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The Electrochemical Society
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Phone: (609) 737-1902
Fax: (609) 737-2743

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A. Evans, M. Prestat, R. Tölke, L. J. Gauckler, T. Hocker, Y. Safa, D. Briand, J. Courbat, and N. de Rooij
- 467 Probing Oxide Stoichiometry and Redox Kinetics in Pr Doped Ceria MIEC Thin Films Using In Situ Optical Absorption
S. R. Bishop, J. Kim, N. Thompson, and H. Tuller
- 468 (Invited) High-Performance Direct Ethanol Solid Oxide Fuel Cells
E. N. Armstrong, J. Park, and N. Q. Minh
- 469 Redox Stability of Ni-YSZ Anodes for Solid Oxide Fuel Cells Prepared by Polymeric Precursor Infiltration
A. Buyukaksoy, V. Petrovksy, and F. Dogan
- 470 Deposition and Characterizations of Pt/YSZ Nanocomposite Thin Films for Micro-SOFCs
H. Huang, M. Rottmayer, T. Reitz, and R. Singh
- 471 Current-Voltage and Temperature Characteristics of Anode Supported Solid Oxide Electrolyzer Cells (SOEC)
J. Njodzefon, D. Klotz, A. Weber, and E. Ivers-Tiffée
- 472 Electrospun Nanofiber Cathode for Intermediate-Temperature Solid Oxide Fuel Cell
M. Zhi and N. Wu
- 473 Fuel Cell and Electrolysis Mode Results for BCY SOFC Compared with Model Predictions
V. Schmidt and C. Tsai
- 474 Demonstration of a Highly Efficient SOFC Power System Using Adiabatic Steam Reforming and Anode Gas Recirculation
M. Powell, K. Meinhardt, V. L. Sprenkle, and L. Chick

- 475 Fabrication and Evaluation of Micro-Tubular SOFC Stack
T. Yamaguchi, H. Sumi, K. Hamamoto, T. Suzuki, and Y. Fujishiro
- 476 Electrochemical Promotion of Propane Combustion on Dispersed Pt Nanoparticles
A. Kambolis, L. Lizarraga, M. N. Tsampas, M. Rieu, J. Viricelle, and P. Vernoux

B5 - Special Topics in Battery Science and Technology

Battery, Energy Technology

- 477 Metal-Air Rechargeable Batteries - Challenges and Recent Developments
S. Narayanan, A. K. Manohar, S. Malkhandi, B. Yang, G. Prakash, and A. Kindler
- 478 The Rechargeability Study on Lithium/Air Batteries
M. Au and T. Adams
- 479 A Dual-Electrolyte Rechargeable Li-Air Battery with Phosphate Buffer Catholyte
A. Manthiram, L. Li, and X. Zhao
- 480 Colloidal Manganese Oxide Nanoparticles as Bifunctional Catalysts for Oxygen Reduction and Evolution Reactions in Lithium/Air Batteries
M. Augustin, O. Yezerska, H. Borchert, T. Plaggenborg, and D. Fenske
- 481 Stability Comparison towards Oxygen Reduction Products between Oligoether Silane and Propylene Carbonate for Lithium-Air Batteries
P. Du, Z. Zhang, J. Lu, and K. Amine
- 482 The Identification of Stable Solvents for Nonaqueous Rechargeable Li-Air Batteries
V. Bryantsev, J. Uddin, W. Walker, V. Giordani, S. Zecevic, D. Addison, and G. V. Chase
- 483 Investigation of the Role of Different Ethers in Lithium-Air Batteries
G. K. Wiberg, R. Subbaraman, J. S. Jirkovsky, V. R. Stamenkovic, and N. M. Markovic
- 484 Understanding the Role of Water in Li-O₂ Electrocatalysis
R. Subbaraman, J. Staszak-Jirkovsky, G. K. Wiberg, V. R. Stamenkovic, and N. M. Markovic
- 485 Electrocatalytic and Surface Morphology Effects on Carbon Supports for Li-O₂ Batteries
J. S. Jirkovsky, R. Subbaraman, G. K. Wiberg, V. R. Stamenkovic, and N. M. Markovic
- 486 High Energy Density Redox Flow Electrodes to Enable Large Scale Electrochemical Storage
Y. Chiang, W. C. Carter, Y. Dong, V. Brunini, N. Baram, and Z. Li

- 487 A Novel Iron-Polysulfide Redox Flow Battery for Renewable Energy Conversion and Storage Applications
G. Xia, X. Wei, L. Li, Z. Yang, G. Graff, and J. Liu
- 488 Measuring Ion-Ion Interactions in Cation Exchange Membranes for All-Vanadium Redox Flow Batteries
L. D. Griffith, S. Kim, and C. Monroe
- 489 Electrochemical Stability of Ionic Liquids for Vanadium Redox Flow Battery by Density Functional Theory
C. Yang, X. Xie, C. Zhao, and Z. Mao
- 490 A Numerical Study of the Effect of Flow Field on Cell Performance and Efficiency of VRFBs
Q. Xu and T. S. Zhao
- 491 A Multiscale Physical Model of Electrochemical Storage Systems
A. A. Franco
- 492 Recent Advances in Manganese Oxide Materials for Lithium Battery Applications
M. Thackeray
- 493 Electrochemical Behavior Associated with Microstructure of $\text{LiNi}_{0.8}\text{Co}_{0.15}\text{Al}_{0.05}\text{O}_2$ for Lithium-Ion Batteries
Y. Makimura, S. Zheng, Y. Ikuhara, and Y. Ukyo
- 494 First-Principles Study of the Ionic Ordering in $\text{Li}_x\text{Ni}_{0.5}\text{Mn}_{1.5}\text{O}_4$
E. Lee and K. Persson
- 495 The Lattice Orientation-Controls of Lithium Cobalt Oxide Cathode Thin Films by RF-Magnetron Sputtering for Thin Film Batteries
Y. Yoon, C. Park, J. Kim, and D. Shin
- 496 In Situ Hydrothermal Synthesis of Defect-Free LiMPO_4
J. Chen and J. Graetz
- 497 Towards the Understanding of Coatings on Rate Performance of LiFePO_4
J. Chong, S. Xun, X. Song, P. Ridgway, G. Liu, and V. S. Battaglia
- 498 Direct Observation of Enhanced Lithium-Ion Intercalation in LiFePO_4 Nanocrystals with Controlled Crystallinity
Q. N. Chen, Y. Liu, Y. Liu, S. Xie, G. Cao, and J. Li
- 499 New Polyanion Compounds as High-Capacity Electrode Materials for Li-Ion Batteries
Y. Yang
- 500 The Crystal Chemistry of the Lithium-Ion Battery Cathode $\text{Li}_2\text{MnSiO}_4$ - an X-ray and Neutron Diffraction Study
R. J. Gummow, N. Sharma, V. K. Peterson, and Y. He

- 501 Utilizing Carbon Nanotubes to Enhance Rate Capability of Lithium Iron Phosphate for High Power Lithium-Ion Batteries
M. Gnanavel and A. J. Bhattacharyya
- 502 Decoding the Structure of Novel, High-Capacity, Li-Ion Cathodes Using X-ray Absorption Spectroscopy
J. R. Croy, M. Balasubramanian, D. Kim, S. Kang, and M. Thackeray
- 503 Techniques for *In Situ* TEM Characterization and Electrochemistry of Nanoscale Battery Materials
J. P. Sullivan, J. Y. Huang, M. J. Shaw, K. R. Zavadil, A. Subramanian, Y. Liu, X. Liu, N. Hudak, and S. J. Hearne
- 504 In-Situ TEM Electrochemistry of Anode Materials in Lithium-Ion Batteries
J. Huang, X. Liu, Y. Liu, J. P. Sullivan, K. R. Zavadil, T. Zhu, L. Zhong, L. Q. Zhang, S. Mao, A. Kushima, J. Li, and S. T. Picraux
- 505 *In Situ* Neutron Reflectometry for the Direct Measurement of Cyclic and Evolving Structures in the Lithium Battery Solid Electrolyte Interphase
S. C. DeCaluwe, J. E. Owejan, J. P. Owejan, and J. A. Dura
- 506 Neutron Imaging of Degraded LFP Pouch Cells Illustrate Dendrite Formation and Internal Shorts
J. B. Siegel, X. Lin, and A. G. Stefanopoulou
- 507 In Situ Determination of Manganese Dissolution Rates in Lithium Manganese Oxide Batteries Using Electron Paramagnetic Resonance Spectroscopy
G. B. Less, J. G. Gallegos, and A. Sastry
- 508 Combining Quantitative Electrochemistry and Electron Microscopy to Study Nanostructured Materials Response and Stability: Reversible Lithiation of Silicon Nanowires
K. R. Zavadil, X. Liu, Y. Liu, and J. Huang
- 509 In Situ EPR Study of a LiMn_2O_4 Cathode Battery
J. G. Gallegos, G. B. Less, J. Park, and A. Sastry
- 510 3D Morphological Evolution of Li-Ion Battery Anode LiVO_2 during Oxidation --Using X-ray Nano-Tomography
Y. K. Chen, P. Shearing, Q. Yuan, J. Gelb, C. Eng, and J. Wang
- 511 $\alpha\text{-MnO}_2$ Electrocatalysts for Oxygen Reaction in Rechargeable Lithium-Air Batteries: Nano-Rods Grown on Spherical Core
J. Lee, A. Riaz, K. Jung, S. Lee, T. Lim, S. Park, R. Song, and K. Shin
- 512 Computational Modelling Studies of Nanostructured TiO_2
M. G. Matshaba, P. E. Ngoepe, and D. C. Sayle
- 513 Doped Spinel as Positive Materials for High Voltage Lithium Batteries
P. M. Le, T. Nguyen, V. Tran, L. Huynh, and V. Tran

- 514 First Principles' Computational Studies on Layered Cathode Materials
J. Shojan, J. Saavedra-Arias, G. Singh, and R. S. Katiyar
- 515 Electrochemical Performance of Nanosized Manganese Oxides Used as Cathode Catalysts for Lithium Air Batteries
J. Lee, K. Jung, J. Lee, S. Yoon, C. Jin, and K. Shin
- 516 Study of Crack Propagation on Single Crystalline Silicon Wafer during Electrochemical Lithiation and Delithiation
C. Kang, S. Son, S. Kim, S. Lee, and K. Oh
- 517 Electroactive Polymer for Reversible Overcharge Protection in Lithium-Ion Batteries
B. Wang, G. Chen, and T. J. Richardson
- 518 Nanostructured Materials for Transportation and Grid Scale Energy Storage
Y. Cui
- 519 Plastic-Deformation-Induced Morphological Evolution of Aggregated Si Particles
H. L. Wang, V. Sethuraman, and V. Shenoy
- 520 Bio-Polymers as Binders for Nano-Silicon Negative Electrodes of Lithium-Ion Batteries
M. Brestaz, W. Porcher, and S. Jouanneau
- 521 Influence of the Diameter Size of Silicon Nanowires for Lithium-Ion Batteries Anode
A. Gohier, B. Laïk, J. Pereira-Ramos, C. Cojocar, and P. Tran Van
- 522 SiOC Composite Thick Film Electrodeposited on a Ni Nanocone-Array Current Collector for Li-Ion Batteries
T. Hang, H. Nara, T. Yokoshima, T. Momma, and T. Osaka
- 523 Conductive Polymer Binder for High Capacity Alloy Anode
G. Liu, S. Xun, L. Wang, W. Yang, and V. S. Battaglia
- 524 Nanomaterials Modeling to Understand Conversion Reactions in Li-Ion Batteries
M. Alfredsson, P. Canepa, J. Talbot, T. Ao, and A. Chadwick
- 525 Phase Transitions of Spinel $\text{Li}_4\text{Ti}_5\text{O}_{12}$ with Multiple-Li Intercalation
F. Wang, J. Hong, A. Van Der Ven, and J. Graetz
- 526 Enhanced Li Capacity at High Lithiation Potentials in Graphene Oxide
M. Stournara and V. Shenoy
- 527 Metalizing Graphite/Electrolyte Interface for Faster Li^+ -Transport
J. Ho, A. V. Cresce, and K. Xu
- 528 Three-Dimensional Battery Architectures
N. Cirigliano, E. Perre, C. Kim, and B. Dunn

- 529 Particles and Polymer Binder Interaction - A Controlling Factor in Lithium-Ion Electrode Performance
G. Liu, H. Zheng, X. Song, and V. S. Battaglia
- 530 Thermodynamic Processes in Electrochemical Cell Performance and Aging
K. L. Gering
- 531 Development of Advanced Li-Ion Cells for NASA's Space Exploration Missions
B. V. Ratnakumar, M. C. Smart, W. West, L. Whitcanack, and S. Surampudi
- 532 Modeling of Porosity-Engineered Ultra High Energy Density Electrode Microstructures
D. R. Ely, B. Vijayaraghavan, K. Feng, R. García-García, Y. Chiang, and R. Garcia
- 533 Modeling the Rate Dependence of Charge Efficiency in Batteries
E. M. Krieger and C. B. Arnold
- 534 A Multiscale Model for the Transient Analysis of Lithium-Ion Batteries
B. Deguilhem, S. Laref, V. Vetere, and A. A. Franco
- 535 3-Dimensional Thermal and Electrochemical Model of Prismatic Wound Li-Ion Batteries
K. Lee, K. Smith, and G. Kim
- 536 Electrochemical-Thermal Coupled Modeling of Internal Short-Circuit by a Metal Particle in a Li-Ion Cell
W. Zhao and C. Wang
- 537 Characterization and Conductivity of Al-Substituted $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$
J. Wolfenstine, E. Rangasamy, J. Sakamoto, and J. Allen
- 538 Recent Progress in Garnet-Type Structure Solid Li Ion Electrolytes: Composition - Structure - Ionic Conductivity Relationship and Chemical Stability Focused
L. Truong, S. Narayanan, and V. Thangadurai
- 539 Advanced Non-Flammable Electrolytes for Li-Ion Batteries
C. P. Rhodes, M. Mullings, and R. Lopez
- 540 First Principles Simulations of the Initial Stages of Organic Solvent Decomposition on Spinel $\text{Li}(x)\text{Mn}(2)\text{O}(4)$ (100) Surfaces
K. Leung
- 541 Effect of Cosolvent on Lithium Ion Intercalation in Propylene Carbonate-Based Solutions Containing Lithium and Calcium Ions
S. Takeuchi, K. Miyazaki, T. Fukutsuka, and T. Abe
- 542 Li^+ -Solvation Structure Directs Interphasial Processes on Graphitic Anodes
K. Xu and A. V. Cresce
- 543 The Rechargeable Zinc Ion Battery from Battery Chemistry to New Design
C. Xu and F. Kang

- 544 Developing Novel Electrolytes for Rechargeable Mg Batteries
J. Muldoon and C. B. Bucur
- 545 Electrochemical Study of MnO₂ Based Cathode Active Materials for Rechargeable Mg Battery
R. Zhang, W. Song, A. Knapp, C. Ling, and M. Matsui
- 546 In Situ Characterization of the Cracking of Battery Electrodes by Acoustic Emission
A. Etienne, H. Idrissi, and L. Roué
- 547 Reconstruction of the Active Material, Binder and Pore Space of a LiCoO₂ Li-Ion Battery Cathode
T. Hutzenlaub, R. Zengerle, and S. Thiele
- 1657 Improved Wide Operating Temperature Range of LiNiCoAlO₂-Based Li-Ion Cells with Methyl Propionate-Based Electrolytes
M. C. Smart, M. Tomcsi, C. Hwang, L. Whitcanack, B. V. Ratnakumar, M. Nagata, V. Visco, and H. Tsukamoto

B6 - Tutorials on Electrocatalysis in Low Temperature Fuel Cells

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

- 548 Electrocatalysis in Polymer Electrolyte Fuel Cells: From Fundamentals to Applications
T. J. Schmidt
- 549 Electrochemical Interfaces for Energy Conversion and Storage
R. Subbaraman, D. Tripkovic, D. Strmcnik, G. K. Wiberg, J. S. Jirkovsky, C. Wang, V. R. Stamenkovic, and N. M. Markovic
- 550 Improved Catalysts for PEM Fuel Cell Electrodes
M. Watanabe
- 551 Platinum Monolayer Electrocatalysts for the Oxygen Reduction Reaction
M. B. Vukmirovic, Y. Cai, S. T. Bliznakov, K. Sasaki, J. X. Wang, and R. R. Adzic
- 552 (Supramaniam Srinivasan Young Investigator Award) Catalyst Supports for PEM Fuel Cell Electrocatalysts
V. K. Ramani
- 553 State of the Art in Non-Precious Metal Catalysts for Fuel Cells
P. Zelenay
- 554 Transition Metal Oxide Based Materials for Cathode of Polymer Electrolyte Fuel Cells
K. Ota, Y. Ohgi, K. Matsuzawa, S. Mitsushima, and A. Ishihara
- 555 Recent Advances in Non-Precious Metal Electrocatalysts for Oxygen Reduction in PEM Fuel Cells
M. Lefèvre and J. Dodelet

- 556 Hierarchically Structured Electrocatalysts for Fuel Cells
P. Atanassov
- 557 Nanostructured Thin Film Electrocatalysts for PEM Fuel Cells - A Tutorial on Fundamental Characteristics and Practical Properties
M. K. Debe
- 558 3-D Catalyst Structures for PEM Fuel Cell Electrocatalysts
B. Pivovar
- 559 Advanced Microscopy Methods for Studying PEM Fuel Cell Materials
K. L. More
- 560 In Situ Anomalous Small-Angle X-ray Scattering and X-ray Absorption Study of Fuel Cell Catalysts
D. J. Myers, J. Gilbert, N. Kariuki, X. Wang, A. Kropf, D. Morgan, S. Ball, J. Sharman, and G. Hards
- 561 Fundamental Mechanistic Understanding of Oxygen Reduction on Non-Precious Cathode Catalysts for Fuel Cells
S. Mukerjee
- 562 (Supramaniam Srinivasan Young Investigator Award) Macroscopic Modeling of the Proton-Exchange-Membrane Fuel-Cell Catalyst Layer
A. Z. Weber
- 563 Computational Studies of Trends in Electrocatalysis
J. Greeley
- 564 Effect of Ligands on the O₂ Binding and Redox Potential of Non-Precious Metal Catalysts: An Ab Initio Study
H. Zhu, S. J. Paddison, and T. A. Zawodzinski Jr.
- 565 PEM Fuel Cell Electrodes: Multi-Scale Studies of Structural and Functional Aspects
C. Sun, A. B. Papandrew, R. Subbaraman, and T. A. Zawodzinski Jr.
- 566 Electrochemical Reduction of Oxygen on Nano-Structured M (M = Fe, Co, Ce, W)Py/C in Alkaline Electrolyte
J. Qiao, L. Ding, L. Xu, X. Dai, and Y. Liu
- 567 Prompting Effect of Fe on the Kinetics and Electrocatalytic Activity of CoPc/C for Oxygen Reduction Reaction
L. Ding, L. Xu, B. Tian, S. Liu, X. Dai, and J. Qiao
- 568 Significant Improvement in the Functional Properties of Pt-free Alloyed Catalyst (PdNiAu): For Ethanol Fuel Cell Application
D. Datta and A. Dutta

- 569 Investigation of Catalyst Durability under Fuel Cell Operation with Reduced Cathode Platinum Loadings
T. Han, N. Dale, and K. Adjemian
- 570 Electrocatalytic Activity of Ternary PtSn-Based Materials toward CO and Ethanol Oxidation
T. S. Almeida, L. M. Palma, C. Morais, K. Kokoh, and A. De Andrade
- 571 Investigation of Electrocatalytic Activity of Titania Nanotube Supported Nanostructured Pt-Ni Catalyst towards Methanol Oxidation
L. Tamašauskaitė-Tamašiūnaitė, A. Balčiūnaitė, A. Vaiciukevičienė, and A. Selskis
- 572 Pt/NbO₂/C Oxygen Reduction Electrocatalysts with High Activity and Durability
N. Zhang, S. Zhang, F. Kong, Y. Gao, and G. Yin
- 573 PdCu/C as a Methanol-Tolerant ORR Electrocatalyst
D. C. Martinez-Casillas, A. Oliver-Tolentino, R. Gonzalez-Huerta, and O. Solorza-Feria
- 574 Synthesis and Characterization of Ru₅Pd₁₀Pt₂ Oxygen Reduction Electrocatalyst for PEM Fuel Cells
F. Leyva-Noyola and O. Solorza-Feria
- 575 Temperature Tuned Reaction Pathways of CO Electrooxidation in Alkaline Media
J. Jiang
- 576 Development of Non-Precious Catalysts for Oxygen Reduction Reaction in Alkaline Electrolyte
S. Shanmugam and G. Jo
- 577 Pt-Pd Bimetallic Alloy Nanoelectrocatalyst for Oxygen Reduction Reaction: Study of the Effect of Composition on Electrocatalysis
S. Ghosh and C. Raj
- 578 Bridge to Fuel Cell Molecular Catalysis: 3D Non-Platinum Group Metal Catalyst in MEAs
X. Zhu, Q. He, G. Hwang, Z. Martin, K. Clark, J. Kerr, R. Kostecki, and A. Z. Weber
- 579 Highly Active and Stable Non-Precious Catalysts for Oxygen Reduction Reaction in PEM Fuel Cells Using Polypyrrole and a Chelating Agent
J. Oh, H. Oh, and H. Kim
- 580 Novel Method to Prevent Carbon Corrosion in PEM Fuel Cells Using Water Electrolysis Catalyst
J. Oh, W. Lee, and H. Kim

