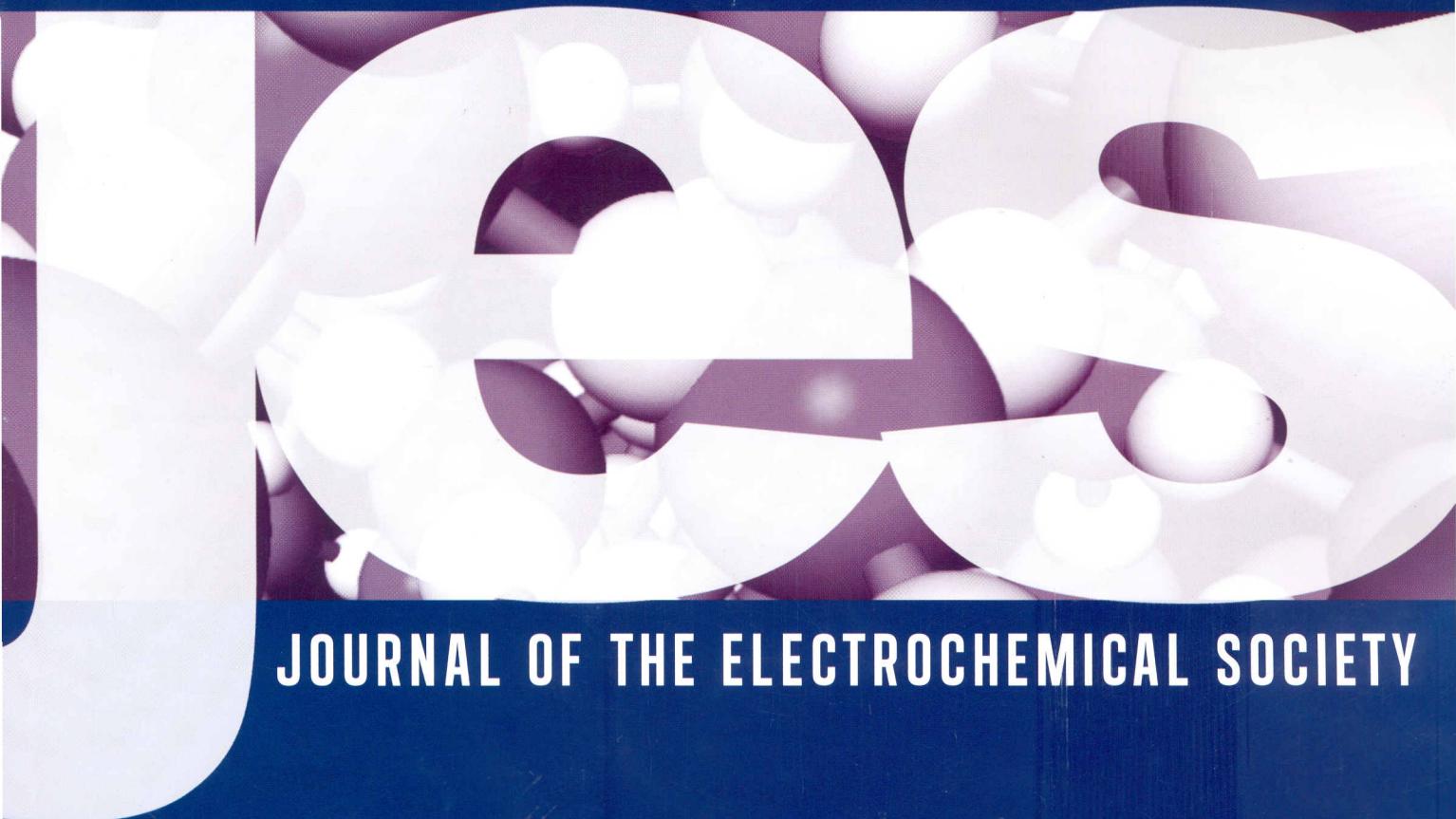


VOL. 159, NO. 7, 2012



JOURNAL OF THE ELECTROCHEMICAL SOCIETY



Table of Contents**Batteries and Energy Storage****In Situ Polymerization of Methoxy Polyethylene Glycol (350) Monoacrylate and Polyethyleneglycol (200) Dimethacrylate Based Solid-State Polymer Electrolyte for Li-Ion Batteries**

