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Meeting Abstracts — MA 2011-02

220th ECS Meeting

October 9-14, 2011 — Boston, Massachusetts

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J. Prochazka, L. Kavan, and M. Zukalova

1351 An Advanced Lithium-Ion Battery Based on High Performance Electrode Materials
J. Hassoun, K. Lee, Y. Sun, and B. Scrosati

1352 Film Batteries Directly Coated on Al Pouch Substrate and Hermetically Sealed under Vacuum Condition for Printed Electronics Devices
Y. Lee, M. Choi, K. Kang, and K. Kim

1353 Electrochemical Cells based on Fluoride Shuttle
M. Anji Reddy, R. Witter, S. J. Büschel, and M. Fichtner

1354 Development of Rechargeable Lithium Cells with Fully Integrated Reference Electrodes
C. A. Wijayawardhana

1355 Improvements of Power Stack Performance in Semi-Solid Flow Cells (SSFCs)
Y. Dong, V. E. Brunini, W. Carter, and Y. Chiang

1356 Layered $Li_{1+x}M_{1-x}O_2$ and SiO-based Material for High-energy-density Lithium-ion Cell
X. Liu, Q. Peng, and Z. Lu

1357 Synthesis and Electrochemical Characterizations of Surface Modified Nano-$FePO_4$-Coated $LIMn_2O_4$ Cathode Materials for Rechargeable Lithium Battery Applications
D. Arumugam and G. Paruthimal Kalaignan

1385 Fluoroethylene Carbonate as an Electrolyte Additive for Improving the Performance of Mesocarbon Microbead Electrode
Z. Wang, J. Xu, W. Yao, Y. Yao, and Y. Yang

1386 Crystal Structure and Electrochemical Properties of $Li(Ni_{0.5-x}Mn_{0.5-y}Fe_{x+y})O_2$ ($0 \leq x + y \leq 0.05$, $x > y$) Cathode Materials
Y. Imanari, K. Nakane, and T. Sanada

1387 High Li-Ion Conducting Garnet Type Solid Electrolyte
M. Furukawa, Y. Sato, K. Yamamoto, and T. Yoshida

1388 Investigation of the Solid Electrolyte Interphase on Graphite Electrodes with Lithium Tetrafluorooxalatophosphate [$LiPF_4C_2O_4$] Electrolyte
M. Xu, L. Zhou, D. Chalsasani, S. Dalavi, and B. Lucht

1389 Effect of Methyl Butyrate (MB), a Low Temperature Co-Solvent on the Solid Electrolyte Interphase (SEI) of Lithium Ion Battery (LIB) Electrodes
S. Dalavi, M. C. Smart, F. Krause, and B. Lucht

1390 Ex Situ and In Situ Studies of Degradation and Capacity Loss in the Cathode Material $LiFeBO_3$ for Lithium-Ion Batteries
S. Bo, F. Wang, D. Zeng, K. Nam, W. Xu, Y. Janssen, L. Du, P. Stephens, J. Graetz, P. Khalifah, and C. Grey

1391 NMR Studies of the $LiBF_4$, LiBOB and LiDFOB Equilibrium
L. Zhou, W. Li, M. Xu, and B. Lucht

1392 SEI Formation for $LiPF_6$ Electrolytes on Binder-Free Anode in Lithium-Ion Batteries
M. Nie and B. Lucht

1393 Solvent-$LiBF_4$ Phase Diagrams, Ionic Association and Solubility - Cyclic Carbonates and Carboxylic Esters
J. L. Allen, Q. Ly, D. Seo, P. Boyle, and W. Henderson

1394 Delving into the Properties and Solution Structure of Nitrile-Lithium Difluoro(oxalate)borate (LiDFOB) Electrolytes for Li-ion Batteries
S. Han, J. L. Allen, P. Boyle, and W. Henderson

1395 Imidazolium Based Ionic Liquids for Lithium Ion Battery Applications. Substitution of C-2 Proton with Electron Perturbing Groups
C. Liao, X. Sun, and S. Dai

1396 Low-Temperature Performance of LiFePO4 Cathode Materials for Li-Ion Batteries
W. Chang, S. Kim, B. Cho, W. Choi, E. Kim, S. Park, H. Shin, and K. Chung

1397 Molecular-Level Interactions in Electrolytes: Solvent-LiClO4 Mixtures - Acyclic Carbonates and Carboxylic Esters
T. Afroz, M. O'Connell, D. M. Seo, P. Boyle, and W. Henderson

1425 Physico-Electrochemical Properties of Sub-Micron Sized and Disordered $LiNi_{0.5}Mn_{1.5}O_4$ Obtained by Microwave-Assisted Modified Pechini Method
K. I. Ozoemena, O. Fashedemi, C. Jafta, and M. Mathe

1426 Surface Analysis of Surface Films on Si-Thin Film Anodes
S. Dalavi, S. Nadimpalli, P. Guduru, and B. Lucht

1427 Surface Analysis and Cycling Performance of Lithium-Ion Cells Containing Methylene Ethylene Carbonate(MEC)
D. Chalasani, J. Li, N. Jackson, and B. Lucht

1428 Lithium In-Situ NMR Study of the Observation of Microstructure on Lithium Metal Anodes
H. Chang, N. M. Trease, D. Zeng, L. Du, and C. Grey

1429 Analysis of Li-Ion Coin Cells with Flame Retardant Co-solvents
R. Dunn and B. Lucht

1430 Three-Dimensional Anode Architectures and Materials
F. Dogan, L. Trahey, M. Thackeray, and J. Vaughey

1431 Lithium In Situ NMR Study of the Observation of Microstructure on Lithium Metal Anodes
H. Chang, N. M. Trease, D. Zeng, L. Du, and C. Grey

1432 Hollow Carbon Nanosphere with Reduced Tin Anode Material for Li-ion Battery
M. Li, K. A. Hays, and M. Wagner

1433 Cycle Performance of Spinel Lithium Nickel Manganese Oxide Used in Lithium Ion Batteries
Y. Fu, X. Song, H. Zheng, P. Ridgway, G. Liu, and V. S. Battaglia

1434 Failure Mechanism Study of a Graphite Negative Electrode Based on Styrene-Butadiene Rubber (SBR) Binder
L. Wang, V. S. Battaglia, and G. Liu

1435 Simultaneous Surface and Bulk Electrochemistry of Battery Electrodes, the Interest of Molecular Implementation for High Power - High Energy Application
L. Madec, B. Lestriez, C. Cougnon, T. Brousse, D. Guyomard, and J. Gaubicher

1436 Determination of the Dissociation Degree, Diffusion Coefficients and Ionic Conductivity of Binary Lithium Salt Polymer Electrolytes with Impedance Spectroscopy
A. Munar, A. Andrio, R. Iserte, and V. Compan

1437 Investigation of Thermal Treatment effect of Anode Current Collectors in Lithium-Ion Batteries
T. Kim, W. Chen, A. Dhanabalan, and C. Wang

1438 Sulfones with Functional-Groups for Lithium-Ion Battery Applications
X. Sun, L. Chen, N. Shao, D. Jiang, and S. Dai

1453 Effect of Various Electrolytes and Electrode Materials on Capacity and Selectivity of Non-Aqueous Li-O_2 Cells
M. Piana, S. Meini, N. Tsiouvaras, R. Zeh, A. Garsuch, and H. Gasteiger

1454 Electronic Properties of $LiMO_2$ (M=Co, Ni) Thin Film Cathode Materials and of their Interfaces Formed during Gas Phase Adsorption, Electrolyte Contact and Electrochemical Li-Deintercalation
G. Cherkashinin, D. Ensling, S. Schmid, D. Becker, L. Nedelmann, R. Hausbrand, S. Jacke, and W. Jaegermann

1455 Rate Capability of $LiCoO_2$ Single Particle in Ionic Liquid Electrolytes for Lithium Batteries
K. Yoshida, M. Tsuchiya, N. Tachikawa, K. Dokko, and M. Watanabe

1456 Nanoparticle Coated Separators for Lithium-Ion Batteries with Advanced Electrochemical Performance
J. Fang, A. Kelarakis, Y. Lin, E. Giannelis, and L. Tsai

1457 Development of LbL Coated Separator Membrane for Semi-Solid Flow cell
B. El-Zahab, D. Liu, N. Baram, W. Carter, Y. Chiang, and P. Hammond

1458 Composite Multifunctional Lithium Ion Batteries
J. Mullenax, P. Browning, W. Huebsch, and E. M. Sabolsky

1459 Effect of Mechanical Stress on the Electrochemical Performance of Celgard Separators for Lithium-ion Batteries
C. Peabody, J. Cannarella, and C. Arnold

1460 Mechanical Strain Induced Resistance Increase in Lithium-Ion Battery Separators
J. Cannarella and C. Arnold

1461 An In Situ Study of SEI Growth on Negative Electrode Materials for Li-Ion Batteries Using Spectroscopic Ellipsometry
M. A. McArthur, S. Trussler, and J. Dahn

1462 In-situ Monitoring the Formation of SEI Layer using Peak Force Tapping Mode AFM
C. Li

1463 In-Situ NMR Studies of Li-Ion Batteries
N. M. Trease, S. Harris, and C. Grey

1464 Oxygen Evolution Reaction of Lithium Peroxide in the Lithium-air Battery: A First Principles Study
Y. Mo, S. Ong, and G. Ceder

1465 α-MnO_2 in Li-Ion and Li-Air Batteries: A First Principles Study
M. K. Chan, R. Benedek, and J. Greeley

1466 Direct Mapping of Li^+-Solvation Sheath Structure through a Mass Spectrum Technique
K. Xu and A. V. Cresce

1467 Low-Temperature Performance of Li-ion Electrolytes and Materials
D. Ofer, J. Rempel, S. Sriramulu, and B. Barnett

1468 Performance Degradation of Li-Ion Batteries
D. Abraham

1469 Influence of Overcharge and Overdischarge on the Impedance Response of $LiCoO_2$ Batteries
S. Erol, M. Orazem, and R. Muller

1470 Electrochemical Shock of Polycrystalline Lithium Battery Materials
W. H. Woodford, Y. Chiang, and W. Carter

1471 Thermal Excursion and its effect on the Electrochemical Behavior of{$LiMn_{⅓}Ni_{⅓}Co_{⅓}O_2$ + $LiMn_2O_4$} Composite Electrodes
M. Dubarry, C. Truchot, B. Liaw, K. L. Gering, S. Sazhin, D. Jamison, and C. Michelbacher

1472 Characterization of LiFePO4 Cathodes and Zinc Anodes by Novel Fourier Transform Electrochemical Impedance Spectroscopy Experiments
G. Min, Y. Ko, and S. Park

1473 Electronic Structure and Reactivity of Candidate Conversion Material Iron Oxifluoride
S. Rangan, R. Thorpe, R. Bartynski, O. Celik, N. Pereira, and G. Amatucci

1474 Studying the Reversibility of Multi-Electron Transfer in Fe(VI) Cathodes Using X-ray Absorption Spectroscopy
M. Farmand, C. Hettige, S. Licht, and D. E. Ramaker

1475 TEM-EELS Studies of Conversion Reaction of the Metal Fluorides as Cathodes for Lithium-Ion Batteries
F. Wang, Y. Zhu, J. Graetz, N. Pereira, G. Amatucci, X. Hua, and C. Grey

1476 Probing Phase Distribution of Lithiated Nanocomposite Metal Fluorides as Positive Electrode Materials in Li Ion Batteries via Solid-state NMR Studies
Y. Hu, L. Du, J. Pastore, and C. Grey

1477 Study of First Charge Discharge Mechanism for $0.3Li_2MnO_3$-$0.7LiNi_{1/3}Co_{1/3}Mn_{1/3}O_2$ as a Cathode Active Material for Li-Ion Batteries
Y. Takanashi, M. Oishi, Y. Orikasa, T. Fujimoto, K. Sato, H. Yamashige, D. Takamatsu, H. Murayama, H. Tanida, H. Arai, T. Ohta, E. Matsubara, Y. Uchimoto, and Z. Ogumi

1478 Degradation Mechanism of Conversion Type Electrode Materials Studied by XPS, ToF-SIMS and AFM
J. Swiatowska, F. Liao, V. Maurice, A. Seyeux, L. Klein, and P. Marcus

1479 Effect of Microstructure, Ordering and Composition on the Electrochemical Performance of $LiNi_{1/2}Mn_{3/2}O_4$ as a Cathode Material
C. Kim and J. Cabana

1493 Direct Measurement of Lithium Transport in Graphite Electrodes with Neutrons
J. P. Owejan, J. Gagliardo, S. Harris, H. Wang, D. S. Hussey, and D. Jacobson

1494 Double Carbon Coating System - Improvement of Battery Cycle Life
H. Hsieh, Y. Lin, S. Chang, and H. Wu

1495 Over-Discharge Behavior of $\{LiMn_{1/3}Ni_{1/3}Co_{1/3}O_2 + LiMn_2O_4\}$ Composite Electrodes
M. Dubarry, C. Truchot, B. Liaw, K. L. Gering, S. Sazhin, D. Jamison, and C. Michelbacher

B12 - Electrochemical Processes for Fuels

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

1496 (Invited) Solid Oxide Electrochemical Cells: Past, Present and Future
S. C. Singhal

1497 (Invited) Electrochemical Routes towards Sustainable Hydrocarbon Fuels
M. Mogensen

1498 Fuel Synthesis with CO_2 Captured from Atmosphere: Thermodynamic Analysis
T. Wang

1499 (Invited) Formic Acid and Formate Production through Electrochemical Reduction of CO_2 - An Assessment of Technology and Challenges
A. S. Agarwal, S. Guan, Y. Zhai, E. Rode, D. Hill, N. Sridhar, L. Chiacchiarelli, and G. Frankel

1500 Electrochemical Reduction of CO_2 to Methanol at Copper Based Surfaces
M. Ren, M. Le, Z. Zhang, P. Sprunger, R. Kurtz, G. Griffin, and J. Flake

1501 Electrochemical Conversion of CO_2 and CH_4 to CH_3OH at Room Temperature through a Carbonate Anion Pathway
N. Spinner and W. E. Mustain

1502 Electrocatalysts for Conversion of CO_2 to Hydrocarbons
J. Wu, F. Ke, C. Wright, and X. Zhou

1503 Surface Modification of Gold for CO_2 Electrochemical Reduction
E. Cave, K. Kuhl, and T. F. Jaramillo

1504 Electrocatalytic Conversion of CO_2 to Fuels on Metal Surfaces
K. Kuhl, E. Cave, and T. F. Jaramillo

1505 (Invited) Protonic Membrane Reactors: Converting CO_2 and Biomass to Transportation Fuels
E. D. Wachsman

1506 (Invited) Reversible Solid Oxide Fuel Cells
N. Q. Minh

1507 Materials and Manufacturing of Electrochemical Cells for Reduction of CO_2 into Liquid Fuels
J. Hallinder, P. Holtappels, and M. Mogensen

1508 (Invited) Nanostructured Electrodes for Reversible, Low Temperature Solid Oxide Cells
Z. Zhan, D. M. Bierschenk, J. Cronin, and S. A. Barnett