B7 - Next Generation Portable Power

Energy Technology, Battery

- 581 Synthesis of Transparent Mesoporous Tungsten Trioxide Films with Enhanced Photoelectrochemical Response: Application to Unassisted Solar Water Splitting
J. Park and P. Yoo
- 582 Formation of Nanowires Network of Polyaniline and its Derivatives for High Performance Supercapacitors
P. A. Basnayaka, M. Ram, and A. Kumar
- 583 Theoretical Investigation of the Li-O₂ Reduction and Evolution Reactions Catalyzed by Metal Surfaces
Y. Xu, G. Dathar, and W. A. Shelton
- 584 Electrochemical Investigation on Stable Nonaqueous Electrolytes for Rechargeable Li-Air Batteries
Y. Shao, W. Xu, F. Ding, Z. Nie, M. Engelhard, J. Xiao, J. Zhang, Y. Wang, and J. Liu
- 585 Reactions in the Non-Aqueous Lithium-O₂ Battery
Y. Chen, S. Freunberger, Z. Peng, N. E. Drewett, L. J. Hardwick, F. Barde, and P. G. Bruce
- 586 Using Rotating Ring-Disc Electrode Voltammetry to Quantify the Stability of Aprotic Electrolytes for Li-Air Batteries
J. Herranz, N. Tsiouvaras, M. Piana, A. Garsuch, and H. Gasteiger
- 587 Exploring Catalyst/Electrolyte Interactions in Li-O₂ Batteries, an Online Electrochemical Mass Spectrometry Study
S. Meini, M. Piana, N. Tsiouvaras, C. Kavakli, H. Gasteiger, and A. Garsuch
- 588 A High Performance Lithium-Air Battery
J. Hassoun, H. Jung, Y. Sun, and B. Scrosati
- 589 Transition Metal-Nitrogen-Carbon Cathode Catalysts for Oxygen-Reduction in Lithium-Air Batteries
G. Wu, S. Ma, K. L. More, and P. Zelenay
- 590 Manganese Oxide with Card-House-Like Structure Reassembled from Nanosheets for Li-Air Battery
S. Ida, Y. Hidaka, Y. Okamoto, A. Thapa, M. Matsuka, H. Hagiwara, and T. Ishihara
- 591 Thin Film Co-MnO₂ by Combined Electroless-Electrolytic Techniques for Ultracapacitor and Li-Air Battery Applications
J. R. Gomez, E. E. Kalu, R. Nelson, M. H. Weatherspoon, and J. P. Zheng
- 592 Potential of a Novel Sugar-Air Flow Battery
S. Li, D. Scott, and B. Liaw

- 593 Aerobic and Anaerobic Operation of an Active Membraneless Direct Methanol Fuel Cell
M. S. Dara, A. Lam, D. Wilkinson, and K. Fatih
- 594 Direct Dimethyl Ether Fuel Cell with Much Improved Performance
Q. Li, G. Wu, Y. Kim, C. M. Johnston, and P. Zelenay
- 595 Moving Beyond Current Energy Density Boundaries
E. Takeuchi, A. Marschilok, and K. Takeuchi
- 596 Synthesis, Structure and Electrochemistry of Lithium Iron Phosphate Material for Lithium-Ion Batteries
J. Thomas, R. Humana, E. Castro, R. Milocco, and A. Visintin
- 597 Pitch Carbon-Coated Lithium Sulfide Electrode for Advanced, Lithium-Metal Free-Sulfur Batteries
J. Park, J. Kim, J. Hassoun, Y. Sun, and B. Scrosati
- 598 A Contribution to the Progress of High Energy Batteries: A Metal-Free, Lithium-Ion, Silicon-Sulfur Battery
J. Hassoun, J. Kim, D. Lee, H. Jung, S. Lee, Y. Sun, and B. Scrosati
- 599 Hollow Carbon Nanospheres/Alloying Metal Anodes for Lithium-Ion Batteries
M. J. Wagner
- 600 Influence of Dapant on Electrochemical Performance of Li Excess Cathode
B. Song, M. Lai, and L. Lu
- 601 Influence of the Nanosize Effect on the Electrochemical Kinetics and the Structural Response of V_2O_5 and Rutile TiO_2 as Lithium Intercalation Compounds
J. Pereira-Ramos, R. Baddour-Hadjean, and S. Bach

C1 - Organic and Biological Electrochemistry General Poster Session

Organic and Biological Electrochemistry

- 602 Spectroscopic Characterization of the Compatibility of Fresh and Aged Novec™ 71IPA with Beryllium, Stainless Uranium, 304L Stainless Steel, and Aluminum Alloy 2024-T3
L. Petry, D. Hansen, T. Wittberg, C. Barklay, D. Kramer, Y. Yoon, H. Knachel, J. Birkbeck, B. Russell, and W. Moddeman
- 603 Electricity Generation in Microbial Fuel Cell by the Decomposition of Organic Slurry by E-Coli
D. S. Songera, A. Kabra, and A. Choudhary
- 604 Enhanced Panchromatic Light Harvesting Characteristics from Adsorption Rate Controlled Mixed Dye Solution for Dye-Sensitized Solar Cells
H. Yang, Y. Kim, S. Kim, K. Ahn, and J. Kim

- 605 Optimization of Electropolymerized Nickel Salen-Based Film for Electro-Oxidation of Aldehydes
N. Wannaprom and P. Vanalabhpatana
- 606 Molecular Design and Photovoltaic Performances of Organic Dyes Containing Triphenylamine for Dye-Sensitized Solar Cell
M. Jung, Y. Kim, J. Cheon, K. Ahn, and J. Kim
- 607 Enhanced Light Harvesting Efficiency by Först Resonance Energy Transfer in Quasi-Solid State DSSC Using Blue Dye
S. Choi, S. Kim, J. Lee, T. Trang, and J. Kim
- 608 Synthesis and Photovoltaic Properties of Organo-Dendritic Photosensitizers Based on Carbazole and Phenothiazine for DSSC
D. Jung, J. Lee, M. Kim, and J. Kim
- 609 Electrophoretic Display Driven by Commercially Applicable, All-Solution-Processed Organic Thin-Film Transistors
K. Kim, H. Na, J. Lee, C. Park, J. Bae, W. Shin, C. Kim, M. Jun, and Y. Hwang
- 610 Organic Nonvolatile Memory Devices Fabricated by an Inkjet Printing Method
Y. Yang, J. Koo, T. Kim, S. Jung, K. Baeg, S. Lee, M. Kim, B. Na, and I. You

C2 - 10th Manual M. Baizer Memorial Symposium on Organic Electrochemistry
Organic and Biological Electrochemistry

- 611 Adventures in Organic Electrochemistry: 50 Years at Indiana University
D. G. Peters
- 612 Cathodic Grafting of Alkyl Chains onto Glassy Carbon Easy Immobilization of Ferrocene Used as Redox Probe
V. Jouikov and J. Simonet
- 613 Electron Transfer to and from Au₂₅ Nanoclusters
S. Antonello, F. Polo, and F. Maran
- 614 Decarboxylation Versus Desilylation in the Anodic Oxidation of a-silylacetic acid, Ph₂(Me)SiCH₂COOH
L. Brakha and J. Y. Becker
- 615 Indirect Cation Flow Method Flash Generation of Alkoxy-carbenium Ions and Studies on Stability of Glycosyl Cations
J. Yoshida, K. Saito, K. Ueoka, K. Matsumoto, S. Suga, and T. Nokami
- 616 Electron-Transfer-Induced Intermolecular Cycloaddition Reactions
Y. Okada and K. Chiba
- 617 Carborane Anions 1-X-12-Y-CB₁₁Me₁₀⁻: Electrochemical Oxidation in Liquid SO₂
A. Wahab, J. Klíma, J. Michl, and J. Ludvík

- 618 Anodic Oxidation of Diphenylacetaldehyde in the Presence of Alcohols
A. J. Fry and R. Merzel
- 619 Indirect Electrochemical Cyclisation of Bromoalkoxylated Derivatives Using Environmentally Friendly Methodologies
E. Duñach, M. J. Medeiros, and S. Olivero
- 620 Effect of Water on the Electrochemical Reduction of Methyl 2-Bromomethylbenzoate at Carbon Cathodes in Dimethylformamide
C. Allen, D. Brown, J. Potts, and C. Ji
- 621 Electrochemical Oxidation with Recyclable, Polymer Bound Mediators
S. J. Yoo and R. Little
- 622 Preparation of a Highly Clear and Transparent Nanoemulsion under Surfactant-Free Conditions Using Tandem Acoustic Emulsification and Its Application to Electropolymerization
M. Atobe, K. Nakabayashi, T. Fuchigami, K. Machida, S. Takeda, and K. Tamamitsu
- 623 Electrochemical Investigation of Ketone Complexation by Lewis Acids in a Chloroaluminate Ionic Liquid
G. T. Cheek
- 624 Electrochemistry in 1-Methyl-3-Linoleyl-1*H*-Imidazol-3-Ium Bis(Trifluoromethylsulfonyl)Imide (An Ionic Liquid): Electrochemical Reduction of *o*-Nitrostyrenes
E. Pasciak and D. G. Peters
- 625 Electrochemical Reduction of Halogenated Species with Solution-Phase and Polymer-Bound Nickel(I) Salen
K. Griffith and D. G. Peters
- 626 Octaorgano Silsesquioxanes with Encapsulated Fluoride Anion, TBA(F@T₈⁻), as a New Class of Non-Coordinating Non-Nucleophilic Supporting Electrolytes
M. Syroeshkin, Y. Wang, V. Gul'tyai, and V. Jouikov
- 627 Electrocatalytic Hydrogen Production Catalyzed by Dicobalt Complex with Imine/Oxime Ligand
H. Shimakoshi, M. Takahashi, and Y. Hisaeda
- 628 Conversion of 2-Nitrophenylpyruvic Acid and β-Dinitrostyrene to 1*H* Indoles by Direct Reduction at Glassy Carbon Electrodes
N. Buehler and D. G. Peters
- 629 Cyclic Voltammetry of Fluorenones: Simulation
I. U. Haque and M. Fatima
- 630 Electrochemical Conversion of Glycerol in a Solid- Polymer-Electrolyte Reactor
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C3 - Progress in Fundamental and Applied Bioelectrochemistry

Organic and Biological Electrochemistry, Physical and Analytical Electrochemistry

- 631 Switchable Electrode Interfaces Controlled by Biological Signals
E. Katz, J. Halámek, V. Bocharova, and L. Halámková
- 632 Superefficient Electron Transfer through 3_{10} -Helical Peptides
P. Gobbo, S. Antonello, I. Guryanov, M. Hesari, and F. Maran
- 633 Electrochemical Genotoxicity Screening Microfluidic Array for Arylamine Reactive Metabolites Formed by Multi Enzyme Bioactivation
D. P. Wasalathanthri, A. Joshi, and J. F. Rusling
- 634 Optimizing Chronocoulometric Solution Detection of Cholesterol at Micro- to Nanoscale Dimensions for Biosensor Applications
R. H. West and J. D. Burgess
- 635 Nanostructured Microfluidic Arrays for the Detection of Cancer Biomarker Proteins
J. F. Rusling, B. Chikkaveeraiah, V. Mani, R. Malhotra, C. K. Tang, N. Sardesai, and A. Vaze
- 636 Nanostructured Immunosensor for Attomolar Detection of Cancer Biomarker IL-8 Using Massively Labeled Superparamagnetic Particles
B. Munge, A. Coffey, J. Doucette, B. Somba, R. Malhotra, V. Patel, J. Gutkind, and J. F. Rusling
- 637 Microfluidic Electrochemical Immunoarray with Microwells from Gold Compact Discs for Detection of Cancer Biomarker Proteins
C. K. Tang, A. Vaze, and J. F. Rusling
- 638 Ultrasensitive Detection of Peanut Allergen Specific Antibodies in Serum Using Electrochemical Microfluidic Immunoarrays
V. Mani, A. Joshi, M. W. Peczu, and J. F. Rusling
- 639 Detection of Antibodies and Nanoparticles by Resistive-Pulse Measurements with Nanopipettes
K. Kececi, Y. Wang, M. V. Mirkin, V. Mani, and J. F. Rusling
- 640 In Situ Imaging of Electrochemically Controlled Liposome Incorporation into a Lipid-Like Layer
A. Musgrove and D. Bizzotto
- 641 Molecular Adsorption and Isoelectric Point of Bovine Serum Albumin at the Electrified Air-Water Interface
K. Engelhardt, A. Rumpel, B. Braunschweig, and W. Peukert
- 642 Investigations of Electrode Size on Chronoamperometric Measurements of Dopamine in Rat Brain Tissue
P. A. Lukus and J. O. Schenk

- 643 Porous NiO with Tailored Nanostructure and Its Sensitive Hydrogen Peroxide Biosensor
C. Leo, P. Zhang, M. Xu, S. Bao, and D. Jia

D1 - Corrosion General Session

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- 644 Corrosion Performance of Zinc-Rich Paints(ZRP) on Mild Steel in NaCl Solution
A. H. Sofian, A. Tanaka, and K. Noda
- 645 Corrosion Protection of Steel with Duplex FCAD/ALD Oxide Nanocoatings
V. Maurice, B. Díaz, E. Härkönen, S. Tervakangas, J. Swiatowska, L. Tóth, G. Radnóczy, J. Kohlemainen, M. Ritala, and P. Marcus
- 646 Potential of Metal Oxide Thin Films For Preventing Corrosion in Carbon, Stainless, and Metal-Plated Carbon Steels
J. J. Jackowski, M. Tejedor, and M. A. Anderson
- 647 Corrosion of Aluminized Steel in Aggressive Natural Water
M. Akhoondan and A. A. Sagüés
- 648 Quaternary Alloy of Ni-Zn-Cu-P from Hypophosphite Based Electroless Deposition Method
M. Zaimi and K. Noda
- 649 On the Fabrication of Highly Ordered Sn-doped and Fe-doped TiO₂ Nanotubes: Toward Improved Optical and Electronic Properties
N. Kyeremateng, V. Hornebecq, P. Knauth, and T. Djenizian
- 650 Tailoring of the Internal Pore Structure of Anodic Aluminum Oxide (AAO) by Pulsed Anodization of Aluminum
W. Lee
- 651 New Evidence of Catalase-Mediated Biocorrosion in Escherichia Coli
S. Baeza, M. Azocar, M. Gulppi, F. Melo, N. Vejar, A. Monsalve, J. Pérez, C. Vasquez, J. Pavez, J. H. Zagal, and M. A. Páez
- 652 Anaerobic Microbial Corrosion of Steel
D. D. Bala and D. Chidambaram
- 653 Corrosion under Simulated Grout Conditions for Prestressed Concrete
R. D. Kalina, H. G. Wheat, S. MacLean, and J. Breen
- 654 Investigation of Passivity of Iron and Carbon Steel in Simulated Concrete Pore Solutions
H. Gunay, O. Isgor, and P. Ghods
- 655 Corrosion of Fe-(8.5~36.9) wt.%Cr Alloys at 600-800°C in H₂S and H₂O Gas Atmospheres
M. Kim, X. Chunyu, S. Kim, and D. Lee

- 656 Comparison of the Corrosion Behavior of Carbon Steel and Type 316L Stainless Steel under Nuclear Reactor Coolant Circuit Conditions
K. Daub, Q. Knapp, J. J. Noel, and J. Wren
- 657 In Situ Electrochemical Corrosion Measurements of Carbon Steel in Supercritical CO₂ Using a Membrane-Coated Electrochemical Probe
J. Beck, M. Fedkina, S. Lvov, M. E. Ziomek-Moroz, G. Holcomb, J. Tylczak, and D. Alman
- 658 Electrochemical Investigation on N80 Carbon Steel Corrosion Mechanisms in Aqueous CO₂ Environments
G. Park, F. Cao, C. Li, and S. Ling
- 659 Surface Studies of Ultra Strength Drilling Steel after Corrosion Fatigue in Simulated Sour Environment
M. E. Ziomek-Moroz, J. Hawk, R. Thodla, and F. Gul
- 660 The Effect of 2- Phenyl-1-Hydrazine Carboxamide on Mild Steel Corrosion in Phosphoric Acid Solutions
A. Dadgareenezhad and F. Baghaei Ravari
- 661 Inhibitory Action of Some Friendly Environment Organic Inhibitors in Cooling Water Systems
F. Branzoi, V. Branzoi, and A. Stanca
- 662 Role of Temperature, pH and Anionic Composition Solution at Aluminum Local Activation under Chloride-Ions Action
S. Kaluzhina and T. Borisenkova
- 663 Electrochemical Study of the Inhibitory Properties of Oxyanions under Galvanic Conditions
I. Carrillo, B. Valdez, R. Zlatev, and M. Stoycheva
- 664 The Adsorption of Propargyl Alcohol on the Surface of Ferrite Steel in 0.5M H₂SO₄
F. Baghaei Ravari and A. Dadgareenezhad
- 665 Deposition Mechanism of Electroless Ni-B Plating on Magnesium Alloy with Zinc Immersion Pretreatment
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- 666 Electrochemical Synthesis and Characterization of Patina on Cu_xSn Bronzes (x≤14) in Sulphate Medium
A. Petitmangin, T. Modjinou, B. Laïk, P. Dubot, J. Muller, and I. Guillot
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- 668 High Temperature Study of Ferritic Steel Type Crofer 22 APU in Argon and Air Atmospheres Containing Water Vapor
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- 669 Electropolishing Effect on Corrosion Resistance of Electrodeposited Nanocrystalline Ni-Mo Alloy Coatings in NaCl Solution
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- 670 Cu - Fe Galvanic Coupling; A Simple Technique to Study the Corrosion Inhibition Mechanism of Benzotriazole for Cu and a Corrosion Inhibition Method for Fe
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- 671 Correlation between Field Exposure and Laboratory Corrosion Tests for Galvanic Couples between Titanium Diboride and Aluminum Using the Zero-Resistance Ammeter Technique in Humid Environments
R. Srinivasan and L. H. Hihara
- 672 Atomistic Simulations on the Dynamics of Chloride Ion Adsorption onto a MgO Substrate
S. K. Sankaranarayanan, S. Deshmukh, and S. Ramanathan
- 673 Microstructural Characterization of Atmospheric Corrosion of Nickel Coated Carbon Reinforced Aluminum (Al/C/50f) Metal Matrix Composites
S. Tiwari and L. H. Hihara
- 674 Molybdenum Based Conversion Coatings for Aerospace Aluminum Alloys
D. Rodriguez and D. Chidambaram
- 675 Formation and Anti-Corrosion Properties of Self-Assembled Vinilsilicon Nanolayers on Copper Surface
M. A. Petrulin, L. Maksaeva, T. Yurasova, and E. Terekhova
- 676 Electrochemical Corrosion Properties of Cerium-Based Conversion and PEO Coated AZ31 Mg Alloys
T. Lim, H. Ryu, and S. Hong

E1 - Dielectrics for Nanosystems 5: Materials Science, Processing, Reliability, and Manufacturing

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- 677 New Dielectric Nanomaterials Fabricated from Nanosheet Technique
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- 678 Semiconductor Nanocrystals Embedded in High-k Materials
J. Heitmann
- 679 Low-Temperature Growth of Ge Nanowires by Vapor-Liquid-Solid Chemical Vapor Deposition
M. Simanullang, A. Seyhan, K. Usami, T. Kodera, Y. Kawano, and S. Oda
- 680 Experimental Determination of the Electronic Density of States for Graphene Oxide
B. W. Alphenaar

- 681 Nanocontact Epitaxy of Thin Films on Si Substrates Using Nanodot Seeds Fabricated by Ultrathin SiO₂ Film Technique
Y. Nakamura and M. Ichikawa
- 682 Mechanism of V_{fb} Shift in HfO₂ Gate Stack by Al Diffusion from (TaC)_{1-x}Al_x Gate Electrode
T. Nabatame, M. Kimura, H. Yamada, A. Ohi, T. Ohishi, and T. Chikyow
- 683 High-k on InAs 100 and 111B Surfaces
E. Lind, J. Wu, and L. Wernersson
- 684 Scanning Probe Analysis of Dielectrics on High Mobility Substrates
S. H. Olsen and R. Kapoor
- 685 Can Metal/Al₂O₃/In_{0.53}Ga_{0.47}As/InP MOSCAP Properties Translate to In_{0.53}Ga_{0.47}As MOSFET Characteristics
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- 686 Effects of the Interfacial Layer on Electrical Properties of TiO₂-based High-k Dielectric Composite Films
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- 687 *In Situ* XPS Study on ALD (Atomic Layer Deposition) of High-k Dielectrics
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- 688 Admittance Spectroscopy of Si/LaLuO₃ and Si/GdSiO MOS Structures
F. Ducroquet, O. Engström, H. D. Gottlob, J. J. Lopes, and J. Schubert
- 689 Comprehensive Demonstration and Physical Origin of HfO₂ Gate Stacks: Band Alignment, V_{FB} Shift and Fermi Level Pinning
X. L. Wang, W. Wang, K. Han, J. Zhang, J. Xiang, X. Ma, H. Yang, D. Chen, and T. Ye
- 690 Electrical and Optical Characterization of GeON Layers with high-*k* Gate Stacks on Germanium for Future MOSFETs
S. N. Murad, P. T. Baine, J. H. Montgomery, D. W. McNeill, S. Mitchell, B. Armstrong, and M. Modreanu
- 691 Impact of Si Diffusion Barrier Layer Formed on TiN Surface by *In Situ* Oxygen Treatment Process for Advanced Gate-First Metal/High-k Stacks
N. Kitano, K. Chikaraishi, H. Arimura, T. Hosoi, T. Shimura, T. Seino, H. Watanabe, and T. Nakagawa
- 692 Fabrication and Investigation of Metal-Insulator-Insulator-Metal (MIIM) Tunnel Diodes Using Atomic Layer Deposition
N. Alimardani, E. Cowell III, J. Wager, and J. Conley Jr.

