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- 748 Numerical Investigation of the High Temperature PEM Electrolyzer: Effect of Flow Channel Configurations
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S. Ganesan, N. Leonard, and S. Calabrese Barton
- 1596 Phenylenediamine as a Promising Ligand for Non-Noble Metal ORR Catalysts
S. Gharaibeh and V. Birss
- 1597 In Situ Spectroscopic Observation of the Fe-N Switching Behaviors of Fe-N₄ and Fe-N₂₊₂ Sites During Oxygen Reduction
Q. Jia, U. Tylus, K. Strickland, N. Ramaswamy, and S. Mukerjee
- 1598 Investigation of a cathodic bimetallic catalyst based on Platinum and cobalt for application in direct methanol fuel cells
C. D'urso, V. Baglio, A. Stassi, D. Sebastian, and A. S. Aricò
- 1599 Temperature Study On Zr-Oxides for the ORR in DMFCs
T. Mittermeier, P. Madkikar, X. Wang, M. Piana, and H. Gasteiger
- 1600 Reaction Pathways and Current Efficiency for Electrooxidation of Ethylene Glycol At Intermediate Temperatures
E. M. Stuve and K. A. Spies
- 1601 Ir-Sn Nanoparticles for the Ethanol Oxidation Reaction
X. Teng and W. Du
- 1602 Closely Interacted Pt-SnO₂ Electrocatalysts for Methanol Oxidation
Y. Chen and Y. Xing
- 1603 N-Doped Graphene-Supported PtRu Direct Methanol Fuel Cell Electrocatalysts
S. Pylypenko, K. N. Wood, A. Serov, P. Atanassov, and R. O'Hayre
- 1604 A Study of Au/C Nanoparticles With Pt Monolayer and Sub-Monolayer Electrocatalysts for Ethanol Oxidation Reaction
R. Loukrakpam, S. R. Brankovic, and P. Strasser
- 1605 EDTA Assisted Ce(III)/Pt Vulcan Xc-72 Catalyst Synthesis for Direct Methanol Fuel Cell Applications
C. R. Cabrera, C. Menendez, R. Guzman-Blas, K. Sasaki, D. J. Stacchiola, S. D. Senanayake, D. Suazo-Dávila, and C. A. Vélez
- 1606 Performance Stability of Carbon-Supported *Vs.* Metal-Black DMFC Catalysts
Q. Li, D. Spornjak, Y. S. Kim, and P. Zelenay
- 1607 Synthesis of Nanostructured Platinum and Platinum-Based Electrocatalyst for Dafc
M. V. Tran, G. H. Nguyen Thi, H. P. Vu Thi, P. M. L. Le, and T. T. P. Nguyen
- 1608 Pd-Bi Catalysts for Electrooxidation of Alcohols
A. Zalineeva, U. Martinez, A. Serov, S. Baranton, C. Coutanceau, and P. Atanassov

- 1609 Corrosion Study of Mesoporous Carbon Supports for Use in PEM Fuel Cells
F. Forouzandeh, D. Banham, F. Feng, X. Li, S. Ye, and V. Birss
- 1610 Covalently, Non-Covalently and Non Functionalized Networked Graphitic Structures As Robust Catalyst Support in PEM Electrodes
E. Negro, M. de Vries, R. Latsuzbaia, and G. Koper
- 1611 Development of Ultra-Low Loading Pt/AGC Catalyst for PEM Fuel Cells
T. Kim, W. S. Jung, T. Xie, and B. N. Popov
- 1612 Pt Catalysts Supported On High Surface Area Graphene Composites for PEFCs
J. Xie
- 1613 Pt-Decorated graphene-like foam for Electrochemical Oxygen Reduction With High Mass Activity
J. Liu, K. Sasaki, and S. M. Lyth
- 1614 Development of Durable Electrocatalysts for PEFC By Controlling Nanostructure of Carbon Supports
A. Hayashi, X. Zhao, Y. Minamida, Z. Noda, and K. Sasaki
- 1615 Durable and Water Manageable Ordered Mesoporous Supports for Polymer Electrolyte Fuel Cells
S. M. Hwang, S. Lee, Y. J. Sohn, T. H. Yang, and G. G. Park
- 1616 Development of Graphitic-Carbon Nitride Materials as Catalyst Supports for Polymer Electrolyte Fuel Cells
N. Mansor, A. Belen Jorge, F. Corà, C. Gibbs, R. Jervis, P. F. McMillan, X. Wang, and D. J. L. Brett
- 1617 Application of Mesoporous Carbon Nano Dendrites(MCND) As Catalyst Supporting Materials for PEFCs
K. Matsumoto, T. Iijima, and M. Hiyoshi
- 1618 Highly Dispersed Pt on Mo₂C: Durable Catalyst for Oxygen Reduction Reaction
A. Roy, U. Martinez, E. L. Brosha, P. Atanassov, and T. L. Ward
- 1619 Evidence of Enhanced Activity of *In-Situ* formed Pt Nano-Rafts On Molybdenum Carbide Support
L. Elbaz, T. Rockward, N. J. Henson, K. Artyushkova, K. L. More, J. Phillips, and E. L. Brosha
- 1620 Pt-Based ORR Catalyst On Carbon-Supported Amorphous Niobium Oxide Support
C. Xu, P. Pietrasz, J. Yang, R. Soltis, K. Sun, M. Sulek, and R. Novak
- 1621 Characterization and Modeling of Mass Transport in Gas Diffusion Layer and Catalyst Layer of PEM Fuel Cells
J. Kleemann

- 1622 In-Situ Measurement of Oxygen Partial Pressure in the Cathode Flow Field With Hydrophilic Surface
S. Hirano, M. Potocki, G. Saloka, S. Palluconi, and J. Crafton
- 1623 Water Vapor Exchange Flow Channels to Enhance the Performance of Polymer Electrolyte Fuel Cells Without Cathode Humidification
H. Nakajima, T. Kitahara, and K. Tsuda
- 1624 Visualization of O₂ Partial Pressures in Running PEFC With Straight Channels
K. Nagase, M. Uchida, J. Inukai, Y. Nagumo, H. Motegi, M. Yoneda, T. Suga, H. Nishide, and M. Watanabe
- 1625 Simultaneous Visualization of Oxygen Partial Pressure and Current Density in Running PEFC
K. Takanohashi, J. Inukai, M. Uchida, Y. Nagumo, T. Suga, H. Nishide, and M. Watanabe
- 1626 Effect of Fuel Permeability On MEA Performances Using Quaternized Multiblock Copolymers
K. Asazawa, E. Nishino, J. Miyake, M. Uchida, K. Miyateke, and M. Watanabe
- 1627 Oriented Electrode Based On TiO₂ nanotube Arrays
H. Yu and C. Zhang
- 1628 Composite Carbon Nanotube and Titania Catalyst Supports for Enhanced Activity and Durability
W. A. Rigdon, D. Larrabee, and X. Huang
- 1629 Ta Modified TiO₂ Supports Exhibit Exceptional Durability in Polymer Electrolyte Fuel Cells
A. Kumar and V. K. Ramani
- 1630 Iridium-Titanium Oxide as Support for Pt Catalyst in PEFC Cathodes
T. Binninger, E. Fabbri, R. Koetz, and T. J. Schmidt
- 1631 Alternative Oxide-Supported Electrocatalysts for PEFCs
K. Sasaki, Y. Takabatake, K. Kanda, T. Tsukatsune, T. Higashi, F. Takasaki, Z. Noda, and A. Hayashi
- 1632 Highly Durable Metal-Oxides As An Alternative Catalyst Supports for PEM Fuel Cells
D. Cilingir Dogan, S. M. Hwang, Y. J. Sohn, T. H. Yang, and G. G. Park
- 1633 Exploring the Activity and Stability Limits for Pt/ITO ORR Electrocatalysts
W. E. Mustain and Y. Liu
- 1634 Performance and Durability of Titanium Nitride-Supported Platinum Catalysts for Polymer Electrolyte Fuel Cells
H. Shintani, K. Kakinuma, M. Uchida, H. Uchida, Y. Tsuji, and M. Watanabe

- 1635 Chaos During H₂/CO Electrooxidation: Trends and Usefulness
A. Mota, T. A. Rocha, and E. R. Gonzalez
- 1636 Reformate Hydrogen Fuel in PEM Fuel Cells: the Effect of Alkene Impurities on Anode Activity
K. Kortsdottir, F. J. Perez Ferriz, C. Lagergren, and R. W. Lindström
- 1637 A Perspective of TM-N_x (TM=Fe, Co, and x=2, 4) Non-PGM Electrocatalysts From First-Principles Calculations
B. Kiefer, S. J. Paddison, and P. Atanassov
- 1638 Role of Transition Metal in Non-Noble Metal Electro-Catalysts in Proton Exchange Membrane (PEM) Fuel Cells
D. Singh, J. Tian, K. Mamtani, and U. S. Ozkan
- 1639 Mechanistic Studies On Fe-PEI Derived Non-PGM Catalysts for Oxygen Reduction
U. Tylus, A. Serov, K. Artyushkova, S. Mukerjee, and P. Atanassov
- 1640 Modeling Non-Precious Metal Catalyst Structures and Their Relationship to ORR Activity
E. F. Holby, G. Wu, P. Zelenay, and C. D. Taylor
- 1641 Structure-to-Property Relationships in Non-Platinum Group Fuel Cell Catalysts: Examination of Length Scale Correlations
M. J. Workman, A. Serov, M. S. Rojas Carbonell, P. Atanassov, and K. Artyushkova
- 1642 Scale-Up of Metal-Nitrogen-Carbon Electrocatalyst Synthesis By High-Pressure Pyrolysis
S. Ganesan, N. Leonard, and S. Calabrese Barton
- 1643 Scale Up of Non-PGM ORR Catalysts
B. Halevi, P. Short, A. Serov, P. Atanassov, S. Ganesan, S. Mukerjee, and S. Calabrese Barton
- 1644 Novel Non-Platinum Group Metal Cathode Catalyst for Fuel Cell Electric Vehicle Application
A. Serov, K. Artyushkova, P. Atanassov, E. Niangar, C. Wang, and N. Dale
- 1645 Effect of High-Voltage Cycling On Non-Precious Metal Catalysts for the ORR
F. Jaouen, V. Goellner, and D. J. Jones
- 1646 Corrugated Pore Model for Design of Non-Precious Oxygen Reduction Cathodes
N. Leonard, S. Calabrese Barton, A. Serov, P. Atanassov, and S. Mukerjee
- 1647 Structure and Reactivity of Fe-N-C Non-PGM Cathode Catalysts Derived by the Sacrificial Support Method
P. Atanassov, A. Serov, K. Artyushkova, B. Kiefer, and S. Mukherjee
- 1648 Alkaline Membrane Fuel Cells Technology Challenges and Approaches to Their Resolution
S. Gottesfeld

- 1649 Enhanced Efficiency With Autonomous Oscillations: Challenges for Dafe
A. Mota and E. R. Gonzalez
- 1650 Effect of the Membrane Thickness on the Over-Potential Behavior of the Direct Formic Acid Fuel Cell
T. Tsujiguchi, T. Iwakami, and N. Nakagawa
- 1651 The Promotion Effect of An Oxide Phase On Pd Electrocatalysts for the Oxidation of Ethanol: *in Situ* irras Studies in An Alkaline Environment
U. Martinez, A. Serov, M. Padilla, and P. Atanassov
- 1652 *In Situ* Degradation Measurements of a DMFC By a Dynamic Hydrogen Reference Electrode
N. Aoun, U. Kunz, and T. Turek
- 1653 Nickel-Cerium Alloys for Borohydride Oxidation
D. M. F. Santos, B. Sljukic, D. Macciò, A. Saccone, C. Sequeira, and L. Amaral
- 1654 Progress in The Development of Alkaline Membrane Fuel Cells and Regenerative Fuel Cells
K. Scott, X. Wu, M. Mamlouk, and R. Espiritu
- 1655 The Electrocatalytic Oxidation of Ethanol in a Proton Exchange Membrane Electrolysis Cell (PEMEC): A Way to Produce Clean Hydrogen for PEFC
C. Lamy, S. Baranton, and C. Coutanceau
- 1656 Synthesis of Cobalt Nanoparticle Embedded Carbon Nanofiber Catalysts With High Oxygen Reduction Reaction Activity
M. Kim, D. Nam, H. Park, K. Eom, E. Cho, C. Kwon, S. J. Yoo, and H. Kwon
- 1657 Palladium Alloy Catalysts Synthesized By Sacrificial Support Method for the Electrooxidation of Ethylene Glycol in Alkaline Environment
C. Cremers, D. Bayer, F. Jung, T. Jurzinsky, A. Serov, P. Atanassov, K. Pinkwart, and J. Tübke

B12 - Stationary and Large-scale Electrical Energy Storage Systems 3

Battery, Energy Technology, Industrial Electrochemistry and Electrochemical Engineering

- 1658 Advances in PNNL's Vanadium Redox Flow Battery Stack
V. Sprenkle, E. Thomsen, W. Wang, B. Li, B. J. Koeppe, K. P. Recknagle, X. Wei, Z. Nie, Q. Luo, and D. Reed
- 1659 Redox Flow Cell Component Validation At Sub-Stack Level
V. Sprenkle, E. Thomsen, W. Wang, B. Li, B. J. Koeppe, K. P. Recknagle, X. Wei, Z. Nie, Q. Luo, and D. Reed

- 1660 Redesign of a Vanadium Redox Flow Battery for Reduced Pressure Loss Using An Interdigitated Flow Field
B. J. Koepfel, K. P. Recknagle, D. E. Stephenson, D. Reed, E. Thomsen, and V. Sprenkle
- 1661 Nano-Catalysts Decorating Graphite Felts As High-Performance Electrodes for An All-Vanadium Redox Flow Battery
B. Li, W. Wang, X. Wei, Q. Luo, Z. Nie, and V. Sprenkle
- 1662 Mitigating Capacity Fade in Vanadium Redox Flow Batteries Using Asymmetric Currents During Cycling
E. Agar, A. Benjamin, C. R. Dennison, D. Chen, M. A. Hickner, and E. C. Kumbur
- 1663 On the Determination of Coulombic Efficiency for Vanadium Redox Flow Batteries: Cutoff Voltage Vs. State of Charge Limits
A. Benjamin, E. Agar, C. R. Dennison, and E. C. Kumbur
- 1664 Influence of Cell Geometry and Operating Parameters On Performance of a Redox Flow Battery With Serpentine and Interdigitated Flow Fields
S. Tsushima, S. Sasaki, and S. Hirai
- 1665 Investigation of the Hydrogen Evolution in All-Vanadium Redox Flow Battery
C. N. Sun, F. Delnick, L. Baggetto, G. M. Veith, and T. A. Zawodzinski
- 1666 Overvoltage Measurements With Reference Electrodes in Redox Flow Batteries
J. Langner
- 1667 State of Charge Effects On the Performance of Vanadium Rfbs
T. A. Zawodzinski, C. N. Sun, D. Aaron, E. Hollmann, A. B. Papandrew, and M. M. Mench
- 1668 Ex Situ Measurements of Transport Properties of Vanadium Ions for Vanadium Redox Flow Batteries
J. S. Lawton, A. Jones, Z. Tang, C. Zhang, and T. A. Zawodzinski
- 1669 Measurement of Localized Current Distribution Applied to a Vanadium Redox Flow Battery
M. M. Mench, J. Clement, and T. A. Zawodzinski
- 1670 GPU-Enabled Pore-Scale Transport Resolved Model for Vanadium Redox Flow Batteries
C. Andersen, G. Qiu, and Y. Sun
- 1671 Modeling of a Vanadium Redox Flow Battery for Energy Storage
C. L. Hsieh, Y. L. Jhong, K. L. Hsueh, and C. Y. Dai
- 1672 Characterization of Battery for Energy Storage Applications – Lead Acid Battery, Lithium Battery, Vanadium Redox Flow Battery, and Capacitor
C. L. Hsieh, Y. T. Liu, K. L. Hsueh, and J. S. Hung

- 1673 A Precious-Metal Free Regenerative Fuel Cell for Storing Renewable Electricity
D. Ng, Y. Gorlin, T. Hatsukade, and T. F. Jaramillo
- 1674 Comparison of Acid and Alkaline Hydrogen-Bromine Fuel Cell Systems
T. V. Nguyen, V. Yarlagadda, G. Lin, G. Weng, V. C. Y. Li, and K. Y. Chan
- 1675 Effect of Operating Condition On Cyclic Performance of a Hydrogen-Bromine Flow Battery
K. T. Cho, M. S. Ding, A. Z. Weber, V. Battaglia, and V. Srinivasan
- 1676 Investigation of the Active Site of Rhodium Sulfide Electrocatalysts
N. Singh, D. C. Upham, R. F. Liu, H. Metiu, and E. McFarland
- 1677 Synthesis and Characterization of $\text{Rh}_x\text{S}_y/\text{C}$ Catalysts for HOR/HER in HBr
J. Masud, J. Walter, T. V. Nguyen, G. Lin, N. Singh, E. McFarland, H. Metiu, M. Ikenberry, K. Hohn, C. J. Pan, and B. J. Hwang
- 1678 Charge Transfer and Storage in the Electrochemical Flow Capacitor – A New Concept for Grid-Scale Energy Storage
C. R. Dennison, M. Beidaghi, K. B. Hatzell, J. W. Campos, Y. Gogotsi, and E. C. Kumbur
- 1679 Assessment of the Iron-Ion/Hydrogen Redox Flow Cell
M. C. Tucker, K. T. Cho, V. Srinivasan, P. N. Ross, and A. Z. Weber
- 1680 Advanced Redox Flow Battery R&D At Pacific Northwest National Laboratory
W. Wang, Q. Luo, Z. Nie, M. Vijayakumar, X. Wei, B. Li, B. Chen, Y. Shao, E. Thomsen, D. Reed, and V. Sprenkle
- 1681 Roles of Cathode Additives for Sodium-Nickel Chloride (Zebra) Battery
G. Li, X. Lu, J. Y. Kim, J. P. Lemmon, and V. Sprenkle
- 1682 Performance Stability of Novel Sodium-Zinc Chloride Battery
X. Lu, G. Li, J. Y. Kim, J. P. Lemmon, and V. Sprenkle
- 1683 Analysis of Electrochemical Properties of Zn-Br Flow Battery
S. Mukherjee, A. Bates, S. C. Lee, O. Kwon, and S. Park
- 1684 A Large Format Stationary Energy Storage Device Based On a Composite Sodium Titanium Phosphate Anode Materials System
J. Whitacre
- 1685 Performance Assessment of Solid Oxide Cells for Electrical Energy Storage
P. Kazemipoor, C. Wendel, and R. J. Braun
- 1686 Identifying and Suppressing Side Reactions in Soluble Lead Flow Batteries to Achieve High Efficiency and Cyclability
M. Verde, K. Carroll, and S. Meng

- 1687 Applications of Quinone Redox Chemistry for Flow Batteries
M. P. Marshak, B. Huskinson, M. R. Gerhardt, and M. J. Aziz
- 1688 A Quinone-Based Flow Battery for Large-Scale Electrochemical Energy Storage
B. Huskinson, M. P. Marshak, M. R. Gerhardt, and M. J. Aziz
- 1689 New TYPE Of LOW Cost, LONG CYCLE Life, High POWER, and SAFE Battery
R. Huggins
- 1690 Double-Membrane Design for High-Voltage and Low-Crossover Redox Flow Batteries
S. Gu, K. Gong, E. Z. Yan, and Y. Yan
- 1691 Nanoporous Separator Development for Various Redox Flow Batteries At Pacific Northwest National Laboratory
X. Wei, W. Wang, B. Li, Q. Luo, Z. Nie, B. Chen, and V. Sprenkle
- 1692 Improved Membranes for Redox Flow Batteries
M. L. Perry, W. Xie, W. Li, and R. M. Darling
- 1693 Modeling and Optimal Control of Energy Storage Devices for a Lithium-Ion Battery-Photovoltaic Hybrid System
M. T. Lawder, A. Jagwani, P. W. C. Northrop, V. Ramadesigan, P. Biswas, and V. R. Subramanian
- 1694 Comparing Limits of Performance in Aqueous and Non-Aqueous Redox Flow Batteries
C. N. Sun, M. M. Mench, and T. A. Zawodzinski
- 1695 Cardo-Polyetherketone Anion Exchange Membranes With Suitable Chemical/Mechanical Stability and Performance for All-Vanadium Redox Flow Battery
S. Yun, J. Parrondo, and V. K. Ramani
- 1696 Importance of Ion-Ion Interactions in Membranes for All-Vanadium Redox Flow Batteries
L. D. Griffith, S. U. Kim, H. Y. Chen, and C. Monroe
- 1697 Comparing Membrane Properties for Redox Flow Batteries
T. A. Zawodzinski, Z. Tang, J. S. Lawton, M. Bright, A. Jones, A. Schnyder, C. N. Sun, and C. Fujimoto
- 1698 Broadband Electrical Spectroscopy (BES) Studies On Hydroxide-Conducting Membrane
V. Di Noto, A. Maes, S. Lavina, E. Negro, B. E. Coughlin, A. M. Herring, and G. Pace

D1 - Corrosion General Poster Session

Corrosion

- 1699 Formation of An Anti-Bacterial Oxide Film On Ti-Ta Alloy By Anodic Oxidation
S. F. Ou, F. Y. Fan, and K. L. Ou