1509 (Invited) Progress in Conversion of CO_2 to Liquid Fuel
S. Elangovan and J. Hartvigsen

1510 (Invited) Synthetic Fuel Production by Recycling CO_2 via High Temperature Electrolysis
J. B. Hansen

1511 (Invited) Efficient Generation of High Energy Density Fuel from Water
K. E. Ayers, L. Dalton, and E. Anderson

1512 Ni-Based Catalysts for Hydrogen Evolution Reaction
W. Chen, K. Sasaki, E. Fujita, R. R. Adzic, and J. Muckerman

1513 Achieving Hydrogen Production through Solid Oxide Electrolyzer Stack by High Temperature Electrolysis
L. Jin, W. Guan, X. Ma, C. Xu, and W. Wang

1514 The Integration of Solid Oxide Fuel Cells and Solid Oxide Electrolysis Cells for the High Efficiency Production of Oxygen and Hydrogen
M. A. Taher, P. Iora, P. Chiesa, C. Adjiman, and N. Brandon

1515 (Invited) Analysis of Transport through Mixed Proton, Oxygen Ion, and Electron (Hole) Conductors: Power and Fuel Generation Modes
A. V. Virkar

1516 Failure Mechanism of (La,Sr)MnO_3 Oxygen Electrodes of Solid Oxide Electrolysis Cells
S. Jiang and K. Chen

1517 Electrochemical Studies on Anode Supported Solid Oxide Electrolyzer Cells (SOEC)
J. Njodzefon, A. Weber, and E. Ivers-Tiffée

1518 Reversible Solid Oxide Fuel Cell Development at Versa Power Systems
B. Borglum

1519 Implications Associated with S Contamination for the Production of Syn-Gas from CO_2 Reduction
E. J. Dufek, T. E. Lister, and M. McIlwain

1520 Novel Structured Solid Oxide Co-Electrolysis Cells
C. Yang, J. Newkirk, V. Baish, and F. Chen

1534 Highly Selective Glyceraldehyde Production from Electrocatalytic Oxidation Process of Biomass-Derived Glycerol
H. Kim, S. Green, S. Lee, G. Tompssets, G. Huber, and W. Kim

1535 First-Principles Quantum Mechanics Assessment of Oxygen Diffusion in $La_{1-x}Sr_xMO_3$ (M=Fe, Co) Based Materials
A. M. Ritzmann and E. A. Carter

1536 A Study of Hydrogen Sulfide Contaminants on the Anode of Micro-Tubular SOFC
D. Choi, M. Ohashi, S. Shimpalee, J. Van Zee, and P. Aungkavattana

1537 Kolbe Electrolysis of Bio-Oils for the Production of Diesel and Aviation Fuels
A. D. Wilson and T. E. Lister

1538 Electrochemical Reduction of O_2 and CO_2 on Platinum in PEM Reactor
J. Wu, S. Hummel, and X. Zhou

1539 Electrochemical Reduction of CO_2 on Single Crystal Copper and Copper Oxide Electrodes for Selective Formation of Hydrocarbons
J. Wu and X. Zhou

1540 (Invited) Solar Thermal Electrochemical Production of Energetic Molecules: Efficient STEP Solar Water Splitting, Carbon Capture, and Solar Metals, Fuel and Bleach Production
S. Licht, H. Wu, J. Lau, B. Wang, C. Hettige, H. Bergmann, and J. Asercion

1541 (Invited) Surface Nitridation of p-$GaInP_2$ for Durable Photoelectrochemical Water Splitting
H. Wang, T. Deutsch, A. Welch, and J. Turner

1542 Phoroelectrochemical Hydrogen Production from Water without an External Applied Voltage Using p-type $CaFe_2O_4$ and n-type TiO_2 Electrodes
S. Ida, K. Yamada, H. Hagiwara, and T. Ishihara

1543 Modified Bismuth Vanadate Electrodes for Photoelectrochemical Water Splitting
P. Kishore, T. E. Furtak, J. A. Turner, and A. M. Herring

1544 (Invited) Solar Fuel Production Using Thermochemical Cycles: A Challenging Materials Problem
M. D. Allendorf, A. McDaniel, J. Miller, E. Coker, A. Ambrosini, T. Aston, A. Weimer, and J. Scheffe

1545 (Invited) CO_2 Utilization by Solar Assisted Photo-Electrochemical Methods
M. D. Salazar-Villalpando

1546 α-Fe_2O_3 Photoanodes for the Photooxidation of Water
I. Herrmann-Geppert, P. Bogdanoff, and S. Fiechter

1561 (Invited) Solid Oxide Membrane Process for the Reduction of Uranium Oxide Surrogate in Spent Nuclear Fuel
Y. Jiang, P. Zink, and U. B. Pal

1562 (Invited) Coal-Based Electrochemical Energy Solutions for Low Carbon Paths
M. Han, S. Song, Z. Liu, and Z. Lei

1563 Electrochemical Analysis of Reformate-Fuelled Anode-Supported SOFC
A. Kromp, A. Leonide, A. Weber, and E. Ivers-Tiffée

1564 Performance of Lower Temperature Solid Oxide Fuel Cells Operating on Reformed Hydrocarbon Fuels
K. Lee, C. Gore, H. Yoon, and E. D. Wachsman

1565 Study of SOFC Operational Behavior by In Situ Laser Raman Spectroscopy
G. Schiller, C. Auer, W. Bessler, C. Christenn, P. Szabo, H. Ax, and W. Meier

1566 Development of High Performance LSM-Bismuth Oxide Composite Cathodes for Lower Temperature SOFCs
K. Lee, A. Lidie, H. Yoon, and E. D. Wachsman

1567 Microstructural Engineering of Porous Cathodes for SOFC Applications
S. R. Gandavarapu, K. Sabolsky, K. Gerdes, and E. M. Sabolsky

1568 First-Principles Modeling of $LaMO_3$ (M=Cr,Mn) Based Materials for Solid Oxide Fuel Cell Applications
M. Pavone and E. A. Carter

1569 First-Principles Study of $Sr_2Fe_{2-x}Mo_xO_6$ (SFMO) for Solid Oxide Fuel Cell Applications
A. B. Muñoz-García, M. Pavone, and E. A. Carter

1570 Performance and Stability of Solid Oxide Fuel Cell LSM-YSZ Composite Cathodes
A. T. Duong and D. Mumm

1571 Epitaxial $La_{1-x}Sr_xCoO_{3-\delta}$ (x = 0.2, 0.4) Thin Film Oxygen Reduction Activity for Solid Oxide Fuel Cells
E. J. Crumlin, S. Ahn, D. Lee, E. Mutoro, M. Biegalski, H. Christen, and Y. Shao-Horn

1572 Overview of SOFC Anode Interactions with Coal Gas Impurities
O. A. Marina and L. Pederson

1573 Improvement of Power Generation Property by Columnar Shape Cathode Thin Film
Y. Ju, S. Ida, T. Inagaki, and T. Ishihara

1574 Development of Novel Cathode/Interconnect Contact Materials for SOFC Stacks
G. Xia, Z. Lu, X. Li, Z. Nie, J. Templeton, R. Scott, Z. Yang, and J. Stevenson

1575 Effects of the Additives in Oxide Anode for Direct Hydrocarbon-Type SOFC
T. Shin, S. Ida, and T. Ishihara

1576 Design, Synthesis, Structural and Textural Characterization, and Electrical Properties of Mesoporous Thin Films Anode for Micro-SOFC
G. Muller, G. Baldinozzi, A. Ringuedé, C. Robert-Laberty, and C. Sanchez

1577 Electrodeposition of CoMn onto Stainless Steel Interconnects for Increased Lifetimes in SOFCs
T. Hall, H. McCrabb, J. Kell, S. Snyder, H. Zhang, X. Liu, and E. Taylor

1578 In Situ XPS Measurements of Surface-Adsorbate Overpotentials on Operating Solid Oxide Cells
C. Zhang, M. Grass, Y. Yu, K. Gaskell, F. Aksoy, N. Jabeen, Y. Hong, G. Jackson, Z. Hussain, Z. Liu, and B. Eichhorn

1579 Understanding Chemical Expansion in CeO_2
D. Marrocchelli, S. Bishop, B. Yildiz, and H. Tuller

1580 Development of a Predictive Thermo-Chemical Expansion and Stress Model in $(Pr,Ce)O_{2-\delta}$
S. Bishop, D. Marrocchelli, Y. Kurur, B. Yildiz, and H. Tuller

1581 Crystal Defects of YSZ in Solid Oxide Fuel Cells and their Microstructure Evolution Upon Cell Operation
X. Song, S. Chen, Y. Chen, G. Hackett, H. Finklea, and K. Gerdes

1582 Development of Techniques to Measure Various Gases Permeability at High Pressure Gradients
M. Ohashi, W. McPhee, J. Preston, G. Hesler, M. Dristy, T. Molter, and J. Van Zee

1583 Materials and Performance of Novel Proton Conducting SOFCs Based on $LaNbO_4$ Electrolyte
A. Magraso, M. Fontaine, Y. Larring, R. Bredesen, G. Syvertsen, H. Lein, T. Grande, M. Huse, R. Strandbakke, R. Haugsrud, and T. Norby

1584 Conductivity of Aqueous K_2CO_3 up to 200℃
P. L. Mollerup and M. Mogensen

1585 Modifications in Nernst-Planck Equation in Solid State Electrochemistry for the 21st Century
T. Miyashita

2701 Core-Shell Nanostructured Electrocatalysts for the Oxygen Reduction Reaction (ORR)
H. D. Abruña

D1 - Corrosion General Poster Session

Corrosion

1586 (Corrosion Division H. H. Uhlig Award) Synchronized Localized Corrosion and Formation Anodic Oxide Structures
P. Schmuki

1587 (Morris Cohen Graduate Student Award of the Corrosion Division) Understanding the Interplay between Water Chemistry Variables and Electrochemical Properties of Copper
H. Cong and J. Scully

1588 Inhibitory Action of Aromatic Amine on Aluminum Corrosion in Hydrochloric Acid
P. S. Desai and S. Kapopara

1589 Organic Materials as Corrosion Inhibitors for Aqueous Medium: A Review
D. Asefi, M. Arami, and N. Mahmoodi

1590 Non-Toxic Compounds as Corrosion Inhibitors: A Review
D. Asefi, M. Arami, and N. Mahmoodi

1591 Corrosion Protection of Aluminum in Different Concentration of HCl by Using an Organic Ligand
A. Dadgarinezhad and F. Baghaei

1592 Organic Synthesis Inhibitors Obtained in Microwaves Field for Anticorrosive Protection of Industrial Cooling Water Systems
F. Branzoi, V. Branzoi, A. Stanca, and I. Harabor

1593 Characterization of the Effect of Corrosion Inhibitors on Pit Growth Kinetics and Damage Accumulation Rates in Aluminum Alloy 7075 T-6
P. Klomjit and R. G. Buchheit

1594 Corrosiveness of Different Treated Municipal Wastewaters Used as Power Plant Cooling System Makeup Water: A Bench-Scale Evaluation
M. R. Choudhury, M. Hsieh, R. Vidic, and D. Dzombak

1595 Corrosion Investigation on Steel and Ferritic Steel in 1M H_2SO_4
F. Baghaei Ravari and A. Dadgareenezhad

1596 Inhibition of Cobalt Corrosion by Silane Coatings
K. Mabuchi

1597 Electrochemical Corrosion of CoNiFe Thin Films in Chemical Mechanical Polishing (CMP) Solutions
J. Wang and Y. Jiang

1598 Effect of BTA on Anodic Dissolution of Copper
A. Inukai, I. Shitanda, M. Itagaki, and K. Watanabe

D2 - Coatings for Corrosion Protection

Corrosion

1651 Investigation of Oxygen Reduction on Self-Assembled Monolayer / Au(111) Model Systems for Delamination Studies
M. Muglali, A. Bashir, and M. Rohwerder

1652 Smart-Release Inhibition of Corrosion-Driven Organic Coating Delamination on Galvanized Steel Surfaces
G. Williams, S. Geary, M. Loveridge, and N. McMurray

1653 Corrosion Protection Inhibitor Systems for Coatings Based on Cooperative Chemical Inhibition and Inhibitor Delivery by Synthetic Ion Exchange Compounds
R. G. Buchheit

1654 Evaluation of the Self Healing Ability of Organic Coatings Modified with Smart Nanocontainers Loaded with Corrosion Inhibitors Applied on Metallic Substrates Used in the Transportation Industry
M. Montemor, D. Snihirova, M. Taryba, and S. Lamaka

1655 Corrosion Inhibition of Galvanized Steel by a Hybrid Organic/Inorganic Coating
K. Win, S. Adhikari, Y. Li, G. Frankel, B. Bammel, T. Smith, J. McGee, J. Comoford, J. Zimmerman, and G. Donaldson

1656 Epoxy Coatings Containing Nanocontainers Loaded with Corrosion Inhibitors for Corrosion Protection of AA 2024-T3
A. C. Balaskas, I. Kartsonakis, P. Bilalis, A. Karatzas, and G. Kordas

1657 Intelligent Corrosion Protection by Electro-Galvanized Zinc Coatings Containing Inhibitor Filled Mesoporous Silica Particles
A. Vimalanandan, T. Khan, and M. Rohwerder

1658 Novelty of Ni - Co - WC Nanocomposite Coatings Prepared from Pulse and Direct Current Methods
B. Ranjith, G. Kalaignan, and K. Srinivasan

1659 Anti-Corrosion and Morphological Properties of Nanoceramic Hexafluorozirconic Acid Based Conversion Thin Film: The Effect of Solution Temperature
H. Eivaz Mohammadloo, A. Sarabi, A. Sabbagh-Alvani, M. Roohnikan, R. Salimi, and H. Sameie

1660 Synthesis and Characterization of Poly (N, N' Dimethylaniline) Coatings as Anticorrosive Protection of Copper in Various Aggressive Media
F. Branzoi and V. Branzoi

1661 Ion Transport Kinetics along Buried Interfaces for Polymer Coated Samples in Cut Edge Geometry
R. Posner, G. Giza, M. Marazita, and G. Grundmeier

1662 Study on a Titanate Film and its Photocathodic Protection Effect for 403 Stainless Steel
Y. Zhu, R. Du, H. Qi, J. Zhang, and C. Lin

1663 Electrochemical Corrosion Study of Protective Organic Thin Film Coating on Mg Alloy
T. Abdel-Fattah and A. Mahapatro

1664 Electropolymerization of Pyrrole with Clays on Aluminium Alloy
K. Castagno, V. Dalmoro, R. Mauler, and D. S. Azambuja

1665 Inhibition of Copper Corrosion Using Conducting Polymer Coatings
U. Carragher and C. Breslin

D3 - Corrosion on Land, Sea, and Air

Corrosion, Sensor

1666 Volt Equivalent Diagrams for the Electrochemical Thermodynamics of Aqueous Sulfur-Containing Systems
D. D. Macdonald, S. Sharifi, and J. Linder

1667 Electrochemical Kinetic Parameters of Oxygen Reduction Reaction on Copper and Brass
S. Motevalian, M. Baghalha, and M. Hadidi