- 693 High-Temperature-Operating Dielectrics of Perovskite Oxides for Powder Device Applications
Y. Noguchi, T. Oguchi, Y. Kitanaka, and M. Miyayama
- 694 SiC and GaN Power MOSFETs for Power Electronics Switching
K. Shenai
- 695 SiO₂ Thickness Dependency of C-V Dispersion in Stacked Al/HfO₂/SiO₂/4H-SiC Capacitors
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- 697 The Impact of Mechanical Strain on Reliability Issue for PD SOI MOSFETs
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- 698 Investigation of Mechanisms and Random Telegraph Signals in Static and Dynamic BTI Stress on PD SOI MOSFETs
C. Chen, T. Chang, H. Lo, W. Lo, S. Ho, C. Dai, O. Cheng, and C. Huang
- 699 Investigation of Random Telegraph Signal with PD SOI MOSFETs
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- 700 Switching and Mechanical Damage of Cu/TaO_x/Pt Resistive Devices under High Negative Voltage Stress
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- 701 Improve Resistive Switching Characteristics in Mixed HfO₂ and Al₂O₃ Layer by Layer Structure
C. Huang, M. Wu, D. Panda, and T. Tseng
- 702 Coexistence of Bipolar and Unipolar Switching in Cu/TaO_x/Pt Resistive Devices
T. Liu, M. Verma, Y. Kang, and M. K. Orlowski
- 703 Ge MOS Capacitor Fabricated by Plasma Enhanced Atomic Layer Deposition at Room Temperature
F. Hirose, M. Degai, K. Kanomata, and K. Momiyama
- 704 Coaxial-Structured Solar Cells with Silicon Nanostructures
H. Li, K. Chen, S. Chiou, H. Liu, C. Juan, and H. Cheng
- 705 A New Mechanism of Symmetry of Current-Voltage Characteristics for High-k Dielectric Capacitor Structures
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- 706 Mechanism of Device Degradation for InGaZnO TFTs by the Drain Bias Stress in Dark and Light Illumination
S. Huang, T. Chang, L. Lin, M. Yang, K. Yang, M. Wu, M. Chen, and F. Jian
- 707 Polysilicon Nanowires Biosensors for pH Measurement and DNA Detection Utilizing High-k Dielectric Sensing Membrane
C. Wu, P. Hsu, C. Wang, T. Liao, H. Cheng, and Y. Wu
- 708 HfTiON as Charge-Trapping Layer for Nonvolatile Memory Applications
X. Huang and P. Lai
- 709 Hybrid Orientation Substrate Fabrication Using Electron Beam Induced Orientation Selective Epitaxial Growth of CeO₂(100) and (110) Areas on Si(100) Substrates
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- 711 Investigation on AC PBI and NBI Stress on Ti_xN_{1-x}/HfO₂ MOSFETs
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- 713 Mechanism of Difficulty to Study the Physics of Leakage Current Reduction by Nitridation of Silicon before High-k Dielectric Deposition Due to Change in Nucleation Characteristics
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- 714 Investigating the Resistance Switching Characteristics for BON-Based Thin Film Nonvolatile Memory Application
H. Tseng, T. Chang, K. Cheng, J. Huang, and Y. Chen
- 715 Formation of CoSi₂/CoSi_xNy Nanocrystals for Nonvolatile Memory Application
J. Huang, T. Chang, J. Lu, S. Chen, T. Liu, Y. Chen, P. Yang, H. Huang, D. Gan, N. Ho, Y. Shi, and S. Sze
- 716 Low Work Function between Erbium Silicide and n-type Silicon Control by Cap Film Stress
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- 717 Solution Based Hybrid Dielectric for Soluble ZnO TFTs
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- 718 A Compact CMOS 3-D Magnetic Field Sensor
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- 719 The Investigation of Molybdenum Doping in Silicon Oxide Based Resistive Switching Memory
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- 720 Investigation of Antimony Oxide Films Deposited by Atomic Layer Deposition
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- 721 Study of the SiO_x Films Deposition Method in Cat-CVD System
J. Park, K. Keum, S. Kang, T. Song, and W. Hong
- 722 Voltage-Pulse-Triggered Switching Behavior in VO₂ Devices on Silicon
G. Seo, B. Kim, C. Ko, Y. Lee, S. Ramanathan, and H. Kim
- 723 Electrical Properties of ZnO Active and SOG Passivation Layer by Inkjet-Printing
S. Lim, J. Oh, S. Kang, S. An, and K. Cho
- 724 Impact of High- κ TaO_x Thickness on the Resistive Memory Properties in IrO_x/TaO_x/WO_x/W Structure
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- 725 Improvement on Interface Quality and Reliability Properties of HfAlO_x MIS Capacitor with Dual Plasma Treatment
K. Chang, T. Chang, P. Chang, B. Huang, C. Wu, and I. Deng
- 726 A Unified Schottky-Poole-Frenkel Model for Capacitor Structures Involving High-k Dielectric Materials
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- 727 Switching Characteristics in Pt/TaON/TiN Films for Nonvolatile Memory Applications
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- 728 FinFET Flash Memory Technology
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- 729 Analysis of Cycling Induced Interface Degradation in Si Nanocrystal Memory Devices
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- 730 Modeling of Copper Diffusion in Amorphous Aluminum Oxide in CBRAM Memory Stack
K. Sankaran, S. Clima, L. Goux, M. Mees, J. A. Kittl, M. Jurczak, L. Altimime, G. Rignanese, and G. Pourtois
- 731 Ge-doped Hafnia-based Dielectrics for Non-Volatile Memory Applications
L. Khomenkova, X. Portier, M. Carrada, C. Bonafos, B. Sahu, A. Slaoui, and F. Gourbilleau
- 732 Unipolar Resistive Switching Memory Using IrO_x/Al₂O₃/SiO₂/p-Si MIS Structure
W. Banerjee, S. Maikap, D. Jana, Y. Chen, and J. Yang

- 733 Resistive Switching Characteristics of ZnO for Nonvolatile Memory Applications
J. He, W. Chang, J. Ke, and J. Durán Retamal
- 734 Forming Free Resistive Switching Memory Using IrO_x/GdO_x/W Cross-Bar Structure
D. Jana, A. Prakash, W. Banerjee, and S. Maikap
- 735 Ozone Assisted ALD of Doped ZnO as a Transparent Metal Oxide
H. Yuan, B. Luo, W. L. Gladfelter, and S. Campbell
- 736 Carrier Transport thorough Grain Boundaries in Highly Transparent Conductive Ga-doped ZnO Films
T. Yamamoto, H. Song, H. Makino, and N. Yamamoto
- 737 Texturing and Tetragonal Phase Stabilization of ALD Hf_xZr_{1-x}O₂ Using a Cyclical Deposition and Annealing Scheme
K. Tapily, S. Consiglio, R. D. Clark, R. Vasić, E. Bersch, I. Wells, J. Jordan-Sweet, G. J. Leusink, and A. C. Diebold
- 738 Electrical Properties of Silicon Nitride Using High Density and Low Plasma Damage PECVD Formed at 400°C
Y. Nakao, R. Kuroda, H. Tanaka, A. Teramoto, S. Sugawa, and T. Ohmi
- 739 New Metal Organic Gas Supply System by Using an Advanced Flow Control System
M. Yamaji, S. Yamashita, A. Hidaka, M. Nagase, N. Ikeda, S. Sugawa, and T. Ohmi
- 740 Low-frequency noise reduction in Si Nanowire MOSFETs
K. Ohmori, W. Feng, R. Hettiarachchi, Y. Lee, S. Sato, K. Kakushima, M. Sato, K. Fukunda, M. Niwa, K. Yamabe, K. Shiraishi, H. Iwai, and K. Yamada
- 741 Reliability of Microcantilever and Microbridge Gas Sensors for Chemical Detection
P. J. Hesketh, R. Aguilar, I. Ellern, M. Navei, A. Pizzo, M. Allendorf, J. Stetter, and M. Findlay
- 742 Towards Higher Reliability in Cantilever-Based Sensing - High Data Rate and Orthogonal Sensors
A. Boisen
- 743 Micropatternable Multifunctional Nanocomposite Polymers for Flexible Soft NEMS and MEMS Applications
A. Khosla and B. L. Gray
- 744 Nano-Derived, Micro-Chemical Sensors for High-Temperature Applications
E. M. Sabolsky, C. Wildfire, E. Ciftyurek, and K. Sabolsky
- 745 Engineering of Nanocomposite Materials for Sensing Applications
A. Amini and B. Bahreyni

- 746 Dry Adhesives for MEMS Assembly, Manipulation and Integration: Progress and Challenges
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- 747 Impact of Thermal Stability of Isolation Liner on the Electrical Characteristics of TSVs
C. Okoro, A. Afzal, B. Kandel, M. Walsh, and Y. S. Obeng
- 748 Innovative Gap-Fill Strategy for 28 nm Shallow Trench Isolation
A. Tavernier, L. Favennec, T. Chevolleau, and V. Jousseau
- 749 Flexibility Evaluation and Improvement of Hybrid Inverters Based on Organic and Oxide Thin Film Transistors
D. I. Kim, B. Hwang, H. Jeon, K. Yu, H. Moon, B. Bae, H. Lee, and N. Lee

E2 - Graphene, Ge/III-V, Nanowires, and Emerging Materials for Post-CMOS Applications 4

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- 750 Physical Properties of Bilayer Exciton Condensates
A. H. MacDonald, D. Pesin, I. Sodemann, L. F. Register, and S. K. Banerjee
- 751 Bilayer PseudoSpin Field Effect Transistor (BiSFET): Concepts and Critical Issues for Realization
L. F. Register, D. Reddy, X. Mau, W. Jung, I. Sodemann, D. Pesin, A. Hassibi, A. H. MacDonald, and S. K. Banerjee
- 752 Current Switching in Crossed Graphene Nanoribbons
R. K. Lake and K. Habib
- 753 Graphene Bilayers: Electron Transport and Device Applications
E. Tutuc
- 754 Wafer-Scale Graphene Nanoribbon Transistor Technology
D. Jena, W. Hwang, K. Tahy, P. Zhao, R. Myers-Ward, P. M. Campbell, C. R. Eddy Jr., D. Gaskill, H. Xing, and A. C. Seabaugh
- 755 On/Off-Current Ratios of In-Situ CCVD Grown Bilayer Graphene FETs as a Function of Temperature
P. Wessely, F. Wessely, E. Birinci, B. Riedinger, and U. Schwalke
- 756 Carbon Device Metrology for Direct Measurement of Reconfigurable p-n Junctions in Graphene
Y. Wang and R. E. Geer
- 757 Performance Analysis of Graphene RF Transistors
M. C. Lemme
- 758 In Situ Electrical Studies of Ozone Based Atomic Layer Deposition on Graphene
J. Kim, S. Jandhyala, G. Mordi, and B. Lee

- 759 Direct Graphene Growth on Oxides: Interfacial Interactions and Band Gap Formation
J. A. Kelber, M. Zhou, S. Gaddam, F. L. Pasquale, L. Kong, and P. A. Dowben
- 760 Aberration Corrected Microscopy of CVD Graphene and Spectroscopic Ellipsometry of Epitaxial Graphene and CVD Graphene for Comparison of the Dielectric Function
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- 761 Modeling the Growth of SWNTs and Graphene on the Atomic Scale
E. C. Neyts, A. C. van Duin, and A. Bogaerts
- 762 Large Area Mapping of Graphene Grain Structure and Orientation
H. Floresca, D. Hinojos, N. Lu, J. Chan, L. Colombo, R. Wallace, J. Kim, and M. J. Kim
- 763 III-Sb MOSFETS : Opportunities and Challenges
A. Nainani, Z. Yuan, A. Kumar, J. Boos, B. R. Bennett, and K. C. Saraswat
- 764 Passivation Challenges with Ge and III/V Devices
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- 765 Investigation of Thermal Stress Relief Mechanism and Corresponding Hole Mobility Improvement in Epitaxially Grown, Wafer-Scale Ge on Si, Using Air-Gapped SiO₂ Nanotemplates
S. Ghosh, D. Leonhardt, and S. M. Han
- 766 Integration of InGaAs Channel n-MOS Devices on 200mm Si Wafers Using the Aspect-Ratio-Trapping Technique
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- 767 Adding New Functionality to Silicon CMOS Integrated Circuits via Deterministic Assembly
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- 768 Desorption of Ge Species during Thermal Oxidation of Ge and Annealing of HfO₂/GeO₂ Stacks
C. Radtke, G. Rolim, S. da Silva, G. Soares, C. Krug, and I. Baumvol
- 769 Supramolecular Organization of Ultra-narrow PbS Nanowires into Dimension Controlled Sheets Comparable to Three Layers of Graphene
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- 772 Reduced Pressure-Chemical Vapor Deposition of High Quality Ge Layers on SiGe/Si Superlayers for Microelectronics and Optoelectronics Purposes
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- 774 Trimethylaluminum Passivation of Al₂O₃/InGaAs Interface for Metal-Oxide-Semiconductor Devices
J. Ahn and P. McIntyre
- 775 Novel Dilute Nitride III/V-Semiconductor Laser System for the Monolithic Integration to Si-Microelectronics
B. Kunert, K. Volz, and W. Stolz
- 776 New Method to Produce High-Quality Epitaxial Ge on Si Using SiO₂-Lined Etch Pits and Epitaxial Lateral Overgrowth for III-V Integration
D. Leonhardt and S. M. Han
- 777 VO₂, a Metal-Insulator Transition Material for Nanoelectronic Applications
K. M. Martens, I. P. Radu, G. Rampelberg, J. Verbruggen, S. Cosemans, S. Mertens, S. Xiaoping, M. Schaekers, C. Huyghebaert, C. Detavernier, S. De-Gendt, M. Heyns, and J. A. Kittl
- 778 Demonstration of Single Crystal GaAs Layers on CTE-Matched Substrates by the Smart Cut Technology
T. Jouanneau, Y. Bogumilowicz, P. Gergaud, V. Delaye, V. Klinger, F. Dimroth, A. Tauzin, B. Ghyselen, and V. Carron
- 779 Characterization of Rapid Melt Growth (RMG) Process for High Quality Thin Film Germanium on Insulator
N. Zainal, S. Mitchell, D. W. McNeill, M. F. Bain, B. Armstrong, P. T. Baine, D. Adley, and T. S. Perova
- 780 High Yield, Low Temperature and Low Pressure Growth of Silicon Nanowires (SiNW)
H. Taghinejad, M. Taghinejad, M. Abdolahad, A. Akhavan Farahani, and S. Mohajerzadeh
- 781 Germanium Doping, Contacts, and Thin-Body Structures
R. Duffly and M. Shayesteh
- 782 Ge on Insulator (GOI) Structure Using Ge Lateral Overgrowth
J. Nam, T. Fuse, Y. Nishi, and K. C. Saraswat
- 783 Multiple-Gate In_{0.53}Ga_{0.47} as Channel n-MOSFETs with Self-Aligned Ni-InGaAs Contacts
X. Zhang, H. Guo, X. Gong, C. Guo, and Y. Yeo
- 784 Sub-100nm Non-Planar 3D InGaAs MOSFETs: Fabrication and Characterization
J. J. Gu and P. D. Ye
- 785 Many-Body Effects in Epitaxial Graphene Mediated by Localized States
C. F. Flipse
- 786 Non-Destructive, Large-Scale Imaging of Anti-Phase Disorder in GaP Epilayers on Si(001) Using Low-Energy Electron Microscopy
B. Borkenhagen, G. Lilienkamp, W. Daum, H. Döscher, and T. Hannappel

E3 - Integrated Optoelectronics 6

Electronics and Photonics, Dielectric Science and Technology

- 788 Recent Advances in Integrated Optoelectronics and their Applications in Endomicroscopy and Distributed Environment Sensing
Q. Fang and M. Deen
- 789 Recent Developments in Gastrointestinal Tract Confocal Laser Endomicroscopy
D. Armstrong
- 790 Development of All-Fiber-Optic Scanning Non-Linear Endomicroscopy Technology and Potential Application for Preterm Birth Detection
Y. Zhang, K. Murari, M. Akins, M. Mahendroo, K. Luby-Phelps, M. Li, and X. Li
- 791 2D Electro-Optic Scanner
W. Wang and C. Tsui
- 792 Diode-based Lifetime Fluorescence Imaging System for Tissue Characterization
A. Papour, Z. Taylor, W. Yong, M. St. John, O. Stafsudd, and W. S. Grundfest
- 793 MEMS Based Mechanical Resonant Push-Pull Scanning Endoscope
K. Gu, C. Tsui, and W. Wang
- 794 *In Vivo* Video Rate Reflectance Confocal and Multiphoton Excitation Microscopy Imaging For Skin Diagnosis
H. Zeng
- 795 A Compact Microflow Fiber Optic Cytometer for Remote Site and Space Bioanalysis Applications
O. Mermut, C. Riviere, P. Grenier, S. Leclair, A. Ismail, D. Provencal, and L. Cohen
- 796 Lensless Fluorescence Imaging of Flowing Beads in Microfluidics
A. Shanmugam, K. Okiah, and C. Salthouse
- 797 Surface Modification for Nonspecific Protein Repelling and Specific Protein Binding
D. Li and H. Chen
- 798 Rapid Detection of Label-free DNA Using Platinum Nanoparticles (PtNPs) in Disposable Electrochemical Droplet (DED) Chip
C. Yu, C. Lin, C. Yang, Y. Ou, R. Wu, M. Shiao, J. Kao, and F. Tseng
- 799 A Novel Microfluidic Cell Culture Device for High Content Screening Applications
H. A. Budz, M. Nelson, P. Selvaganapathy, D. W. Andrews, and Q. Fang
- 800 Cardiopulmonary Monitoring Research Based on Noncontact Sensor of Vital Signs
W. Hu, Z. Zhao, Y. Wang, F. Lin, and H. Zhang

- 801 Time-Resolved Functional Diffuse Reflectance Spectroscopy Based on Fast-Gated Single-Photon Avalanche Diodes
D. Contini, A. Pifferi, A. Dalla Mora, L. Spinelli, A. Torricelli, A. Tosi, F. Martelli, G. Zaccanti, F. Zappa, and R. Cubeddu
- 802 Accurate High Resolution Time Digital Converter Array for Single-Photon Image Sensors
E. Nemati, M. Deen, and H. Peng
- 803 Characterization of a 130 nm CMOS SPAD Pixel
D. Palubiak, M. Deen, and H. Peng
- 804 Photon Detectors Technology in STMicronics
M. Mazzillo, D. Sanfilippo, G. Valvo, A. Piana, B. Carbone, G. Fallica, and S. Coffa
- 805 CMOS Sensors for Compressive Sensing
M. R. Dadkhah, M. Deen, and S. Shirani
- 806 Design and Implementation of a Soft-Measuring System for High-Temperature Field Based on Color CCD Image Sensor
Y. Li, S. Li, and K. Ye
- 807 Integration Technologies Applied to InP-Based Geiger-Mode APDs
M. A. Itzler
- 808 InGaAs/InP Single Photon Avalanche Diodes
Z. Lu, X. Zheng, W. Sun, J. Campbell, X. Jiang, and M. A. Itzler
- 809 Special 100 GHz Photodetectors for Communications
H. Bach
- 810 Conjugated Azomethines - Easily Prepared Functional Materials for Opto-Electronic Applications Ranging from Electrochromics to Organic Photovoltaic Devices
S. Bishop, A. Bolduc, Y. Dong, S. Barik, T. Skalski, and W. Skene
- 811 Photovoltaic Response of InGaN Based Light Receiving Diodes
R. Kolli, E. Stokes, P. Deguzman, and Y. Mizuyama
- 812 Single-Photon, Deep Sub-Nanosecond Integrated Circuits for Fluorescence Lifetime Imaging Microscopy
Y. Maruyama and E. Charbon
- 813 High-Speed Ultra-Sensitive CMOS SPAD Imagers
M. M. Eldesouki, D. Palubiak, and M. Deen
- 814 Design and Implementation of a Long Wavelength Near InfraRed Spectrometer Based on MEMS Scanning Mirror
K. Ye, Y. Li, T. Dong, W. He, S. Li, W. Wei, and X. Xiao

- 815 Reliability Characteristics of GaN-based White Light-Emitting Diodes Degraded with Multiple Degradation Kinetics
E. Jung and H. Kim
- 816 Structural and Optical Glass Characteristic for Basic A Planning of Chalcogenide Aspheric Lens
J. Ko, T. Myung, B. Min, and J. Kim
- 817 Effect of Cadmium Sulphate Concentrations on CdS Thin Films
T. Mahalingam, V. Dhanasekaran, and G. Ravi
- 818 Strip-Loaded Waveguide Optical Isolator Employing Nonreciprocal Guided-Radiation Mode Conversion
H. Yokoi and K. Takaki
- 819 III-V Compound Semiconductor Nanowires for Optoelectronic Applications
C. Jagadish
- 820 Highly Stable Ultrathin Ag-Ni Films for Flexible Transparent Electronics
N. Formica, D. S. Ghosh, T. Chen, and V. Pruneri
- 821 Nonlinear Light Propagation in Photopolymers: From Self-Trapped Beams to 3-D Optical Lattices
K. Saravanamuttu
- 822 GaN-based Nano-Pores and Nano-Wires Fabricated Using Electroless Chemical Etching Process
B. S. Ooi, A. Najjar, A. Slimane, R. T. Elafandy, A. Gasim, Q. Li, and T. Ng
- 823 Nanostructured Conducting Polymers for Flexible Optoelectronic Applications
V. Balderrama, A. Santos, P. Formentín, J. Ferré--Borrull, L. F. Marsal, and J. Pallarès
- 824 Optical Biosensor Based on Photoluminescent Nanoporous Anodic Alumina
A. Santos, P. Formentín, J. Ferré--Borrull, J. Pallarès, and L. F. Marsal
- 825 Development of a Miniaturized Dissolved Oxygen Sensor for Water Monitoring
H. Hsu, P. Selvaganapathy, Q. Fang, and C. Xu
- 826 Oxygen-Dependent Cerium Photoluminescence in LPCVD Si₃N₄
R. M. Savidge, J. Anstey, D. V. Stevanovic, R. N. Kleiman, and A. P. Knights

