

Table of Contents

Batteries and Energy Storage

- Stabilization of $x\text{Li}_2\text{MnO}_3 \cdot (1-x)\text{LiMO}_2$ Electrode Surfaces
(M = Mn, Ni, Co) with Mildly Acidic, Fluorinated Solutions
S.-H. Kang, M. M. Thackeray A269
- Microstructured Nanopore-Walled Porous Silicon as an Anode
Material for Rechargeable Lithium Batteries
D.-K. Kang, J. A. Corno, J. L. Gole, H.-C. Shin A276
- Oxygen Nonstoichiometry and Phase Transitions
in $\text{LiMn}_{1.5}\text{Ni}_{0.5}\text{O}_{4-\delta}$
D. Pasero, N. Reeves, V. Pralong, A. R. West A282
- Determination of Lithium-Ion Transference Numbers
in LiPF_6 -PC Solutions Based on Electrochemical Polarization
and NMR Measurements
J. Zhao, L. Wang, X. He, C. Wan, C. Jiang A292
- The Super-Iron Boride Battery
S. Licht, X. Yu, Y. Wang, H. Wu A297
- Impedance as a Tool for Investigating Aging in Lithium-Ion
Porous Electrodes
I. Physically Based Electrochemical Model
N. Mellgren, S. Brown, M. Vynnycky, G. Lindbergh A304
- Impedance as a Tool for Investigating Aging in Lithium-Ion
Porous Electrodes
II. Positive Electrode Examination
S. Brown, N. Mellgren, M. Vynnycky, G. Lindbergh A320
- Defect Chemistry of LiFePO_4
J. Maier, R. Amin A339
- Parameter Estimation and Life Modeling of Lithium-Ion Cells
S. Santhanagopalan, Q. Zhang, K. Kumaresan, R. E. White A345

Fuel Cells and Energy Conversion

- PEMFC Contamination Model: Competitive Adsorption
Demonstrated with NO_2
J. St-Pierre, N. Jia, R. Rahmani B315
- Stability of Corrosion-Resistant Magnéli-Phase Ti_4O_7 -Supported
PEMFC Catalysts at High Potentials
T. Ioroi, H. Senob, S.-i. Yamazaki, Z. Siroma, N. Fujiwara, K. Yasuda B321
- Fe-C-N Oxygen-Reduction Catalysts Prepared
by Mechanochemical Reaction
R. Yang, T. R. Dahn, H. M. Dahn, J. R. Dahn B327
- Modeling of a SOFC Fueled by Methane: Anode Barrier to Allow
Gradual Internal Reforming Without Coking
J.-M. Klein, S. Georges, Y. Bultel B333
- Fe-Based Electrocatalysts for Oxygen Reduction in PEMFCs
Using Ballmilled Graphite Powder as a Carbon Support
E. Proietti, S. Ruggeri, J.-P. Dodelet B340
- Experimental Study of Two-Phase Transients in PEMFCs
C. Ziegler, T. Heilmann, D. Gerteisen B349
- Coke Formation and Degradation in SOFC Operation with a
Model Reformate from Liquid Hydrocarbons
*H. Timmermann, W. Sawady, D. Campbell, A. Weber,
R. Reimert, E. Ivers-Tiffée* B356
- SOFC Anodes Based on LST-YSZ Composites and on
 $\text{Y}_{0.04}\text{Ce}_{0.48}\text{Zr}_{0.48}\text{O}_2$
G. Kim, M. D. Gross, W. Wang, J. M. Vobs, R. J. Gorte B360
- Multiscale Model of Carbon Corrosion in a PEFC: Coupling
with Electrocatalysis and Impact on Performance Degradation
A. A. Franco, M. Gerard B367



Editor

Daniel Scherson
Case Western Reserve University
Cleveland, Ohio 44106

Associate Editors

Cor L. Claeys

IMEC
B-3001 Leuven, Belgium

Takayuki Homma

Waseda University
Tokyo, Japan

Charles L. Hussey

University of Mississippi
University, Mississippi 38677, USA

Yue Kuo

Texas A&M University
College Station, Texas 77843, USA

Dolf Landheer

National Research Council - Canada
Ottawa, Ontario, Canada

Mark E. Orazem

University of Florida
Gainesville, Florida 32611, USA

Ashok K. Shukla

Indian Institute of Science
Bangalore, Karnataka 560 012 India

Martin Winter

University of Münster
Münster, Germany

Editorial Board

Doron Aurbach	Jennifer Bardwell
Cor Claeys	Andrew Gewirth
Dennis Hess	Takayuki Homma
Charles Hussey	Yue Kuo
Dolf Landheer	Mark E. Orazem
Daniel Scherson	Ashok K. Shukla
Martin Winter	

