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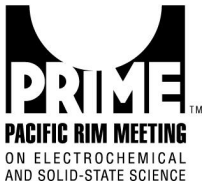

Meeting Abstracts — MA 2012-02

PRiME 2012 — Joint International Meeting
Honolulu, Hawaii — October 7-12, 2012

222nd Meeting of ECS — The Electrochemical Society
2012 Fall Meeting of The Electrochemical Society of Japan (ECSJ)

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Table of Contents

To use this table of contents, scroll down the page or use the bookmarks in the left-hand frame to move to a new location. Click on the number or the title of the abstract you wish to view.

226 Physical and Electrolytic Properties of Partially Fluorinated Chain Ethers as Solvents for Lithium Secondary Batteries
T. Satoh, N. Nambu, M. Takehara, M. Ue, and Y. Sasaki

227 Positive-Tone, Aqueous-Developable, Polynorbornene Dielectric
B. K. Mueller, A. Grillo, E. Elce, and P. Kohl

228 Fabrication of Nano-Structured (La,Sr)(Zn,Fe)O_3 Cathodes for Intermediate-Temperature SOFC
S. Hwang, J. Jang, G. Choi, S. Lee, O. Kwon, D. Lee, S. Mukherjee, and S. Park

229 Shape Selective Formation and Growth of High Index Polyhedral Gold Nanoparticles and Their Activity to Oxygen Evolution
B. C. Solomon, F. Ke, and X. Zhou

230 Study of Optical and Structural Properties of SRSN Fabricated by Cat-CVD below 200 oC
S. Kang, K. Keum, J. Park, T. Song, J. Kim, and W. Hong

231 The Structure, Thermal Expansion Property and Polymorphism of Solid Solution Ho2Mo3-xWxO12
X. Liu, G. Yu, and Y. Liu

A2 - Nanotechnology General Session

All Divisions, ECS New Technology Subcommittee, ECSJ, CSE

232 Growth of Pt Subnano-Clusters on Surface Limited Areas of Prussian-Blue Nanoparticles
M. Ishizaki, S. Tsuruta, K. Kananizuka, M. Kurihara, and M. Sakamoto

233 Novel Synthesis Method of Copper Nanoparticles by Controlling Metal Complexes in Aqueous Solution
S. Yokoyama, H. Takahashi, and K. Tohji

234 Characterization Attributes of Metal Oxide Nanocomposites
M. Hockey, Q. Lin, and E. Calderas

235 Fabrication and Optical Characteristics of Ordered Crystalline ZrO_2 Nanowires and Nanoporous Films on Glass
S. Chu, Y. Hitoshi, H. Segawa, S. Inoue, and K. Wada

236 Electrochemical Synthesis of Crystalline and Compositionally-Uniform $Bi_{1-x}Sb_x$ Nanowire Arrays
W. Yelton, S. Limmer, M. P. Siegal, D. Medlin, J. L. Lensch-Falk, M. Hekmaky, D. L. Overmyer, and J. M. Rivera

237 Effects of Thermal Annealing on Conducting ZnO Nanowires: Conductor-To-Semiconductor Transition and Its Device Applications
P. Jeon, Y. Lee, R. Ha, H. Choi, and S. Im

A3 - Contemporary Issues and Case Studies in Electrochemical Innovation

All ECS Divisions, ECS New Technology Subcommittee

316 Electrochemical Cesium Recovery Using Nanoparticle Film of Copper Hexacyanoferrate
H. Tanaka, R. Chen, C. Fukushima, M. Asai, T. Kawamoto, M. Kurihara, M. Arisaka, T. Nankawa, and M. Watanabe

317 Integration of a New Electroplated Magnetic Alloy with Power Semiconductor Wafer Manufacturing Processes
T. Liakopoulos, A. Panda, M. Wilkowski, and A. Lotfi

318 A Novel Technique of Quantifying Micro Insulation Defects on Grain-Oriented Electrical Steel Using the Scanning Vibrating Electrode Technique
L. T. Cassemis, J. H. Sullivan, and D. Power

319 Role of Dimensional Parameters for Determination of Diffusion Coefficient (D) and Surface Exchange Coefficient (K) Case Study for Oxygen Storage Materials, Electrode Materials for SOFCs, and Materials for Li-Ion and Na Batteries
K. Zheng, D. Baster, J. Molenda, and K. Swierczek

B1 - Batteries and Energy Technology Joint General Session - In Honor of James McBreen

ECS Battery, ECS Energy Technology, ECSJ Battery, CSE

320 A Wonderful Life Dedicated to Energy Research In Memery of James McBreen
X. Yang, K. Nam, S. Mukerjee, M. Balasubramanian, W. Yoon, and K. Chung

321 Recent Advances in Neutron Imaging for Battery Characterization
D. S. Hussey, J. Kahn, O. Zilcha, D. Jacobson, B. Khaykovich, M. V. Gubarev, J. Gagliardo, and J. Owejan

322 Application of Synchrotron-Based X-Ray Techniques to Study Thermal Behavior of Electrode Materials for Lithium Rechargeable Batteries
W. Yoon, K. Nam, K. Chung, M. Balasubramanian, D. Jang, J. Hanson, and X. Yang

323 Solid-State Batteries: A Fifty Year Perspective
B. B. Owens and O. Yamamoto

324 Rechargeable Lithium Battery Electrodes Using a Multifunctional Polymer Binder
A. E. Javier, S. N. Patel, and N. P. Balsara

325 An Empiric Approach to the Estimation of State of Charge of Lithium Cells and Range of an Electric Vehicle
G. Davolio, R. Giovanardi, and C. Lanciotti

326 Designing Advanced Hybrid Materials for Rechargeable Lithium Batteries
Y. Guo

327 Substation Installations of Electrovaya's MWh-Scale Lithium-Ion SuperPolymer Batteries for Smart Grid Applications
R. DasGupta

B2 - Electrochemical Capacitors

ECS Battery, ECS Physical and Analytical Electrochemistry, ECSJ Capacitor Technology, CSE, KECS

B3 - Grand Challenges for Energy Conversion and Large Scale Energy Storage

ECS High Temperature Materials, ECS Battery, ECS Energy Technology, ECS Industrial Electrochemistry and Electrochemical Engineering, ECSJ Energy Technology

611 Grid Scale Energy Storage; Applications, Technology Demonstrations, and a US Perspective
I. Gyuk

612 The Application and Development of Large-scale Energy Storage Technology in China
X. Lai

613 National Energy Technology Developing Strategy in Korea
K. Nahm and S. Chung

614 Challenges in Commercialization of Energy Storage Systems within the Electric Enterprise
D. Rastler

615 Issues and Challenges for Implementation of Large-Scale Energy Storage in Australia
M. Skyllas-Kazacos

616 Status and Development of Energy Storage System In Korea
J. Lee

617 Realities of Economic Screening for Energy Conversion and Storage Technologies
E. McFarland

618 Energy Security with Clean and Green Energy
G. Ka'iliwai

B4 - Intercalation Compounds for Rechargeable Batteries

ECS Battery, ECSJ Battery, KECS

619 Iron and Manganese Based Cathode Materials for Electrochemical Energy Storage
K. J. Takeuchi, A. C. Marschilok, and E. S. Takeuchi

620 Electrochemical and Structural Properties of Li-Rich Layered Cathode Material $Li_{1.2}Ni_{0.2}Mn_{0.6}O_2$
T. Sasakawa, Y. Harada, H. Inagaki, N. Takami, N. Kitamura, and Y. Idemoto

621 Electrochemical Property of Nano Size Multiple Transition Metal Oxides Synthesized from Layered Double Hydroxide
N. Sonoyama, S. Hayashi, T. Toba, and Z. Quan

622 Ion-Exchange Synthesis and Intercalation Process of $Li_{1.05}Na_{0.02}Ni_{0.21}Mn_{0.63}O_2$ Cathodes for Li-Ion Batteries
M. Slater, S. Rood, D. Kim, S. Kang, E. Lee, V. Maroni, D. Bass, A. DeWahl, S. Hackney, and C. S. Johnson

636 Scanning Near-Field Infrared Microscopy of a $LixFePO_4$ Single Particle
I. T. Lucas, J. S. Syzdek, S. F. Lux, N. S. Norberg, A. S. McLeod, Z. Fei, D. N. Basov, and R. M. Kostecki

637 Nanoscale Single Crystal Electrochemistry as a Diagnostic Tool for Li-Ion Batteries
J. S. Syzdek, I. T. Lucas, J. Elangbam, A. Bagnato, and R. M. Kostecki

638 In Situ TEM-EELS Studies of Degradation and Thermal Stability of High-Energy Cathodes for Li-Ion Batteries
F. Wang, S. Bo, L. Zhang, C. Ma, G. Clare, P. Khalifah, Y. Zhu, and J. Graetz

639 In Situ TEM Studies of Capacity Fading Mechanisms of Nano-Structured Anode and Cathode for Lithium-Ion Battery
C. Wang, M. Gu, Z. Wang, X. Li, S. Hu, W. Xu, F. Gao, J. Liu, J. Zhang, S. Thevuthasan, and D. Baer

640 In Situ Small-Angle Neutron Scattering Studies of Electrodes for Lithium-Ion Batteries
C. A. Bridges, X. Sun, J. Zhao, M. Paranthaman, and S. Dai

641 Interest of Auger Electron Spectroscopy to Study Silicon Electrodes Used in Li-Ion Batteries
E. Radvanyi, E. De Vito, W. Porcher, and S. Jouanneau

642 Local Probing of Activation Energy of Ionic Transport in Cathode Materials for Li-Ion Batteries
N. Balke, S. Kalnaus, S. Jesse, N. J. Dudney, C. Daniel, and S. Kalinin

643 Use of In Situ XAS to Elucidate Surface Structural Changes and Capacity Loss during Electrochemical Cycling of nanoscale $LiCoO_2$
C. J. Patridge, C. T. Love, and D. E. Ramaker

644 Toward Safe and Long-Cycle Life Li-Ion Batteries: New Polyanion-Cathode and Their Reaction Mechanism
Y. Yang

645 Bimetallic Sulfates $A_xM_y(SO_4)_z.xH_2O$ (A = Li, Na and M = 3d Metal): New Electrode Materials for Li- and Na-Ion Batteries
M. Reynaud, M. Ati, M. Sougrati, B. Melot, G. Rousse, J. Chotard, and J. Tarascon

646 Revisiting the Lithium Metal Borate ($LiMBO_3$; M= Fe, Mn, Co) Cathode Systems: Synthetic and Electrochemical Findings
Y. Yamashita, P. Barpanda, S. Chung, Y. Yamada, S. Nishimura, and A. Yamada

647 Reaction Mechanism of Pyrophosphate Cathode Material $Li_2(Mn_yFe_{1-y})P_2O_7$
S. Nishimura, N. Furuta, D. Shimizu, P. Barpanda, Y. Yamada, and A. Yamada

648 A Cooperative Mechanism for the Diffusion of Li^+ Ions in $LiMgSO_4F$
D. Marrocchelli, M. Salanne, and G. W. Watson

662 Enhanced Electrochemical Ion Insertion/Extraction Reaction in Cyano-Bridged Coordination Polymer Electrodes for Rechargeable Battery
M. Okubo, Y. Mizuno, D. Asakura, T. Kudo, and H. Zhou

663 Intercalation of α-MnO2 as Mg battery cathode
L. Chen, T. S. Arthur, R. Zhang, and F. Mizuno

664 Towards the Development of Calcium-Ion Batteries
J. Rogosic and D. R. Sadoway

665 Electrochemical Properties of Li_5FeO_4/C Composite Positive Electrode Materials
T. Okumura, M. Shikano, and H. Kobayashi

666 New Fe-Based Oxyfluorides as Rechargeable Lithium-Ion Battery at High Voltage (Average > 3V vs. Li^+/Li)
A. Demourgues, N. Penin, A. Wattiaux, D. Carlier-Larregaray, L. Bourgeois, E. Durand, A. Tressaud, H. Groult, D. Dambournet, C. M. Julien, and K. Zaghib

667 Splash Combustion Synthesis and Exploration of Lithium Metal Pyrophosphate ($Li_{1 \{plus\ minus\} y} MP_2O_7$) Cathodes
P. Barpanda, T. Ye, J. Lu, Y. Yamada, S. Chung, S. Nishimura, and A. Yamada

668 Oxalic Dihydrazide Assisted Novel Combustion Synthesized Pyrophosphate Compounds for Rechargeable Batteries
N. Kalidoss, K. Nallathamby, and M. Minakshi

669 $LiTi_2(PO_4)_3$/Reduced Graphene Oxide Hybrids for High Performance Cathode Materials in Lithium-Ion Batteries
C. Lim, A. G Kannan, H. Lee, and D. Kim

670 An Energy Storage Principle Delivered by Bipolar Porous Polymeric Frameworks
K. Sakaushi, G. Nickerl, F. Wisser, E. Hosono, H. Zhou, S. Kaskel, and J. Eckert

671 $LiNi_{1/3}Mn,_{1/3}Co_{1/3}O_2$ Synthesized by Sol-Gel Method: Structure and Electrochemical Properties
A. M. Hashem, A. Abdel-Ghany, H. M. Abuzeid, H. Ehrenberg, A. Mauger, and C. M. Julien

672 Electronic Properties of Olivine Materials for Positive Electrodes in Li-Ion Batteries
C. M. Julien, A. Mauger, K. Zaghib, and H. Groult

673 $LiMn_yFe_{1-y}PO_4$ Cathode Materials Grown by Hydrothermal Route: Structure and Morphology
M. Mathieu, J. Trottier, P. Hovington, A. Guerfi, K. Zaghib, M. Trudeau, A. Mauger, and C. M. Julien

674 $LiMn_yFe_{1-y}PO_4$ Cathode Materials Grown by Hydrothermal Route: Electrochemical Performance
J. Trottier, M. Mathieu, A. Guerfi, K. Zaghib, A. Mauger, and C. M. Julien

688 Relation between Synthesis Conditions and Electrochemical Properties of Lithium Excess Li-Ni-Mn-O Compounds
H. Yamada, M. Oyama, H. Nakamura, and H. Noguchi

689 Facile Synthesis of FeF_3 and Its Application to Positive Electrode for Rechargeable Lithium Batteries
S. Myung, S. Kim, and Y. Hitoshi

690 Electrochemical Properties of $Mg_{0.22}MnO_2$ as a Cathode Material for Mg Rechargeable Batteries
T. Kakibe, K. Miyazaki, T. Fukutsuka, T. Abe, and Y. Uchimoto

691 Micro-Sized $NaNi_{0.5}Mn_{0.5}O_2$ Layered Materials as a Cathode Material for Rechargeable Na Batteries
M. Jang, S. Myung, S. Oh, and Y. Sun

692 Crystal and Electronic Structures of Layered Li_2MnO_3-$LiMO_2$ Materials during Stepwise Pre-Cycling Treatment
H. Kobayashi, T. Okumura, M. Shikano, Y. Arachi, and H. Nitani

693 $LiCoO_2$ Cathode Nanosheets with Enlarged Surface Area Induced by Hydrothermal Process
K. Fung, C. Ni, C. Liu, and S. Tsai

694 Diffusion of Lithium-Ion and Polaron in Pyrophosphate $Li_2FeP_2O_7$:First-Principles Study
Y. Asari, Y. Suwa, and T. Hamada

695 Crystal Structure and Electrochemical Properties of Ni-Substituted Li_2CuO_2 as a Positive Electrode
T. Ide, T. Nakagawa, Y. Arachi, and Y. Nakata

696 Synthesis and Electrochemical Property of CuO-Containing Li_2MnO_3
S. Akiyama, Y. Arachi, K. Hinoshita, and Y. Nakata

697 Kinetics and Stability Studies on $Li_{1+x}M_{1-x}O_2$ Single Crystals
H. Duncan, B. Hai, A. K. Shukla, and G. Chen

698 Stability and Performance of High-Voltage Cathodes with Pure and Doped Lipon Coatings
Y. Kim, N. J. Dudney, M. Chi, G. M. Veith, S. K. Martha, and J. Nanda

699 Controlled Synthesis of High Tap Density $LiMn_{1.5}Ni_{0.5}O_4$ with Tunable Shapes
A. Cao and A. Manthiram

700 Impact of $LiMn_{1.5}Ni_{0.5}O_4$ Crystal Surface Facets
G. Chen, B. Hai, A. K. Shukla, and H. Duncan

701 Unique Electrochemical Cycling Behaviour of Structurally Integrated Layered-Spinel Lithium Nickel Manganese Oxides
A. W. Rowe, C. L. White, and J. Dahn

715 Vitreous Materials as Electrodes for Lithium Batteries
G. Delaizir, V. Seznec, P. Rozier, P. Lecante, C. Surcin, P. Salles, and M. Dollé

716 Surface Coating of Vanadium Pentoxide Nanowires for Improved Cathodic Stability
F. Gittleson, J. Hwang, R. C. Sekol, and A. D. Taylor

717 Structural and Electrochemical Characterization of Thermally Treated Vanadium Oxide Nanotubes for Li-Ion Batteries
D. McNulty, D. Buckley, and C. O'Dwyer

B5 - Interfaces and Interphases in Battery Systems

ECS Battery, *ECS Energy Technology*, *ECSJ Battery*

718 Studies on Reactions and Structures at Electrode/Electrolyte Interface Using Epitaxial Model Electrodes
R. Kanno, M. Hirayama, and K. Tamura

719 In Situ XAS and XRD Studies on Electrode/Electrolyte Interface of Li_xCoO_2 Thin-Film Electrode
D. Takamatsu, S. Mori, K. Shimada, Y. Orikasa, T. Kawaguchi, H. Murayama, T. Hirano, M. Sato, H. Tanida, Y. Koyama, H. Arai, E. Matsubara, Y. Uchimoto, and Z. Ogumi

720 Revealing Positive Electrode Oxide Changes on Electrochemical Cycling by In Situ Electron Microscopy
D. J. Miller, C. Proff, J. Wen, and D. P. Abraham

721 Lithium Depletion in the Solid Electrolyte Adjacent to Cathode Materials
H. Yamada, K. Suzuki, Y. Oga, I. Saruwatari, and I. Moriguchi

722 Advanced Characterization and First Principles Modeling of Surface and Interfaces of Lithium Intercalation Compounds
Y. Meng

723 Electrochemical Impedance Analysis and Applications of Porous Electrodes for Lithium-Ion Batteries
N. Ogihara, Y. Itou, S. Kawauchi, C. Okuda, Y. Takeuchi, and Y. Ukyo

724 In Situ Atomic Force Microscopy Studies of Surface Layer Formation on $LiMn_2O_4$ Thin Films
N. Missert, R. Garcia, and J. M. Rivera

725 The Effect of ZrO_2 Coating on Nano Size $LiCoO_2$ Cathode for Lithium-Ion Batteries
Y. Kusachi, T. Shimizu, Y. Orikasa, and Y. Uchimoto

726 Phosphate-Based Additives for High Voltage Li-Ion Batteries and Their Derivatives
A. V. Cresce and K. Xu

763 Transport Properties and Chemical Stability of LISICON-Based Glass Ceramics in Contact with Lithium
P. Hartmann, M. Reich, T. Leichtweiss, M. Schneider, W. Schmidbauer, and J. Janek

764 Bias Imposed Interface between Solid Li-Ion Conductor $LiBH_4$ and Li Metal: First Principles Molecular Dynamics Simulations
T. Ikeshoji, E. Tsuchida, M. Otani, S. Takagi, M. Matsuo, and S. Orimo

765 Investigation of the Interface Between Li_2S-P_2S_5 Solid Electrolyte and Li Metal Electrode by Using Electrochemical Methods with Microelectrodes
M. Chiku, W. Tsujiwaki, E. Higuchi, and H. Inoue

766 Studies on the Formation and Stability of Solid Electrolyte Interphase on the Surface of Anode and Cathode of Lithium-Ion Batteries
X. Yu, H. Li, K. Xu, K. Nam, H. Lee, X. Huang, L. Chen, A. von Cresce, and X. Yang

767 Artificial Solid Electrolte Interface (SEI) for Improving Cycle-Ability on Lithium-Ion Battery
F. Wang

768 Ultrathin Multifunctional Coatings as the Artificial Solid Electrolyte Interphases to Improve Performance of Lithium-Ion Batteries
X. Xiao, D. Ahn, P. Lu, and M. W. Verbrugge

769 Li-Ion Transfer at the Interface between Solid Electrolyte/Ionic Liquid
Y. Ishihara, K. Miyazaki, T. Fukutsuka, T. Abe, and Z. Ogumi

770 Atomistic Mechanisms of the Phase Boundary Evolution during Initial Lithiation into Crystalline Silicon
S. Kim, D. Datta, M. J. Chon, V. A. Sethuraman, P. R. Guduru, and V. B. Shenoy

771 In Situ Optical Microscopic Observation of Lithium Electrodeposited in Room Temperature Ionic Liquids Containing Quaternary Ammonium Cation
H. Sano, H. Sakaebe, and H. Matsumoto

772 Analytical Studies of Flow Battery Redox Reaction Electrokinetics on a Thin Fiber Film Rotating Disk Electrode
K. L. Hawthorne, J. S. Wainright, and R. F. Savinell

B6 - Lithium-Ion Batteries

ECS Battery, ECS Energy Technology, ECSJ Battery, CSE, KECS

773 Phase Transition Behavior of $LiFePO_4$ Based Cathode Materials
Y. Zhou, X. Wang, X. Yu, K. Nam, E. Hu, J. Liu, and X. Yang

774 Multi-Scale, Multiphase Mathematical Modeling of $LiFePO_4$ Cathodes
T. W. Farrell and S. Dargaville

775 Phase Transition Study of $LiFePO_4$ Nanowires in Li-Ion Battery
J. Niu, A. Kushima, L. Qi, J. Huang, and J. Li

776 Thermal Stability of Binary Olivine $Li_{1-y}Fe_{1-x}Mn_xPO_4$ [$0 \leq x, y \leq 1$] for Li Rechargeable Battery
J. Kim, K. Park, I. Park, J. Yoo, J. Hong, and K. Kang

777 A Novel Double-Structured $LiMn_{0.85}Fe_{0.15}PO_4$: $LiFePO_4$ Core-Shell Materials for Rechargeable Lithium-Ion Batteries
S. Oh, S. Myung, J. Park, B. Scrosati, K. Amine, and Y. Sun

778 3D Nanoporous Current Collectors for Advanced Thin Film Microbatteries
S. Gowda, A. Reddy, and P. Ajayan

779 High Energy Cells: Lithium-Sulfur and Lithium-Sulfur-Silicon
M. Hagen, S. Dörfler, E. Quiroga-González, H. Althues, J. Tübke, and H. Föll

780 Effect of Initial Sulfur Morphology on Capacity and Cycle-Life of Lithium-Sulfur Batteries
H. Jha, A. Eberle, S. Eckstein, H. A. Gasteiger, C. Poggi, and O. Gröger

781 Large Self-Weaving Sulfur-MWCNT Composite Cathodes for High Rate Lithium-Sulfur Batteries
Y. Su and A. Manthiram

782 Hollow Carbon Balls-Sulfur Composite in Advanced Configuration Lithium Battery
D. Lee, J. Hassoun, J. Park, B. Scrosati, and Y. Sun

783 Experimental Observation of Coherent Strain Effects on Phase Separation in $LiFePO_4$ Electrode
K. Tokuda, T. Kawaguchi, T. Ichitsubo, E. Matsubara, K. Fukuda, Y. Uchimoto, and Z. Ogumi

784 Hydro Thermal Synthesized $LiFePO_4$ Modified by $Li_4P_2O_7$ and Carbon Coatings
J. Chong, S. Xun, X. Song, G. Liu, and V. Battaglia

785 Comparison of Charge Transfer Resistance for Different $LiFePO_4$-Electrodes
J. Illig, M. Ender, and E. Ivers-Tiffée

786 A Comparative Study on A_2MnPO_4F (A = Na and Li) Cathodes for Rechargeable Batteries
S. Kim, D. Seo, H. Kim, K. Park, H. Kim, and K. Kang

787 Olivine Type Cathodes for Stationary Lithium-Ion Batteries
D. Choi, Y. Choi, Q. Huang, W. Wang, J. Liu, J. Zhang, L. Pederson, and V. Sprenkle

788 Nanosized Effect on Charge-Discharge Property of $LiMnPO_4$ Embedded in Porous Carbons
S. Aono, K. Urita, H. Yamada, and I. Moriguchi

803 Effect of Binder Distribution in LIB Electrode on Mass Transport Performance
G. Inoue, T. Matsuoka, Y. Matsukuma, and M. Minemoto

804 Synthesis of $0.5Li_2MnO_3 \bullet 0.5LiMO_2$ (M = Mn, Ni, Co) Layered-Layered Integrated Cathode Electrode Materials with Mechanochemical Process
S. Kim, K. Chung, and B. Cho

805 Composition Optimization of $xLi_2MnO_3 \cdot (1-x)LiMO_2$ Electrodes (M= Mn, Ni, Co) Prepared via Spray Pyrolysis Process
M. Lengyel, X. Zhang, G. Atlas, D. Elhassid, I. Belharouak, and R. Axelbaum

806 Structure Evolution and Its Relation to the Voltage Fade Behavior in Li-Rich Layered $Li_{1.2}Ni_{0.15}Co_{0.1}Mn_{0.55}O_2$ Cathode Material during Cycling: X-ray Diffraction and Absorption Spectroscopy Study
X. Yu, K. Nam, E. Hu, D. P. Abraham, and X. Yang

807 Effect of Precursor Synthesis Atmosphere on Morphology and Electrochemical Performance of $Li_{1.20}Ni_{0.16}Mn_{0.56}Co_{0.8}O_2$ and $Li_{1.17}Ni_{0.25}Mn_{0.58}O_2$
J. Camardese, R. Shunmugasundaram, and J. Dahn

808 Synthesis and Morphological Analysis of Carbonate Based Precursors for Lithium-Ion Battery Cathode Materials
R. Shunmugasundaram, T. Byrne, and J. Dahn

809 Development of All-Solid-State Lithium-Ion Rechargeable Battery Using Quasi-Solidified Glyme - Li-Salt Complexes as Electrolytes
A. Unemoto, T. Matsuo, Y. Gambe, and I. Honma

810 Nanocrystalline Solid Electrolyte: β-Li_3PS_4
Z. Liu, W. Fu, Z. Lin, N. J. Dudney, E. Payzant, and C. Liang

811 Development of Li-Ion Technology Based on Aqueous Electrolytes
S. Martinet, L. Crepel-Marchal, F. Alloin, and J. Lepretre

812 Topological Analysis of Lithium Migration Paths: Application to Solid Electrolytes
L. Miara, M. Aryanpour, S. Ong, Y. Mo, G. Ceder, and H. Lee

813 The Effect of Microstructure on the Lithium Ion Conduction of the $LiBH_4$-LiI Solid Solution
D. Sveinbjornsson, D. Blanchard, M. Mogensen, P. Norby, and T. Vegge

814 The Effect of $LaMeO_3$ as Stabilizer Phase in $0.5[Li_{0.33}Mn_{0.67}]O_2 \bullet 0.5Li[Ni_{0.33}Co_{0.33}Mn_{0.33}]O_2$ Cathode Material
M. Kim, K. Park, J. Yoon, M. Park, J. Park, W. Yoon, and S. Doo

815 Effect of Carbon Coating on $Li[Li_{1/3}Mn_{2/3}]O_2$-$LiMO_2$ Cathode Materials for Lithium Ion Batteries
Y. Wu, X. Wang, and Z. Liu

829 Relaxation Phase Analysis for Li inserted Li-Mn-O Cathode Material
I. Seo, S. Park, and T. Yao

830 Study on the Transport Properties of $LiNi_{0.8}Co_{0.15}Al_{0.05}O_2/LiMn_2O_4$ Blends with Different Compositions
H. Tran, C. Taeubert, and M. Wohlfahrt-Mehrens

831 Structural Modification and Electrochemical Characteristics of Co-substituted Hollandite-type Manganese Oxides using a Hydrothermal Method
Y. Kadoma, H. Watanabe, K. Ui, and N. Kumagai

832 Conformal Electrodeposition of Copolymer Electrolyte into Self-Organized Titania Nanotubes for Lithium Ion Microbatteries
T. Djenizian

833 Gelled Polymer Electrolyte Thin Films with Mechanical Integrity and Persistent Structure for Lithium Ion Batteries
S. Wang, C. Huang, P. Kuo, and H. Teng

834 Intensive Dry and Wet Mixing Enhancing the Electrochemical Performance of Secondary Lithium-Ion Battery Electrodes
H. Bockholt, L. Kleinfeldt, W. Haselrieder, and A. Kwade

835 Structure, Disorder, and Crystallization; Lessons Learned from Analysis of Lithium Triflurormethanesulfonate
M. P. Foley, C. Worosz, L. M. Haverhals, K. Sweely, W. A. Henderson, H. De Long, and P. Trulove

836 Synthesis and Characterization of Ionic Liquid for Lithium-Ion Batteries
X. Sun, C. Liao, and S. Dai

837 Flux Growth of High-Quality $LiCoO_2$ Crystals for All-Crystal-State Lithium-Ion Rechargeable Batteries
Y. Mizuno, H. Wagata, T. Ishizaki, T. Sakaguchi, K. Kohama, K. Yubuta, T. Shishido, S. Oishi, and K. Teshima

838 The effects of Carbon Additive on Electrochemical Performance of High Voltage Spinel $LiNi_{0.5}Mn_{1.5}O_4$
J. Zheng, J. Xiao, W. Xu, X. Li, and J. Zhang

839 First Principles Calculation of Electronic Structures and Thermal Stability of Spinel $LiNi_2O_4$
A. Kuwabara, C. Fisher, Y. Ikuhara, H. Moriwake, H. Oki, and Y. Ikuhara

840 Investigations of the Phase Diagram of the Lithium-Manganese-Nickel Oxide System obtained at 800℃
E. McCalla and J. Dahn

855 Silicon Nitride Thin Film Electrode for Lithium-Ion Batteries
N. Suzuki, R. B. Cervera, T. Ohnishi, and K. Takada

856 Investigation on Si Anode Materials for Lithium-Ion Batteries Using X-ray Absorption Spectroscopy
X. Yu, K. Nam, C. Ma, E. Hu, Y. Zhou, H. Li, and X. Yang

857 Negatively and Positively Nanopatterned Silicon for Use in Lithium-ion Batteries
S. Nam, D. Park, J. Lee, J. Lee, and W. Kim

858 Retardation of Phase Transformation of Li_xCoO_2 in Fast Discharge
T. Kawaguchi, T. Ichitsubo, E. Matsubara, Y. Uchimoto, and Z. Ogumi

859 Low Temperature Synthesis of Manganospinel Based Cathodes for Li-ion Batteries
X. Hao and B. Bartlett

860 Effects of Heat Treatment on the Electrochemical Performance of $LiNi_{0.5}Mn_{1.5}O_4$ Cathode Materials via Spray Pyrolysis Method
J. Shiu, W. Pang, and S. Wu

861 Electrochemical Properties of High-Voltage $LiNi_{0.5}Mn_{1.5}O_4$ and High-Capacity $Li_{1.5}Ni_{0.25}Mn_{0.75}O_{2.5}$ Blends
X. Zhang, L. Li, and I. Belharouak

862 Combined In Situ X-ray Absorption Spectroscopy and First-Principle Calculation Studies on Local Structural and Electronic Structural Alternations of $LiNi_{1/3}Co_{1/3}Mn_{1/3}O_2$
H. Imai, K. Kubobuchi, M. Mogi, M. Matsumoto, M. Nishijima, T. Yamamoto, T. Matsumoto, and Y. Nitta

863 ^{6}Li NMR Spectroscopic Investigation on Local Structures and Battery Properties of Li_2MnO_3 Cathode Materials
H. Imai, K. Hashi, T. Sanada, K. Kamiguchi, A. Ito, M. Watanabe, K. Kubobuchi, M. Mogi, M. Matsumoto, N. Chiba, S. Ohki, T. Shimizu, M. Hatano, and T. Matsumoto