E4 - Nanoscale Luminescent Materials

Luminescence and Display Materials, Dielectric Science and Technology

- 827 (Invited) Universal Ion Implantation System for Use in the Preparation of Doped Silicon Dielectric Films
A. P. Knights, R. M. Savidge, D. V. Stevanovic, R. N. Kleiman, and D. Chivers
- 828 (Invited) Photon Management with Si Nanocrystals
T. Gregorkiewicz
- 829 (Invited) Growing Si Nanocrystals within *a*-Si Nanoclusters Embedded in *a*-SiO₂: Evolution of Photoluminescence
L. Borrero-González, L. Nunes, F. Guimarães, J. Wojcik, P. Mascher, A. Gennaro, M. Tirado, and D. Comedi
- 830 (Invited) Ultrafast Carrier Dynamics in Silicon Nanocrystal Films
L. V. Titova, T. L. Cocker, X. Wang, A. Meldrum, and F. A. Hegmann
- 831 Fast Light-Emitting Silicon-Germanium Nanostructures
D. Lockwood, X. Wu, J. Baribeau, N. Modi, and L. Tsybeskov
- 832 XANES and XEOL Investigation of Cerium and Terbium Co-Doped Silicon Oxide Films
P. R. Wilson, Z. Khatami, R. Dabkowski, K. Dunn, E. Chelomentsev, J. Wojcik, and P. Mascher
- 833 (Invited) Passivation of III-V Nanowires for Optoelectronics
R. R. LaPierre, A. C. Chia, C. M. Haapamaki, and N. Tajik
- 834 Emissive Semiconductor Nanocrystals: Recent Progress
A. Eychmüller, S. Panda, S. Hickey, S. Miao, V. Lesnyak, and N. Gaponik
- 835 Two-Photon Photoluminescence from Hierarchical ZnO Nanostructures
G. Grinblat, M. Tirado, D. Comedi, M. Capeluto, and A. Bragas
- 836 (Invited) Strategies for Isolating Colloidal Quantum Dot Luminescence from External Fluctuations: Mn²⁺ Doping of ZnSe and Alloyed Shells on CdSe
C. N. Allen, S. A. Lamarre, J. Tessier, V. Veilleux, D. Lachance-Quirion, and M. Lecavalier
- 837 Photovoltaic Behavior in a Symmetrical CdSe Quantum Dot - ITO Cell
A. J. Giles and E. Stokes
- 838 (Invited) Si/Ge Quantum Well Light-Emitting Diode for Monolithic Integration in Si Photonics Chips
S. Saito, K. Oda, K. Tani, M. Takahashi, E. Nomoto, T. Okumura, Y. Suwa, Y. Lee, M. Sagawa, T. Sugawara, and T. Ido
- 839 (Invited) Rolled-up 1.55 μm Semiconductor Quantum Dot Tube Lasers
Z. Mi, P. Bianucci, M. Dastjerdi, S. Mukherjee, M. Djavaid, and P. Poole

- 840 Hafnia-Based Luminescent Insulator for Phosphor Application
L. Khomenkova, Y. An, C. Labbé, X. Portier, and F. Gourbilleau
- 841 (Invited) Synthesis of New Fluorescent Semiconductor Nanoparticles and Their Optical Uses
S. Kuwabata, T. Uematsu, and T. Torimoto
- 842 (Invited) Ligand-Mediated Modification of the Electronic Structure of Quantum Dots
T. van Buuren, J. Lee, R. Meulenberg, H. Whitley, L. J. Terminello, D. Prendergast, E. Schwegler, and T. Willey
- 843 Formation of Photo-Luminescent Patterns on Paper Using Nanocrystalline Quantum Dot Ink and Mist Deposition
A. Kshirsagar, S. Pickering, J. Xu, and J. Ruzyllo
- 844 The Influence of Carbon on the Structure and Photoluminescence of Amorphous Silicon Carbonitride Thin Films
Z. Khatami, P. R. Wilson, K. Dunn, J. Wojcik, and P. Mascher
- 845 (Invited) Blue Phosphorescence in Oxidized Nano-Porous Silicon and Related Functions
B. Gelloz and N. Koshida
- 846 (Invited) Synthesis and Optical Properties of Ultrasmall Inorganic Optical Markers Based on Lanthanides Emission for Bio-Medical Applications
A. Podhorodecki, M. Banski, A. Nocolak, B. Sojka, and J. Misiewicz
- 847 (Invited) Effects of the Nanostructure and Fabrication Process on the Photoluminescence Properties of PFO Nanopillar Arrays
L. F. Marsal, R. Palacios, P. Formentín, A. Santos, J. Ferré--Borrull, and J. Pallarès
- 848 Plasma-Driven Transparent Display Panel Using (Y,Gd)BO₃:Eu³⁺ Nanophosphors Prepared by Solvothermal Reaction
S. Choi, B. Park, J. Seo, and H. Jung
- 849 Reliability of Nanoparticle-Coated Phosphors for White LED Application
J. Yoo, I. Cho, D. Suh, and G. Anoop
- 850 Thermal Effect on Electroluminescence Quenching in SiO₂ with Ge and ReO_x Nanoclusters
S. I. Tyagulskiy, I. P. Tyagulskiy, A.N. Nazarov, N. L. Rymarenko, T. M. Nazarova, V. S. Lysenko, L. Rebohle, J. Lehmann, and W. Skorupa
- 851 Processing-Induced Modification of Photo- and Cathodoluminescence Spectra of TiO₂ Nanotubes
M. Enachi, M. Stevens-Kalceff, I. Tiginyanu, and V. Ursaki
- 852 Optical Down-Conversion in Tb³⁺ and Yb³⁺-Doped Zn-Chalcogenide Quantum Dots
S. Das and K. C. Mandal

- 853 Optical and Luminescence Properties of Electrosynthesized ZnSe Thin Films
T. Mahalingam, V. Dhanasekaran, and G. Ravi
- 854 (Invited) Ballistic Electron Emission from Nanosilicon Diode and its Application to Ultra-Thin Film Deposition of Silicon and Germanium
N. Koshida, T. Ohta, and B. Gelloz
- 855 (Invited) Electroluminescence in Metal-Oxide-Semiconductor Tunnel Diodes with Nanometer-Thick Silicon
M. Morita, A. Tsuchida, K. Matsumura, R. Yamada, Y. Oshikane, K. Kawai, J. Uchikoshi, and K. Arima
- 856 (Invited) Electroluminescence from Micro-Cavities of Photonic Crystals, Micro-Disks and Rings Including Ge Dots Formed on SOI Substrates
Y. Shiraki, J. Xia, X. Xu, T. Tsuboi, and T. Maruizumi

E5 - Silicon Compatible Materials, Processes and Technologies for Advanced Integrated Circuits and Emerging Applications 2

Electronics and Photonics, Dielectric Science and Technology

- 857 In Quest of a Fast, Low-Voltage Digital Switch
T. N. Theis
- 858 Ultrathin Ni_{1-x}Pt_x Films as Electrical Contact in CMOS Devices
S. Zhang
- 859 Characterization of Strain-Engineered Si:C Epitaxial Layers on Si Substrates
W. Yoo, T. Ishigaki, T. Ueda, J. Kajiwara, K. Kang, P. Hung, K. Ang, and B. Min
- 860 Tensile Strained Si Seed Produced by Ion Implantation Technique
L. Liu, Z. Xue, J. Bian, H. T. Jiang, X. Wei, Z. Di, and M. Zhang
- 861 Ultra Low-Temperature Epitaxial Growth of Strained Si Directly on Si Substrates
D. Shahrjerdi, B. Hekmatshoar, S. W. Bedell, J. A. Ott, and M. Hopstaken
- 862 Pattern Dependency of Pure-Boron-Layer Chemical-Vapor Depositions
V. Mohammadi, W. de Boer, T. L. Scholtes, and L. K. Nanver
- 863 The Enhancement of Etch Rate of Silicon by Heavy Doping of Phosphorus and Arsenic Atoms During Cyclic Selective Epitaxial Growth of Silicon
K. Lee, Y. Kang, H. An, S. Jeong, J. Han, B. Kim, S. Nam, H. Kang, H. Jeong, C. Chung, H. Park, and B. Choi
- 864 P-type Doping of Silicon Suitable for Structures with High Aspect Ratios by Using a Dopant Source of Boron Oxide Grown by Atomic Layer Deposition
B. Kalkofen, V. Mothukuru, M. Lisker, and E. P. Bulte

- 865 Gas Source Depletion Study of High-Order Silanes of Silicon-Based Epitaxial Layers Grown with RPCVD and Low Temperatures
K. H. Chung, P. Brabant, M. Shinriki, H. He, D. K. Sadana, S. Hasaka, and T. Francis
- 866 From MEMS-CMOS towards Heterogeneous Integration over Scale
H. Fujita, H. Toshiyoshi, and T. Ishida
- 867 Scaled Micro-Relay Structure with Low Strain Gradient for Reduced Operating Voltage
I. Chen, L. Hutin, C. Park, R. Lee, R. Nathanael, J. Yaung, J. Jeon, and T. King Liu
- 868 Applications of Nanowire Enabled Micro Opto-Thermal Actuation
A. Lal
- 869 Advances in Materials and Processes for 3D-TSV Integration
J. J. Lu
- 870 Ge/Si p-n Diode Fabricated by Direct Wafer Bonding and Layer Exfoliation
F. Gity, K. Byun, K. Lee, K. Cherkaoui, J. M. Hayes, A. P. Morrison, C. Colinge, and B. Corbett
- 871 Wet-Chemical Silicon Wafer Thinning Process for High Chip Strength
K. Yoshikawa, T. Miyazaki, N. Watanabe, and M. Aoyagi
- 872 New 3D LSIs Using Si Compatible Materials, Processes and Technologies
M. Koyanagi, K. Lee, T. Fukushima, and T. Tanaka
- 873 Scaling Requires Continuous Innovation in Thermal Processing: Low-Temperature Plasma Oxidation
W. Lerch, W. Kegel, J. Niess, A. Gschwandtner, and J. Gelpey
- 874 Heterogeneous Chip Integration into Silicon Templates by Through-Wafer Copper Electroplating
C. D. Meyer, S. S. Bedair, S. M. Trocchia, M. A. Mirabelli, W. L. Benard, and T. G. Ivanov
- 875 Integration Challenges of III-V Materials in Advanced CMOS Logic
R. J. Hill, W. Loh, J. Huang, T. Kim, R. Lee, J. Oh, C. Hobbs, P. D. Kirsch, and R. Jammy
- 876 Enhancement in Electron Mobility at the Interface between Gd₂O₃(100) and n-type Si(100)
W. Sitaputra and R. Tsu
- 877 Heteroepitaxial Growth of High Quality Germanium Layer on Si(001) in RPCVD for GOI Fabrication
J. Bian, Z. Xue, D. Chen, Z. Di, and M. Zhang

- 878 Ultra-thin SOI/BOX Layers and Next Generations Planar Fully Depleted Substrates
W. Schwarzenbach, V. Barec, X. Cauchy, N. Daval, S. Kerdiles, F. Boedt, O. Bonnin, B. Nguyen, and C. Maleville
- 879 On-Current Variability Sources of FinFETs: Analysis and Perspective for 14nm-Lg Technology
T. Matsukawa, Y. Liu, K. Endo, S. O'uchi, and M. Masahara
- 880 Dynamical Observation of Epitaxial Growth of Copper Silicide/Silicon Nanowire Heterostructures
C. Chiu, C. Huang, J. Chen, Y. Huang, and W. Wu
- 881 Nanocrystalline MoO_x Embedded ZrHfO High-*k* Memories
X. Liu, C. Yang, Y. Kuo, and T. Yuan
- 882 Characterization of Global and Local Wafer Shape Change along Through Silicon Via Process Steps
C. Lee, S. Jie, S. Park, H. Yoo, I. Han, and W. Yoo
- 883 The Effect of Plasma Treatment on Reducing Electroforming Voltage of Silicon Oxide RRAM
F. Xue, Y. Chen, Y. Wang, F. Zhou, B. Fowler, and J. Lee
- 884 Development of High Selectivity Phosphoric Acid and Its Application to Flash STI Pattern
S. Cho, Y. Lee, J. Han, H. Park, H. Kim, K. Hong, S. Park, and H. Kang
- 885 Electrical Improvement of MIS Capacitor with HfAlO_x Gate Dielectrics Treated by Dual Plasma Treatment
K. Chang, T. Chang, P. Chang, B. Huang, C. Wu, and I. Deng
- 886 Electrical and Reliability Characterization of Ti/TiN Thin Film Resistor
Y. Cheng, B. Wei, and F. Lu
- 887 The Bipolar Resistance Switching Behavior with a Pt/CoSiO_x/TiN Structure of Nonvolatile Memory Device
Y. Syu, T. Chang, G. Chang, J. Lou, T. Tsai, and Y. Tai
- 888 Band Gap and Band Offset with Silicon of Amorphous High-*k* LaGdO₃ Thin Films
S. P. Pavunny, R. Thomas, and R. S. Katiyar
- 889 Bipolar Resistive Switching Characteristics Using Al/Cu/GeO_x/W Memristors
S. Maikap and S. Rahaman

E6 - Thermal and Plasma CVD of Nanostructures and Their Applications

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

- 890 (Invited) Aerosol Synthesis of Single-walled Carbon Nanotube
A. G. Nasibulin, A. Kaskela, Y. Tian, H. Jiang, and E. Kauppinen
- 891 (Invited) Ultra-Low Temperature Plasmas for the Processing of Graphene
S. G. Walton
- 892 Plasma Modification of Carbon Nanotube Networks for Molecule Vapor Detection
U. Cvelbar and P. Slobodian
- 893 Graphene Composite Materials for Supercapacitor Electrodes
J. Lake, S. Selverston, Z. Tanaka, M. Meyyappan, and B. Chen
- 894 (Invited) Thermoelectric Properties of Bulk Synthesized Zn₃P₂ Nanowire and Quantum Wire Powders
S. Vaddiraju, M. Van Laer, L. Brockway, and Y. Kang
- 895 Single-crystalline Nickel Silicide Nanowires : Synthesis and Electrical Properties
W. Chiu, J. Chen, Y. Huang, C. Huang, and W. Wu
- 896 Scalable Manufacturing of Metal Oxide Nanowire Powders and Arrays
M. K. Sunkara, J. Kim, E. Clark, and J. Absher
- 897 ZnO Nanostructures Prepared on LiAlO₂ Substrates by Chemical Vapor Deposition
C. J. Lu, Y. Tu, C. Chen, T. Huang, T. Yan, M. Chou, and L. Chang
- 898 Development of Novel Transparent Conducting Oxide (TCO) Precursors and Preparation of TCO Thin Films
T. Chung, C. Kim, K. An, S. Lee, B. Park, and B. Lee
- 899 (Invited) Controlled Functionalization of Carbon Nanotubes with Nanoparticles Using Gas-Liquid Interfacial Discharge Plasmas
T. Kaneko, Q. Chen, and R. Hatakeyama
- 900 (Invited) Nanoscale Semiconductors by Atmospheric-Pressure Microplasmas: Synthesis and Surface Engineering
D. Mariotti
- 901 Plasma Electrochemistry: How Plasmas can be used to Mediate Electrochemical Reactions for Novel Chemical and Materials Applications
S. Lee and R. Sankaran
- 902 Control of Nano-Porosity in Plasma Enhanced Chemical Vapor Deposition of low-k a-SiC:H Dielectrics
S. King and J. Bielefeld

- 903 N₂O Plasma Treatment Suppressed Temperature-dependent Point Defects Formation with Amorphous Indium-Gallium-Zinc-Oxide Thin Film Transistors
J. Jhu, T. Chang, G. Chang, and Y. Tai
- 904 A Kinetic Model for Chemical-Vapor Deposition of Pure-Boron Layers from Diborane
V. Mohammadi, W. de Boer, T. L. Scholtes, and L. K. Nanver
- 905 Multi-Wall Carbon Nanotube Networks as a Tool for Organic Vapor Detection
R. Olejnik, P. Slobodian, P. Saha, and U. Cvelbar
- 906 Copper Oxide Nanowire Synthesis by Direct Oxidation of Copper in Oxygen Plasma
G. Filipič and U. Cvelbar

E7 - Wide-Bandgap Semiconductor Materials and Devices 13

Electronics and Photonics, Dielectric Science and Technology, Sensor

- 907 High-Performance Wide-Bandwidth GaN Power Amplifiers
K. Shenai and S. Leong
- 908 Effects of Cell Distance on the Performance of GaN High-Voltage Light Emitting Diodes
R. Horng and Y. Kuo
- 909 GaN Power Schottky Diodes
R. P. Tompkins, J. R. Smith, S. Zhou, K. W. Kirchner, M. A. Derenge, K. A. Jones, G. Mulholland, P. Suvarna, M. Tungare, and S. Shahedipour-Sandvik
- 910 Design, Fabrication, Characterization, and Evaluation of X-ray Detectors Based on n-type 4H-SiC Epilayers
K. C. Mandal, P. G. Muzykov, and J. Terry
- 911 Chemical Lift-Off of Blue Light-Emitting Diodes Grown on Sapphire Substrate with an Oxide-Patterned Sacrificial Layer
C. Pan, K. Shen, D. Wu, H. Hsueh, and R. Horng
- 912 Ferroelectric Nanolithography for Fabrication of Nanostructures and Nanomaterials
X. Liu, K. Kitamura, and G. Cao
- 913 Enhanced Optical Properties of Metal Oxide Core-Shell Nanowire Arrays
M. Thomas and J. Cui
- 914 Optical and Magnetic Properties of MBE Grown GaN:Yb Nanorods
J. Wu, H. Huhtinen, W. M. Jadwisienczak, and R. Palai
- 915 Aluminum Coating of ZnO Nanorods for High Spectral Purity NanoLasers
G. Visimberga, C. C. Faulkner, M. Boese, and C. O'Dwyer

- 916 Microstructure Characterization of Nonpolar ZnO and Zn_{1-x}Mg_xO Epilayers Grown on (100) Gamma-LiAlO₂ by Chemical Vapor Deposition
T. Huang, W. Lin, J. Wu, M. Chou, T. Yan, and L. Chang
- 917 Superatmospheric MOCVD Reactor Design for High Quality InGaN Growth
A. G. Melton, P. Davis, M. Uddin, and E. Stokes
- 918 Healing of Surface States and Point Defects in Single-Crystalline β -Ga₂O₃ Epilayer
P. Ravadgar and R. Horng
- 919 Ferromagnetic Behavior and Optical Properties in Ytterbium-doped and Ion Implanted GaN Semiconductor
W. M. Jadwisienczak, R. Palai, J. Wu, H. Tanaka, J. Wang, and H. Huhtinen
- 920 In situ Growth Process Monitoring by RHEED and Magneto-optic Properties of Epitaxial GaN:ErYb Thin Films
K. Dasari, H. Huhtinen, W. M. Jadwisienczak, and R. Palai
- 921 The Use of a Remote Plasma to Tune the Optical and Electrical Properties of Atomic Layer Deposited ZnO
M. Thomas and J. Cui
- 922 Carrier Control in Polycrystalline ZnO:Ga Thin Films via Nitrogen Implantation
K. S. Shtereva, I. Novotny, V. Tvarozek, P. Sutta, A. Vincze, C. Jeynes, N. Peng, M. Vojs, and S. Flickyngerova
- 923 Dilute Magnetic Semiconductors: Electrochemical Routes and ab initio Studies of ZnO
P. Dunne, M. Uhlemann, A. Gebert, and L. Schultz
- 924 Effects of Alternating Pulse Bias Stress on Amorphous InGaZnO Thin Film Transistors
S. Park, E. N. Cho, and I. Yun
- 925 Asymmetric Electrical Properties for Dual-Gate InGaZnO TFT Under Gate Bias and Light Illumination
T. Chen, T. Chang, T. Hsieh, C. Lin, F. Jian, and M. Tsai
- 926 Investigating the Degradation Behavior Under Hot Carrier Stress for InGaZnO TFT with Symmetric and Asymmetric Structure
M. Tsai, T. Chang, A. Chu, T. Chen, T. Hsieh, and Y. Chen
- 927 Investigating Degradation Behavior of InGaZnO Thin-Film Transistors induced by Charge-Trapping Effect under DC and AC Gate-Bias Stress
T. Hsieh, T. Chang, T. Chen, M. Tsai, Y. Chen, and F. Jian
- 928 Study of the 700 nm Emitting Spectrum Using GaInP Quantum Dots in the AlGaInP-Based Light Emitting Diodes
H. Oh, J. Park, H. Ryu, H. Lee, Y. Kim, I. Jang, and J. Baek