Publications Staff

Annie Goedkoop, <i>Director of Publications</i>	
Dinia Agrawala	Anne L. Clementson
Paul Cooper	Terry Cooper
Andrea L. Guenzel	John Lewis
Beth Anne Stuebe	

Publication Committee

Subhash Singhal, <i>Chairman</i>	
Timothy R. Armstrong	Dennis Hess
Andrew Hoff	William Howard
Karl Kadish	Michael J. Kelly
Dolf Landheer	Stephen Lipka
Yunmy Meas	Krishnan Rajeshwar
Daniel Scherson	Michael Thackeray
Petr Vanýsek	Steven Visco
John Weidner	Mark Williams

The Electrochemical Society (ECS) is an educational, nonprofit 501(c)(3) organization with more than 8000 scientists and engineers in over 70 countries world-wide who hold individual membership. Founded in 1902, ECS has a long tradition in advancing the theory and practice of electrochemical and solid-state science by dissemination of information through its publications and international meetings.

The *Journal of The Electrochemical Society* (*J. Electrochem. Soc.*) (USPS 284-140) (ISSN 0013-4651) is published monthly by The Electrochemical Society, 65 South Main Street, Pennington, NJ 08534-2839, USA, at Cummings Printing Co., 4 Peters Brook Drive, PO Box 16495, Hooksett, NH 03106-6495, USA. Periodicals postage paid at Pennington, New Jersey, USA and at additional mailing offices. POSTMASTER: Send address changes to: The Electrochemical Society, 65 South Main Street, Pennington, NJ 08534-2839, USA. Canada Post: Publications Mail Agreement #40612608 Canada Returns to be sent to Bleuchip International, P.O. Box 25542, London, ON N6C 6B2.

© Copyright 2008 by The Electrochemical Society, Inc.

Publication Information

Subscriptions: Subscription to members is part of membership benefits. Annual dues: \$98 for Active Members and \$18 for Student Members. Subscription to Nonmembers: \$995 for the 2008 issues. Packages with *Electrochemical and Solid-State Letters* are available.

Address: The address for the Executive Offices and Editorial Department of the Journal is: The Electrochemical Society, 65 South Main Street, Pennington, New Jersey, 08534-2839, USA. Tel.: 609.737.1902; Fax: 609.737.2743; E-mail: ecs@electrochem.org; Web: www.electrochem.org.

The address of the Circulation Department for ECS members is: 65 South Main Street, Pennington, New Jersey, 08534-2839, USA.

The address for the nonmembers' Circulation Department is: American Institute of Physics, P.O. Box 503284, St. Louis, MO 63150-2839, USA.

Manuscripts: Manuscripts are accepted for publication by the *Journal* with the understanding that they are unpublished, original works that have not been submitted elsewhere while under consideration by the *Journal* Editorial Board. See the "Instructions to Authors," which can be found in this issue. To help offset publication costs, a payment of \$80 per printed page is required. A discount is given if at least one author is a Society member at the time of a paper's submission.

Permission to Re-publish: The *Journal* is a copyrighted publication, and manuscripts submitted to the *Journal* become the property of ECS. Permission to re-publish parts of papers in the *Journal* is granted to current periodicals, provided due credit is given and that not more than one-sixth of any one paper is used in derivative works. Reproduction or replication of more than one-sixth of a paper is forbidden and illegal unless prior written authorization is obtained from ECS, along with permission from the author. Please use the Permission Request Form on the ECS Website (www.electrochem.org).