864 Impact of the Calendaring Process on the Interfacial Structure and the Related Electrochemical Performance of Secondary Lithium-Ion Battery Electrodes
W. Haselrieder, H. Seeba, and A. Kwade

865 Si-C and SiO_x Versus Lithium Metal Anodes for High-Energy Rechargeable Batteries
A. Guerfi, D. Leblanc, P. Hovington, M. Lagacé, J. Trottier, J. Hamel-Paquet, M. Dontigny, A. Vijh, and K. Zaghib

866 Implementation and Characterization of Silicon Anode with Metal Alloy Inactive Matrix for Lithium-Ion Secondary Batteries
C. Lee, S. Kwon, J. Kim, S. Suh, J. Cho, J. Moon, J. Choi, S. Kang, and Y. Kim

867 First Principles Studies of the Electrochemical Lithiation and Delithiation of Crystalline Silicon
M. K. Chan, C. Wolverton, and J. Greeley

881 Electronic and Transport Properties of High-Capacity Silicate Cathode Materials for Li-Ion Batteries
R. Longo Pazos, K. Xiong, and K. Cho

882 High-Performance Lithium-ion Battery Cathodes Based on Porous FeF3 Nanowires
L. Li and S. Jin

883 Scale Bridging via Surrogate Modeling for Multi-Scale Analysis of Li-Ion Cathodes
W. Du, N. Xue, A. Sastry, J. Martins, and W. Shyy

884 Metal Oxide/Graphene Hybrid Nanostructured Electrodes for High Performance Lithium Batteries
H. Gullapalli, A. Reddy, and A. Pulickel

885 Thermal Aging on the Cycleability of Cells Made of {LiMn⅓Ni⅓Co⅓O2 + LiMn2O4} Composite Electrodes
B. Lochner, E. Wong, M. Dubarry, C. Truchot, B. Liaw, K. L. Gering, S. V. Sazhin, D. Jamison, and C. Michelbacher

886 Electrochemical Characterization of Sn as an Alternative Anode Material in Li-Ion Batteries
D. X. Liu, J. Black, and A. Co

887 Production of Cu-Sn Thin Films on Copper Substrate Via Electron Beam Deposition Technique
B. Polat, N. Sezgin, O. Keles, K. Kazmanlı, A. Abouimrane, and K. Amine

888 Investigating the Performance of Si- and Sn-Based Anode Materials in Electrovaya's Lithium Ion SuperPolymer Cells
L. Davis and R. DasGupta

889 Large Scale Production of Titanate and Tin Oxide Nanowire Powders and Arrays for Anodes
A. K. Thapa, T. Nguyen, V. Vendra, G. Sunkara, and M. K. Sunkara

890 Porous SnO_2 Helical Nanotubes and Sheets for Lithium-Ion Batteries
H. Luo, L. Fei, and Y. Xu

891 XPS Depth Profiling of Tin Anodes for Lithium Ion Batteries
J. M. Black and A. Co

892 Feedback Controlled Multistage Constant Current (FCMCC) Charging Protocol for Improving Performance on Lithium-Ion Battery
H. Wang, Y. Chen, and F. Wang

893 The Effect of Oxy-Nitride Formation in Lithium-Ion Conductivity for LiMe(Ge, Si and Ti)PS
S. Lee, D. J. Kalita, S. Woo, K. Lee, and Y. Yoon

894 Investigation of High-Temperature Endurance Test for Lithium-Ion Batteries in Vehicles
K. Maeda, K. Komatsu, and M. Takahashi

923 In-situ Separating Layer Coating upon the Wire-type Electrode for Flexible Lithium Batteries
K. V. Luu, Y. Lee, S. Song, C. Kim, and Y. Lee

924 Improvement of High-Capacity Behavior of Layered $Li_{1.23}Ni_{0.13}Co_{0.14}Mn_{0.56}O_2$ Cathodes by Fluorine Substitution for Li-Ion Batteries
J. Min, J. Gim, J. Song, J. Kim, and W. Im

925 First-Principles Study of K-edge XANES for Li-Rich Solid-Solution Layered Cathode Material
T. Tamura, R. Kobayashi, S. Ogata, T. Ohwaki, A. Ito, and Y. Ohsawa

926 Novel 3-Dimensional Electrochemical Energy Storage Systems
F. Roumi, C. Cid, J. Roumi, and M. Hoffmann

927 Highly Interconnected Silicon Nanowires Embeded in Porous Graphite as Anodes in Li-ion Batteries
S. Jeong, J. Lee, D. Yoon, H. Hwang, J. Kim, S. Kim, H. Sun, S. Park, and J. Cho

928 A Study on Structural and Electrochemical Properties of Overcharged Ni-based Cathode Materials for Li-Ion Batteries
W. Chang, D. Kim, H. Chang, B. Cho, J. Lee, and K. Chung

929 Anode Performance of Ni-P-coated Si Thick-film Electrodes for Li-ion Battery
M. Narita, H. Usui, N. Uchida, and H. Sakaguchi

930 Electrochemical Property of Anderson-Type Polyoxometalates as Cathode Material of Lithium Battery
S. Uematsu, E. Ni, and N. Sonoyama

931 Microstructure Study of Si Thin Film Anode with Different Adhesion Layers for Li-Ion Batteries
M. Oh, Y. Song, T. Yoon, C. Woo, J. Jeong, H. Lee, and S. Hyun

932 Hydrothermal Synthesis of $LiCoPO_4$ in the Presence of Carboxymethylcellulose
Y. Namiki, H. Munakata, and K. Kanamura

933 Fabrication of $Li_7La_3Zr_2O_{12}$-Based All-Solid-State Rechargeable Li-Metal Battery
J. Wakasugi, T. Nishioka, H. Munakata, and K. Kanamura

934 Preparation and Conductivity of Novel Ionic Liquid using Dianionic Hexacoordinated Silicates
M. Nanjo, Y. Nakano, and T. Esaka

935 Structure and Electrochemical Properties of Oxygen-Deficient Li_2MnO_{3-x}
K. Kubota, M. Hirayama, R. Kanno, M. Yonemura, Y. Imanari, K. Nakane, M. Cuisinier, N. Dupré, and D. Guyomard

936 A Study on the Thermal Behavior of $LiMnPO_4$ Cathode for Li Secondary Battery by Using Synchrotron Based X-ray Techniques
H. Kim, J. Kim, S. Lee, D. Jang, S. Muhammad, W. Yoon, Y. Choi, and K. Park

937 Analysis of Solid Electrolyte Interphase by Glow Discharge Optical Emission Spectroscopy for Li-Ion Battery Electrodes
H. Takahara, H. Miyauchi, H. Kobayashi, Y. Kobayashi, and T. Nakamura

938 Investigation of the Irreversible Reaction Mechanism on SiO Anode Material for Li-Ion Batteries
H. Yamamura, K. Nobuhara, S. Nakanishi, and H. Iba

939 SiOx Nanoparticles Preparation by an Evaporation and Condesation Process Using Induction Melting
J. Kim, B. Jang, and J. Lee

940 Copper Nanofiber-embedded Cobalt Oxide Thin-Film for High Performance Lithium-Ion Batteries
D. Park, S. Nam, J. Lee, J. Lee, and W. Kim

941 $LiMPO_4$ (M = Fe , Mn) for High Energy Rechargeable Lithium Battery by Solid State Reaction
T. Mahara, H. Miyauchi, H. Tomita, and Y. Sakaguchi

942 Surface Modified High Capacity Li-Excess Transition Metal Oxide by Metal Phosphates
J. Lim, J. Yeon, S. Lee, H. Sun, and H. Lee

943 Morphological, Structural and Electrochemical Study of Layered-Spinel Mixed Structure of Li-Mn-Ni-O as Cathode for Lithium ion Batteries
Y. Hwang, J. Choi, M. Christy, A. Zahoor, S. Park, P. Kim, and K. Nahm

944 Density Functional Theory Studies of Lithium Diffusion on the Step Edge of Graphene Sheets
Y. Kubota

945 Novel Flux Growth of $Li_{1+x}Mn_{2-x}O_4$ Crystals and Films for All-Crystal-State Lithium Ion Rechargeable Batteries
H. Wagata, H. Inagaki, T. Ishizaki, T. Sakaguchi, K. Kohama, S. Oishi, and K. Teshima

946 Electrochemical Fabrication of Si Nanoparticles on Carbon Nanofiber for High Capacity Anodes of Lithium Ion Battery
S. Choi, S. Woo, J. Park, S. Hwang, and D. Whang

947 Lithium Extraction Reaction for the Thin Films of Titanium Dioxide under UV Irradiation
S. Suzuki and M. Miyayama

948 Structural Analysis and Electrochemical Property of Trance Metal Substituted Calcium Ferrite-Type $Li(Mn_xM_{1-x})_2O_4$ (M= Ni, Ti)
M. Mamiya, K. Kataoka, J. Akimoto, S. Kikuchi, Y. Terajima, and K. Tokiwa

949 Graphene Oxide: Corrosion Inhibitor on LIB Cathode Current Collector
R. Prabakar and M. Pyo

950 Silicon Nanowires Prepared by Zinc-Thermal Reduction of Silicon Tetrachloride and Their Application to Lithium Ion Batteries
R. han, M. Yamagata, T. Nohira, R. Hagiwara, and M. Ishikawa

951 $LiNi_{0.6}Co_{0.2}Mn_{0.2}O_2$/$LiMn_{0.8}Fe_{0.2}PO_4$ Blends as Cathode Materials for High Energy Density Li Ion Battery
G. Choi, N. Kim, H. Lim, and S. Cho

952 A Study on Synthesis and Properties of Nano-Sized Metal Oxide Coated on Carbonnanotubes
Y. Kim, J. Yoon, A. Choi, S. Choi, K. Palanisamy, and W. Yoon

953 Electrochemical Performance of $LiNi_{0.5}Mn_{1.5}O_4$ Cathode Material Fabricated from Nanothorn Sphere Structured MnO_2
S. Lim, W. Ryu, W. Kim, and H. Kwon

954 Electrochemical Characteristics of Structure-modified Soft Carbon as an anode in Lithium Ion Batteries
Y. Jo, E. Lee, H. Jeong, Z. Lee, K. Hong, S. Lee, and Y. Kim

955 Exploration of Manganese Oxide Based Cathodes for Alkali Metal Ion Batteries
X. Hao and B. Bartlett

956 Electrochemical Lithiation and Delithiation of Stoichiometric Cu_3Sn and Cu_6Sn_5 Prepared Using Reduction-Diffusion Method
N. Fukuda, A. Kitada, K. Murase, T. Ichii, and H. Sugimura

957 Preparation of $LiNi_{0.5}Ni_{1.5}O_4$ Cathode Material through Spray Drying Assisted Annealing Process and Its Electrochemical Performance
J. Li, M. Lu, X. Liao, and Z. Ma

958 Highly Dispersed Sulfur in Porous Aromatic Framework as Cathode for Lithium-Sulfur Batteries
B. Guo, X. Sun, and S. Dai

959 In-Plane Ionic Conductivity of $Li(3x)La(2/3-x)TiO_3$ Thin Films Deposited on Perovskite Substrates
F. Aguesse, T. Rojo, and J. A. Kilner

960 Structural and Electrochemical Studies of Mesoporous $Li_4Ti_5O_{12}$-TiO_2 Composite Spheres as Anode Material for Lithium Ion Batteries
S. Ting, C. V. Li, and K. Chan

961 Method for Mitigating the Effects of Manganese Dissolution in Li-Ion Batteries
N. Levi, M. Levi, D. Aurbach, Z. Li, L. Zou, T. Fuller, and I. C. Halalay

1096 Origin of Voltage Hysteresis of the Li-Cu-TiS_2 Displacement Reaction System: A Multi-Scale Simulation Based on Thermodynamics and Kinetics
H. Yu, J. Bhattacharya, C. Ling, A. Van Der Ven, and K. Thornton

1097 The Effect of the Active Material of Lithium battery to the Contact Resistance between Carbon and Aluminum Current Collector
C. Honda, S. Onodera, K. Tachibana, and T. Nishina

1098 Entangled Structures of Germanium Nanowires & Graphite Nanofibers for the Anode of Lithium Ion Batteries
S. Woo, S. Choi, J. Park, S. Hwang, and D. Whang

B7 - Metal-Air Batteries

ECS Battery, ECS Energy Technology, ECS Fullerenes, Nanotubes, and Carbon Nanostructures, ECSJ Battery

1099 (Invited) Metal-Air Batteries: A Reality Check
S. Whittingham

1100 Very High Specific Surface Area Capacity Lithium-Air Battery
P. Stevens, G. Toussaint, P. Vinatier, and L. Puëch

1101 A Versatile Composite Electrode Design for Metal-Air Batteries
A. C. Marschilok, E. S. Takeuchi, and K. J. Takeuchi

1102 Comparison of Air Cathodes and Aluminium Anodes for High-Power Density Alkaline Aluminium-Air Batteries
D. MacAodhagáin, C. Ponce-de-Leon-Albarran, R. J. Wood, K. R. Stokes, and F. C. Walsh

1103 (Invited) Cycling Stability and Charging Behavior of Carbon Nanotube Electrodes for Li-O_2 Batteries
B. M. Gallant, R. R. Mitchell, C. V. Thompson, and Y. Shao-Horn

1104 N-Doped Graphene Nanosheet for Li-Air Fuel Cell under Acidic Conditions
E. Yoo, J. Nakamura, and H. Zhou

1105 Structure of Li_2O_2 Discharge Products on Free-Standing Aligned Carbon Nanotube Electrodes for Li-Air Batteries
R. R. Mitchell, B. M. Gallant, Y. Shao-Horn, and C. V. Thompson

1106 Graphene and N-Doped Graphene as Cathodes for Li-Air Batteries
Y. Li, J. Wang, X. Li, D. Geng, R. Li, and X. A. Sun

1107 (Invited) Promoting Ideal Reaction Processes in the Rechargeable Non-Aqueous Li-Air Battery
F. Bardé, Y. Chen, S. A. Freunberger, and P. Bruce

1108 (Invited) Fundamental Electrochemistry in Non-Aqueous Li-air
B. McCloskey, A. Speidel, R. Scheffler, V. Viswanathan, J. S. Hummelshøj, J. K. Nørskov, and A. Luntz

1109 (Invited) Metal-Air Technologies-- Reversibility of Zinc Electrode
J. Yamaki, A. Nakata, T. Yamane, T. Hirai, and Z. Ogumi

1110 Electrochemistry of Cathode Materials for Lithium-Oxygen Batteries Using Microelectrode Voltammetry
E. Nemanick

1111 Decomposition Kinetics of Li-Air Cell Discharge Products in Non-Catalyzed and Catalyzed Carbon Cathodes
S. Meini, H. Beyer, N. Tsiouvaras, M. Piana, and H. A. Gasteiger

1112 Toward Efficiently Rechargeable Li-O_2 Batteries: Freely Diffusing Catalysts and O_2 Electrode-Stable Solvents
W. Walker, V. Giordani, V. S. Bryantsev, J. Uddin, S. Zecevic, D. Addison, and G. V. Chase

1113 (Invited) Dual-Electrolyte Lithium-Air Batteries with Buffer Catholytes
A. Manthiram, L. Li, and Y. Fu

1114 Investigations of Li-O_2 Batteries Using Polyethylene Oxide in Structured Three-Phase Electrodes
J. R. Harding, Y. Lu, P. T. Hammond, and Y. Shao-Horn

1115 Recent Developments in Solid Li-Ion Electrolytes
V. Thangadurai

1116 The Effects of Electrolyte Salts on the Performance of Li-Air Batteries
E. Nasybulin, W. Xu, M. H. Engelhard, Z. Nie, J. Hu, J. Xiao, M. Gross, and J. Zhang

1117 (Invited) A Reversible Lithium-Air Battery with Low Charge Polarization using Ether-Based Electrolytes
K. Amine, J. Lu, H. Jung, K. C. Lau, Z. Zhang, J. Schlueter, P. Du, R. Assary, J. Greeley, G. Ferguson, H. Wang, J. Hassoun, H. Iddir, Y. Sun, B. Scrosati, and L. A. Curtiss

1118 A Long Life, High Capacity, High Rate Lithium-Air Battery Using a Stable Glyme Electrolyte
H. Jung, J. Park, H. Kim, J. Hassoun, C. Yoon, B. Scrosati, and Y. Sun

1119 Stability of Li-Salts during the Discharge Reaction in a Li-O_2 Cell
G. M. Veith, J. Nanda, and N. J. Dudney

1120 Stability of Pyr_{14}TFSI Ionic Liquid in Li-O_2 Cells and Its effect on the Cycling Behavior
M. Piana, N. Tsiouvaras, S. Meini, I. Buchberger, J. Wandt, H. A. Gasteiger, and A. Garsuch

1121 Electrochemical Performance of All-Solid-State Lithium-Air Batteries
H. Kitaura and H. Zhou

1122 (Invited) Investigation of ORR and OER in Non-Aqueous (and Aqueous) Li-O_2 Cells Using Metal Oxide Catalysts
B. D. Adams, S. Oh, R. W. Black, A. Baran- Harper, and L. F. Nazar

1123 Metal Nitrides as Alternative Catalyst for Air Cathodes
C. Pozo-Gonzalo, A. A. Torriero, P. Howlett, M. Forsyth, A. M. Glushenkov, O. Kartachova, and Y. Chen

1124 Role of Manganese Oxides in the Oxygen Electrode for Li-Air Batteries
I. Bae and K. Nam

1125 Highly Performance and Stable Core-corona Bifunctional Catalyst for Rechargeable Metal-air Batteries
Z. Chen, Z. Chen, D. Higgins, and A. Yu

1126 Graphene-Metal Oxide Catalysts for Li-O_2 Batteries
R. W. Black, J. Lee, B. D. Adams, A. Baran- Harper, and L. F. Nazar

1127 The effect of the Surface Area of $LaNiO_3$ Support on the Oxygen Reduction/Evolution Activity of Air Electrode for Rechargeable Metal-Air Batteries
M. Yuasa, H. Imamura, T. Kida, and K. Shimanoe

1128 Graphene/Metal Oxide Catalyst Based High Capacity Cathode for Li-O_2 Batteries
R. S. Kalubarme, C. Ahn, and C. Park

1129 Activated and Nitrogen Doped Carbon Nanofibers as Oxygen Reduction Electrode Materials for Zinc-Air Batteries
D. C. Higgins, Y. Liu, Z. Chen, and Z. Chen

1130 Nickel Cobalt Oxide Nanostructures on Graphene as an Active Bifunctional Electrocatalyst
D. Lee, A. Yu, H. Park, and Z. Chen

1131 Cyclic Voltammetry of Zn/Zn(II) Couple in Dycyanamide Anion and Bis-(trifluoromethylsulfonyl)Imide Anion Based Ionic Liquids
M. Xu, D. Ivey, Y. Bing, Z. Xie, and W. Qu

1132 Carbon Air Electrodes for Alkaline Aqueous Electrolyte Lithium/Air Secondary Batteries
H. Ohkuma, I. Uechi, N. Imanishi, Y. Takeda, and O. Yamamoto

1133 Microwave-Assistanted Synthesis of Ag-MnO_2/SWNT Electrocatalyst for Metal-Air Cells
G. Zhang and Y. Jiang

1134 Carbon Sphere Dotted with Co_3O_4 and RuO_2 Nano Particles for Rechargeable Li/Air Batteries
C. Park and Y. Park

1149 Modeling of Bifunctional Electrode in Metal Air Battery
D. Chan, K. Hsueh, C. Wu, and W. Chang

1150 Inhibiting Ability of Chelating Agent on Aluminum Corrosion in Alkaline Solution and Testing of Aluminum-Air Single Cell
C. Wu, C. Chung, K. Hsueh, and W. Chang

1151 The Kinetic Reaction of Aluminum-Air Battery in Different Aqueous Solution
C. Wang, K. Hsueh, and C. Hsieh

1152 Manganese Oxide Nanosheets: Applications in High Energy Density Zn-Air Batteries
Y. Korenblit, G. Yushin, and J. Cho

1153 (Invited) Protective Layers for the Lithium Electrode Based on Ceramic Phases
J. Cabana

1154 (Invited) Factors Affecting the Cycle Life of a Nonaqueous Li-Air Cell with a Protected Anode
D. Im, D. Lee, T. Kim, V. Roev, S. Ma, and S. Doo

1155 Lithium Dendrite Formation between PEO_{18}LiTFSI and Lithium Metal
H. Wang, N. Imanishi, Y. Takeda, and O. Yamamoto

1156 (Invited) Ultra-High Energy Density Lithium-Air Batteries Based on Protected Lithium Electrodes (PLEs)
S. J. Visco, E. Nimon, B. Katz, M. Chu, and L. De Jonghe

1157 Ionic Conductivity of Garnet-Type $Li_{7-x}La_3Zr_2O_{12-0.5x}$ Solid Electrolyte for Lithium Metal Electrode
Y. Nakata, K. Ishiguro, N. Imanishi, Y. Takeda, and O. Yamamoto

1158 Nickel Foam, a Probable Current Collector in Rechargeable Li-Air Batteries
X. Liu and D. Wang

1159 Degradation Products on Li-Negative Electrode and the Carbon Cathode in Li-O_2 Batteries
R. Younesi, M. Hahlin, and K. Edström

1160 Metal-Free "Li-Ion" Air Battery Realized by Controlling Solvation State in Electrolyte
Y. Yamada, M. Yaegashi, K. Furukawa, F. Li, H. Zhou, and A. Yamada

1161 (Invited) Investigation of Rechargeable Li-Air Battery
D. Zheng, Q. Wang, D. Qu, and X. Yang

1162 Effect of Substitution of Cobalt by Manganese on the Properties of Calcium-Doped Lanthanum Cobalt Oxide for Oxygen Reduction Reaction in Alkaline Medium
S. Malkhandi, P. Trinh, A. Manohar, G. Prakash, S. Narayanan, and A. Manivannan

B8 - Non-Aqueous Electrolytes for Lithium Batteries

ECS Battery, ECS Energy Technology, ECS Physical and Analytical Electrochemistry, ECSJ Battery

1188 Development of Sulfide Glass Electrolytes for All-Solid-State Lithium Batteries
A. Hayashi and M. Tatsumisago

1189 Suppression of H_2S Gas from Li_2S-P_2S_5 Glass Electrolytes by the Addition of Li_2O
T. Ohtomo, K. Kawamoto, A. Hayashi, and M. Tatsumisago

1190 New Lithium Superionic Conductor and Its Application to All Solid-State Batteries
R. Kanno, M. Hirayama, M. Yonemura, Y. Kato, and K. Kawamoto

1191 Interface Structures in Solid-State Lithium Batteries with Sulfide Electrolytes
K. Takada, X. Xu, K. Fukuda, K. Kumagai, K. Watanabe, K. Akatsuka, B. Hang, M. Osada, I. Sakaguchi, T. Ohnishi, T. Sekiguchi, and T. Sasaki

1192 Enlarged Lithium-Ions Migration Pathway by Substitution of B^{3+} for P^{5+} in Li_3PS_4
K. Homma, T. Yamamoto, S. Watanabe, and T. Tanaka

1193 First Principles Investigations of the $Li_{10}GeP_2S_{12}$ Superionic Conductor and Related Materials
S. Ong, Y. Mo, W. D. Richards, and G. Ceder

1194 First-Principles Molecular Dynamics Simulations for Li^+ Diffusion in Li_3PO_4 and Li_3PS_4 Elctrolytes
M. Ikeda, T. Yamasaki, C. Kaneta, K. Homma, T. Yamamoto, and T. Tanaka

1195 Analysis of Lithium-Ion Conduction in LISICON-Based Solid Electrolytes by First-Principles Molecular Dynamics Simulation
K. Fujimura, A. Kuwabara, H. Moriwake, A. Seko, Y. Koyama, and I. Tanaka

1196 Research on Electrode-Electrolyte Interfaces of Innovative New Generation Batteries
F. Mizuno and H. Iba

1197 The Preparation of $Li_7La_3Zr_2O_{12}$ by Sol-Gel Method and Its Electrochemical Performance
T. Nishioka, J. Wakasugi, N. Saito, H. Munakata, and K. Kanamura

1198 Flux Growth of Idiomorphic Garnet-Type Solid Electrolyte Crystals for All-Solid-State Lithium-Ion Rechargeable Batteries
H. Onodera, K. Teshima, H. Wagata, Y. Mizuno, K. Yubuta, T. Shishido, and S. Oishi

1199 High Lithium-Ion Conducting Garnet-type Oxide; $Li_{7+X}La_{3-Y}A_YZr_{2-Z}Nb_ZO_{12}$ (A = Alkali Earth Metals)
Y. Kihira, S. Ohta, H. Imagawa, and T. Asaoka

1200 Electrochemical Performance of an All-Solid-State Lithium-Ion Battery with Garnet-Type Oxide Electrolyte
S. Ohta, T. Saeki, S. Morishita, J. Seki, and T. Asaoka

1240 A Study of the Solid/Liquid Li^+-Electrolytes Interface
C. O'Laoire, J. S. Syzdek, and R. M. Kostecki

1241 Formulation and Properties of Vitreous Eutectic Electrolytes for Li-Ion Batteries
O. Geiculescu, D. DesMarteau, S. Creager, D. Hirschberg, O. Haik, Y. Shilina, E. Zinigrad, M. Levi, D. Aurbach, and I. C. Halalay

1242 Synthesis and Electrochemical Performance of Fluorinated Orthoborate Salts as Additives for Li-Ion Battery Electrolytes
O. Geiculescu, D. DesMarteau, S. Creager, V. Borgel, M. Levi, D. Aurbach, and I. C. Halalay

1243 Enhanced the Safety of the Lithium-Ion Batteries by the Electrolyte Additive
T. Yeh, J. Chen, S. Liao, M. Shen, and C. Liu

1244 Effects of $LiNO_3$ Additive on the Electrochemical Properties of Lithium-Sulfur Batteries
H. Kim

1245 Solvent-Dependent Solid Electrolyte Interphases on Nongraphite Electrodes
M. Ihara, H. Nakai, A. Kita, K. Kawase, and T. Kubota

1246 Electrolytes with Improved Safety Developed for High Specific Energy Li-Ion Cells with Si-Based Anodes
M. C. Smart, F. C. Krause, C. Hwang, J. Soler, W. C. West, B. Ratnakumar, and G. Prakash

1247 Enhanced Morphology and Cycling Efficiency of Li Metal Anode by Electrolyte Additives for Rechargeable Li Batteries
W. Xu, F. Ding, J. Zhang, X. Chen, M. H. Engelhard, M. Sushku, E. Nasybulin, J. Xiao, G. L. Graff, and J. Zhang

1248 Investigation of the Electrolyte Composition in a Li-S Cell upon Long-Term Cycling
R. Schmidt, H. Schneider, J. Tomforde, and T. Weiss

1249 Electrolyte Solvation and Ionic Association: Cyclic Carbonate and Ester-LiTFSI and -$LiPF_6$ Mixtures
W. A. Henderson, D. M. Seo, J. L. Allen, L. A. Gardner, S. Han, and P. D. Boyle

1250 Thermal Phase Behavior and Electrochemical/Physicochemical Properties of Carbonate and Ester Electrolytes with $LiBF_4$, LiDFOB and LiBOB
J. L. Allen, S. Han, D. W. McOwen, B. A. Knight, D. M. Seo, P. D. Boyle, and W. A. Henderson

1251 Delving into the Properties and Solution Structure of Nitrile-Lithium Difluoro(Oxalato)Borate (LiDFOB) Electrolytes for Li-Ion Batteries
S. Han, J. L. Allen, P. D. Boyle, and W. A. Henderson

1252 Ion Transport in Non-Aqueous Liquid Electrolytes Containing Oxide Inclusions
S. K. Das and A. J. Bhattacharyya

1253 The Influence of Molecular Interactions on Battery Electrolyte Properties and Processes
K. L. Gering

1254 Insight into Electrolyte Stability, Decomposition and Transport Properties from DFT and MD Simulations
O. Borodin, L. Xing, and T. Jow

1255 Electrolyte Structure Near Charged Electrode Surfaces: A Molecular Dynamics Simulation Study
D. Bedrov, L. Xing, J. Vatamanu, and O. Borodin

1256 Properties of Fluoro-Free Non-Aqueous Electrolytes: Computational Predictions and Experimental Results
J. Scheers, W. A. Henderson, P. Johansson, and P. Jacobsson

1257 Stability of Aprotic Solvents in Li-Air Batteries: Theoretical Investigation of Nucleophilic Substitution by Superoxide, C-H Acidity, and Autoxidation
V. S. Bryantsev, J. Uddin, W. Walker, V. Giordani, S. Zecevic, D. Addison, and G. V. Chase

1258 Ab Initio Study on Reduction Mechanisms of Vinylene Carbonate Using Global Reaction Route Mapping Method
K. Miyamoto, R. Asahi, and K. Ohno

1259 DFT Study on Reduction Reactions of Ethylene Carbonate and Propylene Carbonate as Co-Solvents inside Graphite in Lithium-Ion Battery Cells
K. Tasaki and A. Goldberg

B9 - Polymer Electrolyte Fuel Cells 12 (PEFC 12)

ECS Energy Technology, ECS Corrosion, ECS Physical and Analytical Electrochemistry, ECS Battery, ECS Industrial Electrochemistry and Electrochemical Engineering, ECSJ Fuel Cells, CSE, KECS

1260 Development of PEFCs with Nanostructurally Controlled Electrocatalysts
A. Hayashi and K. Sasaki

1261 Graphitized Aerogel Supported PEMFC catalysts for Oxygen Reduction Reaction
P. Kolla, Y. Normah, K. Kerce, and A. Smirnova

1262 Influence of Chemistry and Structure on the ORR Activity of Pt Supported on N-Doped Mesoporous Carbon
S. Shrestha, S. Ashegi, J. Timbro, and W. E. Mustain

1263 Low Pt-Loaded Nanofiber Electrodes for Hydrogen/Air Fuel Cells
M. Brodt and P. N. Pintauro

1264 Electrospinning : A Promising Pathway in the Design of Carbon Nanotubes-Based Electrodes for Hydrogen Fuel Cells
S. Zils and M. Michel

1347 Membrane Durability Testing for Heavy Duty Bus Fuel Cells
N. MACAULEY, M. Watson, M. Cruickshank, C. Lim, A. Tavassoli, G. Wang, X. Feng, M. Lauritzen, J. Kolodziej, S. Knights, and E. Kjeang

1348 Cross-linked Aromatic Polymers for High Durability PEM Membranes: Materials and Methods
M. Di Vona

1349 Cross-Linked poly(arylene Ether Ketone) Membranes Sulfonated on both Backbone and Pendant Position for High Proton Conducting and Low Water Uptake
H. Dang and D. Kim

1350 Poly(Arylene Ether Sulfone) Ionomers with Different Acidity Strengths and Fuel Cell Membrane Properties
Y. Chang, G. Brunello, M. Disabb-Miller, M. Hawley, Y. Kim, M. Hickner, S. Jang, and C. Bae

1351 Synthesis and Characterization of Sulfonated Poly(Arylene Ether-1,3,4-Oxadiazole) Derivatives
I. Hajdok and J. A. Kerres

1352 Effect of Humidity and Temperature on Durability of Sulfonated Poly(arylene ether sulfone ketone) Multiblock Copolymer Membranes in PEFC Operation
Y. Sakiyama, H. Uchida, M. Kondo, K. Miyatake, M. Uchida, M. Watanabe, and Y. Nakagawa

1353 Proton Mobility in Hydrated Acidic Polymers: Consequences for Optimization of Proton Conductivity
P. Knauth and M. Di Vona

1354 PFG-NMR and SANS Studies in Cation Exchange Membranes based on Sulfonated Polyphenylene Multiblock Copolymers
M. Yoshida, Y. Zhao, M. Yoshizawa-Fujita, A. Ohira, Y. Takeoka, S. Koizumi, and M. Rikukawa