- 929 Cu(In,Ga)Se₂ Thin Films Preparation from a Cu(In,Ga) Metallic Alloy and Se Thin Film by Atmosphere Pressure Plasma Depositon System
K. Chang, P. Ho, K. Yang, S. Wu, and C. Liu
- 930 In-Situ TEM Observation of Resistive Switching Behaviors by in Nonvolatile Memory
J. Chen, C. Huang, C. Hsin, Y. Huang, and W. Wu
- 931 Deposition and Characterization of Low-cost Spray Pyrolyzed Cu₂ZnSnS₄ Thin-films for Large-area high-efficiency Heterojunction Solar Cells
S. Das, C. Frye, P. G. Muzykov, and K. C. Mandal
- 932 Growth of a-plane ZnO Thin Film on (110) NdGaO₃ Substrate by Pulsed Laser Deposition
T. Yen, J. Tian, C. Peng, Y. Ho, Y. Wu, and L. Chang
- 933 Influence of Cathodic Potential on Structural and Optical Properties of ZnO;Mg Thin Film
H. Ishizaki and S. Ito
- 934 Suppressed Temperature-dependent Sub-threshold Leakage Current of amorphous Indium-Gallium-Zinc-Oxide Thin Film Transistors by Nitrous Oxide Plasma Treatment
G. Chang, T. Chang, Y. Syu, J. Jhu, Y. Tai, and T. Tsai
- 935 Band Gap Modulation in ZnO Thin Films Through Cd Doping by sol-gel Method and Its Characterizations
A. Singh, J. Deshwal, D. Kumar, P. Khanna, and M. Kumar
- 936 Effect of Individual and Bi-layer Stack Gate Dielectric on Device Performance for Amorphous Indium Gallium Zinc Oxide (a-IGZO) TFTs
A. Kiani, S. Pfaendler, B. Bayer, D. Hasko, W. Milne, and A. Flewitt
- 937 Low-voltage IGZO TFT Prepared by APPJ Using HfO₂ as a Gate Dielectric
K. Chang, S. Huang, W. Chiang, I. Deng, C. Wu, and C. Chang
- 938 The Effect of Thermal Annealing on the Properties of IGZO TFT Prepared by Atmospheric Pressure Plasma Jet
K. Chang, S. Huang, W. Chiang, C. Wu, and C. Chang
- 939 Point Defects in Chemical-Vapor Deposited Diamond, High-Purity Semi-Insulating SiC, and Epitaxial GaN
V. I. Polyakov, A. Rukovishnikov, B. Garin, and B. Druz
- 940 The Effect of Plasma Power on the Morphology of Selenium Thin Films Prepared by Atmosphere Pressure Plasma Depositon System
K. Chang, P. Ho, K. Yang, S. Wu, and C. Liu
- 941 Drain Leakage Current in Δ -channel SOI nMOSFET Operating at High Temperatures
M. M. Correia and M. Bellodi
- 942 Structural and Optoelectronic Properties of GZO/SiO_x Bilayer Films by Atmosphere Pressure Plasma Jet
K. Chang, P. Ho, C. Wu, C. Wu, and C. Chang

- 943 Formation of p-n Junction from n-type Nanostructures (GaN or ZnO) / p-thin Film
J. Ahn and J. Kim
- 944 The Effect of Oxygen Species on the ZnO TFT Prepared by Atmosphere Pressure Plasma Jet
K. Chang, S. Huang, C. Chi, C. Wu, and C. Chang
- 945 Effect of Enhanced-mobility Current Path in Transparent a-IZGO TFT
J. Park and D. Choi
- 946 Epitaxial Lateral Overgrowth on the Air Void Embedded SiO₂ Mask for InGaN Light-Emitting Diodes
S. Kim, K. Lee, A. Chang, E. You, and J. Baek
- 947 The Origin of Threshold Voltage Instability in Amorphous Oxide Semiconductors Thin Film Transistor in Different Ambient Gases
Y. Chen, T. Chang, H. Li, and W. Chung
- 948 The Influences of Oxygen Incorporation on the Interface Properties of a-IGZO Thin Film Transistors
C. Lo and T. Hsieh
- 949 Electrical Properties of Vertically- Aligned ZnO Nanowires Investigated by Current Sensing AFM and Kelvin Probe Force Microscopy
V. Jain, G. Kushto, and A. Mäkinen
- 950 Step-Roughened N-face GaN Surface on InGaN Light-Emitting Diodes Using a Laser Decomposition Process
C. Lin, S. Chen, T. Hsieh, W. Huang, T. Yu, and P. Tsai
- 951 Dielectric Loss at MM Range and Deep Level Transient Spectroscopy of the Diamond Grown by DC Arc Plasma Jet Technique
B. Garin, V. Parshin, V. I. Polyakov, A. Rukovishnikov, E. Serov, C. Jia, F. Lu, and W. Tang

F1 - Stress-Related Phenomena in Electrochemical Systems 2

Electrodeposition, Corrosion, Battery

- 952 Effect of Chloride and Polyethylene Glycol (PEG) on Stress and Microstructure in Electrodeposited Copper Nanofilms
M. O'Grady and D. N. Buckley
- 953 Residual Stress in Fe/GaAs Spin Contacts
S. Majumder, S. Shaw, and K. Kavanagh
- 954 Electrochemical Impedance Spectroscopy Applied to Cantilever Curvature
G. R. Stafford, U. Bertocci, and M. Lafouresse

- 955 Stress Control in Electrodeposited 2.4 T CoFe Films
B. Kagajwala, A. Adesanya, J. George, S. Hossain, and S. R. Brankovic
- 956 A Kinetic Model for Stress Evolution in Thin Films
E. Chason
- 957 First Principles Thermodynamic Analyses of Stress/Strain Effects in Electrochemistry
J. Greeley
- 958 Strain, Structure and Catalysis in Dealloyed Pt Bimetallics
R. Yang, M. Oezaslan, M. Toney, and P. Strasser
- 959 Dynamic Electro-Chemo-Mechanical Analysis
Q. Deng, M. Smetanin, and J. Weissmüller
- 960 Probing the Influence of Surface Strain Induced by SMAT on the Corrosion of Alloys 600 and 800
M. Faichuk, S. Ramamurthy, J. J. Noel, and D. Shoesmith
- 961 Tensile Stress Induced by Aluminum Corrosion
O. Capraz, K. Hebert, P. shrotriya, and G. R. Stafford
- 962 Stress-Related Instabilities During Anodic Oxide Growth
Q. Van Overmeere, F. Blaffart, and J. Proost
- 963 Morphological Instability Leading to the Formation of Self-Ordered Porous Anodic Oxide Films
O. Capraz, K. Hebert, P. shrotriya, F. Gao, and W. Hong
- 964 Load Assisted Dissolution AND Damage of Copper Surface under Single Asperity Contact: Influence of Contact Loads and Surface Environment
P. shrotriya, B. Chua, and A. Chandra
- 965 Influence of Tensile Strain on the Corrosion of HD Zn Based Coatings on IF Steels
S. Manhabosco and L. P. Dick
- 966 Curvature Interferometry based In-Situ Measurement of Stresses Associated with Electrochemical Reactions
O. O. Capraz, P. shrotriya, and K. Hebert
- 967 Concurrent Reaction and Plasticity During Initial Lithiation of Crystalline Silicon in Lithium-Ion Batteries
K. Zhao, M. Pharr, J. Vlassak, and Z. Suo
- 968 Mathematical Model for Electrochemical Insertion of Lithium in Silicon Nanowire Electrode - 1D vs. 2D Simulations
G. Sikha, S. De, and J. Gordon
- 969 Effect of Size, Geometry, and Mechanical Compatibility of Electrode Particles in Batteries
F. Roumi

- 970 The Influence of Chemical degradation and Mechanical Fatigue on the Cycle Life of Lithium Ion Batteries
M. Verbrugge, R. Deshpande, Y. Cheng, J. Wang, and P. Liu
- 971 Continuum Modeling of Strongly-coupled Diffusion, Stress, and Solute Concentration
H. Haftbaradaran and H. Gao
- 972 Fracture Analysis of the Cathode in Li-Ion Batteries: A Simulation Study
M. Zhu, J. Park, and A. Sastry
- 973 Structural Changes in $\text{Li}(\text{Ni}_x\text{Co}_y\text{Mn}_z)\text{O}_2$ and LiMn_2O_4 Mixed Cathodes as Monitored by a Novel In Situ Laboratory XRD Cell
K. J. Rhodes and A. Drews
- 974 Fracture and Debonding in Coated Hollow Nanostructured Electrodes of Lithium-Ion Batteries
M. Pharr
- 975 Stress-Induced Capacity Fade Due to Separator Creep in Lithium-Ion Cells
J. Cannarella, C. Peabody, and C. B. Arnold
- 976 Electrochemical Surface Stress Measurements of Li-Ion Battery Anodes During Li^+ Deposition
H. Tavassol, D. Cahill, and A. Gewirth
- 977 Stress Evolution in Lithium-Ion Battery Electrode Coatings During Electrochemical Cycling
V. Sethuraman, N. Van Winkle, D. Abraham, A. Bower, and P. Guduru
- 978 Modeling of Volume Change Behavior of Porous Electrodes
J. Moraveji and J. Weidner
- 979 In-Situ Measurement of Stress Evolution and Ion Dynamics in Conducting Polymer Films
S. Sen, S. Jin, S. Kim, L. Palmore, N. Jadhav, E. Chason, and G. Palmore
- 980 Stress Change in Nafion During Water Uptake
G. R. Stafford, J. Shin, S. Eastman, B. Rowe, and K. Page

F2 - Surface Treatments for Biomedical Applications 3

Electrodeposition, Corrosion, Sensor

- 981 The Effect of Biomolecules on Electrochemical Behavior on CoCrMo Alloy in Simulated Physiological Solution
I. Milosev
- 982 Investigation of the Seizing of Ti6Al4V Orthopedic Constructs In Vitro: Further Results in Hanks Balanced Salt Solution
D. Hansen, H. Bamberger DO, V. Fongue DO, K. Janek, and P. Sjoblom

- 983 Photocatalytic and Antimicrobial Coatings by Electrodeposition of Silver/TiO₂ Nano-Composites
L. Magagnin and M. Diamanti
- 984 Tuning the Biodegradability of Silicon Nanoparticles for Drug Delivery
N. Hon, Z. Shaposhnik, E. Diebold, F. Tamanoi, and B. Jalali
- 985 Understanding Failure of Diamond-Like-Carbon (DLC) Coatings on Articulating Implants
J. A. DeRose, K. Thorwarth, C. Falub, U. Mueller, G. Thorwarth, P. Schmutz, M. Stiefel, and R. Hauert
- 986 Corrosion of Glycerol/NH₄F Synthesized Anodic TiO₂ Nanotubes
R. Promoth, R. Narayanan, and K. Kim
- 987 Animal Study of Electrochemical Deposition of Vancomycin/Chitosan Composite on Ti Alloy to Treat Osteomyelitis
C. Lin, C. Yang, and S. Yen
- 988 Electrode Damage and Corrosion Effects in Fractal TiN Stimulation Electrodes
G. Martinez
- 989 Electropolishing of Nitinol in HF-Free Aqueous Electrolytes
E. Taylor, M. Inman, T. Hall, B. Kagajwala, and A. Lozano-Morales
- 990 Calcium Phosphate Coating on Activated Carbon Fiber Cloth for Biocompatible Applications
Q. Picard, J. Chancolon, S. Delpeux-Ouldriane, S. Mikhalovski, and S. Bonnamy
- 991 Comparison of Physico-Chemical and Antimicrobial Properties of Surface Treated Textile Materials with Silver, Copper and Bismuth Compounds
S. Djokić, N. Djokić, and T. Thundat
- 992 Conformational analysis of Human Serum Albumin
G. Thakur and T. Thundat
- 993 Nanostructured Gold for Immobilization of Thioaniline Functionalized Glucose Oxidase and Au Nanoparticles by Electropolymerization
L. Magagnin, A. Raygani, E. Spadoni Andreani, and F. Secundo
- 994 Surface Functionalization of Titanium-Based Alloy (Ti6Al4V) Using Electrical Discharge Machining
W. Lee, K. Ou, S. Chen, and P. Peng
- 995 Surface Functionalizations of Titanium Dental Implants for Enhancement Bone Apposition and Rapid Osseointegration
P. Kuo, H. Chou, C. Huang, P. Peng, and K. Ou
- 996 Biocompatible TiO₂ Thin Films Prepared by Means of the Ar-O₂ Plasma Implantation
Y. Chan, K. Ou, C. Lin, and P. Peng

- 997 In Vitro Evaluation of Osteoblast-like Cell Adhesion and Proliferation on Titanium Substrate with Different Surface Treatments
H. Chen, C. Hsieh, and C. Lai

G1 - Industrial Electrochemistry and Electrochemical Engineering General Session

Industrial Electrochemistry and Electrochemical Engineering

- 998 On the Process of Niobium Anodic Oxidation in Potassium Nitrate Melt
L. Skatkov and V. Gomofov
- 999 Uranium Electrodeposition for Irradiation Targets
A. M. Saliba-Silva, R. Garcia, E. Bertin, and E. Urano de Carvalho
- 1000 Characterization of Electroplated Ni- TiO₂ Composite Coating
S. Park and J. Lee
- 1001 Oxidation of Cr³⁺-Ions at the Composite TiO_x/PtO_y Electrode
O. Kasian, T. Luk'yanenko, and A. Velichenko
- 1002 Mathematical Model for the Formation of Porous AIII BV Semiconductors
V. Vital'yvish, M. Stetsenko, and Y. Suchikova
- 1003 Preparation and Characterization of Electrosynthesized ZnSeTe Thin Films
M. Mahalingam, V. Dhanasekaran, and J. Chu
- 1004 Improvement of the durability of IrO₂-Ta₂O₅/Ti Anodes for Oxygen Evolution in Periodically Reversed Electrolysis
N. Mori, Y. Ito, Y. Shimizu, M. Matsunaga, and M. Nagase
- 1005 A New Energy-Efficient and Environmentally-Friendly Process to Produce Aluminum
T. R. Beck
- 1006 Sputter Deposited Electrode Material for Electrocatalytic Desulfurization of Crude and its Fractions
Z. Yusuf, A. Hammad, N. Rasheedi, and A. Zahrani
- 1007 Analysis of Ammonia Electro-Oxidation Mechanism with Rotating Disk Electrode (RDE)
L. A. Diaz Aldana and G. Botte
- 1008 Multilayer Electrochemically Deposited Copper Structures for Impurity Diffusion Analysis
M. Rizzolo, E. Lifshin, and K. Dunn
- 1009 Experimental Investigation of Two-Phase Electrolysis Processes
Z. Derhoumi, P. Mandin, and H. Roustan
- 1010 Influence of Seed Texture on Damascene Copper
B. B. OBrien and K. Dunn

- 1011 Sulfur Dioxide Diffusion Coefficient and Solubility in a Two Layer Proton Exchange Membrane
J. Jayakumar, C. Kim, and J. Weidner
- 1012 Gas-Phase Hybrid Sulfur Electrolyzer Stack
S. G. Stone, S. McCatty, J. Hernández-Cintrón, J. Vishnuvarman, and J. Weidner

G3 - Characterization of Porous Materials 5

Industrial Electrochemistry and Electrochemical Engineering, Electrodeposition, Energy Technology

- 1013 Double Templates Synthesis of Mesoporous Nanowires
J. Lee
- 1014 Mesoporous-Carbon-PEDOT Composite as Durable Catalyst-Support for PEFCs
T. Kottakkat, A. Jalajakshi, A. K. Sahu, P. Sethuraman, S. Parthasarathi, and A. K. Shukla
- 1015 Hydrogen Generation from Ammonia Borane by Co/Mesoporous Silica Catalysts
P. Yu, W. Ma, H. Tsai, J. Lee, and Y. Chen-Yang
- 1016 Sulfidation of Nanoporous Titanium Oxide Films Grown by Anodization for Lithium-Ion Intercalation
A. Santos, L. Taveira, T. Djenizian, and L. P. Dick
- 1017 Preparation of Nano Porous Metal Oxide Electrode for Supercapacitors
M. Jeong, S. Cherevko, Z. Kai, and C. Chung
- 1018 Synthesis of Nanostructured Materials from Thioether-Bridged Organosilica and Their Application as a Cathode Support in PEMFC
J. Kim, Y. Kim, and J. Yu
- 1019 Nanostructured, Porous Palladium Alloys from Consolidation of Dendrimer Encapsulated Nanoparticles for Hydrogen Isotope Separation and Storage
P. J. Cappillino, M. Hekmaty, and D. B. Robinson
- 1020 Novel Carbon Nanofiber Precursor For Supercapacitor Applications: 6FDA-DAM:DABA
K. Jung, S. Wijenayake, and J. P. Ferraris
- 1021 Thermal Stability and Adhesion of Low-Emissivity Electroplated Au Coatings
N. Yang, A. M. Morales, T. Johnson, and B. Mills
- 1022 Synthesis of Copper-Based Metal Sponges with Open-Cell Structure by Electrochemical Process
S. Kim, B. Bui, K. Kim, and B. Im
- 1023 Hydrophobicity of Heat-treated Colloid-Imprinted Carbons for PEMFC Applications
X. Li, D. Banham, F. Feng, S. Ye, D. Kwok, and V. Birss

- 1024 Optimisation of Tungsten Carbide-derived Carbon as Electrode Material for Supercapacitors
I. Tallo, T. Thomberg, A. Jänes, and E. Lust
- 1025 Characterisation of Non-Aqueous Symmetrical Supercapacitors Using Aluminium and Titanium Current Collectors
A. Jänes, J. Eskusson, and E. Lust
- 1026 Synchrotron Tomography of Porous Lithium-Ion Battery Anodes
L. Trahey, F. Brushett, B. Blaiszik, V. Rose, R. Winarski, X. Xiao, C. Johnson, J. Vaughey, and M. Thackeray
- 1027 Using Multiple Length Scale X-ray CT to Characterize Electrochemical Devices
P. Shearing, J. Gelb, R. Bradley, F. Tariq, P. Withers, and N. Brandon
- 1028 Effects of Pore Structure and Myristic Acid on the Wettability of the AAO Surface
F. Behzadi, M. Moradi, M. Noormohammadi, and S. Sabaghi
- 1029 Numerical Simulation and Analysis of Effective Diffusivity in Porous Diffusion Layers of Fuel Cells
D. Choy, G. Della Rocca, and G. Blanquart
- 1030 Microscopic Scale Modeling of Effective Transport Properties in Li-Ion Cathodes with Network Theory
W. Du, A. Gupta, N. Xue, J. Martins, A. Sastry, and W. Shyy

G4 - Electrochemical Engineering for the 21st Century 2

Industrial Electrochemistry and Electrochemical Engineering, Electrodeposition, Energy Technology

- 1031 Multiscale Stochastic Simulation of Surface Diffusion During Early Stages of Electrodeposition
A. Bezzola, R. Alkire, and L. Petzold
- 1032 Multi-Scale Simulation of Synergistic Effects of Additives in Damascene Electroplating
Y. Kaneko, K. Ohara, and F. Asa
- 1033 Solder Void Formation in Lead Free Solder
C. L. Arvin, E. Perfecto, R. Davis, B. St. Lawrence, K. Miller, and A. Keigler
- 1034 Flow Channel Geometry and Rib Design Optimization of a Planar Solid Oxide Fuel Cell Stack Using CFD
H. Kanani and Y. Mollayi Barzi
- 1035 Electrical Properties and Thermal Expansion of $\text{La}_{0.5}\text{Ca}_{0.5}\text{TixMn}_{(1-x)}\text{O}_{3-\delta}$ ($0 \leq x \leq 0.2$) as an SOFC Interconnect Sintered by EDTA/Citrate Method
N. Raeis Hosseini, N. Sammes, and J. Chung

- 1036 Periodic Modulation of Sb Stoichiometry in $\text{Bi}_2\text{Te}_3/\text{Bi}_{2-x}\text{Sb}_x\text{Te}_3$ Superlattices Using Pulsed Electrodeposition
D. Banga, J. Lensch-Falk, D. Medlin, V. Stavila, N. Yang, D. B. Robinson, and P. Sharma
- 1037 Progress in Nanowire Growth and Mechanistic Analysis of Silicon Electrodeposition in Ionic Liquid
J. Komadina, T. Akiyoshi, Y. Ishibashi, Y. Fukunaka, P. Pianetta, and T. Homma
- 1038 Repeatable Bipolar Resistive Switching with Both Polarity Dependent SET/RESET Scenario Using Al/Cu/Ge_{0.2}Se_{0.8}/W Structure
S. Rahaman, S. Maikap, H. Lee, W. Chen, F. Chen, M. Kao, and M. Tsai
- 1039 Quinone-Based Redox Catalyst for the Electroreduction of Oxygen to Hydrogen Peroxide
A. Wang, A. Bonakdarpour, D. Wilkinson, and E. Gyenge
- 1040 Atomistic and Coarse-Grained Molecular Dynamics Simulation of a Cross-Linked Sulfonated Poly (1, 3-Cyclohexadiene)-Based Proton Exchange Membrane
Q. Wang, D. J. Keffer, S. Deng, and J. Mays
- 1041 Meso-scale Simulations of Nafion Degradation in Polymer Electrolyte Fuel Cells
K. Malek and A. A. Franco
- 1042 Fuel Cell Reaction Kinetics Using Bayesian Variable Selection
N. Galagali and Y. Marzouk
- 1043 A New Multiscale Physical Model for the Transient Analysis of PEM Water Electrolyzers
A. A. Franco, L. Lopes Oliveira, and C. Jallut
- 1044 Composite Co/C Catalysts for Electroreduction of O₂ to H₂O₂
A. Bonakdarpour, E. Gyenge, and D. Wilkinson
- 1045 Electrosynthesis of Hydrogen Peroxide in a PEM Fuel Cell for Drinking Water Purification
W. Li, A. Bonakdarpour, D. Wilkinson, and E. Gyenge
- 1046 Intercalate Diffusion in Multiphase Electrode Materials and Application to Lithiated Graphite
D. R. Baker and M. Verbrugge
- 1047 Model Based Optimal Design of Electrode Architecture of Lithium-Ion Batteries
V. Ramadesigan, P. W. Northrop, S. De, G. Sikha, R. Braatz, and V. R. Subramanian
- 1048 Modeling of Grain Boundary and Its Effect on Li⁺ Effective Diffusivity and Intercalation-Induced Stresses in Li-Ion Battery Isotropic Active Materials
S. Han, J. Park, W. Lu, and A. Sastry
- 1049 Variational Multi-Scale Enrichment for Electrochemical-Mechanical Li-Ion Battery Cell
S. Lee, J. Park, M. Zhu, and A. Sastry