1668 Study of Corrosion Inhibition Processes of Copper in a Low Conductivity Medium by a Selected Thiol Compound
W. Qafsaoui, H. Perrot, H. Takenouti, and M. Kendig

1669 Acceleration Laboratory Testing of Ag and Cu Atmospheric Corrosion Using Ozone, Ultraviolet Radiation and NaCl
H. Lin and G. Frankel

1670 The Effects of Sodium Dodecyl Sulfate and Carbon Nano Tubes on Copper Corrosion Rates
M. Baghalha and M. Kamal-Ahmadi

1671 The Detection of Non-Linearities Using Odd Random Phase Multisine EIS and its Application in Corrosion Investigations
Y. Van Ingelgem, T. Breugelmans, R. Pintelon, and A. Hubin

1672 Accelerated Corrosion Tests for Silver and their Correlation to Field Exposures
Y. Wan, E. Neiser, and R. Kelly

1673 Electrochemical Characterization of the β-phase (Al_3Mg_2) in 5XXX Aluminum Alloys
J. Buczynski and R. Kelly

1674 Modeling and Measurement of Atmospheric Galvanic Corrosion of AA5083-H131 in Contact with 4340 Steel
D. Mizuno and R. Kelly

1675 Impedance of a Rough/Fractal Electrode Surface with Double Layer and Charge-Transfer Processes
M. Venkatraman, I. Cole, D. Sherwood, and B. Emmanuel

1676 The Impact of Electrochemical Protection Techniques on the Microstructure of Reinforced Concrete
D. Koleva, J. Hu, and K. van Breugel

1677 The Influence of Admixed Polymeric Vesicles on Corrosion Performance of Steel in Simulated Pore Solution and/or Reinforced Mortar
J. Hu, D. Koleva, and K. van Breugel

1678 Lifetime Prediction of Materials from Tests in Simulated Polluted Atmospheres
W. Kovacs III., J. James, and L. F. Garfias-Mesias

1679 The Sustainable Redox Reactions Involved in Cathodic Current Enhancement by Marine Biofilms
M. J. Strom and S. Dexter

1680 Corrosion of Carbon Steel in Simulated Concrete Pore Water in Boom Clay Repository Environments
D. D. Macdonald, A. Almarzooqi, S. Sharifi, and M. Taylor

1681 A Simple Approach for Measuring Slow Rates of Hydrogen Entrainment and Diffusion in Metals
M. Bjørnsdotter, C. Holme, R. Johnsen, and K. Nisancioglu

1682 Activation of Sulfuric Acid Corrosion of Stainless Steel by Thiocyanate
W. Li and C. Pistorius

1683 Evaluation of Thiosulfate as a Substitute of Hydrogen Sulfide in Sour Corrosion Fatigue Studies
M. Kappes, G. Frankel, R. Thodla, N. Sridhar, and R. Carranza

1684 Failures Prediction of Pipelines Carrying Natural Gas Using Bees Algorithm
J. C. González-Islas, E. Bolaños-Rodríguez, E. Lezama-León, A. Solis-Galindo, and H. Muñiz-Molina

D4 - Critical Factors in Localized Corrosion 7

Corrosion

1685 Localised Dissolution Kinetics From Fast In Situ Radiography of Propagating Pits in Stainless Steel and Implications for Modeling Pitting Corrosion over Long Time-Scales
N. Laycock, D. Krouse, M. Gahari, A. J. Davenport, T. Rayment, and C. Padovani

1686 Factors Controlling the Location of Crevice Attack in Austenitic Stainless Steels
J. S. Lee and R. Kelly

1687 Single Pit Study on 316L Stainless Steel Using the Scanning Electrochemical Microscope
N. Aouina, F. Balbaud-Célérier, F. Huet, S. Joiret, H. Perrot, F. Rouillard, and V. Vivier

1741 In Situ Observation for the Reaction of Hydrogen Peroxide in High Temperature Water Utilizing Electrochemical Impedance Spectroscopy
T. Satoh, C. Kato, M. Yamamoto, J. Nakano, and T. Tsukada

1742 Local Impedance Measurements at the Tip of the Scanning Electrochemical Microscope for the Investigation of Corrosion Inhibitor Films on Metals
J. Santana, J. Izquierdo, B. Socas, S. González, and R. M. Souto

1743 Development of a New Microelectrochemical Measurement System for In Situ Optical Microscopic Observation of Pit Initiation Processes
A. Chiba, I. Muto, Y. Sugawara, and N. Hara

D5 - High Temperature Corrosion and Materials Chemistry 9 - A Symposium in Honor of Professor Robert A. Rapp

High Temperature Materials, Corrosion

1744 Measurement and Thermodynamic Interpretation to Identify Ionic Solutes in Simple and Complex Fused Salt Solutions
R. A. Rapp

1745 Thermochemistry of Neutral and Charged Vapor Complexes over NaBr-$LnBr_3$ Systems
D. A. Ivanov and L. Kudin

1746 Acid-Base Reaction of Fused LiCl-41m/o KCl Melt Equilibrated With Gas Atmospheres Containing HCl, H_2O, and O_2 at 600{degree symbol}
N. Otsuka

1747 High-Temperature Corrosion of Metal Alloys in Chlorosilanes and HCl
P. Gannon, B. Clark, and P. White

1748 Corrosion Domain Diagrams for Copper Corrosion in Aqueous Media
D. D. Macdonald, S. Sharifi, and J. Linder

1749 The Effects of Temperature and SO_3 Partial Pressure on Type I and Type II Hot Corrosion
M. Task, F. Pettit, and G. H. Meier

1750 Creating and Delivering Expertise on High Temperature Corrosion in the 21st Century
R. C. John

1751 Status of Carbonate Fuel Cell Materials
C. Yuh, A. Hilmi, L. Chen, A. Franco, and M. Farooque

1752 Structure and Dynamics of Imidazolium-Based Ionic Liquids
B. Aoun, M. González, A. Goldbach, S. Kohara, M. Russina, D. L. Price, and M. Saboungi

1753 Materials Chemistry and the Development of Practical High Temperature Superconductor Wires and Electric Power Applications
G. J. Yurek

1781 The Vaporization of $B_2O_3(l)$ to $B_2O_3(g)$ and $B_2O_2(g)$
N. Jacobson and D. Myers

1782 A Para Equilibrium Model for Selective Oxidation; the Role of the Interface Barriers and Internal Oxidation
M. Danielewski, Z. Grzesik, P. Manikowski, S. Mrowec, and B. Wierzba

1783 Microstructures and Properties of Sputter Deposited NiAl-X and NiAl-Cr-X (X = Hf or Zr) Overlay Coatings
M. L. Weaver and J. Alfano

1784 Modeling Oxidation Kinetics of UHTCs
T. A. Parthasarathy, R. Rapp, M. M. Opeka, and M. Cinibulk

1785 Effect of Boronizing on the Oxidation Behavior of Nb Alloys
E. Dokumaci, I. Ozkan, and B. Onay

1786 Thermodynamic Properties of Al Cr Fe Alloys Experimental Investigation by Knudsen Effusion Mass Spectrometry
T. Markus, M. Motalov, D. Kath, and L. Singheiser

D6 - Where Metals Meet Human Tissue

Corrosion, Organic and Biological Electrochemistry, New Technology Subcommittee, Sensor

1787 Surface Modification of Titanium with Functional and Bio-Molecules by Electrodeposition to Add Biofunctions
T. Hanawa and Y. Tsutsumi

1788 TiO2 Nanotubes - Cell Interactions
P. Schmuki

1789 Biocompatibility of Nano-Structured TiO_2 Surfaces
H. Tsuchiya, K. Tamura, S. Miyabe, P. Schmuki, and S. Fujimoto

1790 Tribocorrosion of Metallic Biomaterials: Retrievals, In-Vitro Testing and Modeling
J. L. Gilbert, S. Mali, V. Swaminathan, R. Urban, and J. Jacobs

1791 Electrochemical effects in the Degradation of CoCrMo Metal-On-Metal Hip Joints
S. Mischler and A. Igual-Munoz

1792 Investigation of the Seizing of Ti6Al4V Orthopedic Constructs *in vitro*
D. Hansen, H. Bamberger, V. Fongue, K. Janek, and P. Sjöblom

1793 CoCrMo Alloy as a Material for Orthopedic Prostheses
I. Milošev and A. Cör

1794 Characterization of Cell Activity on Various Metal and Alloy Substrates with Electrochemical Polarization
S. Fujimoto, T. Sugimoto, and S. Hiromoto

1809 Low Polarization Coatings for Enhanced Stimulation and Sensing Performance of Implantable Electrode Applications
C. He and C. Williams

E1 - Solid State Topics General Session

Dielectric Science and Technology, Electronics and Photonics, Energy Technology

1810 AlGaAs/InGaAs Pseudomorphic High-Electron-Mobility Transistor with a Liquid Phase Deposited SiO_2 as Gate Dielectric
K. Lee, H. Lin, F. Lee, and Y. Wang

1811 Reduction of Greenhouse Gas Emissions by Metal Interconnect Etch Process Optimization
P. Frankwicz, L. Gardner, and T. Moutinho

1812 Clustering of Antimony Implanted in Silicon
S. Koffel, P. Pichler, M. Reading, J. Van den Berg, H. Kheyrandish, S. Hamm, W. Lerch, A. Pakfar, and C. Tavernier

1813 Evaluation of Optical Waveguide by Solid Phase Epitaxial Growth of Amorphous Silicon
K. Kim, W. Yoo, B. Kuh, S. Yang, J. Lim, C. Cho, J. Shin, Y. Yoo, H. Choi, S. Kim, K. Na, E. Lee, J. Won, and Y. Kim

1814 Characteristic of Self-Aligned Plug Type PRAM with Low RESET Current
G. Oh, D. Park, D. Im, B. Bae, K. Jung, Y. Chung, D. Kim, J. Kim, D. Ahn, S. Nam, and H. Kang

1815 Characteristics of Annealed Bi_2Te_3 for Thin-Film Thermoelectric Application
H. Hsu, C. Cheng, C. Yeh, Y. Chou, Y. Lin, Y. Chen, and C. Yang

1816 Effect of Substrate Heating on the Optical Properties and Chemical Composition of Sputter Deposited BCN Thin Films
V. Todi and K. Sundaram

1817 Optical and Dielectric Studies on Multiferroic BFO Thin Films Prepared by PLD
A. Singh, R. Katiyar, and R. Katiyar

1818 High Performance and Stability of Amorphous Hf-In-Zn-O Thin Film Transistors under Illumination
H. Kim, J. Park, K. Son, T. Kim, J. Seon, M. Ryu, and S. Lee

1819 Oxidation of Single Crystal Silicon Nanowires
R. G. Mertens and K. Sundaram

1820 Low Temperature Growth of Silicon Nanowires Supported by Cu-Based Catalyst Suitable for Microelectronic Applications
C. Girardot, C. Pernel, V. Ivanova, E. Martinez, P. Gergaud, and V. Jousseaume

1821 Li_4SiO_4-Li_3PO_4 Solid Solutions as Ceramic Electrolytes in Li Metal Cells
L. Zhang, L. Cheng, J. Cabana, G. Chen, M. M. Doeff, and T. Richardson

1822 Optimization of the Electrochemical Cell with an Adsorption Layer for NO_x Removal
J. Shao and K. Hansen

1823 Electrochemical Oxidation of Propene by Use of LSM/CGO and LSF/CGO Porous Electrochemical Reactor
D. Ippolito and K. Hansen

1824 High Conductivity Solid Oxide Electrolyte Composite-Laminates Utilizing Scandia/Ceria Co-Doped Zirconia Core with Yttria Stabilized Zirconia Outer Skins
J. Neutzler, X. Huang, J. Sightler, Y. Chen, and N. Orlovskaya

1825 Ab Initio Calculations of Structural, Electronic, Optical and Elastic Properties of $CsXBr_3$ (X =Ca, Ge, Sn)
M. G. Brik

1826 Irreversible Electrostatic Deposition of Prussian Blue from Colloidal Solutions
E. C. Muñoz, R. Cisternas, R. Córdova, R. Henríquez, H. Kahlert, U. Hasse, and F. Scholz

1827 Electrochemical and Photoelectrochemical Behaviour of Prussian Blue Deposited on α-Fe2O3 Semiconductor Electrodes
E. C. Muñoz, A. Burgos, R. Córdova, R. Henríquez, and R. Schrebler

1828 Photoelectrochemical Reduction of Nitrate Ions onto Porous Silicon and Different Silicon Modified Electrodes
E. C. Muñoz, C. Heyser, R. Schrebler, R. Henríquez, and R. Marotti

1829 Photoluminescence Characterization of the Interface Properties of Si Nanolayers and Nanowires
Y. Sakurai, K. Ohmori, K. Yamada, K. Shiraishi, K. Kakushima, H. Iwai, and S. Nomura

1830 Temperature Dependence of N-H Local Vibration Modes in GaAsN
K. Ikeda, T. Tanaka, S. Wada, M. Inagaki, N. Kojima, Y. Ohshita, and M. Yamaguchi

1831 Improvement of Crystallinity and Pattern Utilizing Surface Modification for Printed OTFT
K. Kim, N. Kwon, and I. Chung

1832 Synthesis of TiO_2 Nanotubes and Photoelectrochemical Analysis of TiO_2/Prussian Blue Interface
E. C. Muñoz, D. Oyarzún, R. Córdova, R. Henríquez, R. Schrebler, and R. Marotti

1833 Synthesis and Characterization of Partially Stabilized Zirconia by doping with CaO
E. Nieto and P. Nandakumar

1834 Electrical and Optical Properties of a New Polymorph of the Tetrathiafulvalene-Chloranil (TTF-CA) Charge Transfer Salt
A. Wixtrom, J. Buhler, S. Pagola, and T. Abdel-Fattah

1835 Fabrication and Characterization of Flexible OTFTs Based on Graphene Electrodes Using Ink Jet Combined with Imprint Process
N. Kwon, K. Kim, S. Bae, B. Hong, and I. Chung

E2 - Atomic Layer Deposition Applications 7

Dielectric Science and Technology, Electronics and Photonics

1836 Current and Future Applications of ALD
I. J. Raaijmakers

1837 Enabling High Performance Instruments for Astronomy and Space Exploration with ALD
F. Greer

1838 Low Temperature Atomic Layer Deposition of Ru Thin Films with Enhanced Nucleations Using Various Ru(0) Metallorganic Precursors and Molecular O_2
S. Kim

1839 ALD Barrier Deposition on Porous Low-k Dielectric Materials for Interconnects
S. Van Elshocht, A. Delabie, S. Dewilde, J. Meersschaut, J. Swerts, H. Tielens, P. Verdonck, T. Witters, and E. Vancoille

1840 Thermally Robust Ohmic Layer Formation and Stable Electrical Properties in $TiCl_4$-Ti/TiN Process Using Cyclic Plasma Method
S. Cheong, E. Lee, H. Park, M. Kang, G. Choi, J. Kim, S. Nam, and H. Kang

1841 Copper-ALD Seed Layer as an Enabler for Device Scaling
J. Mao, E. Eisenbraun, V. Omarjee, A. Korolev, and C. Dussarrat