- 1700 Oxidation Behavior of Ni-Base Single Crystal Superalloys At 1000°C
Y. Hwang, S. Won, and D. B. Lee
- 1701 Influence of the pH On the Corrosion Protection of Epoxy-Silica-Zirconia Sol-Gel Coatings Applied On EN Aw-6063 Aluminium Alloy
I. R. Fontinha, M. M. Salta, M. L. Zheludkevich, M. G. S. Ferreira, R. B. Figueira, E. V. Pereira, and C. J. R. Silva
- 1702 Mesoporous Titania Film As Photoanodes for Cathodic Protection of Stainless Steel
Z. Feng, C. LEI, H. Zhou, and C. WANG
- 1703 Electrochemical Growth of β -Ni(OH)₂ and NiOOH On Ni Electrodes At Well-Defined Polarization Potential, Polarization Time, and Temperature Conditions
M. Alsabet
- 1704 Comparison of Corrosion Resistance of Stainless Steels in Sour Environments With Various Chloride Concentration and Temperature
J. W. Rho, G. E. Park, K. Y. Kim, and C. J. Park
- 1705 Dissolution Behavior of Pt-Co Binary Alloy Thin Films in Sulfuric Acid
A. Ooi
- 1706 Preparation and Evaluation of Zn Doped Hap Plasma Spray Biocompatible Coatings On Titanium
S. TAKE, K. Kikuchi, S. Suda, and Y. Itoi
- 1707 Thin-Film Ceramic Coatings Based On Sol-Gel Chemistries for Corrosion Protection of Low-Grade Carbon Steels
R. E. Pérez-Roa, M. I. Tejedor, and M. A. Anderson
- 1708 Fast Macropore Etching Via Large Current and High HF Concentration On p-Type Silicon
D. Ge, N. Ren, and Q. Wang
- 1709 Corrosion Resistance and Mechanism of Zinc Rich Paint in Corrosive Media
A. H. Sofian and K. Noda
- 1710 Compositional Characterization of Inclusion/Matrix Boundaries and Relation to Pit Initiation At Mns in Stainless Steel
M. Tohjoh, I. Muto, A. Chiba, Y. Sugawara, and N. Hara
- 1711 Controlling the Corrosion of Metals With Polyphenolic Proteins
W. F. Nelson and D. C. Hansen
- 1712 The Effect of Potential Scan Rate and Temperature At Aluminum Passive State in Borate Buffer Solution
S. Kaluzhina and T. Minakova
- 1713 Corrosion Behavior of Bipolar Plate Materials in Acid Media
M. V. Tran, T. Q. Tran, H. T. Nguyen, and T. T. P. Nguyen

- 1714 A Rapid and Facile Measurement for Corrosion Rates Using Dynamic Light Scattering Technique
C. Yim, D. Kwon, S. Jeon, S. Kim, and J. Park
- 1715 Surface Potential Distribution Observation of Surface Modified of 304 Stainless Steel
T. D. Widodo and K. Noda
- 1716 Three-Dimensional Networked Nanoporous Anodic Alumina Films With Vertical and Transverse Pores Fabricated On Al With Different Purity
S. Z. CHU, K. Osaka, H. Yashiro, H. Segawa, K. Wada, and S. Inoue
- 1717 Applications of Embedded Sensors for in-Situ Corrosion Monitoring in Subsea Tunnel
C. Gong, S. Zhang, Z. Shao, Q. Li, and X. Cheng
- 1718 Adsorption Behavior of Polyphenolic Proteins Onto High Strength Steel (HY80) and 5083 Aluminum Alloys
L. Han and D. C. Hansen
- 1719 Effect of Stress Intensity Factor On Fatigue Crack Morphology in High-Strength Steels in Sour Environments
M. Ziomek-Moroz, J. A. Hawk, K. Collins, R. Thodla, and F. Gui
- 1720 Corrosion Investigation of AISI 316 Stainless Steel With CNT and CNT-Polymer Coating Materials Under Simulated PEMFC Working Conditions
M. Hashempour, A. Vincenzo, M. Bestetti, S. Sharma, and D. Gonzalez
- 1721 Biocorrosion Study of Aluminum Aerospace Alloy in Marine and Urban Environments
M. Sancy, A. Abarzua, E. Morales, M. I. Azocar, G. Gomez, M. Paez, and N. Vejar
- 1722 Corrosion Resistance Of Niobium, Tantalum and Titanium In Sea WATER and Sulfuric ACID
D. R. Do Carmo and C. A. Picone
- 1723 Electrochemical Behaviour of Copper-Coated Carbon Steel
S. Ramamurthy, D. Zagidulin, J. Chen, P. Jakupi, R. Jacklin, D. Shoesmith, and P. Keech
- 1724 Critical Corrosion Temperature (CCorrT) A Novel Electrochemical Methodology to Qualify Coatings At High Temperature in Chloride Containing Environments
L. F. Garfias-Mesias
- 1725 Electrochemical Evaluation of Hot-Dip Galvanized Steel (HDGS) Coated With Organic-Inorganic Hybrid Sol-Gel in Cementitious Materials
R. B. Figueira, C. J. R. Silva, E. V. Pereira, and M. M. Salta
- 1726 Multidimensional Simulation of Corrosion At Coating Defects
J. N. Harb and C. Lueth

- 1727 Dissolution/Deposition of Zinc in the Deionized Water ($60 < T (^{\circ}\text{C}) < 93.3$)
J. H. Park, P. Mast, and J. Poska
- 1728 Corrosion Behavior of Copper-Silver-Phosphorus Brazing Alloy in Chloride Containing Electrolyte At Various Temperature
A. Nurrochman and K. Cho
- 1729 Hydrogen Diffusion Coefficients Through Inconel 718 in Different Metallurgical Conditions
J. J. M. Jebaraj, D. J. Morrison, and I. I. Suni
- 1730 Effect of ECAP On the Pitting Corrosion of 304 Stainless Steel
Z. Zheng and Y. Gao
- 1731 Bipolar Electrochemistry for High-Throughput Corrosion Screening
S. Munktell, M. Tydén, J. Högström, L. Nyholm, and F. Björefors
- 1732 Corrosion of Buried Plumbing Materials By Soil Chemistry and Leakage Current
Y. B. Park, Y. J. Choi, H. J. Jang, Y. S. Park, and I. S. Park

D2 - Atmospheric Corrosion

Corrosion, Physical and Analytical Electrochemistry

- 1733 Revisiting Atmospheric Corrosion of Active Metals : What We Have Learn't and What We Need to Learn
I. S. Cole
- 1734 Improving the Corrosion Resistance of Weathering Steel Bridges
S. Ramamurthy, D. Shoesmith, C. Coomarasamy, and D. Lai
- 1735 Atmospheric Corrosion of Plain Carbon Steel Below the Deliquescence Point of Sodium Chloride
E. Schindelholz, B. Risteen, and R. G. Kelly
- 1736 Marine Aerosol Drop Size Effects On the Corrosion Behavior of Plain Carbon Steel
B. Risteen, E. Schindelholz, and R. G. Kelly
- 1737 Identification of Hydrogen Uptake Sites and Local Hydrogen Concentrations During Atmospheric Exposure of Steels Using Scanning Kelvin Probe Microscopy and Electrochemical Extraction
R. F. Schaller and J. R. Scully
- 1738 Hydrogen Uptake During Atmospheric Corrosion of Galvanized steel
M. Rohwerder and S. Evers
- 1739 Evaluation of hydrogen absorption Into Steel With Alternating Current Responses
E. Tada

- 1740 Accelerated Atmospheric Corrosion Testing of Steel and AA5083
P. Khullar and R. G. Kelly
- 1741 Galvanic Corrosion Behavior of Zinc/Steel Couple Under Thin Electrolyte Layer
L. Wen, Y. Jin, and J. Cheng
- 1742 Effect of Various Electrolytes On Zinc Corrosion Investigated By Scanning Flow Cell System With Dynamic Electrolyte Change
C. A. Laska
- 1743 Effect of Stabilization Treatment and Nb/C Ratio On the Intergranular Corrosion Susceptibility of Super304H Austenitic Heat-Resistant Steel
Y. Gao, X. Xiong, Z. Zheng, and C. Zhang
- 1744 Under-Deposit Chloride-Induced Stress Corrosion Cracking in Austenitic Stainless Steels: Aspects Associated With Deposit Type, Size and Composition
A. Cook, S. Lyon, T. S. Leung, B. Gu, N. Stevens, R. Newman, M. Gunther, G. McFiggans, and D. Engelberg
- 1745 Synchrotron Tomography Study of Atmospheric Pitting Corrosion of Stainless Steel During Wet-Dry Cycles
L. Guo, S. Street, H. Mohammed-Ali, S. Glanvill, N. Mi, M. Ghahari, A. Du Plessis, A. J. Davenport, T. Rayment, and C. Reinhard
- 1746 Synchrotron Microtomography Studies of Atmospheric Corrosion of Stainless Steel and Aluminum Alloys
A. J. Davenport, A. Du Plessis, N. Mi, L. Guo, S. Street, M. Ghahari, H. Mohammed-Ali, T. Rayment, C. Reinhard, M. Stamparoni, and P. Modregger
- 1747 Evaluation of Atmospheric Corrosion of Bare Metals During a Two Year Outdoor Exposure
Y. Yoon, D. C. Hansen, J. D. Angel, W. H. Abbott, W. J. Culhane, L. Petry, and C. A. Joseph
- 1748 Atmospheric Pitting and Galvanic Corrosion of High Strength Al Alloys
Z. Feng, S. C. Morton, M. S. Thomson, and G. Frankel
- 1749 The Stability Criteria for Localized Corrosion of AA7075-T6 and Its Application in Galvanic Interaction With Noble Materials
Y. Shi and R. G. Kelly
- 1750 In Situ Monitoring of Ultra Slow Oxide Growth On Copper Protected By a Self Assembled Monolayer
S. Hosseinpour, M. C. Johnson, and C. Leygraf
- 1751 Mechanistic Studies of Corrosion Product Flaking On Copper and Copper-Based Alloys in Marine Environments
X. Zhang, S. Goidanich, C. Leygraf, and I. Odnevall Wallinder

- 1752 Corrosion Performance of Zinc Magnesium Aluminium Coated Steel: Effect of Chloride Deposition and CO₂
D. Thierry
- 1753 Corrosion Performance of Zinc Magnesium Aluminium Coated Steel: Discussion of Fundamental mechanisms
M. Rohwerder, R. Krieg, A. Vimalanandan, D. Thierry, and N. Le Bozec
- 1754 Molecular Studies of Self Assembled Monolayers As Corrosion Inhibitors for Copper
S. Hosseinpour, M. C. Johnson, and C. Leygraf
- 1755 Characterization of the Inhibition Effect of CaSO₄ On Pitting Damage Accumulation of Aluminum Alloy 7075-T6
P. Klomjit and R. Buchheit
- 1756 Atmospheric Corrosion of Different Zinc Coating On Steel
P. Zabinski, K. Mech, and R. Kowalik
- 1757 Comparison of Atmospheric Parameters On the Corrosion of Epoxy Coated 2024-T3 Al Alloy
L. Petry, D. C. Hansen, S. A. Hayes, Y. Yoon, and J. D. Angel
- 1758 Chromate Mitigation in Atmospheric Corrosion By the Use of Smart-Release Pigments
H. N. McMurray and G. Williams
- 1759 Atmospheric Corrosion of Top Coats Used to Protect Carbon Steel and Stainless Steels in Chloride Containing Environments
L. F. Garfias-Mesias, J. Warren, and J. V. Cauich-Rodriguez
- 1760 Predicting Atmospheric Corrosion Rates for 1010 Steel Using a Cumulative Damage Approach
D. H. Rose, S. J. McCombie, J. D. Angel, and D. C. Hansen
- 1761 Dynamic Characterization for Soil/Environmental Conditions in Coating/Substrate Metal Interface Systems By Stochastic Modeling
H. Castaneda, X. Li, A. Yajima, and R. Liang
- 1762 Evaluation of the Maximum Pit Size Model On Stainless Steel Under Atmospheric Conditions
M. T. Woldemedhin, J. Srinivasan, M. E. Shedd, M. McGrath, and R. G. Kelly

D3 - Degradation of Carbon Structural Materials

Corrosion, New Technology Subcommittee

- 1763 Corrosion Studies On Alumina and Carbon Fibres/Magnesium Metal Matrix Composites
V. W. Neubert and A. Bakkar

- 1764 Development of the Atmospheric Corrosion Model of Nickel-Coated Carbon Reinforced Aluminum (Al/C/50f) MMCs
S. Tiwari and L. H. Hihara
- 1765 Corrosion Protection of Interfaces Between Aluminum and Mechanically-Coupled Polymer Matrix Composites (PMCs)
R. Srinivasan, L. H. Hihara, and J. Nelson
- 1766 Evaluating Adhesive Bonds With Carbon-Composites Using Electrochemical Impedance Spectroscopy
G. Davis, FECS
- 1767 Electrochemical Corrosion Investigations On Metal Doped a-C:H Coatings for Bipolar Plates in Redox-Flow Batteries
J. Richards, K. Schmidt, P. Fischer, and J. Tübke

D4 - Mass Transport Phenomena in Localized Corrosion

Corrosion

- 1768 Mass Transport and Electrochemical Factors Influencing Stainless Steel Pitting and Repassivation in Neutral Chloride Media
J. Srinivasan, M. McGrath, and R. G. Kelly
- 1769 Imaging of Mass Transport Process for Localized Corrosion of Stainless Steel
C. Lin
- 1770 The Effect of NaNO₃ On Salt Films in Pitting Corrosion of 304 Stainless Steel Using Synchrotron X-Ray Diffraction
S. Street, W. Xu, L. Guo, P. Quinn, F. Mosselmans, T. Rayment, and A. J. Davenport
- 1771 Investigation of Localized Corrosion and the Role of Transport in Lightweight Alloys Using Microkinetic Models With First-Principles Link
S. Chaudhuri, A. Sumer, J. Xiao, and M. Losada
- 1772 Coupling of Dissolution and Mass Transport for Pitting of Nickel Base Alloys in Solutions Containing Thiosulfate Ions
R. Newman, A. G. Carcea, and W. Zhang
- 1773 The Role of Elemental Sulfur and Chloride Ions on Pit Initiation at MnS Inclusion in Stainless Steel
A. Chiba, I. Muto, Y. Sugawara, and N. Hara
- 1774 The Local Redox Conditions Within Spent Nuclear Fuel Inside a Failed Nuclear Waste Container – a Modelling Study
L. Wu, Z. Qin, and D. Shoesmith

- 1775 Effect of Applied Stress On Dissolution Morphology and Pit Initiation Behavior of Mns Inclusion in Stainless Steel
N. Shimahashi, I. Muto, Y. Sugawara, and N. Hara
- 1776 Chloride Ion Concentration Effects On Passivity Breakdown in Magnesium
G. Williams, H. Dafydd, and H. N. McMurray
- 1777 Effects of Sulphide and Chloride Concentrations On the Morphology and Growth Kinetics of Sulphide Films During Copper Corrosion in Anaerobic Aqueous Solutions
J. Chen, Z. Qin, and D. Shoesmith
- 1778 Corrosion Behavior of Copper Patina in Presence of Marine Biofouling
L. P. Veleva, D. L. Sauri, and J. L. Lopez
- 1779 Quantitative Chemical Speciation of Copper Electro-Deposition Studied By Stxm
Z. Qin, V. Lee, and A. P. Hitchcock
- 1780 Development Of Semi-Elliptical Surface Cracks In Lightly Sensitized Al-Mg Alloys
S. Lee and D. D. Macdonald
- 1781 Stress Corrosion Cracking of Alloy 22
S. K. Lee and D. D. Macdonald
- 1782 Modeling of the Effect of Crystallographic Orientation On Pit Growth and Shape
S. M. Qidwai, N. Kota, and V. G. DeGiorgi
- 1783 Influence of the Microstructure On Stress Concentration Due to Localized Corrosion
N. Kota, S. M. Qidwai, and V. G. DeGiorgi
- 1784 A Model of Damage Evolution During Crevice Corrosion of Nickel Base Alloys
R. S. Lillard, A. Stenta, K. L. Kreider, and G. Young
- 1785 Monitoring Crevice Corrosion Via the Coupling Current: Effect of Anodamine
W. Kuang, S. Lee, J. Mathews, and D. D. Macdonald

D5 - Oxide Films: A Symposium in Honor of Clive Clayton on his 65th Birthday

Corrosion

- 1786 An XAS Study of the Surface of Low-Temperature Carburized Stainless Steel
D. F. Roeper, W. E. O'Grady, K. I. Pandya, and P. M. Natishan
- 1787 Effect of Non-Random Atomic Arrangements On the Initiation of Passivation in Solid-Solution Alloys
D. Artymowicz, K. Sieradzki, and R. Newman
- 1788 Characterization of Electric Conduction of Passive Films and Oxide Films Formed On Fe-Cr Alloys
S. Fujimoto, Y. Iwamizu, Y. Tai, and M. Saito

- 1789 A Unified Theory for Passivity and Passivity Breakdown
D. D. Macdonald
- 1790 Surface Oxide films : Growth, Chemical Composition, Structure Investigated By Surface Analytical Techniques (XPS, ToF-SIMS, STM, STS) and Recent Progress in Modeling
P. Marcus
- 1791 Light Thermal Damage in Polymer Composite Systems: Analysis of Bulk and Surface Properties Through Vibrational and X-Ray Spectroscopy
C. R. Clayton, C. N. Young, R. D. Granata, W. R. Scott, and G. M. Connelly
- 1792 Corrosion of Carbon Steel in Physically-Constrained Locations in Hlnw Isolation
G. Engelhardt, B. Kursten, and D. D. Macdonald
- 1793 Oxide Film Formation and Corrosion of Stainless Steels in Supercritical and Ultra Supercritical Water
D. Rodriguez, A. Merwin, and D. Chidambaram
- 1794 Electrochemical and Oxidation Behaviour of Smat Alloy 800 SG Tubing Specimens
M. G. Faichuk, S. Ramamurthy, J. J. Noel, and D. Shoesmith
- 1795 Effects of pH On S-Induced Passivity Degradation of Alloy 800 in Simulated Crevice Chemistries
D. Xia, R. Zhu, C. Shen, Y. Behnamian, J. Luo, and K. Stan
- 1796 Corrosion Resistance of Oxide Scales Formed in High-Temperature Oxidation of Al-Bearing Ferritic Stainless Steels
Y. Sugawara, M. Ogiwara, I. Muto, T. Inakuma, H. Sakamoto, and N. Hara
- 1797 Nanostructure and Local Properties of Oxide Layers Grown On Stainless Steel in High Temperature Water
V. Maurice, T. Massoud, L. H. Klein, A. Seyeux, and P. Marcus
- 1798 Oxidation of Superalloys in Supercritical Water
A. Merwin, D. Chidambaram, and D. Rodriguez
- 1799 Concurrent Cathodic Disbonding and Microscopy At High Temperatures and High Pressures On Steel Coated Exposed to Seawater
L. F. Garfias-Mesias and E. Ramirez
- 1800 Effect of Sour Environment Temperature On Fatigue Crack Propagation in Ultrahigh-Strength Steel
M. Ziomek-Moroz, J. A. Hawk, R. Thodla, and F. Gui
- 1801 The Composition of Oxide Films On Gd-Doped Uranium Dioxide (UO₂)
M. Razdan and D. Shoesmith
- 1802 The Corrosion Behaviour of Passive Multi-Phase Metallic Nuclear Wasteforms
R. M. Asmussen, J. Chen, D. Zagidulin, J. J. Noel, S. Wallon, U. M. Tefashe, J. Mauzeroll, and D. Shoesmith

- 1803 Material Stability in Molten Salt for Nuclear Power Applications
A. Merwin and D. Chidambaram
- 1804 Protective Oxide Film On Aluminium Encapsulated With Different Nanocontainers
A. Lisenkov, S. Poznyak, A. Salak, M. L. Zheludkevich, and M. G. S. Ferreira
- 1805 Stress Distributions in Anodic Alumina Films Prior to the Onset of Pore Formation
O. O. Capraz, P. Shrotriya, and K. Hebert
- 1806 Imaging and Characterizing Oxide Breakdown and Pit Initiation in Aluminum Using Electron Microscopy
K. R. Zavadil
- 1807 Tutorial: The Power Law Model for Interpretation of CPE Parameters
M. E. Orazem, B. Tribollet, I. Frateur, M. Musiani, and V. Vivier
- 1808 Modeling Stress Distributions in Anodic Alumina Films Prior to the Onset of Pore Formation
K. Hebert, O. O. Capraz, S. Ide, and P. Shrotriya
- 1809 Simultaneous Ellipsometric and Potentiostatic Study of Aluminum Oxide Growth and Dissolution in Acetate Buffer
N. H. Giskeødegård, O. Hunderi, and K. Nisancioglu
- 1810 A Novel Application of the Scanning Vibrating Probe for Determination of Coupling Currents: Understanding the Mechanisms SCC in 5000 Series Al Alloys
K. D. Williams, R. Bayles, P. M. Natishan, and D. D. Macdonald
- 1811 Microstructural Studies of Pure Aluminum and Al1100: the Effect of Grain Size and Boundaries On Quality of Anodic Aluminum Oxide Template
D. Pourjafari
- 1812 Effect of Vacuum System Base Pressure On Corrosion Resistance of Sputtered Al Thin Films
G. Frankel, X. Chen, R. Gupta, S. Kandasamy, and N. Birbilis
- 1813 Characterization of Self-Assembled Monolayer On Anodized Aluminum By XPS, AFM and Low-Voltage SEM
H. Habazaki
- 1814 (2013 ECS Corrosion Division H. H. Uhlig Award Lecture) Active Corrosion Protection By Ldhs
M. G. S. Ferreira
- 1815 (2013 ECS Corrosion Division Morris Cohen Graduate Student Award Lecture) Internal Stresses in Ultrathin Oxide Films: Influence On Growth and Reliability
Q. Van Overmeere
- 1816 Corrosion Behavior of AZ31B Friction Stir Welds
J. Kish, Z. Cano, S. Zhang, J. McDermid, G. Williams, and C. Glover

- 1817 Corrosion Films On Single Crystal Magnesium
E. A. McNally and J. Kish
- 1818 Modeling the Chloride Ion Attack of Aluminum Oxide By Experimental and Theoretical XANES Analysis
D. F. Roeper, W. E. O'Grady, and P. M. Natishan
- 1819 Effects of Aging Temperature and Time On the Corrosion Protection Provided By Trivalent Chromium Process Coatings On AA2024-T3
L. Li and G. M. Swain
- 1820 Pretreatment Effects On the Corrosion Protection Provided By Trivalent Chromium Process Coatings On AA2024-T3
L. Li, A. L. Desouza, and G. M. Swain
- 1821 Effects of Chromate and Molybdate Ions On Scratch Repassivation Behavior of Precipitation Hardened Aluminum Alloys
S. B. Madden
- 1822 Synthesis and Electrochemical Characterization of TiO₂ Materials
I. E. Castañeda and J. U. Uruchurtu
- 1823 Parameters and Underlying Mechanisms Affecting the Morphology of Bifurcating TiO₂ Nanotube
D. J. LeClere, A. Ashari, G. Kawamura, H. Muto, and A. Matsuda
- 1824 TiO₂ Nanotubes and Mesosponges: Modification Approaches to a Strongly Enhanced Water Splitting Activity
P. Schmuki
- 1825 TiO₂-WO₃ Nanotubular Composite Synthesized By Anodization of Simultaneous Multi-Target Sputtered Thin Films Characterized By Laser Ablation ICP-MS
Y. R. Smith, K. N. Chappanda, S. K. Mohanty, and M. Misra
- 1826 Stability of Photoactive Oxide Semiconductors
D. Chidambaram and R. Gakhar
- 1827 Investigating Surfaces By Complimentary Chemical Spectroscopies
G. P. Halada
- 1828 Growth and Characterization of Tubular Oxide Layers On Ti Substrates
H. Tsuchiya, S. Yamamoto, and S. Fujimoto
- 1829 Porous Anodic Oxide Films Grown On Compound Semiconductor
S. Ono, K. Sugawara, and H. Asoh
- 1830 Evaluation of Corrosion Resistance of Multilayered Sn/Ag₃Sn Electroplating On Cu Alloys for Electric Connectors
S. Z. CHU and H. Yashiro