- 1050 Electrochemical and Transport Behavior of Lithium Ion Battery 3-D Electrode Architectures
M. Martin, P. P. Mukherjee, S. Pannala, S. Allu, D. Ranjan, and J. Turner
- 1051 Nano Effects on Li Diffusion and Li-induced Phase Transitions in Titania
H. yildirim, J. Greeley, and S. K. Sankaranarayanan
- 1052 Electrical and Materials Characterization of PANI Nanoparticles infused Polymers for Battery Applications
R. Ratnadurai, P. K. Sekhar, and E. Stefanakos
- 1053 Electrical-Thermal Simulation of a Simplified Cell
H. Lo and J. Oung
- 1054 The Patterning of Al Surface by PDMS Stamp and Electrochemical Etching
G. Park and J. Choi
- 1055 Cellular Automation for the Self-Organization Processes at the Annealing of Silicon Rich Oxide Layer
O. M. Orlov, I. Matyushkin, S. Korobov, and G. Y. Krasnikov
- 1056 A New Multiscale Model for the Transient Analysis of Lithium-Ion Batteries
B. Deguilhem, A. A. Franco, and V. Vetere
- 1057 Phase Field Modeling in Metal-Air Batteries
N. A. Zerihun, U. Preiss, and I. Steinbach
- 1058 Hydration and Proton Transfer in 3M{trade mark, serif} PEM Ionomers: An Ab Initio Study
J. K. Clark and S. Paddison
- 1059 Molecular Modeling of Proton and Water Distribution in Catalyst Layer Pores of Polymer Electrolyte Fuel Cells
A. Nouri Khorasani, K. Malek, and M. Eikerling

G5 - Fuel Cell Membranes, Electrode Binders, and MEA Performance

Industrial Electrochemistry and Electrochemical Engineering, Energy Technology

- 1060 Development of Composite Non-Platinum IrFe (1:16)/C Nanoparticle as Novel Anodic Catalyst in PEMFC
B. Li, D. Yang, R. Lin, Z. Yu, and J. Ma
- 1061 Synthesis of the Layer - Network Structure Nanomaterial as a Filler for Proton Exchange Membrane
C. Liang, Y. Chen-Yang, C. Tsai, and C. Wang
- 1062 Preparation of the Novel Nanocomposite Membranes Based on Nafion and Porous Materials with Unsaturated Metal Sites for PEMFC
C. Tsai, Y. Chen-Yang, C. Lin, C. Liang, and C. Wang

- 1063 A Study on Formation of Fuel Cell Electrodes by Inkjet Printing Technology
J. Park, M. Shin, M. Kang, and Y. Kim
- 1064 Development of Water Soluble Anionic Binder Solutions for Solid Alkaline Fuel Cells
M. Shin, J. Park, and M. Kang
- 1065 Optimization of Novel Catalyst Layer Synthesized by In Situ Sol-Gel of Tetraethoxysilane in Nafion-Ionomer Solution with Pt/C for PEFC
T. Kim, J. Lee, Y. Yoon, T. Yang, and S. Yim
- 1066 Effects of Sintering Time on Electrode Structure and Electrochemical Properties of PBI Based HT-PEMFCs
M. Kim, H. Kwon, J. Ryu, H. Kim, and E. Cho
- 1067 A Novel Anion Exchange Membrane for Vanadium Redox Flow Battery
X. Xie, Y. Cui, X. Fan, Y. Lv, and Y. Shang
- 1068 New Proton Conductive Membranes Based on Acid-doped Interpenetrating Polymer Networks
F. M. Loureiro, R. Pacheco Pereira, and A. Rocco
- 1069 Sulfonic Acid Bisphenol A Membranes for Fuel Cell Applications
L. Blanco, F. M. Loureiro, R. Pacheco Pereira, and A. Rocco
- 1070 Nanocomposite Membranes with Phosphonic Acid Functionalized Zirconium Phosphate for High Temperature PEMFC
L. Ghil and H. Rhee
- 1071 Electrospun Inorganic-organic Composite Membrane for High Temperature Polymer Exchange Membrane Fuel Cell (HT-PEMFC)
S. Juon, H. Na, T. Kim, U. Byambasuren, and Y. Shul
- 1072 Two-Dimensional Modeling for a PEM Fuel Cell Adopting a Thin-Film Agglomerate Model
C. Lee, S. Jung, and C. Chen
- 1073 Morphological Modification of Composite Membrane using a compatibilizer for a Polymer Membrane-based Fuel Cell
H. Jung and J. Choi
- 1074 Advanced Meso-Structured Silica-Nafion Hybrid Membranes for DMFCs
A. K. Sahu, S. Meenakshi, S. Bhat, S. Pitchumani, P. Sridhar, and A. K. Shukla
- 1075 Degradation Mechanism of PEMFCs with Metallic Bipolar Plates During 1.4-V Pulse Cycling
K. Eom, E. Cho, T. Lim, J. Jang, and H. Kim
- 1076 Relating Ionomer and Electrode Structure to H₂-Air Fuel Cell Performance and Durability
C. M. Johnston, B. Choi, D. Langlois, N. Mack, and Y. Kim

- 1077 Irreversible Losses in a PEM Fuel Cell during Accelerated Stress Test of Catalyst Support
S. Park, Y. Shao, V. Viswanathan, J. Liu, and Y. Wang
- 1078 New Approaches to Improving Performance of Ultra-Low Loading Pt/C Cathodes
C. M. Johnston, N. Mack, and Y. Kim
- 1079 Fuel Cell Performance Using a Phosphonated Polysulphone Ionomer (PSUgPVPA) in the PEM Cathode Electrode
R. Wreland Lindstrom, L. Guerrero Aguinaga, A. Oyarce, D. Ubeda, M. Ingratta, P. Jannasch, and G. Lindbergh
- 1080 A 3-D Catalytic Electrode Structure for Ultra-low Platinum Loading and High Performance PEMFCs
W. Zhu, R. Liang, and J. P. Zheng
- 1081 MEA Characteristics on Poly (2, 5-benzimidazole) Membrane for High-Temperature PEM Fuel Cells
W. Qian, Y. Shang, W. Shubo, X. Xie, and Z. Mao
- 1082 Hollow Tin Oxide as a Corrosion-Resistant Carbon-Free Pt Electrocatalyst Support for Proton Exchange Membrane Fuel Cells
M. Song, J. Kim, and J. Yu
- 1083 Carbon Corrosion-Induced Microstructure Changes of Cathode Catalyst Layers and Their Impact to the PEFC Performance
J. Park, G. Park, T. Yang, S. Yim, and E. Park
- 1084 Ionomers for Alkaline Fuel Cell Electrodes and MEAs
J. Zhou, K. Joseph, and P. Kohl
- 1085 Cross-linked QPMV Alkaline Anion Exchange Membranes (AAEM) and In Situ Atomic Force Microscopy (AFM) Characterization
Y. Luo, J. Guo, C. Wang, and D. Chu
- 1086 Contrasting Ordered and Amorphous Alkaline Exchange Membranes for Fuel Cell Applications
A. M. Herring, A. Maes, M. Vandiver, J. Horan, S. Seifert, and A. Krasovsky
- 1087 Determination of the Water Concentration Profile Across Nafion 115 Membrane Thickness During Fuel Cell Operation by In Situ μ -Raman Spectroscopy
Y. Lanteri, Z. Peng, S. Deabate, P. Huguet, A. Morin, and A. K. Sutor
- 1088 Synthesis and Characterization of Poly(Ether Sulfone Quinoxalines) and Its Blends for Direct Methanol Fuel Cells
J. Sutrisno, I. Pramudya, and A. Fuchs
- 1089 The Effects of Pinholes on the Performance of Polymer Electrolyte Fuel Cells
S. Didari, Z. Ahmad, J. Moon, C. Cruz, and T. Harris

- 1090 Effect of Ion Exchange on Polymer Electrolyte Degradation Rates
M. Tague, A. Yakaboski, H. Rivera, and E. Smotkin
- 1091 Estimation of the Performance of a Mixed Conductor as Filler in Polymer Electrolytes by 3D Modeling of Impedance Spectroscopy
R. Dugas, A. Tavares, and D. Guay
- 1092 Nafion Beta-Relaxation as a Function of Relative Humidity Probed by Dielectric Spectroscopy
B. R. Matos, M. André Dresch, E. Inácio Santiago, M. Linardi, D. Zanetti de Florio, and F. Coral Fonseca
- 1093 Fuel Cell Performance and Water Transport Properties of Asymmetric Bi-Layer Proton Conducting Membranes
Z. Peng, A. Morin, P. Huguet, S. Deabate, and A. K. Sutor
- 1094 Modeling and Optimization of the DMFC System: Relating Materials Properties to System Size and Performance
B. Bennett, B. Koriashy, and J. Meyers
- 1095 Computational Fluid Dynamics of Water Droplet Formation and Detachment from Gas Diffusion Layer
Z. Ahmad, S. Didari, J. Moon, and T. Harris
- 1096 A Microstructural Resolved Model of PFSA Membranes Degradation in PEM Fuel Cells
A. A. Franco, R. Coulon, and K. Malek
- 1097 Mesoscale Modeling of Hydrated Morphology in Sulfonated Poly(phenylene sulfone) Ionomers
C. Wang, S. J. Paddison, and G. Duscher
- 1098 Effect of Surface Hydrophilicity on the Formation of Nafion Thin Film Inside PEMFC Catalyst Layers: A Computational Study
D. Damasceno Borges, S. Mossa, K. Malek, G. Gebel, and A. A. Franco
- 1099 Low Cost Hydrogen Fuel Cell
M. S. Dara, A. Lam, D. Wilkinson, and K. Fatih
- 1100 Advances in Proton Exchange Membrane Technology for High Efficiency Electrolysis
K. E. Ayers, E. Anderson, C. Capuano, M. Niedzwiecki, M. A. Hickner, and W. Johnson
- 1101 Impact of Ethylene Glycol Contamination on Proton Exchange Membrane (PEM) Fuel Cells
K. A. O'Leary, B. Lakshmanan, and J. St-Pierre
- 1102 Characterization of Anion Exchange Membrane Technology for Low Cost Electrolysis
K. E. Ayers, E. B. Anderson, C. Capuano, M. Niedzwiecki, M. A. Hickner, C. Wang, Y. Leng, and W. Zhao

- 1103 Electrocatalytic Cells for Synthetic Fuel Production from Carbon Dioxide
R. Elder, D. Cumming, K. Omojola, and D. Sinclair
- 1104 Hybrid Direct Carbon Fuel Cell: Catalytic Effect of Carbonate Cation and Amount of Carbon Fuel in Cell Performance
B. Cantero-Tubilla, C. Xu, J. Zondlo, K. Sabolsky, and E. Sabolsky

H1 - Electron Transfer and Energy Applications of Fullerenes and Nanostructured Materials

Fullerenes, Nanotubes, and Carbon Nanostructures, Energy Technology

- 1105 (Invited) Adjustable Cavity in Cofacial Bisporphyrinic Tweezers for the Recognition of PhotoActive Guests
R. Rein and N. Solladie
- 1106 (Invited) The Dynamics of Photoinduced Electron Transfer Processes in Electron Donor-[60]Fullerene Supramolecular Interlocked Systems
D. I. Schuster, J. Megiatto Jr., D. M. Guldi, and S. Kirner
- 1107 Photoinduced Electron Transfer in Porphyrin-ssDNA- SWCNT Bionano Donor-Acceptor Hybrids
F. Dsouza, S. Das, M. Zandler, A. Sandanayaka, and O. Ito
- 1108 Covalent and Non-covalent Binding of Tetrathiafulvalene to Carbon Nanotubes
D. M. Guldi
- 1109 (Invited) Functionalization of Azafullerene C₅₉N with Organic Electron Donors
N. Tagmatarchis
- 1110 (Invited) Functionalization of Carbon Nanotubes for Energy Conversion
M. Prato
- 1111 (Invited) Ultrafast Excited State Equilibration in Fullerodendrimers with a Perylenediimide Core
F. Monti, C. Chiorboli, and N. Armaroli
- 1112 (Invited) Carbon Nanostructures-Perylenebisimides as Artificial Photosynthetic Systems and for Bulk Heterojunction Solar Cells
A. Sastre, S. Pla, L. Martin-Gomis, D. Molina, F. Fernández-Lázaro, K. Ohkubo, S. Fukuzumi, S. Collins, and T. Nguyen
- 1113 (Invited) Photoinduced Electron Transfer in PDI-C₆₀ Dyads
M. Niemi, R. Dubey, N. Tkachenko, A. Efimov, and H. Lemmetyinen
- 1114 (Invited) Electron-Transfer Reduction of Li⁺@C₆₀
K. Ohkubo, Y. Kawashima, and S. Fukuzumi
- 1115 (Invited) Structures and Properties of Protonated Phthalocyanines
T. Kojima, T. Honda, N. Kobayashi, and S. Fukuzumi

- 1116 Functionalized Carbon Nano-Onion for Investigations of Proton-Couple Electron Transfer Reactions
D. M. Anjos, J. McDonough, Y. Gogotsi, G. Brown, and S. Overbury
- 1117 Ultrafast Two-Photon Absorption Based Energy-Transfer of Fullerosome Vesicle Nanostructures for Nonlinear Photonic Applications
L. Chiang, W. Ji, and L. Tan
- 1118 (Invited) In Situ ESR Spectroelectrochemical Study of $\text{Sc}_{4\text{M}}\text{O}_2@\text{C}_{80}$: Endohedral Redox System
A. Popov, N. Chen, L. Echegoyen, S. Stevenson, and L. Dunsch
- 1119 Characterization of Electronic Properties of PCBM and Other Fullerene Acceptors
B. W. Larson, J. B. Whitaker, I. V. Kuvychko, H. Wen, X. Wang, A. Popov, L. Dunsch, N. Kopidakis, G. Rumbles, O. Boltalina, and S. Strauss
- 1120 Electrochemical and Chemical Reductions of Trifluoromethyl Fullerenes for Synthesis of New Derivatives
J. B. Whitaker, B. W. Larson, I. V. Kuvychko, A. Popov, O. Boltalina, and S. Strauss
- 1121 (Invited) Can Liquid Crystallinity Increase Photovoltaic Efficiency?
K. Toth, D. Guillon, and D. Felder-Flesch
- 1122 SECM Investigations of Covalent Assembly of Anthracene and Fullerene Monolayers on Silicon Surfaces
B. Fabre, D. Bassani, C. Liang, D. Ray, F. Hui, and P. Hapiot
- 1123 3-D Nanostructured Si-Ge-Single Wall Carbon Nanotube Free-Standing Anodes for High Energy Density Lithium Ion Batteries
R. A. DiLeo, M. Thone, M. Forney, M. Ganter, J. Staub, R. Rogers, and B. Landi
- 1124 Preparation and Characterization of New Fulleride Materials for Thermoelectric Applications
P. Borton, M. Check, D. Dudis, and D. Turner
- 1125 Flexible Solar Cell Using CdSe Quantum Dots/Graphene Composites
M. Kang and M. Jung
- 1126 The Effect of Metal Catalysts in the Electrocatalytic Activity of Nitrogen-Doped Carbon Nanotube Cups for Oxygen Reduction Reaction
Y. Tang, Y. Zhao, and A. Star

H2 - Chemistry of Fullerenes and Carbon Nanotubes

Fullerenes, Nanotubes, and Carbon Nanostructures

- 1127 Thermal Reaction of [60]Fullerene with Amino Acids
S. Zhu, T. Zhang, X. Cheng, C. Mai, and G. Wang
- 1128 Enantioselective Cycloaddition of N-metalated Azomethine Ylides onto Fullerenes
S. Filippone, M. Izquierdo, E. Maroto, and N. Martin
- 1129 Challenges and Opportunities in Continuous Functionalization of Carbon Nanostructures Enabled by Flow Chemistry
M. Maggini
- 1130 Functionalization of Perfluoroalkylfullerenes: Towards Materials Applications
O. Boltalina, T. Clikeman, L. San, J. B. Whitaker, B. W. Larson, I. V. Kuvychko, Y. Chen, A. Popov, and S. Strauss
- 1131 Mild Methods in the Selective Functionalization of Fullerenes
J. Marco-Martínez, M. Izquierdo Barroso, S. Filippone, and N. Martin
- 1132 (Young Investigator Award) Fullerene-Driven Molecular Shuttles
A. Mateo-Alonso
- 1133 Novel Perfluoroalkylfullerene-Based Acids: Preparation, Properties, and Chemical Reactivity
I. V. Kuvychko, L. San, O. Boltalina, and S. Strauss
- 1134 Receptors for Carbon Nanostructures: The New Collection
N. Martin, E. Pérez, D. Canavet, H. Isla, and M. Gallego
- 1135 Versatile Fullerene Building Blocks for the Construction of Biologically Active Molecules
J. Nierengarten
- 1136 Photoinduced Energy and Electron Transfer in Supramolecular Polyads of Covalently linked azaBODIPY-Bisporphyrin 'Molecular Clip' hosting Fullerene
F. D'Souza, A. Amin, V. Bandi, M. El-khouly, N. Subbaiyan, M. Zandler, and S. Fukuzumi
- 1137 Unusual Chemical Properties of Paramagnetic Fullerenes Encapsulating a Trivalent Metal
X. Lu, H. Nikawa, Z. Slannina, T. Akasaka, and S. Nagase
- 1138 Selective Adenosine 5'-Triphosphate (ATP) Recognition with a Molecularly Imprinted Polymer Using Derivatized Fullerene Functional Monomers
W. Kutner, P. Sharma, M. Dabrowski, C. Bikram KC, K. Noworyta, and F. D'Souza
- 1139 Tuning the Molecular Order of C₆₀ Functionalized Phosphonic Acids
B. Braunschweig, A. Rumpel, M. Novak, J. Walter, M. Halik, and W. Peukert

- 1140 Towards Topologically Pristine Carbon Nanotubes
M. Suzuki, K. Tahara, S. Khan, Y. Tobe, and Y. Rubin
- 1141 Functionalization of Carbon Nanotubes
M. Prato
- 1142 Photoinduced Charge Separation and Charge Transport in Carbon Nanostructure-Based Composites
H. Imahori
- 1143 Decoration of Carbon Nanotubes and Carbon Nanohorns
F. Langa, M. Vizuet, M. Barrejón, and M. Gómez-Escalonilla
- 1144 Exohedral and Endohedral functionalization of Luminescent MWCNTs for Advanced Materials Applications
D. Bonifazi
- 1145 Non Conventional Techniques for the Modification of Carbon Nanoforms
E. Vazquez
- 1146 Phthalocyanine-SWNT and Phthalocyanine-Graphene Ensembles: Hybrid Systems for Solar Energy Conversion
M. Ragoussi, G. de la Torre, D. Guldi, and T. Torres
- 1147 Interaction of *L*-Valine Homopeptides with Fullerene C₆₀: A Molecular Mechanics Study
V. A. Basiuk and A. Cruz-Gregorio
- 1148 Theoretical Analysis and Experimental Evidence for the Covalent Cross-Linking of C₆₀ Fullerene with Diamines
F. Contreras-Torres, E. V. Basiuk, V. A. Basiuk, V. Meza-Laguna, and T. Gromovoy
- 1149 Noncovalent Functionalization of Single-Walled Carbon Nanotubes with Porphyrins
M. Bassiuk, V. A. Basiuk, E. V. Basiuk, M. Martínez-Herrera, A. Rojas-Aguilar, and I. Puente-Lee
- 1150 Electronic Structure and stability of Fullerene Dimers via Density Functional Theory Calculations
S. Lee

H3 - Carbon Nanotubes and Nanostructures: Fundamental Properties and Processes

Fullerenes, Nanotubes, and Carbon Nanostructures

- 1151 (Invited) Catalyst Morphology Oscillation Governed Nucleation of Carbon Nanotubes
E. Pigos, E. Penev, R. Sharma, B. Yakobson, and A. R. Harutyunyan
- 1152 (Invited) Carbon-based Nanomaterials: Design, Synthesis, and Properties
C. Nuckolls

