
18th International Meeting on Lithium Batteries (IMLB 2016)

Editor:

J. W. Fergus



Published by

The Electrochemical Society

65 South Main Street, Building D
Pennington, NJ 08534-2839, USA

tel 609 737 1902

fax 609 737 2743

www.electrochem.org

ecstransactions™

Vol. 73, No. 1

Copyright 2016 by The Electrochemical Society.
All rights reserved.

This book has been registered with Copyright Clearance Center.
For further information, please contact the Copyright Clearance Center,
Salem, Massachusetts.

Published by:

The Electrochemical Society
65 South Main Street
Pennington, New Jersey 08534-2839, USA

Telephone 609.737.1902
Fax 609.737.2743
e-mail: ecs@electrochem.org
Web: www.electrochem.org

ISSN 1938-6737 (online)
ISSN 1938-5862 (print)
ISSN 2151-2051 (cd-rom)

ISBN 978-1-62332-407-0 (Softcover)
ISBN 978-1-60768-765-8 (PDF)

Printed in the United States of America.

Table of Contents

<i>Preface</i>	<i>iii</i>
(Invited) Ecologically Friendly Recycling of Lithium-Ion Batteries - the LithoRec Process <i>J. Diekmann, C. Hanisch, T. Loellhoeffel, G. Schälicke, A. Kwade</i>	1
Synthesis of SiO ₂ -Modified Li ₂ MnO ₃ -LiMn _{1/3} Ni _{1/3} Co _{1/3} O ₂ by Spray Pyrolysis with Acid Addition as Cathode Materials for Lithium Ion Batteries <i>S. Hashigami, K. Yoshimi, M. Kawanishi, S. Ujiie, T. Inagaki, M. Hashinokuchi, T. Doi, M. Inaba</i>	11
Lithiated and Sulfonated Poly (Ether Ether Ketone) Binders with High Rate Capability for LiFePO ₄ Cathodes <i>K. F. Chiu, H. J. Leu, S. H. Su, C. H. Wu</i>	19
Realization of High Performance Lithium Iron Phosphorus Oxynitride Thin Film Cathodes for Lithium Ion Batteries <i>K. F. Chiu, S. H. Su, H. J. Leu, Y. R. Jheng</i>	27
Synthesis LiMn _{0.7} Fe _{0.2} Ni _{0.1} PO ₄ and Carbon Coating with Cassava Powder and Citric Acid as Carbon Source <i>B. Prihandoko</i>	37
First Lithiation/Delithiation Treatment on Agglomerated Nano-Si Particles Modified by Multi-Wall CNT and Its Characteristics <i>K. Ogisu, K. Yamane, K. Hamai, N. Tagami, T. Sasakawa, M. Shiraki, T. Chiba, N. Okazaki, A. Tada</i>	43
Electrochemical Properties of Amorphous Nb ₂ O ₅ Thin Film and Its Application to Rechargeable Thin Film Lithium Ion Batteries <i>R. Ye, K. Ohta, M. Baba</i>	49

Probing the Aging Effects on Nanomechanical Properties of a Thin Film LiFePO ₄ Cathode <i>D. E. Demirocak, B. Bhushan</i>	57
Ionic Liquid Electrolytes for Safer Lithium Batteries: I. Investigation Around Optimal Formulation <i>M. Moreno Jr., E. Simonetti Sr., G. B. Appetecchi Sr., M. Carewska Sr., M. Montanino Jr., G. T. Kim Sr., N. Loeffler Jr., S. Passerini Sr.</i>	67
Electrospun Membranes Based on PVdF-PEO Blends for Lithium Batteries <i>A. La Monaca, C. Arbizzani, F. De Giorgio, M. L. Focarete, D. Fabiani, M. Zaccaria</i>	75
Electrochemical Investigation of Thermodynamic and Transport Phenomena in LP30 Electrolyte with Various Concentrations of Conducting Salt <i>K. Fröhlich, G. Bimashofer, G. Faflek, F. Pichler, M. Cifrain, A. Trifonova</i>	83
Lithium Molten Salt Battery at Near Room Temperature Using Low-Melting Alkali Metal Melts <i>K. Kubota, H. Matsumoto</i>	95
Catalytic Activity of Au/MWNTs Nanocomposite on Oxygen Reduction Reaction and Application on Li-O ₂ Batteries <i>K. Luo, Y. Zhao, Z. Luo, M. Zhu, X. Liu, K. Scott</i>	101
Semi-Empirical Modeling of Capacity Fade: A Practical Approach for Battery Pack Manufacturers <i>S. Wilke, B. Schweitzer, S. Khateeb, S. Al-Hallaj</i>	109
Activated Lignin Based Carbon Nanofibers As Binder-Free Anodes for Lithium Ion Batteries <i>E. Stojanovska, E. Serife Pampal, A. Kilic</i>	121
Electrochemical Studies of Carbon Nanotube-LiFePO ₄ Nanocomposite Cathode for High-Capacity Lithium-Ion Batteries <i>X. Sun, K. Feng, Z. Chen, B. Cui</i>	129
Performance and Safety Characteristics of Si-Based Anode Materials for Li-Ion Batteries <i>M. Yanagida, T. Mukai, Y. Ikeuchi, T. Sakamoto, N. Yamashita, H. Tanaka</i>	137