Permission to Reproduce: Reprographic copying beyond that permitted by the fair use provisions of the Copyright Act of 1976 is granted to libraries and other users registered with the Copyright Clearance Center provided that the fee (CCC Code 0013-465 1/97) is paid directly to: Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, USA; Tel: 978.750.8400; Fax: 978.750.4744; E-mail: info@copyright.com. Copying for other than internal or personal use without the express written permission of ECS is prohibited; please use the Permission Request Form on the ECS website (www.electrochem.org).

Article Copies: Single copies of articles are available from ECS to members at \$18.40 (US) per article, and to nonmembers at \$23 (US) per article. Orders may be placed via the ECS website.

Single Issues: ECS has available for sale a limited inventory of single issues of the *Journal*. Contact the ECS Circulation Department for more information. Positive microfilm copies of issues may also be obtained from ProQuest Information and Learning, 300 North Zeeb Road, Ann Arbor, MI 48106, USA; Tel: USA and Canada: 800.248.0360; all other countries 415.433.5500; Fax: 415.433.0100; E-mail: orders@infostore.com.

Claims: All claims for missing issues should be reported within 60 days of normal delivery date, and should be directed to the Circulation Department at the address given above.

Address Changes: Notice of a change in address should be sent to the Circulation Department at the address given above.

Notice: Statements and opinions given in articles and papers in the *Journal of The Electrochemical Society* are those of the contributors, and The Electrochemical Society, assumes no responsibility for them.

Online Edition: Full-text articles are available either through ECS membership, an institutional subscription, or by purchase, for all issues from 1948 (Vol. 93) and forward. The online edition is available at:

<http://www.ecsd.org/JES/>

- InBaCo₂O_{5+δ} Oxides as Cathodes for Intermediate-Temperature Solid Oxide Fuel Cells**
J.-H. Kim, A. Manthiram B385
- Stochastic 3D Modeling of the GDL Structure in PEMFCs Based on Thin Section Detection**
R. Thiedmann, F. Fleischer, C. Hartnig, W. Lebnert, V. Schmidt B391
- Partially Oxidized Tantalum Carbonitrides as a New Nonplatinum Cathode for PEFC-1-**
A. Ishihara, Y. Shibata, S. Mitsubima, K. Ota B400
- Spray Pyrolysis Deposition of Electrolyte and Anode for Metal-Supported Solid Oxide Fuel Cell**
Y. Xie, R. Neagu, C.-S. Hsu, X. Zhang, C. Decès-Petit B407
- Reinforced Membrane Durability in Proton Exchange Membrane Fuel Cell Stacks for Automotive Applications**
T. R. Ralph, D. E. Barnwell, P. J. Bouwman, A. J. Hodgkinson, M. I. Petch, M. Pollington B411
- Evaluation of Micro LSM-Supported GDC/ScSZ Bilayer Electrolyte with LSM-GDC Activation Layer for Intermediate Temperature-SOFCs**
T. Yamaguchi, S. Shimizu, T. Suzuki, Y. Fujisiro, M. Awano B423
- In Situ High-Resolution Neutron Radiography of Cross-Sectional Liquid Water Profiles in Proton Exchange Membrane Fuel Cells**
M. A. Hickner, N. P. Siegel, K. S. Chen, D. S. Hussey, D. L. Jacobson, M. Arif B427
- Atomistic Analysis of Hydration and Thermal Effects on Proton Dynamics in the Nafion Membrane**
C. H. Cheng, P. Y. Chen, C. W. Hong B435
- Effective Anode Thickness in Rechargeable Direct Carbon Fuel Cells Using Fuel Charged by Methane**
H. Saito, S. Hasegawa, M. Ibara B443

Corrosion, Passivation, and Anodic Films

- Combination of AFM, SKPFM, and SIMS to Study the Corrosion Behavior of S-phase particles in AA2024-T351**
L. Lacroix, L. Ressler, C. Blanc, G. Mankowski C131
- Multianalytical and In Situ Studies of Localized Corrosion of EN AW-3003 Alloy—Influence of Intermetallic Particles**
A. Davoodi, J. Pan, C. Leygraf, S. Norgren C138
- Study of Mixed Flowing Gas Exposure of Copper**
M. Reid, J. Punch, L. F. Garfias-Mesias, K. Shannon, S. Belochapkine, D. A. Tanner C147
- In Situ Ellipsometric Analysis of Growth Processes of Anodic TiO₂ Nanotube Films**
S. Joo, I. Muto, N. Hara C154
- The Inhibition of Pitting Corrosion in Stainless Steel 304 L During Proton Irradiation**
R. S. Lillard, G. Vasquez C162