*Li Wang, Ning Li, Xiangming He, Chunrong Wan,
Changjin Jiang* A915

Effect of Discharge Cutoff Voltage on Reversibility of Lithium/Sulfur Batteries with LiNO₃-Contained Electrolyte

Sheng S. Zhang A920

Probing Li-Ni Cation Disorder in Li_{1-x}Ni_{1+x-y}Al_yO₂ Cathode Materials by Neutron Diffraction

Lu Cai, Zengcai Liu, Ke An, Chengdu Liang A924

Electrochemical Testing of Ultraporous Membranes as Separators in Mild Aqueous Supercapacitors

Alexis Laforgue, Lucie Robitaille A929

Measurement of Parasitic Reactions in Li Ion Cells by Electrochemical Calorimetry

L. J. Krause, L. D. Jensen, J. R. Dahn A937

Influence of Room Temperature Ionic Liquid Anion Chemical Composition and Electrical Charge Delocalization on the Supercapacitor Properties

*H. Kurig, M. Vestli, K. Tõnurist, A. Jänes,
E. Lust* A944

Separation of Charge Transfer and Contact Resistance in LiFePO₄-Cathodes by Impedance Modeling

*J. Illig, M. Ender, T. Chrobak, J. P. Schmidt,
D. Klotz, E. Ivers-Tiffée* A952

Influence of Manganese Dissolution on the Degradation of Surface Films on Edge Plane Graphite Negative-Electrodes in Lithium-Ion Batteries

*Manabu Ochida, Yasuhiro Domi, Takayuki Doi,
Shigetaka Tsubouchi, Hiroe Nakagawa,
Toshiro Yamanaka, Takeshi Abe,
Zempachi Ogumi* A961

Physicochemical and Electrochemical Properties of 1-Ethyl-3-Methylimidazolium Tris(pentafluoroethyl)trifluorophosphate and 1-Ethyl-3-Methylimidazolium Tetracyanoborate

*Shiro Seki, Nobuyuki Serizawa, Kikuko Hayamizu,
Seiji Tsuzuki, Yasuhiro Umebayashi, Katsuhito Takei,
Hajime Miyashiro* A967

Quantitative Characterization of LiFePO₄ Cathodes Reconstructed by FIB/SEM Tomography

*Moses Ender, Jochen Joos, Thomas Carraro,
Ellen Ivers-Tiffée* A972

A Simple Coin Cell Design for Testing Rechargeable Zinc-Air or Alkaline Battery Systems

Patrick Bonnick, J. R. Dahn A981

Synthesis of Porous NiO/Reduced Graphene Oxide Composites for Supercapacitors

*Yongfeng Bu, Shun Wang, Huile Jin, Weiming Zhang,
Juanjuan Lin, Jichang Wang* A990

The Prepared and Electrochemical Property of Mg Doped LiMnPO₄ Nanoplates as Cathode Materials for Lithium-Ion Batteries

*Youzhong Dong, Hui Xie, Jie Song, Maowen Xu,
Yanming Zhao, John B. Goodenough* A995

The Effect of Barium Hydroxide on the Rechargeable Performance of Alkaline γ -MnO₂

Mark R. Bailey, Scott W. Donne A999

Correlation between Battery Performance and Lithium Ion Diffusion in Glyme-Lithium Bis(trifluoromethanesulfonyl)amide Equimolar Complexes

*Kazuki Yoshida, Mizuho Tsuchiya, Naoki Tachikawa,
Kaoru Dokko, Masayoshi Watanabe* A1005

Realizing the Performance of LiCoPO₄ Cathodes by Fe Substitution with Off-Stoichiometry

*S. M. G. Yang, V. Aravindan, W. I. Cho, D. R. Chang,
H. S. Kim, Y. S. Lee* A1013

Electrochemical Investigation of All-Solid-State Lithium Batteries with a High Capacity Sulfur-Based Electrode

*James E. Trevey, Jeremy R. Gilsdorf, Conrad R. Stoldt,
Se-Hee Lee, Ping Liu* A1019

Multi Length Scale Microstructural Investigations of a Commercially Available Li-Ion Battery Electrode

P. R. Shearing, N. P. Brandon, J. Gelb, R. Bradley,
P. J. Withers, A. J. Marquis, S. Cooper, S. J. Harris A1023

Electrodeposited Polyacrylonitrile and Cobalt-Tin Composite Thin Film on Titanium Substrate

Francisco Nacimiento, Ricardo Alcántara,
José R. González, José L. Tirado A1028

Theoretical and Experimental Analysis of Porous Electrodes for Lithium-Ion Batteries by Electrochemical Impedance Spectroscopy Using a Symmetric Cell