- 1831 Electrical Stability Enhancement of the Thin Filmtransistor With the Back-Channel Deposited By Cosputteringamorphous In-Ga-Zn-O and Siox
H. R. Lee, J. H. Kim, J. H. Park, Y. H. Ko, J. S. Park, and J. G. Park
- 1832 Interstitially Hardened 316L Stainless Steel: A Surface Analytical Study of the Oxide
N. R. Tailleart, P. M. Natishan, F. J. Martin, R. J. Rayne, H. Kahn, and A. H. Heuer
- 1833 A Super Austenitic 6 Mo Stainless Steel (UNS N08367) Passivity-Breakdown Characterization in Acidic Fluoride Solutions
E. M. Maya Visuet and H. Castaneda
- 1834 The Point Defect Model for the Passive Sulfide Films On Copper
S. sharifi-Asl and D. D. Macdonald
- 1835 Thin Surface Films Over copper–nickel Alloys: Corrosion Behavior in Neutral and Acidic Medium in Presence of Chloride Ions
F. M. Al-Kharafi, A. Abdel Nazeer, R. M. Abdullah, and A. Galal
- 1836 The Corrosion of Carbon Steel in Simulated Concrete Pore Water Under Anoxic Conditions
P. Lu, A. Almarzooqi, B. Kursten, and D. D. Macdonald
- 1837 Steady State Analysis of Thin Oxide Barrier Layers Formed in Neutral and Weakly Alkaline Solutions
C. Albu, J. Deconinck, and V. Topa
- 1838 Repassivation On Type 316L Stainless Steel With Cyclic Deformation in Simulated Body Fluid Including Cells
K. Doi, S. Miyabe, and S. Fujimoto
- 1839 Electrochemically Fabricated of TiO₂ Nano-Layers On Ti-6Al-4V
S. Roy, J. Varia, and J. Portoles
- 1840 Effect of Anaerobic Microbial Corrosion On the Surface Film Formed On Steel
D. D. Bala and D. Chidambaram
- 1841 ZrO₂ Hybrid Sol-Gel Coatings for Active Corrosion Protection of Ti6Al4V Biomedical Alloy in Simulated Body Fluids
J. C. Galván, F. R. García-Galván, A. A. El hadad, R. Montoya, and A. Jiménez-Morales

D6 - Biodegradable and Bioabsorbable Metals and Materials

Corrosion

- 1842 Critical Factors in Mg Alloy Corrosion and Biocompatibility
S. Virtanen

- 1843 Effect of Alloying Element Ca and Anodization On Corrosion Resistance and Bioactivity of AZ61 Alloy
A. Anawati, H. Asoh, and S. Ono
- 1844 Switch of Guanine and Adenine Current Caused By Temperature Change in DNA/NIPA and PAM-Based Hydrogels
E. Zabost, M. Karbarz, M. Donten, and Z. Stojek
- 1845 Evaluation of Transparent Polyimide Film As a Biological cell Culture Sheet With Microstructures
H. Maenosono, H. Saito, and Y. Nishioka
- 1846 A Study On the Affect of Novel Surface Treatments and Biodegradable Polymer Coatings On Corrosion and Surface Properties of Ternary Nitinol Alloy
C. Pulletikurthi and N. Munroe

E1 - Solid State Topics General Session

Dielectric Science and Technology, Electronics and Photonics, Energy Technology

- 1847 Enhancement-Mode AlGaAs/InGaAs Pseudomorphic High-Electron-Mobility Transistor With a Liquid Phase Oxidized GaAs As Gate Oxide
J. S. Huang, K. W. Lee, J. J. Lin, and Y. H. Wang
- 1848 Enhancement-Mode Metal-Oxide-Semiconductor Metamorphic High-Electron-Mobility Transistor
J. S. Huang, K. W. Lee, H. W. Chen, and Y. H. Wang
- 1849 Negative Capacitance Tunnel Field Effect Transistor: A Novel Device With Low Subthreshold Swing and High On Current
N. Chowdhury, S. M. F. Azad, and Q. D. M. Khosru
- 1850 Cp'Cpcn' v'ecr'O qf gr'v'F gyto kpg'v'j g'S wcpw' gf 'Gpgti { 'Ngxgm'c'pf 'Y cxg'H'p'ek'qpu'hqt S wcpwo 'Y gm'F gxlegu
N. Chowdhury, I. Ahmed, Z. A. Azim, M. H. Alam, I. A. Niaz, and Q. D. M. Khosru
- 1851 A Stacked Sputtered Process for β -FeSi₂ Formation
T. Inamura, A. Sasaki, K. Aoki, K. Kakushima, Y. Kataoka, A. Nishiyama, N. Sugii, H. Wakabayashi, K. Tsutsui, K. Natori, and H. Iwai
- 1852 Photo-Anode Nanostructure Design and Electron Transport Mechanism of Photoelectrochemical Cells
C. T. Liu and C. W. Hong
- 1853 Modulation Doped Hydrogenated Amorphous Silicon Germanium Superlattice Contacts and Application to Optoelectronic Devices
B. Hekmatshoar, W. Rieutort-Louis, D. Shahrjerdi, and R. Haight

- 1854 Epinephrine Detection In Copper Self Assembled Monolayers
J. F. Silva Sr.
- 1855 High Quality of $\text{Ge}_{1-x}\text{Si}_x$ ($0.9 \leq x \leq 0.95$) Buffers Grown On 6° off Si(100) By Using Low Temperature Ge Seed Layer
C. L. Nguyen
- 1856 Hot Hole-Induced Device Degradation By Drain Junction Reverse Current
K. S. Kim, J. Song, D. Song, and B. Choi

E2 - Atomic Layer Deposition Applications 9

Dielectric Science and Technology, Electronics and Photonics

- 1857 ALD Growth of PbTe and PbSe Superlattices for Thermoelectric Applications
K. Zhang, A. D. Ramalingom Pillai, D. Nminibapiel, M. Tangirala, V. S. Chakravadhanula, C. Kübel, H. Baumgart, and V. Kochergin
- 1858 Synthesis, Characterization, and Application of Tunable Resistance Coatings Prepared By Atomic Layer Deposition
J. W. Elam, A. U. Mane, J. A. Libera, O. H. Siegmund, J. McPhate, M. J. Wetstein, A. Elagin, M. J. Minot, A. O'Mahony, R. G. Wagner, W. M. Tong, A. D. Brodie, M. A. McCord, and C. F. Bevis
- 1859 Unit Steps of an ALD Half-Cycle
T. Blomberg
- 1860 *In Situ* Characterization of Plasma-Assisted Pt ALD on W ALD Adhesion Layers with Spectroscopic Ellipsometry
A. S. Cavanagh, L. Baker, J. W. Clancey, J. Yin, A. Kongkanand, F. T. Wagner, and S. M. George
- 1861 Vapor Phase Surface Functionalization Using Atomic Layer Deposition (ALD) and Self Assembled Molecules (SAMs)
G. M. Sundaram, L. Lecordier, and R. Bhatia
- 1862 Diaphragm Durability Enhancement for Valves Supplying Gas for Atomic Layer Deposition
M. Yamaji, T. Tanikawa, T. Yakushijin, T. Funakoshi, S. Yamashita, A. Hidaka, M. Nagase, N. Ikeda, S. Sugawa, and T. Ohmi
- 1863 ZnO Nanorods Grown On ZnO Seed Layer Derived By Atomic Layer Deposition Process
K. Zhang, S. Khadka, D. Nminibapiel, M. Tangirala, and H. Baumgart
- 1864 VO_2 Films Prepared By Atomic Layer Deposition and RF Magnetron Sputtering
K. Zhang, M. Tangirala, D. Nminibapiel, V. Pallem, C. Dussarrat, W. Cao, H. Elsayed-Ali, H. Baumgart, T. N. Adam, and C. S. Johnson

- 1865 Nanoscale Film Thickness Measurements By X-Ray Fluorescence Spectroscopy for ALD Grown Films
T. M. Abdel-Fattah and H. Baumgart
- 1866 Microstructure Analysis of ALD Bi₂Te₃/Sb₂Te₃ Thermoelectric Nanolaminates
K. Zhang, D. Nminibapiel, M. Tangirala, V. S. Chakravadhanula, C. Kübel, H. Baumgart, and V. Kochergin
- 1867 Ultra Dielectrophoresis Using Atomic Layer Deposited Films: Electrothermal Analysis
S. Emaminejad, M. Javanmard, R. W. Dutton, and R. W. Davis
- 1868 Physical, Electrical, and Reliability Characteristics of Multi-Step Deposition-Annealed HfO₂ Film
Y. L. Cheng, C. Y. Hsieh, and T. C. Bo
- 1869 Vj g"Chge'qh'Cvqo le'Nc {gt'F gr qukgf "TiO₂ Qz kf g'Vj kempguu'qp"vj g'Y cvgt'Qz kf cvkqp Rgthqto cpeg'qh'O gvcn'Kpuwrcvt/Uk'leqp'Cpqf gu
A. G. Scheuermann, J. P. Lawrence, M. Gunji, C. E. D. Chidsey, and P. C. McIntyre
- 1870 Characteristics of SnS_x By Atomic Layer Deposition for CIGS Solar Cells
G. Ham, S. Shin, J. Park, and H. Jeon
- 1871 Atomic Layer Deposition of Multi-Component Metal Sulfides Applied to Thin Film Photovoltaics
E. Thimsen
- 1872 Spatial-ALD of Transparent and Conductive Oxides
A. Illiberi, T. Grehl, A. Sharma, B. Cobb, G. Gelinck, P. Poodt, H. Brongersma, and F. Roozeboom
- 1873 Characteristics of Thin Film Ytria-Stabilized Zirconia Electrolyte by Atomic Layer Deposition for Thin Film Solid Oxide Fuel Cells
G. Y. Cho, J. Y. Paek, J. Park, T. Park, Y. H. Lee, and S. W. Cha
- 1874 Conformal Deposition for 3D Thin-Film Batteries
P. M. Vereecken and C. Huyghebaert
- 1875 High Areal Capacity Li-Ion All Solid State 3D Microbattery Based on Anatase TiO₂ Deposited by ALD on Silicon Microstructures
E. Eustache, P. Tilmant, L. Morgenroth, P. Roussel, N. Rolland, T. Brousse, and C. Lethien
- 1876 Advanced Dielectrics Targeting 2X nm DRAM MIM Capacitors
M. Popovici, J. Swerts, M. Aoulaiche, A. Redolfi, B. Kaczer, M. S. Kim, B. Douhard, A. Delabie, S. Clima, M. Jurczak, and S. Van Elshocht
- 1877 ALD of SrTiO₃ and Pt for Pt/SrTiO₃/Pt MIM structures: Growth and Crystallization study
V. Longo, M. Verheijen, F. Roozeboom, and E. Kessels

- 1878 Atomic Layer Deposition of Thin Oxide Films for Resistive Switching
K. Frohlich Sr., P. Jancovic, B. Hudec, J. Derer, A. Paskaleva, T. Bertaud, and T. Schroeder
- 1879 ALD and Pulsed-CVD of Ru, RuO₂, and SrRuO₃
J. H. Han and C. S. Hwang
- 1880 Catalytic Surface Reactions during Nucleation and Growth of Atomic Layer Deposition of Noble Metals: a Case Study for Platinum
A. Mackus, A. Bol, and E. Kessels
- 1881 Conductivity Improvements of Atomic Layer Deposited Ta₃N₅
H. F. W. Dekkers, S. Van Elshocht, and L. P. B. Lima
- 1882 Room Temperature Sensing of O₂ and CO By ALD Prepared ZnO Films Coated With Pt Nanoparticles
I. Erkens, M. Blauw, M. Verheijen, F. Roozeboom, and E. Kessels
- 1883 X-ray Characterization of PEALD versus PVD Tantalum Nitride Barrier Deposition and the Impact on Via Contact Resistance
X. Zhang, O. van der Straten, T. Bolom, M. He, J. Maniscalco, and D. Edelstein
- 1884 Tetragonal Zirconia Stabilization by Metal Addition for MIM Capacitor Applications
J. Ferrand, V. Beugin, A. Crisci, S. Coindeau, S. Jeannot, M. Gros-Jean, and E. Blanquet
- 1885 Molecular Layer Deposition of Polymeric Films
D. C. Cameron and T. V. Ivanova
- 1886 Atomic Layer Deposition Diffusion Barriers for Silver Art and Cultural Heritage Objects
A. Marquardt, E. M. Breitung, T. Drayman-Weisser, G. Gates, G. W. Rubloff, and R. J. Phaneuf
- 1887 Plasma-Enhanced Atomic Layer Deposition of III-Nitride Thin Films
C. Ozgit-Akgun, I. Donmez, and N. Biyikli
- 1888 A Comprehensive Study of Thermal Stability on Microstructure and Residual Stress for ALD HfZrO₂ Dielectric Films at 28nm HKMG CMOS Applications
C. K. Chiang
- 1889 Ultrathin SiO₂ Films Grown by Atomic Layer Deposition Using Tris(dimethylamino)silane (TDMAS) and Ozone
L. Han and Z. D. Chen
- 1890 Application of Atomic Layer Deposition Tungsten (ALD W) as Gate Filling Metal for 22 nm and Beyond Nodes CMOS Technology
G. Wang, Q. Xu, T. Yang, J. Luo, J. Xiang, J. Xu, G. Xu, C. Li, J. Li, J. Yan, C. Zhao, D. Chen, and T. Ye

- 1891 Self-Cleaning and Electrical Characteristics of ZrO₂ (HfO₂)/GaAs MOS Capacitor Fabricated by Atomic Layer Deposition
A. K. Pradhan and C. White

E3 - GaN and SiC Power Technologies 3

Electronics and Photonics, Dielectric Science and Technology

- 1892 A Thermodynamic Interpretation of PVT Growth of Single Crystal SiC Material and Challenges in Reducing Dislocations
T. Fujimoto, M. Katsuno, H. Tsuge, S. Sato, S. Ushio, K. Tani, H. Yashiro, H. Hirano, and T. Yano
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E4 - Low-Dimensional Nanoscale Electronics and Photonic Devices 6

Electronics and Photonics, Dielectric Science and Technology, Sensor

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X. Zheng

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- 2019 Voltage-Induced Nonvolatile Change of Magnetic Anisotropy of CoFeB Ultrathin Films Stacked With Multivalent Oxides
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- 2020 Surface Roughness Effects of Pt Seed-Layer Under Full-Heusler Co₂feal/MgO-Based Magnetic Tunnel Junctions On Perpendicular Magnetic Anisotropy
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H. Tanaka
- 2024 Entropy-Controlled Phase Change Memory With An Extraordinary Small Switching Energy
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- 2025 Special Electric Characteristics of Superlattice Phase Change Memory
T. Ohyanagi, M. Kitamura, and N. Takaura

E6 - Photovoltaics for the 21st Century 9

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

- 2026 Bulk-Heterojunction Solar Cells Based On Mixed Donors of P3HT and Phenylene–Thiophene Oligomer Derivative
T. Okukawa, S. Fujii, Z. Duan, Y. Otori, Y. Kaneko, G. Zhao, Y. Yanagi, A. Yoshida, M. Ohzeki, T. Yanagidate, Y. Arai, H. Kataura, and Y. Nishioka
- 2027 Driving Energy for the Formation of Molecular Bulk Heterojunction in Small Molecule Based Organic Photodiode
H. Han, S. Sul, K. H. Lee, J. B. Park, Y. Jung, S. Byun, C. Jung, and K. S. Kim
- 2028 Construction of Hierarchically Structured TiO₂ Nanotube Arrays for Efficient Dye-Sensitized Solar Cells
M. Ye, D. Zheng, M. Lv, C. Chen, Z. Lin, and C. Lin
- 2029 Effect of Co-Evaporated Liq:Alq₃ Layer for Power-Conversion-Efficiency Enhancement of Polymer Photovoltaic Cells
J. H. Park, J. H. Kim, H. R. Lee, Y. H. Ko, J. S. Park, and J. G. Park
- 2030 Nano-Ordering of Donor-Acceptor Interactions Using Metal-Organic Frameworks As Scaffolds
K. Leong, M. E. Foster, B. M. Wong, E. D. Spörke, D. Gough, J. C. Deaton, and M. D. Allendorf
- 2031 Optimizing Light Harvesting and Charge Collection in Dye-Sensitized Solar Cells Based On ZnO
T. Pauporté

- 2032 Flexible PTB7:PC70BM Bulk-Heterojunction Solar Cells with LiF Cathode Buffer Layer
T. Yanagidate, S. Fujii, M. Ohzeki, R. Nagata, D. Kaneto, T. Sato, T. Hoashi, Y. Yanagi, Y. Arai, T. Okukawa, A. Yoshida, H. Kataura, and Y. Nishioka
- 2033 Highly Conductive PEDOT:PSS Electrode Treated With Polyethylene Glycol for ITO-Free Polymer Solar Cells
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- 2035 Physical Characterization of Thin Films of $\text{Cu}_x\text{Zn}_y\text{S}_z$ for Photovoltaic Applications
F. Di Benedetto, S. Cinotti, A. Guerri, A. De Luca, A. Lavacchi, G. Montegrossi, M. Innocenti, F. Carla', and R. Felici
- 2036 Rapid Thermal Processing in CdS/CdTe Thin Film Solar Cells By Intense Pulsed Light Sintering
R. Dharmadasa, O. K. Echendu, I. M. Dharmadasa, and T. Druffel
- 2037 Cu(InGa)(SeS)₂ Electrodeposition From a Single Bath
M. A. Saeed and U. Landau
- 2038 Three-Electrode Electrorefining for Ultrapure Solar-Grade Si
X. Han, B. Zhou, and M. Tao
- 2039 Modelling of the Contact Resistance of Screen Printed Ag-Contacts to Si Emitters
A. M. Svensson, S. Olibet, E. Cabrera, J. Friis, K. Butler, and J. Harding
- 2040 SEM Analysis As a Diagnostic Tool for Photovoltaic Cell Degradation
G. O. Osayemwenre and E. L. Meyer
- 2041 Development of Amorphous Carbon-Based Variable Optical Gap Semiconductor Materials
K. Honda, K. Yoshinaga, and A. Nakahara
- 2042 Semi Transparent Electrode of Au nano mesh on Flexible Substrates Fabricated by Transfer Printing Using Self-Organized Porous Polymer Mold
Y. Yanagi, H. Saito, S. Fujii, A. Yoshida, T. Okukawa, T. Yanagidate, M. Ohzeki, Y. Arai, Y. Ohori, D. Kaneto, R. Nagata, H. Kataura, and Y. Nishioka
- 2043 Towards a Photoelectrochemical Tool for Comprehensive Quality Assessment of Solar Cell Absorber Layers
D. Colombara, A. Crossay, V. Depredurand, and P. J. Dale
- 2044 Electrodeposition and Characterization of Hematite Films Obtained From DMSO Solution
G. Riveros, D. L. Ramirez Sr., E. Dalchiele, R. Marotti, L. Peter, P. Grez, F. Martín, and J. R. Ramos-Barrado
- 2045 Electrochemical Deposition of Compact and Nanostructured Films of Doped ZnO
D. L. Ramirez Sr., K. N. Álvarez, G. Riveros, M. Tejos, and M. G. Lobos

- 2046 Electrodeposition of Lead Sulfide Thin Film and Application As Counter Electrode for Quantum Dot Solar Cells
N. V. Le, T. T. Ha, H. T. Nguyen, and T. T. P. Nguyen
- 2047 Electron Transport Kinetics in Solid State Dye-Sensitized Solar Cells Utilizing Polymer Electrolyte
W. Cho, Y. R. Kim, D. H. Song, and Y. S. Kang
- 2048 High Efficient Inverted Polymer Solar Cells By Surface Treatment of Zinc Oxide
S. Woo, W. Kim, and H. K. Lyu
- 2049 Dye Sensitized Solar Cell Based On Polyaniline - Carbon Nanotubes Composite
L. Saad, S. Ebrahim, M. Fetteha, M. Soliman, and T. M. Abdel-Fattah
- 2050 Enhanced Absorption Using Gold Nanoparticles Deposited TiO₂ Photoanode for Dye-Sensitized Solar cells
J. Oh and H. Lee
- 2051 Improved Photovoltaic Effects of Photonic Crystal Based Photoelectodes in Dye-Sensitized Solar Cell
J. Kang and H. Lee

E7 - Processing, Materials, and Integration of Damascene and 3D Interconnects 5

Dielectric Science and Technology, Electrodeposition, Electronics and Photonics, High Temperature Materials

- 2052 Some Strategic Tracks to Optimize Routing of High Speed Signal Transmission Between Memory and Logic in 3D-IC Stacks
J. Roullard, A. Farcy, S. Capraro, T. Lacrevez, C. Bermond, G. Houzet, P. Artillan, J. Charbonnier, C. Fuchs, C. Ferrandon, P. Leduc, and B. Flechet
- 2053 Reliability Challenges of 3-D Stacked Chip Package With Through-Silicon-Via (Invited talk)
M. Suh
- 2054 3D Integration and Reliability Challenges
M. Koyanagi, M. Murugesan, K. Lee, T. Fukushima, and T. Tanaka
- 2055 3D Integration for An SOI Pixel Detector (Invited Talk)
M. Motoyoshi
- 2056 Fabrication and Characterization of Grain Growth in Electroplated Cu for 3D IC Interconnect Applications
T. C. Liu, S. R. Wang, and M. Corey
- 2057 Challenges for Scaled Damascene Interconnects
S. Armini, J. Swerts, N. Jourdan, Y. K. Siew, J. Boemmels, Z. Tokei, and H. Struyf

