
Batteries and Energy Technology

Joint General Session

Editors:

M. Doeff

M. Manivannan

R. Jow

V. Kalra

G. Liu

Sponsoring Divisions:



Battery



Energy Technology



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. 75, No. 18

Copyright 2017 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 978-1-62332-409-4 (CD-ROM)
ISBN 978-1-60768-767-2 (PDF)

Printed in the United States of America.

Table of Contents

Preface *iii*

Chapter 1 **Li Ion Batteries - Systems, Analysis and Modeling**

Implementation of Unscented Kalman Filter-Based Online State-of-Charge Estimation
in LiFePO₄ Battery-Powered Electric Vehicle Applications 3
B. Huang, C. Wang, Z. Zhu, Y. Shen, Y. Xiao

Chapter 2 **Redox Flow Batteries**

Fabrication and Characterization of Electrospun Electrodes for Flow Battery
Electrodes 15
S. P. Liu, M. Kok, J. T. Gostick

Improved Performance of Ti/Mn Redox Flow Battery by Thermally Treated Carbon
Paper Electrodes 27
*Y. R. Dong, Y. Kawagoe, K. Itou, H. Kaku, K. Hanafusa, K. Moriuchi,
T. Shigematsu*

Characterization of Carbon Materials for Redox Flow Battery Electrodes by
Voltage-Step Coulometry 37
Y. Sato, A. Narita, Y. Kaneko, A. Negishi, K. Nozaki, T. Kato

Arrhenius Variation of Precipitation Time for V^V in Vanadium Flow Batteries 49
*D. Oboroceanu, N. Quill, C. Lenihan, D. Ní Eidhin, S. P. Albu, R. P. Lynch,
D. N. Buckley*

Development Strategy and Comparison of a Novel Flow Field Design for Redox Flow
Battery 65
D. Fofana, E. Roberts

Chapter 3

Air Batteries and Fuel Cells

- Development of Aluminum-Air Battery Using an Ionic Liquid Electrolyte Solution 83
T. Oguma, K. Azumi

Chapter 4

Poster Session

- Photo-Potential Property of TiO₂ Electrode Prepared by the Screen Printing Method 93
F. Watanabe, S. Motoda, M. Morita

- Nitrogen-Doped Porous Carbon with High Degree of Graphitization Derived from Silk Cocoon for Lithium-Sulfur Batteries 101
M. W. Xiang, H. Liu

- Development of Iron-Based Rechargeable Batteries with Sintered Porous Iron Electrodes 111
K. Hayashi, Y. Maeda, T. Suzuki, H. Sakamoto, T. Kugimiya, W. K. Tan, G. Kawamura, H. Muto, A. Matsuda

- Effect of Chloride on Anodic Dissolution of Aluminum in 4 M NaOH Solution for Aluminum-Air Battery 117
H. J. Lee, I. J. Park, S. R. Choi, J. G. Kim

- Characteristics of Double Layered TiO₂ Anode Assembling to Marine Microbial Fuel Cell 133
S. Motoda, M. Morita, S. Tamura

Chapter 5

Aqueous Systems

- pH-Controlled Synthesis of Electrolytic Manganese Dioxide Materials for Alkaline MnO₂/Zn Batteries 147
F. Nesvaderani, A. Bonakdarpour, D. P. Wilkinson

- Impact of BaSO₄ Additive on the Cycling Performance of MnO₂/Zn Alkaline Batteries 155
A. Bonakdarpour, S. Mehta, W. Xi, G. Afonso, D. P. Wilkinson

Chapter 6
Lithium Metal and Lithium/Sulfur

Electrochemical Properties of Porous V_2O_5 /Sulfur/Carbon Composite Electrode Prepared Using a Combination of Aerosol and Powder Technologies <i>K. Long, I. Taniguchi</i>	165
Author Index	191