Nobuhiro Oghara, Shigehiro Kawauchi, Chikaaki Okuda,
Yuichi Itou, Yoji Takeuchi, Yoshio Ukyo A1034

Synthesis of $\text{LiNi}_{1/3}\text{Mn}_{1/3}\text{Co}_{1/3}\text{O}_2$ Cathode Material and its Electrochemical Characterization in an Aqueous Electrolyte

K. C. Mahesh, H. Manjunatha, R. B. Shivashankaraiah,
G. S. Suresh, T. V. Venkatesha A1040

A Study of the Reactivity of De-Intercalated $\text{NaNi}_{0.5}\text{Mn}_{0.5}\text{O}_2$ with Non-Aqueous Solvent and Electrolyte by Accelerating Rate Calorimetry

Xin Xia, J. R. Dahn A1048

Hollow Polypyrrole Films: Applications for Energy Storage Devices

Min Seok Kim, Jun Hyuk Moon, Pil J. Yoo,
Jong Hyeok Park A1052

Electronic Effects of Substituents on Redox Shuttles for Overcharge Protection of Li-ion Batteries

M. Nurullah Ates, Chris J. Allen, Sanjeev Mukerjee,
K. M. Abraham A1057

A Water Stable High Lithium Ion Conducting $\text{Li}_{1.4}\text{Ti}_{1.6}\text{Al}_{0.4}(\text{PO}_4)_3$ -Epoxy Resin Hybrid Sheet

Keita Takahashi, Paul Johnson, Nobuyuki Imanishi,
Nigel Sammes, Yasuo Takeda, Osamu Yamamoto A1065

Microstructural Observation of $\text{LiNi}_{0.8}\text{Co}_{0.15}\text{Al}_{0.05}\text{O}_2$ after Charge and Discharge by Scanning Transmission Electron Microscopy

Yoshinari Makimura, Shijian Zheng, Yuichi Ikuhara,
Yoshio Ukyo A1070

Electrochemical Characterization of $\text{LiTi}_2(\text{PO}_4)_3$ as Anode Material for Aqueous Rechargeable Lithium Batteries

R. B. Shivashankaraiah, H. Manjunatha, K. C. Mahesh,
G. S. Suresh, T. V. Venkatesha A1074

Toward the Aqueous Processing of $\text{Li}_4\text{Ti}_5\text{O}_{12}$: A Comparative Study with LiFePO_4

C. Fongy, P. Moreau, S. Chazelle, M. Bouvier,
S. Jouanneau, D. Guyomard, B. Lestriez A1083

Interfacial Phenomena at a Composite LiMnPO_4 Cathode

Nick S. Norberg, Robert Kostecki A1091

Impedance Reducing Additives and Their Effect on Cell Performance

I. $\text{LiN}(\text{CF}_3\text{SO}_2)_2$

J. C. Burns, N. N. Sinha, Gaurav Jain, Hui Ye,
Collette M. VanElzen, W. M. Lamanna, A. Xiao,
Erik Scott, J. Choi, J. R. Dahn A1095

Impedance Reducing Additives and Their Effect on Cell Performance

II. $\text{C}_3\text{H}_9\text{B}_3\text{O}_6$

J. C. Burns, N. N. Sinha, Gaurav Jain, Hui Ye,
Collette M. VanElzen, W. M. Lamanna, A. Xiao,
Erik Scott, J. Choi, J. R. Dahn A1105

Preparation and Electrochemical Properties of $\text{Li}_{1+x}\text{Al}_x\text{Ge}_{2-x}(\text{PO}_4)_3$ Synthesized by a Sol-Gel Method

Ming Zhang, Keita Takahashi, Nobuyuki Imanishi,
Yasuo Takeda, Osamu Yamamoto, Bo Chi,
Jian Pu, Jian Li A1114

Nanoscale Interface Modification of LiCoO_2 by Al_2O_3 Atomic Layer Deposition for Solid-State Li Batteries

Jae Ha Woo, James E. Trevey, Andrew S. Cavanagh,
Yong Seok Choi, Seul Cham Kim, Steven M. George,
Kyu Hwan Oh, Se-Hee Lee A1120

Performance of Wet Chemical Synthesized $x\text{Li}_2\text{MnO}_3-(1-x)\text{Li}(\text{Mn}_{0.375}\text{Ni}_{0.375}\text{Co}_{0.25})\text{O}_2$ ($0.0 \leq x \leq 1.0$) Integrated Cathode for Lithium Rechargeable Battery