- 2058 Nanoscale Wiring By Cu Electrodeposition in Supercritical Carbon Dioxide Emulsified Electrolyte
M. Sone
- 2059 Characterization of Local Stress in Silicon Around Through-Silicon Via Interconnects By Using Micro Raman Spectroscopy
J. H. Kim
- 2060 Reduction of Thermal Expansion Coefficient of Electrodeposited Copper for TSV
K. Kondo, S. Mukahara, T. Hayashi, M. Takeuchi, T. Saito, and N. Okamoto
- 2061 TSV Filling By NiW Alloys Electroplating
H. W. Wang, H. M. Huang, and W. P. Dow
- 2062 Using Graphene As a Conducting Layer for Through Silicon Via Filling
S. C. Chang and W. P. Dow
- 2063 Simulation of Produced Cuprous Ion Concentrationdistribution During Periodic Reverse Pulse Currentwaveform
T. Hayashi, K. Kondo, M. Yokoi, T. Saito, and N. Okamoto
- 2064 Extreme Bottom-Up Filling of Through Silicon Vias
D. Josell and T. P. Moffat
- 2065 A Study of Adopting Pure Tin Solder to Pillar Bump
U. H. Lee, M. Cho, W. Choi, H. Y. You, J. Choi, and J. Won
- 2066 Kinetic Monte Carlo Simulation of Filling High-Aspect-Ratio Through Silicon Via - II
Y. Kaneko, Y. Fukiage, T. Hayashi, K. Kondo, K. Ohara, and F. Asa
- 2067 Modeling the Bottom-Up Filling of Through-Silicon Vias Through Suppressor Adsorption/Desorption Mechanism
L. Yang, A. Radisic, J. Deconinck, and P. M. Vereecken
- 2068 Copper Seed Layer Wet Etching for 3D Integration
L. Gabette, R. Kachtouli, R. Segaud, and P. Besson
- 2069 Improvement of Adhesion Strength of Electrolessbarrier Layer and Its Application to TSV Process
S. Nishizawa, S. Shingubara, T. Shimizu, and F. Inoue
- 2070 Through-Silicon-Via (TSV) Filling By the Electro-Chemical Deposition of Cu With Modified Microstructures By Ultra-Fast Pulsed Current
S. Jin, G. Wang, and B. Yoo
- 2071 A Novel Cu Plating Formula for Filling Through Holes
Y. T. Lin, J. J. Yan, and W. P. Dow
- 2072 Effect On Aspect Ratio Dependence On Etch Rate: Experiment and Modeling
L. Meng

- 2073 Thermomechanical Properties of Electroplated Cu and Its Effect On Beol Leakage for Logic Devices
H. Lee, J. An, D. Lee, K. Moon, S. Lee, B. L. Park, S. Choi, H. K. Kang, E. Chung, and I. Chung
- 2074 Low Temperature Fusion Wafer Bonding for Wafer-Level 3D Integration Applications
J. Burggraf, J. Bravin, H. Wiesbauer, and V. Dragoi
- 2075 Effect of Bath Chemistry On Electrodeposited Cu Morphology Using Thin PVD Cu Seed
J. Kelly, X. Lin, T. Nogami, O. van der Straten, J. Demarest, J. Li, R. Murphy, P. DeHaven, X. Zhang, C. Penny, Q. Huang, and D. Edelstein
- 2076 Novel Alkaline Copper and Copper-Alloy Electroplating Processes Offering Extended Capabilities in Semiconductor Interconnect Metallization
A. Joi, R. Akolkar, and U. Landau
- 2077 Mechanistic Study of Autocatalysis During Electroless Copper Deposition
R. Akolkar, L. Yu, L. Guo, and R. Preisser
- 2078 Structural Features of Nano-Scale Damascene Copper Lines After Annealing in Wide Temperature Range
T. Konkova, S. Mironov, Y. Ke, and J. Onuki
- 2079 Investigation On Pad Surface Conditioner to Control Dishing Amount in Cu Damascene Process
J. W. Kim
- 2080 Investigation of Bomb Defects: Reducing the Defect From Perhydropolysilazane Layer On Semiconductor
C. J. Lee, Y. H. Kim, J. S. Kim, J. S. OH, and B. D. Choi
- 2081 CVD/ALD-Mn(Nx) As Copper Diffusion Barrier For Advanced Interconnect Technologies
N. Jourdan
- 2082 Positive Tone, Chemically Amplified, Cross-Linkable Dielectric
B. Mueller and P. A. Kohl
- 2083 Triangular Voltage Sweep Measurements After Current-Ramp Temperature Stress
I. Ciofi, P. Lazzaro, S. Silipigni, Y. Barbarin, and K. Croes
- 2084 Effect of Dynamic Electric Field On Dielectric Breakdown in Damascene Cu Interconnects
J. Y. Song, H. W. Yeon, J. Y. Bae, Y. C. Hwang, and Y. C. Joo
- 2085 Analysis of Cu(I) Complexes in Copper Sulfate Electroplating Solution By Using Reaction Kinetics With a Chelate Reagent
H. Noma, T. Koga, C. Hirakawa, K. Nonaka, and K. Shobu
- 2086 Cuprous Ion As An Accelerant of Copper Damascene Electrodeposition
K. Kondo

- 2087 Screening Techniques for Selecting Improved Additives for Bottom-Up Copper Metallization
L. Boehme and U. Landau
- 2088 Impurity-Induced Tin Incorporation During Copper Electrodeposition
S. Kitayaporn, M. Hopstaken, Q. Huang, and B. C. Baker-O'neal
- 2089 Copper Plating Uniformity On Resistive Substrate With Segmented Anode
L. Yang, A. Radisic, J. Deconinck, and P. M. Vereecken
- 2090 Diallylamine Levelers Side Chains Effect On Copper Via Filling
Y. Yamada, K. Kondo, M. Takeuchi, T. Saito, N. Okamoto, M. Bunya, and M. Yokoi
- 2091 In-Situ Analysis of Peg Surface Adhesion On Cu
U. H. Lee, J. Choi, J. Won, H. J. Lee, H. J. Sohn, and T. Kang
- 2092 Analysis of Additive Role for Copper Electroplating Using Microfluidic Channel
M. Hayase, Y. Agarita, and H. Egoshi
- 2093 Combination of AC Voltammetry and Chemometric Classification for Diagnosis of Disturbances of Electrodeposition Process
A. Jaworski, H. Wikiel, and K. Wikiel

E8 - Semiconductor Cleaning Science and Technology 13 (SCST 13)

Electronics and Photonics

- 2094 (Keynote) Roadmap Of Future Devices and Related Cleaning Challenges/Opportunities
P. W. Mertens
- 2095 (Invited) Particle Cleaning Technologies To Meet Advanced Semiconductor Device Process Requirements
H. F. Okorn-Schmidt, F. Holsteyns, A. Lippert, D. Mui, M. Kawaguchi, C. Lechner, P. E. Frommhold, T. Nowak, and R. Mettin
- 2096 A Study of Nanoparticle Removal On Patterned Surfaces
A. Pacco, F. Holsteyns, and S. De Gendt
- 2097 Evaluation of An Effective Wet Cleaning Method for Particle Removal on Various Thin Films
Y. S. Cho, H. H. Lee, M. S. Yun, H. Hwang, M. S. Kim, B. K. Kang, A. A. Busnaina, and J. G. Park
- 2098 Surface Cleaning Using CO₂ Gas Cluster For Semiconductor Device
Y. Cho, H. Choi, and T. Kim
- 2099 A Multi-Frequency Megasonic System for Nano-Particle Removal
H. Kim, Y. Lee, and E. Lim

- 2100 Numerical Calculation MODEL Of SiO₂ Film Etching By HF Aqueous Solution Using Single Wafer Wet Etcher
H. Habuka, S. Ohashi, K. Mizuno, and T. Kinoshita
- 2101 Si and Sige Alloys Wet Etching Using Tmah Chemistry
V. Loup, L. Gabette, M. C. Roure, R. Kachtouli, M. Jourdan, P. Besson, and S. Petitdidier
- 2102 A Study On the Removal Method of Si Residue During Si Wet Etching
K. Ko, H. Jeon, M. Song, B. Yoon, C. Lee, and T. Kim
- 2103 Effect of Surface Wettability On Frictional Conditions of PVA Roll Brushes
Y. Hara, T. Sanada, A. Fukunaga, and H. Hiyama
- 2104 Use of a Simple Cavitation Cell Set-Up With Replaceable Single Band Filters for Analysis of Sonoluminescence Signal From Megasonic Irradiated Gasified Aqueous Solutions
S. Raghavan, Z. Han, M. Keswani, M. Beck, and E. Liebscher
- 2105 Numerical Study of Single Bubble Dynamics in Megasonic Field for New Physical Cleaning Method
N. Ochiai and J. Ishimoto
- 2106 Challenges and Solutions for 450mm FEOL Wet Clean Tool
B. Yu, F. Ku, C. Taft, A. S. Larrea, T. Hayashi, A. Morita, K. Arai, H. Naohara, and J. Lin
- 2107 Chemical Improvement of Euv Ruthenium Capping Layer Against Active Oxygen and Hydroxyl Radicals
H. Lee, J. Choi, S. Koh, J. Kim, D. Kim, J. Choi, H. Kim, H. Ko, B. G. Kim, and C. U. Jeon
- 2108 Feol and Beol Cleaning Challenges for 2x and Sub-20nm Technology Nodes
A. Sehgal
- 2109 Evaluation of TaN as the Wet Etch Stop Layer during the 22nm HKMG Gate Last CMOS Integrations
H. Cui, J. Xu, J. Gao, J. Xiang, Y. Lu, Z. Tang, X. He, T. Li, J. Luo, X. Wang, B. Tang, J. Yu, T. Yang, J. Yan, J. Li, and C. Zhao
- 2110 Lanthanum Interaction With Surface Preparations
P. Garnier, V. Joseph, and R. Krachewski
- 2111 Integration of Wet Cleaning in 45 Nm Pitch Beol Processing
E. Kesters, Q. T. Le, F. Lazzarino, S. Decoster, C. Wilson, I. Simms, F. Holsteyns, and S. De Gendt
- 2112 Effective Defect Control in TiN Metal Hard Mask Cu/Low-k Dual Damascene Process
A. Kabansky, S. S. H. Tan, E. A. Hudson, G. Delgadino, L. Gancs, and J. Marks

- 2113 Inhibition of Copper Corrosion By Removal of H₂O₂ From CO₂-Dissolved Water Using Palladium Catalysts
D. Yano, M. Murayama, M. Takahashi, H. Kobayashi, and K. Yamanaka
- 2114 Monitoring of Polymer Removal Process for Copper Interconnect
E. Shalyt, G. Liang, J. Wang, M. Pavlov, V. Dozortsev, P. Bratin, and C. Bai
- 2115 (Invited) Wetting Behavior Of Aqueous Solutions On High Aspect Ratio Nanopillars With Hydrophilic Surface Finish
G. Vereecke, X. Xu, W. K. Tsai, H. Yang, S. Armini, T. Delande, G. Doumen, F. Kentie, X. Shi, I. Simms, K. Nafus, F. Holsteyns, H. Struyf, and S. De Gendt
- 2116 Watermark Formation Mechanism By Evaporation of Ultra-Pure Water: Study the Effect of Ambient
A. H. Tamaddon, P. W. Mertens, G. Vereecke, F. Holsteyns, G. Doumen, S. De Gendt, and M. Heyns
- 2117 Advanced Wafer Drying Technology for 1x Node and Beyond Using Surface Modification Method
T. Orii, T. Watanabe, T. Toshima, M. Nakamori, K. Egashira, Y. Ido, and N. Matsumoto
- 2118 Contamination Control in Supercritical CO₂ Drying Process for Nano-Scale Memory Manufacturing
H. Hayashi, H. Okuchi, H. Tomita, Y. Ono, T. Nakamori, and H. Sugawara
- 2119 All Wet Resist Strip for Improved Semiconductor Process and Product Improvement
M. Bashyam
- 2120 Translation of Particles to Wafers During Spin Coating
C. W. Extrand, S. I. Moon, and L. Monson
- 2121 Cryogenic Single-Component Micro-Nano Solid Nitrogen Particle Production Using Laval Nozzle for Physical Resist Removal-Cleaning Process
J. Ishimoto, U. Oh, T. Koike, and N. Ochiai
- 2122 Effects of Plasma and Wet Processes on Si-Rich Anti-Reflective Coating to Address Selective Trilayer Rework for Sub-20nm Technology Nodes
O. Pollet, R. Sommer, L. Lachal, S. Barnola, C. De Buttet, C. Richard, and C. Jenny
- 2123 Characterization of the Descum Process for Various Silicon Substrates
C. S. Tiwari, Y. S. Lim, R. Fulton, J. Srinivasan, M. Gisinger, P. Flynn, and L. H. Mak
- 2124 TiN Metal Hard Mask Removal with Selectivity to Tungsten and TiN Liner
L. M. Chen, S. Lippy, B. Peethala, M. Sankarapandian, D. L. Rath, K. Boggs, and E. Kennedy

- 2125 Selective Removal of Ashed Spin-On Glass
H. C. Wu and S. H. Tu
- 2126 Non-Stiction Performance of Various Post Wet-Clean Drying Schemes On High-Aspect-Ratio Device Structures
H. W. Chen, R. Gouk, S. Verhaverbeke, and R. Visser
- 2127 Influence of Geometry, Edges and Roughness On Liquid Penetration and Removal During Wet Cleaning
C. W. Extrand and S. I. Moon
- 2128 Micro Unetched Oxide Defect During Buffered Oxide Etchant Process
S. LIM, D. Ahn, K. Kim, H. Jung, B. Lee, H. Lee, and H. Hwang
- 2129 (Invited) A Novel Approach to Clean Surface for High Mobility Channel Materials With in-Situ Atomic Hydrogen Clean
J. PARK, J. G. Cruz, B. Zheng, J. Gelatos, M. Narasimhan, and P. K. Narwankar
- 2130 P cpquecrg"Gvej kpi "qh"KKX"Ugo leqpf vevqtu"lp"Cekf le"J₄Q₄"Uqmwkqpu
D. H. V. Dorp, S. Arnauts, D. Cuyppers, J. Rip, F. Holsteyns, and S. De Gendt
- 2131 Ej go lecdRcuukc vqp"qh"l cCu"*322+"Wukpi "Cmcpvj kqu
P. Mancheno-Posso and A. J. Muscat
- 2132 Study of InP Surfaces After Wet Chemical Treatments
D. Cuyppers, D. H. V. Dorp, M. Tallarida, S. Brizzi, L. Rodriguez, T. Conard, S. Arnauts, D. Schmeisser, C. Adelman, and S. De Gendt
- 2133 Selective Ni Removal Deposited On Ge At Different Annealing Temperatures
M. Otsuji
- 2134 Surface Processing for Area Selective Mist Deposition of Nanocrystalline Quantum Dot Films
J. H. Chao, A. Kshirsagar, and J. Ruzyllo
- 2135 Trace Metal Analysis of Cleanroom Dry Wipers By Inductively Coupled Plasma – Mass Spectrometry
S. Liu and B. Liu
- 2136 Quantitative Analysis of the Metallic Contamination On GaAs and InP Wafers By TXRF and ICPMS Techniques
H. Fontaine and T. Lardin

E10 - Semiconductors, Dielectrics, and Metals for Nanoelectronics 11

Dielectric Science and Technology, Electronics and Photonics

- 2137 Effects of N-Rich TiN Capping Layer on Reliability in Gate-Last High-k/Metal Gate MOSFETs
K. Bae, K. T. Lee, H. C. Sagong, M. Choe, H. Lee, S. Kim, K. S. Kim, J. Park, S. Pae, and J. Park
- 2138 High Temperature Annealing of the Interface State Component of Negative-Bias Temperature Instability (NBTI) in MOSFET Devices
D. Nguyen, K. Kambour, C. Kouhestani, H. P. Hjalmarson, and R. A. B. Devine
- 2139 Reliability of ALD $\text{Hf}_{1-x}\text{Zr}_x\text{O}_2$ Deposited by Intermediate Annealing or Intermediate Plasma Treatment
M. Bhuyian, D. Misra, K. Tapily, R. Clark, S. Consiglio, C. Wajda, G. Nakamura, and G. Leusink
- 2140 Multiphonon Processes as the Origin of Reliability Issues
W. Goes, M. Toledano-Luque, F. Schanovsky, M. Bina, O. Baumgartner, B. Kaczer, and T. Grasser
- 2141 Similarities between Ionizing Radiation Effects and Negative-Bias Temperature Instability (NBTI) in MOSFET Devices
H. P. Hjalmarson, D. Nguyen, K. Kambour, C. Kouhestani, and R. A. B. Devine
- 2142 SiC MOS Interface States: Difference between Si Face and C Face
T. Umeda, M. Okamoto, R. Kosugi, S. Harada, R. Arai, Y. Sato, T. Makino, and T. Ohshima
- 2143 Reliability of La-Silicate MOS Capacitors with Tungsten Carbide Gate Electrode for Scaled EOT
S. Hosoda, K. Tuokedaerhan, K. Kakushima, Y. Kataoka, A. Nishiyama, N. Sugii, H. Wakabayashi, K. Tsutsui, K. Natori, and H. Iwai
- 2144 Origins for Fermi Level Control in Metal/High-k/Si Stacks with Inserted Dielectric Layers
M. Eizenberg and L. Kornblum
- 2145 Novel Graphene Devices
C. M. Corbet, M. Ramon, H. C. Movva, D. Reddy, S. Kang, S. F. Chowdhury, D. Akinwande, E. Tutuc, F. Register, and S. K. Banerjee
- 2146 The Origin of Linear and Nonlinear Damping in Graphene Nanomechanical Resonators
M. Bockrath and T. Miao
- 2147 Oxidation Models for Crystalline Silicon Nanowires
R. G. Mertens, V. H. Velez, and K. B. Sundaram

- 2148 Resistivity of Ni Silicide Nanowires and Its Dependence On Ni Film Thickness Used for the Formation
J. Song, K. Matsumoto, K. Kakushima, Y. Kataoka, A. Nishiyama, N. Sugii, H. Wakabayashi, K. Tsutsui, K. Natori, and H. Iwai
- 2149 III-V Nanowires for Optoelectronic Applications
H. Tan, N. Jiang, D. Saxena, Y. H. Lee, S. Mokkalapati, L. Fu, Q. Gao, H. J. Joyce, and C. Jagadish
- 2150 Vertical III-V Nanowire-Channel on Si
K. Tomioka and T. Fukui
- 2151 Nanoscale Heterogeneous Reactions and Interfaces in Ge/Si and for III-V on Si Integrated Devices
S. Dayeh, W. Tang, B. M. Nguyen, X. Dai, Y. Liu, Y. Hwang, and R. Chen
- 2152 How to Dope a Semiconductor Nanocrystal?
Y. Amit, A. Fasut, O. Milo, E. Rabani, A. Frenkel, and U. Banin
- 2153 Advanced Spectroscopic Ellipsometry Application for Multi-Layers SiGe At 28nm Node and Beyond
T. C. Hsuan, Y. C. Hu, S. Hsu, D. Z. Zhan, A. Lin, S. Yu, C. C. Chien, S. J. Chang, S. M. Chiu, C. J. Huang, C. Y. Cheng, J. Cheng, G. Raphael, Z. Jiang, Y. Carlos, and Z. Tan
- 2154 Comparison of Strained SiGe-On-SOI and Condensed Sgoi p-Mosfet With Various Ge Concentrations
S. H. Song, D. Y. Lee, T. H. Kim, T. H. Shim, and J. G. Park
- 2155 Integration of High-k Dielectrics on Epitaxial (100), (110) and (111) Germanium for Multifunctional Devices
M. K. Hudait, Y. Zhu, D. Maurya, and S. Priya
- 2156 Effect of Precursor Entrance Sequence during Atomic Layer Deposition on the Al₂O₃/Ge Interface by X-ray Photoelectron Spectroscopy
J. Xiang, G. Wang, T. Li, H. Cui, X. Wang, G. Xu, J. Li, W. Wang, and C. Zhao
- 2157 Resistive Switching in Metal Oxides: From Physical Modeling to Device Scaling
D. Ielmini, S. Ambrogio, and S. Balatti
- 2158 Optimization of W\Al₂O₃\Cu(-Te) Material Stack for High-Performance Conductive-Bridging Memory Cells
L. Goux, W. Kim, K. Opsomer, A. Belmonte, G. S. Kar, F. De Stefano, V. V. Afanas'ev, U. Celano, M. Houssa, W. Devulder, C. Detavernier, R. Muller, W. Vandervorst, and M. Jurczak
- 2159 Theoretical Design of Desirable Stack Structure for Resistive Random Access Memories
K. Kamiya, M. Y. Yang, B. Magyari-Köpe, M. Niwa, Y. Nishi, and K. Shiraishi

- 2160 Electrochemical Interfaces in Ref qz/dcugf 'Tgukukxg'Uy kej kpi 'F gxkegu
I. Valov, S. Tappertzhofen, E. Linn, and R. Waser
- 2161 Chemical Vapor Deposition of MoS₂ Films
J. Mun, D. Kim, J. Yun, Y. Shin, S. Kang, and T. Kim
- 2162 2D Semiconductors: Materials, Interfaces, and Devices
A. Javey
- 2163 Fundamentals in MoS₂ Transistors: Dielectric, Scaling and Metal Contacts
H. Liu, A. T. Neal, Y. Du, and P. D. Ye
- 2164 Interaction of Germanene with (0001)ZnSe Surfaces: A Theoretical Study
M. Houssa, E. Scalise, B. van den Broek, G. Pourtois, V. V. Afanas'ev, and A. Stesmans
- 2165 Structural and Chemical Stabilization of the Epitaxial Silicene
A. Molle, D. Chiappe, E. Cinquanta, C. Grazianetti, M. Fanciulli, E. Scalise, B. van den Broek, and M. Houssa
- 2166 Pseudopotential-Based Study of Electron Transport in Low-Dimensionality Nanostructures
M. V. Fischetti, S. J. Aboud, Z. Y. Ong, J. Kim, S. Narayanan, and C. E. Sachs
- 2167 Development of an All-Wet-Etch Process Chemistry for the Patterning of Metal Conductors in Igzo Thin-Film-Transistors
K. Leschkies
- 2168 Extremely Large Refractive Indexes in Anodic Tantalum Pentoxide
A. Kulpa and N. A. F. Jaeger
- 2169 High Quality SiGe:B of High Ge Layer for 14nm and Beyond FINFET Processes
C. I. Liao, C. Y. Chen, S. Yu, C. C. Chien, C. L. Yang, J. Y. Wu, and B. Ramachandran
- 2170 Schottky Barrier Height between Erbium Silicide and Various Morphology of Si(100) Surface Changed by Alkaline Etching
H. Tanaka, A. Teramoto, S. Sugawa, and T. Ohmi
- 2171 Photo-Bias Instability of Solution Processed Zinc Tin Oxide Thin Film Transistors With Varying Zn:Sn Composition Ratio
Y. J. Kim, B. S. Yang, S. Oh, S. J. Han, and H. J. Kim
- 2172 Effect of Sputtering Pressure On the Electrical Characteristics of RF Magnetron Sputtering Processed Zinc Tin Oxide Thin Film Transistors
H. W. Lee, B. S. Yang, S. Oh, S. J. Han, and H. J. Kim
- 2173 Electrodeposition and Characterization of ZnO Rods Films
V. N. D. Santos and S. A. S. Machado

