

TABLE OF CONTENTS

Preface

Use of Models to Delineate Sources of Impedance Rise in Two Li-Ion Cell Chemistries <i>B. G. Potter, S. A. Jones, G. L. Henriksen, C. G. Motloch, J. P. Christophersen, J. R. Belt, and Ira Bloom</i>	1
Equivalent Circuit and Fuzzy Logic Modeling of Impedance Increase in Aged Li-Ion Cells <i>P. Singh, G. Nagasubramanian, and X. Wang</i>	11
Approaches for Simulation of Capacity Fade in Li-Ion Batteries <i>R. Spotnitz</i>	22
Capacity Loss Predictions for Active Primary Cells Using Accelerated Aging <i>D. E. Weigand, E. V. Thomas, and H. W. Papenguth</i>	28
Accelerated Degradation Testing of Lithium-Ion Cells: Experimental Design and Modeling <i>E. V. Thomas, R. G. Jungst, H. L. Case, G. Nagasubramanian, B. Y. Liaw, and D. H. Doughty</i>	41
Inductive Model Development for Lithium-Ion Batteries to Predict Life and Performance <i>A. Urbina, T. L. Paez, R. G. Jungst, B. Y. Liaw, H. L. Case, and D. H. Doughty</i>	51
Quantum Chemical Modeling of the Electrochemical Reduction of Oxygen <i>G. V. Zhuang, N. M. Markovic, and P. N. Ross, Jr.</i>	63
Hysteresis during Cycling of Nickel Hydroxide Active Material <i>V. Srinivasan, J. W. Weidner, and J. Newman</i>	74
Mechanistic Model of Charge Retention in Ab ₂ -Based Nickel Metal Hydride Systems Xiao Guang Yang and Bor Yann Liaw	87
First-Principle-Based Finite-Element Modeling of a Li(Si)/LiCl-KCl/Fes ₂ Thermal Battery Cell <i>K. S. Chen, G. H. Evans, and R. S. Larson</i>	100
Uncertainty of Critical Battery Performance Parameters <i>G. L. Hunt, D. J. Marts, and J. L. Morrison</i>	112

An Approximate Solution for a Pseudocapacitor <i>V. R. Subramanian, S. Devan, and R. E. White</i>	120
Development of Battery and Electrochemical Capacitor Equivalent Circuit Models for Power System Optimization <i>J. R. Miller and S. M. Butler</i>	132
Modeling Heat Conduction in Spiral Geometries <i>P. M. Gomadam, R. E. White, and J. W. Weidner</i>	146
Virtual Test Bed for Electrochemical Power Sources <i>L. Gao, M. Blackwelder, Z. Wu, and R. A. Dougal</i>	160
Optimal Battery-Fuel Cell Hybrid Power System <i>R. Gundala, J. W. Weidner, and R. E. White</i>	176
Development of a Theoretical Model to Analyze the Performance of the Molten Carbonate Fuel Cell <i>N. Subramanian, B. S. Haran, R. E. White, and B. N. Popov</i>	191
Evaluating Pem Fuel Cell System Models <i>K. Haraldsson and K. Wipke</i>	206
Evaluation of the Experimental Model for Methanol Crossover <i>J. A. Drake, W. Wilson, and K. Killeen</i>	223
Test of a Mechanism for O ₂ Electroreduction on Pt (111) Via Dynamic Monte Carlo Simulations <i>S. Calvo, D. S. Mainardi, A. P. J. Jansen, J. J. Lukkien, and P. B. Balbuena</i>	238
Subject Index	249