1842 Plasma Enhanced Atomic Layer Deposited Ru for MIMCAP Applications
J. Swerts, M. Salimullah, M. Popovici, M. Kim, M. Pawlak, A. Delabie, M. Schaekers, K. Tomida, B. Kaczer, K. Opsomer, C. Vrancken, I. Debusschere, L. Altimime, J. Kittl, and S. Van Elshocht

1843 Tailor-Made, Magnetic Nanotubes by Template-Directed Atomic Layer Deposition
K. Nielsch and R. Zierold

1844 ALD Applied To Conformal Coating Of Nanoporous γ-Alumina: Spinel Formation And Luminescence Induced By Europium Doping
E. Rauwel, O. Nilsen, A. Galeckas, J. Walmsley, E. Rytter, and H. Fjellvåg

1845 Replication of Nanoporous Gyroid Polymer Films Using Atomic Layer Deposition for Use in Dye-Sensitised Solar Cells
P. Cunha, M. Scherer, and U. Steiner

1846 Metalcone and Metalcone/Metal Oxide Alloys Grown Using Atomic & Molecular Layer Deposition Techniques
B. Lee, V. Anderson, and S. George

1860 Picosun SUNALE ALD Systems for High Quality Nanocoatings - Bridging the Gap between R&D and Industrial Production
M. Toivola, P. J. Soininen, T. Lehto, and T. Pilvi

1861 High throughput Atomic Layer Deposition for Encapsulation of Large Area Electronics
J. Kools

1862 ALD for Sustainable Future - Paving the Way to Cleaner World from Sub-Nanometer Level
M. Toivola and T. Pilvi

1863 Deposition and Characterization of Atomic Layer Deposited ZnS Thin Films on p-type GaSb(100) Using Diethylzinc Precursor and Hydrogen Sulfide
R. Xu, J. Huang, S. Ghosh, and C. Takoudis

1864 Atomic Layer Deposition of AlN with Tris(Dimethylamido)Aluminum and NH_3
G. Liu, E. Deguns, M. Sowa, R. Bhatia, A. Bertuch, M. Dalberth, L. Lecordier, G. Sundaram, and J. Becker

1865 Atomic Layer Deposition of Thin Superconducting Films and Multilayer for High Energy Particle Accelerator
T. Proslier, J. Klug, N. C. Becker, J. W. Elam, H. Claus, J. Norem, J. Zasadzinski, and M. Pellin

1866 New Ni Amidinate Source for ALD/CVD of Ni Containing Films
H. Li, T. Perera, D. Shenai, Z. Li, and R. Gordon

1867 Development of Novel Silicon Precursors for Low-Temperature CVD/ALD Processes
K. Iwanaga, K. Tada, H. Chiba, T. Yamamoto, A. Maniwa, T. Yotsuya, and N. Oshima

1868 Development of New Alkylgermyl Telluride Molecules and their Use for Room Temperature GST Depositions
H. Ishii, J. Yokota, M. Minoura, and J. Gatineau

1869 Development and Application of Novel Precursors for Atomic Layer Deposition
T. Chung, C. G. Kim, K. An, S. Lee, and B. Park

1870 Study of Atomic Layer Deposition of ZnO on Polar Oxide Substrate by In Situ Quartz Crystal Microbalance
K. Pradhan and P. F. Lyman

1871 Atomic Layer Deposition of Antimony Telluride and Bismuth Telluride using $(Me_3Si)_2Te$ with $SbCl_3$ and Trimethylbismuth as Precursors
D. Gu, D. Nminibapiel, H. Baumgart, H. Robinson, and V. Kochergin

1872 Nanocomposites of ALD Hafnia Tubes Surface Functionalized with Gold Nanoparticles
T. Abdel-Fattah, D. Gu, and H. Baumgart

1873 Molecular Layer Deposition of Flexible, Transparent and Conductive Hybrid Organic-Inorganic Thin Films
B. Yoon, B. Lee, and S. George

1874 Novel Hybrid Organic/Inorganic Photovoltaic Device Configuration Utilizing ALD Technology and Template Based Nanoelectrode Arrays
D. Gu, H. Baumgart, and G. Namkoong

1875 Atomic Layer Deposited Oxides for Passivation of Silicon Photoelectrodes for Solar Photoelectrochemical Cells
B. Kalanyan and G. Parsons

1876 Unique Properties of ALD Al_2O_3 for Si Photovoltaics
G. Dingemans and W. Kessels

1877 High Performance Dye-Sensitized Photovoltaic Cells with Micro-Fiber-Based Photoanodes Using Conformal ALD TiO_2 Coatings
D. Kim and G. Parsons

1878 ALD for Next Generation Nanostructured Dye-Sensitized Solar Cells
N. Tétreault, P. Labouchere, A. Chandiran, and M. Gratzel

E4 - High Dielectric Constant and Other Dielectric Materials for Nanoelectronics and Photonics 9

Dielectric Science and Technology, Electronics and Photonics

1879 MOS Interface Control Technologies for III-V/Ge Channel MOSFETs
S. Takagi, R. Zhang, T. Hoshii, and M. Takenaka

1880 Interaction of Aluminium Oxide with Germanium upon Annealing in Different Atmospheres
C. Radtke, N. Molina Bom, G. Vieira Soares, C. Krug, and I. Jacob Rabin Baumvol

1881 Fabrication of High-κ/Ge Stacks with High Quality GeO_2 Interlayer
Y. Suzuki, Y. Oniki, Y. Iwazaki, and T. Ueno

1882 Theoretical Study of Ge Dangling Bonds in GeO_2 and Correlation with ESR Results at Ge/GeO_2 Interfaces
M. Houssa, G. Pourtois, V. Afanas'ev, and A. Stesmans

1883 Defects and Impurities in Ge-Based Electronic Devices
L. Tsetseris

1884 Theoretical and Experimetal Demonstration of Electronic State of GeO_2
H. Chang, S. Lu, W. Chang, T. Chou, H. Lan, C. Lin, and C. Liu

1885 Fabrication of III-V Nanowire-Based Surrounding-Gate Transistors on Si Substrate
K. Tomioka, J. Motohisa, S. Hara, and T. Fukui

1899 Active Trap Determination at the Interface of Ge and $In_xGa_{1-x}As$ Substrates with Dielectric Layers
A. Molle, S. Baldovino, L. Lamagna, S. Spiga, M. Fanciulli, D. Tsoutsou, E. Golias, A. Dimoulas, G. Brammertz, C. Merckling, and M. Caymax

1900 In Situ Deposited HfO_2 with a-Si Passivation as a Potential Gate Stack for High Mobility (In)GaSb- Based p-MOSFETs
P. Nagaiah, V. Tokranov, M. Yakimov, S. Novak, H. Bakhru, and S. Oktyabrsky

1901 Molecular Beam Epitaxial Growth and Passivation of "6.1" Semiconductors for Advanced p-QWFET Devices
C. Merckling, A. Alian, X. Sun, M. Heyns, M. Caymax, and J. Dekoster

1902 SF_6 Plasma Treated High κ Dielectrics Engineering on InP Metal-Oxide-Semiconductor Field-Effect-Transistors
Y. Wang, H. Zhao, Y. Chen, F. Xue, F. Zhou, and J. Lee

1903 Properties of Oxide Heterostructures
A. Demkov, A. Posadas, H. Seo, and J. Lee

1904 Effect of Strain and Dimensionality on the Properties of Manganites
C. Adamo, R. Misra, N. Benedek, S. Denev, A. Sengupta, J. Mundy, J. Lee, D. Muller, V. Gopolan, C. Fennie, P. Schiffer, and D. Schlom

1905 Characterization of the Solid State Properties of Anodic Oxides on Ta-Nb Alloys as a Function of the Anodizing Conditions
F. Di Franco, G. Zampardi, M. Santamaria, F. Di Quarto, and H. Habazaki

1906 Synthesis of $La_xAl_{2-x}O_3$ Films Using Ultrasonic Spray Pyrolysis Technique
A. N. Meza-Rocha, M. Perez-Arrieta, E. Zaleta-Alejandre, Z. Rivera, R. Balderas, and C. Falcony

1907 $In_{0.7}Ga_{0.3}As$ Tunneling Field-Effect-Transistors with $LaAlO_3$ and ZrO_2 High-k Dielectrics
F. Xue, H. Zhao, Y. Chen, Y. Wang, F. Zhou, and J. Lee

1908 Conduction Currents and Paramagnetic Defect Centers in UV-Illuminated Silicon Nitride Films
K. Ishikawa and K. Kobayashi

1909 Si_3N_4 as a Useful Passivation Gate Dielectric for InGaAs MIS Stacks
I. Krylov, A. Gavrilov, S. Cohen, D. Ritter, and M. Eizenberg

1910 Size-Dependent Trapping Effect in Nano-Dot Non-Volatile Memory
C. Tsai, C. Cheng, T. Chang, K. Chou, A. Chin, and F. Yeh

1912 Deposition Mechanism and Electrical Property of CeO_2 Thin Films by MOCVD with H_2O Introduction
N. Tada, T. Kitaru, H. Shimada, T. Izu, S. Suzuki, K. Ishibashi, and Y. Yamamoto

1925 Near Room-Temperature Liquid-Phase Deposition of Barium-Doped TiO_2 on n-GaN and its Application to AlGaN/GaN MOSHEMTs
C. C. Hu, M. Lin, T. Wu, F. Adriyanto, P. Sze, C. Wu, and Y. Wang

1926 Impact of ALD Gate Dielectrics (SiO_2, HfO_2, and SiO_2/HAH) on Device Electrical Characteristics and Reliability of AlGaN/GaN MOSHFET Devices
B. Lee, C. Kirkpatrick, Y. Choi, X. Yang, Y. Wang, X. Yang, A. Huang, and V. Misra

1927 Synchrotron Radiation Nano-Spectroscopy of Dielectrics for LSI and ReRAM
M. Oshima

1928 High Speed Switching Characteristics of Pt/Ta_2O_5/Cu Memresistive Switch
P. Shrestha, K. P. Cheung, A. Ochia, H. Baumgart, and G. Harris

1929 High Performance Cu-Doped SiO_2 ReRAM by a Novel Chemical Soak Method
F. Chin, W. Yang, T. Chao, Y. Zhang, L. Lin, S. Liu, and C. Lin

1930 Effect of Top Electrode Material on Resistive Switching Characteristics in MnO_2 Nonvolatile Memory Devices
Y. Tsai, T. Chang, C. Lin, L. Chiang, S. Chen, S. Sze, and T. Tseng

1931 Resistive Switching Characteristics of Core-Shell Nanoparticles of Metal-Oxide on Flexible Substrates
J. Yoo, Q. Hu, Y. Baek, C. Kang, H. Lee, and T. Yoon

E5 - Processing Materials of 3D Interconnects, Damascene and Electronics Packaging

Dielectric Science and Technology, Electrodeposition, Electronics and Photonics

1932 Additive Behavior in Cu Electroplating and the Recrystallization of Plated Cu
Q. Huang, B. Baker-O'Neal, J. Kelly, and C. Cabral Jr.

1933 Robust Ultrathin (20-25 nm)Trilayer Dielectric Low k Cu Damascene Cap for Sub-30 nm Nanoelectric Devices
S. V. Nguyen, T. Haigh, M. Tagami, A. Grill, S. Cohen, H. Shobha, C. Hu, E. Adams, E. Liniger, T. Shaw, T. Cheng, H. Yusuff, Y. Xu, T. Ko, S. Molis, T. Spooner, S. Skordas, X. Liu, G. Bonilla, and D. Edelstein

1934 Multivariate Statistical Process Control of Copper ECD by Early Fault Detection and Diagnosis Using In Situ DC/AC Electrochemical Sensor Coupled with D- and Q-Statistic
A. R. Jaworski, H. Wikiel, and K. Wikiel

1935 A Rotating Ring-Disk Study of Interactions Among SPS, Cuprous Ion and Oxygen
Y. Chen and D. Barkey

1936 Evaluation of Grain Size Distributions of Cu Interconnects with Less than 100nm Width by X-ray Diffraction Method
T. Inami and J. Onuki

1937 Investigation of Cu Electroless Deposition Mechanism by Open Circuit Potential Measurement
T. Lim, K. Park, M. Kim, O. Kwon, and J. Kim

1938 Detection of Electrochemically Active By-Products and Contaminants in Plating Baths Used in Semiconductor Wafer Level Packaging
M. Pavlov, E. Shalyt, and P. Bratin

1939 Resistivity Reduction for Very Narrow Cu Wiring
J. Onuki, Y. Sasajima, and K. Tamahashi

1940 Predictive Analytical Fill Model of Interconnect Metallization Providing Optimal Additives Concentrations
J. D. Adolf and U. Landau

1941 Electrolyte Additive Chemistry and Feature Size-Dependent Impurity Incorporation for Cu Interconnects
J. Kelly, T. Nogami, C. Parks, O. van der Straten, J. Demarest, J. Li, P. DeHaven, C. Hu, E. Liniger, C. Penny, and T. Vo

1942 In Situ Studies of the Initial Stages of Co Thin Film Deposition on Barrier Layer Materials
W. Zhang, K. Hughes, R. Nahm, J. Engstrom, P. Ma, and D. Thompson

1943 Simulation of Shape Evolution in Through-Mask Electrochemical Deposition
P. R. McHugh, G. Wilson, and T. Ritzdorf

1944 An Alkaline Copper Plating Process Providing High Nucleation Density on Ru and Bottom-Up Fill
A. Joi and U. Landau

1945 Single Diallylamine Type Copolymer Additive which Perfectly Fills Cu Electrodeposition with only 1ppm
K. Kondo, M. Takeuchi, H. Kuri, M. Bunya, N. Okamoto, and T. Saito

1946 High Speed Copper Electrodeposition for through Silicon Via(TSV)
T. Hayashi, K. Kondo, M. Takeuchi, T. Saito, N. Okamoto, and M. Bunya

1947 Tailored Design of Suppressor Ensembles for Damascene and 3D-TSV Copper Plating
A. Flügel, M. Arnold, A. Wagner, I. Chang, D. Mayer, N. Hai, M. Trung, F. Weiss, V. Grimaudo, W. Reckien, T. Bredow, and P. Broekmann

1948 Vapor Deposition of Highly Conformal Copper Seed Layers for Plating through-Silicon Vias, Including Silica Insulator and Manganese Nitride Barrier and Adhesion Layers
Y. Au and R. Gordon

1949 The Bottom-Up Copper Fill of Ø5µm × 40µm Vias Using 2-Component Model Chemistry
A. Radisic, L. Yang, C. Drijbooms, and H. Bender

1950 Electroless Barrier Deposition with Pd Nanoparticle Catalyst in High Aspect Ratio TSV
H. Miyake, F. Inoue, R. Arima, T. Shimizu, and S. Shingubara