Slow Stabilization of Si-Li Alloys Formed during Charge and Discharge Process in a Si-Carbon Mixed Electrode Studied by <i>in-situ</i> Solid-State ^7Li Nuclear Magnetic Resonance Spectroscopy <i>J. Arai, K. Gotoh, R. Sayama, K. Takeda</i>	141
Smart Electrode Processing for Battery Cost Reduction <i>J. H. Schünemann, H. Dreger, H. Bockholt, A. Kwade</i>	153
Enhancing Li-Ion Battery Safety by Early Detection of Nascent Internal Shorts <i>S. V. Sazhin, E. J. Dufek, K. L. Gering</i>	161
Processing of Aluminum-Doped Lithium Lanthanum Zirconate Garnet-Type Solid Electrolyte Materials <i>J. Fergus, X. Zhang</i>	179
Ionic Liquid Based Polymer Gel Electrolyte Membranes for Lithium Ion Rechargeable Batteries <i>S. Kataria, L. Balo, H. Gupta, V. K. Singh, S. K. Singh, A. K. Tripathi, Y. L. Verma, R. K. Singh</i>	183
Electrochemical and Chemical Na^+/Li^+ Ion Exchange in Na-Based Cathode Materials <i>N. V. Kosova, A. M. Tsapina, S. A. Petrov, A. B. Slobodyuk</i>	191
Inhomogeneities in Large Format Lithium Ion Cells: A Study by Battery Modelling Approach <i>R. Arunachala, C. Parthasarathy, A. Jossen, J. Garche</i>	201
Nickel Hexacyanoferrate-Modified LiFePO_4 Cathodes with High-Rate and High-Pulse Current Charge-Discharge Capabilities <i>K. F. Chiu, H. J. Leu, S. H. Su, K. Y. Chao</i>	213
Li_4SnS_4 : Simulations of Its Structure and Electrolyte Properties <i>N. A. W. Holzwarth</i>	231
Modeling of Lithium Ion Battery Using Modelica and Scilab/Xcos <i>S. Arianto, R. Y. Yuwono, B. Prihandoko</i>	241
New Formulations of High-Voltage Cathodes for Li-Ion Batteries with Water-Processable Binders <i>F. Bigoni, F. De Giorgio, F. Soavi, C. Arbizzani</i>	249

Carbon-Laminated Silicon/Graphene Composite Anodes with Improved Capacity and Cycling Stability <i>K. F. Chiu, H. J. Leu, S. H. Su, P. C. Yang</i>	259
No Significant Effect of Phosphorous Doping on the Electrochemical Performance of Silicon-Carbon Composite Anodes for Li-ion Batteries <i>T. T. Mongstad, H. F. Andersen, J. P. Maehlen, W. Filtvedt, H. Klette, Ø. Nordseth, M. Kirkengen</i>	275
Silyl and Silyl/Carbonate Blend Electrolytes for Lithium-Ion Battery Applications <i>L. J. Lyons, A. Peña Hueso, T. Johnson, R. West</i>	281
Lithiated Polyacrylic Acid Binder to Enhance the High Rate and Pulse Charge Performances in Graphite Anodes <i>K. F. Chiu, H. J. Leu, S. H. Su, R. Z. Wu</i>	289
Analytical Charged Capacity Expression of Lithium-Ion Battery for SOH Estimation Based on Constant Current Charging Curves <i>X. Li, J. Jiang, Q. Ju, Z. Chen, Z. Zhang, C. Zhang</i>	305
An Analysis of the Resistance of Commercial Lithium Ion Pouch Cells Based on Two Practical Thermal Performance Tests <i>M. Huang, L. Kong, Y. Gao</i>	319
Development of Large Format NMC-Graphite Lithium Ion Pouch Cell with Aqueous Processed Electrodes <i>A. Kvasha, I. Urdampilleta, I. De Meatza, R. Colombo, P. Ulmann, M. Gulas, C. Gutierrez, M. Bengoechea, J. A. Blazquez, O. Miguel, H. J. Grande</i>	325
Author Index	331