1355 Proton Conductive Paths on Polymer Electrolyte Membranes Detected by AFM under Controlled Hydrogen Atmosphere
J. Inukai, M. Hara, D. Hattori, B. Bae, K. Miyatake, and M. Watanabe

1356 Synthesis of Polyethylene-Based Proton Exchange Membranes Containing PE Backbone and Sulfonated Poly(arylene ether sulfone) Side Chains for Fuel Cell Applications
H. Kim, S. N. Lvov, and T. Chung

1357 New Ionically and Covalently Cross-Linked Polyaromatic Membranes for Fuel Cells and Electrolysis
J. A. Kerres

1358 Studies on the Platinum Dissolution Reaction in PEMFC Electrocatalysts - The Effect of Temperature on catalyst degradation
P. Sivasubramanian and R. Mohtadi

1412 Investigation of Carbon Corrosion Resistance of CNT Containing Electrode
D. Larrabee, W. A. Rigdon, E. McPherson, J. J. Sightler, and X. Huang

1413 Investigation of the Corrosion of Carbon Supports in Polymer Electrolyte Fuel Cells Using Simulated Start-Up/Shut-Down Cycling
Y. Park, K. Kakinuma, M. Hara, M. Uchida, H. Uchida, and M. Watanabe

1414 Durability of Arc Plasma Synthesized Pt/C Nano-Catalyst
H. Joo, J. Park, and H. Choi

1415 Kinetics and Mass Transport Investigation of Pt/Carbon Electrocatalyst by Rotating Disk Electrode
C. Wang, N. Dale, and K. Adjemian

1416 Oxygen Reduction Reaction Activity and Durability of Electrocatalysts Supported on SnO_2
T. Tsukatsune, Y. Takabatake, Z. Noda, S. Taniguchi, Y. Shiratori, A. Hayashi, and K. Sasaki

1417 Effects of Tin Dioxide Loading on ORR Activity and Durability of Pt/C Catalyst
N. Eguchi, T. Kinumoto, T. Tsumura, and M. Toyoda

1418 Durability Enhancement of Pt/C Catalysts via Support Functionalization with Silicotungstic Acid
K. S. Mason, K. Neyerlin, M. Kuo, K. Horning, S. S. Kocha, J. A. Turner, and A. Herring

1419 Performance Evaluation of Pt-Deposited SiO_2 Composite Catalyst under Low Humidity Conditions
J. Yoo, I. Choi, S. Ahn, J. Kim, and O. Kwon

1420 Durability of Au Core/Pt Shell Structured Catalyst
E. Maki, Y. Ikehata, T. Nishikawa, Y. Kirihata, N. aoki, H. Inoue, H. YAMADA, H. Daimon, and M. Inaba

1421 Electrochemical Stability of Pt ML on Au/QC Electrode
H. YAMADA, A. Kawamura, T. Kobayashi, K. Katakura, and M. Inaba

1422 Electrochemical Stability for Pt-Enriched Ni/Pt(111) Topmost Surface Prepared by Molecular Beam Epitaxy
N. Todoroki, Y. Iijima, R. Takahashi, K. Matsumoto, Y. Yamada, T. Hayashi, and T. Wadayama

1423 Platinum Dissolution in Nitrogen Oxides-Containing $HClO_4$ Solution Studied by Electrochemical Quartz Crystal Microbalance
Y. Uchiyama, T. Abe, T. Morita, and S. Imabayashi

1424 Poly(Benzimidazole)-Functionalized Graphene Supported Pt Electrocatalyst and Its Application in High Temperature PEM Fuel Cells
A. A. Permyakova, J. Jensen, Q. Li, and N. Bjerrum

1501 Fabrication and Optimization Membrane Electrode Assembly with Support-Less Platinum Catalysts for Space Applications
X. Huang, W. A. Rigdon, K. J. Billings, and T. I. Valdez

1502 Novel Metallic Glass Micro Fuel Cell Architecture
R. C. Sekol, G. Kumar, M. Carmo, S. Mukherjee, F. Gittleson, N. Hardesty-Dycke, J. Schroers, and A. D. Taylor

1503 Screening Balance of Plant Materials to Understand their effect on Fuel Cell Performance
H. N. Dinh, M. Das, K. Neyerlin, M. S. Opu, H. Wang, C. S. Macomber, M. Ohashi, and J. Van Zee

1504 Investigating the Performance of Catalyst Layer Micro-Structures with Different Platinum Loadings
M. Khakbaz Baboli, D. A. Harvey, and J. G. Pharoah

1505 Development of Ultra-Low Pt Alloy Cathode Catalyst for PEM Fuel Cells
B. N. Popov, T. Xie, T. Kim, W. Jung, A. Kriston, P. Ganesan, and H. Kim

1506 Synthesis and Properties of High Temperature Proton Exchange Membranes Based on Polybenzimidazoles Containing Hydroxypyridine
L. Zhou and R. He

1507 Polymer Electrolyte Membranes for Fuel Cells of Graft-type sulfonated Polybenzimidazoles
J. Park, M. Asano, Y. Maekawa, and K. Kudo

1508 Performance of the HT-PEM Membrane Electrode Assembly
H. Hjuler, T. Steenberg, C. Terkelsen, T. Holst, H. Garcia, and K. Cooper

1509 Performance Analysis of a HT-PEM Fuel Cell under Mechanical Compression Control
A. Diedrichs and P. Wagner

1510 Thermogravimetric and Spectroscopic Investigation of the Interaction between Polybenzimidazole and Phosphoric Acid
A. Majerus, F. Conti, C. Korte, W. Lehnert, and D. Stolten

1511 Sulfonated-Nanocomposites Incorporated Polybenzimidazole Based Polymer Electrolyte Membranes for Fuel Cells
K. A. Stewart and H. Pal Singh Missan

1512 Novel Polybenzimidazole-Phosphoric Acid Membranes for Fuel Cell Applications
G. W. Yeager, L. Krishnan, E. Thomas, and T. Zhang

1513 A Novel, Easy to Synthesize, Anhydrous Derivative of Phosphoric Acid for Use as Electrolyte in H_2/O_2 Fuel Cells
Y. Ansari, T. Tucker, and A. Angell

1514 Non-Humidified Fuel Cells Using a Protic Ionic Liquid as Electrolyte
T. Yasuda, Y. Honda, R. Tatara, K. Dokko, and M. Watanabe

1650 Advanced Electrocatalysts for PEM Fuel Cells
C. Wang, D. van der Vliet, D. Tripkovic, D. Strmcnik, D. Li, N. M. Markovic, and V. R. Stamenkovic

1651 In Situ Pt K-Edge XAFS Study on Pt/Au Nanoclusters for Fuel Cell Catalysts
T. Kaito, H. Mitsumoto, S. Sugawara, K. Shinohara, H. Uehara, H. Ariga, S. Takakusagi, and K. Asakura

1652 Evaluation of Electrocatalytic Activity and Durability for Oxygen Reduction Reaction of Au Core/Pt Shell Catalysts with Small Core
E. Higuchi, K. Okada, M. Chiku, and H. Inoue

1653 Improvement of Durability of Au core/Pt Shell Structured Catalyst
H. Daimon, N. aoki, H. Inoue, T. Nishikawa, Y. Ikehata, E. Maki, H. YAMADA, and M. Inaba

1654 Synthesis of Pt-Au Nanoparticle Netlike Assembly as High Active and Durable Catalysts for ORR
Z. Zhou, H. Wang, L. Song, C. Chen, N. Tian, and S. Sun

1655 In Situ XAFS Study on the Structure and Behavior of PEFC Core-Shell Pt-M/C (M = Au, Pd) Catalysts under Stepwise Voltage Operation Conditions
S. Nagamatsu, T. Arai, M. Yamamoto, H. Oyanagi, T. Ishizaka, H. Kawanami, T. Uruga, M. Tada, and Y. Iwasawa

1656 Enhanced Oxygen Reduction Performance and Durability for Titanium Dioxide Modified PtAu/C Nanoparticles
C. Liu, M. Janyasupab, Y. Zhang, C. Lai, J. Lin, L. Tsai, C. Liu, and K. Wang

1657 PtPd Areogels as a New Class of High Surface Area Catalysts towards the Oxygen Reduction Reaction
W. Liu, A. Rabis, A. Foeslke, R. Kötz, J. Yuan, A. Hermann, P. Rodriguez, A. Eychmüller, and T. J. Schmidt

1658 Pt-Sn(Oxidized Shell)/C and Pt-Sn(Reduced)/C as Cathode Catalysts for the Oxygen Reduction Reaction in Polymer Electrolyte Fuel Cells: Catalyst Performances and Characterization
G. Samjeské, S. Nagamatsu, K. Nagasawa, Y. Imaizumi, S. Takao, O. Sekizawa, T. Yamamoto, T. Uruga, and Y. Iwasawa

1659 PtSc Alloy Nanocrystals as Electrocatalysts with High Specific and Mass Activity for Oxygen Reduction Reaction
Y. Zhang, Z. Zhuang, and Y. Yan

1660 Hydrogen Oxidation at Small Amount of Pt on TiO_2-SiO_2
W. Zhang, S. Shironita, and M. Umeda

1661 Hydrocarbon Electrolytes with Nitrile Groups for Direct Methanol Fuel Cells
S. Hürter, M. Müller, D. Stolten, and M. D. Guiver

1704 Optimization of Clamping Pressure for High Pressure (Proton Exchange Membrane) PEM Electrolyzers
O. F. selamet, M. Acar, M. Ergoktas, and M. Mat

1705 Comparing Platinum and Palladium as Hydrogen Oxidation/Evolution Electrocatalysts in Alkaline Medium
J. Herranz, P. Rheinländer, S. Henning, and H. A. Gasteiger

1706 Carbonate and Bicarbonate Ion Transport in Alkaline Anion Exchange Membranes
A. M. Kiss, T. D. Myles, K. N. Grew, A. A. Peracchio, G. J. Nelson, and W. K. Chiu

1707 Alkaline Stability and Ion Conductivity of Polysulfone Anion Exchange Membranes (AEMs) with Different Cation Chemistries
C. G. Arges and V. Ramani

B10 - Renewable Fuels from Sunlight and Electricity

ECS Energy Technology, ECS High Temperature Materials, ECS Physical and Analytical Electrochemistry, ECS New Technology Subcommittee, ECSJ, KECS

1708 Electron- and (In Situ) Soft X-ray Spectroscopy of Materials for Photo-Electrochemical Water Splitting
L. Weinhardt

1709 Analysis of Functional and Dysfunctional Defects in Photoelectrode Materials for Solar Water Splitting
A. Braun, N. M. Gaillard, Y. Chang, D. K. Bora, K. Gajda-Schrantz, J. Guo, Z. Liu, K. Sivula, M. Grätzel, and E. Constable

1710 Hybrid Photovoltaic/Photoelectrochemical Device Design Using I-III-VI2 Copper Chalcopyrite-Based Photocathodes
J. M. Kaneshiro, Y. Chang, and N. M. Gaillard

1711 Silicon Microwires Coupled to Earth Abundant Catalysts as Photocathodes for the Hydrogen Evolution Reaction
E. L. Warren, J. R. McKone, M. R. Shaner, H. A. Atwater, H. B. Gray, and N. S. Lewis

1712 Photoelectrochemical Hydrogen Production from Water Using p-type Calcium Ferrite and n-type Semiconducting Electrodes
S. Ida, K. Yamada, H. Hagiwara, and T. Ishihara

1713 Band Structure Controls of $SrTiO_3$ towards Visible-Light Induced Two-Step Overall Water-Splitting
H. Irie

1714 Development of Metal-Oxide-Semiconductor (MOS) Electrodes for Photoelectrochemical Water Splitting
D. V. Esposito, A. Talin, and T. Moffat

1769 Synthesis and Electrochemical Properties of Platinum-Based Films Used as Cathode Materials in the Dye-Sensitized Solar Cells
P. Hien, L. M. Phung, N. T. Hoang, and N. T. Thoa

1770 The Properties According to Pore Former with SOFC Unit Cell Using Decalcomania Method
M. Lee, B. Kim, B. Choi, and S. Kim

1771 Solar Hydrogen Generation at Pre-Structured Silicon Photocathodes Activated by Bimetallic Nanoparticles
M. Lublow, C. Merschjann, and T. Schedel-Niedrig

1772 Understanding the Reaction Mechanism in the Sugar-Air Flow Battery
S. Li, D. Scott, and B. Liaw

1773 Catalytic Reduction of Carbon Dioxide to Carbon Monoxide Using the Rhenium(I) Complex (5,5'-Bisphenylethynyl-2,2'-Bipyridyl)$Re(CO)_3Cl$
E. Portenkirchner, K. Oppelt, C. Ulbricht, D. A. Egbe, H. Neugebauer, G. Knör, and N. Sariciftci

1774 New Polyethylene Based Anion Exchange Membranes (PE-AEMs) with High Ionic Conductivity
M. Zhang, H. Kim, E. Chalkova, F. Mark, S. N. Lvov, and T. Chung

1775 Ruthenium-Based Materials for Oxygen and Hydrogen Evolution Catalysis in Photoelectrochemical Applications
Y. Chang, J. M. Kaneshiro, and N. M. Gaillard

1776 Membranes for Solar Water Splitting Devices
S. Ardo, M. McDonald, S. Park, M. DiFranco, M. Freund, and N. S. Lewis

1777 A Non-Combustible Process for Generating Energy from Bio-Waste
A. Kumar, V. Kamavaram, V. Veedu, and K. Cheung

1778 Electrochemistry of Molybdenum and Its Oxides for CIGS Solar Cells
V. S. Saji, S. Lee, Y. Yeon, and C. Lee

1779 Interhalogen-Based Binary-Redox Couples for High-Voltage Solar Cells
N. C. Deb Nath, S. Sarker, H. Lee, and J. Lee

1780 Development of an Artificial Co-Enzyme for Formate Dehydrogenose with the Function of CO_2 Reduction
S. Ikeyma and Y. Amao

1781 Photoelectrochemical Dehydrogenation of Ammonia Borane with Pt/n-Si
H. Inoue, C. Matsuda, M. Shimada, M. Chiku, and E. Higuchi

1782 The Activity of Ash-free Coal in Direct Carbon Fuel Cells
H. Ju, J. Kim, J. Lee, S. Lee, R. Song, and J. Lee

1783 In-situ FTIR Analysis of CO2 Electrochemical Reduction at Copper Electrodes
M. Ren, E. Andrews, and J. Flake

1784 Theoretical Characterization of Ammonia Oxidation Intermediates and Products on Platinum Clusters
D. A. Daramola and G. G. Botte

1785 Evaluation of Current Efficiency of SOEC Using Precise On-Line Gas Analysis
Y. Tanaka, S. Nakamura, K. Sato, K. Nozaki, T. Kato, and A. Yamamoto

1786 Metal Tungstates as Oxygen Evolution Catalysts
H. Jia, T. Sekito, J. Stark, L. Zhou, and L. Chen

1787 Modified Fe_2O_3 Photoanodes Prepared by Pulse Electrodeposition
W. J. Lee, P. Shinde, and G. Go

1788 Polycrystalline Cu(In, Ga)Se_2 Thin Films and PV Devices Sputtered from a Binary Target without Additional Selenization
P. Liu, B. B. Jheng, and M. Wu

1789 Theoretical Investigations of Transition Metal Nano-Clusters for Electrochemical NH_3 Production
J. G. Howalt and T. Vegge

1790 Choline Chloride Enhancement of Carbon Dioxide Reduction on Platinum Catalysts
W. Zhu, B. Rosen, A. Salehi-Khojin, and R. Masel

1791 Structure Sensistivity of CO_2 Conversion on EMIM-BF4 Silver Co-Catalyst System
A. salehi-khojin, B. Rosen, W. Zhu, and R. Masel

1792 Basic Study of Alkaline Water Electrolysis
A. Manabe, T. Hashimoto, M. Kashiwase, M. Kurosaki, T. Hayashida, K. Hirao, I. Shimomura, and I. Nagashima

1793 CO_2 Reduction at Glassy Carbon Electrode in the Presence of Pyridine
J. Agullo, M. Morin, and D. Bélanger

1794 Cu Monolayer on Au/C and Pt/C for the Electrochemical Reduction of CO_2 to Hydrocarbons
I. L. Escalante-Garcia, J. S. Wainright, and R. F. Savinell

1795 Ti-Doped Hematite Nanostructures for Solar Water Splitting with High Efficiency
J. Deng, J. Zhong, A. Pu, D. Zhang, and X. Sun

1796 Electrochemical Synthesis of Disordered Three-Dimensional Cuprous Oxide (Cu_2O) Film and Its Photoelectrochemical Properties
S. Yoon, M. Kim, J. Lim, K. Lee, and B. Yoo

1811 Electrochemical Reduction of CO_2 to Value-Added Products: The effect of Electrode Structure and Electrolyte
H. Jhong, M. R. Thorson, S. Ma, A. Salehi, and P. J. Kenis

1812 Carbon Dioxide Decomposition and Oxygen Generation Via SOEC
H. Guo and B. Kang

1813 Low Overpotential CO_2 Reduction on Nanostructured Copper Electrodes
C. W. Li and M. Kanan

1814 Room Temperature Electrochemical Synthesis of Oxygenates through a Carbonate Anion Pathway
N. Spinner and W. E. Mustain

1815 Degradation of Solid Oxide Electrolysis Cells Applied for H_2O/CO_2 Co-Electrolysis
Y. Tao, S. D. Ebbesen, and M. Mogensen

1816 Hydrogen Production Via Electrolysis in Cu-Cl Thermochemical Cycle
S. N. Lvov, R. Schatz, S. Kim, S. Khurana, A. Morse, M. Chung, and M. Fedkin

1817 Nanostructured Molybdenum Carbide as Pt-Free Catalysts for Hydrogen Evolution
W. Chen, C. Wang, K. Sasaki, N. Marinkovic, W. Xu, J. Muckerman, Y. Zhu, and R. R. Adzic

1818 Reverse Combustion: The Efficient Electrochemical Conversion of Carbon Dioxide and Water to Organic Fuels Using an Aromatic Amine Catalyst
A. B. Bocarsly, T. Shaw, E. Zeitler, K. Liao, Y. Hu, Z. Detweiler, M. Baruch, J. Herb, and J. White

1819 Reactive Molecular Dynamics Modeling of Interfacial Phenomena in Solid Oxide Fuel Cells
B. V. Merinov, A. C. van Duin, and W. Goddard III

1820 Modeling the Behavior of a Solar-Hydrogen Generator
S. Haussener, C. Xiang, A. Berger, J. Newman, N. S. Lewis, and A. Weber

1821 Renewable Liquid Fuels from Sunlight
P. G. Hoertz, J. Bittle, A. Miller, D. Murry, C. Bonino, J. Newman, and J. Trainham

1822 Low-Cost Renewable Hydrogen from Sunlight and Water
S. Y. Reece

1823 Thermochemical Water Splitting with Zirconium-Substituted Cerium Oxides
Y. Hao, W. Chueh, and S. M. Haile

1824 Heterogeneous Nanostructures: Fast Electrochemistry for High-To-Ultrahigh Power Electrical Energy Storage
S. Lee

1825 Kinetics of Oxidation of CO and H_2 and Reduction of CO_2 and H_2O in Ni/YSZ Based Solid Oxide Cells
S. D. Ebbesen and M. Mogensen

1826 Understanding Trends in Electrocatalytic Activity for CO Evolution
H. A. Hansen, J. Varley, A. A. Peterson, and J. K. Nørskov

1827 The Status of Direct Methanol Fuel Cell System Lessons Learned and the Road Ahead
D. Chu and R. Jiang

1828 X-ray Absorption Measurements on Perovskite Electrodes for the Oxygen Evolution Reaction
M. Risch, K. Stoerzinger, K. May, A. Mansour, and Y. Shao-Horn

1829 Crossover in a Homogeneous-Catalyst Reactor
J. Newman

1830 Proton Conductive Niobium Phosphates as Electrolytes for Fuel Cells Operating with Renewable Biofuels
Y. Huang, Q. Li, T. Anfimova, A. H. Jensen, J. Jensen, E. Christensen, and N. Bjerrum

B11 - Sodium Batteries

ECS Battery, ECS Energy Technology, ECS High Temperature Materials, ECSJ Battery

1831 Sodium Ion Batteries for Grid Applications
M. M. Doeff, M. Shirpour, and J. Cabana

1832 Towards the Development of the Na-Ion Technology: In Search of Suitable Electrodes and Electrolytes
A. Ponrouch, P. Senguttuvan, E. Marchante, M. Courty, J. Tarascon, and M. Palacin

1833 Understanding the Difference in Intercalation Behavior between Layered Na- and Li-Transition Metal Oxides
S. Kim, X. Ma, S. Ong, and G. Ceder

1834 P2-type $Na_{2/3}[Fe_{1/2}Mn_{1/2}]O_2$ Made from Earth-Abundant Elements for High-Energy Na-Ion Batteries
N. Yabuuchi, M. Kajiyama, Y. Yamada, and S. Komaba

1835 Structure and Electrochemistry of $Na_xFe_xMn_{1-x}O_2$ Na-Ion Cathode Materials
J. S. Thorne, R. A. Dunlap, and M. N. Obrovac

1836 Layered $Na_{1-x}Li_xNi_{0.5}Mn_{0.5}O_2$ Electrodes with O3- and P2- Composite Structure for Na-Ion Batteries
E. Lee, D. Kim, M. Slater, S. Rood, V. Maroni, D. Bass, S. Hackney, and C. S. Johnson

1837 A Study of the Reactivity of De-Intercalated $NaNi_{0.5}Mn_{0.5}O_2$ with Non-Aqueous Solvent and Electrolyte by Accelerating Rate Calorimetry
X. Xia and J. Dahn

1838 Cathode Properties of Disodium Rhodizonate for Sodium Secondary Battery
K. Chihara, N. Chujo, A. Kitajou, E. Kobayashi, and S. Okada

1839 Electrochemical Behavior of Olivine $FePO_4$ Cathode Material for Na-Ion Batteries
P. Kubiak, M. Casas-Cabanas, V. Roddatis, J. Carretero-Gonzalez, D. Saurel, and T. Rojo

1840 First Principles Investigations of the Electrochemical Properties of Sodium-Ion Cathode Materials
A. J. Toumar, W. D. Richards, S. Kim, X. Ma, X. Li, S. Ong, and G. Ceder

1841 Development of High Capacity Positive Electrode Material for Sodium Ion Battery
R. Kataoka, T. Mukai, K. Nakatani, A. Yoshizawa, and T. Sakai

1842 Na-Ion Intercalation Cathode with High Rate and Excellent Structural Stability
D. Lee, J. Xu, and Y. Meng

1843 Nanostructured Na-Ion Full-Cells
S. Tepavcevic, H. Xiong, C. J. Johnson, and T. Rajh

1844 Sodium Manganese Oxide Thin Film Cathodes: Characterization of a Na-Ion Intercalation Model System
L. Baggetto, C. A. Bridges, R. R. Unocic, F. Delnick, N. J. Dudney, and G. M. Veith

1845 Phase Change of $NaFeO_2$ during Electrochemical Na Intercalation and Deintercalation: An In Situ X-ray Diffraction Study
N. Takeichi, K. Kuratani, M. Yao, M. Tabuchi, and T. Kiyobayashi

1846 Microstructure Evolution with Electrochemical Desodiation Process in Na_xMnO_2
X. Li, X. Ma, A. J. Toumar, S. Ong, and C. Gerbrand

1847 Novel Cathode Materials of Sodium-Containing Metal Phosphates as Highly Voltage Sodium-Ion Batteries
M. Nose, H. Nakayama, K. Nobuhara, S. Nakanishi, and H. Iba

1848 Structural Investigation of $NaCrO_2$ as a Positive Electrode for Rechargeable Sodium Battery Using Molten NaFSA-KFSA
C. Chen, K. Matsumoto, T. Nohira, R. Hagiwara, K. Numata, E. Itani, A. Fukunaga, S. Sakai, K. Nitta, and S. Inazawa

1849 Electrochemical Properties of Sn-Based Electrodes for Na-Ion Batteries
Y. Matsuura, T. Ishikawa, W. Murata, N. Yabuuchi, S. Kuze, and S. Komaba

1850 Na Insertion Mechanism in Alpha $NaFeO_2$ as Positive Electrode Materials for Na-Ion Batteries
H. Yoshida, N. Yabuuchi, and S. Komaba

1851 Synthesis, Characterizations and Electrochemical Studies of $Na_2Ti_6O_{13}$ for Sodium Ion Batteries
N. Trinh, O. Crosnier, S. Schougaard, and T. Brousse

1852 High Capacity Negative Electrodes for Na-Ion Batteries: Insertion Mechanism and SEI Layer
S. Komaba, T. Ishikawa, Y. Matsuura, W. Murata, N. Yabuuchi, S. Shimazu, J. Son, Y. Cui, H. Oji, K. Gotoh, and K. Takeda

1853 Reversible Insertion of Sodium in Tin
L. D. Ellis, T. D. Hatchard, and M. N. Obrovac

1854 First-Principles Study on Alkali Metal-Graphite Intercalation Compounds
K. Nobuhara, H. Nakayama, S. Nakanishi, and H. Iba

1855 Electrochemical Properties of Titanium-Based Anode Materials for Rechargeable Na Ion Battery
H. Nakayama, M. Nose, K. Nobuhara, S. Nakanishi, and H. Iba

1856 GaV_4S_8 : A New Class of Anode Material for Sodium-Ion Batteries
C. Michelet, O. Crosnier, T. Brousse, P. Moreau, and D. Guyomard

1857 Electrochemical Insertion of Na Ion into Nanocarbon Materials for Sodium Ion Batteries
T. Matsushita, Y. Ishii, and S. Kawasaki

1858 Reaction of Li and Na with Iron Oxide/ Carbon Nanotube Composite Electrode in Ionic Liquid Electrolyte
M. Egashira, Y. Tsubouchi, D. Ogawa, N. Yoshimoto, and M. Morita

1859 Microwave Synthesized $NaTi_2(PO_4)_3$ Anode Materials For Rechargeable Aqueous Electrolyte Sodium-Ion Battery
W. Wu, A. Mohamed, and J. F. Whitacre

1860 $Na_3V_2(PO_4)_3$/C : A Novel Porous Sodium Ion Insertion Host For Sodium Ion Battery Applications
K. Saravanan, L. Bing, and P. Balaya

1861 Quinone-Based Organic Active Materials for Use in Sodium and Magnesium Batteries
M. Yao, H. Senoh, H. Sano, K. Kuratani, T. Kiyobayashi, and H. Sakaebe

1862 Na-Ion Capacitor Using Activated Carbon and Na Pre-Doped Hard Carbon
K. Kuratani, M. Yao, H. Senoh, N. Takeichi, T. Sakai, and T. Kiyobayashi

1863 Synthesis and Characterization of $Na_{3+x}M_xZr_{2-x}Si_2PO_{12}$ for Solid State Na-Ion Battery Applications
G. Hitz, K. Lee, and E. D. Wachsman

1878 Influence of Sulfur Concentration on Low Temperature Operation of the Cell Na/β"-Alumina/S(IV) in $AlCl_3$-NaCl Melt
T. J. Dunstan and J. Caja

B12 - Solid State Ionic Devices 9 - Ion Conducting Thin Films and Multilayers

ECS High Temperature Materials, ECSJ Solid-State Chemistry

1879 Innovative Oxides Materials for Electrochemical Energy Conversion
E. D. Wachsman

1880 Study of Crystal Growth in Oxide Thin Films Fabricated by Pulsed Laser Deposition
N. Sata, S. Tamura, Y. Fujiwara, Y. Shibata, F. Iguchi, H. Yugami, Y. Nagao, H. Kageyama, and K. Nomura

1881 Probing $Pr_xCe_{1-x}O_{2-d}$ Thin Film Defect Concentrations Using In Situ Optical Absorption and Impedance Spectroscopy Techniques
S. R. Bishop, D. Chen, J. Kim, N. Thompson, and H. L. Tuller

1882 Metastable Thin Films for Energy Applications: On Structural Lattice Anomalies and Electrical Transport
J. L. Rupp, S. Bishop, E. Fabbri, J. Han, D. Marrochelli, E. Traversa, H. L. Tuller, and B. Yildiz

1883 Relating Nanostructures of Yttria-Stabilized-Zirconia Thin Films to Their Proton Conductivity
J. Martynczuk, M. V. Schlupp, B. Scherrer, D. Stender, R. Tölke, A. Evans, M. Prestat, and L. Gauckler

1884 Ion Conduction in $BaZr_{0.85}Y_{0.15}O_{3-\delta}$ Films Fabricated by Pulsed Laser Deposition in Various Conditions
D. Jang, K. Bae, and J. Shim

1885 Do Oxygen-Ion Conductors Feel the Strain
D. Pergolesi, E. Fabbri, S. N. Cook, V. Roddatis, E. Traversa, and J. A. Kilner

1886 Epitaxial Zirconia and Ceria Based Thin Films and Multilayers with Arbitrary Composition
W. Shen, J. Jiang, and J. L. Hertz

1887 Electric Conductivity in Cu- and Ga-Doped Pr_2NiO_4 Nano Film Laminated with Sm-Doped CeO_2
J. Hyodo and T. Ishihara

1888 Electronic Activation in the $(La_{0.8}Sr_{0.2})CoO_3/(La_{0.5}Sr_{0.5})_2CoO_4$ Supperlattices at High Temperature
Y. Chen, Z. Cai, Y. Kuru, H. L. Tuller, and B. Yildiz

1889 Low Energy Ion Scattering (LEIS) Analysis of $SrTiO_3$ (100) and $NdGaO_3$ (110) Single Crystal Surface Terminations
A. Cavallaro and J. A. Kilner

1890 Enhanced Oxygen Surface Exchange Kinetics in Surface Modified Yttria Stabilized Zirconia by Atomic Layer Deposition
J. Park, C. Chao, X. Tian, J. Shim, and F. Prinz

1891 Thin Film Electrolyte Membranes of Yttria-Stabilized Zirconia Prepared by Aerosol Assisted Chemical Vapor Deposition
M. V. Schlupp, J. Courbat, D. Briand, N. de Rooij, M. Prestat, and L. Gauckler

1892 Ion Conduction in Nanoscale Yttria-Stabilized Zirconia Thin Films Fabricated by Atomic Layer Deposition
K. Son, M. Bae, K. Bae, J. Ha, and J. Shim

1893 Atomic Resolution Imaging of Oxygen Columns in Oxide Ion Conductor Using HRTEM
J. An, A. Koh, J. Park, H. Jung, T. M. Gür, and F. B. Prinz

1894 Detecting Li-Ion Currents on the Nanoscale through a Thin Film Battery
N. Balke, S. Jesse, A. Tselev, N. J. Dudney, and S. Kalinin

1895 Lateral Oxygen Tracer Diffusion in a Multilayered SDC/PNCG Film Displaying Enhanced Electrical Conductivity
S. N. Cook, J. Druce, T. Ishihara, and J. A. Kilner

1896 Analysis of Lateral Diffusion of Oxide Ions along YSZ-MgO(100) Interface
K. Bae, J. Park, F. B. Prinz, J. Son, and J. Shim

1897 Electrochemical Performance of Free-standing Micro-Solid Oxide Fuel Cell Membranes using De-alloyed Pt-Y-Al Electrodes
R. Tölke, M. Prestat, H. Galinski, J. Martynczuk, and L. Gauckler

1898 Thin Pulsed Laser Deposited Bilayer Electrolytes in Anode-Supported SOFCs
J. S. Hardy, Z. Lu, J. W. Templeton, and J. W. Stevenson

1899 Morphological and Compositional Changes on YSZ/GDC Bi-layered SOFC Electrolytes in Various Temperature and Reducing Environments
Y. Jee, J. An, J. Choi, T. Park, G. Cho, M. Lee, F. B. Prinz, and S. Cha

1900 Cation Interdiffusion Model for Enhanced Oxygen Kinetics at Oxide Heterostructure Interfaces
M. Gadre, Y. Lee, and D. Morgan