C. Ghanty, R. N. Basu, S. B. Majumder A1125

Chemical and Biological Sensors

Effect of an Ultraviolet-Ozone Treatment on the Electrical Properties of Titanium-Oxide Thin-Film Transistors Fabricated by Using a Sol-Gel Process

Ho Yong Chong, Se Han Lee, Tae Whan Kim B771

Determination of Tetradifon in Brazilian Green Bell Pepper by Differential Pulse Voltammetry

Herbert Aleixo, Adelir Aparecida Saczk,
Marcelo Firmino de Oliveira,
Leonardo Luiz Okumura B775

Corrosion Science and Technology

Corrosion Protection of Copper by Self-Assembled Monolayers Modified in Aqueous Micellar Solution

Sisi Wu, Zhenyu Chen, Yubing Qiu,
Xingpeng Guo C277

Selection of Electrode Area for Electrochemical Noise Measurements to Monitor Localized CO₂ Corrosion

Xiu Jiang, Srdjan Nešić, François Huet, Brian Kinsella,
Bruce Brown, David Young C283

Visualization of pH and pCl Distributions: Initiation and Propagation Criteria for Crevice Corrosion of Stainless Steel

Takefumi Kaji, Toshiya Sekiai, Izumi Muto,
Yu Sugawara, Nobuyoshi Hara C289

Corrosion and Passivation Behavior of Pure Ti in Different Types of Ionic Liquids

Jhen-Rong Chen, Wen-Ta Tsai, I-Wen Sun C298

Surface Analysis and Electrochemical Behavior of Aluminum Pretreated by Vinyltriethoxysilane Films in Mild NaCl Solution

I. Milošev, Ž. Jovanović, J. B. Bajat, R. Jančić-Heinemann,
V. B. Mišković-Stanković C303

Ion Migration and Film Morphologies in Anodic Alumina Films Formed in Selenate Electrolyte

A. Baron-Wiecheć, O. Ekundayo, S. J. Garcia-Vergara,
H. Habazaki, H. Liu, P. Skeldon, G. E. Thompson C312

Electrochemical/Electroless Deposition

The Effect of Geometric Structure on Photoluminescence Characteristics of 1-D TiO₂ Nanotubes and 2-D TiO₂ Films Fabricated by Atomic Layer Deposition

Yung-Huang Chang, Chien-Min Liu, Chih Chen,
Hsyi-En Cheng D401

Effect of Additives and Heat Treatment on the Formation and Performance of Electroless Nickel-Boron Plating on AZ91D Mg Alloy

Zhou-Cheng Wang, Lu Yu, Fei Jia,
Guang-Ling Song D406

Electroplating of Conformal Electrodes for Vacuum Nanogap Tunnel Junction

L. Jangidze, A. Tavkhelidze, Y. Blagidze,
Z. Taliashvili D413

Cathodic Deposition of TiO₂: Effects of H₂O₂ and Deposition Modes

Chi-Chang Hu, Huan-Ching Hsu, Kuo-Hsin Chang D418

Template-Free Electrochemical Deposition and Characterization of Ni Nano/Microrod Arrays

Chen-zhong Yao, Bo-hui Wei, Li-xin Meng, Xiao-hua Hu,
Ji-huan Yao, Ke-yong Cui D425

Preparation of Highly Uniform and Monodisperse PS/Cu Composite Microspheres Using Electroless Plating

Yuehui Ma, Qinghua Zhang D431

Electroless Copper Bath Stability Monitoring with UV-VIS Spectroscopy, pH, and Mixed Potential Measurements

Fumihiro Inoue, Harold Philipsen, Alex Radisic,
Silvia Armini, Yann Civale, Shoso Shingubara,
Peter Leunissen D437

Mass Production of Monodisperse Gold Nanoparticles in Polyaniline Matrix

Hiroshi Shiigi, Ryosuke Morita, Yusuke Muranaka,
Shiho Tokonami, Yojiro Yamamoto, Hidenobu Nakao,
Tsutomu Nagaoka D442

Composition Gradients and Magnetic Properties of 5–100 nm Thin CoNiFe Films Obtained by Electrodeposition

Jie Gong, Steve Riemer, Augusto Morrone,
Venkatram Venkatasamy, Michael Kautzky,
Ibro Tabakovic D447