- 2174 Effects of Non-Complexing Additives on Electrodeposited Cu(InGa)Se₂ (CIGSe) Thin Film
F. W. D. S. Lucas and L. H. Mascaro
- 2175 A Two-Step Electrical Degradation Behavior in α -InGaZnO Thin-Film Transistor
T. M. Pan, F. H. Chen, C. H. Chen, C. C. Lin, C. Cheng, F. H. Ko, W. H. Lin, P. H. Chen, J. L. Her, and Y. H. Matsud
- 2176 Improved Characteristics for Metal-nGaSb Ohmic Contact by Using Indium Gallium Zinc Oxide (IGZO)
J. H. Shin, H. W. Jung, and J. H. Park
- 2177 Refined Characterization up to Millimeter Waves of Ferroelectric KTN Thin Film for Efficient Integrated Tunable Devices
G. Houzet, T. Lacrevez, C. Bermond, A. Le Febvrier, S. Députier, M. Guilloux-Viry, P. Queffelec, and B. Fléchet
- 2178 Engineering of the Interface Between Silicon and Rare-Earth-Oxide Buffer for GaN Growth
R. Dargis, A. Clark, F. E. Arkun, and R. Smith
- 2179 Vanadium Dioxide for Selector Applications
I. P. Radu, B. Govoreanu, K. Martens, M. Toeller, A. P. Peter, M. R. Ikram, L. Q. Zhang, H. Hody, W. Kim, P. Favia, T. Conard, H. Y. Chou, B. Put, V. V. Afanasiev, A. Stesmans, M. Heyns, S. De Gendt, and M. Jurczak
- 2180 Light Wavelength Effect on Tungsten Oxide Dielectric Properties
C. C. Lin and Y. Kuo
- 2181 Extremely Short Channel Si-MOSFETs Prepared on SOI Substrates Using Anisotropic Wet Etching
S. Migita, Y. Morita, M. Masahara, and H. Ota
- 2182 High-Performance Field-Effect-Transistors On Monolayer-WSe₂
W. Liu, J. Kang, and K. Banerjee
- 2183 Improvement of Field-Effect Mobility of P3HT Films By Slow Cooling in Annealing Treatment
S. Iino, D. Tadaki, T. Ma, J. Zhang, Y. Kimura, and M. Niwano
- 2184 Measurement of Complex Conductance and Capacitance in the Phz Frequency Range With Subnanometric Spatial Resolution: Application to the Grain Boundary of Monoclinic Hafnia
C. Guedj
- 2185 Electron Band Alignment at Ge/Oxide and A_{III}-B_V/Oxide Interfaces from Internal Photoemission Experiments
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- 2324 Electrochemical Deposition of Pt-(Fe, Co, Ni) Alloys: Self-Terminated Growth to Underpotential Co-Deposition
T. P. Moffat, Y. Liu, C. Hangarter, D. Gokcen, L. Y. Ou Yang, and U. Bertocci
- 2325 Electrochemical Analysis of the Underpotential Deposition of Cadmium and Zinc On Different Substrates
R. Kowalik, P. Zabinski, and K. Mech
- 2326 Lead UPD On Ru(0001)
Q. Yuan, S. Brankovic, and D. Wu
- 2327 Lead Underpotential Deposition On Ru Sub-Monolayer Modified Au(111) Surface
S. Brankovic and Q. Yuan
- 2328 Electrodeposition of Semiconductors Thin Films With Different Composition and Band Gap
M. Innocenti, I. Bencistà, L. Becucci, F. Di Benedetto, S. Cinotti, L. Wang, A. Lavacchi, M. V. Pagliaro, F. Vizza, C. Zafferoni, and M. L. Foresti
- 2329 Dynamic Stress Analysis At Solid Electrodes
M. C. Lafouresse, U. Bertocci, and G. R. Stafford
- 2330 Study of Pt Dissolution During Formic Acid Oxidation On Thin Films Deposited Via Surface Limited Redox Replacements
N. Vasiljevic, M. Fayette, J. Nutariya, and N. Dimitrov
- 2331 In-Situ TEM Observation of Electrochemical Growth
Y. Oshima
- 2332 Nucleation Study On Dendrite Suppressing Lithium-Sodium Electrolyte for Lithium Batteries
J. K. Stark and P. A. Kohl
- 2333 Early Stages of Electrochemical Nucleation and Growth On Carbon Substrates: Nanocluster Aggregation, Coalescence and Recrystallization
J. Ustarroz, T. Altantzis, J. Hammons, A. Hubin, S. Bals, and H. Terry
- 2334 Electrodeposition of Silver On Ultra Thin Polypyrrole Films. Approach to Unusual Nucleation of Metal
T. Rapecki, Z. Stojek, and M. Donten
- 2335 Synthesis and Technological Application of Electrodeposited Semiconductors By EC-ALD
I. Bencistà, F. Borgatti, M. Cavallini, F. Di Benedetto, A. Lavacchi, and M. Innocenti
- 2336 Next Experimental Confirmation of Validity of the Phenomenon of Phase Formation Through a Stage of Liquid State in Metals Being Electrodeposited
O. B. Girin

- 2337 Effect of Organic Additives On Electrochemical Reduction Assessment Using SERS Analysis
M. Saito
- 2338 *In Situ* X-Ray Characterizations of Bismuth Electrodeposition Under Different Nucleation Mechanisms
X. Huang, M. D. Plaza, J. Y. P. Ko, and J. D. Brock
- 2339 Silver Electrodeposition From Ionic Liquids: Coatings Morphology and Mass Transport Issues
A. Lavacchi, S. Cinotti, M. Innocenti, L. Becucci, L. Wang, E. Banchelli, and L. Luconi
- 2340 Study of Coni Electrodeposition Mechanism in a Glycine Bath Using Eqcm
V. P. Graciano
- 2341 Electrodeposition of Supersaturated Cuag Alloys in Pyrophosphate-Iodide Electrolytes
R. Bernasconi, L. Nobili, and L. Magagnin
- 2342 Electrodeposition of Binary Alloys Immiscible in the Bulk
G. Zangari
- 2343 Electrochemical Formation of Brazing Alloys On Metal Substrates
F. Ulu, I. Karakaya, G. Demirci, M. S. Aras, and M. Erdogan
- 2344 An Electrochemical Quartz Crystal Nano-Balance Study On Cu-Sn Codeposition From Methane Sulphonic Acid Electrolytes
S. Roy and N. Pewnim
- 2345 DFT Analysis On Cathodic Reaction of Au Thiosulfate Complex At Au(111) Surface
M. Kunimoto, H. Nakai, and T. Homma
- 2346 Effect of Additives On Dendritic Growth During Zinc Electrodeposition
S. J. Banik and R. Akolkar
- 2347 Structural Accelerating Effect of Chloride On Copper Electrodeposition
Y. I. Yanson and M. J. Rost
- 2348 Exploiting the H-Sorption Properties of Pd for the Epitaxial Deposition of Pt
B. C. Rawlings and N. Vasiljevic
- 2349 *In Situ* STM Study of the Effect of Additives On Copper Bulk Electrodeposition
A. Taranovskyy, Y. I. Yanson, M. J. Rost, and J. W. M. Frenken
- 2350 Effect of Cyanide Inhibition and Ultrasonic Waves On the Electrocrystallisation of Pure Au-Cu Alloys Prepared From An Alkaline Cyanide Bath
R. Botrel, F. Durut, E. Brun, C. Chicanne, V. Brunet, and V. Vignal

- 2351 UPD Layer By Layer Growth of Semiconductor Thin Films On Ag Single Crystals: Effects of Substrate Orientation On Film Structure and Crystallinity
F. Carla', M. Innocenti, R. Felici, and M. L. Foresti
- 2352 A Spontaneous Morphology Change on the Surface of Electrodeposited Single-Crystal Copper Films during Room-Temperature Aging
S. Nakahara, S. Ahmed, and D. N. Buckley
- 2353 Comparison of Structural Properties of Copper Deposits From Sulfate and Pyrophosphate Electrolytes
B. Arslan, N. Ülgüdür, M. Erdogan, I. Imamoglu, and I. Karakaya
- 2354 Electrochemically Induced Growth of Zinc Oxide On Microelectrodes
D. Schlettwein, M. Stumpp, and C. Lupo
- 2355 Adherent Electroless Copper Deposition Using Inexpensive Sn/Ag Catalyst On Non-Roughened Epoxy Laminate Substrates
E. Uzunlar, Z. Wilson, and P. A. Kohl
- 2356 In-Situ Studies Of Electrochemical Growth At The ID03 Beamline Of The Esrf
R. Felici, F. Carla', J. Drnec, and O. Balmes
- 2357 Influence of Electrodeposition Conditions On the Properties of Samaria Films
I. Enculescu, E. Matei, M. Enculescu, C. Florica, and A. Costas
- 2358 Design of Nanostructured ZnO Films By Electrochemical Deposition
T. Pauporté
- 2359 Hierarchical Shape Evolution of Cuprous Oxide Nano and Micro-Crystals By Surfactant Assisted Electrochemical Deposition
S. Yoon, M. Kim, J. H. Lim, and B. Yoo
- 2360 Electrochemical Growth of Copper Nanowires Inside of Semiconducting TiO₂ Nanotubes
S. J. Sitler and K. S. Raja
- 2361 Contactless Electrodeposition and Micropatterning Via Bipolar Electrochemical Printing
T. M. Braun and D. Schwartz
- 2362 Electrochemical Deposition of Gold Nanoparticles On Rough TiO₂ Surfaces
Y. Kimura, E. F. F. Mehdi, T. A. Miya, T. Tobe, R. Kojima, and M. Niwano
- 2363 Porous Silicon With Deposited Iron Oxide As Vehicle for Magnetically Guided Drug Delivery
K. Rumpf, P. Granitzer, Y. Tian, G. Akkaraju, J. Coffler, P. Poelt, and M. Reissner
- 2364 Electrodeposited Metal Nanotube/Nanowire Arrays in Mesoporous Silicon and Their Morphology Dependent Magnetic Properties
P. Granitzer, K. Rumpf, T. Ohta, N. Koshida, P. Poelt, and H. Michor

F5 - Emerging Opportunities in Electrochemical Deposition for Nanofabrication

Electrodeposition, Physical and Analytical Electrochemistry

- 2365 E-ALD of Pd On Au Single Crystals
J. L. Stickney, L. B. Sheridan, Y. G. Kim, D. Benson, K. Jagannathan, and D. B. Robinson
- 2366 Conformal Electroless Deposition On monolayers for TSV Applications
M. Cervati, G. Carnevali, S. Armini, and L. Magagnin
- 2367 Co-Deposition of Carbon Nanotubes With Copper
Y. Sun and L. Romankiw
- 2368 Electroless Deposition On Self-Assembled Monolayers As a Method to Enable Fabrication of Advanced Interconnects
A. Maestre Caro, R. Chebiam, L. Teugels, S. Clendenning, and J. Clarke
- 2369 Towards Molecular Electronics: Using Electroless Deposition to Deposit Nano-Objects
Z. Shi, K. Borner, A. Ellsworth, and A. V. Walker
- 2370 Electrodeposition of Continuous Ultrathin Layers of Functionalized Nanoporous Catalyst On Glassy Carbon Electrodes
N. Dimitrov, L. Bromberg, M. Kamundi, J. Xia, R. Rooney, and M. Fayette
- 2371 Negative Resist Monolayers of Thiols As Templates for Metal Electrodeposition
Z. She, A. DiFalco, G. Haehner, and M. Buck
- 2372 Growth-Inhibited Nucleation of Ni Nanoparticles On TiN Substrates
J. Vanpaemel, M. van der Veen, S. De Gendt, and P. M. Vereecken
- 2373 Electroless and Electrochemical Deposition of Zinc Oxide On Passive Metals As Electrodes in Textile-Based Dye-Sensitized Solar Cells
D. Schlettwein, M. Stumpp, S. Künze, and J. C. Falgenhauer
- 2374 Electrical Properties of ZnO Nanowires Prepared By Templateless Electrodeposition
I. Enculescu, E. Matei, C. Florica, and A. Costas
- 2375 Electroless and Electrolytic Deposition of Silver and Nickel for Solid Oxide Fuel Cells Anodes
E. Ruiz-Trejo, P. Boldrin, F. Tariq, N. P. Brandon, A. Atkinson, J. Darr, C. Tighe, and M. Millan-Agorio
- 2376 Electrochemical Metal Chalcogenides for Electrocatalysis and Energy Storage
K. J. Stevenson and D. W. Redman
- 2377 Templated Electrodeposition of Metal Nanorods Into TiO₂ Nanotubes
N. Liu, S. So, and P. Schmuki

- 2378 Wide pH Range Electroless Copper Deposition At Room Temperature. Eqcm and CV Study of Autocatalytic Copper(II) Reduction By Cobalt(II)-Pentaethylenehexamine Complexes
E. Norkus, I. Stankeviciene, L. Tamasauskaite-Tamasiunaite, G. Stalnionis, K. Prusinskas, and A. Jagminiene
- 2379 Self-Healing Electrostatic Shield Mechanism for Dendrite Control During Electrodeposition
J. G. Zhang, F. Ding, W. Xu, X. Chen, Y. Zhang, E. N. Nasybulin, G. L. Graff, and M. Sushko
- 2380 Nonvolatile Resistance Switching in Electrodeposited Metal Oxide Thin Films
J. A. Switzer, J. A. Koza, and I. Schroen
- 2381 Superconformal Film Growth: Challenges and Opportunities
T. P. Moffat, G. Liu, S. Zou, L. Richter, L. Y. Ou Yang, D. Wheeler, and D. Josell
- 2382 The Advanced Monitoring of Organic Additives in Copper Electroplating Baths
M. Pavlov, E. Shalyt, P. Bratin, and X. Sun
- 2383 Electrochemical Synthesis of Soft Ferromagnetic Thin Films and Nanostructures for Magnetic Recording and MEMS Application
S. Brankovic
- 2384 Palladium-Free Surface Metallization of Polycarbonate Substrate By Inkjet-Printing Technology
H. F. Huang and W. P. Dow
- 2385 Numerical Simulation of the Effect of Additives On Copper Electro-Deposition
L. Yin, Y. Jin, L. Wen, and X. Zhang
- 2386 Influence of Polyalkyl Glycol Polymers On Copper Filling of Damascene Interconnects
K. Ryan, K. A. Dunn, J. van Eisdien, and J. D. Adolf
- 2387 Extreme Bottom-Up Filling of Through Silicon Vias: Cu and Au
D. Josell and T. P. Moffat
- 2388 Electrodeposition of Macroporous Materials and of Free Standing Nanowires From Ionic Liquids
F. Endres
- 2389 Electrochemical Fabrication of Magnetic Nanostructures- Analysis, Control, and Design of Deposition Processes -
T. Homma, S. Wodarz, B. Jiang, M. Kunimoto, and M. Yanagisawa
- 2390 Adhesion of Electroless Nib Film On Modified Polyimide With Aminosilane
T. Osaka, S. Matsui, K. Tadokoro, T. Hachisu, A. Sugiyama, I. Matsuda, and T. Yokoshima

- 2391 Electrochemical Processing of Carbon Nanostructures
P. M. Vereecken, A. Radisic, and D. J. Cott
- 2392 Near-Surface Atomic and Electronic Structural Effects in Layer-By-Layer Derived Core-Shell Catalysts
F. M. Alamgir
- 2393 Superconformal Deposition of Au in a Sulfite Electrolyte
D. Josell and T. P. Moffat
- 2394 Electrodeposition of Cobalt-Tungsten Alloys From An Alkaline Citrate-Containing Bath As Barrier Layers in Electronic Application
N. dadvand, G. jarjoura, and G. J. kipouros
- 2395 Cu Electroless Deposition By Using Cu Nanoparticles As Catalysts for a Printed Circuit Board Metallization
Y. C. Chung and W. P. Dow
- 2396 Electroless Co-B-P-W Deposition Using Dmab As reducing Agent
E. Norkus, A. Jagminiene, I. Stankeviciene, L. Tamasauskaite-Tamasiunaite, and Z. Sukackiene
- 2397 The Application of Nico Alloy Electroforming On Products With Microstructure
H. J. Chen
- 2398 Towards An Atomistic Understanding of the Activation of Plating Additives At the Copper/Electrolyte Interface
H. Nguyen, T. M. T. Huynh, A. Flügel, M. Arnold, D. Mayer, and P. Broekmann
- 2399 Using Vibrational Spectroscopy and Electrochemical Stress Measurements to Interrogate Metal Electrode Surfaces
A. Gewirth, J. Oberst, K. Schmitt, and H. Tavassol
- 2400 Optimization of Leveler Concentrations in Copper Via Filling for Deduction of Contamination
J. H. Lee and K. T. Kim
- 2401 Effects of Anodizing Parameters On the Formation of Titanium Dioxide Nanotubes
Z. Bolukoglu, I. Karakaya, and M. Erdogan

G1 - Alkaline Electrolyzers

Industrial Electrochemistry and Electrochemical Engineering, Battery, Energy Technology, Physical and Analytical Electrochemistry

- 2402 Effect of Bubbles Coverage in Gas Evolving Rotating Disk Electrodes
L. A. Diaz, M. Muthuvel, and G. G. Botte

- 2403 Self-Sustainable Production Of Hydrogen and Chemicals From Renewable Alcohols By Alkaline Electrolysis
H. A. Miller, F. Vizza, A. Lavacchi, J. Filippi, W. Oberhauser, M. Bevilacqua, A. Marchionni, M. Innocenti, and L. Wang
- 2404 Electrocatalytic Oxidation Mechanism of Urea On Ni/Co Hydroxide Catalyst in Alkaline Medium
V. Vedharathinam and G. G. Botte
- 2405 Well-Defined NiFeAlO₄ Inverse Spinel As Efficient Alkaline Water Oxidation Catalyst
J. Y. C. Chen, A. Serov, P. Atanassov, and S. S. Stahl
- 2406 Efficient Water Oxidation Using Nickel-Hydroxide As An Electrocatalyst
M. Gao and Y. Yan
- 2407 Towards Accurate *Ab-Initio* Prediction of ORR/ Oer Activity of LaBO₃ (B=Cr,Mn) Perovskites – Role of Hubbard *U* and Stable Surface Coverage
M. Gadre, Y. L. Lee, Y. Shao-Horn, and D. Morgan
- 2408 Enhanced Oxygen Evolution At ‘Aged’ Hydrous Nickel Oxide Electrodes in Alkaline Solution: Kinetics and Mechanism
I. Godwin and M. E. G. Lyons
- 2409 Investigation of the Alkaline Interface for Non-PGM Electrocatalysts in AEM Water Electrolysis
M. Bates and S. Mukerjee
- 2410 Mixed Metal Mixed Oxides Electrocatalyst for Water Electrolysis
R. Kamaraj, D. Jonas Davidson, S. Vasudevan, G. Sozhan, and S. Ravichandran
- 2411 Hydrogen Production By Alkaline Membrane Water Electrolysis
J. Parrondo, C. G. Arges, and V. K. Ramani
- 2412 Durability and Activity of Modified Nickel Anode for Alkaline Water Electrolysis
H. Ichikawa, K. Matsuzawa, Y. Kohno, Y. Sunada, I. Nagashima, Y. Nishiki, A. Manabe, and S. Mitsushima

G2 - Synthesis and Electrochemical Engineering General Session
Industrial Electrochemistry and Electrochemical Engineering

- 2413 Performance Analysis of Syngas Fueled Solid Oxide Electrolysis Cells
P. Kazemipoor and R. J. Braun
- 2414 Microbial Reverse-Electrodialysis Electrolysis Chemical-Production Cell for H₂ Production and CO₂ Sequestration
X. Zhu, M. C. Hatzell, and B. E. Logan
- 2415 Ammonia Synthesis From Urea Using An Electrochemical Approach
F. Lu

- 2416 PEM Electrolysis Model With Experimental Validation
D. L. Fritz III
- 2417 Current and Voltage Efficiency of High Pressure PEM Water Electrolyzers
M. Schalenbach
- 2418 Effect of Cerium Doping On Morphology and Physical Properties of α -Fe₂O₃ films Prepared By Hydrothermal Electrodeposition
C. Yilmaz and U. Unal
- 2419 Electrochemical Performance of Ultrafine Bubble Water
Y. Ueda, T. Zushi, and Y. Tokuda
- 2420 Electrochemical Carboxylation of Olefins to Form Monocarboxylic Products By Using 12CaO•7Al₂O₃ Electrude Cathode
J. Li, T. Fuchigami, S. Inagi, H. Hosono, and S. Ito
- 2421 Electrochemical Reduction of Tungsten Oxide in Molten LiCl-KCl Using a Novel Fluidised Bed Electrode Approach
R. Abdulaziz, L. D. Brown, D. Inman, S. J. R. Simons, P. R. Shearing, and D. J. L. Brett
- 2422 Nickel Phosphide As Hydrogen Evolution Reaction Electrocatalysts
H. Li, S. Gu, Z. Zhuang, Q. Fang, P. Liu, J. Chen, and Y. Yan
- 2423 Anodes Based On Platinized Ebonex[®]
A. Velichenko, O. Kasian, and T. Luk'yanenko
- 2424 The Effect of Gas Compositions On the Performance and Durability of Soecs
S. D. Kim, D. W. Seo, S. K. Woo, and J. H. Yu
- 2425 Mo/TiN Novel Composite Powder for An Alkali Metal Thermal to Electric Converter (AMTEC) Electrode
S. D. Kim, S. Y. Kim, J. H. Joo, M. S. Seo, and S. K. Woo
- 2426 Removal of Radioactive Cs Using Aqueous Sodium Metasilicate With Reduced Volumes of Waste Solution
Y. Ueda, Y. Tokuda, H. Goto, T. Kobayashi, and Y. Ono
- 2427 Influence of the sp² Content On Boron Doped Diamond Electrodes Applied in the Textile Dye Electrooxidation
F. L. Migliorini, M. D. Alegre, S. A. Alves, M. R. Baldan, M. R. V. Lanza, and N. G. Ferreira
- 2428 Nitrate Removal By Electrolysis Using Cu/BDD Electrode Cathode
M. C. E. Ribeiro, A. B. Couto, N. G. Ferreira, and M. R. Baldan

H1 - Carbon Nanostructures 4 - Fullerenes to Graphene

Fullerenes, Nanotubes and Carbon Nanostructures, Dielectric Science and Technology, Energy Technology, Physical and Analytical Electrochemistry, Sensor