1901 Nanostructured $La_{0.6}Sr_{0.4}CoO_{3-\delta}$ Cathodes Prepared by Spray Pyrolysis for Thin Film SOFC
M. Prestat, Z. Yáng, O. Pecho, L. Holzer, J. Martynczuk, A. Evans, L. Gauckler, T. Hocker, J. Hwang, and J. Son

1902 Cation Segregation and Electrochemical Activity of Ruddlesden Popper Phase Cobalt Oxides in Oxygen Reduction and Oxygen Evolution
Z. Cai, Y. Chen, and B. Yildiz

1903 In Situ Ambient Pressure X-ray Photoelectron Spectroscopy of Epitaxial Strontium Substituted Lanthanum Cobalt Oxides Near Operating Conditions Under Applied Potentials
E. J. Crumlin, E. Mutoro, Z. Liu, M. D. Biegalski, W. T. Hong, H. M. Christen, H. Bluhm, and Y. Shao-Horn

1904 Hard X-ray Surface Composition and Electronic Structure Measurements of Heteroepitaxial Solid Oxide Fuel Cell Cathode Material
J. N. Davis, L. Saraf, T. Kaspar, S. Gopalan, U. B. Pal, J. Woicik, S. Basu, and K. F. Ludwig

1905 Spray Pyrolysis Deposition and Electrochemistry of $La_{0.5}Sr_{0.5}Mn_{0.5}Co_{0.5}O_{3-\delta}$ Thin Film Anodes for Solid Oxide Fuel Cells
Z. Yáng, S. Bisig, M. Prestat, and L. Gauckler

1906 Synthesis and Characterization of Ruthenium - Gadolinia-doped Ceria Composite Thin Film Anode for Direct Methane SOFCs
Y. Takagi and S. Ramanathan

1907 Nanostructured Vanadium Oxide Anodes for Thin Film Solid-Oxide Fuel Cells
Q. Van Overmeere and S. Ramanathan

1908 Atomistic Investigation of Oxygen Vacancy Induced Volume Changes in CeO_2 Grain Boundaries
S. Kim and V. B. Shenoy

1909 Obtaining Mixed Ionic/Electronic Conductivity in Perovskite Oxides at Anodic Solid Oxide Fuel Cell Conditions: A Computational Approach
S. Suthirakun, S. C. Ammal, and A. Heyden

1910 Electrochromic Films Produced by Ultrasonic Spray Deposition of Mesoporous Tungsten Oxide
C. Li, F. Lin, R. M. Richards, R. Tenent, A. Dillon, and C. Wolden

1911 Development of Safe All Inorganic Li-Ion Batteries
L. Castro, G. Jouan, A. Kubanska, V. Seznec, L. Tortet, M. Morcrette, V. Viallet, R. Bouchet, and M. Dollé

1912 Stabilization of NASICON-Type $LiZr_2(PO_4)_3$ at Room Temperature
L. Castro, A. Kubanska, L. Tortet, R. Bouchet, and M. Dollé

1913 Open-Circuit Voltage Anomalies in Dense Bilayered Electrolytes: Explanation and Implications
K. Duncan and E. D. Wachsman

1927 Control of Activity and Stability by Tailoring Microstructure of Electrocatalyst-Modified Composite Cathode of SOFC
S. Lee, P. Ohodnicki, and K. Gerdes

1928 Characterization and Modeling of Infiltrated SOFC Cathode
X. Liu, Y. Li, M. Gong, K. Gerdes, R. Gemmen, R. Pakalapati, I. Celik, and T. Horita

1929 Ab Initio Based Modeling of $LaMnO_{3\{plus\ minus\}\delta}$ Defect Chemistry for Solid Oxide Fuel Cell Cathodes
Y. Lee and D. Morgan

1930 A-Site Diffusion in $La_{1-x}Sr_xMnO_3$: Ab Initio and Kinetic Monte Carlo Calculations
B. Puchala, Y. Lee, and D. Morgan

1931 Influence of Water Vapor on Sulfur Distribution Within $La_{0.6}Sr_{0.4}Co_{0.2}Fe_{0.8}O_3$ Cathode
F. Wang, K. Yamaji, D. Cho, T. Shimonosono, M. Nishi, H. Kishimoto, M. Brito, T. Horita, and H. Yokokawa

1932 Electrochemical Operation of $La(Ni,Fe)O_3$ under Cr-Poisoning Conditions
M. K. Stodolny, B. A. Boukamp, D. H. Blank, and F. P. van Berkel

1933 Nonlinear Electrochemistry Impedance Spectroscopy and Its Applications
N. Xu, J. Riley, and J. A. Kilner

1934 Ultra Small Angle X-ray Scattering Studies of Solid Oxide Fuel Cell Cathode Powders
K. Chang, B. Ingram, M. Hopper, J. Ilavsky, and H. You

1935 In Situ Examination of Oxygen Kinetics in $La_{1-x}Sr_xCoO_{3-\delta}$ Thin Films at Intermediate and Low Temperatures by X-ray Diffraction
M. D. Biegalski and S. V. Kalinin

1936 Preparation of $A_2BB'O_6$ Oxides by Pechini Method for Solid Oxide Fuel Cells
S. Kim, A. Dorai, D. Seo, I. Han, J. Yu, S. Kim, J. Joo, and S. Woo

1937 Crystal Structure and Electrical Properties of Al-Doped Lanthanum Silicate Solid Electrolytes
T. Funahashi, A. Mineshige, H. Mieda, Y. Daiko, H. Yoshioka, and T. Yazawa

1938 Power Generation of Rechargeable Direct Carbon Fuel Cells with Batch-type Charging System
H. Tanaka, A. Yabuki, X. Li, and M. Ihara

1939 A Comparative Study on Microstructural Change of LSM/SDC and LSCF/SDC Interfaces
M. Komoto, H. Muroyama, T. Matsui, and K. Eguchi

1940 Study of $La_{0.1}Sr_{0.9}Co_{0.8}Fe_{0.2}O_{3-\delta}$ for Ceria-Based IT-SOFC Cathode
M. Choi, H. Im, K. Lee, and S. Song

1941 Evaluation of Y and Fe Co-Doped $SrTiO_3$ as Anode Material for SOFC
H. Im, M. Choi, S. Jeon, and S. Song

1942 Resistivity and Interfacial Properties of CGO-YSZ Bilayers in Solid Oxide Fuel Cells
J. Hjelm, P. Hjalmarsson, K. Brodersen, and S. Foghmoes

1943 Cathode Performance and Deposited Cr under Cr Poisoning Condition in the $(La_{0.6}Sr_{0.4})(Co_{0.2}Fe_{0.8})O_3$ Cathode
D. Cho, T. Horita, M. Brito, K. Yamaji, H. Kishimoto, M. Nish, T. Shimonosono, F. Wang, and H. Yokokawa

1944 Performance Degradation and Microstructural Change of Ni-YSZ Anode upon Thermal and Redox Cycles
M. Kubota, H. Muroyama, T. Matsui, and K. Eguchi

1945 Electrochemical Studies of LSCF Powder Prepared using Pechini Process for IT-SOFC Unit Cell
*H. Jeon, H. Kim, T. Kim, and H. Kim**

1946 Correlation between Protonic Conductivity and Structure of Phosphate Glasses for Intermediate Temperature Fuel Cells
H. Sumi, Y. Fujishiro, T. Oine, and T. Kasuga

1947 Proton Conduction in $CsH(PO_3H)$ under Dry or Humid Conditions
M. Nagao, A. Ikeda, and S. M. Haile

1948 Structure and Electrochemical Property of Various Valence Metal Ion Co-doped Scandia Stabilized Zirconia
N. Sonoyama, M. Ikeda, Y. Ota, N. Imanishi, A. Hirano, Y. Takeda, and O. Yamamoto

1949 Fabrication of a Micro-tubular Bi-Layered Membrane by Electrophoretic Deposition
K. Lee, J. Seo, J. Yoon, and H. Hwang

1950 Analysis of Electrical Conduction Mechanism of $LaNi_{1-x}M_xO_{3-\delta}$ (M = Fe, Mn)
E. Niwa, H. Maeda, C. Uematsu, and T. Hashimoto

1951 Oxygen Transport Properties of Al doped $La_2NiO_{4+\delta}$
S. Jeon, M. Choi, H. Im, and S. Song

1952 Transport Properties of the Proton Conducting $BaCe_{0.45}Zr_{0.4}Y_{0.15}O_{3-\delta}$
D. Lim, M. Choi, H. Im, K. Lee, and S. Song

1953 Performance of $BaCe_{0.85}Y_{0.15}O_{3-\delta}$ Electrolyte for the Proton Conducting Ceramic Fuel Cells
K. Lee, M. Choi, D. Lim, and S. Song

1954 Molecular Dynamics Simulation on Oxygen Ion Diffusion in $LaInO_{3-\delta}$ Perovskite Structure Doped with Ba and Sr
S. Jeong, K. Hwang, M. Yoon, and H. Hwang

1969 Functional Relationships between Structure and Transport in the BZY and BCY Proton Conductors
A. Braun and Q. Chen

1970 Improving the Performance of Solid Oxide Fuel Cells with $BaZrO_3$ Electrolyte by Using Sinteractive Anodic Powders
L. Bi, E. Fabbri, and E. Traversa

1971 Magnesium Manganese Spinel Coatings for Solid Oxide Fuel Cell Interconnects
S. Joshi, C. Silva, and A. Petric

1972 Increased Performance Stability of SOFC Cathodes by Use of Protective Coatings on Metallic Interconnectors
M. Kornely, N. Menzler, A. Weber, and E. Iver-Tiffée

1973 Imaging of Oxide Ionic Diffusion at Cathode/Interlayer/Electrolyte Interfaces for Solid Oxide Fuel Cells: long-term operation effects
T. Horita, D. Cho, T. Shimonosono, M. Nishi, H. Kishimoto, K. Yamaji, and H. Yokokawa

1974 Novel Anode Material for Direct Hydrocarbon Solid Oxide Fuel Cells
C. Yang, Z. Yang, G. Xiao, L. Zhang, M. Han, and F. Chen

1975 Efficient High Power Density SOFCs with Zirconia/Bismuth Oxide Bilayered Electrolytes
K. Lee and E. D. Wachsman

1976 Process Integration for Scale-Up of $Ce_{0.9}Gd_{0.1}O_{1.95}$ Electrolyte-Based LT-SOFCs
H. Yoon, C. M. Gore, A. A. Lidie, K. Lee, and E. D. Wachsman

1977 Performance of Solid Oxide Fuel Cells on H_2, NH_3 and Hydrocarbon Fuels
M. Han, J. Xiong, and S. C. Singhal

1978 Improved Power Density by (Mn, Fe) Doped CeO_2 as a Oxide Anode for Ni-Fe Metal Support SOFC
Y. Ju, S. Ida, and T. Ishihara

1979 Effect of Co Addition on Sintering and Electrical Properties of La-Doped CeO_2 as a Buffer Layer for Doped $LaGaO_3$ Electrolyte Films of Solid Oxide Fuel Cells
J. Hong, S. Ida, and T. Ishihara

1980 Effect of Fuel Utilization on the Performance of Nickel/Zirconia Anode-Supported SOFCs
O. A. Marina, C. Coyle, D. Edwards, and J. Stevenson

1981 Durability of SOFC Against Thermal and Redox Cycling
M. Hanasaki, C. Uryu, S. Taniguchi, Y. Shiratori, and K. Sasaki

1982 Sulfur-Poisoning in Reformate Fuelled Anode Supported Solid Oxide Fuel Cells
A. Kromp, S. Dierickx, A. Leonide, A. Weber, and E. Ivers-Tiffée

C1 - Organic and Biological Electrochemistry General Poster Session

All ECS Divisions, ECSJ Organic and Biological Electrochemistry

1983 The Electrolytic Dissociation of 1,3-Cyclobutanedicarboxylic Acids
E. Kvaratskhelia and R. Kvaratskhelia

1984 Propagation and Collision of Nonlinear Electrical Responses in *Aloe Vera* L. and *Arabidopsis Thaliana*
L. O'Neal, M. I. Volkova, V. S. Markin, and A. G. Volkov

1985 Effect of Surfactants on the Voltammetric Response and Determination of an Antihypertensive Drug Phentolamine at Boron Doped Diamond Electrode
R. Shrivastav, S. Satsangee, and R. Jain

1986 Potential-Induced Conformational Changes in Self-Assembled Monolayers of L-Cysteine at p-GaAs(100) Electrodes
M. Enache, L. Preda, V. Lazarescu, C. Negrila, and M. Lazarescu

1987 Effect of Humidity of Atmosphere on Characteristics of Cathodic Film Formed on Ti in Ca^{2+}/Ethanol Solution
T. Haruna and A. Nonaka

1988 Evolution of Cathode Surface Hydrophobicity in Microbial Fuel Cell Using Sessile Drop Technique
C. Santoro, M. Cremins, A. Mackay, U. Pasaogullari, M. Guilizzoni, A. Casalegno, and B. Li

1989 Electrodeposition of Poly (Ethyleneglycol) for Constructing the Artificial Scaffold onto Titanium
S. Migita, S. Okada, Y. Tsutsumi, H. Doi, N. Nomura, and T. Hanawa

1990 Monitoring of the Processes of Proliferation and Differentiation of Immunocytes by the Impedance Measurement Method
S. Kasai, K. Shoji, M. Tada, H. Kiriu, R. Ishii, and H. Kodama

1991 Photocurrent Characteristics of Thin Films Produced from Aqueous Colloidal Dispersion of Indolino[60]Fullerene by Using Electrospray Deposition Method
H. Matsutaka, Y. Shigemitsu, T. Orii, T. Aoyama, H. Takaku, and Y. Tajima

1992 Electrochemical Characteristics of Vinylferrocene-Terminated Si(111) Prepared in Diethyl Ether and Dibutyl Ether Grafting Media
M. U. Herrera, T. Ichii, K. Murase, and H. Sugimura

1993 A Green Electrochemical Method to Remove Protein Surface Fouling and Industrial Dye Wastes
J. Yang and S. Gunasekaran

1994 Effects of Cathodic Platinum Loadings and Organic Substrate Concentrations on the Performance of Single Chamber Microbial Fuel Cells Fed with Raw Wastewater
C. Santoro, B. Li, U. Karra, A. G. Agrios, G. Squadrito, and P. Cristiani

1995 Electrosynthesis of Polypyrrole in Low-Viscosity Ionic Liquids
K. Tsunashima, T. Matsubayashi, Y. Ono, and M. Matsumiya

1996 Disc-Like and Bent-Shape Semiconducting Liquid Crystals for Organic Electronics
F. Ely, M. O. da Silva, R. Cristiano, A. Vieira, and H. Gallardo

1997 Irreversible Thermodynamics Microbial Fuel Cell Anode Model
J. E. Velez and C. Sanchez

1998 Graphene Nanohybrids based on Genetically Engineered Protein for Agrichemical Biosensing
N. Heo, S. Lee, K. Lee, and T. Park

C2 - Bioengineering Based on Electrochemistry

ECS Organic and Biological Electrochemistry, *ECS Sensor*, *ECSJ Bioengineering*

1999 Electrochemical-Based Bioprocessing Device Composed of Recombinant Protein/DNA Conjugate
J. Choi

2000 Fabrication of Multilayer Cell Structure Using Electro-Deposited Alginate Gel
F. Ozawa, K. Ino, H. Shiku, and T. Matsue

2001 Metabolism Feature of Multicellular Tumor Spheroids Assessed by a Comprehensive System
Y. Zhou, T. Arai, Y. Horiguchi, K. Ino, H. Shiku, and T. Matsue

2002 Development of Voltage Switching Mode Scanning Electrochemical Microscopy for Topographical and Electrochemical Nanoscale Imaging of Living Cells
Y. Takahashi, A. I. Shevchuk, P. Novak, Y. Matsumae, B. Babakinejad, J. V. Macpherson, P. R. Unwin, K. Ino, H. Shiku, J. Gorelik, D. Klenerman, Y. E. Korchev, and T. Matsue

2003 Electrochemically Modulated Release of Nitric Oxide through Polymers to Inhibit Bacterial Biofilm Formation and Prevent Platelet Activation
M. E. Meyerhoff, L. Höfler, D. Koley, H. Ren, T. C. Major, J. Wu, and C. Xi

2004 Engineering of Catalytic Domain of Cellobiose Dehydrogenase and Its Application for the Direct Electron Transfer Type Enzyme Electrode
S. Ando, S. Ferri, W. Tsugawa, and K. Sode

2005 Aptameric Sensor for Detection of VEGF Based on Labeling Technique Using GDH Fused Zinc Finger Protein
A. Tatsumi, K. Abe, T. Fukaya, K. Sode, and K. Ikebukuro

2006 Evolution of Cathodic Characteristics (Water and Oxygen Transport) in Microbial Fuel Cell (MFC)
C. Santoro, M. Cremins, A. Mackay, U. Pasaogullari, M. Guilizzoni, A. Casalegno, and B. Li

2007 Turning Oxidase into Dehydrogenase for Application to the Electrochemical Measurement
S. Saito, Y. Horaguchi, T. Endo, S. Ferri, K. Mori, K. Kojima, W. Tsugawa, and K. Sode

2008 Peroxidase Activity of G-Quadraplex Hemin-Binding DNA Aptamers Determined by Electrochemical Measurement
I. Kubo, Y. Hoshino, M. Liu, H. Abe, and Y. Ito

2009 Electron Transfer between Cytoplasm and Electrode via Redox-Active Phospholipid Polymer
K. Nishio, R. Nakamura, S. Nakanishi, X. Lin, T. Konno, K. Ishihara, and K. Hashimoto

2010 In Situ Observation of Direct Electron Transfer Reaction between Cytochrome c and ITO Electrode with Electrochemically Controlled Slab Optical Waveguide Spectroscopy
N. Matsuda and H. Okabe

2011 Recent R&D on Disposable Electrochemical Biosensors
H. Nam, G. Cha, M. Kim, M. Lee, and S. Chung

2012 Floated Electrochemical Cell for On-Line Electrospray Mass Spectrometry for Detection of Biological Radical Reactions
D. Looi, I. Iftikhar, G. Garbellini, and A. Brajter-Toth

2013 High Efficient Glucose Oxidation by Ordered Molecular Assembly inside Carbon Nanotube Forests
S. Yoshino, T. Miyake, H. Kaji, T. Yamada, K. Hata, and M. Nishizawa

2014 Evaluation of Electrochemical Disinfection of Feline Calicivirus in Aqueous Conditions
N. Shionoiri, T. Tanaka, T. Sato, Y. Fujimori, T. Nagao, T. Nakayama, and T. Matsunaga

2015 Electrochemistry-Based and Signal-Amplified Sensing Strategies for DNA-Based Point-of-Care Biosensors
I. Hsing

2016 Electrochemical and Physical Assessment on Electrode Coating Materials for Neuromodulation Application
A. Shi, B. Li, P. Cong, and D. Seeley

2017 Mechanical Force-Based Probing of Cytoskeletal Proteins in Living Cells Using Antibody-Immobilized Nanoneedles
C. Nakamura, Y. R. Silberberg, R. Kawamura, S. Mieda, Y. Amemiya, T. Kihara, K. Fukazawa, K. Ishihara, N. Nakamura, and J. Miyake

2018 A Spatio and Temporal Gaseous Ethanol Visualization System for Real-Time Analysis from Human Breath and Body
T. Arakawa, X. Wang, T. Kajiro, K. Miyajima, H. Kudo, K. Yano, and K. Mitsubayashi

2019 Development of Human-Environment Interface by Sensing and Multivariate Analysis of Bio-Ecosystem
M. Koshiba, G. Karino, A. Seno, Y. Shirakawa, K. Mimura, T. Sagawa, W. Tsugawa, K. Sode, and S. Nakamura

2020 Electrochemical Impedance Spectroscopy on Nanomaterial-Modified Surfaces
A. J. Veloso, X. Chen, V. Hung, N. Li, and K. Kerman

2021 Second Generation Continuous Glucose Sensing System Employing Direct Electron Transfer Principle
W. Tsugawa, K. Kojima, and K. Sode

2022 Engineering Fungi Derived FAD Glucose Dehydrogenase and Its Application for Glucose Sensor Strip Employing Screen Printed Carbon Electrode
Y. Onishi, M. Nakajima, W. Tsugawa, K. Mori, K. Kojima, and K. Sode

2023 Profile of IgE and IgG4 Binding Epitopes in Cow's Milk Allergens Using Peptide Array
M. Okochi, Y. Yoshida, and H. Honda

2024 Fiber-Optic Fluoroimmunoassay System for *On-Site* Determination of the Indoor Allergen
K. Miyajima, K. Tamari, E. Kiyomiya, M. Hayashi, T. Arakawa, H. Kudo, K. Shiba, and K. Mitsubayashi

2025 Self-Assembled Synthetic Protein Scaffolds: Biosynthesis and Applications
W. W. Su and Z. Han

2026 Use of High Surface Area Electrodes for Safe Delivery of Direct Current for Nerve Conduction Block
T. Vrabec, J. Wainright, N. Bhadra, N. Bhadra, and K. Kilgore

2027 Electrochemical Approach to Fabricate Stacked Thick Cell Sheets
N. Mochiuzki, H. Suzuki, and J. Fukuda

2028 Electrical Bioassay System Using a Hydrogel-Supported Skeletal Muscle Cells
K. Nagamine, H. Kaji, M. Kanzaki, and M. Nishizawa

2029 Fabrication of Semi-Invasive Micro-Needle Array Using Gradation Exposure
M. Yamaguchi, Y. Sasaki, Y. Kimura, and M. Sasaki

2030 Higher Catalytic Activity by Fluctuation effect of Captured Enzyme Molecules in Designed Self-Organized Membrane on an Electrode Surface
Y. Takatsuji, R. Yamasaki, A. Iwanaga, M. Lienemann, M. Linder, and T. Haruyama

2031 Nano-Structured Protein Layer on an Electrode Surface Taking Advantage of Self-Organized HFBI and Its Electrochemical Property
R. Yamasaki, Y. Takatsuji, A. Iwanaga, M. Lienemann, M. Linder, and T. Haruyama

2058 Enhancement of Wettability on Titanium Substrates by Femtosecond Laser Micron/Nano Machining
K. Fung, Y. Su, C. Liu, C. Ni, C. Lin, P. Wu, and C. Cheng

2059 Correlation between Spectroscope Absorbance and Biofilm to Anode Microbial Fuel Cell
R. J. Marassi, J. M. Santos, C. E. Teodoro, F. S. Santos, and G. C. Silva

2060 Assessment of Cell Behaviors on TiO_2 Nanotube Arrays by Using Atomic Force Microscopy, Raman Spectroscopy, Fluorescence Microscopy
R. Li, Q. Li, L. Xiao, S. Williams, E. Suasnavas, C. Isom, D. Larson, L. Rickords, and A. Zhou

2061 Sucarcane Waste as Substrate for Microbial Fuel Cell
J. M. Santos, R. J. Marassi, C. E. Teodoro, F. S. Santos, and G. C. Silva

2062 Development of a POCT Diagnostic System for Periodontal Disease Using a Printed Electrode
T. Uenoyama, K. Yamanaka, M. Saitou, Y. Yamaguchi, M. Wada, and E. Tamaiya

2063 Implantable Nerve Cuff Electrode Deposited with Electrospun Nanofiber to Control Drug Release for Long-Term Implantation
S. Lee, S. Park, S. Lim, K. Hwang, and J. Kang

2064 Amino Acid Sensing Based on 2D-SPR Imaging
Y. Hida and H. Shinohara

2065 Non-FET Electrochemical DNA Detection Using Metal-Gap-Oxide-Silicon Structures
K. Kawai, Y. Doi, T. Furukawa, J. Uchikoshi, K. Arima, and M. Morita

C4 - New Synthetic and Mechanistic Approaches to Molecular Electroorganic Chemistry

ECS Organic and Biological Electrochemistry, ECSJ Electroorganic Chemistry

2066 Anodic Oxidation of *gem*-Diaryl Ketones in the Presence of Alcohols
A. J. Fry and B. Sheludko

2067 Oxidative Dechlorination of Chlorinated Organic Compound Catalyzed by Vitamin B_{12}-TiO_2
H. Shimakoshi and Y. Hisaeda

2068 Controlling and Improvement of Electrosynthetic Reaction by Using Microreactor: Application to Intermolecular Coupling Reaction of Phenol Derivatives
T. Kashiwagi, S. R. Waldvogel, and M. Atobe

2069 Site-Controlled Modification of Conducting Polymer Films Based on Bipolar Electrochemistry
S. Inagi, Y. Ishiguro, and T. Fuchigami

2084 Synthesis and Properties of Nitrogen-Bridged Terthiophenes
K. Mitsudo, S. Shimohara, and S. Suga

2085 Regioselective Cross-Coupling Reaction of Azulene and α, β-Unsaturated Ketone by Electron Transfer from Magnesium
H. Maekawa, J. Honda, and R. Akaba

2086 Prediction of Reduction Potentials from Calculated Electron Affinities for Metal-Salen Compounds
J. A. Miranda, J. M. Yates, and B. F. Gherman

2087 Anodic Oxidation of Carbamates in the Presence of Solid-Supported Acids and Its Application to Carbon-Carbon Bond Forming Reactions
T. Tajima, A. Takabayashi, and K. Yamazaki

2088 Paired Electrochemical Reaction of a Poly(Fluorenol) Derivative
H. Nagai, S. Inagi, and T. Fuchigami

2089 Fabrication of Gradient Surface Using Bipolar Electrochemistry
N. Shida, Y. Ishiguro, S. Inagi, and T. Fuchigami

2090 Synthetic Study of O-Methylthalibrine Using Anodic Oxidation
Y. Kawabata, Y. Naito, T. Saitoh, Y. Ishikawa, and S. Nishiyama

2091 Preparation and Reaction of Titania Particles Encapsulated in Hollow Silica Shells as an Efficient Photocatalyst for Stereoselective Synthesis of Pipecolinic Acid
S. Chandren and B. Ohtani

2092 Electrochemical Oxidation of Poly(*p*-phenylene-vinylene) Derivatives Containing Tetraphenylethylene Units
S. Wakana, S. Inagi, T. Fuchigami, and I. Tomita

2093 Voltammetry of Nitrofluorenes: Simulation
I. U. Haque and A. Dar

2094 The Electrochemical Oxidation of Pyrogallol: Formation of Long-Lived Oxygen Radicals and Application to Assess the Radical Scavenging Abilities of Antioxidants
S. Mu

D1 - Corrosion General Poster Session

All ECS Divisions, ECSJ Corrosion

2095 Corrosion Protection of Steel by Conducting Polypyrrole Film Doped with Poly-acids of Mo and W
M. Sasaki, A. Hyono, M. Ueda, and T. Ohtsuka

2096 Corrosion under Water-Repellent Coating
H. Saito

D2 - Materials Degradation in Energy Systems: Corrosion and Hydrogen-Material Interactions

ECS Corrosion, ECS Battery, ECS Energy Technology, ECSJ Corrosion

2167 Electrochemical and Metal-Phase Processes Accompanying Hydrogen Absorption in Aluminum During Aqueous Corrosion
K. R. Hebert, O. O. Capraz, P. Shrotriya, and G. Zhang

2168 Effect of Absorbed Hydrogen on Cavity Formation at High Temperature Water and Its Role on SCC Growth
K. Arioka

2169 The Effects of Chromate, Molybdate, and other Selected Inhibitors on Surface and Crack Tip Corrosion Inhibition
S. B. Madden and J. R. Scully

2170 Hydrogen Diffusion and Trapping in High Purity Al and Aluminum Alloy 5083-H131
J. Ai, M. Lim, and J. R. Scully

2171 Lattice Defects Induced by Hydrogen Absorption in Metallic Materials
H. Suzuki, K. Takai, and M. Fujinami

2172 The Hydriding of Uranium: Bulk Transport and Trapping of Hydrogen in Uranium
R. Lillard, C. D. Taylor, J. R. Wermer, N. A. Mara, and J. C. Cooley

2173 The Influence of Hydrogen on Nuclear Fuel Corrosion Inside a Failed Waste Container
M. E. Broczkowski, L. Wu, Z. Qin, and D. W. Shoesmith

2174 ZrO_2 Passive Layer Stability Loss in the Presence of Hydrogen Defects - Connections to Pit Initiation
M. Youssef and B. Yildiz

2175 The effect of Thermal Hydrogenation Processing on the Oxide Layer Formation of Ti-6Al-4V Alloy
L. Wang, S. Yu, C. Shen, C. Chang, and C. Tsai

D3 - Corrosion, Passivity, and Energy: A Symposium in Honor of Digby Macdonald

ECS Corrosion

2176 The Semiconducting Properties and Impedance Analysis of Passive Films on Copper in Anaerobic Sulfide Solutions from the Viewpoint of the Point Defect Model
Y. Ling, M. L. Taylor, S. Sharifiasl, and D. D. Macdonald

2177 Determining the Coupling Current as a Means of Detecting Crevice Activity and Inhibition
S. Lee, J. A. Mathews, and D. D. Macdonald

2178 Influence of the Microstructure on the Passive Character of Titanium Oxide Films Characterized by EIS
N. Rodríguez de la Cruz, E. M. Arce, J. Torres, R. Luna Sánchez, J. G. Vazquez Arenas, J. Hallen, and R. Cabrera Sierra

2179 Effects of Solution Temperature on the Kinetic Nature of Passive Film on Ni
K. Park, S. Ahn, and H. Kwon

2261 Oxygen Sensors for Accelerator Driven System (ADS) Reactors
A. Verdaguer, S. Colominas, and J. Abellà

2262 Prussian Blue Films in Ammonium Aqueous Solution
J. Agrisuelas, C. Delgado, J. García-Jareño, and F. Vicente

2263 Towards Tritium Electrochemical Sensors: Synthesis and Characterization of Proton Conducting Ceramic Elements
L. Llivina, S. Colominas, and J. Abellà

2264 In Situ Coupling Current Studies in AA5083 and AA2024
K. Williams, R. Bayles, and D. D. Macdonald

2265 On the Corrosion of Iron in Physically-Constrained Locations
D. D. Macdonald and G. R. Engelhardt

2266 Mechanisms of Depassivation
D. D. Macdonald

2267 Two Manifestations of the Passivity of the Metal in Aqueous Solution
H. Hua and H. Hua

2268 Could this Fuel Replace Gasoline
J. O. Bockris

D4 - High Resolution Characterization of Corrosion Processes 3

ECS Corrosion, ECSJ Corrosion

2269 Kelvin Probe Force Microscopic Study on Galvanic Action between MnS Inclusions and Stainless Steel Matrix
Y. Sugawara, I. Muto, and N. Hara

2270 Analysis of Pit Corrosion Using Temporal Series of Micrographs Coupled with Electrochemical Methods to Estimate the Three-Dimensional Evolution of Pits
A. M. Zimer, E. Rios, M. A. de Carra, L. H. Mascaro, and E. C. Pereira

2271 Microscopic Polarization Behavior and Thermodynamic Stability of TiS and $Ti_4C_2S_2$ Inclusions in Stainless Steels
N. Shimahashi, I. Muto, Y. Sugawara, and N. Hara

2272 Microelectrochemical Investigation of Pit Initiation and Selective Dissolution between MnS and Stainless Steel
A. Chiba, I. Muto, Y. Sugawara, and N. Hara

2273 In Situ Ex-Polarized TEM Observation on Dissolution of MnS Inclusions and Metastable Pitting of Authentic Stainless Steel
B. Zhang, Y. Zhou, and X. Ma

2287 Localised SKP Studies of Cathodic Disbondment on Chromium/Chromium Oxide Coated Steel
D. J. Warren and H. N. McMurray

2288 Investigation of Copper Corrosion Inhibition by Ethyl Xanthate with Frequency-Dependent Alternating-Current Scanning Electrochemical Microscopy
J. J. Santana and R. M. Souto

2289 Damage Evolution Quantification of Hybrid Coatings on Aluminum Alloy by Surface and Electrochemical Techniques
I. Barraza-Fierro, T. Gao, M. Soucek, and H. Castaneda