- 1153 (Invited) Functional Inks Based on Monodisperse Carbon Nanomaterials
M. C. Hersam
- 1154 Extraction of Specific Large-Diameter Single-Wall Carbon Nanotubes by Fluorene-Based Copolymers
M. Tange, T. Okazaki, and S. Iijima
- 1155 Crowding-Induced Self-Assembly of DNA-SWCNT: From Length to Chirality Selectivity
C. Y. Khripin, N. Arnold-Medabalimi, and M. Zheng
- 1156 (Invited) Optically Active Single-Walled Carbon Nanotubes
N. Komatsu
- 1157 (Invited) "Fully Flattened" Carbon Nanotubes: A New Synthesis of Graphene Nanoribbon
D. Choi, R. Kitaura, Y. Miyata, Y. Azuma, Y. Majima, and H. Shinohara
- 1158 GNR Production through Hydrogen Plasma Assisted CNT Unzipping
S. Mohammadi, Z. Kolahehdouz Esfahani, S. Darbari, S. Mohajerzadeh, and N. Masoumi
- 1159 (Invited) Dynamics of Excitons and Trions in Single-Walled Carbon Nanotubes
T. Nishihara, M. Okano, and Y. Kanemitsu
- 1160 (Invited) Effect of Water-Filling and Trion Generation in Luminescent Single Wall Carbon Nanotubes
L. Cognet
- 1161 (Invited) Tube Length Dependence of Far-Infrared Absorption of Single-Walled Carbon Nanotubes
T. Okazaki and S. Joung
- 1162 (Invited) Direct Photoluminescence Imaging of Exciton and Single-Dopant Dynamics in Single-Wall Carbon Nanotubes
S. K. Doorn, J. J. Crochet, J. G. Duque, and J. H. Werner
- 1163 (Invited) Redox Reaction of SDS-Encased Carbon Nanotubes with Mercury Ions for Optical Sensing
A. A. Kamel, E. Gangluff, and W. Zhao
- 1164 (Invited) Delayed Fluorescence from Single-Wall Carbon Nanotubes
T. Hertel, F. Späth, and D. Stich
- 1165 (Invited) Separation and Optical Characterization of Empty and Water-Filled Single-Wall Carbon Nanotubes
J. A. Fagan, J. Huh, J. Simpson, J. L. Blackburn, J. M. Holt, and A. R. Hight Walker
- 1166 Non-Invasive Spectroscopic Determination of Activation Energies for Plasma Oxidation of Carbon Nanotubes
S. Lee and Y. Liu

- 1167 Cluster *Bundlet* Model of B/C/N Nanotubes and Cones
F. Torrens and G. Castellano
- 1168 Growth Mode for Carbon Micro Coils Having Double Helix Geometries
S. Park, Y. Jeon, and S. Kim
- 1169 In Vitro Selection of DNA Aptamers for the Single-Wall Carbon Nanotubes
O. Selivanova, C. Y. Khripin, X. Tu, and M. Zheng
- 1170 (Invited) Imaging Spectroscopy of Stable and Unstable Air-Suspended SWNTs
P. Finnie and J. Lefebvre
- 1171 (Invited) Optoelectronics and Relaxation Mechanisms in Graphene and Carbon Nanotubes
V. Perebeinos
- 1172 (Invited) Photophysics of Metallic Carbon Nanotubes Enabled by Enriched and Aligned Ensemble Samples
J. Kono
- 1173 (Invited) Energy Transfer in Carbon Nanotubes/Organic Chromophores Assemblies
C. Roquelet, J. Lauret, C. Voisin, B. Langlois, F. Violla, P. Roussignol, and E. Deleporte
- 1174 (Invited) Multiple Exciton Generation and Fluorescence Brightening in Single-Walled Carbon Nanotubes
B. Loesch, M. Odoi, J. Smyder, X. Tu, M. Zheng, and T. Krauss
- 1175 (Invited) Optical and Electrical Properties of Carbon Nanotube PN Diodes
J. Lee
- 1176 (Invited) Extinction Coefficient of Single-Chirality Metallic and Semiconducting Carbon Nanotubes
X. Tu, C. Y. Khripin, J. Howarter, and M. Zheng
- 1177 Fano Resonances in Mid-Infrared Spectra of Single-Walled Carbon Nanotubes
F. Lapointe, É. Gaufrès, I. Tremblay, N. Tang, P. Desjardins, and R. Martel
- 1178 Temperature-dependent Fluorescence Studies of Oxygen-doped Single-Walled Carbon Nanotubes
S. Ghosh, S. Bachilo, and R. Weisman
- 1179 Fluorescent SWNT-Silica Nanocomposites: A Balance Between Environmental Perturbations and Observed Photophysical Properties
J. G. Duque, C. E. Hamilton, G. Gumba, S. A. Crooker, J. J. Crochet, A. D. Mohite, K. A. DeFriend Obrey, A. M. Dattelbaum, and S. K. Doorn
- 1180 Polydisperse Fluorescence Quantum Yields in Single-Walled Carbon Nanotube Samples
J. K. Streit, S. Bachilo, and R. Weisman

- 1181 Single-Particle Photoluminescence Microscopy of Carbon Nanotubes Under Microfluidic and Potentiostatic Control
N. Rühl and T. Hertel
- 1182 Raman Studies on Chirality Purified Nanotubes: the Chirality Dependence of the G Modes and Quantum Interference
H. P. Telg, J. G. Duque, H. Chen, X. Tu, M. Zheng, J. Maultzsch, C. Thomsen, A. Swan, and S. K. Doorn
- 1183 (Invited) Using ^{13}C -labeled Single-walled Carbon Nanotubes to Uncover Fundamental Properties
J. L. Blackburn, C. Engtrakul, J. M. Holt, E. Gjersing, V. Irurzun, D. Resasco, and G. Rumbles
- 1184 Comparison Between the Performance of Silicon Nanowire, Germanium Nanowire and Carbon Nanotube Junctionless Transistors from First Principle Calculations
L. Ansari, B. Feldman, G. Fagas, J. Colinge, and J. Greer
- 1185 The Relationship of Morphological Structure, Electronic Structure and Electrical Transport Property: A Sample Study of Carbon Nanotubes
J. Gao, J. Zhong, and X. Sun

H4 - Carbon Nanotubes and Nanostructures: Applications and Devices

Fullerenes, Nanotubes, and Carbon Nanostructures

- 1186 (Invited) Anomalous Current-Voltage Characteristics and Non-Adiabatic/Adiabatic Phase Transitions in Ultra-Clean Suspended Carbon Nanotubes
R. Dhall, M. Amer, S. Chang, Z. Liu, and S. B. Cronin
- 1187 (Invited) Optical Properties of Freely Suspended Carbon Nanotubes at Cryogenic Temperatures
A. Hoegele
- 1188 (Invited) Dramatic Reduction of IR Vibrational Cross-sections of Molecules Encapsulated in Carbon Nanotubes
D. Kazachkin, Y. Nishimura, H. Witek, S. Irle, and E. Borguet
- 1189 (Invited) Resonance Raman Spectroscopy of Separated SWCNTs
J. Simpson, J. Fagan, R. Stephenson, X. Tu, M. Zheng, and A. R. Hight Walker
- 1190 Thin Films with Single-walled Carbon Nanotubes for Non-contact Strain Sensing
S. Bachilo, P. Withey, S. Mohan, S. Nagarajaiah, and R. Weisman
- 1191 (Invited) Optimizing the Carbon Nanotube/Conjugated Polymer Interaction in Organic Solar Cell Active Layers
J. M. Holt, K. Mistry, A. Ferguson, N. Kopidakis, B. Larsen, F. Prehn, M. Heeney, G. Rumbles, and J. L. Blackburn

- 1192 (Invited) Photocurrent in Macroscopically Aligned Carbon Nanotube Arrays
S. Nanot, C. Pint, L. Hendricks, J. Kono, R. Hauge, A. Cummings, and F. Leonard
- 1193 (Invited) Light Harvesting with Porphyrin/Carbon Nanotube Compounds
C. Voisin, C. Roquelet, F. Violla, B. Langlois, J. Lauret, P. Roussignol, and E. Deleporte
- 1194 Efficiently Harvesting Excitons in Macroscopic Semiconducting Carbon Nanotube Photovoltaic Devices by Rationally Controlling their Morphology and Nanostructuring
D. Bindl, M. Wu, and M. Arnold
- 1195 Carbon Nanomaterials and Polymers Composite Electrolyte for Dye Sensitized Solar Cells: Electrochemical and Photovoltaic Properties
M. Akhtar, Z. Li, J. Jang, J. Yang, and O. Yang
- 1196 (Invited) Time-Domain ab initio Studies of Molecule and Quantum Dot Sensitized TiO₂
O. Prezhdo
- 1197 (Invited) Structural Model, Catalytic CVD Synthesis and Elasticity of Helically Coiled Carbon Nanotubes
I. Milosevic, Z. Popovic, M. Damjanovic, D. Fejes, Z. Balogh, and K. Hernadi
- 1198 Nanoscale Radiative Heat Transfer Between a Dielectric Substrate and an SWNT
A. Nemilentsau and S. Rotkin
- 1199 (Invited) Electrochemical Modification of Individual Carbon Nanotubes, and Their Sensing Properties
P. Collins
- 1200 (Invited) Engineering Porous Structure and Surface Chemistry of Carbon for Supercapacitors
G. Cao and S. Candelaria
- 1201 Bismuth-Carbon Nanotube Composite Modified Carbon Paste Electrode for the Determination of Heavy Metal Ions
N. Pikroh and P. Vanalabhpatana
- 1202 (Invited) Analytical Ultracentrifugation Characterization of Empty and Water-Filled Single-Wall Carbon Nanotubes
J. A. Fagan, V. Rastogi, J. L. Blackburn, and A. R. Hight Walker
- 1203 (Invited) Single Wall Carbon Nanotube Aerogels and Composites Thereof
K. Kim, Y. Oh, I. Lee, C. Jeong, and M. F. Islam
- 1204 (Invited) Direct Synthesis and Potential Applications of Thin Highly Transparent Single Walled Carbon Nanotubes Films with High Conductivity
E. Pigos, G. Chen, and A. R. Harutyunyan

- 1205 Microstructure and Properties of Single Wall Carbon Nanotube Reinforced Yttria Stabilized Zirconia Ceramics
J. Shin and H. Seong-Hyeon
- 1206 Enabling "Bottom up" Approach for Nano Probe Fabrication and Study of Carbon Nanotubes
I. Kuljanishvili
- 1207 (Invited) Intrinsic Resistivity of Individual Single Walled Carbon Nanotubes with Known-Chirality
M. Takekoshi and P. Kim
- 1208 (Invited) Charge Injection Mechanism at Carbon Nanotube-Organic Semiconductor Interface
B. Sarker and S. Khondaker
- 1209 (Invited) Graphene Quantum Devices
C. Stampfer
- 1210 (Invited) DNA-based Self-Assembly of Parallel Carbon Nanotube Arrays, and Suspended Graphene Switches
M. Bockrath
- 1211 Covalently Functionalized Carbon Nanotubes for Electronics
D. Bouilly, J. Cabana, F. Meunier, M. Desjardins-Carrière, F. Lapointe, P. Gagnon, F. L. Larouche, E. Adam, M. Paillet, and R. Martel
- 1212 Fabrication of Pt Nanoclusters on Carbon Nanotubes and Graphene Sheets by Pulse Electrodeposition Method
C. Hsieh, J. Wei, Y. Liu, W. Chen, and R. Juang
- 1213 Field Emission Characteristics of Carbon Nanotube-Zinc Oxide Compound Cathode by Hydrothermal Process
C. Chang, C. Kei, C. Su, and H. Cheng
- 1214 Fabrication of Carbon Nanotube Thin Film on Highly Rough Glass Substrate as Field Emission Devices
Y. Chien, W. Tsai, I. Lee, C. Yuan, C. Sung, K. Cheng, and K. Cheng
- 1215 Carbon Nanotubes Directly Grown on Ultra-thin Graphite for Field Emission
W. Tsai, Y. Chien, and H. Cheng
- 1216 Planting of Carbon Nanotubes on Nano-Textured and Micro-Structured Silicon Substrates
S. Taak, S. Darbari, M. Poudineh, Z. Sanaee, and S. Mohajerzadeh
- 1217 Enzymatic Nanostructured Carbon Electrodes for Biofuel Cell Application
E. Nazaruk, M. Karaskiewicz, K. Zelechowska, J. Biernat, J. Rogalski, and R. Bilewicz

- 1218 Electrochemical Synthesis and Characterization of Polypyrrole/Single-Walled Carbon Nanotube Composites
M. Raicopol, B. Cioaca, M. Ionita, and L. Pilan
- 1219 Absorption of Radiofrequency Energy by Gold Nanoparticles and Gd³⁺ Loaded Ultra-short Carbon Nanotubes for Applications in Non-invasive Radiofrequency Hyperthermia Cancer Treatment
S. J. Corr, S. Phounsavath, L. Wilson, and S. Curley
- 1220 Fabrication of Chemical Functionalized Graphene Solution
S. Lee, J. Han, Y. Kwon, M. Kang, I. Lee, and K. An
- 1221 Tailoring the Microstructure Characteristics of Cu-MWCNT Metal Matrix Composites Through Modified Deposition Parameters
R. Manu and S. Jayakrishnan

H5 - Endofullerenes and Carbon Nanocapsules *Fullerenes, Nanotubes, and Carbon Nanostructures, Sensor*

- 1222 Magnetic Properties of Co₅ Nanocluster Embedded into Carbon Fullerenes in Different Orientations: DFT Calculation
A. V. Kuznetsov
- 1223 Synthesis and Structure Determination of Tm@C₈₂(I) - Ni(OEP) Co-crystal
Y. Sado, S. Aoyagi, Y. Miyata, R. Kitaura, and H. Shinohara
- 1224 Dimetallic Sulfide Endohedral Fullerenes with Unusual Cages
L. Echevoyen and N. Chen
- 1225 Fullerenes Encaging a Carbide Cluster: Molecular Structures and Chemical Properties
X. Lu, K. Nakajima, H. Kurihara, N. Mizorogi, T. Akasaka, and S. Nagase
- 1226 Recent Advances in Endohedral Metallofullerene Separations
S. Stevenson
- 1227 Chemically Modified Endohedral Metallofullerenes: Towards the Construction of Photoactive Donor-Acceptor Systems
L. Feng, Z. Slanina, N. Mizorogi, T. Akasaka, D. M. Guldi, and S. Nagase
- 1228 Endohedral Fullerenes: A Probe for Chemistry at the Nanoscale
K. Porfyrakis
- 1229 Structural Studies of Samarium Containing Endohedral Fullerenes
A. L. Balch, M. Olmstead, C. Beavers, H. Yang, Z. Liu, and B. Q. Mercado
- 1230 Computations for Metallofullerenes Derivatized during Extraction: La@C₈₀-C₆H₃C₁₂ and La@C₈₂-C₆H₃C₁₂
Z. Slanina, T. Akasaka, and S. Nagase

- 1231 Effect of "Nanotube Field" on Physical Properties of Encapsulated Molecules in Carbon Nanotubes
T. Okazaki
- 1232 Magnetic Property Investigation of Gadolinium-Based Endohedral Metallofullerenes
J. Zhang, G. Yee, T. Fuhrer, C. Pregot, and H. C. Dorn
- 1233 Computational Investigation of the Properties of $M_2C_2@C_n$ ($M=Y$ or Gd) ($n=82, 92, \infty$)
T. Fuhrer, J. Zhang, and H. C. Dorn
- 1234 (Keynote) Titanium in the Mixed-Metal Nitride Clusterfullerenes: The Role the Second Metal
A. Popov, A. Svitova, and L. Dunsch
- 1235 The World-Shortest Metallofullerene-Peapods: $(Gd@C_{82})@[11]$ cycloparaphenylene
Y. Nakanishi, Y. Miyata, H. Omachi, S. Matsuura, Y. Segawa, K. Itami, R. Kitaura, and H. Shinohara
- 1236 Urea as a New and Cheap Nitrogen Source for the Synthesis of Metal Nitride Clusterfullerenes
S. Yang, M. Jiao, W. Zhang, Y. Xu, T. Wei, C. Chen, and F. Liu

H6 - Carbon Nanotubes and Nanostructures: Medicine and Biology

Fullerenes, Nanotubes, and Carbon Nanostructures, Sensor

- 1237 Flavin-induced Superhelices of Single Walled Carbon Nanotubes
F. Papadimitrakopoulos
- 1238 (Invited) Hybrid Nanobio-devices based on Carbon Nanotubes and Nanostructures
S. Hong
- 1239 (Invited) Functionalized Single Wall Carbon Nanotubes as Carriers for Biomedical Applications
D. Scheinberg, C. Villa, S. Alidori, J. Mulvey, and M. Mcdevitt
- 1240 (Invited) SWCNT Near-Infrared Fluorescence as a Tool for Developing Biomedical Applications
R. Weisman
- 1241 (Invited) Applications of Functionalized Carbon Nanotubes in Nanomedicine
M. Prato
- 1242 Self-sorting of Cancerous Cells with Functionalized CNTs
D. Bonifazi
- 1243 Nanoparticle-facilitated Magnetization of Tumor Cells
M. Jebb, W. Wei, G. Villares, M. Lewis, and L. Wilson

- 1244 Functionalized Fullerenes and Carbon Nanotubes in Biomedicine
T. Da Ros
- 1245 Endohedral Metallofullerenes: A New Diagnostic and Therapeutic "Theranostic" Platform for Biomedical Applications
H. C. Dorn, J. Zhang, M. Shultz, and J. Wilson
- 1246 (Invited) Functionalized Fullerenes for Breast Cancer Imaging and Therapy
V. Krishna, A. Qin, A. Georgieva, G. Zhou, H. Zeng, G. Walter, B. Koopman, S. Grobmyer, and B. Moudgil
- 1247 Decacationic [70]Fullerene Approach for Efficient Photokilling of Infectious Bacteria and Cancer Cells
L. Chiang and M. Hamblin
- 1248 Electrochemically Generated Highly Fluorescent Graphene Quantum Dots as a Biological Label for Stem Cells
L. Fan and M. Zhang
- 1249 Chromatographic Separation of Highly Soluble Nanodiamond Prepared by Polyglycerol Grafting
N. Komatsu, L. Zhao, and T. Takimoto

H7 - Porphyrins and Supramolecular Assemblies

Fullerenes, Nanotubes, and Carbon Nanostructures, Sensor

- 1250 Rigid and Flexible Bis-Porphyrinic Tweezers: Efficient Molecular Recognition of Bidentate Bases
R. Rein and N. Solladie
- 1251 Influence of Surface Defects on Porphyrin Adsorption and Self-Assembly on Graphite: A Theoretical Analysis
M. Bassioux, E. Alvarez-Zauco, and V. A. Basiuk
- 1252 Nanometer-Sized Reactor---A Porphyrin-Based Model System for Anion Species
Y. Li, H. Liu, and Y. Li
- 1253 Porphyrin-based CuAAC Coupled Layer-by-Layer Molecular Multilayers on Gold (111) Electrodes for Electro-optical Applications
A. Krawicz and P. Dinolfo
- 1254 (Invited) Chemical Synthesis in Solution and Porphyrin Nanostructures on Surfaces - Similar Concepts, Different Results
M. O. Senge
- 1255 (Invited) Molecular Organization and Conductivity in Self-Assembled Binary Porphyrin Nanostructures
U. Mazur and K. Hipps

- 1256 (Invited) Functional Supramolecular and Nano-Scaled Systems and Micro-Scaled Chiral Materials
V. Borovkov, T. Osawa, S. Ikeda, T. Kitamura, and Y. Inoue
- 1257 (Invited) Self-Quenched, Self-Assembled Pyropheophorbide-Phospholipid Nanovesicles for Theranostic Applications
J. F. Lovell
- 1258 (Invited) Single Molecular Electronics for Functionality Emergence
T. Ogawa, H. Tanaka, D. Tanaka, S. Gohda, and T. Inose
- 1259 (Invited) DNA as a Supramolecular Scaffold for Porphyrin and Metal Complex Assemblies
E. Stulz
- 1260 (Invited) Supramolecular Inclusion Complexes of Cyclic Zn-Bisporphyrins with Fullerenes: Structural and Thermodynamic Characterization
P. Ballester
- 1261 (Invited) A Charge Transfer Challenge - Combining Fullerenes and Metalloporphyrins in Aqueous Environments
D. M. Guldi
- 1262 (Invited) Supramolecular Systems of Oxoporphyrinogens, Porphyrins and Fullerenes
J. P. Hill, F. Dsouza, N. Subbaiyan, Y. Xie, S. Ishihara, and K. Ariga
- 1263 (Invited) Multiporphyrin Macrocycles Using Fullerene Templates
A. Mulholland and S. J. Langford
- 1264 (Invited) Diporphyrin Nanotweezers for Discrimination of the Diameter and Handedness of Single-Walled Carbon Nanotubes
N. Komatsu
- 1265 (Invited) Use of Functionalised Carbon Nanotubes in Novel Solar Cells
J. G. Shapter
- 1266 (Invited) Tailored Assembly of Carbon Nanotubes and Graphene
S. Kim
- 1267 (Invited) Single Molecules and Molecular Aggregates Studied by Non-Contact Force Microscopy
E. Meyer, R. Pawlak, S. Kawai, and T. Glatzel
- 1268 (Invited) Enhanced Selectivity of Porphyrins-Functionalized ZnO Nanorods
Y. Sivalingam, G. Magna, E. Martinelli, R. Paolesse, and C. Di Natale
- 1269 (Invited) Charge Transport through Single Porphyrins at Interfaces
Z. Li and E. Borguet

- 1270 (Invited) Nucleotidic and Peptidic Multi-Porphyrinic Devices: When the Desired Conformation is Determined by Chiral Flexible Linkers
N. Solladie
- 1271 (Invited) Porphyrinoid Assemblies: Supramolecular Teams for Chemical Sensor Applications
S. Nardis, D. Monti, G. Pomarico, F. Mandoj, M. Stefanelli, C. Di Natale, and R. Paolesse
- 1272 (Invited) Self-assembling Porphyrins: Teaching Old Dogs New Tricks
T. S. Balaban
- 1273 (Invited) Supramolecular Assemblies Composed of Saddle-Distorted Porphyrins with Carboxyl Groups
M. Sankar, T. Ishizuka, T. Hasobe, K. Ohkubo, S. Fukuzumi, and T. Kojima
- 1274 (Invited) Polymeric Porphyrin Assemblies Driven by Molecular Recognition
T. Haino
- 1275 (Invited) Transcriptional Regulation by Heme Acting as a Signaling Molecule
S. Aono
- 1276 (Invited) Physicochemical Properties of Hemoproteins Reconstituted with Metalloporphyrinoid
T. Hayashi, A. Onoda, and K. Oohora
- 1277 (Invited) Heme Carrier Protein 1 Involves a Cancer Specific Porphyrin Accumulation
H. Matsui, T. Kaneko, and I. Hyodo
- 1278 (Invited) Structural Basis for Molecular Mechanism of Electron Transfer from Cytochrome c to Cytochrome c Oxidase
K. Ishimori
- 1279 (Invited) NMR for the Design of Cytochrome c-based Superoxide Biosensors
P. Turano
- 1280 (Invited) Electropolymerized Metalloporphyrins as Catalysts for the Reduction of Oxygen
S. Swavey
- 1281 (Invited) Designing Space Around π -Conjugated Molecules
K. Sugiyasu
- 1282 (Invited) Phthalocyanine-Perylenebisimide Multifunctional Arrays in Energy and Electron Transfer Systems
F. Fernández-Lázaro, V. Blas-Ferrando, N. Zink, L. Martin-Gomis, J. Ortiz, K. Ohkubo, S. Fukuzumi, and A. Sastre-Santos
- 1283 (Invited) Catalytic Two-Electron Reduction of Dioxygen with a Cobalt(II) Chlorin
S. Fukuzumi, K. Mase, and K. Ohkubo