Direct Electroless Deposition of Low Phosphorous Ni-P Films on AZ91D Mg Alloy

Robert Petro, Mordechay Schlesinger D455

Fuel Cells, Electrolyzers, and Energy Conversion

The Effect of the Reference Electrode Position on the Measurement of Half Cell Polarization in Proton-Exchange Membrane Fuel Cells

Jan Hendrik Ohs, Ulrich Sauter, Sebastian Maass,
Detlef Stolten F181

Effect of Ni-Gd_{0.1}Ce_{0.9}O_{1.95} Anode Functional Layer Composition on Performance of Lower Temperature SOFCs

Kang Taek Lee, Nicolas J. Vito, Hee Sung Yoon,
Eric D. Wachsman F187

Poly(2,5-bibenzimidazole) Membranes: Physico-Chemical Characterization Focused on Fuel Cell Applications

José J. Linares, Cassandra Sanches, Valdecir A. Paganin,
Ernesto R. González F194

Porous Core/Shell Ni@NiO/Pt Hybrid Nanowire Arrays as a High Efficient Electrocatalyst for Alkaline Direct Ethanol Fuel Cells

Maksudul Hasan, Simon B. Newcomb,
Kafil M. Razeeb F203

Impact of Water on PEFC Performance Evaluated by Neutron Imaging Combined with Pulsed Helox Operation

P. Boillat, P. Oberholzer, A. Kaestner, R. Siegrist,
E. H. Lehmann, G. G. Scherer, A. Wokaun F210

Oxygen Electrocatalysis on Epitaxial $\text{La}_{0.6}\text{Sr}_{0.4}\text{CoO}_{3-\delta}$ Perovskite Thin Films for Solid Oxide Fuel Cells

Ethan J. Crumlin, Sung-Jin Ahn, Dongkyu Lee,
Eva Mutoro, Michael D. Biegalski, Hans M. Christen,
Yang Shao-Horn F219

Photocatalytically Generated Trimetallic (Pt-Pd-Au/C-TiO₂) Nanocomposite Electrocatalyst

Wilaiwan Chanmanee, Norma R. de Tacconi,
Krishnan Rajeshwar, Wen-Yuan Lin, Leszek Niel, Wesley A. Wampler F226

Unsupported Cu-Pt Core-Shell Nanoparticles: Oxygen Reduction Reaction (ORR) Catalyst with Better Activity and Reduced Precious Metal Content

M. Neergat, R. Rahul F234

Thickness Control over Ionomer Coatings on Nano Patterned Three-Phase Zones for a Highly Efficient Electrode

Yi-Shiuan Wu, Ren-Guei Wu, Tsung-Kuang Yeh, Chuen-Horng Tsai, Yu-Chuan Su, Fan-Gang Tseng F242

Facilitated Electro-Oxidation of Formic Acid at Nickel Oxide Nanoparticles Modified Electrodes

Gumaa A. El-Nagar, Ahmad M. Mohammad, Mohamed S. El-Deab, Bahgat E. El-Anadouli F249

A Model-Based Interpretation of the Influence of Anode Surface Chemistry on Solid Oxide Fuel Cell Electrochemical Impedance Spectra

Huayang Zhu, Alexander Kromp, Andre Leonide, Ellen Ivers-Tiffée, Olaf Deutschmann, Robert J. Kee F255

Computational Exploration of Ultra-High Current PEFC Operation with Porous Flow Field

L. J. Zheng, A. K. Srouji, A. Turhan, M. M. Mench F267

Quantitative Study on the Correlation Between Solid Oxide Fuel Cell Ni-YSZ Composite Anode Performance and Sintering Temperature Based on Three-dimensional Reconstruction

Zhenjun Jiao, Gyeonghwan Lee, Naoki Shikazono, Nobuhide Kasagi F278

Recoverable Performance Loss Due to Membrane Chemical Degradation in PEM Fuel Cells

Jingxin Zhang, Brian A. Litteer, Frank D. Coms, Rohit Makharia F287

A Model for Local Impedance of the Cathode Side of PEM Fuel Cell with Segmented Electrodes

A. A. Kulikovsky F294

Long-Term Stability of SOFC Composite Cathode Activated by Electrocatalyst Infiltration

Shiwoo Lee, Nicholas Miller, Kirk Gerdes F301

Oxygen Reduction Activity of Pyrolyzed Polyanilines Studied by XPS and ¹⁵N Solid-State NMR with Principal Component Analysis