2290 Study of Electrochemical Corrosion Behavior of Nanocrystalline Thin Film by Electrochemical Techniques and In Situ AFM
L. Liu, Y. Li, and F. Wang

D5 - High Temperature Corrosion Materials Chemistry 10

ECS High Temperature Materials, ECS Corrosion

2291 In Situ Optical Studies of Electrochemically Induced Anode Degradation in High Temperature Solid Oxide Fuel Cells
R. A. Walker, J. D. Kirtley, D. M. Halat, and M. McIntyre

2292 Mechanical Properties of Ni-YSZ Cermets under Simulated Environment of Redox Cycling
T. Miyasaka, S. Sukino, S. Watanabe, T. Kawada, K. Sato, and T. Hashida

2293 Improved Sintering Property of Y-Doped $BaZrO_3$ by Mn Addition
D. Kim, E. Patrik, S. Miyoshi, T. Tsuchiya, and S. Yamaguchi

2294 Non-Linear Doping effect on the Electrochemical Properties of $BaZr_{1-x}Pr_xO_3$
M. Tamaru, S. Miyoshi, D. Kim, T. Higuchi, Y. Oyama, and S. Yamaguchi

2295 Study on Electrode Reaction of Perovskite Oxide Electrodes on a Proton Conducting Electrolyte
K. Suzuki, S. Hashimoto, K. Amezawa, and T. Kawada

2296 Mechano-Electrochemical effect on Materials Property of Ion Conducting Oxides
K. Yashiro, Y. Kawamura, S. Nakakawaji, K. Sato, K. Amezawa, and J. Mizusaki

2297 Chemical Stability of $Ba_{0.5}Sr_{0.5}Co_{0.8}Fe_{0.2}O_{3-\delta}$ (BSCF)
F. Wang, K. Yashiro, K. Amezawa, and J. Mizusaki

2298 A Study of Nickel-Substituted Lanthanum Cobaltite as Cathode Materials for SOFCs
Y. Uzumaki, S. Hashimoto, K. Amezawa, and T. Kawada

2299 La/Sr-Co Perovskite-Based Multi-Layered Super Cathode Fabricated by Sputtering Method
A. Takeshita, S. Miyoshi, and S. Yamaguchi

2300 Oxygen Transport in Perovskite Type Oxide $La_{0.6}Sr_{0.4}Co_{0.2}Fe_{0.8}O_{3-\delta}$
H. Kudo, K. Yashiro, S. Hashimoto, K. Amezawa, T. Kawada, and J. Mizusaki

2301 Influence of Phase Crystallography on Precipitation Microstructures and Deformation Mechanisms in Tantalum Carbides
G. B. Thompson, R. A. Morris, N. De Leon, B. Wang, and C. Weinberger

2302 Preparation and Characterization of Materials in the Ta-Hf-C System
J. A. Zaykoski, M. M. Opeka, and I. Talmy

2303 Variability in Oxidation Resistance of ZrB_2-SiC
K. N. Shugart and E. J. Opila

2304 Effect of Silicon Addition on the Oxidation Kinetic and on the Structure of the Oxide Layer Formed on Transition Metal Nitride Coatings
J. Pierson, P. Steyer, A. Mège-Revil, and D. Pilloud

2305 Oxidation of Cr_2AlC between 700 and 1300°C in Air
S. Kim, S. Bong, and D. Lee

2306 Fabrication of Vertically Aligned Nano-Oxide Arrays via Internal Oxidation of Dilute Alloys
M. Nanko and D. T. Do

2307 High-Temperature Oxidation Kinetics for Recovery of Mechanical Strength on Nano-Ni Dispersed Al_2O_3 Hybrid Materials
D. Maruoka and M. Nanko

2308 Early Oxidation Stages of Alumina Formers and the effect of the Additions: A Brief Survey
J. Jedliński

2309 The Influence of KCl(s) on the Oxidation of a FeCrAl Alloy at 600 °C in Dry and Wet Environment
N. Israelsson, L. Johansson, and J. Svensson

2310 Deposit-Induced Corrosion of Nickel-Base Alloys at Low Temperatures (650-750°C)
B. S. Lutz, M. N. Task, N. M. Yanar, F. S. Pettit, G. R. Holcomb, and G. H. Meier

2311 High-Temperature Corrosion Behavior of Sputtered Ni-Based Nanocrystalline Coating with Yttrium Addition in Chloride at 900°C
P. Yu, W. Wang, F. Wang, and S. Zhu

2312 Accelerated Corrosion of Low Alloy and Stainless Steel by $PbCl_2$-Containing Salt Mixtures
D. P. Bankiewicz, P. Yrjas, and M. Hupa

2313 An Electrochemical Impedance Spectroscopy Study on the effect of Condensate on Oxides Formed on a 25Cr/20Ni Cast Stainless Steel in Exhaust Environments
M. Ekström, B. Zhu, P. Szakalos, and S. Jonsson

2341 Microstructural Investigation of Co- and RE-Nanocoatings on FeCr Steels
S. Canovic, J. Froitzheim, R. Sachitanand, M. Nikumaa, L. Johansson, and J. Svensson

2342 Protection of Ferritic Steels by Nano-Structured Coatings: Supercritical Steam Turbines Applications
M. Mato, M. Hierro, S. Castañeda, G. Alcalá, I. Lasanta, M. Tejero, J. Sánchez, M. Brizuela, and F. J. Pérez

2343 Improvement of the Resistance of Titanium Aluminides to Environmental Embrittlement
P. J. Masset, F. Bleicher, L. Bortolotto, G. Geiger, A. Kolitsch, C. Langlade, J. Paul, B. Pelic, F. Pyczak, D. Rafaja, P. Schumacher, M. Schütze, G. Wolf, and R. Yankov

D6 - Light Alloys 4

ECS Corrosion, ECSJ Corrosion

2344 High Resolution SEM Investigation of Intercrystalline Corrosion on 6000-Series Aluminum Alloy with Low Copper Content
K. Shimizu and K. Nisancioglu

2345 Effect of Additive Elements on Corrosion Behavior for Aluminum in Weak Alkaline Solution at High Temperature
Y. Honkawa, T. Yaegashi, and Y. Kojima

2346 Combined Role of Trace Elements Pb and Sn in Low Temperature Activation of Aluminum
K. Kurt, J. C. Walmsley, S. Diplas, and K. Nisancioglu

2347 Interactions of Sulfide with Aluminum Alloys
J. S. Lee, R. Ray, and B. Little

2348 The Role of Environmental Aspects and Atmospheric Contaminants on the Corrosion of 2024, 6061 and 7075 Aluminum Alloys
Y. Yoon and D. C. Hansen

2349 Pitting Corrosion of Aluminum Alloy in Chloride Environment
Y. Oya and Y. Kojima

2350 Effect of Surface Topography, Cleaning, and Conversion Coatings in the Adhesion Strength of Organic Polymers to AA2024-T3 using the Blister Test
B. C. Rincon Troconis and G. Frankel

2351 Self-Healing Nature of Molybdate Conversion Coatings for Aluminum Alloys
D. Rodriguez, R. Misra, and D. Chidambaram

D7 - Pits and Pores 5: A Symposium in Honor of David Lockwood

ECS Corrosion, ECS Luminescence and Display Materials, ECSJ Corrosion

2433 Bulk Diffusion Controlled Dealloying
Q. Chen and K. Sieradzki

2434 The Strong Rashba Spin-Orbit Interaction in $Hg_{0.77}Cd_{0.23}$ Te Inversion Layer
G. Yu, X. Liu, L. Wei, T. Lin, J. Chu, Y. Wei, and J. Yang

2435 Pitting Corrosion Behavior and Grain Evolution of Shot Peened 304 Type Stainless Steel
T. D. Widodo and K. Noda

2436 Formation of Interconnected Nano-Channels in Highly-Ordered Anodic Alumina
B. Huang, Y. Tian, B. Shan, and R. Chen

2437 TiO2 Nanotubes and Other Self-organized Anodic Structures: Formation and Applications
P. Schmuki

E1 - Solid State Topics General Session

ECS Dielectric Science and Technology, ECS Electronics and Photonics, ECS Energy Technology, ECSJ Solid-State Chemistry, ECSJ Functional Ceramics

2438 Characteristics of Zinc Oxide Films Grown on Sapphire Substrates Using High-Energy H_2O Generated by a Catalytic Reaction on Platinum Nanoparticles
K. Yasui, H. Miura, S. Satomoto, and T. Kato

2439 Dielectric Constant Studies of BCN Thin Films
K. B. Sundaram and V. Todi

2440 Effect of Wet Surface Treatments on Amorphous Silicon Anneal and Gate Breakdown
C. S. Tiwari, T. Guo, C. Breyfogle, J. Zhang, H. Mitro, L. Olmer, V. Kumar, D. Pohlman, and M. Rutte

2441 Ultrasonic Spray-Assisted Vapor-Deposition Method as a Cost-Effective and Environmental-Friendly Technology for Semiconductor and Dielectric Materials for Devices
S. Fujita, S. Katori, J. Piao, T. Ikenoue, and K. Kaneko

2442 UV-Visible Faraday Rotators Based on Rare-Earth Fluoride Single Crystals: $LiREF_4$ (RE=Tb, Dy, Ho, Er and Yb), PrF_3 and CeF_3
V. Vasyliev, E. G. Villora, Y. Sugahara, and K. Shimamura

2443 The Characterization Study of Polycrystalline Silicon Grain Growth with Electron Backscatter Diffraction Patterns and Crystallinity
S. Yang, J. Chang, J. Lim, J. Shin, Y. Yoo, J. Kim, B. Chung, H. Choi, K. Hwang, and H. Kang

2444 Electrical Breakdown of Anodic Aluminum Oxide Films for Electrowetting Systems
M. Mibus, E. Nein, A. Sapkota, C. Knospe, M. Reed, and G. Zangari

2445 Ultrafast Carrier Dynamics in Green-Sensitive Organic Photodiodes
S. Sul, K. Lee, D. Leem, K. Kim, and H. Han

2446 Single Chamber HFCVD Process for Growth of Diamond, Graphene and CNTs
S. Albin, R. Vispute, and A. Seiser

2447 The Systematic Study and Simulation Modeling on Dislocation Edge Stress Effects for Si N-MOSFETs
M. Liao, C. Chen, L. Chang, C. Yang, C. Hsieh, and M. Lee

2448 The Investigation on the Relaxation of Intrinsic Compressive Stress in CMOS Transistors by Additional N IMP Treatment and AFM-Raman Stress Extraction
M. Liao, C. Chen, L. Chang, C. Yang, C. Hsieh, and M. Lee

2449 Plasmonic Color Filters for OLED by Laser Interference Lithography
J. Park, Y. Do, B. Hwang, K. Choi, and B. Ju

2450 Hot Carrier effects by Gate Induced Drain Leakage Current
K. Kim, C. Han, J. Lee, D. Kim, H. Kim, H. Lee, and B. Choi

2451 Development of Visual Inspection System for Metal Surface with Multivariate Pattern Analysis
K. Shigyo, T. Matsumoto, K. Sakiyama, and H. Kobayashi

2452 Effects of Tungsten Composition Ratio on the Properties of W-In-Zn-O Films Deposited by RF Magnetron Sputtering
G. Heo, B. Oh, J. Park, Y. Lee, Y. Lee, and D. Shin

2453 Fabrication of n-type Semiconductive Polycrystalline Diamond by Incorporating Phosphorous Atoms
A. Nakahara, H. Naragino, K. Yoshinaga, S. Tanaka, and K. Honda

2454 Carrier Transport Mechanism at Metal/Amorphous Gallium Indium Zinc Oxide Interfaces
S. Kim, C. Choi, and H. Kim

2455 Glowth of AlN Single Crystals by Sublimation Method
Y. Oshima, M. Nakamura, Y. Masa, E. G. Villora, K. Shimamura, and N. Ichinose

E2 - Atomic Layer Deposition Applications 8

ECS Dielectric Science and Technology, ECS Electronics and Photonics

2456 Fabrication of Sb_2Te_3 and Bi_2Te_3 Multilayer Composite Films by Atomic Layer Deposition
K. Zhang, D. Nminibapiel, M. Tangirala, H. Baumgart, and V. Kochergin

2457 Trimethylaluminum-Based Atomic Layer Deposition of Al:MO_2 (M=Zr, Hf): A Viable Route to Integrate High-Permittivity Oxides on $In_{0.53}Ga_{0.47}As$ Substrates
A. Molle, E. Cianci, A. Lamperti, C. Wiemer, S. Baldovino, L. Lamagna, S. Spiga, M. Fanciulli, G. Brammertz, C. Merckling, and M. Caymax

2484 Synthesis of VO_2 Thin Films by Atomic Layer Deposition with TEMAV as Precursor
K. Zhang, M. Tangirala, D. Nminibapiel, V. Pallem, C. Dussarrat, and H. Baumgart

E3 - Chemical Mechanical Polishing 12

ECS Dielectric Science and Technology

2485 Corrosion Inhibition Effect of Organic Additive on Ru Film in Colloidal Silica Based Slurry with Sodium Periodate
H. Cui, J. Lim, J. Cho, H. Hwang, J. Park, and J. Park

2486 Electrochemical Characterizations on Chemical Mechanical Polishing Compositions of Polishing Ruthenium Films in CMP Processes
T. X. Shi, J. Henry, and J. Schlueter

2487 Brush Scrubbing Scratches Reduction Methods in Post CMP Cleaning
H. Soondrum

2488 Studies on Slurry Design Fundamentals for Advanced CMP Applications
G. Basim, A. Karagoz, L. Chen, and I. Vakarelski

2489 Managing Corrosion during the Chemical Mechanical Polishing (CMP) of Metal Films
J. Schlueter, J. Henry, and T. X. Shi

2490 Microstructure and Pattern Size Dependence of Copper Corrosion in Submicron-Scale Features
U. Lee, J. Choi, J. Won, H. Lee, H. Sohn, and T. Kang

2491 Scratching of Patterned Composite Surfaces by Pad Asperities in Chemical-Mechanical Polishing
S. Kim, N. Saka, and J. Chun

2492 Effect of Chelating Agent on Chemical Mechanical Polishing Performance for Polycrystalline $Ge_2Sb_2Te_5$ Film
J. Cho, J. Lim, S. Woo, E. Hwang, and J. Park

2493 Metal Oxide Nano Film Characterization for CMP Optimization
G. Basim, A. Karagoz, and Z. Ozdemir

2494 Novel Ru CMP Slurry Using TiO_2 Nano Particle as Abrasive and H_2O_2 as Oxidizer
J. Park, H. Cui, J. Lim, J. Jo, H. Hwang, and J. Park

2495 Metal Clearing Process Control in Metal CMP
K. Xu, I. Carlsson, T. Liu, S. Shen, B. Swedek, Y. Wang, X. Xia, D. Bennett, W. Tu, and L. Karuppiah

2496 Post-CMP Cleaning of Copper Interconnects at Sub-32nm Technology Node
T. Dnyanesh, M. Rao, and G. Banerjee

2510 Chemical Mechanical Polishing for Extreme Ultraviolet Lithography Mask Substrates
A. Hariprasad, R. Teki, and S. V. Babu

2511 Effect of CMP Additives on the Agglomeration Rate of Alumina Nanoparticles
N. Brahma and J. B. Talbot

2512 Microreplicated Pad Conditioner for Advanced CMP Applications
C. Gould, J. Zabasajja, and D. Le-Huu

E4 - Gallium Nitride and Silicon Carbide Power Technologies 2

ECS Electronics and Photonics, ECS Dielectric Science and Technology

2513 Overview of Three-Dimension Integration for Point-of-Load Converters
F. C. Lee and Q. Li

2514 Development of High Power Density All-SiC Three-Phase Inverter
S. Sato, K. Matsui, Y. Zushi, Y. Murakami, and S. Tanimoto

2515 Defect Electronics in SiC and Fabrication of Ultrahigh-Voltage Bipolar Devices
T. Kimoto

2516 SiC Trench Devices with Ultra Low R_{on}
T. Nakamura, M. Aketa, and Y. Nakano

2517 Fabrication of a SiC Double Gate Vertical Channel JFET and It's Application in Power Electronics
A. Schöner and M. Bakowski

2518 Recent Advances in VJFETs at SemiSouth
K. Chatty, D. C. Sheridan, V. Bondarenko, R. Schrader, K. Speer, and J. B. Casady

2519 Optimization of 4.5kV Si IGBT/SiC Diode Hybrid Module
K. D. Hobart, E. Imhoff, T. Duong, and A. Hefner

2520 Aspects on SIC Switches for Soft-Switching Converters in an Industrial Application
P. Ranstad and J. Linner

2521 Fast High Voltage Switching With SiC Power Devices
T. Funaki

2522 On the De-Rating of Silicon Carbide (SiC) Power Devices
K. Shenai

2523 Managing Basal Plane Dislocations in SiC: Perspective and Prospects
D. Gaskill, R. Myers-Ward, V. Wheeler, R. Stahlbush, N. Mahadik, E. Imhoff, L. O. Nyakiti, and C. Eddy Jr

2567 GaN Technology for Energy Efficient Electronics
K. Boutros, R. Chu, B. Hughes, and S. Khalil

2568 Nanoscale Probing of Interfaces in GaN for Devices Applications
F. Giannazzo, G. Greco, P. Fiorenza, R. Lo Nigro, F. Roccaforte, and A. Scuderi

2569 Ti Silicide Electrodes Low Contact Resistance for Undoped AlGaN/GaN Structure
K. Tsuneishi, J. Chen, K. Kakushima, P. Ahmet, Y. Kataoka, A. Nishiyama, N. Sugii, K. Tsutsui, K. Natori, T. Hatorri, and H. Iwai

2570 Fully Copper-Based Metallization for GaN High Electron Mobility Transistor Devices
E. Yi Chang, Y. Lin, L. Chang, Y. Chen, and Y. Wong

2571 XPS analysis of AlGaN/GaN Surface after Chemical and N-Containing Plasma Treatments
R. Meunier, A. Torres, M. Charles, E. Morvan, C. Petit-Etienne, O. Renault, and T. Billon

2572 Characterizations of GaN Films Grown on Si (111) Substrates under Various Growth Temperatures of Multiple AlN Buffer Layers
B. Tran, E. Chang Yi, K. Lin, T. Luong, H. Yu, M. Huang, C. Chung, H. Trinh, H. Nguyen, C. Nguyen, and Q. Luc

2573 Characteristics of GaN Nanowires Produced Using VLS Method on the Growth Temperatures
J. Yoon, B. Oh, and J. Yang

E5 - Dielectric Materials and Metals for Nanoelectronics and Photonics 10

ECS Dielectric Science and Technology, ECS Electronics and Photonics

2574 Ultra-Low Switching Power RRAM Using Hopping Conduction Mechanism
A. Chin, Y. Chiu, C. Cheng, Z. Zheng, and M. Liu

2575 ALD Grown Functional Oxide Layers for Nonvolatile Resistive Switching Memory Applications
S. Hoffmann-Eifert and R. Waser

2576 Hafnium Oxide Based CMOS Compatible Ferroelectric Materials
U. Schroeder, J. Mueller, E. Yurchuk, S. Mueller, D. Martin, S. Slesazeck, and T. Mikolajick

2577 HfO_2-based RRAM for Embedded Nonvolatile Memory: From Materials Science to Integrated 1T1R RRAM Arrays
T. Bertaud, C. Walczyk, D. Walczyk, M. Sowinska, D. Wolansky, B. Tillack, G. Schoof, C. Wenger, S. Thiess, and T. Schroeder

2578 Resistive Switching of Iron Oxide Nanoparticles in Patterned Array Structure on Flexible Substrate
J. Kim, J. Yoo, Y. Baek, H. Kim, Q. Hu, C. Kang, and T. Yoon

2592 Phenomena of Dielectric Capping Layer Insertion into High- κ Metal Gate Stacks in Gate-First/Gate-Last Integration
H. Jagannathan, P. Jamison, and V. K. Paruchuri

2593 Conformal Metal Gate Process Technology for 14nm Logic Node and Below
A. M. Noori, A. Brand, Y. Lei, M. Chen, W. Tang, X. Lu, X. Fu, S. Ganguli, J. Anthis, D. Thompson, N. Yoshida, M. Xu, M. Chang, and S. Gandikota

2594 Investigation of Mg Diffusion in Ta(N) based Electrodes on HfO_2 for sub-32nm CMOS Gate-Last Transistors
R. Gassilloud, C. Maunoury, C. Leroux, P. Chevalier, C. Dressler, F. Aussenac, F. Martin, D. Bensahel, and S. Maitrejean

2595 Device-Circuit Co-design of FinFETs in Scaled Technologies
S. Gupta and K. Roy

2596 Independent-Double-Gate FinFET SRAM Technology
K. Endo, S. O'uchi, Y. Liu, T. Matsukawa, and M. Masahara

2597 Electrical Characterization and Reliability Assessment of Double-gate FinFETs
C. D. Young, K. Akarvardar, K. Matthews, M. Baykan, J. Pater, I. Ok, T. Ngai, K. Ang, M. Minakais, G. Bersuker, C. Hobbs, P. Kirsch, and R. Jammy

2598 Current Status of High-k and Metal Gates in CMOS
G. D. Wilk, M. Verghese, P. Chen, and J. Maes

2599 Roles of Target Composition on the Dielectric Property of RF Sputtered Bi_2O_3-ZnO-Nb_2O_5 Pyrochlore Thin Film
K. Ko, M. Lim, B. Lee, H. Lee, and J. Choi

2600 Effect of Erbium Silicide Crystallinity for Low Barrier Contact Between Erbium Silicide and n-type Silicon
H. Tanaka, A. Teramoto, S. Sugawa, and T. Ohmi

2601 Measurement and Identification of Three Contributing Charge Terms in Negative bias Temperature Instability
C. Mayberry, D. D. Nguyen, C. Kouhestani, K. E. Kambour, H. P. Hjalmarson, and R. A. Devine

2602 Process to Etch Ni and Pt Residues during Silicide Contact Electrode Processing using Low Temperature Aqueous Solutions
A. N. Duong, C. Fitz, S. Metzger, O. Karlsson, J. C. Foster, G. Nowling, V. Sih, and P. Besser

2603 Correlation between Electrical and Optical Properties of Tantalum Anodic Oxide and Electron Cyclotron Resonance Etching Studies of E-beam Deposited Ta_2O_5 Films
A. Kulpa and N. Jaeger

2616 Interface Properties La-Silicate MOS Capacitors with Tungsten Carbide Gate Electrode for Scaled EOT
K. Tuokedaerhan, R. Tan, K. Kakushima, P. Ahmet, Y. Kataoka, A. Nishiyama, N. Sugii, K. Tsutsui, K. Natori, T. Hattori, and H. Iwai

2617 Remote Scavenging Technology using Ti/TiN Capping Layer Interposed in a Metal/High-k Gate Stack
X. Ma, X. Wang, K. Han, W. Wang, and T. Ye

2618 Band Lineup Issues Related with High-k/SiO_2/Si Stack
J. Xiang, X. Wang, T. Li, C. Zhao, W. Wang, Q. Liang, J. Li, D. Chen, and T. Ye

2619 Schottky Barrier Height at TiN/HfO_2 Interface of TiN/HfO_2/SiO_2/Si Structure
K. Han, X. Wang, W. Wang, J. Zhang, J. Xiang, H. Yang, C. Zhao, D. Chen, and T. Ye

2620 SiC MOS Interface States: Similarity and Dissimilarity from Silicon
T. Umeda, Y. Satoh, R. Kosugi, Y. Sakuma, M. Okamoto, S. Harada, and T. Ohshima

2621 Controlled Lateral Etching of Titanium Nitride in a CMOS Gate Structure using DSP+
J. C. Foster, S. Metzger, and P. Besser

2622 The Electrochemical Kinetics of Selectively Corroding Poly-Silicon in Generating Lonely Crater-Defects
L. Sheng and E. Glines

2623 Local-Loading Effects for Pure-Boron-Layer Chemical-Vapor Deposition
V. Mohammadi, W. de Boer, T. Scholtes, and L. K. Nanver

E6 - High Purity Silicon 12
ECS Electronics and Photonics

2624 Challenges for the Semiconductor Industry in the 21st Century
P. A. Gargini

2625 Si Crystal Growth from a Melt: The Secrets Behind the v/G Criterion
J. Vanhellemont

2626 FZ Crystal Growth of Si and Ge- Current Limitations and Approaches to Overcome
H. Riemann, H. Rost, M. Wuenscher, R. Menzel, and B. Hallmann-Seiffert

2627 Electrolytic Deposition of Silicon for Solar Application
S. Sokhanvaran and M. Barati

2628 A Study on Density Functional Theory of the effect of Pressure on the Formation and Activation Enthalpies of Intrinsic Point Defects in Growing Single Crystal Si
K. Sueoka, E. Kamiyama, and H. Kariyazaki

2656 Defect Generation in Device Processing and Impact on the Electrical Performances
M. Polignano, I. Mica, G. P. Carnevale, A. Mauri, E. Bonera, and S. Speranza

2657 Segregation Behavior of Copper and Tantalum in Oxide Film and Si Substrate after Device Heat-treatment
I. Lee, S. Baek, G. Lee, U. Paik, and J. Park

2658 The Characteristics of Gettering Ability in Advanced Multi-Chip Packaging Thinned Wafer
J. An, J. Kim, J. Kim, K. Lee, H. Kang, S. Lee, B. Moon, Y. Shin, S. Hwang, and H. Park

2659 Effects of Slow Diffusivity Metallic Contaminant on Electrical Characteristic Degradation for Silicon C-MOS Image Sensor
G. Lee, I. Lee, S. Baek, I. Kim, and J. Park

E7 - Low-Dimensional Nanoscale Electronic and Photonic Devices 5

ECS Electronics and Photonics, ECS Dielectric Science and Technology, ECS Sensor

2660 Syntheses of a Variety of Silicide Nanowire and Nanosheet Bundles
H. Tatsuoka, W. Li, E. Meng, and D. Ishikawa

2661 Bottom-up Process to Fabricate Periodic Arrays of β-$FeSi_2$ Nanopillars for Photonic Applications
Y. Kaneko, M. Suzuki, K. Nakajima, and K. Kimura

2662 Mn Silicide Nanowires on the Si(001)-2×1 Surface Having Anisotropic Strain Fields with Bi Nanolines
K. Miki, H. Liu, and J. Owen

2663 A Proposal of Schottky Barrier Height Tuning Method with Interface Controlled Ni/Si Stacked Silicidation Process
Y. Tamura, R. Yoshihara, K. Kakushima, P. Ahmet, Y. Kataoka, A. Nishiyama, N. Sugii, K. Tsutsui, K. Natori, T. Hattori, and H. Iwai

2664 High-Performance Piezoelectric Nanogenerators Based on Piezoelectric and Semiconducting Coupled Properties
S. Kim

2665 Novel Functional Materials and Characterizations for Highly Efficient Dye-Sensitized Solar Cells
E. W. Diau

2666 WO_3 Nanotubes for Effective Photoelectrochemical Water-Splitting
X. Zheng

2667 Fabrication of Silicon Groove/Pyramid Hierarchical Structures for Solar Cell Applications
Z. Lin, A. Li, H. Wang, and J. He

2668 Large Scale Single-Crystal Cu(In,Ga)Se_2 Nanotip Arrays For High Efficiency Solar Cell
Y. Chueh

2669 GaN-based Nanorods: From High-Gain Photoconductor to Solar Hydrogen Generation
Y. Huang, Y. Huang, W. Tu, K. Chen, and L. Chen

2670 From Organic Powders to Geometrically Well Defined Low-Dimensional Structures: A way for Unprecedented Optical and Chemical Properties
J. Park, H. Moon, and H. Choi

2671 Hybrid Silicon Solar Cells with Hierarchical Structure for Energy Harvesting
W. Wei, C. Ho, S. Tai, H. Wang, A. Li, R. Chung, and J. He

2672 Three-dimensional Silicon Phononic Crystal
Y. Lin, H. Ting, L. Chou, and L. Chen

2673 One-Dimensional Semiconductor Heterostructures: Challenges and Opportunities
S. A. Dayeh

2674 Chemical Vapor Deposited MoS_2 Thin Layers and Their Applications
L. Li

2675 Epitaxial Growth of Iron-Silicide Nanodots on Si Substrates Using Ultrathin SiO_2 Film Technique and Their Physical Properties
Y. Nakamura and M. Ichikawa

2676 Au@SnO2 Core-Shell Nanowires: Novel Material for Gas Sensor
W. Liu, C. Hsu, and L. Chou

2677 DC and RF Characteristics of Ga_2O_3/GaN Single Nanowire MOSFET
J. Yu, C. Li, P. Yeh, Y. Wu, and L. Peng

2678 Controllable Surface Plasmon Resonance Properties of Hexagonal Close-packed Metal Nanosphere Arrays
H. Ting, Y. Lin, L. Chou, C. Tsai, and L. Chen

2679 Surface Plasmon-Enhanced Optical Properties of Composite Materials Containing Metal Nanoparticles: Birefringence and Laser Oscillation
K. Tanaka, K. Fujita, S. Murai, X. Meng, Y. Moriguchi, and T. Komine

2680 Nanoheterostructures of Semiconducting Nanowires for Electronic Sensors and Photodetectors
P. Lee

2681 Implantable and Bio-Integrated Flexible GaN LED
K. Lee

2682 Photoacoustic Emission from Local Plasmon Resonators Nanostructured by Glancing Angle Deposition
K. Namura, M. Suzuki, K. Nakajima, and K. Kimura

2710 Gold Nanoparticle 2D-Arrays Chemically Immobilized as Large-Area Near-Field Light Source
K. Miki, K. Isozaki, T. Ochiai, T. Taguchi, and K. Nittoh

2711 Light- and Energy-Harvesting Scheme Employing the Nanoscale Photon Management in the Solar Cells and the Photodetectors
J. He

2712 Self-Powered Flexible Strain Sensor
J. Zhou

2713 Thermal Properties of In_2O_3 Nanowires
C. Hsu, C. Hung, and L. Chou

2714 Optical Characterization of Si Quantum Dots
S. Hu, T. Lin, D. Tsai, and R. Liu

E8 - Processing Materials of 3D Interconnects, Damascene and Electronics Packaging 4

ECS Dielectric Science and Technology, ECS Electrodeposition, ECS Electronics and Photonics, ECSJ Electronics

2715 Innovation Through Industry and University Collaboration
S. Johnston

2716 Heterogeneous 3D Stacking Technology Developments
H. Ikeda

2717 Metallization for 3D interconnect processing
H. Philipsen, Y. Civale, K. Vandersmissen, M. Honore, F. Inoue, and P. Leunissen

2718 3D Wafer Stacking via Bonding of Recessed Cu Damascene Structures
C. Tan

2719 3D Integration Technologies Based on Surface-Tension Driven Multi-Chip Self-Assembly Techniques
T. Fukushima, K. Lee, J. Bea, T. Tanaka, and M. Koyanagi

2720 High Aspect Ratio Silicon Etch
B. Wu

2721 Through Silicon Via (TSV) Process Using DRIE and Cathode Coupled PE-CVD
Y. Kusuda

2722 Advances in Semiconductor Metallization Technologies for New Applications and Device Scaling
R. Preisser

2723 Opportunities for Electroless Copper Deposition in Semiconductor Manufacturing
Y. Dordi

E9 - Fundamentals and Applications of Microfluidic and Nanofludic Devices

ECS Electronics and Photonics, ECS Physical and Analytical Electrochemistry, ECS Sensor

2777 Superhydrophobicity and Graphene Oxide Nanosheets to Prevent Biofouling in EWOD based Lab-on-chip Devices
G. Perry, F. Lapierre, Y. Coffinier, V. Thomy, and R. Boukherroub

2778 Influence of Lateral Confinement on the Dewetting Induced Patterns on Chemically Patterned Surfaces
D. Bandyopadhyay, A. Sharma, A. Sehgal, and A. Karim

2779 Spreading of a Micro-Droplet on a Physicochemically Heterogeneous Porous Medium
A. Kumar, V. Prasad S, T. Banerjee, and D. Bandyopahdyay