Electrochemical/Chemical Deposition and Etching

- Effect of Current Density and Plating Time on the Morphology of Copper Electrodeposits on an AFM Tip**
K. L. Lin, S. Y. Chen, U. S. Mobanty D251
- Electrodeposition of Al-Mo-Ti Ternary Alloys in the Lewis Acidic Aluminum Chloride-1-Ethyl-3-methylimidazolium Chloride Room-Temperature Ionic Liquid**
T. Tsuda, S. Arimoto, S. Kuwabata, C. L. Hussey D256
- Effect of Cl⁻ on the Adsorption-Desorption Behavior of PEG**
W. Wang, Y.-B. Li D263
- Isotropic Effect of Fluid Flow on Scaling of Surface Roughness during Copper Electrodeposition**
A. Osafo-Aquaab, D. G. Foster, J. Jorne D270

Electrodeposition of Ni/LaCrO₃ Composite Coatings for Solid Oxide Fuel Cell Stainless Steel Interconnect Applications <i>N. Sbaigan, D. G. Ivey, W. Chen</i>	D278
AC Impedance Investigation of Copper in Acid Solution II. Effect of Bath Additives on Copper Electrodeposition <i>L. D. Burke, R. Sharna</i>	D285
Etching of Ion Irradiated LiNbO₃ in Aqueous Hydrofluoric Solutions <i>J. Reinisch, F. Schrempel, T. Gischkat, W. Wesch</i>	D298
Uniformity Effects when Electrodepositing Cu onto Resistive Substrates in the Presence of Organic Additives <i>M. J. Willey, U. Emekli, A. C. West</i>	D302
All-Copper Chip-to-Substrate Interconnects Part I. Fabrication and Characterization <i>T. Osborn, A. He, N. Galiba, P. A. Kobl</i>	D308
All-Copper Chip-to-Substrate Interconnects Part II. Modeling and Design <i>A. He, T. Osborn, S. A. Bidstrup Allen, P. A. Kobl</i>	D314
Effects of Polishing Pressure on Electrochemical Characteristics of Silicon Wafers during CMP <i>X. Song, H. Yang, H. Liu, X. Zhang, G. Qiu</i>	D323
Mechanism of Design of the Precision Recycle Process of a Color Filter Using Electrochemical Etching <i>P. S. Pa</i>	D327
Voltammetric Study of the Inhibition Effect of Polyethylene Glycol and Chloride Ions on Copper Deposition <i>M. E. Huerta Garrido, M. D. Pritzker</i>	D332

Physical and Analytical Electrochemistry

Electrolytic IVER-MS Technology for the Isotopic Quantitation of Select Electroactive Materials <i>J. Kuo, M. Gray, C. T. Tan, L. Chandler, M. May</i>	F43
Electrochemical Impedance Study of the Germanium/Electrolyte Interface <i>I. M. Huygens, K. Strubbe</i>	F49
Electrochemical Study of Copper in the 1-Ethyl-3-Methylimidazolium Dicyanamide Room Temperature Ionic Liquid <i>T.-I. Leong, I.-W. Sun, M.-J. Deng, C.-M. Wu, P.-Y. Chen</i>	F55

Dielectric Science and Materials

CON-TACT Planarization Process of Spin-on Dielectrics for Device Fabrication <i>W.-S. Shib, J. Yota, K. Itchbaporia</i>	G65
Influence of Neodymium Content on Structural Properties and Electrical Characteristics of High-<i>k</i> NdTiO₃ Gate Dielectrics <i>T.-M. Pan, W.-H. Shu</i>	G72
Cross-Linked Organic Sacrificial Material for Air Gap Formation by Initiated Chemical Vapor Deposition <i>L. H. Lee, K. K. Gleason</i>	G78
Structural and Electrical Properties of Bi₆Ti₅TeO₂₂ Thin Films Grown on Pt/Ti/SiO₂/Si Substrate <i>C.-H. Choi, J.-Y. Choi, K.-H. Cho, M.-J. Yoo, J.-H. Choi, S. Nahm, C.-Y. Kang, S.-J. Yoon, H.-J. Lee</i>	G87
Impact of Process Optimizations on the Electrical Performance of High-<i>k</i> Layers Deposited by Aqueous Chemical Solution Deposition <i>S. Van Elsbocht, A. Hardy, C. Adelman, M. Caymax, T. Conard, A. Franquet, O. Richard, M. K. Van Bael, J. Mullens, S. De Gendt</i>	G91