- 2429 Large Surface Area Graphene-Si Anodes for Li-Ion Batteries
G. Radhakrishnan, P. M. Adams, J. D. Cardema, and M. V. Quinzio
- 2430 Novel and Simple Electrografting Monomer Method to Exfoliate HOPG for Lithium-Ion Batteries
A. Aqil, F. Ouhib, C. Jérôme, C. Detrembleur, and A. Vlad
- 2431 CVD Synthesis of Graphene/Carbon Nanofiber Hybrids and “Square” Graphene Domains
K. Vinodgopal, G. P. Dai, and M. H. Wu
- 2432 Graphene Growth On Electrodeposited Polycrystalline Copper and Ruthenium
D. Pigliafreddo, L. Magagnin, L. Nobili, C. Carraro, and R. Maboudian
- 2433 Interfacial Charge Induced Phenomena in Porous Graphene-Based Bulk Materials
J. Biener, M. A. Worsley, E. Montalvo, P. G. Campbell, B. C. Wood, T. Ogitsu, M. Bagge-Hansen, J. R. I. Lee, M. Stadermann, M. M. Biener, S. Dasgupta, L. Shao, R. K. Kalluri, A. V. Hamza, A. Striolo, J. Weissmueller, H. Hahn, and T. F. Baumann
- 2434 Thick, Binder-Free Carbon Nanotube-Based Electrodes for High Power Applications
M. A. Worsley, M. Merrill, S. Charnvanichborikarn, S. O. Kucheyev, M. Stadermann, T. F. Baumann, and J. Biener
- 2435 Carbon and Composite Nanostructured Materials for Energy Applications
A. Serov, N. Andersen, K. Artyushkova, and P. Atanassov
- 2436 Indene Bisadduct of Fullerenes As High Efficiency Acceptor for Polymer Solar Cells
Y. Li
- 2437 Platinum Nanoparticles Immobilized On CVD-Grown Graphene As a Transparent and Efficient Counter Electrode Materials for Dye-Sensitized Solar Cells
V. D. Dao, J. K. Lee, and H. S. Choi
- 2438 Synthesis, Structure, and Properties of C₆₀-Pd Spherical Nanoparticles
K. Winkler, E. Brancewicz, and E. Gradzka
- 2439 Electrochemically Generated Highly Fluorescent Boron-Doped Graphene Quantum Dots for Fluorescent Crystal, Sensors and Bioimaging
L. Fan and Z. Fan
- 2440 Application of Positively Charged Carbon Nanotubes to Layer-By-Layer Assemblies of Dehydrogenase Enzymes for Molecular Bioelectronic Devices
B. Kowalewska, M. Dzwonek, and P. J. Kulesza

- 2441 Controlled Deposition of Carbon Nanotubes Within a Smectite Nanoclay By Means of a Modified Langmuir-Schaefer Approach
A. Kouloumpis, P. Zygouri, K. Spyrou, T. A. Tsoufis, P. Stathi, P. Rudolf, and D. Gournis
- 2442 Electrocatalytic Features of Selectively Attached Microperoxidase-11 On to Nano-Carbon Structures
S. Kariate and S. Krishnan
- 2443 Controllable Synthesis of Heteroatom-Doped Carbon Nanotubes As Efficient Catalysts for Electrochemical Detection of Dopamine
T. J. Li, K. Ho, and W. H. Chiang
- 2444 Networked Graphitic Structures Grown From Dense Microemulsions As High Performance Electrode Material
E. Negro, M. Dieci, G. Koper, and D. Sordi
- 2445 Evaluation of MEAs Prepared By Pt/C Catalysts With Improved Durability Through the Heat Treatment
X. Zhao, A. Hayashi, Z. Noda, and K. Sasaki
- 2446 Hydrogen-carbon Bond on the Nanostructured Graphite for Hydrogen Sensor
Y. Zhang
- 2447 Comparative Study of the Growth of CNTs On Stainless Steel With and Without the External Catalyst
M. Hashempour, A. Vincenzo, and M. Bestetti
- 2448 Enhanced Photocatalytic Activity of ZnO-Rgo Nanocomposites in Degradation of Gaseous Acetaldehyde
Y. C. Chen, K. I. Katsumata, and Y. J. Hsu
- 2449 Preparation of Graphene-ZnO Nanocomposites Using a Facile, Green Antisolvent Method
W. C. Hu and Y. J. Hsu
- 2450 Fabrication of Graphene By Electrochemical Exfoliation in Alkaline Electrolytes
L. C. Chang, Y. C. Hsieh, Y. M. Chen, P. W. Wu, and J. F. Lee
- 2451 Charge Selective Ion Transport Through Graphene Oxide Based Membranes
J. Nham, S. H. Ha, Y. S. Jeong, J. H. Kim, and Y. J. Lee
- 2452 Novel Dendrimer Intercalated Graphene-Based Materials
T. A. Tsoufis, F. Katsaros, Z. Sideratou, O. Ivashenko, P. Rudolf, and M. A. Karakassides
- 2453 Supercapacitors Based On High-Surface-Area Graphene
X. Zhou and Y. Lian

- 2454 Oxygen Reduction Reaction On Glassy Carbon Electrodes Modified With Amino-functionalized Carbon Nanotubes and Iron Phthalocyanines
P. Cañete-Rosales, J. F. Silva Sr., and J. H. Zagal Sr.

II - Physical and Analytical Electrochemistry Division General Session
Physical and Analytical Electrochemistry

- 2455 The Wedge Scheme, a General Framework for Incorporating H-Bonding Into Proton-Coupled Electron Transfer Reaction Mechanisms
D. K. Smith, L. A. Clare, and A. Pham
- 2456 Iodide Effect On the Conduction Band Edge of ZnO Nanomaterials
P. Chhetri, N. Perera, and M. A. Alpuche-Aviles
- 2457 The Incorporation of Bovine Serum Albumin Into a Polypyrrole Film in One Simple Step
A. Hamilton and C. Breslin
- 2458 X-Ray Acceleration On Electrochemical Reaction
J. Liu, M. Roberts, R. Younesi, M. Dahbi, J. Zhu, T. Gustafsson, and K. Edström
- 2459 Nitric OXIDE Reduction and Oxidation ON Polycrystalline Platinum: Differential Reflectance Spectroscopic Studies
D. A. Scherson and A. Jebaraj
- 2460 Nanostructured Monolayer Films Electrografted On Carbon Substrates. Application to the Electrochemical Preparation of Surfaces With Reversible Photo-Switchable Properties
Y. Leroux and P. Hapiot
- 2461 Can Electron Tunneling Occur in a Hundred-Nanometer Thick Nafion Film and be Utilized to Image Nafion/Electrode Interfaces With An Angstrom Level Resolution?
X. Zhou
- 2462 Operation of Scanning Ion Conductance Microscopy (SICM) At Short Tip to Sample Distances
N. Sa, W. Shi, M. A. Derylo, and L. A. Baker
- 2463 Finite-Elements Simulation of Etch Front Propagation in Silicon Electropolishing Process
A. Ivanov, U. Mescheder, and P. Woias
- 2464 Investigating the Mechanism of Thylakoid Direct Electron Transfer for Photocurrent Generation
M. J. Rasmussen and S. D. Minteer
- 2465 Increased Dissociation of Water Due to Large Electric Fields
N. P. Craig and J. Newman

- 2466 Simple Instabilities in the Potentiostatic Oxidation of High Conducting Formic Acid/Formate Solutions
M. Schell
- 2467 Combined ATR-FTIR and IRAS Study of Dissociation and Oxidation of Alcohols At Palladium Electrode in Alkaline Media
Y. Y. Yang and W. B. Cai
- 2468 Electrochemical Behavior of Organics Oxidation On Palladium-Based Nanocatalysts Synthesized From Bromide Anion Exchange
K. B. Kokoh, Y. Holade, C. Morais, T. W. Napporn, and K. Servat
- 2469 Electrochemical Properties and Applications of Graphene Nano Platelets
Q. Wan, M. Han, Y. Liu, and N. Yang
- 2470 Distance-Dependent Electron Transfer At Passivated Electrodes Decorated By Gold Nanoparticles
A. Barfidokht, S. Ciampi, E. Luais, N. Darwish, and J. J. Gooding
- 2471 The Effects Of Internal Pressure Evolution On The Ageing Of Commercial Li-Ion Cells
A. Matasso, D. Wetz Jr., A. H. Salehi Gilani, and F. Liu
- 2472 Electrode Materials: The Decision Makers of the Electrochemical Properties of Immobilized Human Liver Microsomes
S. Krishnan, C. Walgama, and R. Nerimetla
- 2473 Magnetron Sputtered Ptnp/MWCNT Composite Electrocatalysts for Oxygen Reduction Reaction
K. Tammeveski, K. Jukk, J. Kozlova, P. Ritslaid, V. Sammelseg, and N. Alexeyeva
- 2474 Effects of Axial Ligation and Electron Donors On Oxygen Reduction Catalysis By Metalloporphyrins
J. Chlistunoff and J. M. Sansiñena
- 2475 Electrodeposited Nickel-Based Electrocatalysts for Oxygen Evolution Reaction (OER)
Y. Cai and A. T. Bell
- 2476 Applications of Fourier Transformed Large Amplitude Ac Voltammetry for Kinetics Studies At Stationary and Rotating Disc Electrodes
J. Zhang, A. M. Bond, K. Bano, and G. F. Kennedy
- 2477 Optimizing 3D Amperometry for Analyte Identification in Liquid Chromatography
J. Cheng, P. Jandik, Y. Liu, and C. Pohl
- 2478 Bromide Oxidation On a Polycrystalline Platinum Rotating Disk Electrode in Aqueous Solutions
D. A. Scherson and J. Xu

- 2479 Electrochemical Analysis of Antioxidants Using Bicontinuous Microemulsion
E. Kuraya, S. Nagatomo, K. Sakata, S. Uemura, and M. Kunitake
- 2480 A Highly Sensitive Hybrid Film Sensor for Voltammetric Detection of Calcium Antagonist Cilnidipine
R. Jain and D. Kumar
- 2481 Studies of Adiponitrile As An Electrochemical Solvent
G. T. Cheek
- 2482 Characterization of a Conductive Agar Electrolyte
J. Kagan
- 2483 Quinone Electrochemical Mysteries: Thick Cyclic Voltammograms and Tiny Redox Waves
P. A. Staley, L. A. Clare, E. M. Lopez, and D. K. Smith
- 2484 Electroactive Monolayers On n-Type Silicons
J. J. Gooding, M. H. Choudhury, S. Ciampi, X. Lu, and C. Zhao
- 2485 Characterization of Flow-Through Porous Electrodes for Microfluidic Electrochemical Cells
M. A. Goulet and E. Kjeang
- 2486 X-Ray Absorption Spectroscopy Study of Water Molecules At the Water/Electrode Interfaces
C. Wu, J. J. Velasco-Velez, and M. B. Salmeron
- 2487 Electrooxidation of *Para*-Chloroaniline At Gold Electrode
I. U. Haque
- 2488 Thermodynamics in Porous Electrodes for One- and Two-Component Electrolytes
K. Kiyohara and K. Asaka
- 2489 A Grand Canonical Ensemble Model for Electrolytes Confined in Mesoporous Domains
M. Kobra
- 2490 Directed Immobilization of a Heme Protein On Nanostructured Electrodes
C. Walgama, R. Nerimetla, and S. Krishnan
- 2491 Preparation and Physicochemical Characterisation of Novel Ru-Based Catalyst for Oxygen Reduction Reaction
A. Dobrzyniecka
- 2492 Physico-Chemical Properties of Ionic Liquid Analogous Based On Magnesium Chloride Hexahydrate and Dimethylformamide
Y. Jing, H. Wang, Y. Jia, D. Yue, Y. Yao, X. Wang, and J. Ma

- 2493 Influence of Aromatic and Unsaturated Substituents On Physical and Electrochemical Properties of Phosphonium Ionic Liquids
K. Tsunashima, S. Kikuchi, C. Nagai, Y. Sakai, and M. Matsumiya
- 2494 Quasi-Solid-State Dye-Sensitized Solar Cells Assembled With Polymer Electrolyte Containing Core-Shell Structured Polymeric Ionic Liquid
S. G. Jo and D. W. Kim
- 2495 Dye-Sensitized Solar Cells Assembled With Polymeric Ionic Liquid and Poly(3,4-ethylenedioxythiophene) Counter Electrode
N. Jeon, S. G. Jo, D. K. Hwang, S. Im, and D. W. Kim
- 2496 The Electrolytic Dissociation of 1,3-Cyclopentanedicarboxylic Acids
E. Kvaratskhelia, R. Kvaratskhelia, and R. Kurtanidze
- 2497 Catalytic Oxidation of Liquid Fuels On Palladium Nanoparticles Loaded Carbon Nanotubes
Q. Wan, M. Han, H. Liao, and N. Yang
- 2498 Electrode Surface Fouling for Sensitive Electroanalytical Determination of Phenols
A. N. M. Kawde
- 2499 Heavy Metal Extraction and Electroseparation From Wastewater By Acidic Solutions
Y. Addi
- 2500 Electrochemical Determination of Copper and Thiourea in the Presence of An Animal Glue From Strongly Acidic Solutions Employed in the Electrorefining Processes of Copper
M. G. Lobos, D. L. Ramirez Sr., G. Riveros, P. Diaz, and H. Gomez
- 2501 Degradation Route for Amaranth Dye By Sonoelectrochemical Process Using BDD Anode
A. D. J. Motheo, J. R. Steter, M. R. V. Lanza, and W. R. P. Barros

12 - Invitational Symposium in Honor of Adam Heller on his 80th Birthday

Physical and Analytical Electrochemistry, Battery, Energy Technology, Organic and Biological Electrochemistry

- 2502 At 80: The Joy of Uncovering Truths and Building People-Serving Products
A. Heller
- 2503 A Long-Life, High-Rate Lithium/Sulfur Cell
M. K. Song, Y. Zhang, and E. J. Cairns
- 2504 Electrochemical Tuning of Metabolisms of Photosynthetic Microbes
K. Hashimoto, Y. Lu, and S. Nakanishi
- 2505 Electrochemical/Enzymatic Amplification Schemes for the Sensitive Detection of Pathogens in Electrochemically Activated Capillaries
O. Msehli, S. Molina, B. Teixeira-Dias, and I. Katakis

- 2506 Doping in Organic Semiconductors and Solar Cells
B. Gregg
- 2507 (2013 ECS Europe Section Heinz Gerischer Award Lecture) Multiple Exciton Generation from Single Photons in Semiconductor Nanocrystals, Quantum Dot Solar Cells, and via Singlet Fission in Molecular Chromophores: Applications to Next Generation Solar Photon Conversion to PV and Solar Fuels
A. J. Nozik
- 2508 Photooxidation of Chloride By Oxide Minerals: Implications for Perchlorate On Mars
B. A. Parkinson
- 2509 (2013 ECS Fellow Inductee) Preparation and Electrochemistry of Atomic Metal Electrodes
M. Josowicz, A. P. Jonke, I. T. Schwartz, and J. Janata
- 2510 Mechanism of the Anodic Oxidation of Platinum
D. D. Macdonald and F. Mao
- 2511 All-Solid Semiconductor-Sensitized Solar Cells Made By Electrodeposition
C. Levy-Clement, J. Elias, and V. Ivanova
- 2512 Enzyme-Catalyzed Direct Electron Transfer: An Inspiration for Electrocatalyst Design
P. Atanassov
- 2513 Functionalization of Multi Walled Carbon Nanotubes with Pyrene-based Groups for Enhanced Oxygen Reduction by Laccase
F. Giroud and S. D. Minteer
- 2514 Development of Non-Gassing Electroosmotic Pump and Its Application for Drug Infusion System
W. Shin
- 2515 Sacrificial dye electrode for non-gassing electro-osmotic pumps
R. K. Nagarale
- 2516 Design of Redox Polymers for Reagentless Biosensors, Biofuel Cells, and Photobioelectrochemistry
W. Schuhmann
- 2517 Redox Mediators Coupled to Surfaces and Supports: Operation of Enzymatic Biofuel Cells in Physiological Buffers, Human Saliva and Blood
P. O Conghaile, D. MacAodha, M. Falk, S. Shleev, L. Gorton, and D. Leech
- 2518 Optimizing the Electrocatalytic Oxidation of NADH At Nitrogen-Doped Carbon Nanotubes
J. M. Goran, C. A. Favela, and K. J. Stevenson
- 2519 Metabolic Control Analysis of Bioelectrodes for Multistep Oxidation of Biofuels
S. Calabrese Barton, B. Piering, and S. D. Minteer

- 2520 Improving Implanted Glucose Sensor Performance - Designing the Next Generation of Sensors
M. Pishko
- 2521 Impedance Biosensors: Remaining Technical Challenges
I. I. Suni and R. Radhakrishnan
- 2522 Design, Synthesis and Characterization of Polyoxometalates for Use As Electrochemical Labels for Detection of Single Nucleotide Polymorphisms Using Electrochemical Array Based Primer Extension
C. O Sullivan
- 2523 Wireless Communication By An Autonomous Self-Powered Cyborg Insect
J. J. Matic, M. J. Rasmussen, A. J. Pollack, W. Weeman, I. Lee, M. A. Willis, S. Garverick, R. E. Ritzmann, and D. A. Scherson
- 2524 Wired Microbe Electrodes
D. Boyd, J. Erickson, N. Lebedev, J. Roy, R. M. Snider, S. Strycharz-Glaven, L. Tender, and S. Tsoi
- 2525 Improvement of Interdigitated Array Electrodes for the Investigation of Electron Transfer Through Biofilms of *Geobacter Sulfurreducens* mutants
R. M. Snider and D. R. Bond
- 2526 Structural Transition of Alkylthiol/Au(111) Interface During Self-Assembly Process
K. Uosaki and T. Kondo
- 2527 Electrochemical Communication Between thylakoid Membranes and Osmium Redox Polymers Modified Electrodes
L. Gorton, K. Hasan, H. Hamidi, S. C. Emek, Y. Dilgin, D. Leech, H. E. Åkerlund, and P. Albertsson
- 2528 Photoelectrochemical Energy Conversion: From Efficient Planar Structures to Nanotopographic Devices
H. J. Lewerenz
- 2529 Series Circuit of Organic Thin-Film Solar Cells for Electrochemical Conversion of Water Into Hydrogen
A. Aoki, T. Hori, M. Naruse, and T. Abe
- 2530 Potential of Copper Indium Selenide for Solar Absorbers in Various Energy Conversion Devices
S. Menezes and Y. Li
- 2531 Bioinspired Photoelectrochemistry
K. Rajeshwar, C. Janaky, and N. Myung

I3 - Photoelectrochemistry and Photoassisted Electrocatalysis

Physical and Analytical Electrochemistry

- 2532 (Invited) Critical Metrics and Limiting Physical Parameters in Electrolytic and Photoelectrochemical Solar to Hydrogen Production Technologies
E. L. Miller, S. Dillich, D. Peterson, and K. Randolph
- 2533 (Invited) III-V Nitrides and Tandem Cells for Photoelectrochemical Water Splitting
J. A. Turner
- 2534 (Invited) Scalably Manufacturable Solar-Fuels Generators
C. Koval
- 2535 (Invited) Mechanisms of (Photo)Electrochemical Reduction of Carbon Dioxide From First Principles
E. A. Carter
- 2536 (Invited) Photochemical Charge Transfer in Niobium Oxide Nanocrystal Films Studied With Surface Photovoltage Spectroscopy
F. E. Osterloh and J. Zhao
- 2537 (Invited) Oxygen Evolution At Vertically Aligned Core-Shell Iron-Iron Oxide Nanowire Arrays
G. Wittstock, G. Denuault, S. Mátéfi-Tempfli, H. Bültel, M. Mátéfi-Tempfli, A. Lesch, I. Schmidt, C. Dosche, M. Ahlf, K. Al-Shamery, A. Fanget, and L. Forro
- 2538 Synthesis and Characterization of Highly-Ordered Doped Titania Nanotubes for Solar Hydrogen Generation
S. Karimi and R. Cuello
- 2539 Composite WO₃/TiO₂ Nanotubes for Solar Photo-Conversion and Electrochromic Applications
D. B. Robinson and K. Reyes
- 2540 (Invited) Materials Aspects Of Hematite-Based Photoelectrochemical Water Splitting
D. Wang
- 2541 Design, Synthesis, and Characterization of Hematite Nanotubes for Photoelectrochemical Water Splitting
T. Mushove, S. Blodgett, and L. T. Thompson
- 2542 Nanostructured Hierarchical Hematite Photoanode From Hydrothermal Synthesis for Efficient Solar Water Oxidation
H. Y. Kang, T. Y. Yang, K. Jin, J. H. Lee, U. Sim, H. Y. Jeong, Y. C. Joo, and K. T. Nam
- 2543 (Invited) Modified Copper Tungstate Photoanodes For Efficient Solar Driven Water Oxidation
A. M. Herring, S. K. Pilli, J. A. Turner, T. G. Deutsch, and T. E. Furtak

- 2557 Spectroelectrochemical Investigation of ZnCr₂O₄ for High Photovoltage p-Type Sensitized Solar Cells
V. V. Nair and M. Law
- 2558 Critical Factors of Dye-Sensitized Solar Cell Using TiO₂ Nanotubes
S. So, N. Liu, and P. Schmuki
- 2559 (Invited) Cold Gas Sprayed Semiconductor-Based Electrodes For The Photo-Induced Water Oxidation
I. Herrmann-Geppert, H. Gutzmann, P. Bogdanoff, T. Emmler, P. Hillebrand, M. Schieda, F. Gaertner, and T. Klassen
- 2560 (Invited) Metal-Insulator-Semiconductor Photoelectrodes As a Platform For Efficient and Stable Photoelectrochemical Water Splitting
D. V. Esposito, Y. Lee, A. A. Talin, and T. P. Moffat
- 2561 Oxide Thin-Films for Protection and Functionalization of Photocathodes in Tandem Water-Splitting Devices
P. C. K. Vesborg, B. Seger, I. Chorkendorff, and O. Hansen
- 2562 Solar Water Splitting By Transition Metal Oxide – Silicon Photoanodes Prepared Under Cathodic Electrochemical Conditions
M. Lublow, T. Schedel-Niedrig, and A. Fischer
- 2563 Electrodeposited Zinc Oxide Nanorods ALD-Coated With Iron Oxide: Their Photocatalytic and Photoelectrochemical Properties
T. Ahmed, M. Fondell, M. Boman, and J. Zhu
- 2564 (Invited) Photovoltaic Designs For Integrated and Spontaneous Solar Water Splitting
J. W. Ager III
- 2565 (Invited) An Autonomous Solar-To-Chemical Energy Conversion System
S. M. Jawahar Hussaini, N. Singh, J. Lee, G. Stucky, M. Moskovits, and E. McFarland
- 2566 Optimal Band Gap Combinations of Light Absorbers for Integrated Photoelectrochemical Water-Splitting Systems
S. Hu, C. Xiang, S. Haussener, A. Berger, and N. S. Lewis
- 2567 Nanowire-Based Device Integration for Direct Solar Water Splitting
C. Liu, J. Tang, H. M. Chen, B. Liu, and P. Yang
- 2568 Tandem Junction Si Microwire Based Devices for Water Splitting
M. Shaner, K. Fountaine, S. Ardo, R. Coridan, Y. Park, K. S. Choi, H. Atwater, and N. S. Lewis
- 2569 (Invited) Correlation Among Band Structure, Charge Transfer and Photocatalytic/Photoelectrochemical Performance Of Semiconductors
N. Wu