2780 The Flow Transitions of a Liquid-Liquid Multiphase Flow Inside Microchannels
S. Timung, V. Tiwari, T. Mandal, and D. Bandyopadhyay

2781 Electrohydrodynamic and Electrokinetic Instabilities in Elastic Membranes Confined Between Electrolyte Films
M. Dey and D. Bandyopadhyay

E10 - More than Moore

ECS Dielectric Science and Technology, ECS Electronics and Photonics, ECS Sensor, ECS New Technology Subcommittee

2782 More Moore or More than Moore
C. Hobbs, K. Ang, R. Hill, C. Kang, W. Loh, K. Hummler, S. Arkalgud, P. Kirsch, and R. Jammy

2783 Technology Roadmapping of ICs "More than Moore" Functional Diversification
B. Bader and M. Gaitan

2784 Emerging Research Devices and Architectures for More-Than-Moore Applications
A. Chen

2785 Engineering the Bio-Abio Interface to Enable Next Gen Bionics
A. Guiseppi-Elie, C. Kotanen, O. Karunwi, and A. Wilson

2786 Enabling Long-Term Dielectrophoretic Actuation for Cell Manipulation and Analysis in Microfluidic Biochips
D. R. Reyes

2787 Microsystem Pathways to a Greener World Using Radioisotopes
A. Lal

2788 Superconducting Fault Current Limiter with Fast Nanosecond Switching Time for Communication System Application
T. Chiu, C. Shih, C. Cheng, C. Cheng, T. Huang, and T. Chang

2789 High-Speed Alkaline Etching for Backside Exposure of through Silicon Vias
K. Yoshikawa, T. Miyazaki, N. Watanabe, and M. Aoyagi

E11 - Nonvolatile Memories

ECS Dielectric Science and Technology, ECS Electronics and Photonics, ECSJ Electronics

2803 Scalable Non-volatile Memory and Switch Device for High-Density Bipolar ReRAM Applications
D. Lee, M. Lee, and U. Chung

2804 A Two Terminal Vertical Selector Device for Bipolar RRAM
S. Chopra, P. Bafna, P. Karkare, S. Srinivasan, S. Lashkare, P. Kumbhare, Y. Kim, S. Srinivasan, S. Kuppurao, S. Lodha, and U. Ganguly

2805 Forming-less Interfacial Resistive Switching Mechanism of Ultra-Thin HfO_2 Films
J. Kim, I. Mok, K. Lee, Y. Kim, and H. Sohn

2806 Hf Cap Thickness Dependence in Bipolar-Switching TiN\HfO_2\Hf\TiN RRAM Device
Y. Chen, G. Pourtois, S. Clima, B. Govoreanu, L. Goux, A. Fantini, R. Degreave, G. Groeseneken, D. Wouters, and M. Jurczak

2807 Material Engineering of GexSbyTez and GaxSby Phase Change Materials for High Performance Phase Change Memory
H. Cheng, S. Raoux, T. Hsu, C. Wu, M. BrightSky, H. Lung, and C. Lam

2808 Advances in ALD GST Process and Equipment for sub-20nm PCRAM Devices : Precursor delivery, GST Gapfill and Electrical Characterization
Z. Karim, L. Yang, J. Mack, M. Liu, U. Weber, P. Baumann, S. Ramanathan, B. Lu, W. Czubatyj, S. Hudgens, and T. Lowrey

2809 Characterisation of GeTe Phase Change Material Deposited by Plasma Assisted MOCVD
L. Dussault, C. Vallée, M. Aoukar, D. Jourde, and P. Michallon

2810 Supercritical Fluid Deposition of Bismuth Titanate for Embedded FeRAM Applications
Y. Zhao, K. Jung, T. Momose, and Y. Shimogaki

2811 Deposition Mechanism of Metal Oxide for FeRAM Electrode using Flow Type Supercritical Fluid Deposition Reactor
K. JUNG, T. Momose, and Y. Shimogaki

2812 Progresses on High Density MRAMs with perpendicular MTJs and Challenges to Realize Normally-Off systems
H. Yoda

2813 Racetrack Memory 2.0
S. Parkin

2814 STT-MRAM Development and Its Integration with BEOL Process for Embedded Applications
T. Sugii, Y. Iba, M. Aoki, H. Noshiro, K. Tsunoda, A. Hatada, M. Nakabayashi, Y. Yamazaki, A. Takahashi, and C. Yoshida

E12 - Photovoltaics for the 21st Century 8

ECS Dielectric Science and Technology, ECS Electrodeposition, ECS Electronics and Photonics, ECS Energy Technology, ECS Industrial Electrochemistry and Electrochemical Engineering, ECSJ Photoelectrochemistry

2853 Microstructural Controls of a Titania Electrode for Dye-Sensitized Solar Cells
A. Nakamura, T. Hyodo, and Y. Shimizu

2854 Rapid Synthesis of High Performance TiO_2 Nanoparticles for Dye-Sensitized Solar Cells Employing Microwave and Supercritical Water
K. Manseki, Y. Kondo, D. Ishihama, T. Ban, T. Sugiura, and T. Yoshida

2855 Protonated Carboxyl Anchor for Stable Adsorption of Ru N749 dye on TiO2 Anatase (101) Surface
K. Sodeyama, M. Sumita, and Y. Tateyama

2856 High Efficiency Dye-sensitized Solar Cells Using Thin TiO2 Films Co-sensitized by Indoline Dyes
S. MORITA, M. Ikegami, A. Ishii, and T. Miyasaka

2857 Preparation of Non-annealed Anatase TiO2 Films on ITO substrates by Anodizing in Hot Phosphate/glycerol
E. Tsuji, N. Hirata, and H. Habazaki

2858 Enhanced Hole Transport in Nickel Oxide Electrodes for Photoelectrochemical Sensitized Cells
K. Zhu, S. Kang, N. Neale, and A. Frank

2859 Alkylation of Chlorin e6 for Higher Efficiency Dye-Sensitized Solar Cells
X. Wang, H. Tamiaki, and S. Sasaki

2860 Tin Oxide Nanowires and Their Hybrid Architectures for Kinetically Fast Redox Couples in Dye-Sensitzed Solar Cells
V. Vendra, T. Nguyen, D. Amos, T. Druffel, and M. K. Sunkara

2861 Nano-Clay Electrolyte for High Performance Dye-Sensitized Solar Cells
S. Uchida, T. Kubo, and H. Segawa

2862 Integration of Polymer Electrolytes in Nanostructured Electrodes of Dye Sensitized Solar Cells
S. Nejati, D. Martin, C. Prejean, J. Deshmukh, and K. K. Lau

2863 Conductivity Enhanced CuSCN for Improved Performance in Dye-Sensitized Solid-state Solar Cells
A. Konno, E. Premalal, and N. Dematage

2864 Dye-sensitized photocapacitors fabricated with ionic liquid electrolytes for power generation and storage
T. Miyasaka, H. Ina, and M. Ikegami

2905 CIGS Electrodeposition from Improved Electrolytes: Electrochemical Characterization and Transport Effects
M. A. Saeed, O. Gonzalez, and U. Landau

2906 Use of Surface Chemistry Control and Low Temperature Growth Methods for Overcoming Perceived Limitations in III-Nitride Epitaxy
W. Doolittle, M. Moseley, B. Gunning, and G. Namkoong

2907 Controlled Synthesis of Chalcogenide Nanocrystal Inks for High-Performance Photodetectors and Solar Energy Conversion
J. Hu, Y. Guo, and L. Wan

2908 $CuInS_2$- and Cu_2ZnSnS_4-based Thin Film Solar Cells Prepared from Electrodeposited Metal Stacks
S. Ikeda, Y. Otsuka, A. Kyoraiseki, W. Septina, T. Harada, and M. Matsumura

2909 Electrodeposition of In-S based Buffer Layers for High Efficiency $Cu(In,Ga)Se_2$ based Solar Cells
E. Chassaing, N. Naghavi, S. Galanti, G. Renou, M. Soro, M. Bouttemy, A. Etcheberry, and D. Lincot

2910 Overview of Electrodeposition Based Copper Indium Gallium Selenide (CIGS) Solar Cell Fabrication
S. Aksu, S. Pethe, A. Kleiman-Shwarsctein, S. Kundu, and M. Pinarbasi

2911 Electrodepsion of $Cu_2ZnSn(S,Se)_4$ (CZTSSe) Thin Films for the Thin film Solar Cell Application
K. Lee, S. Seo, and J. Kim

2912 Synthesis of Phase Pure Pyrite Nanowires/Nanotubes for Solar Energy Applications
D. R. Cummins, H. B. Russell, J. Jasinski, and M. K. Sunkara

2913 Electrodeposition of Tin (II) Sulfide from 1-Butyl-3-methylimidazolium Dicyanamide at High Temperature for Thin Film Solar Cells
M. Steichen, R. Djemour, D. Regesch, L. Gütay, S. Siebentritt, and P. Dale

2914 Multilayer Hybrid Solar Cell using Anodic TiO2 Nanotubes
T. Ma, R. Kojima, D. Tadaki, J. Zhang, Y. Kimura, and M. Niwano

2915 Optical Property of Random Inverted-Pyramid Textures on Si Surface by Etching with N-Fluoropyridinium Salts
M. Otani, J. Uchikoshi, K. Tsukamoto, T. Hirano, T. Nagai, K. Adachi, K. Kawai, K. Arima, and M. Morita

2916 Enhancement of Thermal and Chemical Stabilities of Gold Nanorods Embedded in Titanium Oxide Film
Y. Takahashi, N. Miyahara, and S. Yamada

2917 Development of Organic-Inorganic Hybrid Photovoltaic Cells with Metallocene Molecular Complexes
A. Ishii and T. Miyasaka

2918 Effect of Ag Nano-crystals on Power-conversion-efficiency Enhancement for Polymer Photovoltaic Cells
J. Kim, D. Kim, Y. Hwang, J. Shin, J. Park, and J. Park

2919 An Analysis on Electrorefining for Solar-Grade Silicon
M. Tao

2920 Dislocation Analysis for a New Mushroom-Shaped Growth of Large-Size Monocrystalline Silicon by Seed Casting Technique
B. Gao, H. Harada, Y. Miyamura, S. Nakano, and K. Kakimoto

2921 Effects of Metal Contamination on Power-conversion-efficiency Degradation for p-type Silicon Solar Cell
S. Baek, I. Lee, H. Yoon, M. Choi, G. Lee, and J. Park

E13 - Plasma Processing 19

ECS Dielectric Science and Technology, ECS Electronics and Photonics

2922 Direct SiGe BFFT Patterning by Dry Plasma Etching
A. Milenin, L. Witters, B. Deweerdt, C. Vrancken, and M. Demand

2923 Hydrogen Plasma-Based Etching of Copper
F. Wu, G. Levitin, T. Choi, and D. Hess

2924 Inductively Coupled Plasma Etching of InP with Cl_2/H_2/Ar Plasma
E. A. Douglas, J. Stevens, R. Shul, and S. Pearton

2925 Extreme Nano Etching
D. L. Olynick, Z. Liu, S. Dhuey, C. Peroz, B. Harteneck, and S. Cabrini

2926 Investigation of Synchronized Pulsed Plasma for High Selective Etching of Silicon Nitride Spacers
R. Blanc, O. Joubert, T. David, F. Leverd, and C. Vérove

2927 Systematic Approach to TDM Process Development
C. W. Johnson, D. Pays-Volard, L. Martinez, and J. Plumhoff

2928 Advanced Dual Hard Mask Patterning Scheme to Enable High Resolution Lithography for sub 30 nm Technology Nodes
J. Paul, M. Rudolph, S. Riedel, S. Wege, C. Hohle, and V. Beyer

2929 Towards New Plasma Technologies for 22 nm Gate Etch Processes and Beyond
O. Joubert

2944 The Chemical Reaction of IGZO Thin Film as the Effect of Inert Gas in CF_4/Ar Plasmas
Y. Joo, J. Woo, Y. Chun, and C. Kim

2945 Etching Characteristics of Top Metal Electrode and IGZO channel layer in Inductively Coupled Plasma System
Y. Chun, Y. Joo, J. Woo, and C. Kim

2946 Interplay Between Plasma Modification of Surfaces and Atomic Layer Deposition for Semiconductor Applications
J. Swerts, C. Adelmann, S. Armini, A. Delabie, L. Nyns, M. Popovici, M. Schaekers, P. Verdonck, and S. Van Elshocht

2947 Hybrid Sublimation ECR-PECVD System for Fabrication of Rare Earth Doped Silicon Based Thin Film Structures
R. Dabkowski, J. Wojcik, and P. Mascher

2948 Characterization and Modelling of CH_4-CO_2 Microwave Plasmas for Nano-Smooth Diamond Coatings and Homogeneous Nano-Diamond Grain Synthesis
L. Vandenbulcke, T. Gries, S. de Persis, and M. Vandenbulcke

2949 Charge-based Delivery of Molecules to Skin Using Atmospheric Plasmas
A. M. Hoff, R. Connolly, T. Chapman, J. Llewellyn, R. Gilbert, and M. Jaroszeski

2950 Analysis and Applications of Nonthermal Atmospheric Plasma: High Electric Field Plasma and Plasma Discharges/Jets
Y. B. Manga and K. Ou

2951 Evaluation of Micro Plasma formed in the Narrow Gap in Electrolyte Solution
H. Tamai, M. Hafner, A. Hassel, H. Tachikawa, and K. Azumi

E14 - Semiconductor Wafer Bonding 12: Science, Technology, and Applications

ECS Electronics and Photonics

2952 Direct Bonding Energy Measurement Under Anhydrous Atmosphere
F. Fournel, L. Continni, C. Morales, J. Da Fonseca, H. Moriceau, C. Martin Cocher, F. Rieutord, A. Barthelemy, and I. Radu

2953 Study of Hydrophilic Si Direct Bonding with Ultraviolet Ozone Activation for 3D Integration
J. Fan, G. Chong, and C. Tan

2954 Hydrophilic Wafer Bonding - An Acid/Base Concept
M. Reiche

2955 Surface Activiation for Semiconductor Wafer Direct Bonding Using Polymer-Stripping Wet Chemicals
R. Knechtel, H. Wünschre, and H. Klingner

2997 Adhesive Wafer Bonding Applied for Fabrication of True-Chip-Size Packages for SAW Devices
T. Heuser, C. Bauer, V. Dragoi, and G. Mittendorfer

2998 Distortion Free Wafer Bonding Technology for Backside Illumination Image Sensors
M. Broekaart, A. Castex, K. Landry, R. Fontaniere, and C. Lagahe-Blanchard

2999 Monitoring Inner Pressure of MEMS Devices Sealed by Wafer Bonding
R. Knechtel, S. Hering, and S. Dempwolf

3000 Chemical-Mechanical Polishing YAG For Wafer Bonding
J. Mc Kay, C. Moulet-Ventosa, and M. Goorsky

E15 - State-of-the-Art Program on Compound Semiconductors 54 (SOTAPOCS 54)

ECS Electronics and Photonics, ECS Luminescence and Display Materials

3001 Progress in Nonpolar and Semipolar GaN Materials and Devices
J. S. Speck

3002 Study of Protein-Peptide Binding Affinity Using AlGaN/GaN High Electron Mobility Transistors
C. Huang, G. Lee, J. Chyi, H. Cheng, C. Hsu, Y. Hsu, F. Ren, and Y. Wang

3003 Science Challenges of Ultra-Efficient Solid-State Lighting
M. H. Crawford and J. Tsao

3004 InGaN/GaN Nanostructure Arrays for LEDs
T. Yeh, Y. Lin, and P. D. Dapkus

3005 Wide Bandgap Semiconductors for Sensing within Extreme Harsh Environments
D. G. Senesky

3006 ZnS-based Nanostructures: An Unique UV-Light Sensor
X. Fang, L. Hu, and L. Wu

3007 Detection of SARS Coronavirus Nucleocapsid Protein Using AlGaN/GaN High Electron Mobility Transistors
Y. Hsu, G. Lee, J. Chyi, C. Chang, C. Huang, C. Hsu, T. Huang, F. Ren, and Y. Wang

3008 n-type Nanostructures / p- GaN or Si Thin Film Positioned by Non-Uniform Electric Field
J. Kim

3009 Resistive Switching in Zinc-Tin-Oxide and Atomic Layer Deposition of Nanolaminates for Amorphous Oxide Semiconductor Thin Film Transistors
J. Conley Jr.

3010 Impurity-Induced Disordering in Si- and Mg-doped AlGaN-AlN Superlattices
A. Allerman, J. Wierer, Q. Li, M. H. Crawford, and S. Lee

3024 Why <111>A Pore Propagation Occurs in InP and the Mechanism that Dictates Pore Width
R. Lynch, N. Quill, C. O'Dwyer, S. Nakahara, and D. Buckley

3025 TiC Electrode Formed by Multi-Stacking Process for Diamond Contact Metal
Y. Tanaka, K. Kakushima, P. Ahmet, Y. Kataoka, A. Nishiyama, N. Sugii, K. Tsutsui, K. Natori, T. Hattori, S. Yamasaki, and H. Iwai

3026 Application of Inline X-ray Metrology for Defect Characterization of III-V/Si Heterostructures
P. Hung, M. Wormington, K. Matney, P. Ryan, K. Dunn, A. Wang, R. Hill, M. Wong, J. Price, W. Wang, and G. Bersuker

3027 Advanced Compound Semiconductor and Silicon Fabrication Techniques for Next-Generation Solar Power Systems
G. N. Nielson

3028 Improvement in Etching Rate of Epilayer Lift-Off for High Concentrated Solar Cell Applications with Low Surface Tension Fluid
R. Horng, F. Wu, and M. Tseng

3029 Band Offsets in Dielectric/InGaZnO4 Heterojunctions
H. Cho, K. Kim, E. A. Douglas, B. P. Gila, V. Craciun, E. S. Lambers, F. Ren, and S. Pearton

3030 Anodic Formation of Porous InP in KCl Solutions
N. Quill, R. Lynch, C. O'Dwyer, and D. Buckley

3031 Cytotoxicity Study of Zinc Oxide Nanoparticles Modified with Biological Coatings
R. Chung, W. Wei, R. Lin, W. Shih, and H. Wang

3032 4H-SiC Lateral JFET for Low Power Operational Amplifier Applications
W. Lien, D. G. Senesky, and A. Pisano

3033 Visible-Blind Ultraviolet Photodetector Fabricated on n-ZnO/$LaAlO_3$/p-Si Heterojunction
D. Tsai, C. Kang, H. Wang, Y. Chu, and J. He

3034 VCSELs for Atomic Clocks
D. K. Serkland, K. Geib, and G. Peake

3035 Oxide-Semiconductor-Based TFTs for Displays and Flexible Electronics
C. Wu

3036 Direct Observation of Conducting Nano filaments in BMO Resistive Switching Memory
C. Kang, W. Kuo, C. Huang, W. Chang, W. Wu, Y. Chu, and J. He

3037 Bloch Oscillations in Two-Dimensional Antidot Arrays
W. Pan

3038 Single Donor Devices for Quantum Computing
M. Carroll, E. Bielejec, N. Bishop, J. Dominguez, and M. Lilly

3039 Sulfide Quantum Dots as a Sensitizer for Titanium Dioxide Photoanodes of Solar Cells
T. Li, C. Lin, and H. Teng

3040 Multi-Shelled Metal Oxide Hollow Microsphere: Design, Preparation and Property
Z. Dong, R. Yu, and D. Wang

3041 Fully Transparent Non-Volatile Memory Using Multi-Layer Graphene Electrode
P. Yang, S. Jen, W. Chang, P. Chiu, and J. He

3042 Hybrid Silicon Solar Cells with Hierarchical Structure for Energy Harvesting
W. Wei, C. Ho, S. Tai, H. Wang, A. Li, R. Chung, and J. He

E16 - Thin Film Transistors 11 (TFT 11)

ECS Electronics and Photonics

3043 Transparent Amorphous Oxide Semiconductor TFTs: History and current status
H. Hosono

3044 Top-Gate effects in Dual-Gate Amorphous $InGaZnO_4$ Thin-Film Transistors
K. Takechi, S. Iwamatsu, T. Yahagi, Y. Watanabe, S. Kobayashi, and H. Tanabe

3045 Deposition of Low Stress Amorphous Zinc Tin Oxide at Ambient Temperature using a Remote Plasma Sputtering Process Suitable for Delicate Substrates
S. M. Pfaendler, G. Ercolano, J. Driscoll, and A. J. Flewitt

3046 MgZnO/ZnO Heterostructure Field-Effect Transistors Fabricated by RF-Sputtering
B. Wang, I. Cheng, and J. Chen

3047 a-InGaZnO Thin-Film Transistor with Non-Vacuum Processed InGaZnO/AlOx Gate Dielectric Stack
M. Furuta, T. Kawaharamura, T. Toda, and W. Dapeng

3048 Simple Aqueous Solution Route for Fabrication of High Performance Oxide TFT
B. Bae, Y. Hwang, J. Seo, and G. Choi

3049 Fabricating Multiple Channeled Zinc Oxide Thin Film Transistor via Sol-Gel Method
G. Chiou, S. Liu, S. Chen, and H. Chen

3050 Improvement of Solution-Processed Oxide Thin-Film Transistors by Ultra-Violet Treatment
J. Lee, S. Song, D. Kang, Y. Kim, J. Kwon, and M. Han

3051 Light and Bias Induced Defects in a-IGZO Thin Film Transistors
P. Migliorato, M. Seok, J. Um, M. Chowdhury, and J. Jang

3052 Improvement of the Photo-Bias Stability of Zn-Sn-O Field effect Transistors by an Ozone Treatment
B. Yang, S. Oh, Y. Kim, and H. Kim

3053 Improvement in the Photo-Induced Bias Instability of Oxide TFT by Controlling Sub-Gap States
K. Son, T. Kim, J. Park, H. Kim, S. Seo, J. Seon, K. Ji, J. Jeong, H. Lee, S. Im, M. Ryu, and S. Lee

3054 Mixed Oxide Thin Film Transistors Under Combinatory Optical Irradiation and Electrical Bias
T. L. Alford, R. Vemuri, and W. Mathews

3055 The effect of Zn/Sn Ratio on the Electrical Performance of Amorphous ZrZnSnO (ZZTO) Thin Film Transistors by RF Sputtering
I. Chiu, I. Cheng, and J. Chen

3056 Twenty five Years of Improvement of the Silicon Based TFT: From As-Deposited Polycrystalline Silicon to Nanostructured Silicon Deposited at Very Low Temperature
T. Mohammed-Brahim and O. Bonnaud

3057 Beyond the Current Horizontal of Silicon Thin Film Technology: Light-Soaking Free Nano-Crystal Embedded Polymorphous Silicon Thin Film and TFT by Neutral Beam Assisted CVD at Room Temperature
M. Hong and J. Jang

3058 Impacts of Channel Thickness on the Characteristics of N-Type Planar Junctionless Poly-Si Thin-Film Transistors
C. Lin, H. Lin, and T. Huang

3059 Grain Growth Control during Micro-Thermal-Plasma-Jet Irradiation Using Amorphous Si Strips and Slit Masks
Y. Fujita, S. Hayashi, K. Sakaike, and S. Higashi

3060 Decreasing the Off-Current for Vertical TFT by Using an Insulating Layer between Source and Drain
P. Zhang, E. Jacques, R. Rogel, and O. Bonnaud

3061 Thick Single Grain Silicon Formation with Microsecond Green Laser Crystallization
A. Arslan, H. Kahlert, P. Oesterlin, D. Mofrad, R. Ishihara, and C. Beenakker

3062 Single-Grain Si TFTs Fabricated by Liquid-Si and Long-Pulse Excimer-Laser
R. Ishihara, J. Zhang, M. Trifunovic, M. van der Zwan, H. Takagishi, R. Kawajiri, T. Shimoda, and C. Beenakker

3063 Materials, Processing, and Characterization for Printed Flexible Electronics
W. S. Wong

3064 Investigation of Transfer Mechanism of Si Film with Mid-Air Structure Induced by Near-Infrared Semiconductor Diode Laser Irradiation
K. Sakaike, Y. Kobayashi, S. Nakamura, M. Akazawa, and S. Higashi

3065 Modes of Operation and Optimum Design for Application of Source-Gated Transistors
R. A. Sporea, J. M. Shannon, and S. Silva

3066 CVD Produced Graphene/Silicon Nitride TFTs
W. I. Milne, M. T. Cole, P. Kidambi, K. Ying, M. Drapeko, S. Hofmann, and A. Nathan

3067 Characterization and Modeling of Organic Field-Effect Transistors
G. Horowitz

3068 Carrier Behavior in a Highly-Doped P3HT Layer and Its Application to Organic Thin Film Transistors
D. Tadaki, T. Ma, J. Zhang, S. Iino, Y. Kimura, and M. Niwano

3069 High Performance Low-Voltage Organic Phototransistors: Interface Modification and the Tuning of Electrical, Photosensitive and Memory Properties
X. Liu, G. Dong, L. Duan, L. Wang, and Y. Qiu

3070 Influence of Annealing Conditions on the Bias Temperature Stability of MgZnO TFTs
Y. Tsai, J. Chen, and I. Cheng

3071 Comparative Study of In_2O_3, ZnO and In-Zn-O Source Solutions for Oxide Channel Thin Film Transistors
E. Tokumitsu, T. Shimizu, K. Haga, and T. Shimoda

3072 Thin-Film Transistor Using Dielectrophoretic Assembly of Single-walled Carbon Nanotubes
T. Toda, T. Kawaharamura, H. Furusawa, and M. Furuta

3073 Degradation of p-Channel Low Temperature Poly-Si TFTs with Positive Source Pulse Stress
H. Liu, S. Chiou, P. Chan, C. Kung, F. Wang, and T. Kang

3074 Simple Patterning Process of the Polymer Source/Drain electrodes for Organic Thin-Film Transistors
Y. Jang

3075 Influence of Polymer Dielectric Surface Energy on Thin-Film Transistor Performance of Solution-Processed Triethylsilylethynyl Anthradithiophene (TES-ADT)
L. Chen, P. Lin, C. KIM, M. Chen, P. Huang, J. Ho, and C. Lee

3076 Study of Electronic Structure and Film Composition at Back Channel Surface of Amorphous In-Ga-Zn-O Thin Films
A. Hino, T. Kishi, S. Morita, K. Hayashi, and T. Kugimiya

3077 Performance Variations of Amorphous-$In_2Ga_2ZnO_7$ Thin-Film Transistors According to Thin Al_2O_3 Passivation Layer Deposited by Atomic Layer Deposition
S. Rha, U. Kim, J. Jung, W. Jeon, Y. Yoo, E. Hwang, B. Park, and C. Hwang

3078 Chemical-Structure Tailored, High Performance Indium Gallium Zinc Oxide Thin-Film Transistors
S. Jeong, J. Lee, Y. Seo, S. Choi, Y. Choi, and B. Ryu

3079 Electrospray Deposited Semiconducting Oxide Thin Films For Display Backplane TFT Application
S. LEE and C. Hwang

3080 Low-Temperature, Aqueous Solution Processed Amorphous Indium Oxide Thin Film Transistors
K. Choi, S. Chang, T. Oh, S. Jeong, K. Lee, Y. Kim, H. Ha, and B. Ju

3081 Characteristiscs of Nanocrystalline Silicon Films Deposited by Cat-CVD Below 100 ℃
T. Song, K. Keum, S. Kang, J. Park, J. Kim, and W. Hong

3082 Influence of Thermal Stress and Kinetic Bias Stress on The Electrical Performance of Mixed Oxide Thin Film Transistors
T. L. Alford, S. Husein, and R. Vemuri

3083 Composition Dependence of the Negative Bias Light Illumination Instability of Indium Zinc Oxide Transistors
S. Oh, B. Yang, Y. Kim, and H. Kim

3084 SKPM Study on Oxide TFT
J. Park and H. Cha

3085 The Change of Electrical Performance and Stability of Ti, B-doped In-Zn Oxide Thin Film Transistors Depending on Gate Insulators
B. Kim, J. Shin, C. Hong, K. Kim, N. Park, and W. Cheong

3086 Aqueous Inorganic Inks for Low Temperature Fabrication of Metal Oxide-Based High-Mobility Transparent Thin-Film Transistors
C. Liu, W. Lee, and T. Shih

3087 Channel Width and Channel Length Dependencies in Amorphous-Oxide-Semiconductor Thin-Film Transistors: From a Device Structure Perspective
M. Mativenga, J. Um, R. Mruthyunjaya, J. Chang, G. Heiler, T. Tredwell, and J. Jang

3088 Ambipolar SnO Thin-Film Transistors and Inverters
L. Liang and H. Cao

3089 Structure and Material Considerations for Thin Film Transistor Applications beyond LCD Driving
Y. Kuo

3090 Issues of Backplane Technologies for AMOLED
S. Lee, J. Lee, and M. Han

3091 A Novel LTPS TFT Pixel Circuit for Compensating IR Drop of Large Area AMOLED Display
S. Lee, S. Kuk, S. Song, M. Song, and M. Han

3092 Memory Thin Film Transistor with Monolayered Nanoparticles through Chemical and Biological Bindings
H. Lee, H. Jung, M. Kim, Y. Kim, S. Oh, and T. Yoon

3093 High Mobility Oxide TFT
S. K. Park, M. Ryu, H. Oh, C. Hwang, S. Yang, and S. Lim

3094 Nanocrystal Floating Gate Memory with Indium-Gallium-Zinc-Oxide Channel and Pt-Fe_2O_3 Core-Shell Nanocrystals
S. Lee, Q. Hu, J. Lee, Y. Baek, H. Lee, and T. Yoon

3095 Transparent Amorphous Oxide Semiconductors for System on Panel Applications
P. Liu, L. Chu, L. Teng, Y. Fan, and C. Fuh

3096 Thin-Film Transistors on Germanium-on-Glass Substrate
R. G. Manley and T. Chuang

3097 Dual In-Plane-Gate Thin-Film Transistors Gated by Chitosan on Paper Substrates
Q. Wan and W. Dou

3098 Highly Stable IGZO TFT with Electro-Less Ni Plated Cu Electrodes
S. Nam, T. Moon, K. Lee, K. Lee, S. Yoo, W. Shin, and S. Im

3099 Laser Patterned Junctionless In-Plane-Gate Oxide Thin-Film Transistors Arrays
L. Zhu and Q. Wan

3100 The Stability and Reliability of Mixed Oxide-Based Thin Film Transistors Under Gamma Irradiation
T. L. Alford, A. Indluru, and K. E. Holbert

E17 - SiGe, Ge, and Related Compounds: Materials, Processing, and Devices 5

ECS Electronics and Photonics

3101 Advanced CMOS Scaling and FinFET Technology
E. J. Nowak

3102 FinFET--How to Make a Very Short Channel MOSFET
C. Hu

3155 X-ray and Raman Characterization of strained SiGe Layers Treated by Stain Etching
W. Zhou, R. Liang, and L. Yan

3156 Ge-on-Si Bufferless Epitaxial Growth for Photonic Devices
R. E. Camacho-Aguilera, Y. Cai, J. Bessette, X. Duan, L. Kimerling, and J. Michel

3157 Formation of Large-Grain Ge(111) Films on Insulator by Gold-Induced Layer-Exchange Crystallization at Low Temperature
J. Park, T. Suzuki, M. Kurosawa, M. Miyao, and T. Sadoh

3158 Impedance Spectroscopy of GeSn/Ge Heterostructures by a Numerical Method
B. Baert, O. Nakatsuka, S. Zaima, and N. Nguyen

3159 Improvements in Atomic Layer Deposition Nucleation on Ge(100) and SiGe(100) via HOOH dosing
T. Kaufman-Osborn, J. Lee, K. Kiantaj, and A. C. Kummel

3160 Orientation Dependence of $Si_{1-x}C_x$:P Growth and the Impact on FinFET Structures
J. Tolle, K. D. Weeks, M. Bauer, V. Machkaoutsan, J. Maes, M. Togo, A. Hikavyy, S. Brus, and R. Loo