Society Officers

President
Barry R. MacDougall
National Research Council
Ottawa, ON, K1A 0R6, Canada

Vice-President
D. Noel Buckley
University of Limerick
Limerick, Ireland

Vice-President
Paul Natishan
U.S. Naval Research Laboratories
Washington, DC 20375, USA

Vice-President
William D. Brown
University of Arkansas
Fayetteville, Arkansas 72701, USA

Secretary
Petr Vanýsek
Northern Illinois University
DeKalb, Illinois 60115, USA

Treasurer
John R. Susko
JRS Technology
Owego, New York 13827, USA

Executive Director
Roque J. Calvo
The Electrochemical Society
65 South Main Street
Pennington, New Jersey 08534-2839, USA
Phone: 609 737 1902
Fax: 609 737 2743
E-mail: ecs@electrochem.org
Web: www.electrochem.org

Benefits of Membership

- **The Journal of The Electrochemical Society.** Society membership includes this top-quality, peer-reviewed monthly publication. Each issue includes some 70 or more original papers selected by a prestigious editorial board, on topics covering both electrochemical and solid-state science and technology. The electronic edition is available to members at:
<http://ecsd.org/JES/>
- **Electrochemical and Solid-State Letters.** This peer-reviewed, rapid publication electronic journal is available to members at:
<http://ecsd.org/ESL/>
- **Interface.** This quarterly publication features articles and news of general interest to those in the field.
- **Professional Development and Education.** Exchange technical ideas and advances at the Society's semi-annual international meetings or through the programs of the 19 local sections in the USA, Canada, Europe, Israel, Korea, and Japan.
- **Publications.** Stay aware of pertinent scientific advances through the Society's publications, including ECS Transactions, proceedings volumes, meeting abstracts, and monograph volumes.
- **Opportunity for Recognition.** Recognize the accomplishments of your peers through the Awards Program, which provides over two dozen ECS Awards annually.
- **Networking and Contacts.** Take advantage of the numerous opportunities to meet with your peers and expand your circle of valuable contacts.
- **Membership Directory.** Available only to members, the Directory provides easy reference to your colleagues throughout the world.
- **Money Savings.** Get exceptional discounts on all ECS publications, page charges, meetings, and short courses.

Divisions

Battery

Kuzhikalail Abraham, *Chair*
Charles R. Walk, *Vice-Chair*
Zempachi Ogumi, *Secretary*
Nancy J. Dudney, *Treasurer*
Curtis F. Holmes, *Advisor*

Corrosion

Patrik Schmuki, *Chair*
Alison Davenport, *Vice-Chair*
Douglas C. Hansen, *Secretary-Treasurer*
Gerald Frankel, *Advisor*

Dielectric Science and Technology

Katalin Voros, *Chair*
Durga Misra, *Vice-Chair*
Kalpathy Sundaram, *Secretary*
Dolf Landheer, *Treasurer*
John Flake, *Advisor*

Electrodeposition

Gery Stafford, *Chair*
Christian Bonhote, *Vice-Chair*
Giovanni Zangari, *Secretary*
Haniklia Deligianni, *Treasurer*
Cynthia Bruckner-Lea, *Advisor*

Electronics and Photonics

Albert Baca, *Chair*
Ping-Chih Chang, *First Vice-Chair*
Yue Kuo, *Second Vice-Chair*
Andrew M. Hoff, *Secretary*
Ren Fan, *Treasurer*
M. Jamal Deen, *Advisor*

Energy Technology

Karim Zaghib, *Chair*
Sundar Narayanan, *Vice-Chair*
Jean St-Pierre, *Secretary*
Jeremy P. Meyers, *Treasurer*
John Weidner, *Advisor*

