exploring Safety and Performance Concerns Associated with Silicon Containing Lithium-Ion Cells	1
<i>Daniel Abraham</i>	
Cathode Design Considerations for Bulk Solid-State Batteries	9
<i>Josh Buettner-Garrett</i>	
Materials for Advanced Lithium Ion Batteries	21
<i>Dominick Cagliano</i>	
CATL's Initiatives for Next Generation High Energy Materials and EV Lithium Ion Battery Development.....	35
<i>Chengdu Liang</i>	
Improving Li-ion Energy and Cycle Life at the Negative Electrode	46
<i>M. N. Obrovac</i>	
Pure-Silicon Lithium-Ion Battery System for Reducing Barriers to EV Adoption.....	62
<i>Benjamin Park</i>	
Status of Electric Vehicle Batteries and the Role of Li Metal	67
<i>Venkat Srinivasan</i>	
Challenges and Opportunities for Implementing High-Nickel Cathode Materials in High-Performance Li-Ion Cells	75
<i>D. Kaplan, A. Pullen, J. Rempel, D. Ofer, S. Dalton-Castor, B. Barnett, Suresh Sriramulu</i>	
Surface and Interface in Rechargeable Lithium Batteries: Challenges and Opportunities	86
<i>Xingcheng Xiao, Jiagang Xu, Yikai Wang, Yang-Tse Cheng, Kai Guo, Huajian Gao, Yue Qi</i>	
New Electrolytes: Non-carbonate and All-Fluorinated Carbonates.....	96
<i>Kang Xu, Chunsheng Wang, Shirley Meng</i>	

POSTERS

Development of High Voltage Li[1.0]Ni[0.5]Mn[1.5]O[4]	105
<i>Lars Fahl Lundegaard, Jakob Weiland Høj, Kristoffer Visti Graae, Jacob Kaestel-Hansen, Christian Fink Elkjaer, Rainer Küngas, Jon Fold von Bulow, Line Holten Kollin, Søren Dahl, Jonathan Højberg</i>	
Improved Battery Performance and Reliability Through Multiple and Rugged Spectroscopic Materials Characterization	106
<i>Matthieu Chausseau</i>	
Re-Energizing the Silicon Anode: A New Approach to the Highest Energy Li-Ion System	107
<i>Ed Williams, Daniela Molina Piper, Tyler Evans</i>	
Online Estimation of Lithium-Ion Battery Capacity Using Deep Convolutional Neural Networks	108
<i>Sheng Shen, Mohammad Kazem Sadoughi, Xiangyi Chen, Mingyi Hong, Gaurav Jain, Hui Ye, Chao Hu</i>	
A Case Study on the Fire of Battery Module (Case Analysis).....	109
<i>Jaeyeun Oh, Hyunwon Lee</i>	
Technologies and Materials to Enable Advanced Anode and Cathode Materials.....	110
<i>K.B. Fitch, M.V. Yakovleva, Jian Xia</i>	
In-Operando Optical Microscopy and Vertex Delay Cyclic Voltammetry for Direct Observation of Lithium Dendrite Regimes	112
<i>Joonho Koh, Sardar Saydul, Jing Xu, Danmiao Kang, John P. Lemmon, Noam Hart</i>	
Solid-State Polymer Electrolytes with a Poly(Ethylene Glycol) Epoxy Resin Polymer Host.....	113
<i>Gerrick E. Lindberg, Constantin Ciocanel, Cindy C. Browder</i>	
Liquefied Gas Electrolytes for Lithium Batteries	114
<i>Cyrus Rustomji</i>	
Patents on Electrochemical Energy Storage.....	115
<i>Arumugam Manthiram, Milda Vilkaityte Saenz</i>	
Electrolyte Development for Silicon-Based Anode Through High Throughput Screening	116
<i>Jinhua Huang, Ye Zhu, Cameron Peebles, Gang Cheng, Mark Gresser</i>	
Conversion Mechanism of CuF₂ for Secondary Batteries	117
<i>Kyler Carroll, Chuze Ma, Ana Kiricova, Bin Li</i>	

Ex Situ Treatment of Lithium Metal Anodes to Enable Long-Term Cycling with Carbonate-Based Electrolytes	119
<i>Cameron Peebles, Jinhua Huang, Ye Zhu, Gang Cheng, Dee Strand</i>	
Accelerating Silicon Anode Development	120
<i>Kyler J. Carroll, Johnny Yang, Dee Strand, Bin Li, Tanghong Yi</i>	
Importance of Reliable Circuit Protection as a Safety Measure in Automotive Applications	121
<i>Mike Roach, Liwu Wang</i>	
Understanding Degradation of Lithium-Ion Battery Performance	122
<i>Richard Rucker, Josh Godshaw, Joel Forman, Keith Beers, Kevin White, Timothy Bogart</i>	
Validating Material Purity Using X-Ray Technology to Safeguard Against Catastrophic LiB Failure	123
<i>Masataka Ohgaki, Yuta Seki, Greg Rigby, Matt Kreiner, Brian Goolsby, Keiichiro Shinohara</i>	
Economic Implications of Lithium Ion Battery Degradation for Vehicle-To-Grid (V2X) Services	124
<i>Andrew W. Thompson</i>	
Spatial Distribution of Heat Generation in a Lithium Ion Battery Pouch Cell	125
<i>Takkyung Yoo, Heon-jun Jeong, Jeseung Moon, Kyu-Jin Lee</i>	
State-of-Health Based Load Sharing Strategy in Vehicle-to-Grid Systems	126
<i>Hussam Khasawneh, Mahesh Illindala, Longya Xu</i>	
A Life Model of Lithium-Ion Battery Considering Electrolyte Dry-Out	127
<i>Seong-taek Ryu, Hong-Keun Kim, Jeseung Moon, Kyu-Jin Lee, Hong-Keun Kim</i>	
Effects of Thermal Imbalance in LIB Pack Systems on Capacity Fade Studied by a Multi-Physics Model	128
<i>Hong-Keun Kim, Kyu-Jin Lee, Soonkyu Lee</i>	
Atomic Layer Deposition: A Scalable Process for Enabling the Next Generation of High Performance Materials	129
<i>Barbara Hughes, James Trevey</i>	
Potential in Synergy of Automotive and Aviation Battery Development	130
<i>Christof Bussen, Jan Wohlmuther, Robert Stanek, Sebastian Menne, Nina Koertzing, Martin Talke</i>	
Online-Simulation and Its Parameter Estimation for E-Vehicle Batteries and Their Dependence on Temperature, C-Rate and SOC	132
<i>Volker Schulz, Arnulf Latz, Magdalena Gottfried</i>	
Dual-Chemistry Energy Storage Design and Control Software for Next Generation xEVs	133
<i>Thomas Couture, Akhilesh Bakshi, Thomas Ortmeyer, Nicolo Brambilla, Fabrizio Martini</i>	
Battery-Lifetime Extension for Low-Cost EVs Using Combined Battery System	134
<i>Takeshi Inoue, Shin Yamauchi, Rishi Chandra, Shigeki Makino, Daiki Komatsu</i>	
Analysis of Thermal Behavior and Improvement of Performance of Lithium-Ion Battery by Tab-Heating at Low Temperature	135
<i>Kyu-Jin Lee, Heon-jun Jeong</i>	
Structural Material with Intrinsic Power Storage Capability for Use in Hybrid Electrochemical Systems	136
<i>Gerrick E. Lindberg, Cindy C. Browder, Constantin Ciocanel</i>	
Author Index	