3161 High Throughput SEG of Highly In-Situ Doped SiCP/SiP Layers for NMOS Devices Using a $Si_3H_8SiH_3CH_3/PH_3/Cl_2$ based CDE Process
M. Bauer

3162 Ge-on-Si: Single-Crystal Selective Epitaxial Growth in a CVD reactor
A. Sammak, W. de Boer, and L. K. Nanver

3163 The Structural and Electrical Properties in CeO_2 Dielectric on Ge Substrate for MOS Capacitors by Atomic Layer Deposition with $Ce(iprCp)_3$
I. Oh, M. Kim, J. Park, J. Gatineaub, K. Changhee, and H. Kim

3164 Point-of-Use Sampling and Organic Impurity Analysis for Bulk Gases in Semiconductor Processing
J. Park, S. Shin, Y. Lee, P. Jun, and J. Kim

3165 Electronic Band Structure and Effective Masses of $Ge_{1-x}Sn_x$ Alloys
K. Low, Y. Yang, G. Han, W. Fan, and Y. Yeo

3166 Multi-Wavelength High Resolution Micro-Raman and Optical Reflectance Characterization of Nano-Scale Strained Silicon-on-Insulator Substrates
T. Kim, T. Shim, W. Yoo, and J. Park

3167 Theoretical Calculation of Defects Formation Under Thermal Equilibrium in Heavily n-type Doped Germanium
K. Takinai, Y. Ishikawa, and K. Wada

3168 Strain Engineering in GeSnSi Materials
H. Radamson, M. Noroozi, A. Jamshidi, and M. Ostling

3183 Single-Shot Readout of Singlet-Triplet Qubit States in a Si/SiGe Double Quantum Dot
J. Prance, Z. Shi, C. Simmons, D. Savage, M. Lagally, L. Schreiber, L. Vandersypen, M. Friesen, R. Joynt, S. Coppersmith, and M. Eriksson

3184 A Design Scheme for Topological Insulators based Bonds, Bands, Symmetry and Spin Orbit Coupling
C. Felser, L. Müchler, S. Chadov, H. Zhang, and S. Zhang

3185 Measurement and Control of Individual Electron Spins in Silicon MOS-based Quantum Dots
H. Jiang

3186 Non Planar Non Si CMOS - Challenges and Opportunities
C. Hobbs, K. Ang, R. Hill, I. Ok, B. Min, D. Franca, H. Stamper, S. Vivekanand, M. Rodgers, S. Gausepohl, P. Kirsch, and R. Jammy

3187 Phonon Dispersion in <100> Si Nanowire Covered with SiO2 Film Calculated by Molecular Dynamics Simulation
T. Watanabe, T. Zushi, M. Tomita, R. Kuriyama, N. Aoki, and T. Kamioka

3188 Electron Transport and Strain Mapping in Ge-SixGe1-x Core-Shell Nanowire Heterostructres
E. Tutuc

3189 Liquid-Phase Deposition of Thin Si and Ge Films Based on Ballistic Electro-reduction
T. Ohta, R. Mentek, B. Gelloz, N. Mori, and N. Koshida

3190 Evidence of Layer-by-Layer Oxidation of Ge Surfaces by Plasma Oxidation Through Al_2O_3
R. Zhang, P. Huang, J. Lin, M. Takenaka, and S. Takagi

3191 GOI substrates -Fabrication and Characterization-
A. Sakai, S. Yamasaka, J. Kikkawa, Y. Nakamura, Y. Moriyama, T. Tezuka, S. Takeuchi, and K. Izunome

3192 Strained Nanoscaled Devices
D. Gruetzmacher, S. Mantl, Q. Zhao, S. Richter, L. Knoll, J. Moers, J. Gerharz, G. Mussler, D. Buca, and R. Minamisawa

3193 Effect of Two-step Oxidation in Ge Condensation on Surface Roughness Property of Relaxed SiGe layer-on-insulator Substrates
T. Shim, T. Kim, D. LEE, R. Okuyama, and J. Park

3194 Simple Fabrication of Suspended Germanium Structures and Their Electrical Properties from High Quality Ge on Si(001) Layers
V. A. Shah, M. Myronov, C. Wongwanitwatana, R. Morris, M. Prest, J. S. Richardson-Bullock, E. H. Parker, T. E. Whall, and D. R. Leadley

3195 Formation of Graded SiGe on Insulator by Segregation-Controlled Rapid-Melting-Growth
R. Matsumura, Y. Tojo, H. Yokoyama, M. Kurosawa, T. Sadoh, and M. Miyao

3196 Modeling Two Dimensional Solid Phase Epitaxial Growth for Patterned Ge Substrates
B. L. Darby, B. R. Yates, A. Kumar, A. Kontos, R. Elliman, and K. S. Jones

3197 Germanium/Silicon Heterostructures for Terahertz Emission
R. W. Kelsall, V. Dinh, P. Ivanov, A. Valavanis, L. Lever, Z. Ikonic, P. Velha, D. Dumas, K. F. Gallacher, D. J. Paul, J. Halpin, M. Myrnov, and D. R. Leadley

3198 Ge Photodiodes for CMOS Photonics Optical Engines and Interconnects
S. Sahni and G. Masini

3199 Long Wavelength {greater than or equal to}1.9 μm Germanium for Optoelectronics Using Process Induced Strain
P. Velha, D. J. Paul, M. Myronov, and D. R. Leadley

3200 Single Photon Emitters on Si substrate
S. Bietti, L. Cavigli, M. Abbarchi, G. Isella, J. Frigerio, C. Frigeri, A. Vinattieri, M. Gurioli, and S. Sanguinetti

3201 Advanced GE-ON-SI Telecommunication Receivers
C. R. Doerr

3202 Heteroepitaxial Lattice Mismatch Stress Relaxation in Nonpolar and Semipolar GaN by Dislocation Glide
J. S. Speck

3203 Channel Strain Evolution of Recessed Source/Drain $Si_{1-x}C_x$ Structures by Modifying Scaling Factors
S. Kim, D. Byeon, M. Jung, I. Lee, D. Ko, Y. Kim, and H. Lee

3204 High Ge Content SiGe Selective Processes for Manufacturing Source/Drain in the Next Generations of pMOS Transistors
A. Hikavyy, W. Vanherle, L. Witters, B. Vincent, J. Dekoster, and R. Loo

3205 Formation of Uniaxially Strained Si/Ge Channels on SiGe Buffers Strain-Controlled with Selective Ion Implantation
K. Sawano, Y. Hoshi, S. Nagakura, K. Arimoto, K. Nakagawa, N. Usami, and Y. Shiraki

3206 Coherent Manipulation of a Si/SiGe-based Singlet-Triplet Qubit
M. G. Borselli

3207 Spin Generation and Relaxation in Ge/SiGe Quantum Wells
G. Isella, F. Bottegoni, S. Cecchi, A. Ferrari, F. Ciccacci, F. Pezzoli, A. Giorgioni, E. Gatti, E. Grilli, M. Guzzi, C. Lange, N. Koester, R. Woscholski, S. Chatterjee, D. Trivedi, P. Li, Y. Song, and H. Dery

3208 Enhancement-Mode Buried Strained Silicon Channel Double Quantum Dot with Integrated Electrometer
M. Carroll, N. Bishop, T. Lu, T. Pluym, and P. Kotula

3222 GeSn Channel n and p MOSFETs
S. Gupta, R. Chen, B. Vincent, D. Lin, B. Magyari-Kope, M. Caymax, J. Dekoster, J. S. Harris, Y. Nishi, and K. Saraswat

3223 High Hole Mobility in Strained Germanium-Tin (GeSn) Channel pMOSFET Fabricated on (111) Substrate
G. Han, S. Su, Y. Yang, P. Guo, X. Gong, L. Wang, W. Wang, C. Guo, G. Zhang, C. Xue, B. Cheng, and Y. Yeo

3224 Negative Bias Temperature Instability Study on $Ge_{0.97}Sn_{0.03}$ P-MOSFETs with Si_2H_6 Passivation, HfO_2 High-k Dielectric and TaN Metal Gate
X. Gong, S. Su, B. Liu, L. Wang, W. Wang, Y. Yang, E. Kong, B. Cheng, G. Han, and Y. Yeo

3225 Si/SiGe Thermoelectric Generators
D. J. Paul, A. Samarelli, L. Ferre Llin, Y. Zhang, J. Weaver, P. Dobson, S. Cecchi, J. Frigerio, F. Isa, D. Chrastina, G. Isella, T. Etzelstorfer, J. Stangl, and E. Müller Gubler

3226 SiGe Band-to-Band Tunneling Calibration based on p-i-n Diodes: Fabrication, Measurement and Simulation
K. Kao, A. Verhulst, R. Rooyackers, A. Hikavyy, R. Loo, A. Milenin, J. Tolle, H. Dekkers, E. Simoen, V. Machkaoutsan, J. Maes, K. De Meyer, N. Collaert, M. Heyns, C. Huyghebaert, and A. Thean

3227 Tunneling Field-Effect Transistor with Novel Ge/$In_{0.53}Ga_{0.47}As$ Tunneling Junction
P. Guo, Y. Yang, Y. Cheng, G. Han, C. Chia, and Y. Yeo

3228 Germanium Tin Tunneling Field Effect Transistor for Sub-0.4 V Operation
Y. Yang, K. Low, G. Han, and Y. Yeo

3229 Si/SiGe Tunneling Static Random Access Memories
G. Ternent and D. J. Paul

3230 Ge Surface-Energy-Driven Secondary Grain Growth for Vertical Channel in 3D NAND Flash Memories
S. Lee, Y. Son, and E. Yoon

3231 Epitaxial Growth and Applications of Low-Resistivity Phosphorous-Doped $Si_{1-x}C_x$
T. N. Adam, N. Loubet, A. Reznicek, V. K. Paruchuri, R. Sampson, and D. Sadana

3232 Selective Epitaxial Growth of Heavily Boron-Doped Silicon with Uniform Doping Depth Profile
Z. Zhu, Z. Cong, and R. Balasubramanian

3233 High Tensile Strained In-Situ Phosphorus Doped Silicon Epitaxial Film for nMOS Applications
Z. Ye, S. Chopra, R. Lapena, Y. Kim, and S. Kuppurao

3234 Microstructure Development and Its Effects on the Electrical Properties in Epitaxially Grown In-Situ Boron and Carbon (co)-doped Highly Strained High Percentage Silicon-Germanium Layers
A. Reznicek, T. N. Adam, J. Li, Z. Zhu, H. Hovel, J. de Souza, S. W. Bedell, V. Paruchuri, and D. Sadana

3235 In Situ Boron (B) Doped Germanium (Ge:B) Grown on (100), (110), and (111) Silicon: Crystal Orientation and B Incorporation Effects
G. Han, Q. Zhou, P. Guo, W. Wang, Y. Yang, and Y. Yeo

3236 Materials Integration for III-V/SiGe+CMOS Integrated Circuit Platforms (Invited)
E. A. Fitzgerald, P. Sharma, M. Bulsara, T. Milakovich, S. Ringel, A. Pitera, J. Hennessy, and A. Malonis

3237 Heterogeneous Integration of III-V Devices and Si CMOS on a Silicon Substrate
T. Kazior

3238 Heterogeneous Integration of InP HBTs on CMOS: Leveraging and Providing Value to Conventional Silicon Technologies
J. C. Li, Y. Royter, P. Patterson, T. Hussain, J. Duvall, M. Montes, I. Valles, F. Ku, M. Boag-O'Brien, A. Lopez, D. Le, D. Zehnder, S. Kim, S. Chen, T. Oh, M. Akmal, E. Wang, D. Hitko, M. Sokolich, D. Chow, P. Brewer, and K. Elliott

3239 Wafer-level Heterogeneous Integration of GaN HEMTs and Si (100) MOSFETs
H. Lee, Z. Li, M. Sun, K. Ryu, and T. Palacios

3240 Scalable GaN-on-Silicon Using Rare Earth Oxide Buffer Layers
F. Arkun, M. Lebby, R. Dargis, R. Roucka, R. S. Smith, and A. Clark

3241 Formation and Characterization of Nickel Germanosilicide on $Si_{1-x}Ge_x/Si/SiO_2/Si$
W. Yoo, N. Hasuike, H. Harima, and M. Yoshimoto

3242 Low Specific Ohmic Contacts to n-type Germanium Using a Low Temperature NiGe Process
K. F. Gallacher, P. Velha, D. J. Paul, I. Maclaren, M. Myronov, and D. Leadly

3243 Formation of 1.7-nm-thick-EOT Germanium Dioxide Film with a High-Quality Interface Using a Direct Neutral Beam Oxidation Process
A. Wada, R. Zhang, S. Takagi, and S. Samukawa

F1 - Bio-Enabled Materials, Processes, and Devices

ECS Electrodeposition, ECS Physical and Analytical Electrochemistry, ECS Sensor, ECSJ

3244 (Invited) DNA-Translocation through a Solid-State Nanopore Coated with a Functionally Switchable Self-Assembled Monolayer
S. Harrer, D. Wang, B. Luan, G. Stolovitzky, H. Peng, and A. Afzali-Ardakani

3245 (Invited) Electrochemical Biosensors for Detecting Pathogens
W. R. Heineman, X. Guo, A. Kulkarni, S. Iyer, and H. Halsall

3259 Development of Novel Guided Tissue Regeneration Membranes for Biomedical Applications
Y. C. Chen and K. Ou

3260 Multifunctional Biodegradable Cross-Linked Polymer Research and Development and Clinical Application of Animal Experiments
W. Su and K. Ou

3261 Investigating Phosphonate Monolayer Stability as Protective Coatings for Retinal-Neural Sensors
B. A. Branch, M. Dubey, A. Aaron, K. Baldwin, A. M. Dattelbaum, and D. Petsev

F2 - Electrodeposition General Session: Fundamentals and New Materials - Dieter M. Kolb Memorial Symposium

ECS Electrodeposition, ECSJ Nano-Micro Fabrication

3262 On the Structure of the Helmholtz Layer at the Solid-Electrolyte Boundary and its Relation to Electrode Kinetics
H. J. Lewerenz

3263 Metal Deposition on Metal, Semiconductor, Organic Layer - Common Interests with Prof. Dieter Kolb
K. Uosaki

3264 Underpotential Deposition of Cu on Au(111) in Acid Sulfate Solution
N. Vasiljevic, L. Viyannalage, N. Dimitrov, and K. Sieradzki

3265 Tuning the Driving Force in Underpotential Codeposition of Alloys via Selective Complexation: Application to Au-Cu Alloys
D. Liang and G. Zangari

3266 Lead Underpotential Deposition on Sub-Monolayer Pt and Ru Modified Au(111) Surface
Q. Yuan, A. Tripathi, M. Slavkovic, and S. Brankovic

3267 EC-STM Study of Two-Dimensional Complex Adlayer Directly Formed on Au(111)
S. Yoshimoto and K. Nishiyama

3268 Characterisation of the Deposition of n-octanohydroxamate on Copper Surfaces
G. K. Parker, S. Holt, and G. Hope

3269 Electrochemical Formation of Cu-Corronene Adlayer on Au(111) in Acidic Solution
T. Sawaguchi and S. Yoshimoto

3270 E-ALD of Pd on Au Single Crystals
L. Sheridan, Y. Kim, J. Stickney, and D. B. Robinson

3271 Layer-by-layer Pt Electrodeposition on Au Single Crystal Surfaces Studied by In situ Resonance Surface X-ray Scattering
T. Kondo, M. Shibata, T. Masuda, and K. Uosaki

3300 Fabrication of Low CTE Metal Masks by the Invar Fe-Ni Alloy Electroforming Process for Large and Fine Pitch OLED Displays
T. Nagayama, T. Yamamoto, T. Nakamura, and Y. Mizutani

3301 Synthesis and Characterization of Electrodeposited Cu_2O Thin Film for Photo-Electrochemical Cells
M. Kim, S. Yoon, D. Chang, N. Myung, D. Lim, I. Kim, B. Yoo, K. Lee, and J. Lim

3302 Characterization of Zn-Ni-P alloys Electrodeposited in Alkaline Solutions
Y. Kamimoto, K. Yamamoto, S. Yamashita, and R. Ichino

3303 The Electrodeposition of Zinc-Bismuth Alloys
A. Luegger, B. Gollas, and J. Zidar

3304 Influence of Adatom Supersaturation on Real Activation Energy of Charge Transfer Stage during Metal Electrocrystallization
I. Kryshtop, N. Yurchenko, and V. Trofimenko

3305 Electrochemical Assembly of Ruthenium Complexes during the Multilayering Process of MnO_2
K. Tomono, R. Yamaguchi, and M. Nakayama

3306 AFM Analysis for Initial Stage of Electroless Displacement Deposition of Silver on Silicon Surface
T. Ego, S. Yae, T. Hagihara, N. Fukumuro, and H. Matsuda

3307 Fabrication of Cu-Ag Film Using Electrodeposition and Characterization of Its Properties
H. Ko, M. Kim, J. Kim, and O. Kwon

3308 Degradation of Additives and Its Influences on Copper Electrodeposition
S. Choe, M. Kim, H. Kim, T. Lim, A. Lee, S. Jun, K. Woo, and J. Kim

3309 Electrodeposition of CoNiW Alloys: HCP-FCC Structural Transition
A. M. Sakita, R. Della Noce, C. Sadao Fugivara, and A. Vicente Benedetti

3310 Electrochemical Formation of Functional Silver Coatings: Nanostructural Peculiarities
O. Bersirova and V. Kublanovsky

3311 High Temperature Hardness of Electrodeposited Nickel-based Carbon Nanotube Composite Coatings
T. Suzuki, M. Kato, T. Matsuda, and S. Kobayashi

F3 - Electroless Deposition: Principles, Activation, and Applications 2

ECS Electrodeposition, ECSJ, CSE

3312 Influence of Added Elements on Electroless Ni-P
P. Cavallotti and L. Magagnin

F4 - Emerging Materials and Processes for Energy Conversion and Storage

ECS Electrodeposition, ECS Battery, ECS Energy Technology, ECSJ

3340 (Invited) The Battery of the Future: Using Computational Modeling to Understand the Limits of Intercalation Systems Across a Wide Range of Chemistries
G. Ceder

3341 Single-Step and Low-Temperature Synthesis of Layered $LiCoO_2$ Thin Film Electrodes: An Electrochemical-Hydrothermal Route
H. Porthault, F. Le Cras, and S. Franger

3342 (Invited) Fabrication of Rechargeable Micro Lithium-Ion Battery with 3D Anode and 3D Cathode
K. Kanamura, K. Yoshima, and H. Munakata

3343 Energy Harvesting Device
Y. Garsany and K. Swider-Lyons

3344 Fundamental Study of Li Dendrite Growth in Ionic Liquid
T. Nishida, K. Nishikawa, T. Homma, Y. Fukunaka, and M. Rosso

3345 Effect of Dissolved Gas in an Ionic Liquid Electrolyte for Lithium and Lithium/Sodium Metal Anode
J. K. Stark and P. Kohl

3346 Two-dimensionally Patterned Electrodeposition of Sn Film from Aqueous Acid Bath
S. Yagi, E. Takeda, T. Okada, D. Mu, N. Okamoto, T. Saito, and K. Kondo

3347 Porous Li_2MnO_3 as a High Capacity and High Rate Capability Cathode Material
M. Nookala, T. Penki, and S. Duraisamy

3348 Synthesis and Electrochemical Properties of Cation Doped Spinel $LiM_xMn_{2-x}O_4$ (M=Ni, Al; $0 \leq x \leq 0.5$) Cathode Materials for Li-Ion Battery
M. A. Kebede, N. Kunjuzwa, K. I. Ozoemena, and M. K. Mathe

3349 Improved Lithium Storage and Cyclability in Graphene/Graphene Oxide Wired Mesoporous SnO_2
K. Shiva and A. J. Bhattacharyya

3350 (Electrodeposition Division Research Award Presentation) Electrodeposition for the Synthesis of Thin Film Solar Cells
L. Deligianni

3351 (Invited) New Paradigms for Cost-Effective III-V Photovoltaic Technology
D. Shahrjerdi, S. W. Bedell, B. Hekmatshoar, C. Bayram, N. Li, K. Fogel, P. Lauro, J. Ott, M. Hopstaken, and D. Sadana

3352 Silicon Bonding State in Films Electrodeposited from $SiCl_4$ in Ionic Liquid
J. Komadina, T. Akiyoshi, Y. Ishibashi, X. Wang, Y. Fukunaka, P. Pianetta, and T. Homma

3353 Novel Front Side MetallizationPprocesses for Silicon based Solar Cells
A. Bund, M. Fritz, U. Schmidt, O. Luehn, and H. Kuehnlein

3354 (Invited) CIGS-Based Solar Cells Prepared from Electrodeposited Precursor Films
R. N. Bhattacharya and Y. Kim

3355 One-Step Electrochemical Deposition of Cu-In-Ga Mixed Oxide Thin Films for Low-Cost CIGS Solar Cells
E. Chassaing, A. Duchatelet, T. Sidali, G. Savidand, and D. Lincot

3356 Electrophoretic Deposition: A Bottom-up Approach to Functional Nanocomposite Films
M. A. Worsley, A. Pascall, K. Sullivan, T. Olson, C. Orme, J. Satcher, and J. Kuntz

3357 Electrodeposition of Elements for Thin Film, Photovoltaic Applications: Citrate Complexation and Partial Current Densities
S. S. Zahmi and E. Podlaha

3358 Wet Clean Efficiency Monitor by SP3 SM
Y. Chang Chien, M. Yeh, C. Yang, S. Ku, C. Wan, C. Hu, E. Chen, J. Yan, E. Khuan, K. Joyce, and C. Hu

3359 Tuning of Mesopore Size in WO_3-based Photoaodes for Enhanced Visible Light Driven Water Oxidation
D. Chandra and M. Yagi

3360 CIS Thin Film Solar Cells from Electrodeposited Cu/In Stacked Precursors
Y. Kim, S. Chae, S. Yoon, M. Jeon, and R. N. Bhattacharya

3361 Various Metal Oxides based Dye-Sensitized Solar Cells
S. Kang

3362 Fabrication Mediated by Self-Assembly of Block Copolymer and Photoelectrochemical Properties of Mesoporous WO_3 Films
D. Chandra, K. Ouchi, and M. Yagi

3363 Preparation and Photoanodic Properties of a Chromium-Electrodeposited TiO_2 Electrode
R. Tsuriya, M. Kajita, N. Abe, A. Shoji, and M. Yagi

3364 Energy Storage Devices from Biomass Conversion Byproducts, Lignin
J. Yang, S. Gunasekaran, and S. Gunasekaran

3365 Pore-Filling Anion-Exchange Membranes for Non-Aqueous Redox Flow Batteries (RFBs)
M. Kang, M. Lee, J. Kim, H. Cha, and J. Park

3366 Novel Graphene - Polyethylene Oxide Composite Electrolyte for Highly Efficient Solid State Dye Sensitized Solar
M. Akhtar, Z. Li, J. Jang, and O. Yang

3380 (Invited) A Bilayer Membrane of Photocatalytic Nanotube Array and Hydrogen Permeable Metal for High-Purity Hydrogen Production
K. Noda and M. Hattori

3381 Electrodeposited Pt100-xPbx Alloys and Intermetallics for Direct Formic Acid Fuel Cell
S. Hwang, J. Bonevich, J. Kim, and T. Moffat

3382 Characterization of the Electronic and Electrochemical Properties of Cu_2O and Fe_2O_3 modified TiO_2 Nanotubes
L. Tsui and G. Zangari

3383 Direct Electrodeposition of Porous Platinum
L. Jones, A. Ott, T. Junk, and S. Bhargava

3384 The Effect of Surface Modification on the Properties of a Nickel Catalyst: A Theoretical Study
D. A. Daramola, B. Hassler, and G. G. Botte

3385 Preparation of Nanostructured Pd Anodes for Alkaline Direct Ethanol Fuel Cells (DEFC) by Electrochemical Milling and Faceting (ECMF)
Y. Chen, A. Lavacchi, F. Vizza, A. Marchionni, J. Filippi, M. Bevilacqua, M. Innocenti, and H. Miller

3386 Bringing Conjugated Polymers and Oxide Nanoarchitectures into Intimate Contact: Light Induced Electrodeposition of Polypyrrole and Polyaniline on Nanoporous WO_3 or TiO_2 Nanotube Arrays
C. Janaky, N. de Tacconi, W. Chanmanee, and K. Rajeshwar

3387 The Mechanism of Visible-Light-Derived Photocurrent Generation at an Antimony Sulfide / Metal Oxide Electrode
A. Shoji, T. Ueno, H. Kabaki, S. Okuyama, and M. Yagi

3388 Carbon-Supported Iron(III)-Corrole as a Non-Precious Metal Catalyst for Fuel Cell Application
I. Shown, H. Huang, S. Wang, S. Chang, H. Hsu, H. Du, C. Wang, L. Chen, and K. Chen

3389 Photoelectrochemical Generation of Hydrogen Using p-type $CaFe_2O_4$ Photocathodes
R. Venkatkarthick, C. Krithiga Devi, L. John Berchmans, S. Vasudevan, D. Jonas Davidson, G. Sozhan, and S. Ravichandran

3390 Development of Electrically Controlled Energetic Materials (ECEM)
E. Rozumov, K. Chung, D. Kaminsky, P. Anderson, P. Cooke, K. Griswold, M. Donadio, M. Sussman, J. Laquidara, C. Adam, D. Thompson, T. Manning, J. Wyckoff, V. Panchal, E. Caravaca, W. Sawka, M. McPherson, and T. Buescher

F5 - Magnetic Materials and Devices 12

ECS Electrodeposition, ECSJ Magnetic Materials Processes and Devices

3391 Thin Film Magnetic Heads - Early Inventions and Their Ongoing Impact on Magnetic Storage and on Electrochemistry
L. T. Romankiw and S. Krongelb

3392 Beyond Perpendicular Magnetic Recording- Alternative Magnetic Storage Technologies
N. robertson

3393 Electrodeposition of Magnetic Alloys Used in Fabrication of Recording Heads
I. Tabakovic, S. Riemer, J. Gong, V. Venkatasamy, and M. Kautzky

3394 Magnetic Tape Heads and Contact Recording
R. G. Biskeborn

3395 Electrochemical Deposition of Magnetic Alloy Films with Large Magnetic Anisotropy
D. Liang and G. Zangari

3396 Reversible Change of Magnetism in FePt and CoPt Films by Electrochemical Charging
K. Leistner

3397 Resistivity Control in CoFeNiX Magnetic Alloys
N. Dole, D. Lee, N. Brockie, A. Papou, W. French, and S. Brankovic

3398 Composition Gradients and Magnetic Properties of 10-100nm NiFe and CoFe Films Obtained by Electrodeposition
J. Gong, S. Riemer, V. Venkatasamy, M. Kautzky, and I. Tabakovic

3399 Development of Thin Film Technology for High-Density Magnetic Recording Media
M. Futamoto

3400 Electroplated Hardmask for Bit Patterned Media Nanoimprinting Template Fabrication using Block Copolymer Lithography
C. Bonhote, G. Siddiqi, J. Lille, and R. Ruiz

3401 Microstructural and Magnetic Studies of Electrodeposited, Equiatomic Fe-Pt Films
D. Liang and G. Zangari

3402 Metastable $L1_1$ and B_h Ordered Phase Formation in CoPt Alloy Thin Films Epitaxially Grown on Metal Underlayers
M. Ohtake, D. Suzuki, F. Kirino, and M. Futamoto

3403 Superconformal Electrodeposition of Ni, Co and Fe-Group Alloys
T. Moffat, C. Lee, S. Kim, Y. Liu, and D. Josell

3404 Induced Codeposition of NiMo, NiW and CoW Alloys with a Competing Side Reaction
S. Sun, T. Bairachna, T. Maliar, H. Cesiulis, and E. Podlaha

G2 - Synthesis and Engineering General Session

ECS Industrial Electrochemistry and Electrochemical Engineering, ECSJ Industrial Electrolysis and Electrochemical Engineering

3433 Electroplated Ni-W-S Alloy Cathode for Alkaline Water Electrolysis
D. Suzuki, K. Someya, T. Suzuki, A. Horie, R. Miyamoto, Y. Ishikawa, and S. Yoshihara

3434 Size Control of Hydrogen Nanobubble by Pt-nanoparticle/Ru Electrode
K. Kikuchi and T. Okamoto

3435 Degradation of Nickel Anode for Alkaline Water Electrolysis under Potential Cycling
H. Ichikawa, K. Matsuzawa, I. Nagashima, A. Manabe, Y. Nishiki, and S. Mitsushima

3436 Water Electrolysis to Produce the Dry Oxygen for the Human Activies under the Closed Environment
Y. Sone, S. Masato, Y. Tetsuya, and S. Naoki

3437 Low Voltage Electrochemical Process for Manufacturing Sodium Hydroxide and Halogenated Hydrocarbons
B. K. Boggs, S. Gorer, M. Kostowskyj, R. King, J. Miller, and R. Gilliam

3438 Theoretical Study on Pressurized Operation of Solid Oxide Electrolysis Cells
M. Henke, C. Willich, C. Westner, F. Leucht, W. Bessler, J. Kallo, and K. Friedrich

3439 Electrolytic Conversion of Sodium Salts in a Kraft Mill
J. Cloutier

3440 Scale-up of Low Energy Process for Generation of Alkalinity
R. L. King, D. Martinez, J. Miller, S. Gorer, M. Kostowskyj, B. K. Boggs, and R. Gilliam

3441 Design of Rechargeable Air Diffusion Cathode of Metal-Air Battery in Alkaline Solution
Y. Takeshita, S. Fujimoto, and M. Sudoh

3442 Development of a High Performance Salt Electrolysis Cell Using Soft-Zero-Gap Method
H. Matsui, H. Tanaka, and H. Okido

3443 Electrochemical Processes in Waste Water Treatment: Process Development at Pilot Plant Scale
D. Woisetschlaeger, M. Koncar, and M. Siebenhofer

3444 Recycling Electrochemical Machining Electrolyte for Metal Recovery and Elimination of Waste
E. J. Taylor, B. Skinn, H. Garich, and M. Inman

3445 Anodic Reactivity of Ferrous Sulfide Particles Generated in Wastewater Treatment
E. Mejia Likosova, Y. Poussade, J. Keller, and S. Freguia

H1 - Carbon Nanotubes and Graphene: From Fundamental Properties and Processes to Applications and Devices

ECS Fullerenes, Nanotubes, and Carbon Nanostructures, ECS Dielectric Science and Technology, ECS Energy Technology, ECS Sensor, CSE

3524 Synthesis and Functions of Hybrid Assemblies Composed of Metalloporphyrin and Heteropolyoxometallates
T. Kojima, A. Yokoyama, T. Ishizuka, K. Ohkubo, and S. Fukuzumi

3525 Synthesis and Properties of Acenes Photochemically Prepared from Diketone Precursors
H. Yamada, T. Aotake, S. Katsuta, Y. Kaneshige, C. Ohashi, and K. Nakayama

3526 Stability Computations for La@C_{76}
Z. Slanina, F. Uhlik, T. Akasaka, and S. Nagase

I1 - Physical and Analytical Electrochemistry General Session

ECS Physical and Analytical Electrochemistry, ECSJ, CSE, KECS

3527 Electrochemical Measurements in High Magnetic Fields for Energy Storage
A. Migliori, C. R. Kreller, R. L. Borup, and F. H. Garzon

3528 The Importance of Electrochemical Surface Potentials in Pressure Solution
K. Kristiansen, M. Valtiner, G. Greene, J. Boles, and J. Israelachvili

3529 Surface Intermediates of the Oxygen Evolution Reaction on Iridium as Observed by Surface Interrogation Scanning Electrochemical Microscopy (SI-SECM)
N. Arroyo-Curras and A. Bard

3530 SECM Footprint Analysis of Reactive Oxygen Species Produced During Multielectronic O_2 Reduction
J. Noel, A. Latus, C. Lagrost, E. Volanschi, and P. Hapiot