Fullerenes, Nanotubes, and Carbon Nanostructures

Francis D'Souza, *Chair*
Dirk Guldi, *Vice-Chair*
R. Bruce Weisman, *Secretary*
Prashant Kamat, *Treasurer*
Carl F. Holmes, *Advisor*

High Temperature Materials

Eric Wuchina, *Chair*
Enrico Traversa, *Senior Vice-Chair*
Jeffrey Fergus, *Junior Vice-Chair*
Timothy Armstrong, *Secretary-Treasurer*
David Shifler, *Advisor*

Industrial Electrochemistry and Electrochemical Engineering

Dennie T. Mah, *Chair*
John Weidner, *Vice-Chair*
Vijay K. Ramani, *Secretary-Treasurer*
Gerald Frankel, *Advisor*

Luminescence and Display Materials

Uwe Happek, *Chair*
Kailash Mishra, *Vice-Chair*
Holly Comanzo, *Secretary*
John Collins, *Treasurer*
Alok Srivastava, *Advisor*

Organic and Biological Electrochemistry

Isao Taniguchi, *Chair*
Albert Fry, *Vice-Chair*
James D. Burgess, *Secretary-Treasurer*
M. Jamal Deen, *Advisor*

Physical and Analytical Electrochemistry

Hugh De Long, *Chair*
Paul Trulove, *Vice-Chair*
Shelley D. Minteer, *Secretary-Treasurer*
Cynthia Bruckner-Lea, *Advisor*

Sensor

Rangachary Mukundan, *Chair*
Jing Li, *Vice-Chair*
Zoraida P. Aguilar, *Secretary*
Michael T. Carter, *Treasurer*
David Shifler, *Advisor*

Semiconductor Devices, Materials, and Processing

Bilayer Memory Device Based on a Conjugated Copolymer and a Carbon Nanotube/Polyaniline Composite

L. Li, Q.-D. Ling, C. Zbu, D. S. H. Chan, E.-T. Kang, K.-G. Neob H205

Diffusion of Arsenic Through Strained Si/Relaxed Si_{1-x}Ge_x Heterostructure

T. Sumitomo, S. Matsumoto H210

Trapezoidal Cross-Sectional Influence on FinFET Threshold Voltage and Corner Effects

R. Giacomini, J. A. Martino H213

Interaction Forces Between a Glass Surface and Ceria-Modified PMMA-Based Abrasives for CMP Measured by Colloidal Probe AFM

S. Armini, R. Burtovyy, M. Moinpour, I. Luzinov, J. De Messemacker, C. M. Whelan, K. Maex H218

A Study on Improving the Reliability of Polysilicon TFTs Employing Dual-Layered Gate Insulator

C.-Y. Kim, S.-G. Park, M.-K. Han, H.-K. Lee, S.-W. Lee, S.-H. Jung, C.-D. Kim, I. B. Kang H224

Evaluation of Etch Behavior of Doped Silicon Wafer in Wet Cleaning Process

D. Sinha H228

Highly ESD-Reliable, Nitride-Based Heterostructure p-i-n Photodetectors with a p-AlGaN Blocking Layer

C. H. Liu, T. K. Lam, T. K. Ko, S. J. Chang, Y. X. Sun H232

Membrane-Mediated Electropolishing of Copper

S. Mazur, G. W. Foggin, C. E. Jackson, Jr., B. Chase H235

Hydrogen-Induced Effect on Device Performance of a Pd/GaAs-Based Heterostructure Field-Effect Transistor

C.-W. Hung, H.-I. Chen, T.-H. Tsai, C.-F. Chang, T.-P. Chen, L.-Y. Chen, K.-Y. Chu, W.-C. Liu H243

Influence of Titanium Content on the Structural and Electrical Properties of Er_{1-x}Ti_xO_y Gate Dielectrics

T.-M. Pan, W.-H. Shu H247

Compensation and Carrier Conduction in Synthetic Fe_{1-x}Ni_xS₂ (0 ≤ x ≤ 0.1) Single Crystals

C.-H. Ho, M.-H. Hsieh, Y.-S. Huang H254

A High Rectification Ratio Nanocrystalline p-n Junction Diode Prepared by Metal-Induced Lateral Crystallization for Solar Cell Applications