1966 Chip-Level Packaging of MEMS Devices Using Air-Gap Structures
N. Fritz, R. Saha, S. Bidstrup Allen, and P. Kohl

1967 Advances in Wafer Bonding for 3D Integration
J. Lu

1968 Complaint Cu-to-Cu Electroless Bonding for High-Density Off-Chip Interconnection
H. Koo, R. Saha, and P. Kohl

1969 Polycarbonates as Temporary Wafer-Wafer Adhesives
N. Fritz, S. Bidstrup Allen, and P. Kohl

1970 Design and Verification of BCB Templates for Chip-to-Wafer Alignment in 3D Integration
D. Zhang and J. Lu

1971 Tungsten CMP Process on a Dual Head Polishing Platform: Effect of Slurry Abrasive Concentration and Process Temperature
Z. Wang, R. Peng, S. Xia, and S. Tsai

1972 3D Integration and Reliability
T. Tanaka, K. Lee, T. Fukushima, and M. Koyanagi

1973 Self-Controlled Constant-Current Temperature Stress for Triangular Voltage Sweep Measurements of Cu
I. Ciofi, M. Mannarino, Y. Li, K. Croes, and G. Beyer

1974 Wafer Test Technology for 3D-Integrated Circuits
Y. Nakata

1975 Mechanical and Electrochemical Analysis of UV Cured Conductive Composites Containing Photopolymerized Polypyrrole
J. Byrom, S. Kasisomayajula, and V. J. Gelling

1976 The Performance and Density Advantages of 3D FPGA
Y. Nakagawa, K. Osada, T. Matsumura, H. Koike, N. Miyamoto, and K. Takeda

1977 Processing Methods for Polynorbornene Dielectric with Superior Mechanical and Electrical Properties
M. Raeis-Zadeh and P. Kohl

E6 - Photovoltaics for the 21st Century 7

Energy Technology, Dielectric Science and Technology, Electronics and Photonics, Industrial Electrochemistry and Electrochemical Engineering, Electrodeposition

1978 Segmented Modeling of Large-Area VHF PECVD Thin-Film Amorphous Silicon Deposition System
K. Shenai, K. Shah, R. Raju, and A. Vijh

1992 Characterization of Cu_2O Hybrid Diode with Structural Controlled C_{60}
M. Izaki, T. Ohata, K. Murata, T. Saitoh, F. binti Mohamad, and J. Sasano

1993 Reduced Graphene Oxide-Copper Sulfide Nanocomposites as Electrocatalysts in Quantum Dot Solar Cells: Overcoming the Platinum-Sulfur Relationship
J. Radich, R. Dwyer, and P. Kamat

1994 Antimony Sulfide Absorbers in Solar Cells
P. Nair, R. González Lua, M. Calixto Rodríguez, J. Capistrán Martínez, O. GomezDaza, and M. Nair

1995 Electrochemical Deposition of Ni_3S_2 for Photovoltaic Applications: Colloidal Sulfur Stabilization by Gelatin
M. Pac and M. Tao

1996 Density Functional Investigation of Charge Transfer in Organic Solar Cell
B. S. Pujari, S. Gusarov, M. Brett, and A. Kovalenko

1997 Effect of $[Zn^{2+}]$ Concentration on the Formation of Zinc Sulfide Film as a Buffer Layer of $Cu(In,Ga)Se_2$ Thin Film Solar Cells
Z. Zhong, Z. Li, E. Cho, and S. Kwon

1998 Photo-Induced Charge Extractoin Linerar Increasing Voltage (Photo-CELIV) Measurement of CNT/CIGS Solar Cells
S. Han

1999 Effects of Na Precursor Layer Deposited on Mo Substrate about $(In,Ga)_2Se_3$ and CIGS Layers
Y. Shin, C. Lee, and B. Ahn

2000 Fabrication of $Zn_{1-x}Mg_xO$ Buffer Layers for CIGS Solar Cells by Atomic Layer Deposition Using $Mg(CpEt)_2$ as a Mg Source
C. Lee, Y. Shin, and B. Ahn

2001 Effects of In Situ Boron Doping in Si Epitaxial Growth on a VIC Processed Poly-Si Seed Layer Using Hot-Wire CVD
S. Kang, K. Ahn, C. Lee, S. Mun, and B. Ahn

2002 Branched TiO_2 Nanorod Arrays Coated by TiO_2 Nanosheets for Dye Sensitized Solar Cells
W. Guo, D. Zheng, M. Lu, and C. Lin

2003 Synthesis of ZnO Nanobrush for Application in Dye-Sensitized Solar Cells
Y. Luo, K. Huang, and J. Huang

2004 Graphene-CdSe Quantum Dot Electrodes Fabrications for Solar Cells Using Electrophoretic Deposition
M. Jung and M. Kang

2005 Preparation of Graphene/Multi-Walled Carbon Nanotube Hybrid and its Use as Photoanodes of Dye-Sensitized Solar Cells
M. Yen, M. Hsiao, S. Liao, P. Liu, C. Ma, N. Pu, and M. Ger

2006 Partially Dyed TiO_2 for RT Photoanode Fabrications
H. Kim and M. Pyo

2007 Effect of Internal Stress on the Chemical Texturing of Sputtered Al:ZnO Layers for Light-Trapping in Thin Film Solar Cells
S. Michotte, Q. Van Overmeere, E. Van Caloen, I. Sbille, R. Santoro, and J. Proost

2008 Experimental Study of Phosphorus Diffusion Gettering in n-type Multicrystalline Silicon
J. Lindroos, H. Talvitie, A. Haarahiltunen, M. Yli-Koski, and H. Savin

2009 Novel Organic Solar Cell Based on Polyaniline - Carbon Nanotubes Composite
S. Ebrahim, T. Abdel-Fattah, and M. Soliman

2010 Heuristics Assisted Optimization of Processing Parameters of dyed TiO_2 for RT Photoanode Fabrications
E. Bae, M. Pyo, and K. Sohn

2011 Electrochemical Fabrication of Titanium Oxide Film from an Aqueous Solution Containing Titanium Ion and Hydroxyl Amine
H. Ishizaki and S. Ito

2012 Electrochemically Generated Fluorescent Fullerene[60] Nanoparticles
L. Fan and E. Yifeng

2013 Low Cost Hybrid Solar Cell Integration on Wall Tiles
M. D. Reyes Tolosa, J. Orozco Messana, M. Hernández Fenollosa, R. Camaratta, A. Niedersberg, H. Bolink, A. Soriano, and H. Brine

2014 Sensitization of Porous Silicon with Germanium Quantum Dots for Up-Conversion of Low Energy Photons via Intermediate Band for Third Generation Solar Cells
A. Karoui and A. Kechiantz

2015 Ge Quantum Dots Embedded in SiO_2 or SiN_x: Synthesis and Light Absorption
S. Mirabella, A. Gentile, S. Cosentino, N. Piluso, G. Nicotra, E. Esposito, M. Camalleri, F. Simone, and A. Terrasi

2016 Strain Induced Nano-Structured $Si_{1-X}Ge_X$ Grown on Silicon by UHV-RTCVD for Photovoltaics
A. Karoui, A. S. Ethiraj, and F. Karoui Sahtout

2017 ZnO Nanowire Arrays Sensitization with Different Absorber Materials for Fabrication of Nanostructured Solar Cells
R. Salazar, S. Sanchez, A. Delamoreanu, C. Lévy-Clément, and V. Ivanova

2018 A Greener Electrodeposition Recipe for Zinc Oxide Films
B. Zhou and M. Tao

2019 Supramolecular Solar Cells - Water Soluble Porphyrin Adsorption on Tin Oxide and their Photoelectrochemical Studies
N. Subbaiyan, E. Maligaspe, and F. D'Souza

2020 $CuInS_2$ Quantum Dots Coated with CdS as High-Performance Sensitizers for TiO_2 Electrodes in Hydrogen Production and Photovoltaic Applications
T. Li and H. Teng

2021 Hybrid Nitride-ZnO Solar Cells
G. Namkoong, G. Diefeng, S. Bae, D. Kim, D. Seo, D. Lee, S. Jeon, and H. Baumgart

2022 Flexible High Efficiency Luminescent Solar Concentrators
J. P. Ziegler, H. Walker, R. Griffey, and N. Wyeth

2023 Three Dimensionally Back Contacted Chalcogenide Heterojunction Solar Cells
C. M. Hangarter, B. Hamadani, J. Guyer, S. Jung, C. Beauchamp, and D. Josell

2024 Chemically Deposited Tin Chalcogenides as Absorbers in Thin Film Solar Cells
M. Nair, A. García, M. Aragón-Silva, E. Barrios-Salgado, J. Campos, and P. Nair

2025 Electroplated Cu_2ZnSnS_4 (CZTS) Thin Films Solar Cells
S. Ahmed, K. Reuter, D. Mitzi, H. Deligianni, and L. Romankiw

2026 Synthesis of Cu_2ZnSnS_4 (CZTS) Absorber Layer and Metal Doped ZnS Buffer Layer for Heterojunction Solar Cell Applications
A. I. Inamdar, K. Jeon, H. Woo, W. Jung, H. Im, and H. Kim

2027 Investigation of Electrically Active Defects in n-CdS/p-CdTe Solar Cells
P. R. Kharangarh, D. Misra, G. Georgiou, and K. Chin

2028 CdTe Thin Film Solar Cells - Materials Science Challenges of Advanced Physical Concepts
W. Jaegermann

2029 Electroplated Diffusion Barriers for Flexible Photovoltaics
L. Guo, M. Mason, H. Deligianni, and L. Romankiw

2030 Fabrication of $Cu(In,Ga)Se_2$ Thin Films by Selenization of Stacked Elemental Layer with Solid Selenium
Z. Li, E. Cho, and S. Kwon

E7 - Semiconductor Cleaning Science and Technology 12 (SCST 12)

Electronics and Photonics

2070 Lattice Boltzmann Simulation of Cavitation and Particle Behavior Induced by Sonication Transducer
H. Kim and T. Kim

2071 Cleaning Challenges of EUV Mask Substrates, Blanks, and Patterned Mask
A. Rastegar, M. House, and A. John Kadaksham

2072 Design, Fabrication and Performance Test of a Quartz Horn Megasonic Waveguide for Semiconductors Cleaning
H. Kim, Y. Lee, and E. Lim

2073 Electrochemical Degradation of Oxytetracycline on Modified Electrode of Ti/TiO_2 and ITO/TiO_2
C. Berríos, D. Quezada, and M. Ureta-Zañartu

E8 - State-of-the-Art Program on Compound Semiconductors 53 (SOTAPOCS 53)

Electronics and Photonics, Luminescence and Display Materials

2074 Nitride Semiconductors: Why They Work in Optoelectronic Devices?
T. D. Moustakas

2075 MBE Growth of AlInN and AlInN/GaN Heterostructures for Intersubband Device Applications
M. Manfra

2076 The Thermal Response of Gallium Nitride HFET Devices Grown on Silicon and SiC Substrates
F. N. Donmezer and S. Graham

2077 Space Charge Limited Current in GaN Heterostructure Nanowires
M. Mastro

2078 Controlled Growth of III-V Nanowires for Energy Applications
S. Gradecak, S. Lim, S. Crawford, M. Brewster, S. Ren, and M. Tambe

2079 Fabrication of AlGaN/GaN/AlGaN Double Heterostructure HEMT on Diamond
E. L. Piner

2080 Effect of Source Field Plate on the Characteristics of Off-State, Step-Stressed AlGaN/GaN High Electron Mobility Transistors
L. Liu, T. Kang, D. Cullen, L. Zhou, J. Kim, C. Chang, E. Douglas, S. Jang, D. Smith, S. Pearton, W. Johnson, and F. Ren

2081 Reliability Issues in AlGaN/GaN High Electron Mobility Transistors
E. Douglas, L. Liu, C. Lo, B. Gila, F. Ren, and S. Pearton

2094 Probing the Radiative Limits of III-V Quantum Wells
R. E. Welser, O. Laboutin, and W. Johnson

2095 Heterogeneous Integration of III-V Devices and Si CMOS on a Silicon Substrate
T. E. Kazior

2096 Evaluation of the High Temperatures Influence on High Frequency C-V Curves of MOS Capacitor
M. Bellodi and A. Borges Ziliotto

2097 Three-Dimensional Numerical Simulation of Thermosolutal Marangoni Convection in a Liquid Bridge Under Zero Gravity
H. Minakuchi, Y. Takagi, Y. Okano, S. Gima, and S. Dost

2098 The Reliability Study and Device Modeling for p-HEMT Microwave Power Transistors
S. Liu, T. Chang, T. Chang, H. Kao, C. Cheng, and A. Chin

2099 Investigation of Electrodeposited and Solution Grown ZnO Nanorod Based UV Photo Detector
S. Dalui

2100 Forster Resonance Energy Transfer between Colloidal CdSe/ZnS Core/Shell QDs and Non-Polar a-plane GaN LEDs
M. Park, J. Kwak, J. Kim, K. Choi, and J. Xu

2101 Plasmon Resonant Enhancement of Photocatalytic Solar Fuel Production
Z. Liu, W. Hou, W. Hsuan, P. Pavaskar, and S. B. Cronin

2102 Cation Exchange Approach to $Cd_{1-x}Zn_xSe$ Nanorods with Enhanced Photocatalytic Activity
A. T. Nguyen, Y. Chiou, and Y. Hsu

2103 Enhanced Photoelectrochemical Properties of CdS/ZnO Supported on Carbon Nanotube Films
L. Dong and J. Malone

2104 Plasmonic Nanoantenna-Induced SERS Spectra at Atomically Defined Catalytic Pt-Group Metal Surfaces
K. Ikeda and K. Uosaki

2105 Enhancement of Electrochromic Switching Performance in a Subwavelength Nanoplasmonic Slit
E. C. Walter, A. Agrawal, H. Lezec, and A. Talin

2106 Combination of the Opposing Effects of Silver Nanoparticles and Peptide Nucleic Acids on Dye-Sensitized Solar Cells to Enhance their Respective Positive Influence
N. Loew, S. Ikenouchi, and M. Ihara

2107 Indium Tin Oxide Nanofibers and their Applications for Dye-Sensitized Solar Cells
S. Chuangchote, T. Sagawa, and S. Yoshikawa

2108 Adding New Capabilities to Silicon CMOS Integrated Circuits via Deterministic Programmed Assembly
T. S. Mayer, J. Kim, T. Morrow, B. Won, M. Li, W. Hu, X. Zhong, S. Dean, K. Sun, J. Mayer, and C. Keating

2109 Graphene Formation on 4H-SiC(0001) Surface Flattened by Catalyst-Assisted Chemical Etching in HF Solution
H. Sakane, K. Nishitani, A. Hattori, T. Okamoto, K. Kawai, J. Uchikoshi, Y. Sano, M. Morita, K. Yamauchi, and K. Arima

2110 Graphene/SiC/Si FETs with SiCN Gate Stack
T. Suemitsu, M. Kubo, H. Handa, R. Takahashi, H. Fukidome, M. Suemitsu, and T. Otsuji

2111 Hydrogen Detection by CVD-Graphene Coated with Pt Film
B. Chu, J. Nicolosi, C. Lo, W. Strupinski, S. Pearton, and F. Ren

2112 Effects of Post-Deposition Annealing Atmosphere and Duration on Sol-gel Derived Amorphous Indium-Zinc-Oxide Thin-Film Transistors
W. Chung, T. Chang, H. Li, T. Tseng, and Y. Tai