- 2570 Photo/Electrocatalytic Properties of the Hydrogenated TiO₂
K. Bienkowski and P. J. Kulesza
- 2571 Effect of the Heterogeneous Catalyst Attachment Method On O₂ Production of WO₃ Photoanodes in Acidic Aqueous Electrolyte
J. M. Spurgeon and J. M. Velazquez
- 2572 Structure-Activity Relationship in Mixed (Fe,Ni) Oxyhydroxide Catalysts for Electrochemical Oxygen Evolution
D. Friebel, K. E. Sanwald, A. Bodin, A. M. Wise, D. Sokaras, R. Alonso-Mori, T. C. Weng, R. Davis, J. Bargar, M. Louie, Y. Cai, M. Bajdich, A. T. Bell, J. A. Lercher, and A. Nilsson
- 2573 Molybdenum Sulfides Materials As Hydrogen Evolution Catalysts and Surface Protecting Layers for Highly Active and Stable Silicon-Based Water Splitting Photocathodes
J. D. Benck, J. Kibsgaard, and T. F. Jaramillo
- 2574 (Invited) A Study Of Interfacial Processes Between Metal Oxide Nanostructured Thin Films and Ionic Liquids For Potential Applications In Photoelectrochemistry
C. Santato, J. Pison, D. Isik, Y. Sivalingam, and J. Sayago
- 2575 Influence of Surface Structure Geometry On the Performance of Electrodes for Photoactivated Hydrogen Generation
M. Schieda, A. Rzeszutek, I. Herrmann-Geppert, A. C. Bronneberg, D. L. Olynick, and T. Klassen
- 2576 Controlling the Energetics and Activity of Nanocrystal Metal Oxide Water Splitting Catalysts With Potential Determining Ions
F. E. Osterloh and R. L. Chamouis
- 2577 Stochastic Photoelectrochemistry of Colloidal Semiconductor Nanoparticles
M. A. Alpuche-Aviles, A. Fernando, and S. Parajuli
- 2578 (Invited) Investigation Of Plasmonic Ag@Ag₃(PO₄)_{1-x}/ZnO Nanoarchitectures For Solar-Hydrogen Application
Y. G. Lin, Y. K. Hsu, L. C. Chen, and K. H. Chen
- 2579 Highly Stable, Efficient, Visible-Light Driven Water Photoelectrolysis System With Use of Nanocrystalline Semiconducting Oxides
R. Solaraska, K. Bienkowski, P. J. Kulesza, and J. Augustynski
- 2580 High Surface Area Transparent Conductive Oxide As Effective Scaffolds for Nanostructured Metal Oxide Photoelectrochemical Electrodes
P. Chakthranont, A. J. Forman, B. A. Pinaud, and T. F. Jaramillo
- 2581 Solution Phase Growth and Photoelectrochemical Energy Conversion of Indium Phosphide Nanowires
N. Nikolay Kornienko and P. Yang

- 2582 Temperature Assisted Tuning of CdTe Nanocrystal Deposits On TiO₂ Nanotubes Under Solvothermal Conditions
S. Sarker, B. Mukherjee, E. Crone, and V. Subramanian
- 2583 Electrochemical Characteristics of the Mixture of 1-Ethyl-3-Methyl Imidazolium Tetrafluoroborate and 1-Ethyl-3-Methylimidazolium Iodide
C. Siimenson, L. Siinor, and E. Lust
- 2584 Improvement in Photo-Potential Characteristics of TiO₂ electrode Assembling to Marine Microbial Fuel Cell
S. Tamura, M. Morita, S. Motoda, S. Uematsu, and T. Shinohara
- 2585 Aqueous Synthesis of CdSe Quantum Dots
S. Parajuli and M. A. Alpuche-Aviles
- 2586 Design Principles for Artificial Photosynthetic Cells Across the pH Spectrum
A. Berger, M. A. Modestino, K. Walczak, R. A. Segalman, and J. Newman
- 2587 Reaction Scheme for the Electrochemical Treatment of Alachlor in Water By the Photoassisted Process Photoelectro-Fenton With BDD and Pt Anodes
A. R. F. Pipi, A. R. De Andrade, E. Brillas, and I. Sirés
- 2588 δ-MnO₂ Supported On Carbon Nanotubes for Photocatalytic Water Splitting
M. Nakayama, S. Mito, K. Yoshimura, Y. Mohri, and M. Shamoto
- 2589 Electrochemical Preparation of Polyaniline-Photosystem I Composite Films for Biohybrid Solar Energy Conversion
E. A. Gizzie, G. LeBlanc, and D. E. Cliffler
- 2590 Re-Annealing Effect On the Structure and Photo-Electrochemical Character of the Annealed Hematite Nanorods Fabricated By Electrochemical Etching
M. C. Huang, C. C. Wu, T. H. Wang, W. S. Chang, J. C. Lin, W. H. Lan, Y. C. Lee, and K. L. Hsueh
- 2591 Titania Based Mixed Oxide Photoanode for Photoelectrochemical Water Oxidation
R. Venkatkarthick, D. Jonas Davidson, S. Vasudevan, G. Sozhan, and S. Ravichandran
- 2592 Titanium Oxide Electrodeposition On Diamond/Ti Electrodes With Different Boron Dopings
A. B. Couto, F. L. Migliorini, M. R. Baldan, and N. G. Ferreira
- 2593 Highly Efficient Photoelectrochemical Hydrogen Production Using CdS/CdSe Co-Sensitized TiO₂ Nanorod Array Photoelectrode
H. S. Han, S. Shin, J. S. Kim, I. S. Cho, and K. S. Hong
- 2594 Photo-Electrochemical Communication Between Cyanobacteria and Osmium Redox Polymer Modified Electrodes
K. Hasan, H. B. Yildiz, E. Sperling, M. A. Packer, D. Leech, C. Hägerhäll, and L. Gorton

- 2595 Curcumin-Ru Complex for Dye-Sensitized Photoelectrochemical Water Splitting
R. Vedarajan, Y. Morita, and N. Matsumi
- 2596 The Influence of Polysulfide Electrolyte On CdSe QDs
L. A. King, H. Tellez Lozano, and J. D. Riley
- 2597 Photocathodic Activity of Poly(3-Hexylthiophene) in Aqueous Acid
S. Holdcroft, G. M. Suppes, and E. Ballard
- 2598 Synthesis and Preliminary Photoelectrochemical Study of Silver Antimony Sulfide Semiconductor
S. Parajuli, P. Chhetri, W. L. Stephenson, and M. A. Alpuche-Aviles

I4 - Physical and Analytical Electrochemistry in Ionic Liquids 3

Physical and Analytical Electrochemistry, Battery, Electrodeposition, Sensor

- 2599 Improving Magnesium Electrochemistry in Ionic Liquids Through Enhanced Solvation
T. S. Watkins and D. A. Buttry
- 2600 Electrochemical Capture of Carbon Dioxide in An Ionic Liquid Using N-Methyl-4,4'-Bipyridinium Cation
P. Singh and D. A. Buttry
- 2601 Chemical Reactivity of Alkyl Thiolates Used in Electrochemical CO₂ Capture in Ionic Liquids
M. Hasani and D. A. Buttry
- 2602 Liquid Metal Salts: High Current Density Electrodeposition of Cu-Sn-Zn Metal Stacks From Ionic Liquids for Kesterite Based Thin Film Photovoltaics
M. Steichen, N. R. B. Brooks, M. Arasimowicz, J. C. Malaquias, P. J. Dale, L. Van Meervelt, J. Fransaer, and K. Binnemans
- 2603 Voltammetry for Quantitative Analysis of Actinides in Molten Salts
M. M. Tylka, J. L. Willit, M. A. Williamson, and J. Prakash
- 2604 Electrochemistry of Ferrocene-Modified Redox Ionic Liquids
B. Gélinas, J. Forgie, and D. Rochefort
- 2605 Electrochemical Studies of 9-Fluorenone Complexation By Aluminum in Ionic Liquids
G. T. Cheek
- 2606 'Polymeric Ionic Liquid/Carbon Black' composite as a Green Supporting Electrolyte
S. J. Yoo and R. D. Little
- 2607 Silylamine Reversible Ionic Liquids As Electrochemical Solvents
E. J. Biddinger, S. Kattakola, and T. K. Shillingford
- 2608 Ionic Liquids for Ammonia Electrosynthesis and Energy Storage
J. M. Sansiñena, J. Chlistunoff, N. C. Tomson, J. M. Boncella, and F. H. Garzon

- 2609 Enhanced Electrical Conductivity of Carbon-Based Nanoparticles in Ionic Liquid Electrolytes
P. F. Salazar, S. Kumar, and B. Cola
- 2610 Supported Nanoparticle Stability, Assembly and Extended Charge Neutralization in Deep Eutectic Solvents
J. Hammons
- 2611 Gas Diffusion Electrodes and Ionic Liquid Electrolytes for Secondary Zinc-Air Batteries: Electrochemical Characterization
A. Westphal, D. Fenske, I. Bardenhagen, and O. Yezerska
- 2612 Mixture of 1-Ethyl-3-Methylimidazolium Tetrafluoroborate and 1-Ethyl-3-Methylimidazolium Iodide: A New Potential High Capacitance Electrolyte for Edles
L. Siinor, C. Siimenson, K. Lust, and E. Lust
- 2613 Spectroelectrochemical Study of Multi-Electron Transfer in Ionic Liquids
A. Atifi and M. D. Ryan
- 2614 Hysteresis of Potential-Dependent Changes in Ion Density and Orientation of Ionic Liquids On An Au Electrode: An Surface-Enhanced Infrared Study
K. Motobayashi, K. Minami, N. Nishi, T. Sakka, and M. Osawa
- 2615 Galvanostatic Pulse Plating of Al Metal in Room-Temperature Chloroaluminate Ionic Liquids
L. H. Chou
- 2616 Heterogeneous and Homogeneous Electron Transfer Kinetics of the $[\text{CeCl}_6]^{3-2-}$ redox Reaction in the 1-Butyl-3-Methylpyrrolidinium Bis(trifluoro-methylsulfonyl)Imide Ionic Liquid
L. H. Chou
- 2617 Amperometric Gas Sensors With Ionic Liquid Electrolytes
M. T. Carter, J. R. Stetter, M. W. Findlay, and V. Patel

15 - Processes 8

Physical and Analytical Electrochemistry, Energy Technology

- 2618 A Self-Healing Phenomenon of Thin $\delta\text{-MnO}_2$ Film in the Oxidative Decomposition of Hydrogen Peroxide
M. Nakayama and A. Sato
- 2619 Electrolytic Formation of Pt-Li Alloy and Its Excellent Electrocatalysis for Formic Acid Oxidation
Z. Awaludin, T. Okajima, and T. Ohsaka
- 2620 Photo-Assisted Boosting of Formic Acid Electrooxidation On TiO_2 Nanotube-Pt Electrode
N. Mojumder, S. Sarkar, S. Abbas, and V. Subramanian

- 2621 Activity and Stability Trends for Oxygen Evolution Reaction Electrocatalysts
N. Danilovic
- 2622 Electrochemical SERS Study On Well-Defined Catalytic Metal Surfaces Using Hybridized Plasmon Modes
K. Ikeda, J. Hu, and K. Uosaki
- 2623 Potential Dependent Structures At Pt(111) Single Crystal Electrode/Perchloric Acid Electrolyte Interface Studied By Surface X-Ray Scattering
T. Kondo, K. Uosaki, N. Aoki, and T. Masuda
- 2624 Modeling of Magnetic Enhancement of Homogeneous Electron Transfer Reactions
H. C. Lee, S. D. Minteer, and J. Leddy
- 2625 Nanoscale Electrochemical Processes On Cu(111) Surface Using Periodic DFT and Quantum/Classical Simulations
A. Sumer, M. Losada, and S. Chaudhuri
- 2626 Factors That Influence the Reduction of Organic Halides At Silver Cathodes
L. M. Strawsine and D. G. Peters
- 2627 Structural and Compositional Control of Mesoporous Thin Film Electrocatalysts
J. D. Snyder, N. Markovic, and V. R. Stamenkovic
- 2628 Electrocatalytic Oxygen Reduction and Water-Oxidation On Transition Metal Ions-Doped MnO₂, RuO₂ and IrO₂ in Alkaline Aqueous Solutions
A. J. Jeevagan, G. Saravanan, T. Onobuchi, Y. Suzuki, E. Murakoshi, S. Kaneko, G. Kobayashi, and F. Matsumoto
- 2629 Direct Electrolytic Reduction of Hematite Pellets in Alkaline Electrolyte for Iron Production
G. M. Haarberg and B. Yuan
- 2630 Tin Oxide and Nickel Ferrite Anodic Behaviour in Molten Chlorides
G. M. Haarberg, E. Kvalheim, and A. M. Martinez
- 2631 An All-Inorganic Responsive Surface: Electrochemical Switching of Boron Nitride Nanomesh Corrugation
S. F. L. Mertens, A. Hemmi, S. Muff, R. K ung, S. De Feyter, J. Osterwalder, and T. Greber

J1 - Sensors, Actuators, and Microsystems General Session

Sensor

- 2632 Quantitative Decoding of Ammonia-Hydrocarbon Mixtures Using Zirconia-Based Mixed Potential Sensors
C. R. Kreller, J. Tsitron, P. K. Sekhar, R. Mukundan, F. H. Garzon, A. V. Morozov, and E. L. Brosha
- 2633 Chloride-Sensitivity Improvements By Nitrogen Plasma Immersion Ion Implantation On Samarium Oxide Membrane
Y. R. Ye, Y. H. Lin, C. S. Lai, J. C. Wang, C. Chang, A. T. Cho, J. J. Chang, and M. F. Chiang
- 2634 MEMS Gas Chromatograph for Explosive Marker Compounds: Temperature and Flow Rate Effects On Sensor-Array Detector Responses and System Performance
L. K. Wright, W. R. Collin, G. Serrano, and E. T. Zellers
- 2635 Response Characteristics of Fuel Cell Type Alcohol Sensor Using Nafion Membrane
M. Sudoh and K. Kamiya
- 2636 Hydrazine Sensor for Quantitative Determination of High Hydrazine Concentrations for Direct Hydrazine Fuel Cell Vehicle Applications
S. Babanova, U. Martinez, K. Asazawa, H. Tanaka, and P. Atanassov
- 2637 Amperometric Gas Sensors in Agricultural Applications
M. T. Carter, J. R. Stetter, M. W. Findlay, and V. Patel
- 2638 Synthesis and Hydrogen Gas Sensing Performance of Pd-Functionalised Nanostructures
K. Y. Kok, I. K. Ng, N. U. Saidin, L. Lombigit, S. H. Ilias, C. Z. Che Abd Rahman, and T. F. Choo
- 2639 Detection of Cancer Biomarker With Surface-Enhanced Raman Scattering Biosensor
N. Wu and M. Li
- 2640 Novel Plasmonic SERS Sensor and Its Application to Chemical Analysis for Solid/Solid Interfaces
M. Yanagisawa
- 2641 Drug Screening Arrays At Protein/Protein Interfaces in Cancer
S. Krishnan
- 2642 Tuning and Control of Surface Plasmon Resonance Sensing Using Grating-Based Nanostructures
A. C. Hillier, W. H. Yeh, and J. W. Petefish
- 2643 Regularities of Electroless Deposition of Silver On Porous Silicon for Fabrication of SERS-Active Substrates
K. Artsemyeva, H. Bandarenka, A. Panarin, S. N. Terekhov, and V. P. Bondarenko

- 2644 Soft Actuators Prepared By Electrochemical Copolymerization of Pyrrole and Methyl 1H-Pyrrole
J. Yamasaki, S. Ogihara, T. Kadoyama, F. Tsumuji, S. Takamiya, and Y. Nishioka
- 2645 Green-Sensitive Organic Photodetector With High Spectral Sensitivity for Image Sensor Application
K. H. Lee, D. S. Leem, C. Jung, K. B. Park, S. J. Lim, X. Bulliard, K. S. Kim, Y. W. Jin, S. Lee, and S. Y. Park
- 2646 Ultra-Narrow, High Aspect Ratio Trenches for Use in Miniaturized Poly-SiGe Accelerometers
A. Ray Chaudhuri, P. Helin, S. Severi, R. V. Hoof, B. Du Bois, H. Tilmans, L. Francis, and A. Witvrouw
- 2647 Reaction of the Electrogenerated Superoxide Species With Binding-Materials in Commercial Pt Screen-Printed Electrodes, and Its Implication in Amperometric O₂-Gas Sensing
J. Lee, K. Murugappan, D. W. M. Arrigan, and D. S. Silvester
- 2648 Metallic Atom-Scale Junction for Chemical Noise Detection: Study of Surface Molecular Adsorption/Desorption Kinetics Using Fluctuation Spectroscopy
T. W. Hwang and P. W. Bohn
- 2649 Supermolecule Functionalized Graphene and Application in Electrochemical Sensor
G. Diao and M. Chen
- 2650 Preparation and Characterization of Microcomposite Based On Environmentally Sensitive Microgel and Conducting Polymer
M. Karbarz, M. Mackiewicz, T. Rapecki, and Z. Stojek
- 2651 Hydrogen Resistivity Sensors From Nanoparticle Assemblies: Palladium Versus Platinum
K. Rajoua and F. Favier
- 2652 Characterization of Mediator-Less Sugar/Oxygen Enzymatic Fuel Cells in Vitro
P. Lamberg, S. Shleev, R. Ludwig, and T. Ruzgas
- 2653 Electrochemical Reduction of 2,4,6-Trinitrotoluene On Vanadium Dioxide
M. C. Casey, A. J. Raubach, J. I. Ziegler, R. F. Haglund, and D. E. Cliffl
- 2654 Synergistic Effects of Graphene Based Nano Hybrid Materials for the Electrochemical Sensing Applications
T. Soundappan, S. De, V. Ramadesigan, and V. R. Subramanian
- 2655 Electrochemical Characterization of Screen Printed Au Electrodes
Q. Huang, B. Baker-O'Neal, and S. Ahmed
- 2656 Engineering An Electrochemical Sensor for the Characterization of Bond Vibration Frequencies of a Chemical Analyte
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- 2658 Voltammetric Glucose Sensor Using POLY(2,5 DIMETHOXY ANILINE) As A Polymer Support
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- 2660 Glucose Detection At Films Composed of Ir Oxide Nanoparticles On Carbon Supports
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- 2661 Electrochemical Interference in a Catechol-Modified Chitosan Redox Cycling Amplification System for Clozapine Detection
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- 2662 Tapered Optical Fibers for Biosensing Applications
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- 2663 Bioimaging Using LSI-Based Amperometric Biosensing System With 400- Electrodes
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- 2665 Characteristics of Fully Screen-Printed Paper-Based Chromatographic Electrochemical Biosensor
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- 2668 Intelligent Detector of Internal Combustion Engine Cylinder Pressure and Sensitivity Temperature Coefficient Compensation
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Q. Wang, Y. M. Zhang, W. Mao, and D. Ge
- 2670 Development of a Bifunctional Pt/Au Platform Microelectrode Modified With Glucose Oxidase for Glucose Determination
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- 2671 Voltammetric Determination Of Dipyrone Using Graphite Paste Electrode Modified With Nanoparticles Of Nickel Hexacyanoferrate
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- 2672 Effect of Amyloid Conformation On the Response of Field Effect Transistor Biosensor to Sup35NM Protein
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- 2673 Label-Free Detection of Alanine Aminotransferase Using a Low Operation Voltage and Single Reaction Step of Graphene Field-Effect Biosensor
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- 2674 Improved Hydrogen Sensing Characteristics of Flat Type Micro Catalytic Hydrogen Gas Sensor of Smaller Size
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F. H. Cincotto, P. A. Raymundo-Pereira, F. C. Moraes, and S. A. S. Machado
- 2676 Effect of Hydrogen Treatment On Characteristics of Titanium Oxide Nanotube Micro Hydrogen Gas Sensors
T. Tobe, R. Kojima, Y. Kimura, and M. Niwano
- 2677 Study of Ultrathin TiO₂ Metal Oxide Gas Sensor Deposited By Atomic Layer Deposition for Environmental Monitoring
S. C. Mills, B. Lee, and V. Misra
- 2678 Electrochemically Active Graphene oxide used as an electrochemical Indicator for Biosensor
K. Kim and D. Choi
- 2679 Impedimetric Hg²⁺ Analysis By Employing Thrombin Label
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- 2680 The I-V Characteristics of a Termination-Controlled Borondopedpolycrystalline Diamond Field Effect Transistor pH Sensor for Using At Harsh Environment
Y. Shintani
- 2681 Toxic Gas Sensors Using Ionic Liquids
A. Nauber and P. Tschuncky

- 2682 Reduced Graphene Oxide and Single-Walled Carbon Nanotubes Composite Material for Electrocatalytic Oxidation of NADH
T. Y. Huang, K. Ho, and C. W. Chu

J2 - Impedance Techniques, Diagnostics, and Sensing Applications

Sensor, Corrosion, Industrial Electrochemistry and Electrochemical Engineering, Physical and Analytical Electrochemistry