Shigeki Kuroki, Yo Hosaka, Chiharu Yamauchi, Mayu Sonoda, Yuta Nabae, Masa-aki Kakimoto, Seizo Miyata F309

Chemical and Structural Stability of Sm- and In-Co-Doped Proton Conductor $\text{BaCe}_{0.80-x}\text{Sm}_{0.20}\text{In}_x\text{O}_{3-\delta}$ in Various Atmospheres

Cuijuan Zhang, Hailei Zhao F316

Laser Perforated Fuel Cell Diffusion Media: Engineered Interfaces for Improved Ionic and Oxygen Transport

M. P. Manahan, M. M. Mench F322

Performance Evaluation of a Regenerative Hydrogen-Bromine Fuel Cell

Haley Kreutzer, Venkata Yarlagadda, Trung Van Nguyen F331

Comparison of Proton Exchange Membranes Degradation Rates between Accelerated and Performance Tests

Marianne P. Rodgers, R. Paul Brooker, Nahid Mohajeri, Leonard J. Bonville, H. Russell Kunz, Darlene K. Slattery, James M. Fenton F338

Electrochemical Reduction of Carbon Dioxide

I. Effects of the Electrolyte on the Selectivity and Activity with Sn Electrode

Jingjie Wu, Frank G. Risalvato, Fu-Sheng Ke, P. J. Pellechia, Xiao-Dong Zhou F355

Electrochemical Behaviors of Nickel/Yttria-Stabilized Zirconia Anodes with Distribution Controlled Yttrium-Doped Barium Zirconate by Ink-jet Technique

Hiroyuki Shimada, Fuhito Ohba, Xinyu Li, Akifusa Hagiwara, Manabu Ihara F360

Physical and Analytical Electrochemistry, Electrocatalysis, and Photoelectrochemistry

Electrochemical Stability of Imidazolium Based Ionic Liquids Containing Cyano Groups in the Anion: A Cyclic Voltammetry, XPS and DFT Study

Daniel Weingarth, Izabela Czekaj, Zhaofu Fei, Annette Foelske-Schmitz, Paul J. Dyson, Alexander Wokaun, Rüdiger Kötz H611

Dynamics of Photogenerated Holes in TiO₂-Polyheptazine Hybrid Photoanodes for Visible Light-Driven Water Splitting
Lidong Wang, Michal Bledowski, Ayyappan Ramakrishnan, Dennis König, Alfred Ludwig, Radim Beranek H616

Controlling a Single DNA Molecule in an Electric Field by Means of In Situ Atomic Force Microscopy
Jae Sun Jeong, Giovanni Dietler H623

Damage-Free Photoemission Study of Conducting Carbon Composite Electrode Using Ar Gas Cluster Ion Beam Sputtering Process
Dong-Jin Yun, Changhoon Jung, Hyung-Ik Lee, Ki-Hong Kim, Yong Koo Kyung, Anass Benayad, JaeGwan Chung H626

Electrochemical Quartz Crystal Microbalance Study of the Fe-Ga Co-Deposition
D. Iselt, K. Tschulik, S. Oswald, D. Pohl, L. Schultz, H. Schlörb H633

Hierarchical ZnO Nanostructures Growth by Aqueous Solution Process for Dye-Sensitized Solar Cells
C. M. Yang, M. H. Hon, I. C. Leu H638

Simulation of SECM Approach Curves for Heterogeneous Metal Surfaces
Qixin Zhou, Yechun Wang, Dennis E. Tallman, Mark B. Jensen H644

Simultaneous Storage of Oxidative and Reductive Energy Generated at a UV-Irradiated TiO₂ Photocatalyst
Lei Xu, Li-Ying Zhang, Jian-Ming Wang, Jing Xu, Jing Cai, Hai-Bo Shao, Jian-Qing Zhang H650

Comparison of Plastic Based Counter Electrodes for Dye Sensitized Solar Cells
Ghufran Hashmi, Kati Miettunen, Janne Halme, Imran Asghar, Henri Vahlman, Tapio Saukkonen, Zhu Huaijin, Peter Lund H656

Conductive Atomic Force Microscopy Probes from Pyrolyzed Parylene
Kirstin C. Morton, Maksymilian A. Derylo, Lane A. Baker H662

Electroless Growth of Size-Controlled Gold Nanoparticles Using Hydroquinone
Shunsuke Yagi, Naoya Oeda, Chie Kojima H668