3531 New Methods and New Applications of Electrochemiluminescent Analysis
G. Xu, L. Hu, L. Zhang, Y. Yuan, T. Yuan, and S. Parveen

3532 Probing The Structure and Composition at the Electrode Interface: Understanding the Importance of Through-Space Interactions
M. R. Anderson, M. De La Rosa, M. Tomlinson, and M. Anderson

3533 Surface-Enhanced Raman Spectroscopy Platforms for Studying Electrodeposition and Surface Chemistry of Nanostructured Semiconductors
J. Gu and S. Maldonado

3534 Detection of Tetryl by Electrogenerated Chemiluminescence (ECL) quenching of Ru(bpy)32+
P. Lindhome and R. L. Calhoun

3535 Simulation of Electrochemical Micromachining with Nanosecond Pulses
E. L. Hotoiu, S. Van Damme, and J. Deconinck

3536 Performance Characterization of the Titanium(IV)-Porphyrin Reagent for Determining Hydrogen Peroxide based on Ab Initio Calculations
K. Takamura and T. Matsumoto

3562 Reduction of Perchlorate by Electrochemically Generated Zero-Valent Iron on Conducting Polymer Electrode
E. Kim, S. Choi, S. Kim, and K. Paeng

3563 Anomalous Codeposition of Ni-Zn in Acid Solutions
Y. ADDI and A. Khouider

3564 Irregular-Stairs Method: A More Precise Method of Measuring the Performance of Dye-Sensitized Solar Cells
J. Shimura and K. Noda

3565 Cyclic Voltmogram for HUPD on Pt(111) Calculated from Total Gibbs Energies
H. A. Asiri and A. Anderson

3566 Long Term Evaluation of Potentiometric Oxygen Sensors in Molten Lead
A. Verdaguer, S. Colominas, and J. Abella

3567 Electrochemical Reduction of Selenite and Selenate Accelerated by Methyl Viologen
F. Koshikumo, W. Murata, A. Ooya, and S. Imabayashi

3568 Effect of pH on Absorption and Reductive Desorption Processes for Self-assembled Monolayer of Aromaticthiol Studied by Surface Enhanced IR Spectroscopy
K. Nishiyama, A. Kumatabara, H. Ueda, and S. Yoshimoto

3569 Crystalline Composition Analysis of Titanium(IV) Oxide Photocatalyst Particles by X-ray Diffraction Analysis
M. SANO and B. Ohtani

3570 Photoelectrochemical Water Splitting with Aluminum and Nitrogen co-doped Zinc Oxide prepared by Sputtering Technique
S. Shet

3571 Potentiometric Determination of Potassium Ions in Biodiesel at a Nickel(II) Hexacyanoferrate Modified Electrode Using Microemulsions
G. Sedenho, L. Paim, and N. R. Stradiotto

I2 - Bioelectroanalysis and Bioelectrocatalysis

ECS Physical and Analytical Electrochemistry, ECSJ Bioengineering, CSE

3572 Electrochemical Investigations of Lipid Membranes and Proteins at the Liquid-Liquid Interface
R. Kataky

3573 Fabrication of Nanoporous 1- 3 nm Thick Membranes on Nanostructured Microelectrodes for Low nM Detection
A. Boateng, F. Irague, and A. Brajter-Toth

3574 Electrochemical Immunoassay of Phosphorylated Proteins
D. Du

3602 Investigation of Impedance Spectra of Mediator-type Amperometric Biosensor by Faradaic Impedance Analysis
I. Shitanda, Y. Hoshi, and M. Itagaki

3603 The Direct Electron Transfer Reaction of Bilirubin Oxidase in Protic Ionic Liquids
R. Ikari, J. Kuwahara, N. Nakamura, and H. Ohno

I3 - Molten Salts and Ionic Liquids 18

ECS Physical and Analytical Electrochemistry, ECS Electrodeposition, ECS Energy Technology, ECSJ Molten Salts

3604 Dynamic Atomic Force Microscopy (AFM) Studies to Characterize Multi-Layered Structures at Ionic Liquid/Solid Interfaces
W. Zhang, L. Chen, K. Smith, J. J. Sangiovanni, and G. S. Zafiris

3605 Local Structure of Ionic Liquid / Electrode Interfaces Analyzed by Frequency-Modulation AFM and Photoelectron Spectroscopy
T. Harada, Y. Kanai, Y. Mino, A. Imanishi, Y. Yokota, and K. Fukui

3606 An Arrhenius Argument to Explain Electrical Conductivity Maxima versus Temperature
A. L. East

3607 Electrochemical Investigation of Quinone Complexation by Lewis Acids in a Chloroaluminate Ionic Liquid
G. T. Cheek

3608 Effects of the Charge Density of the Anions of Ionic Liquids on the Electrode Kinetics of Ruthenium 2,2'-Bipyridine Complexes
Y. Katayama, Y. Toshimitsu, and T. Miura

3609 Voltammetric Studies of Proton Reduction in 1-Butyl-1-methylpyrrolidinium Triflate
G. T. Cheek, D. F. Roeper, and W. E. O'Grady

3610 Robust Microelectrodes for Molten Salt Analysis
A. Relf, D. Corrigan, C. L. Brady, J. G. Terry, and A. J. Walton

3611 PTFE Bound Activated Carbon - A Quasi Reference Electrode for Ionic Liquids and Its Application
D. Weingarth, A. Foelske-Schmitz, A. Wokaun, and R. Kötz

3612 Critical Evaluation of Metallocenes as Internal Reference Scales for Voltammetric Measurements in Ionic Liquids
A. A. Torriero and M. Forsyth

3613 Electrochemical Conversion of Carbon Dioxide to Oxygen in Ionic Liquid Media
D. Carr, B. Slote, K. Jayne, and M. C. Kimble

3614 Influence of Temperature on the Electrochemical Characteristics of Bi(111) | 1-Butyl-3-Methylimidazolium Tetrafluoroborate Interface
L. Siinor, R. Arendi, C. Siimenson, K. Lust, and E. Lust

3734 Control of Formation Process of Au Nanoparticles Prepared by Low Energy Quantum Beam Irradiation in Ionic Liquid
A. Imanishi, T. Arimura, T. Sakamoto, T. Tsuda, S. Kuwabata, and K. Fukui

3735 Simple Fabrication of Pt Nanoparticle-Carbon Nanotube Composite with Ionic Liquid-Sputtering Method
K. Yoshii, T. Tsuda, T. Arimura, A. Imanishi, T. Torimoto, and S. Kuwabata

3736 Fabrication of 3D Polymer Structures from Room-Temperature Ionic Liquid by Quantum Beam Techniques
H. Minamimoto, K. Inoue, T. Tsuda, A. Imanishi, S. Seki, and S. Kuwabata

I4 - Electrocatalysis 6

ECS Physical and Analytical Electrochemistry, ECS Energy Technology, ECS Industrial Electrochemistry and Electrochemical Engineering, ECSJ Interfacial Electrochemistry, CSE

3737 (Invited) Oxygen Evolution Reaction on Minute Amounts of Ru and Ir Catalyst for Application in Fuel Cell Protection
R. T. Atanasoski, D. A. Cullen, and L. Atanasoska

3738 ORR Activity Enhancement of MBE-prepared Pt monolayer on Au(111) Single Crystal Substrate
Y. Iijima, Y. Takahashi, N. Todoroki, K. Matsumoto, and T. Wadayama

3739 Facile Synthesis of Pd_xCo@Pd/C Core-Shell Nanoparticles and Pt-Decorated Pd_3Co@Pd/C as Oxygen Reduction Reaction Electrocatalysts
D. Wang, C. Li, and H. D. Abruña

3740 Oxygen Reduction for Fuel Cells and Batteries: Mechanistic Studies and the Design of New Catalysts
A. A. Gewirth, C. Tornow, and E. Tse

3741 Surface Modification of PtRu/C by Mono-layered Decoration of Pt, Au, Pd, and Ir for Oxygen Reduction Reaction
C. Kuo, L. Chang, Y. Hsieh, P. Wu, and J. Lee

3742 An Excellent Electrocatalysis of Novel Pt-TaOx Composite Electrocatalysts for Oxygen Reduction Reaction
Z. Awaludin, T. Okajima, and T. Ohsaka

3743 Carbon Supported Pt-Os Electrocatalysts for Oxygen Reduction Reaction
Y. Lee, C. Kuo, Y. Hsieh, P. Wu, and J. Lee

3744 Instantaneous One-Pot Synthesis of Fe-N-codoped Graphene as an Efficient Electrocatalyst for Oxygen Reduction Reaction in Acidic Solutions
K. Kamiya, K. Hashimoto, and S. Nakanishi

3745 Strip-Like Nanosized Tungsten Carbide as Catalyst for Oxygen Reduction Reaction
S. Kang and P. Shen

3746 In Situ STM Elucidation of the effects of Step Structures on Pt(111) Electrodes for Dissolved CO Oxidation
J. Inukai, D. A. Tryk, T. Abe, M. Wakisaka, H. Uchida, and M. Watanabe

3747 High Speed AFM Study on the Potential Dependence of the Dissolution of Shape-controlled Pt Nanoparticles
Y. Yamada, C. Yoshida, M. Nakamura, and N. Hoshi

3748 XPS and STEM of the Interface Formation between Ultra-Thin Ru, Ir and Pt Layers and Perylene Red Catalyst Support Whiskers
L. L. Atanasoska, D. A. Cullen, A. Hester, and R. T. Atanasoski

3749 Ethanol Electrooxidation on a (2x2)-Sn/Pt(111) Surface Alloy and a SnO_x/Pt(111) Surface: A Combined Surface Science and In Situ FTIR Study
W. Zhou, J. Magee, S. Axnanda, R. R. Adzic, and M. G. White

3750 Electrochemical and ATR-IR Investigation on Decontaminated Shape-Controlled Pd Nanocrystals
H. Zhang and W. Cai

3751 Molecular Structures of Fluorinated Self-Assembled Monolayers (SAMs) Constructed on Metal Surfaces Investigated by Surface Vibrational Spectroscopies
I. Yagi, K. Nomura, and K. Inokuma

3752 (Invited) Application of Ordered Intermetallic Phases to Electrocatalysis
F. Matsumoto and H. Abe

3753 Activation of Noble Metal Centers through Modification with Metal Oxo Species towards Electrocatalytic Oxidation of Alcohols and Formic Acid
P. J. Kulesza, I. Rukowska, A. Wadas, D. Marks, K. Klak, and S. Zoladek

3754 Synthesis, Characterization and Electrocatalytic Properties of Electrodeposited Pt Thin Films with Preferential {100} Orientation
E. Bertin, S. Garbarino, J. Solla-Gullón, F. Vidal-Iglesia, J. Feliu, A. Ponrouch, M. H. Martin, and D. Guay

3755 Electrode Surface Control by Platinum Nanoparticles Protected by Polyacrylic Acid for Electrocatalytic Hydrogen Generation
M. Kajita and M. Yagi

3756 (Invited) Electrochemical Behavior of Pt-Skin Layers on Pt-Co Alloy Single-Crystal Electrodes in Acid Media
M. Wakisaka, S. Morishima, Y. Hyuga, H. Uchida, and M. Watanabe

3757 Unique Properties of Reduced SnO_x: CO Oxidation on Nanostructured SnO_x/Pt(111)
S. Axnanda, W. Zhou, M. G. White, Z. Zhu, and Z. Liu

3758 Clarification of Two-Consecutive Potential Driven Phase Transition Processes of Diphenyl Viologen at a Au (111) Electrode Surface
T. Higashi and T. Sagara

I5 - Electrochemical Atomic Layer Epitaxy and Quantum Confinement

ECS Physical and Analytical Electrochemistry, ECS Electrodeposition

3825 Reduction of Nitrate Mediated By Metal UPD on Pd-Modified Au Electrodes In Aqueous Electrolytes
A. J. Jebaraj and D. J. Scherson

3826 Preparation of Size-quantized Lead Sulfide Thin Layer on Silver Nanocubes via Electrochemical Atomic Layer Deposition
M. Nakano, K. Okazaki, and T. Torimoto

J1 - Chemical Sensors 10 - Chemical and Biological Sensors and Analytical Systems

ECS Sensor, ECSJ Chemical Sensor

3827 Phytosensors and Phytoactuators
A. G. Volkov, M. I. Volkova, and V. S. Markin

3828 Biofuel Cell Providing a Platform for Self-Powered Biosensors
S. Dong

3829 Miniature Enzymatic Biosensors for Tear Glucose Measurement in Capillary Tubes
B. Peng, Q. Yan, B. Cohan, T. C. Major, and M. E. Meyerhoff

3830 Real-time and Ultra-sensitive detection of Cancer Marker Using a Novel Silicon Nanobelt Field Effect Transistor
Y. Yu, J. Wu, and C. Wu

3831 Graphene Oxide-Based Aptasensor for Heavy Metal Detection
M. Li and N. Wu

3832 Time Sensors: Circadian Rhythms in Biologically Closed Electrochemical Circuits of Plants
A. Waite, J. Wooten, A. G. Volkov, and V. S. Markin

3833 Immobilization of Enzymes and Redox Proteins and Their Electrochemical Biosensor Applications
S. Chen, V. Mani, S. Palanisamy, and Y. Li

3834 Salmonella Typhimurium Detection on Food Surface using Magnetoelastic Biosensors
Y. Chai, S. Horikawa, M. Park, S. Li, and B. Chin

3835 Bio-Inspired Autonomous Sentinel System for Screening Invasive Pathogens
S. Li, H. Wikle III, Y. Chai, M. Park, S. Horikawa, and B. Chin

3836 New Multimode Sensors based on Nanostrucured Materials for Simultaneous Screening of Biological Fluids for Specific Breast Cancer and Hepatitis B Biomarkers
R. I. Stefan - van Staden and M. Enachescu

3837 Direct Detection of Salmonella Typhimurium on Tomato and Spinach using a Phage-based Magnetoelastic Biosensor Method
M. Park, S. Li, K. Weerakoon, S. Horikawa, Y. Chai, and B. Chin

J2 - Luminescence and Display Materials: Fundamentals and Applications

ECS Luminescence and Display Materials, ECSJ Phosphor Research

3903 Investigation of Ion Dependence of Electronic Structure for $3d^3$ Ions in Mg_2TiO_4 based on First-principles Calculations
M. Novita, H. Yoshida, and K. Ogasawara

3904 Comparison of Simulation and Experimental Results of Crystalline Si Solar Module with $YVO_4:Bi^{3+},Eu^{3+}$ Nanophosphor Spectral Shifter
Y. Iso, S. Takeshita, and T. Isobe

3905 Simple-Structure Light-Emitting Diodes Based on a Blend of Nanocrystal Quantum Dots and ZnO
J. Kwak, W. Bae, and C. Lee

3906 Optimizing the Synthesis of Europium Dibenzoylmethide Triethylammonium
K. Bhat, R. Fontenot, W. A. Hollerman, and M. Aggarwal

3907 Comparison of Hydrothermal and Glycothermal Syntheses of $YBO_3:Ce^{3+},Tb^{3+}$ with Green Fluorescence under Near UV Excitation
H. Hara, S. Takeshita, T. Isobe, T. Sawayama, and S. Niikura

3908 Practical Multiplet Energy Level Diagrams for V^{2+}, Cr^{3+}, Mn^{4+} in Oxides and in Fluorides
H. Nagoshi, H. Yoshida, and K. Ogasawara

3909 The Influence of Phosphor Decay Time on the Cross-Talk in 3D-PDP
J. Yoo, C. Ji, G. Anoop, I. Cho, S. Lee, Y. Cho, W. Kim, and E. Park

3910 Synthesis of InP Multi-Shell Structured Quantum Dot and Their Application for White LEDs
K. Kim and S. Jeong

3911 Improved Optical Properties of InP Quantum Dot Through Transition Metal Doping
J. No, K. Kim, and S. Jeong

3912 Synthesis and Spectroscopy of Nanoscale $Y_2O_3:Nd^{3+}$ Phosphors
G. Bilir, G. Ozen, J. Collins, and B. Di Bartolo

3913 Preparation and Photoluminescence Property of Praseodymium doped Calcium Titanate Nanocrystals
Y. Hakuta, M. Ohara, M. Aoki, K. MInami, K. Sue, and H. Takashima

3914 Effects of Preparing Conditions on the Luminescent Properties of Mn^{4+} Ion Doped $CaAl_4O_7$ Phosphors
J. Park, G. Kim, and Y. Kim

3915 The Luminescent Properties of Eu^{2+} Doped Ca_2SiO_4 Nanopowders Synthesized by a Sol-Gel Method
J. Park, J. Lee, and Y. Kim

3916 3D Visualization of 4-Component Relativistic Wave Functions of the Free Ce^{3+} Ion and the Ce^{3+} Ion in YAG
T. Katakami, K. Higashiura, and K. Ogasawara

3917 Low Electric Field Driving Transparent Thin Films Electroluminescence Devices with Perovskite Oxides
H. Takashima and I. Mitsuru

3918 Luminescence study of $Ca_{3-3x/2}(VO4)_2$:xEu ($0.01 \leq x \leq 0.09$) Red-Phosphors Prepared by Solution Combustion Method
K. Kim, S. Yoon, Y. Shin, and K. Park

3919 Microstructure and Photoluminescence Properties of $Sr_{2.91}V_2O_8$:$Eu_{0.06}$ Phosphors Prepared by the Solution Combustion Method
K. Park, S. Yoon, K. Kim, and Y. Shin

3920 Electroluminescence from Cr^{3+} in New Perovskite Thin-Film Phosphors using $LaAlO_3$ and $LaGaO_3$ as the Host
T. Miyata, Y. Nishi, T. Mori, and T. Minami

3921 Development of Novel Electrochromic Hyperbranched Polymer for Displays
S. Kim, A. Tanaka, and T. Nagamura

3922 Electric and Electroluminescence Properties of $Ca_{0.6}Sr_{0.4}TiO_3$:Pr Thin Films Prepared by Sol-Gel Method
T. Kyomen, M. Hanaya, and H. Takashima

3923 Optical Phonon Emission of ZnO Thin Films
S. Munisamy, S. Kasilingam, T. Rajalingam, and T. Masaki

3924 Synthesis of $Sr_2Si_5N_8$:Eu^{2+} Red-Emitting Phosphor by Induction Heating
J. Choi, A. Piquette, M. Hannah, K. C. Mishra, J. B. Talbot, and J. McKittrick

3925 Morphology and Particle Size Dependent Luminescence Properties of Y_2O_3:Eu Phosphors Prepared by Various Synthetic Methods
Y. Kim, J. Han, J. Talbot, and J. Mckittrick

3926 Optoelectronic and Persistent Luminescence Properties in Ce^{3+}-Doped Garnet Ceramics
J. Ueda, K. Aishima, and S. Tanabe

3927 Ce^{3+}-Tb^{3+} Energy Transfer in Aluminate Garnets
A. Setlur and J. Shiang

3928 Systematic Studies of Structural and Optical Properties of Pure and Doped Pyrochlore Crystals
A. Srivastava and M. G. Brik

3929 Experimental and Crystal Field Studies of Spectroscopic Properties of Mn^{2+} Ions in Fluoride Crystals in UV-VUV
M. G. Brik, M. Kirm, M. True, and G. Zimmerer

3930 Improvement of Luminescence Properties of $KSrPO_4$:Eu by a Polymerizable Complex Method Employing a Water Soluble Phosphorus Oligomer
M. Kim, M. Kobayashi, H. Kato, and M. Kakihana

3931 Relationship between Emission Properties and Host Structure for Eu^{2+}-doped Phosphate Investigated by Quantitative Structure Relationship and First Principles Calculation
H. Takaba, R. Miura, A. Suzuki, N. Hatakeyama, and A. Miyamoto

3932 Transparent Inorganic Downconverters for Luminescent Solar Concentrators
L. Shea-Rohwer, J. Martin, and M. Nyman

3933 Spectroscopy of Pr-doped CaTiO3 Nano-particles under Excitation into the Charge Transfer State
J. Collins, Y. Tsehay, P. Boutinaud, G. Chadeyron, and R. Boosin

3934 Development of YVO_4:Bi^{3+},Eu^{3+} Nanophosphor and Its Application as a Spectral Down-Shifter for Solar Cells
S. Takeshita and T. Isobe

3935 Liquid Phase Synthesis and Characterization of $LaPO_4$:Yb^{3+}/$GdPO_4$ Nanoparticles with NIR Emission under NIR Excitation
T. Isobe, T. Shimizu, K. Hara, and S. Takeshita

3936 Photoluminescence of single InAsP quantum dots in InP nanowires
P. Poole, D. Dalacu, J. Lapointe, and K. Mnaymneh

3937 Fast Luminescence in Silicon-Germanium Nanostructures
D. J. Lockwood, X. Wu, J. Baribeau, N. Modi, and L. Tsybeskov

3938 XANES and XEOL Studies of Luminescent Silicon Carbonitride (SiCN) Thin Films
Z. Khatami, P. Wilson, J. Wojcik, and P. Mascher

3939 Design Rule of Ti/Al Ohmic contacts on N-face n-GaN : Solution for Thermal Degradation
B. Kim, Y. Song, J. Son, C. Yoo, and J. Lee

3940 Colloidal Synthesis of $(CuAg)_xIn_{2x}Zn_{2(1-2x)}S_2$ Solid Solution Nanocrystals with Tunable Band Gap
M. Dai, K. Okazaki, A. Kudo, S. Kuwabata, and T. Torimoto

3941 Core/Shell structured Nanoparticles and Hybrid Electrode Materials for Electrically Tunable Photonic Crystal Display
H. Shim, M. Han, J. Lim, C. Heo, H. Jin, C. Shin, S. Jeon, J. Kim, J. Lee, and S. Lee

3942 Enhanced Electrochemiluminescence Light-Emitting Device Driven by Application of AC Voltage and Its Emission Mechanism
T. Nobeshima, K. Nakamura, and N. Kobayashi

3943 Efficient Materials for High Quality Light Sources: Present Status and Future Prospects
J. Carreras and C. Hunt

3944 Highly Efficient Phosphor-Converted White Light Emitting Diode by Electrophoretic Deposition
J. Choi, M. Anc, A. Piquette, M. Hannah, K. C. Mishra, J. B. Talbot, and J. McKittrick

3945 Nano-Pyramids Structure for Enhancement of Light Extraction Efficiency by Nanoimprint Lithography
C. Yoo, Y. Song, B. Kim, K. Kim, J. Son, and J. Lee

3946 Highly Reliable Encapsulation Films for OLEDs Composed of SiN_x and SiO_xC_y Prepared Using SWP-CVD
S. Ueno, M. Yomogida, M. Suzuki, Y. Konishi, and K. Azuma

3947 Green-Color Selective Organic Photodetector with High Sensitivity for Image Sensor Application
K. Lee, D. Leem, K. Park, S. Lim, Y. Jin, S. Lee, K. Kim, and S. Park

3948 Thermo-switchable Emission and Coloration of Composite Material Containing Luminescent Europium(III) Complex and Fluoran Dye
K. Nakamura, Y. Kobayashi, K. Kanazawa, and N. Kobayashi

3949 Color tunable organic plasmon-emitting diodes
I. Lee, K. Kim, S. Kim, B. Koo, B. Lee, and J. Lee

3950 Electroswitchable Emission of the Luminescent Eu(III) Complex based on Electrochemical Reaction
K. Kanazawa, K. Nakamura, and N. Kobayashi

3951 Ultrafine Silver Nanowire Networks as Scattering Core in Organic Light Emitting Diodes
B. Lee, K. Kim, S. Kim, I. Lee, B. Koo, and J. Lee

3952 Enhancing Light Outcoupling of Flexible Organic Light Emitting Diodes by Domain Selective-Etching
I. Lee, K. Kim, S. Kim, B. Koo, B. Lee, and J. Lee

3953 Triboluminescent Properties of EuD_4TEA and ZnS:Mn and Their Use for Smart Sensors
R. Fontenot, K. Bhat, W. A. Hollerman, and M. Aggarwal

3954 Using Triboluminescence To Detect Ballistic and Hypervelocity Impacts
W. A. Hollerman and R. Fontenot

J3 - Materials for Solid State Lighting

ECS Luminescence and Display Materials, ECS New Technology Subcommittee, ECSJ Phosphor Research

3955 (Centennial Outstanding Achievement Award Presentation of the LDM Division) Toward Further Breakthroughs in Nitride Phosphors
H. Yamamoto

3956 Spatio-Time-Resolved Cathodoluminescence Studies on Freestanding GaN Substrates Grown by Hydride Vapor Phase Epitaxy
S. F. Chichibu, Y. Ishikawa, K. Hazu, M. Tashiro, K. Furusawa, H. Namirta, S. Nagao, K. Fujito, and A. Uedono

3957 Electrical Characterization of High-quality InGaN-based Blue Light Emitting Diodes on 8inch Silicon Grown by Metalorganic Chemical Vapor Deposition
J. Kim, J. Kim, Y. Tak, J. Kim, H. Hong, S. Chae, M. Yang, J. Lee, H. Choi, J. Park, Y. Park, and U. Chung

3958 Simulation and Design of (In,Ga)N-Based Light Emitting Diodes
Z. Liang, E. Stach, T. Sands, and E. García

3959 Tuning of Indium Tin Oxide Work Function with an Ionic Solid Thin Film in Polymer Light-Emitting Diodes
Y. Chou and T. Wen

3960 First Principles Investigations of the Electronic Structures and Associated Properties of Solid Solutions of AlN and GaN
K. C. Mishra, P. Schmidt, and K. Johnson

3961 Fabrication Semipolar GaN on Nanoscale Pattern C-sapphire by Using Self-Assembled Ni Pattern as Mask
C. Chen, C. Hsieh, and Y. Wu

3962 Transparent Electrode for Top Emitting Organic Light Emitting Diodes by Suppression of Surface Plasmons
B. Koo, S. Kim, K. Hong, K. Kim, I. Lee, and J. Lee

3963 Growth and Electrical Properties of n-type 4H-SiC Single Crystals
X. Xu, Y. Peng, S. Song, X. Chen, and X. Hu

3964 Nanoco's CFQDs for Solid-State Lighting Applications
N. Pickett

3965 Fabrication of Efficient, Stable White Light-Emitting Diodes Based on Highly Fluorescent Copper-Indium-Sulfide Quantum Dots
W. Song and H. Yang

3966 Glass Matrices Containing Rare-Earth Ions for White Light-Emitting Diodes with High Color Rendering Indices
J. Heo and S. Yi

3967 High Color Rendering White LED Based on Silicate/Dye-Bridged Siloxane Hybrid Phosphor Encapsulant
B. Bae, S. Kwak, N. Kim, and H. Im

3968 Hybrid Solid-State Lighting Design
W. Hertog, C. Hunt, and J. Carreras

3969 Synthesis, Luminescence Mechanism and Application of β-sialon Green Phosphor with Sharp Line-Width
K. Takahashi, K. Yoshimura, M. Harada, Y. Tomomura, T. Takeda, R. Xie, and N. Hirosaki

3970 Synthesis and Luminescence of Eu^{2+} Activated Yellow Oxynitride Phosphor
P. Nammalwar, S. Manepalli, D. Porob, Y. Gao, and A. Setlur

3971 Sr-Containing Sialon Phosphors with High Quantum Efficiencies for White LEDs
Y. Fukuda, K. Albessard, A. Okada, T. Sato, R. Hiramatsu, and N. Matsuda

3972 Bandgap Estimates and Ce^{3+} Quenching in Cs_3CoCl_5-based Phosphors
U. Happek and A. Setlur

3973 Single Phase, Highly Efficient $Li(Ca_{0.99-x}Sr_xEu_{0.01})PO_4$ Blue Emitting Phosphors for Near UV-Emitting LEDs
J. Han, M. Hannah, A. Piquette, J. Talbot, K. C. Mishra, and J. Mckittrick

3974 Luminescence Quenching in Highly Doped YAG:Ce
A. Setlur, M. Pasricha, M. Perera, G. Levitt, and U. O. Happek

3975 Enhancement of Photoluminescence Properties of Green-Emitting Oxynitride Phosphor using Eu_2O_3@B_2O_3 Core-Shell for White LED Applications
D. Yoon

3976 Silica-Overcoated Copper-Indium-Sulfide Quantum Dot-Polymer Composite Plate as a Robust Wavelength Converter of White Light-Emitting Diode
W. Song, E. Jang, and H. Yang

3977 Tunable Green-Red- Emitting $Ca_{14}Mg_2[SiO_4]_8:Eu^{2+}$,Mn^{2+} Phosphor : the Structural and Optical Properties, and Their Application to Near-UV LED-based White LEDs
K. Lee and W. Im

3978 The Formation of the Hexagonal Pyramid Facets on Wet Etching Patterned Sapphire Substrate
Y. Chen, F. Hsiao, and Y. Wu

3979 High Brightness III - V Light-Emitting Diodes on Diamond/Silicon Composite Substrate
T. Chang, J. Hu, Y. Wu, and B. Lin

3980 Organic Light-Emitting Diodes with Contact-Printed Red Emissive Layer
S. Peng, J. Jou, S. Chen, and P. Wu

3981 Color Tuning of Red-Emission $Eu_{1-x}Ba_xSi_2O_2N_2$ Phosphors for White-Light-Emitting Diode
K. Park, K. Seo, J. Kim, T. Kim, and G. Kim

3982 Blue Excitability of Yellow Zn_{1-x} Mn_xS Phosphor and It's LED Application
K. Park, K. Seo, H. Lim, J. Kim, T. Kim, and G. Kim

3983 Green $CaSc_2O_4$: Ce^{3+} Phosphor for White-Light-Emitting Diode
K. Park, K. Seo, S. Lim, H. Lim, J. Lim, J. Kim, L. Jiang, J. Kim, T. Kim, and G. Kim

3984 Luminescence Properties and Stability Improvement by SiO_2 Coating on Various Phosphors for Near UV-Emitting LEDs
J. Han, M. Hannah, A. Piquette, J. Talbot, K. C. Mishra, and J. Mckittrick

J4 - Microfabricated and Nanofabricated Systems for MEMS/NEMS 10

ECS Sensor, ECS Dielectric Science and Technology, ECS Electronics and Photonics, ECS Physical and Analytical Electrochemistry, ECSJ Bioengineering, CSE

3985 Micro-systems and Nanotechnologies in ELISA and Droplet Generation Applications
C. Yeh and Y. Lin

3986 A Novel Microdevice for the Treatment of Hydrocephalus
J. Oh, F. Kralick, and H. Noh

3987 Wafer Scale Processing of Plasmonic Nanopore Arrays in 200mm CMOS Fab Environment
K. Malachowski, R. Verbeeck, T. Dupont, C. Chen, S. Musa, Y. Li, T. Stakenborg, D. Sabuncuoglu Tezcan, and P. Van Dorpe

3988 Tunable Young's Modulus in Carbon MEMS using Graphene-based Stiffeners
C. M. Washburn, T. Lambert, J. Blecke, D. Davis, P. S. Finnegan, B. G. Hance, and J. M. Strong

3989 Residue-Free Dry Etching of Polymer Sacrificial Layer for Microelectromechanical-System Device Fabrication
K. Takagahara, K. Ono, K. Kuwabara, T. Sakata, H. Ishii, Y. Sato, and Y. Jin

3990 Low Cost UV Laser Direct Write Photolithography System for Rapid Prototyping of Microsystems
J. Waynelovich, A. Sepehri, B. Mehta, S. Kassegne, and A. Khosla

3991 The Carbonized SU-8 Elctrospun Nano-Fiber for an Electrode in the Energy Storage Device
H. Kim, J. Woo, Y. Joo, Y. Chun, and C. Kim

3992 Hydrodynamic Cell Enrichment in Double Spiral Microfluidic Channels
J. Sun, M. Li, C. Liu, G. Hu, and X. Jiang

3993 Nanostructured Columnar Thin Films for Biological and Chemical Sensing Applications
P. Shah, H. Knachel, A. Sarangan, and K. Hansen

3994 Thermal Conductivity Engineering via Nano Patterning
B. Kim, I. El-Kady, and R. H. Olsson III