2113 The Impact of Active Layer Pre-Treatment on Bias Stress Stability of Sol-gel Derived Amorphous Indium-Gallium-Zinc-Oxide Thin Film Transistors
W. Chung, T. Chang, H. Li, Y. Chen, I. Li, T. Tseng, and Y. Tai

E9 - ULSI Process Integration 7

Electronics and Photonics

2114 Monolithic Photonic Integration on the Silicon Platform
L. C. Kimerling

2115 Efficient Guiding Principle of Highly Scalable MONOS-Type Memories
K. Shiraishi, K. Yamaguchi, K. Kamiya, A. Otake, and Y. Shigeta

2116 Vertical Structured Cells and Vertical Stacked Cells for Nano-Generation High Density Memory
T. Endoh

2117 High-K Dielectrics / High-Mobility Channel MOSFETs
J. Lee, F. Xue, Y. Chen, Y. Wang, and F. Zhou

2118 Device and Integration Technologies of III-V/Ge Channel CMOS
S. Takagi, M. Yokoyama, S. Kim, R. Zhang, and M. Takenaka

2119 Issues and Challenges of High-κ Dielectrics on High-Mobility Substrates
D. Misra

E10 - GaN and SiC Power Technologies

Dielectric Science and Technology, Electronics and Photonics

F1 - Current Trends in Electrodeposition - An Invited Symposium

Electrodeposition

F2 - Electrodeposition of Nanoengineered Materials and Devices 4

Electrodeposition, Sensor

2216 Deposition of Palladium Open Shell Nanoparticles onto Ordered Titania Nanotube Arrays for Electrocatalysis
A. Lavacchi, Y. Chen, C. Bianchini, L. Derogatis, F. Vizza, and M. Innocenti

2217 Platinum Alloy Nanotubes for Methanol Fuel Cells
N. E. Holubowitch, L. Nagle, and J. Rohan

2218 Large-Scale Synthesis in Bimetallic Core-Shell Structured Nanoparticles Using the Kinetically-Controlled Autocatalytic Chemical Process
F. Taufany, C. Pan, J. Rick, H. Chou, M. Tsai, B. Hwang, D. Liu, J. Lee, M. Tang, Y. Lee, and C. Chen

2219 Direct Electrodeposition of AuZn Nanowires in Zinc Chloride-1-Ethyl-3-Methylimidazolium Chloride Ionic Liquids
Y. Hsieh and I. Sun

2220 Cu2O and Fe2O3 modified TiO2 nanotubes for Photoelectrochemical Solar Cell Applications
L. Tsui, L. Wu, N. Swami, and G. Zangari

2221 Facile Synthesis of Platinum Nanoflower Monolayer on Single-Walled Carbon Nanotube Membrane
L. Su, W. Jia, and Y. Lei

2222 The Effect of MPSA on the Metallization of Electrochemically Patterned Nano Templates
K. A. Nelson and J. N. Harb

2223 Conducting Polymer Nanopore Arrays. Selective Filling of TiO_2 Nanotubes with Polypyrrole
D. Kowalski and P. Schmuki

2224 Observation of Electrodeposition and Dissolution Dynamic Processes Using In-Situ LCM-DIM with Atomic Scale
Y. Kim, R. Wen, A. Lahiri, M. Azhagurajan, K. Sashikata, and K. Itaya

2225 Magnetoresistance of Electrodeposited Nanocontacts
J. George, R. Sharma, S. Elhalawaty, R. Carpenter, D. Litvinov, and S. Brankovic

2226 Electrodeposition of Metal-Oxide-Metal Nanowire Heterostructures for ReRAM Applications
D. Perego, F. Amiri, L. Cattaneo, S. Franz, M. Bestetti, G. Tallarida, S. Brivio, and S. Spiga

2227 Synthesis and Magnetic Properties of Ordered, Vertically-Aligned Au Nanowires Embedded in Ferromagnetic Matrices
I. S. Chi, K. Bussmann, J. D. Caldwell, and R. C. Cammarata

2257 Photoelectrochemical Properties of Brush Plated CdSTe Films
M. Matheline, R. John, and K. R. Murali

2258 Pulse Electrodeposited $CuInTe_2$ Films
V. Chandran, S. Srinivas, and K. R. Murali

2259 Pulse Electrodeposited $CuGaSe_2$ Films and Their Properties
C. Chitra, V. Sampathkumar, and K. R. Murali

F3 - Fundamentals of Electrochemical Growth: From UPD to Microstructures 2

Electrodeposition

2260 Next-Generation Methods for Integration of Experiments, Theory and Modeling for Electrochemical Phase Formation
R. C. Alkire

2261 First Principles Studies of Trends in Metal Electrodeposition
J. Greeley

2262 Giant Electric Field Effects on Magnetism of Ultra Thin Films: An All Electrochemical Approach
P. Allongue, F. Maroun, N. Tournerie, A. Engelhardt, and R. Novak

2263 On the Electrochemical Phase Formation in Ionic Liquids
A. Ispas and A. Bund

2264 Room-Temperature Electrochemical Reduction of Epitaxial Magnetite Films to Epitaxial Iron Films
J. A. Switzer, Z. He, R. Gudavarthy, and J. A. Koza

2265 Underpotential Deposition on Submonolayer Modified Single Crystal Surfaces
Q. Yuan and S. Brankovic

2266 New Technologic Substrates by Electrodeposition for Energy Devices
M. Innocenti, L. Becucci, S. Bellandi, I. Bencistà, F. Di Benedetto, F. Loglio, M. Muniz Miranda, M. Romanelli, and M. Foresti

2267 Electrodeposition of Metals in Catalysts Syntheses: A Case of Platinum Monolayer Electrocatalysts
M. Vukmirovic, S. Bliznakov, K. Sasaki, J. Wang, and R. R. Adzic

2268 Pt Deposition by Surface Limited Redox Replacement of H-UPD
N. Vasiljevic, J. Nutariya, M. Fayette, and N. Dimitrov

2269 Layer-by-Layer Formation of Pt Ultrathin Films on Au(111) Surface Studied by in situ Resonance Surface X-ray Scattering
T. Kondo, M. Shibata, T. Masuda, and K. Uosaki

F4 - Semiconductors, Metal Oxides, and Composites: Metallization and Electrodeposition of Thin Films and Nanostructures 2

Electrodeposition

2296 Electrodeposition of VO_2 Thin Films for Memory Applications
J. A. Koza, Z. He, A. Miller, and J. A. Switzer

2297 Electrodeposition of Semiconductors in the Magnetic Field
R. Kowalik, K. Mech, and P. Zabinski

2298 Electrodeposition of CIS Films on the Mo Back Electrodes with Different Crystallinities
H. Huang, H. Kang, and C. Lin

2299 Synthesis and Characterization of Electrodeposited SbxTey Thin Films
J. Lim, I. Yoo, M. Park, D. Lim, N. Myung, and K. Lee

2300 Thin Silicon Film Deposition by Unilateral Electroreduction at the Surface of Nanosilicon Ballistic Electron Emitter
T. Ohta, H. Yoshimura, B. Gelloz, and N. Koshida

2301 Molecular Control Over Bare and TBBT Covered n-GaAs(110)/DMSO Electrified Interface
V. Lazarescu, L. Preda, M. Anastasescu, G. Dobrescu, C. Negrila, and M. Lazarescu

2302 Gold Metallization of Silicon by Galvanic Displacement for MEMS and Electrochemical Sensors
A. Raygani and L. Magagnin

2303 Mechanism Study of Ag Catalyzed Directional Etch of Silicon for Nanowire Formation
I. Shao and L. Gignac

2304 Modification of Vertically-Aligned Multi-Walled Carbon Nanotube Arrays with Nanoparticles using Electrodeposition and Applications in Sensing
J. Yang, W. Zhang, and S. Gunasekaran

2305 Surface Characterizations and Activity Studies of SnO_x/Pt for Ethanol Oxidation Reaction
S. Axnanda, W. Zhou, M. G. White, J. Hrbek, and R. R. Adzic

2306 Super Dense TiO_2 Films on Glass, FTO and Silicone Substrates Made by Dip Coating
J. Prochazka, L. Kavan, M. Zukalova, and A. Poruba

2307 Preparation of Metallic and Polymeric Nano-Plates in Lamella Liquid Crystal Systems by Electrochemical Method
T. Liu

2308 Surface States- and Field Effects at Au-MPC-modified GaAs(100) Electrodes
L. Preda, M. Enache, M. Anastasescu, C. Negrila, F. Vasiliu, M. Lazarescu, and V. Lazarescu

2337 Fabrication and Properties of Metal/Diamond Composite Plating Films
S. Arai, Y. Tashiro, M. Vu Hoang, and Y. Suzuki

G1 - Industrial Electrochemistry and Electrochemical Engineering General Session

Industrial Electrochemistry and Electrochemical Engineering

2338 Comments on the Parasitic Copper Deposition during Cathodic Reduction in Copper Chloride Thermo-Chemical Cycle
M. Reda

2339 Functional Hard Chrome Plating from a Trivalent Bath
M. Inman, T. Hall, and E. Taylor

2340 Surface Finishing of Passive Materials in Low Viscosity Aqueous Electrolytes
E. Taylor, H. McCrabb, H. Garich, T. Hall, and M. Inman

2341 Sensitivity Analysis of Design Variables of an All-Vanadium Redox-Flow Battery
M. Moore, R. M. Counce, J. Watson, and T. A. Zawodzinski Jr.

2342 Experimental Study of Desulfurization of Crude Fraction by In Situ Generated Hydrogen-The Role of Hydrogen Atoms
A. D. Hammad, Z. Yusuf, and N. Rasheedi

2343 Ta Compound Film as New Anode Material for Polymer Electrolyte Water Electrolysis
K. Yamauchi, K. Matsuzawa, K. Ota, and S. Mitsushima

2344 Investigation of the Mass Transport Processes in the Electro-oxidation of Organic Compounds for Wastewater Treatment
Q. Ni, D. W. Kirk, and S. Thorpe

2345 Electrochemical Disinfection in Chloride-Free Electrolyte using Boron-Doped Diamond Anode in the Presence of Organic Matters
H. Li, X. Zhu, and J. Ni

2346 Novel Electrode for Water Purification based on Nanodiamonds
J. Lee, K. Jaeeun, K. Jaeyoung, and K. Hyorang

2347 An Attempt to Improve Mn-Mo-Sn Oxide Anodes for Oxygen Evolution in Seawater Electrolysis for Hydrogen Production
Z. Kato, K. Koizumi, K. Izumiya, N. Kumagai, and K. Hashimoto

2348 Electrochemically Regenerable Filter for Pb Removal from Water with Selectivity
H. Kim, C. Kim, J. Lee, H. Yang, and H. Kang

2349 Development of an Electroactive Membrane for Lithium Recovery by Electrochemical Means
C. Locati and E. Kelder

2365 Polyethylene Oxide Design for Lithium Transference
S. O'Neill, R. Tu, and D. Steingart

G2 - Nanostructured Materials: Chemistry & High-Temperature Applications

High Temperature Materials

2366 A Facile Antisolvent Approach to Au-Decorated ZnO Nanocrystals with Improved Photocatalytic Activity
W. Lin and Y. Hsu

2367 Ag_2O-Sensitized GaOOH Nanorods Exhibiting Charge Carrier Separation under Visible Light Illumination
Y. Hsu and Y. Hsu

2368 High Temperature Oxygen Sensors Based on Metal Oxide Nanofibers
Y. Liu, Y. Ding, H. Gao, P. Gao, and Y. Lei

2369 Low Temperature Method for Large Scale Growth of ZnO Nanotetraopods
J. Hooda, S. Mann, A. Mann, and V. Parkash

2370 High-Performance Composite Cathode with Tailored Microstructure and Mixed Conductivity for Application in Intermediate Temperature Solid Oxide Fuel Cells Based on Proton Conducting Electrolytes
E. Fabbri, L. Bi, D. Pergolesi, and E. Traversa

2371 Pulsed Laser Deposition of Superlattices Based on Ceria and Zirconia
D. Pergolesi, A. Tebano, F. Fabbri, G. Balestrino, and E. Traversa

2372 Charge Carrier Dynamics for ZnO-decorated ZnSe Nanorods Prepare from Cation Exchange Process
M. Chen and Y. Hsu

2373 In Situ Signal Analysis Studies of Electrical Properties of Porous Anodic Alumina Oxide during Anodizing
J. Iuliucci and D. Barkey

2374 A Model of Anodic Pore Growth in Alumina Using the Smoothed Boundary Method
S. DeWitt, H. Yu, and K. Thornton

2375 Development of Ultra Highly Porous Solid Oxide Electrolysis Cell
K. Hamamoto, M. Fukushima, Y. Yoshizawa, T. Suzuki, Y. Fujishiro, and M. Awano

2376 Microstructural Evolution and High Temperature Stability of Pd:TCO Thermoelectric Nanocomposites
M. Amani, O. Gregory, and G. Fralick

2377 Transferring Porous Silicon Layer onto a Desirable Substrate
K. Chen, J. Hsu, B. Song, W. Lee, Y. Lin, X. Zhou, C. Hsu, C. Huang, C. Ho, and T. Lee

2378 Fabrication of Composite Nanoporous Si Films with Gold Nanoparticles to Enhance the Efficiency of Silicon Solar Cells
H. Hachimura, K. Nam, Y. Tanaka, and M. Ihara

2379 Characterization of Copper Nanostructures Grown on Porous Silicon by Displacement Deposition
H. Bandarenka, V. Petrovich, O. Komar, P. Nenzi, and M. Balucani

H1 - Carbon Nanotubes and Nanostructures: From Fundamental Properties and Processes to Applications and Devices

Fullerenes, Nanotubes, and Carbon Nanostructures, Dielectric Science and Technology, Sensor, Energy Technology

2380 Relative Populations for the Mixed $X_2S@C_{82}$ Endohedrals
Z. Slanina, T. Akasaka, and S. Nagase

2381 Influence of on Pair Formation Processes on the Redox Properties of Fullerenes
K. Winkler, E. Grądzka, and A. Picón Marín

2382 Redox and Optical Properties of Corannulene Species and Their Electrochemically Generated Graphene-like Films
G. Valenti, J. Quimby, C. Fontanesi, L. Scott, F. Paolucci, and M. Marcaccio

2383 Control of Electronic Structure of Graphene by Various Dopants and Their Effects on a Nanogenerator
H. Shin, W. Choi, D. Choi, G. Han, S. Yoon, H. Park, S. Kim, J. Choi, and Y. Lee

2384 CO_2 Laser-Induced Growth of Epitaxial Graphene on SiC (0001)
S. N. Yannopoulos, A. Siokou, A. Nasikas, V. Dracopoulos, F. Ravani, and G. Papatheodorou

2385 In-Situ CCVD Grown Bilayer Graphene Transistor
P. Wessely, F. Wessely, E. Birinci, and U. Schwalke

2386 Fabrication of Nanopillar Light Emitting Diodes using Homogeneous Multilayer Graphene Electrodes
W. Choi, H. Shin, S. Yoon, and J. Choi