- 2683 The Influence of Coupled Faradaic and Charging Currents On Impedance Spectroscopy
S. L. Wu, M. E. Orazem, B. Tribollet, and V. Vivier
- 2684 The Role of the Reference and Counter Electrodes in Electrochemical Impedance Measurement
P. Vanyšek, H. Tavassol, and K. L. Pilson
- 2685 Investigation of Transport/Insertion Processes in Mixed and Ionic Conducting Thin Films By Ac Electrogravimetry
L. K. To, O. Sel, C. Gabrielli, and H. Perrot
- 2686 Diffusion Impedance of Microband Electrode Array By FEM
Y. Hoshi, M. Ohya, I. Shitanda, and M. Itagaki
- 2687 Carbon Nanotube Coated Paper Sensor for Damage Diagnosis Using Electrical Impedance Tomography
B. Kim, Y. Lu, T. Kim, J. W. Han, M. Meyyappan, and J. Li
- 2688 (2013 ECS Fellow Inductee) Information from Noise
J. Janata and R. West
- 2689 Impedance Analysis of Copper Alloys At the Corrosion Potential in Seawater
I. Frateur, B. E. Torres Bautista, M. L. Carvalho, and B. Tribollet
- 2690 Study of Pickling and Over-Pickling Mechanisms of Silicon High Alloyed Steel Grade By Electrochemical Impedance Spectroscopy
A. A. Mouyad, M. E. Orazem, E. Sutter, B. Tribollet, and A. Koltsov
- 2691 Galvanic Deposition of Mo Atop Al 6061 Alloy
B. D. Falola, A. Krishnamurthy, R. Radhakrishnan, and I. I. Suni
- 2692 Phosphate Adsorption On Thin Films Made of Transition Metal Oxides, As Measured By Electrochemical Impedance Spectroscopy
R. E. Pérez-Roa, R. E. Moss, J. Ma, D. R. Noguera, and M. A. Anderson
- 2693 Applications of AC Impedance Spectroscopy As Characterization and Diagnostic Tool in Rechargeable Energy Storage Devices
V. Lvovich

- 2694 Impedance Behavior of Binderless Ni-Mo Composite Cathode for a Li-O₂ Battery Via Impedance Spectroscopy
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- 2695 Impedance As a Diagnostic Tool to Characterize Mixed-Potential Sensor Response
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- 2696 Role of Porosity in Impedancemetric NO_x Gas Sensors Using Yttria-Stabilized Zirconia (YSZ) Electrolyte and Au-Based Electrodes
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- 2697 Mixed Ion and Electron Conducting Ceramics for Gas Sensors
V. Thangadurai, S. Mulmi, and R. Kannan
- 2698 Pd Decorated TiO₂ Nanotube Arrays Schottky Barrier Diodes for Efficient Hydrogen Sensing Application
Y. Ling
- 2699 AC Impedance Characterization of Microbes in Skim Milk
M. Smiechowski and K. Klopfer
- 2700 Covalent Immobilization of Thiolated Oligonucleotide Onto Glassy Carbon: A Cost-Effective Alternative for Genosensor Fabrication
C. O Sullivan
- 2701 Development of Novel Routes for Surface Functionalisation With Diazonium Derivatives and Their Application in Electrochemical Genosensing
C. O Sullivan
- 2702 Characterization of Tau Protein Films On Surfaces
S. Martic and H. Trzeciakiewicz
- 2703 Immobilization of Protein Aptamers On Binary SAM for Protein Sensing Applications
H. Feyzizarnagh, N. Reaver, D. S. Kim, and B. D. Cameron
- 2704 Equivalent Electrical Circuits of Impedances of Pt, Ir and Ni Electrodes Under Anodic Polarization
E. Baranova, O. Kuznetsov, and A. Allagui
- 2705 Investigation of Oxygen Reactions in a Screenprinted Pt/YSZ-Model Electrode System
Y. Zheng, U. Sauter, L. Kunz, M. Streeb, G. Oehler, K. Sahner, and R. Moos
- 2706 Analysis of Electrochemical Characteristics of Organic-Inorganic Hybrid Titanophosphite membranes
Y. Ueda, Y. Tokuda, H. Nagai, H. Masai, and T. Yoko

J3 - Luminescence and Display Materials - Fundamentals and Applications

Luminescence and Display Materials

- 2707 Development of Phosphors for White Emitting Near UV LEDs
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- 2708 Blue Light Excitable Red-Emitting Oxide Phosphor
K. Toda, S. W. Kim, T. Hasegawa, K. Uematsu, T. Ishigaki, and M. Sato
- 2709 Looking for Red Line-Phosphors for LED-Based Systems
A. A. Setlur, J. Murphy, R. Lyons, F. Garcia-Santamaria, P. K. Nammalwar, and N. Karkada
- 2710 "UV Or Blue LEDs With Phosphors: An Interesting Way to Develop Smart Lighting."
G. Chadeyron
- 2711 Synthesis of Green-Emitting $\text{La}_2\text{O}_2\text{s:Tb}^{3+}$ Phosphors By Two-Step Flux Method
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- 2712 Photoluminescence of Li^+ and Eu^{3+} Co-Doped $\text{NaAl}(\text{WO}_4)_2$ As Near-UV Excited Red Phosphors
Y. Liu, Y. Y. Gu, and Z. G. Lu
- 2713 Luminescence Characteristics of Color Tunable Eu^{2+} Activated $\text{KSrPO}_4\text{-(Ba,Sr)}_2\text{SiO}_4$ Phosphors for Near-UV Light Emitting Diode Applications
J. Han, M. E. Hannah, A. Piquette, J. B. Talbot, K. C. Mishra, and J. McKittrick
- 2714 Oxyfluoride Phosphors for Lighting
T. Vogt
- 2715 Efficient Luminescence in Eu^{2+} Activated $(\text{Ba,Ca})_2\text{Si}_5\text{N}_8$ phosphor
P. K. Nammalwar, D. G. Porob, S. K. Manepalli, and A. Setlur
- 2716 Publishing Luminescence and Display Materials Content in ECS Journals: Past, Present, and Future
D. W. Hess
- 2717 Interconfigurational d-f Luminescence of Ce^{3+} and Pr^{3+} in Double Phosphate Hosts
M. Bettinelli
- 2718 Optical Spectroscopy of Six Coordinated Eu^{2+} and Ce^{3+} in $\text{M}^{2+}\text{Al}_2\text{B}_2\text{O}_7$ ($\text{M}^{2+}=\text{Ca, Sr, Ba}$)
S. J. Camardello and A. Srivastava
- 2719 Systematic Crystal Field Studies of Mn^{4+} -Doped Perovskites
A. Srivastava and M. G. Brik
- 2720 The Sensitization of the Pr^{3+} Photon Cascade Emission in YF_3
S. J. Camardello and A. Srivastava

- 2721 Interesting Theoretical Problems in Luminescence From Solids
K. C. Mishra, K. H. Johnson, and A. Piquette
- 2722 Development of All-Solid Thin Film Electro-Chromic Devices and Applications
C. J. Panchal and A. Khosla
- 2723 Synthesis of Conjugated Materials for Organic Photovoltaics and Luminescence
D. Výprachtický, V. Pokorná, I. Kmínek, V. Dzhabarov, and V. Cimrová
- 2724 Photophysical and Electrochemical Properties of Novel Luminescent and Photoconductive Copolymers
V. Cimrova, D. Výprachtický, I. Kmínek, V. Dzhabarov, and V. Pokorná
- 2725 Mixed Electron and Lithium Ion Conduction in Nanocrystal-Polymer Composites for Electrochromic Applications
E. Runnerstrom, G. Garcia, R. Buonsanti, A. Llodes, B. A. Helms, and D. J. Milliron
- 2726 Glycothermal Synthesis and Characterization of YAG:Ce³⁺ Nanophosphors
T. Isobe
- 2727 Effect of Synthesis Methods On the Powder Characteristics and Luminescence Properties of Nanophosphors
J. Han, J. I. Choi, J. B. Talbot, J. S. H. Lee, and J. McKittrick
- 2728 Thermal Quenching in II-VI Semiconductor Nanocrystals: What Causes It and How to Eliminate It
D. F. Kelley, X. Cai, K. Gong, J. E. Martin, and L. S. Rohwer
- 2729 Quantum Dots for LED Downconversion in Display Applications
S. Coe-Sullivan, W. Liu, P. Allen, and J. S. Steckel
- 2730 Synthesis Of Fluorescent Nanocomposites Constituted Of GdPO₄:Eu³⁺ and Tb³⁺ Nanowires Embedded In A Silicon Polymer
D. Boyer, A. Garrido Hernandez, A. Potdevin, G. Chadeyron, A. García Murillo, F. de J. Carrillo Romo, and R. Mahiou
- 2731 Combined Crystal Field and First Principles Studies of the Y₂O₂S Phosphor Doped With Yb³⁺ and Er³⁺
A. K. Gangadharan, M. Pokhrel, M. G. Brik, D. K. Sardar, and C. G. Ma
- 2732 Improved Multiplet Energy Diagrams for D³ Ions in Oxides Based On Correlation Corrections
K. Ogasawara, F. Alluqmani, and M. Novita
- 2733 Prediction of Pressure Dependence of R-Line Emission for d³ Ions in α-Al₂O₃ Based On First-Principles Calculations
M. Novita and K. Ogasawara

- 2734 Enhanced Luminescent Properties of Europium Complex By Replacement of Water Molecules By 2, 2'-Bipyridine
R. K. Lather
- 2735 First-Principles Calculations of 4f-5d Transition Spectra for Ce³⁺ in Silicate Garnets
E. Haji, M. Novita, and K. Ogasawara
- 2736 A Comparison of Excitation and Emission Properties of Pr-Doped. LiNbO₃, CaNbO₃, and CaTiO₃
J. Collins, J. Tsehay, and S. Velupillai
- 2737 Synthesis and Photoluminescent Properties of Ba₂V₂O₇:Eu Phosphors
S. Lohra
- 2738 Synthesis and Optical Properties of Tb³⁺- Doped LaSrAl₃O₇ phosphors
R. Langyan
- 2739 Fabrication and Spectral Investigation of Y₂O₃:Nd³⁺ Nano-Particles
J. Collins, B. Di Bartolo, and G. Bilir
- 2740 Crystallinity and Photoluminescence Improvement of YAG:Ce Phosphor Ceramics By Solid State Reaction With Silica Addition
Y. T. Nien
- 2741 The Photoluminescence Properties of Ce⁺³ Doped Nano Sized SiO₂ for Transparent Coating Application
B. Becer, Z. Yesil, N. Kiraz, and M. Asiltürk
- 2742 Blue-Emitting Metal Chloride Phosphor: High Color Purity Phosphor in Near-UV for White LED Applications
S. J. Gwak and W. B. Im
- 2743 Enhanced Photoluminescence of Spray Pyrolysis Deposited Y₂O₃: Er⁺³ Thin Films By Li⁺ Co-Doping
A. Meza, E. Huerta, E. Zaleta-Alejandre, Z. Rivera-Álvarez, and C. Falcony
- 2744 Luminescent Characteristics of Polyethylene Terephthalate (PET) Thin Films Deposited By Spray Pyrolysis Using Rare Earths (RE³⁺) As Dopants
S. Carmona-Tellez, M. A. Aguilar-Frutis, G. Alarcón-Flores, M. García-Hipolito, E. Zaleta-Alejandre, A. Meza.Rocha, Z. Rivera-Álvarez, R. Martínez-Martínez, and C. Falcony
- 2745 Critical Overviews About Conventional Ideas for White-LED (Oxy)Nitride Phosphors: Covalency and *Stiffness*
M. Mikami
- 2746 Discovery of Novel Oxynitride Phosphors for Use in LEDs
K. S. Sohn

- 2747 Phosphor Crystals for Tailored Spectrum LEDs
P. S. Dutta
- 2748 Effect of Flux On Luminescence of Eu²⁺ Activated Yellow Oxynitride Phosphor
P. K. Nammalwar, S. K. Manepalli, D. G. Porob, and A. A. Setlur
- 2749 Novel Synthesis Methods for Luminescent Materials: Spark Plasma Sintering (SPS) and Micro Arc Oxidation (MAO)
S. H. Hong and E. H. Kang
- 2750 Microstructure and Optical Properties of An Oxynitride Ceramic Phosphor
M. Raukas, M. E. Hannah, D. Johnston, J. Montaner, Z. Yu, S. Tragl, A. Rucki, V. Klueppel, E. Jones, X. Zhou, M. Wang, and S. Gradecak
- 2751 Spectral Tuning in Nitride Phosphors By Compositional Tailoring
R. J. Xie, N. Hirotsaki, T. Takeda, and T. Suehiro
- 2752 Synthesis of Yellow-Emitting NaAlSiO₄:Eu²⁺ Phosphors Using SiO₂ Powder As a Silica Source
K. Toda, T. Abe, T. Ishigaki, S. W. Kim, K. Uematsu, M. Sato, T. Masaki, and D. H. Yoon

J4 - Microfluidic MEMS/NEMS, Sensors and Devices

Sensor, Physical and Analytical Electrochemistry, New Technology Subcommittee

- 2753 Plenary Talk--Nanosensor Systems. e-Bra, e-Band and Wireless Electronics for Monitoring and Control of Cardiovascular Diseases and Neurological Disorders
V. K. Varadan
- 2754 Keynote--Recent Biomedical Applications of Dielectrophoresis
R. Pethig
- 2755 Distinguished Invited Speaker--Spectroelectrochemistry in Low-Dimensional Nanofluidic Devices for Chemical and Biochemical Sensing
J. Zhao, N. M. Contento, D. A. Grismer, L. P. Zaino III, S. Poliseti, and P. W. Bohn
- 2756 An Automated Electrochemical Immunosensing System for Detection of Cortisol At Point-of-Care (POC)
S. Bhansali
- 2757 Real Time Diagnostic Point of Care By Amperometric Immuno-Biosensor Kit By Flow Technology
H. E. Braustein, K. Levkov, I. E. Braustein, Y. E. Bezalel, M. E. Abo Zaid, G. Fleminger, and J. Rishpon

- 2758 Keynote--Microsphere-Based Detection of Biological Toxins and Signaling Molecules Using Renewable Surface Microfluidic Platforms With Enhanced Mass Transport and Capture
J. W. Grate, C. Bruckner-Lea, M. G. Warner, R. M. Ozanich, and N. Anheier
- 2759 Distinguished Invited Speaker--3D Printing of Intricate Soft and Wet Systems
H. Furukawa
- 2760 RFID Corrosion Sensors
W. H. Smyrl
- 2761 Chip Based Amplification and Detection of Influenza C Virus Using Dielectrophoresis
K. V. I. S. Kaler, R. Prakash, R. Tellier, K. Pabbaraju, and S. Wong
- 2762 Stochastic Microsensors Based On Nanostructured Materials Used in the Screening of Whole Blood for Hepatitis B
R. I. Stefan-van Staden and I. Moldoveanu
- 2763 Separation and Preconcentration Of Viable Pathogens By Chemotaxis
J. Xu and P. J. Hesketh
- 2764 Keynote--Long-Term Viability of DNA-Based Bionanoelectronics: Studies in Transient Effects On Electrical Property of DNA Molecular Wires
S. Kassegne
- 2765 Distinguished Invited Speaker--Inkjet-Printed Carbon Nanotube Electrodes for Electrochemical Sensor Applications
R. P. Tortorich, E. Song, and J. W. Choi
- 2766 Electrochemical Alloying-Dealloying in Ionic Liquids for Fabricating Nanoporous Microelectrodes
J. Jiang
- 2767 Redox cycling at nanowire-based interdigitated comb electrodes: Enhanced electrochemical sensitivity and electrode kinetics
A. O' Riordan
- 2768 Centrifugal Microfluidic Platform With Real-Time Electrochemical Detection
A. L. Brogger, S. Z. Andreasen, F. G. Bosco, K. B. Andersen, D. Kwasny, W. E. Svendsen, and A. Boisen
- 2769 Carbon-MEMS Based Multi-Sides Electrode Array Fabric for Neural Sensing and Recording
N. W. Vahidi, S. Kassegne, and T. McDowell
- 2770 Non-enzymatic electrochemical sensor technology based on vertically aligned 3-D nanowire array platform
K. Razeeb

- 2771 Electrochemical Characterization of DNA Attachment On Graphitic Carbon Microelectrodes for Bionanoelectroics Platforms
M. Hirabayashi, B. Mehta, S. Kassegne, and A. Khosla
- 2772 Dynamic Contact Angles in Low Voltage Electrowetting-On-Dielectric Systems
M. Mibus, X. Hu, C. Knospe, M. L. Reed, and G. Zangari
- 2773 Distinguished Invited Speaker--Patch Type Glucose Sensor for Low-Invasive Glucose Monitoring
M. Yasuzawa, S. Sato, and K. Edagawa
- 2774 Electrochemical Sensors for Point-of-Care Measurements of Metals
I. Papautsky
- 2775 Electrochemical Screening of Peptides for Targeting CD13
S. Martic, K. Kaur, and R. Soudy
- 2776 Probing the Three Phase Interface to Understand Electrochemical Screening of Gas Phase Pollutants
P. K. Sekhar and K. Subramanian
- 2777 A Polyaniline Nanowire Network With Catalytic Nanoparticles for Chemical Sensing
E. Song and J. W. Choi
- 2778 Tunable Surface Area Electrochemical Biosensors Through Self-Assembly
B. D. Gates, M. T. Y. Paul, and B. Kinkead
- 2779 Distinguished Invited Speaker--Self-Assembly of Nanostructures On Electron Beam Lithographically Patterened Templates for Biomedical and Nanoelectronic Sensor Applications
A. K. Pradhan
- 2780 Graphene Based Microsensors for the Assay of Adenine, Guanine and Epinephrine
J. F. VAN Staden, J. F. VAN Staden, R. Georgescu, and R. I. Stefan-VAN Staden
- 2781 Design and Simulation of Sensors to Detect Methanol
S. Chittur Krishnaswamy, M. S, V. Guruviah, and S. Bollepalli
- 2782 Keynote--Review of Polymer Magnetic Nanocomposites for Microfluidics Applications
B. L. Gray
- 2783 Distinguished Invited Speaker--Micromolding of Nife and Ni Thick Films for 3D Integration of MEMS
J. Moulin, M. Woytasik, O. Garel, T. H. N. Dinh, Y. Zhu, M. Souadda, and E. Lefevre
- 2784 Monolithic Integration of An Optical Microfluidic System for the Detection of Flurophore Tagged Recombinant Bovine Somototropin
M. Packirisamy and J. Ozhikandathil

- 2785 Sm-Co Thick Films Micromolding
J. Moulin, M. Woytasik, D. Belghiti, and K. Chouarbi
- 2786 Fabrication and application of world's smallest polymer bonded permanent rare earth micro-magnets for MEMS/NEMS Devices
A. Khosla, S. Kassegne, M. Hirabayashi, and M. Silvestro
- 2787 Si Fabrication Technologies for Biomedical Applications: Double Stranded DNA Separation
B. Majeed, L. Zhang, N. Tutunjyan, D. S. Tezcan, and P. Fiorini
- 2788 Rapid Detection of Total Coliform and *E. Coli* in Contaminated Water Using Chemically Modified Microwells
N. S. Gunda, S. Naicker, M. Ghoraiishi, S. Bhattacharjee, T. Thundat, and S. Mitra
- 2789 A Review of Single-Cell Manipulation Techniques for Microfluidic Lab-On-a-Chip Systems
S. F. Romanuik and B. L. Gray
- 2790 Microfluidic Platform for Specific Capture, Release, and Impedance Based Quantification of Microparticles for Protein and Cellular Quantification
M. Javanmard, J. Mok, R. W. Davis, and M. Mindrinos
- 2791 Keynote--Using Experience From Explosives Detection in Development of Biosensors Based On Nanomechanical Responses
A. Boisen
- 2792 Distinguished Invited Speaker--Capillary-Based Assay for Cardiac Markers With Cantilever Platform
N. S. Gunda and S. Mitra
- 2793 Polymer Nanobridge On a Microfabricated Quartz Tuning Fork
S. Jeon, S. Lee, and M. Yun
- 2794 Electrochemical Synthesis of Polymer Nanostructures for Thermal Management
B. Cola
- 2795 Transient Thermal Response of Micro TCD for Identification of Gases
A. Mahdaviifar, M. Navaei, R. Aguilar, P. J. Hesketh, G. Hunter, M. W. Findlay, and J. R. Stetter
- 2796 Electrochemically Controlled Capillarity of a Liquid Metal Alloy for Shape Reconfigurable Microsystems
M. R. Khan, C. Trlica, C. B. Eaker, and M. D. Dickey
- 2797 Design and Modeling of a Novel Two Dimensional Nano-Scaled Force Sensor Based On Silicon Photonic Crystal
L. Li, T. Li, W. Song, G. Zhang, and Y. Li

- 2798 Electropolishing of n-Type Polycrystalline 3C-Silicon Carbide
N. Ballarin, C. Carraro, R. Maboudian, and L. Magagnin
- 2799 Application Of Highly Flexible Conductive Nanocomposite Polymer Electrode Array To Tissue Electrical Impedance Scanning (EIS)
D. Chung, A. Khosla, B. L. Gray, A. M. Parameswaran, R. Ramaseshan, and K. Kohli
- 2800 Nanocomposites, Microfluidics, MEMS and Nems
A. Khosla
- 2801 Determination of Liquid Viscosity With Microfabricated Diaphragm Resonating Sensors for the Biomedical Application
K. S. Hwang, H. J. Kim, M. S. Chae, Y. K. Yoo, and J. H. Lee
- 2802 Vapor-Solid Growth of Highly Oriented SnO₂ Nanorods for Chemical Sensing Applications
C. G. Carvajal, A. K. Pradhan, and C. S. Davis
- 2803 Nano-Pored Three-Dimensional PDMS Microchip
J. H. Lee, S. I. Han, and Y. K. Yoo
- 2804 In Vivo Evaluation Of Fine Needle Type Glucose Sensors Implanted In Rabbit Blood Vessel
K. Edagawa and M. Yasuzawa

J6 - Sensors for Agriculture

Sensor, Physical and Analytical Electrochemistry

- 2805 Current Sensor Research and Future Needs in Agriculture, Natural Resources, and Food Systems
D. Schmoltd
- 2806 Hyperspectral Imaging Techniques for Quality and Safety Inspection of Agro-Food Products
M. S. Kim, K. Chao, A. Lefcourt, and D. Chan
- 2807 Nanobiosensing Technology for Foodborne Pathogen and Toxin Detection
B. Park
- 2808 Vj g'P UH'Dkugpukpi "Rtqi tco
A. Revzin
- 2809 Cp"Kf wux { }u'Lqwtpg{ "vq" Tgf weg'Hqqf dqtpg"Kipguu
B. Fernandez-Fenaroli
- 2810 Microcantilever Sensors Loaded With Sensing Nanomaterial for On-Site Detection and Monitoring of Trace-Level Bio/Chemical Molecules
X. Li

- 2811 A Cost-Efficient Microfluidic Device for Study of Chemotaxis and Bacteria Separation Purposes
A. Mahdaviifar, J. Xu, and P. J. Hesketh
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