J. D. Hwang, K. S. Lee H259

Effects of Liquid Layer Thickness on Oxidation of an Organic Monolayer by Aqueous Ozone

S. Mazur, G. T. Dee H263

Electrical Properties of Atomic Layer Deposition HfO₂ and HfO_xN_y on Si Substrates with Various Crystal Orientations

W. J. Maeng, H. Kim H267

Sensors and Displays: Principles, Materials, and Processing

Roles of Shape and Size of Component Crystals in Semiconductor Gas Sensors

I. Response to Oxygen

N. Yamazoe, K. Shimanoe J85

Roles of Shape and Size of Component Crystals in Semiconductor Gas Sensors

II. Response to NO₂ and H₂

N. Yamazoe, K. Shimanoe J93

Luminescent Properties of Ca- α -SiAlON:Eu²⁺ Phosphors Synthesized by Gas-Pressured Sintering

J. H. Ryu, Y.-G. Park, H. S. Won, S. H. Kim, H. Suzuki, J. M. Lee, C. Yoon, M. Nazarov, D. Y. Nob, B. Tsukerblat J99

Characterization and DNA Sensing Properties of Nanogapped
Array Electrodes

S. Tokonami, H. Shiigi, T. Nagaoka J105

Nanostructured Materials, Carbon Nanotubes, and Fullerenes

High Photocatalytic Activity of Heterojunction of Zinc
Selenide Grown on Nanoscaled Titanium Oxide

M.-K. Lee, T.-H. Shib K63

Hard and High-Temperature-Resistant Silicon Carbonitride
Coatings Based on N-Silyl-Substituted Cyclodisilazane Rings

A. M. Wrobel, I. Blaszczyk-Lezak, A. Walkiewicz-Pietrzykowska,
T. Aoki, J. Kulpinski K66

Mechanistic Study of Ag/Pd-PVP Nanoparticles and Their
Functions as Catalyst for Electroless Copper Deposition

J.-L. Lan, C.-C. Wan, Y.-Y. Wang K77

Electrical and Optical Properties of V₂O₅ Micro-Nano
Structures Grown by Direct Vapor Phase Deposition Method

N. V. Hullavarad, S. S. Hullavarad, P. C. Karulkar K84

Interdisciplinary Topics

A Coupled Electrochemical and Hydrodynamical Two-Phase
Model for the Electrolytic Pickling of Steel

N. Ipek, M. Vynnycky, A. Cornell P33

Impedance Monitoring of Carbon Steel Cavitation Erosion
under the Influence of Corrosive Factors

J. Ryl, K. Darowicki P44

Sections

Council of Section Officers

Venkat Srinivasan, *Chair*
Lawrence Bottomley, *Vice-Chair*
James Noel, *Secretary*
Don Gervasio, *Past-Chair*

Brazilian

Luis Frederico P. Dick, *Chair*
lflick@ufrgs.br

Canadian

Dan Bizzotto, *Chair*
bizzotto@chem.ubc.ca

China

Ming Yang, *Chair*
myang@icspectrum.com

Cleveland

Irina Serebrennikova, *Chair*
Irina.Serebrennikova@energizer.com

Detroit

Gholam-Abbas Nazri, *Chair*
g.nazri@gm.com

European

Carmel B. Breslin, *Chair*
cb.breslin@may.ie

Georgia

Peter Hesketh, *Chair*
peter.hesketh@me.gatech.edu

Israel

Doron Aurbach, *Chair*
aurbach@mail.biu.ac.il

Japan

Shunri Oda, *Chair*
soda@pe.titech.ac.jp

Korea

Kwang Bum Kim, *Chair*
kbbkim@yonsei.ac.kr

Mexican

Ignacio Gonzalez, *Chair*
igm@xanum.uam.mx

Pittsburgh

Natalia V. Pimenova, *Chair*
natalia.pimenova@MSAnet.com

San Francisco

Adam Z. Weber, *Chair*
aweber@newman.cchem.berkeley.edu

Taiwan

Chi-Chao Wan, *Chair*
ccwan@mx.nthu.edu.tw

Texas

Harovel G. Wheat, *Chair*
hwheat@mail.utexas.edu

Twin Cities

Liliana Atanasoska, *Chair*
liliana.atanasoska@bsci.com