2387 Landau Levels of Dirac Fermions without External Magnetic Field Observed for Potassium or Nitrogen Doped HOPG
J. Nakamura, D. Guo, T. Machida, T. Suzuki, K. Iwatake, T. Shikano, S. Okada, and T. Kondo

2388 Cu_2O-Decorated Nanographenes as Promising Photocatalysts
H. Chou and Y. Hsu

2415 Engineering of Electrode Material for Supercapacitors and Lithium-Ion Batteries using Carbon Nanowalls Grown in Plasma of DC Glow Discharge
V. Krivchenko, D. Itkis, S. Evlashin, D. Semenenko, E. Goodilin, A. Rakhimov, and A. Pilevsky

2416 Surface Growth of Tree-like Si Nanowire Structures on Micro-gap Electrodes and Their Application in Bio-sensing Applications
C. Ahn, A. Kulkarni, and T. Kim

2417 Silicon-based Molecular Devices made by Flip Chip Lamination
C. A. Hacker, M. Walsh, S. Pookpanratana, and C. Richter

2418 Cu^{2+}-doped ZnO Nanocrystals: Visible-Light-Driven Photoactivity and Room-Temperature Ferromagnetism
Y. Lu and Y. Hsu

I1 - Physical and Analytical Electrochemistry General Session

Physical and Analytical Electrochemistry

2419 Potentiometric Analyte Detection at the ppb and ppt Level Using Fluorous Sensing Membranes
P. Bühlmann, C. Lai, and L. Chen

2420 Trace Metal Electroanalysis in Cotton Films
S. Shariki, S. Dale, and F. Marken

2421 Functionalized Nanoporous Membrane Electrodes for ASV Analysis of Water
T. L. Wade, H. Bessbousse, and M. Clochard

2422 Sensing of Oligopeptides using Anisotropic Metal Nanoparticles
Y. Niidome, Y. Nakamura, A. Kiya, Y. Taga, M. Fujii, and N. Nakashima

2423 Square Wave Voltammetry for the Detection of Electroactive Products Resulting from Nitrate Reduction at a Copper-Tin Alloy Electrode
F. M. Cuibus, S. Dorneanu, A. Ispas, A. Bund, and P. Ilea

2424 Application of Carbon Modified Materials in the Detection of Cr(VI)
L. Garry, B. Alcock-Earley, and C. Breslin

2425 High-Sensitive and Locally Resolved Hydrogen Detection in Metals by Scanning Kelvin Probe Technique
M. Rohwerder, S. Borodin, and S. Evers

2426 Monitoring of Redox Potential of Blood Serum in Patients with Kidney Transplants
M. Khubutiya, M. Goldin, A. Evseev, A. Pinchuk, I. Alexandrova, and V. Kolesnikov

2482 Identification of Surface-Confined Electron Transfer Mechanisms Using Cyclic Square Wave Voltammetry
M. A. Damm and L. Bottomley

2483 Electrochemical Polymerization of o-PDA with and without the Presence of Fe^{III}
S. A. Gharaibeh, E. El Sawy, and V. Birss

2484 Changes of the Physical Properties of Water near the Surface of a Bare and of a Functionalized Gold Contacting Electrode
D. M. Soares, W. Gomes, M. Tenan, and E. do Nascimento

I3 - Bioelectroanalysis

Physical and Analytical Electrochemistry, Sensor

2485 Biofunctionalization of Carbon Nanotube Electrodes for the Fabrication of Biosensors and Biofuel Cells
S. Cosnier

2486 Electrochemical Microfluidic Paper-based Analytical Devices using a Glucometer for Point-of-care Detection of Multiple Analytes
F. Deiss, Z. Nie, X. Liu, O. Akbulut, and G. Whitesides

2487 Microelectrochemical Investigation of Chemical Potential of Cholesterol in Lipid Monolayers
D. Jiang and J. Burgess

2488 Electrochemical Study of Enzyme Kinetics in Nanofluidic Thin Layer Cell
L. Rassaei, E. Goluch, P. S. Singh, K. Mathwig, S. Kang, and S. Lemay

2489 Detection of Acetone on Human Breath using Cyclic Voltammetry
P. Motsegood and J. Leddy

2490 A Bifunctional Trehalose Anode Incorporating Two Covalently Linked Enzymes Acting in Series
M. Rasmussen, R. West, J. Burgess, I. Lee, and D. Scherson

2491 Electrochemical Sensor for Detection of Volatiles Released by Plants
T. Konduru, N. Parimi, G. Rains, and R. P. Ramasamy

2492 Carbon Nanotube Microelectrode Immunosensor for Bone Biomarkers
P. N. Kumta, M. Ramanathan, Y. Yun, V. Shanov, M. Schulz, and W. Heineman

2493 Development of Biosensors for the Detection of Organophosphates in Waterways
J. Crumbley, E. Cho, and A. H. Suroviec

2494 A Phospholipid Polymer based Biocompatible Amperometric Glucose Biosensor
J. Merotra

I4 - Electrochemistry at Nanoscale Dimensions 2

Physical and Analytical Electrochemistry

2508 Surface Patterning of Aluminum in H3PO4 and H2SO4 Mixtures and Using Them as Templates for Fabrication of Free Standing Nanowires
B. D. Polat, F. Bayata, O. Keles, and M. Urgen

2509 Porphyrin Adsorption on a Cu(111) Electrode Surface: Potential Dependent In-Situ STM Studies
T. H. Phan and K. Wandelt

2510 Studies of the Adsorption Behavior, Surface Dynamics, and Adsorbate-Adsorbate Interactions of Dimethyl Disulfide on Cu(100) Electrodes by In-Situ Video-STM
Y. Yang, A. Taranovskyy, and O. Magnussen

2511 XAS Investigation of Galvanic Displacement Reaction of Pt Ions on Ru Nanoparticles
Y. Hsieh, L. Chang, P. Wu, and J. Lee

2512 Nickel Particles with High Catalytic Activity for Hydrogen Evolution Reaction
A. Cally, R. Wuthrich, and E. A. Baranova

2513 Enhanced Electrocatalytic Activity of Cubic Pd Nanoparticles for the Oxygen Reduction Reaction
H. Erikson, A. Sarapuu, K. Tammeveski, J. Solla-Gullón, and J. Feliu

2514 Synthesis of Pure Tungsten Carbide and Catalytic Activity of Platinum on a Tungsten Carbide Support for Oxygen Reduction Reaction
M. Nie, Z. Zeng, and L. Zhang

2515 Nanoscale Effects on the Electrocatalytic Activity of TiO_2 Supported Gold Nanoparticles
B. N. Reinecke, H. Ogasawara, A. Nilsson, and T. F. Jaramillo

2516 Nanoparticles-Shape Effect on the ORR Activity of Pt_{ML} Electrocatalysts
Y. Cai, K. Gong, C. Ma, and R. R. Adzic

2517 Observation of Surface-charge-induced Overlimiting Current in Porous Materials
D. Deng, V. Dydek, A. Mani, S. Schlumpberger, and M. Z. Bazant

2518 Conductance and Flux Measurements within Microcapillary-Incorporated Nanoporous Monoliths Derived from Cylinder-Forming Polystyrene-Poly(Methylmethacrylate) Diblock Copolymers
T. Ito, S. Ibrahim, S. Nagasaka, and D. Higgins

2519 High-Performance Electroanalysis Using AC Voltammetry Based on Functionalized Redox Molecules on Embedded Carbon Nanofiber Nanoelectrode Arrays
L. Syed, J. Liu, A. Prior, D. Hua, and J. Li

2520 Scanning Electrochemical Microscopy with Nanoprobe Arrays - Towards Stamp Electrochemical Lithography
N. Sojic, F. Kanoufi, F. Deiss, M. Etienne, and C. Combellas

2521 Building and Electrochemical Characterization of 8 nm Radius Nanoelectrodes Arrays Obtained by Sol-Gel Chemistry: Geometrical Impact in Mass Transport
O. Fontaine, C. Robert-Laberty, and C. Sanchez

2522 Fabrication of Nano-Scale Lithium Batteries for In Situ Observations by Analytical Electron Microscopy
D. Zeng, T. McGilvray, M. Yang, D. Gostovic, F. Wang, N. Dadney, Y. Zhu, Y. Meng, and J. Graetz

2523 Measuring Nanoscale Nature of Electrochemically Active States in Fuel Cell Cathodes
A. Kumar, M. Biegalski, A. Mozrovska, E. Eliseev, F. Ciucci, A. Borisevich, S. Jesse, and S. Kalinin

2524 Irreversible Conduction of Lithium-Ions in Lithium-Ion Conducting Glass Ceramic on the Nanoscale by Electrochemical Strain Microscopy
T. M. Arruda, A. Kumar, S. Jesse, and S. Kalinin

2525 In Situ Electrochemical Lithiation and Size-Scale Observation of Individual Si and SiCu Nanorods
H. Ghassemi, R. Shabazian Yassar, and M. Au

2526 Electrochemistry in Nano-Space of Structurally Controlled Carbon Materials
A. Hayashi, I. Yagi, and K. Sasaki

2527 Mapping Thermodynamics and Kinetics of Oxygen Vacancies in Fuel Cell Electrolytes on the Nanoscale
A. Kumar, M. Biegalski, A. Morozovska, E. Eliseev, F. Ciucci, S. Jesse, and S. Kalinin

2528 Stochastic Single Molecule Detection in Fluidic Nanoelectrochemical Devices
P. S. Singh, M. Zevenbergen, and S. Lemay

2529 Electronic Transfer Rates into Wired Monolayer Protected Nanoparticles
D. Cliffel, B. Turner, and G. Chen

2530 Discussion of Electronic Structure effects in Oriented Platinum/Valve-Metal Thin Film Alloys that Exhibit Enhanced Oxygen Reduction Reaction Rates
C. C. Hays

2531 Effects of Surface Modification on The Adsorption Behavior and Electronic Properties of Poly(3-hexylthiophene) Adlayer Self-Assembled onto Au(111) Surfaces
Y. Liu and Y. Lee

2532 Influences of Bulk Conductivity and Double Layer Thickness on IonCurrent Rectification in Nanopores
C. Kubeil and A. Bund

I7 - Physical and Analytical Electrochemistry in Ionic Liquids 2

Physical and Analytical Electrochemistry

2533 The Electrolytic Dissociation of 1,2-Cyclobutanedicarboxylic Acids
E. Kvaratskhelia and R. Kvaratskhelia

2534 Evaluation of NaTFSI-TEATFSI Ionic Liquid as an Electrolytic Melt for Na Electrorefining
M. Ueda, K. Honda, and T. Ohtsuka

2535 Analysis of the Ionic Conduction Behavior in Some Room Temperature Molten Fluorides
H. Inoue, T. Isogai, T. Nakai, M. Saito, M. Inaba, and A. Tasaka

2536 Novel Approach for Fabrication of 3D Micro/nano-Structures by Combining Focused Ion Beam Technique with Room-Temperature Ionic Liquid
H. Minamimoto, K. Inoue, T. Tsuda, A. Imanishi, S. Seki, and S. Kuwabata

2537 Electrochemical Behavior of Ferrocene in Various Ionic Liquids
T. Ho, C. Gabrielli, H. Perrot, and M. Turmine

2538 Study of Ionic Collective Coulomb Forces in the Microfluidic Channel
K. Ho, M. Lee, and C. Kuan

2539 Heterogeneous Electron Transfer Kinetics and Diffusion of Ferrocene/Ferrocenium in Ionic Liquids
Y. Pan and C. L. Hussey

2540 Inhomogeneous Layered Structure of Ionic Liquid Molecules at IL / Graphite Electrode Interfaces Observed by Electrochemical FM-AFM
K. Fukui, T. Harada, A. Imanishi, and Y. Yokota

2541 Studies of the Double Layer Capacity at Single Crystal Gold Electrodes in Room Temperature Ionic Liquids
R. Fawcett, D. Misicak, and A. Gaál

2542 Platinum Electrochemistry in an Ionic Liquid with Aqueous Additions
H. S. Isaacs, S. Bliiznakov, J. Wishart, R. R. Adzic, H. Luo, and S. Dai

2543 Collective Dynamics and Charge Transfer in Room-Temperature Ionic Liquids
M. Kobrak

2544 Electrochemical windows of Room-temperature Ionic Liquids from Molecular Dynamics and Density Functional Theory Calculations
S. Ong, O. Andreussi, Y. Wu, N. Marzari, and G. Ceder

2545 Effect of Fluoroalkyl Chain Length of Anion on Oxygen Reduction Reaction in Ionic Liquids
M. Haibara, H. Munakata, and K. Kanamura

2546 Behavior of Metal Ions at Interface of Ionic Liquids Studied by X-ray Photoelectron Spectroscopy
A. Imanishi, N. Takayuki, Y. Yokota, T. Tsuda, S. Kuwabata, and K. Fukui

2547 XPS Analysis of Electrochemical Processes at the Ionic Liquid/Electrode and the Ionic Liquid/Ultra High Vacuum Interface
A. Foelske-Schmitz, D. Weingarth, A. Wokaun, and R. Kötz

2548 Electronic Absorption and Voltammetric Analysis of Ni(II) Coordination in the Room Temperature Ionic Liquid: 1-Ethyl-3-Methylimidizolium Chloride/Aluminum Chloride
J. F. Parker, G. T. Cheek, D. Roeper, and W. O'Grady

2549 Voltammetric Investigations of the Fries Rearrangement in an Ionic Liquid
G. T. Cheek

2550 Passivation and Corrosion of Transition Metals in Ionic Liquid
E. Billy, E. Chaînet, and F. Tedjar

2551 OLED Aluminum Barrier Deposition from Ionic Liquid Solution
P. Bressers, A. Branca, and H. Rendering

2552 Electrode Reaction Mechanism in Anodic Electrolyte Ionic Liquids for Vanadium Redox Flow Battery
X. Xie, C. Yang, J. Wang, S. Wang, Y. Shang, Z. Mao, and V. Mathur

2553 Modifying Transport Properties of Ionic Liquids Adding SO_2 or an Ether Bond on the Organic Cation
M. Monteiro, R. Ando, L. Siqueira, F. Camilo, P. Santos, M. Ribeiro, and R. M. Torresi

J1 - Sensors, Actuators, and Microsystems General Session

Sensor

2554 Use of Mobile Cell Phone for the Generation and Detection of Electrogenerated Chemiluminescence in Low Cost Sensors
J. L. Delaney, E. H. Doeven, and C. Hogan

2555 Metal-Semiconductor-Metal Direct Expose Electron Detector and Secondary Electron Detector with Metal Nano-rod Array and Trench Structure to Enhance the Performance
M. Lee, K. Ho, and C. Kuan

2556 An Algorithm for Low Pressure Particle Monitoring Sensor using Light Scattering Phenomenon
J. Mun, J. Yoon, H. Jung, Y. Gwon, S. Kang, J. Yoon, Y. Shin, and T. Kim

2557 Fabrication of Electromagnetically Actuated Actuators in Polymer based Microfluidic Devices
M. Rahbar, A. Khosla, B. Gray, and L. Shannon

2601 Epitaxially-Grown Thin Films in Electrochemical Sensing Applications
J. Yang, H. Xiang, L. Shuai, and S. Gunasekaran

2602 Formation of Molecularly Imprinted Polymer Thin Films on Gold Electrodes using a 'Clickable' Self-Assembled Monolayer/Monomer System
T. Wang and C. Shannon

2603 Controlled Ex-Situ Doping of Electrochemically Polymerized 5,10,15,20 tera(4-hydroxyphenyl)-porphyrin (THPP) for Hybrid Switching Circuits
S. Koiry, S. Krishnan, R. Ratnadurai, and S. Bhansali

2604 The Impacts of Back-Surface Passivation Using Shallow Ion Implantation and Pulsed Laser Thermal Annealing on Back-Illuminated CMOS Image Sensors Performances: Physical and Electrical Characterizations
Z. Ait Fqir Ali-Guerry, M. Marty, D. Dutartre, R. Beneyton, P. Normandon, and G. Lu

J2 - Impedance Techniques: Diagnostics and Sensing Applications

Sensor, Industrial Electrochemistry and Electrochemical Engineering, Corrosion

2605 Optimization of Passivity Models on Experimental Electrochemical Impedance Data
M. Urquidi-Macdonald, M. Taylor, S. Sharifi, A. Almarzooqi, and D. D. Macdonald

2606 Single-Frequency LCR Databridge Impedance Measurements as Surrogate Measures for the Integrity of Human Skin
E. White, M. Orazem, and A. Bunge

2607 The Application of Odd Random Phase Electrochemical Impedance Spectroscopy (ORP EIS) in Biological Sensing Applications
S. Verguts, O. Olarte, Y. Van Ingelgem, K. Barbé, W. Van Moer, E. Lauwers, B. Landuyt, and A. Hubin

2608 Time Dependent Impedance Determined by Wavelet Transformation
M. Itagaki, I. Shitanda, T. Saitou, and K. Watanabe

2609 Two Common Electroanalytical Techniques - Cyclic Voltammetry and Impedance. How to Get One from the Other.
P. Vanysek

2610 Numerical Simulations of Nonlinear Electrochemical Impedance Spectra of Unstable Systems
K. Pushpavanam, V. Ramani, and S. Ramanathan

2611 The Distribution of Relaxation Times as Beneficial Tool for Equivalent Circuit Modelling of Batteries and Fuel Cells
D. Klotz, J. Schmidt, A. Weber, and E. Ivers-Tiffée

2626 Dielectrophoretic Response of DNA in PBS Buffer using Fluorescence and Impedimetric Measurements
S. Li, X. Liu, J. Wu, and C. Ke

2627 Synthesis of Equivalent Electrical Circuits Based on Electrochemical Impedance Data
E. A. Baranova and O. Kuznetsov

2628 Electrochemical Impedance Spectroscopy to Investigate Energy Devices with Wavelet Transformation
T. Saito, M. Itagaki, I. Shitanda, and K. Watanabe

J3 - Luminescence and Display Materials: Fundamentals and Applications

Luminescence and Display Materials

2629 Piezospectroscopy - Strain Induced Photoluminescence Changes
D. R. Clarke

2630 Synthesis, Crystal Structure and Luminescence of Rare Earth Ions in New Borate, $KBaM(BO_3)_2$(M= Sc^{3+}, Lu^{3+}, Y^{3+}, Gd^{3+})
A. Srivastava, S. Camardello, H. Comanzo, F. Garcia-Santamaria, and J. Collins

2631 Luminescence Quenching in Highly Doped YAG:Ce
U. Happek and A. Setlur

2632 An Investigation of Self-absorption and Corresponding Spectral Shift in Phosphors
A. Piquette, K. C. Mishra, and M. E. Hannah

2633 Searching for new Pr^{3+}-Doped Materials Showing Efficient 4d-5f Luminescence
M. Bettinelli

2634 Energy Level of Europium Ion in Strontium Aluminate Phosphor by Density Functional Calculation
H. Yamada, C. Xu, S. Matsushima, and M. Arai

2635 Remarkable Enhancement of Swift Heavy Ion Irradiation on $SrAl_2O_4$: Eu^{2+} Afterglow
T. Zhan, C. Xu, H. Yamada, Y. Terasawa, L. Zhang, H. Iwase, and M. Kawai

2636 Development of New Elasticoluminescence Material $SrMg_2(PO_4)_2$:Eu
S. Kamimura, H. Yamada, and C. Xu

2637 Near Infra-Red Mechanoluminescence by the Energy Transfer from Eu^{2+} to Er^{3+} Ions
Y. Terasawa, C. Xu, and H. Yamada

2638 A Simple Model of the Energy of a Nanoparticle
C. Struck and O. Barbosa-Garcia

2639 Complex Aperiodic Nanoplasmonics Engineering Light-matter Interactions on Optical Chips
L. Dal Negro

2640 Photoluminescence Study of $CaHfO_3$ and $SrHfO_3$ Nanoparticles Synthesized Via Non-Aqueous Sol-Gel Process
E. Rauwel, A. Galeckas, M. Karmaoui, P. Rauwel, and H. Fjellvåg

2641 Photoluminescence Efficiency of Self-Assembled Germanium Dots on SiO_2 and TiO_2
D. Lockwood, N. Rowell, E. Barbagiovanni, L. Goncharova, P. Simpson, I. Berbezier, G. Amiard, L. Favre, A. Ronda, M. Faustini, and D. Grosso

2642 Photoluminescence Study and Precursor Dependence of ZnO Nanoparticles Synthesized via Non-Aqueous Sol-Gel Process
E. Rauwel, A. Galeckas, P. Rauwel, and H. Fjellvåg

2643 Ternary Quantum Dots with Tunable Emission Wavelength and their Use as Light Emitting Diodes
Y. Pu and Y. Hsu

2644 The Effect of Particle Size on the Luminescence of Cr-doped YAG Nanoparticles
B. Di Bartolo, G. Ozen, F. Picinelli, A. Speghini, M. Bettinelli, and J. Collins

2645 Energy Transfer of Two-Ion Doped Phosphors for LED Application
S. Im, T. Kim, and T. Kim

2646 Sensitizing Eu^{3+} for Potential LED Phosphors
A. Setlur, J. Murphy, F. Garcia-Santamaria, and U. Happek

2647 Luminescence Properties of Oxy-nitride Green Phosphors Synthesized with Silicate Phosphor as a Precursor
E. Kang, S. Choi, and S. Hong

2648 A Study of Blue Emitting Phosphors, $ABPO_4:Eu^{2+}$ (A=K, Li, Na; B=Ca, Sr, Ba) for UV LEDs
M. E. Hannah, A. Piquette, M. Anc, J. McKittrick, J. Talbot, J. Han, and K. C. Mishra

2649 Development of Red Phosphors for Solid-State Lighting
L. Shea-Rohwer, M. Nyman, and J. Martin

2650 Near UV-to-Red Photon Conversion in Bi^{3+} and Pr^{3+}-Codoped $CaTiO_3$
P. Boutinaud

2651 Preparation and Luminescence of $SrScSi_4(O,N)_7$ Phosphors
D. Porob, N. Karkada, P. K. Nammalwar, and A. Setlur

2652 High Quantum Efficiency of $(Ba_{1-x}Eux)_2SiO_4$ sub-micron sized Green Emitting Phosphors for Near UV-Emitting LEDs
J. Han, M. E. Hannah, J. Talbot, K. C. Mishra, and J. Mckittrick

2653 Cathodoluminescent Phosphors for General Lighting with Enhanced Efficacy, Lifetime, and Thermal Stability using CNT and CNT Coatings
C. E. Hunt, A. Traore, M. Sheehan, C. McLeod, Q. Huang, D. Gu, and H. Baumgart

2654 First-Principles Investigation of the Luminescence Mechanism of Eu^{2+} in M_2SiO_4 (M= Sr, Ba)
K. C. Mishra, M. E. Hannah, P. Schmidt, and K. Johnson

2655 Solution-based Protective Coatings for LED Phosphors
J. Murphy, M. Karadge, and A. Setlur

2656 Kinetic Studies of Luminescence from Pr^{3+}-doped Calcium Niobate
J. Collins, G. Ozen, B. Di Bartolo, and M. Bettinelli

2657 Blue and Red Luminescence Bands in Oxidized Porous Si and Effect of External Electric Field
B. Gelloz, K. Nishikawa, and N. Koshida

2658 The Self-Assembly of Quaternary Ammonium Salts for Cathode-Independent High Efficiency Polymer Light-Emitting Diodes
T. Wen, S. Hsieh, S. Hsiao, C. Wu, and T. Guo

2659 The Application of Tetraoctylammonium Bromide and Ammonium Bromide in Polymer Light-Emitting Diodes
K. Tsai, S. Hsieh, T. Guo, and T. Wen

2660 Tuning of Poly(3,4-ethylenedioxythiophene): Polystyrenesulphonate Work Function with N91 in Polymer Light-Emitting Diodes
Y. Chou, C. Li, S. Hsieh, T. Guo, and T. Wen

2661 The Phase-Change of Tetraoctylammonium Bromide on Device Performance in Polymer Light-Emitting Diodes
C. Wu, S. Hsieh, T. Guo, and T. Wen

2662 Ce^{3+}-doped Garnet Ceramic Phosphors for White LED
S. Tanabe

2663 Ceramic Converters in LEDs
M. E. Hannah, J. F. Kelso, M. Raukas, M. Stough, G. Wei, Y. Zheng, N. Zink, K. Bergenek, R. Wirth, D. Eisert, and A. Linkov

2664 Optical Property Control in Ceramic Converters for White LED Applications
J. F. Kelso, N. Zink, and A. Lenef

2665 Lumiramic Phosphor Technology for Solid State Lighting
H. Bechtel, P. Schmidt, A. Tuecks, and O. Shchekin

2666 Narrow Spectral Linewidth Trivalent Rare Earth Doped $SrCaMo_{1-x}W_xO_4$ Phosphors for High Efficacy White LEDs
P. S. Dutta and A. Khanna

2667 A New Ceramic Phosphor for LED Applications
Y. Zheng, M. E. Hannah, N. Zink, V. Perez, G. Wei, J. F. Kelso, and M. Raukas

2668 High Efficiency Sr-Ca-Ga-S:Eu^{2+} Alloyed Phosphors for Full Spectrum White LEDs
P. S. Dutta and A. Gennett

2669 $BaY_2Si_2Al_2O_2N_5:Eu^{2+}$: A Novel Green-Emitting Phosphor for White Light-Emitting Diodes
W. Liu, C. Yeh, C. Huang, C. Lin, Y. Chiu, Y. Yeh, and R. Liu

2670 Exciton Luminescence in ^{10}B-doped ZnO:Ga and Its Application to Neutron Scintillator
H. Nanto, T. Kumakura, Y. Takei, T. Nakamura, and M. Katagiri

2671 Enhancing Color Gamut of White Displays by using High Efficiency Color Thin Films Incorporating Novel Organic Dye Materials
W. Liu, M. Jhang, W. Huang, C. Lin, and C. Cheng

2672 Sol-Gel Synthesis and Photoluminescent Properties of $SrMoO_4:Eu^{3+}$ Phosphors for Application to White LEDs
S. Park, K. Jang, H. Lee, S. Yi, and J. Jeong

2673 Synthesis, Visible Upconversion Luminescence of Yb^{3+}, Tm^{3+} Co-Doped $LaGaO_3$ Phosphors
H. Yang, B. Moon, B. Choi, K. Jang, H. Lee, S. Yi, and J. Jeong

2674 Elasticoluminescence Mechanism of $SrMg_2(PO_4)_2$:Eu
S. Kamimura, H. Yamada, and C. Xu

2675 The Evolution of the Optical Spectra of (M, M')$TiO_3:Pr^{3+}$ (M, M': Ca, Zn, Sr) Phosphors
G. Kim, S. Lee, and Y. Kim

2676 Photoluminescence Properties of un-doped and Sm^{3+} doped $Ca_3Y_2Si_3O_{12}$ Phosphors for NUV based WLEDs
V. Bandi, B. Grandhe, K. Jang, H. Lee, D. Shin, S. Yi, and J. Jeong

2677 The Enhancement of the Green Emission of $Na(Y,Al)F_4:Yb^{3+}/Er^{3+}$ up-conversion Phosphors
S. Kwon, J. Lee, and Y. Kim

2678 Deposition and Luminescent Characterizations of $Sr_2SiO_4:Eu^{2+}$ Thin Films Prepared by a Sputtering Method
S. Lee, J. Lee, G. Kim, and Y. Kim

2679 Characteriztions of GaN-Based Light-Emitting Diodes Fabricated with Emission Wavelengths of 429-467 nm
E. Jung, S. Kim, and H. Kim

2680 Novel Beam Profile Indicator for Swift Heavy Ions
T. Zhan, C. Xu, H. Yamada, Y. Terasawa, L. Zhang, H. Iwase, and M. Kawai

2681 History Recording System of Fatigue Crack Growth based on Mechanoluminescent Microparticles
N. Terasaki and C. Xu

2682 Synthesis and Luminenscence Properties of Full-Color (Ba, Ca, Sr)$_3$MgSi$_2$O$_8$:Eu^{2+}, Mn^{2+} Phosphors for near UV-Emitting LEDs
G. Hirata, J. Han, M. E. Hannah, J. Talbot, K. C. Mishra, and J. Mckittrick

2683 Silicon-based Nitride Red Phosphors for White Light Emitting Diodes (LEDs)
J. Choi, G. Hirata, M. E. Hannah, A. Piquette, J. Talbot, K. C. Mishra, and J. Mckittrick

J6 - Sensors Based on Fluroscence, SERS, SPR, and Photoelectrochemistry

Sensor

2684 Fluorescence Quenching Studies of Electric Field Induced DNA Orientation Dynamics at Glassy Carbon Electrode Surfaces
Q. Li, C. Cui, D. Higgions, and J. Li

2685 Quantum Dots for Multiplex In Vitro Diagnostics
Z. P. Aguilar, H. Xu, D. Chou, J. Dixon, and A. Wang

2686 Evidence of Long-Range Plasmonic Coupling: Interpillar Gap Dependence from Large-Area ALD Ag-Coated Si Nanopillar Arrays
J. D. Caldwell, O. Glembocki, F. Bezares, E. Robertson, M. Kariniemi, S. Prokes, E. Foos, J. Niinistö, T. Hatanpaa, M. Ritala, and M. Leskelä

2687 Tracking Motions of Plasmonic Nanoparticle Probes under Differential Interference Contrast Microscopy
W. Sun, A. Stender, Y. Gu, and N. Fang

2688 Fluorescence-Signaling Aptasensor for ATP and PDGF Detection on Functionalization Diamond Surfaces
A. Ruslinda, Y. Ishiyama, X. Wang, T. Kobayashi, and H. Kawarada

2689 Microchip Separation Based Sensors for Monitoring Biological Systems
S. M. Lunte

2690 Enabling Mercury Detection via Energy Transfer between Quantum Dots and Gold Nanoparticles
M. Li and N. Wu

2691 Development of High-Quality Near-Infrared Quantum Dots for Sensor Applications
H. Zhao, I. Ka, M. Chaker, M. El Khakani, and D. Ma