- 1284 (Invited) Self-Assembled Light-Harvesting Diphenylalanine Porphyrin for Mimicking Natural Photosynthesis
A. G. Coutsolelos, E. Kasotakis, G. Charalambidis, A. Mitraki, and T. S. Balaban
- 1285 (Invited) Modulation of Triplet Emissivity in Pt Porphyrin - Rhodamine Dyads by Weak Magnetic Fields
T. Mani, D. Niedzwiedzki, and S. Vinogradov
- 1286 (Invited) Photoinduced Electron Transfer Processes of Supramolecular Donor-Acceptor Systems: Toward Solar Energy Harvesting Systems
M. E. El-Khouly and S. Fukuzumi
- 1287 (Invited) Synthesis of Subphthalocyanine pi-Complexes
E. Caballero, M. Rodríguez-Morgade, J. Fernández-Ariza, I. Sanchez-Molina, C. Claessens, J. Sessler, and T. Torres
- 1288 (Invited) Tuning the Electrochemical Redox Potential of Manganese(III) Corroles for Optimal Decomposition of Reactive Oxygen and Nitrogen Species (ROS/RNS)
Z. Gross
- 1289 (Invited) Electroreduction of Iron and Free-Base Nitrocorroles in Non-Aqueous Media
K. M. Kadish, M. Manowong, P. Chen, X. Xiao, R. Paolesse, G. Pomarico, S. Nardis, M. Stefanelli, L. Tortora, F. Fronczek, and K. Smith
- 1290 (Invited) Synthesis, Characterization and Optical Properties of Pyrene-Dendronized Porphyrins
E. Rivera Garcia, N. Solladie, J. Duhamel, R. Rein, G. Zaragoza-Galán, and M. Fowler
- 1291 (Invited) Porphyrins and Macrocycles: From Basics to Applications
H. Kasai, T. Nguyen, and M. Escano
- 1292 (Invited) Porphyrinic Metal-Organic Frameworks: Materials Design, Synthetic Strategies, and Emerging Applications
W. Choe
- 1293 (Invited) Electrochemical, Spectroelectrochemical and Protonation Studies of Planar and Nonplanar Free Base Porphyrins
P. Bhyrappa, Y. Fang, and K. M. Kadish
- 1294 (Invited) Spectroelectrochemical Characterization of Singly and Doubly Oxidized Free-base Porphyrins
Z. Fu, P. Chen, and K. M. Kadish

H8 - Nanostructures for Energy Conversion

Fullerenes, Nanotubes, and Carbon Nanostructures, Energy Technology

- 1295 Plasmon-Enhanced Water Oxidation on Gold Nanostructured TiO₂ Single Crystal Substrates
H. Misawa, Y. Nishijima, K. Ueno, K. Murakoshi, and H. Inoue
- 1296 (Invited) Electrochemical Synthesis of Nanocarbon
S. Yasuda and K. Murakoshi
- 1297 (Invited) Charge Separation in Type-II Semiconductor Heterodimers Formed by Anion Exchange Reaction
T. Teranishi
- 1298 (Invited) Gap-Mode Plasmon Enhancement of Photocurrent Generation at Organic Monolayer-Modified Metal Electrodes
K. Ikeda and K. Uosaki
- 1299 (Invited) Micro-to-Nanostructures to Probe Electrocatalysts by SERS
I. Yagi, K. Inokuma, and N. Ohta
- 1300 (Invited) Photosensitization of ZnO Nanorod Electrodes with ZnS-AgInS₂ Solid Solution Nanoparticles
T. Torimoto, T. Sasamura, K. Okazaki, A. Kudo, and S. Kuwabata
- 1301 (Invited) Spectroscopic Properties of Au-Ag Core-Shell Nanorods and Their Redox Reactions
Y. Niidome, Y. Tsuru, A. Kiya, Y. Hamasaki, and N. Nakashima
- 1302 (Invited) Fabrication of Porous Hollow Spheres of Metal Oxide by Anodization of Small Metal Particles
H. Masuda, T. Yanagishita, T. Kondo, and K. Nishio
- 1303 (Invited) Linker Length Dependence of Photoinduced Electron Injection and Recombination Between MK-Dyes and TiO₂ Nanocrystalline Film
A. Furube, K. Sunahara, R. Katoh, X. Zhang, N. Koumura, K. Hara, and M. Tachiya
- 1304 (Invited) Enhancement of Dye-Sensitized Photocurrents by TiO₂-Coated Gold Nanoparticles
T. Tatsuma, T. Kawawaki, and Y. Takahashi
- 1305 Photoelectrochemical Hydrogen Evolution and Reduction of Carbon Dioxide at p-Si(111) modified by Molecular Layer with Metal Complexes
K. Uosaki, T. Masuda, Y. Sun, H. Fukumitsu, S. Takakusagi, T. Kondo, W. Chun, and K. Asakura
- 1306 (Invited) Nanostructured Semiconductor Materials for Solar Energy Conversion
Z. Lin and X. Xin

- 1307 (Invited) Simple Construction of Near Unity Photon-to-Electron Conversion Efficiency Performing Photoelectrochemical Cells Built on Porphyrins Electrostatically Stacked onto Nanocrystalline SnO₂ Surface
N. Subbaiyan and F. D'Souza
- 1308 (Invited) Semiconductor Nanowires for Solar Fuels
M. K. Sunkara, H. Russell, C. Pendyala, J. Jasinski, and J. Kim
- 1309 (Invited) Strategies to Design High Efficiency Quantum Dot Sensitized Solar Cells
P. Kamat, J. Radich, and P. Santra
- 1310 (Invited) Design and Characterization of Novel Ruthenium and Porphyrin Sensitizers for Highly Efficient Dye-Sensitized Solar Cells
E. W. Diau
- 1311 Desirable Hole-Conducting Coadsorbents for Highly Efficient Dye-Sensitized Solar Cells through an Organic Redox Cascade Strategy
I. Choi, S. Kim, B. Song, K. Seo, M. Kang, M. Ju, and H. Kim
- 1312 Enhanced Electrochemical Performance of Si-Nanowires in Fluorinated Carbonate Electrolytes: A Surface Chemical Investigation
V. Etacheri, O. Haik, Y. Goffer, G. Roberts, I. Stefan, R. Fasching, and D. Aurbach
- 1313 Improved Photoelectrochemical Properties and Ultrafast Charge Carrier Dynamics of Sensitized and Chemically Modified Metal Oxide Nanowire Arrays
J. Z. Zhang, Y. Li, G. Wang, Y. Ling, D. Wheeler, H. Wang, and R. Fitzmorris
- 1314 Novel Core/Shell Ni@NiO/Pt as High Efficient Electrocatalyst for Alkaline Direct Ethanol Fuel Cells
M. Hasan and K. Razeeb
- 1315 Specific Surface Energy and Shape Stability of Face Centered Cubic Elemental Solids as a Function of Size
P. Parthasarathy and A. Virkar
- 1316 Cathode Catalyst Degradation in Proton Exchange Membrane Fuel Cells
P. Parthasarathy and A. Virkar
- 1317 Hierarchically ZnO Nano Crystalline Aggregates Synthesized Through an Inter-Phase Precipitation Method and Application in Dye-Sensitized Solar Cells
R. Gao, L. Wang, Q. Zhang, and G. Cao
- 1318 Water Diffusion and Dissociation on Metal Defect Sites, Density Functional Theory Study
L. Arnadóttir
- 1319 Photoelectrooxidation of Water on Hematite Thin Films
I. Herrmann-Geppert, P. Bogdanoff, and S. Fiechter

- 1320 Graphene Aerogels as a Highly Effective Counter Electrode Material for Dye- Sensitized Solar Cells
W. Cheng, C. Wang, and S. Lu
- 1321 Potential and Limit of Cobalt and Nickel Complex Catalysts in Photoelectrochemical Water Oxidation of Oxide Semiconductors
T. Jeon, S. Choi, H. Jeong, and H. Park
- 1322 Electrochemical Electron and Hole Potentials in Illuminated Niobate and Titanate Nanocrystal Water Splitting Photocatalysts
J. Zhao, R. Chamousis, and F. Osterloh
- 1323 Surface, Optical, and Photoelectrochemical Properties of CdSe Coated TiO₂ Nanotube Arrays Synthesized Using a One-Pot Solvothermal Process
B. Mukherjee, Y. Smith, and V. (. Subramanian
- 1324 Metal Nanoparticle Aerogels and Their Applications
A. Eychmüller, W. Liu, A. Herrmann, N. Gaponik, and N. Bigall
- 1325 Synthesis of Extremely Small Bimetallic Pt-Pd Nanoparticles Colloids and Their Catalytic Properties in the Oxygen Reduction Reaction
P. Laurent, S. Donet, C. Thieuleux, and C. Copéret
- 1326 Clean Energy Generation and Storage Using Few Layered Graphene (FLG) Nanoflakes: Studies of Oxygen Reduction Reaction and Supercapacitor Behavior
N. Soin, S. Sinh Roy, S. Mitra, T. Thundat, and J. McLaughlin
- 1327 TiO₂ Nanotubes as Catalyst Support for PEM Fuel Cells
F. J. Nores Pondal, M. Al-Hoshan, and N. Guillet
- 1328 Photoelectrochemical Hydrogen Generation: Effect of Photocatalyst Dispersion
D. Bruce and D. Wilkinson
- 1329 Structure and Surfaces of Pt-Fe Catalytic Nanoparticles from Quantitative Aberration Corrected Transmission Electron Microscopy
M. Chan, F. Nan, L. Chen, C. Bock, and G. Botton
- 1330 Nanostructured Composite Electrode based on Hydrous Manganese Oxide and Mesoporous Carbon for Electrochemical Supercapacitor: Synthesis, Morphology and Electrochemical Characterization
P. M. Le, T. Ha, T. Nguyen, L. Huynh, T. Lam, V. Tran, and T. Nguyen
- 1331 Bimetallic Platinum-Iron Nano-electrocatalyst Supported on Carbon Fiber for Coal Electrooxidation to Produce Hydrogen
P. Yu and G. Botte
- 1332 Green Co-Reduction Synthesis Method of PtRu-Graphene Electrocatalysts for DMFCs Applications
V. Bhaghavathi Parambath, R. Nagar, K. Sethupathi, and R. Sundara

- 1333 Electrodeposition of CoS Counter Electrodes for Dye-Sensitized Solar Cells by a Potential Reversal Technique
Y. Tsai, J. Liao, C. Wan, and J. Lin
- 1334 Field Emission Properties and Aggregates of Inorganic/Organic Charge Transfer Complexes
H. Liu, Y. Li, and Y. Li
- 1335 Self-Assembled Porphyrins on Modified Zinc Oxide Nanorods: Development of Model Systems for Inorganic-Organic Semiconductor Interface Studies
H. Saarenpää, E. Sariola-Leikas, A. Pyykkinen, J. Kontio, A. Efimov, H. Hayashi, H. Lipsanen, H. Imahori, H. Lemmetyinen, and N. Tkachenko
- 1336 Graphite Nanofiber Composite Supported Electrical Conductivity for LiFePO₄ Cathode Material
W. Wang, E. Jin, and H. Gu
- 1337 New Fabrication of Dye-Sensitized Solar Cells with Community of Electrolyte and Pt Counter Electrode
X. Zhao, E. Jin, and H. Gu
- 1338 Cyclic Voltammogram of Au-Ag Core-Shell Nanorods on an ITO Plate and Their Optical Properties
Y. Hamasaki, Y. Tsuru, A. Kiya, N. Nakashima, and Y. Niidome
- 1339 Wavelength Conversion Lanthanide Materials for Highly Efficient Dye-Sensitized Solar Cells
Y. Eom, J. Oh, M. Ju, and H. Kim
- 1340 Ordered Polymer Electrolytes with Grafted Core-Shell Au- γ -Fe₂O₃ Nanoparticles
K. Shvartsman, D. Golodnitsky, Y. Lareah, L. Burstein, and E. Peled
- 1341 Architecture and Properties of Molecular Heterostructures and Materials
Y. Li, H. Liu, and Y. Li
- 1342 Effect on the recombination of the Dye-Sensitized Solar Cells
E. Jin, A. Park, X. Zhao, and H. Gu
- 1343 Obtaining and Characterization of 3YSZ+8YSZ Mixtures for SOFC Electrolyte
C. Ilea, H. Tikkanen, and E. Dorolti
- 1344 Improve the Electronic Conductivity of Lithium Batteries by Adding Poly (sodium 4-styrenesulfonate) and MWCNT
H. V. Nguyen, E. Jin, and H. Gu
- 1345 Electrochemical Fabrication of Ni Core-CdSe Shell Nanowire Arrays for Photovoltaic Application
F. Kang, Q. Li, and X. Xiao

- 1346 Composite-type Hybrid Photoelectrodes for Dye-Sensitized Solar Cells with Plastic Substrates
M. Ko, K. Yoo, and J. Kim

H9 - Chemistry and Physics of Graphene and 2D Nanostructures

Fullerenes, Nanotubes, and Carbon Nanostructures, Energy Technology

- 1347 (Invited) Preparation and Application of Chemically Functionalized Graphene
M. C. Hersam
- 1348 (Invited) Stimuli-Responsive Polymer Covalent Functionalization of Graphene Oxide by Ce(IV)-Induced Redox Polymerization
B. Wang, Y. Deng, D. Yang, J. Hu, X. Huang, and J. Z. Zhang
- 1349 Capture Store and Discharge of Electrons in Graphene Based Assemblies
P. Kamat, I. Lightcap, and S. Krishnamurthy
- 1350 Theoretical Investigation of the Li-Oxygen Reduction and Redox Activity of Model Carbon Structures
Y. Xu, G. Dathar, and W. A. Shelton
- 1351 Study of H, O and C Adatoms Surface Diffusion on Graphene by Computer Simulation
V. I. Gorbenko
- 1352 Fabrication of Graphene Thin Films Based on Layer-by-Layer Self-Assembly of Functionalized Graphene Nanosheets
J. Park, J. Park, C. Chung, and P. Yoo
- 1353 Theoretical Study of Single and Bilayer Graphene Nanoribbons Photodetectors
M. Moradinasab, H. Nematian, M. Pourfath, M. Fathipour, and H. Kosina
- 1354 Chemically Functionalized One- and Two-dimensional Carbon-Based Nanostructures for the Development of Effective Nanobiocatalytic Systems
T. Tsoufis, I. Pavlidis, T. Vorhaben, U. Bornscheuer, D. Gournis, H. Stamatis, and P. Rudolf
- 1355 Functionalization of Graphene Sheets
M. Prato
- 1356 Cyclically Functionalized Graphene Nanoribbons
R. C. Haddon
- 1357 (Invited) Doping and Intercalation of Graphene using Electrolyte Gate
D. Efetov and P. Kim
- 1358 (Invited) Interfacial Engineering of Organic Nanofibril Heterojunctions into Highly Photoconductive Materials and Beyond
H. Huang, Y. Che, L. Li, M. Xu, B. Bunes, X. Yang, and L. Zang

- 1359 (Invited) A Novel Route Towards the Formation of Hybrid Materials Consisting of Graphene and Iron Oxide Nanoparticles
T. Tsoufis, Z. Syrgiannis, M. Karakassides, D. Gournis, M. Prato, and P. Rudolf
- 1360 Facile Synthesis of Graphene/Metal Nanocomposite via Self-Catalysis Reduction at Room Temperature and Its Catalytic Application
Q. Zhuo, J. Gao, Y. Ma, and X. Sun
- 1361 Atomic Resolution Characterization of Sub-Nanometer Pt Clusters on Nitrogen-Doped Graphene
S. Stambula, N. Gauquelin, S. Gorantla, S. Turner, S. Sun, X. Sun, and G. Botton
- 1362 Synthesis of Large Sized Graphene Sheets Using Ultrasound
K. Vinodgopal, D. Taylor, K. Le, A. Sapkota, and N. Salleh
- 1363 Synthesis of Soluble Graphene
E. Billups, A. Mukherjee, Y. Sun, and O. Kuznetsov
- 1364 Synthesis and Patterning of Laser Converted Graphene for Flexible Energy Storage Devices
M. El-Kady, V. Strong, S. Dubin, J. Wassei, J. Torres, and R. Kaner
- 1365 Assembly of Graphene-Based Two-Dimensional Nanosheets
X. Feng
- 1366 (Invited) Topological Band Theory in Twisted Multilayer Graphene
E. J. Mele
- 1367 (Invited) QED Kapitza Conductance of Graphene
A. Petrov and S. Rotkin
- 1368 Photoelectron Spectroscopy Studies of Plasma-Treated Graphene
S. D. Sherpa, G. Levitin, and D. W. Hess
- 1369 Graphene Edges: The Origin of Electronic, Chemical and Magnetic Activities
T. Enoki
- 1370 Electrical and Optical Properties of Transferable and Dispersible Graphene Nanostructures of Controlled Structure
V. Berry
- 1371 Characterization of Few-layer Graphene (FLG) starting with Pristine Graphite via Wet Chemical Functionalization
S. Malik, C. Liebscher, G. Kostakis, D. Wang, S. Potratz, C. Balaban, and T. S. Balaban
- 1372 Transient Absorption Microscopic Study of Carbon Nanostructures
L. Huang, B. Gao, and G. Hartland

- 1373 (Invited) Graphene PN Junctions
J. Lee
- 1374 Enhancing Raman Signals with Micron-Scale Graphene-Coated Plasmonic Structures
A. Banerjee and H. Grebel
- 1375 Toward Atomic Spintronics via Organometallic Complexes of Graphene
A. Popov, S. Avdoshenko, I. Ioffe, G. Cuniberti, and L. Dunsch

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

- 1376 Chemical and Structural Influences on the Electrochemical Reactivity of Uranium Dioxide Nuclear Fuel
H. He, K. O'Neil, J. J. Noel, O. Semenikhin, and D. Shoesmith
- 1377 Electrochemical Assessment of Aqueous Lead Contamination in Golden Triangle Area
J. A. Gomes, G. Graham, D. Couch, A. Nahid, M. H. Mazumdar, S. Shukla, and K. Urbanczyk
- 1378 Controlled Magneto-Electrochemical Generation of Ni Nano Particles
N. Ijaz, T. Hussain, and R. Jamil
- 1379 Electrochemical Studies of the Kinetics and Mechanism of Aqueous Iron Hydrolysis Reactions in Mine Water Solutions
M. A. Ashtewi and B. Horrocks
- 1380 Effect of Cyanide Release on the Electrocrystallization of Au-Cu Alloys Prepared from an Alkaline Cyanide Bath
E. Brun, F. Durut, R. Botrel, M. Theobald, O. Legaie, and V. Vignal
- 1381 Rapid Small Feature Cu Filling: Implications for "Bottom-up" Deposition Models
R. O. Miller, C. Schieffer, C. Thambidurai, and J. Klocke
- 1382 Electrochemical Behavior of Cerium in the 1-butyl-3-methylpyrrolidinium Bis(trifluoromethyl)sulfonyl-imide Ionic Liquid Containing Chloride
L. Chou and C. Hussey
- 1383 Electrochemical Behavior of Europium (III)/(II) in the 1-(1-butyl)trimethylammonium bis(trifluoro-methylsulfonyl)imide Ionic Liquid Containing TODGA
Y. Pan and C. Hussey
- 1384 Bitrex: A new Levelling Agent for Copper
J. F. Cooper and C. H. Barnes
- 1385 Modeling Non Equilibrium Potentiometry and Electrochemical Impedance by NPP Model
A. Lewenstam, T. Sokalski, J. Jasielec, P. Lingenfelter, B. Grysakowski, B. Wierzba, R. Filipek, and M. Danielewski

- 1386 The Effect of Specific Adsorption of Cations and Their Size on the Charge-Compensation Mechanism in Carbon Micropores: The Role of Anion Desorption
M. Levi, S. sigalov, G. Salitra, and D. Aurbach
- 1387 Hydrogen Sorption Properties of Bare and Rhodium-capped Palladium Multilayers Grown via Surface Limited Redox Replacement (SLRR) Reactions
L. B. Sheridan, D. Gebregziabihier, J. Stickney, and D. B. Robinson
- 1388 Finite-Element Computer Simulations on Cyclic Voltammograms Measured at Recessed Nanodisk-Array Electrodes
T. Ito and K. Tran Ba
- 1389 The Role of OH Radicals in Oxidation Reactions at BDD
S. Ernst, S. Ayata, A. Stefanova, and H. Baltruschat
- 1390 Comparison of the Interfacial Kinetics of the Reaction of Bromide and Iodide Anions with Silver Oxide on a Silver Substrate
S. Pretty, J. J. Noel, and J. Wren
- 1391 Increasing the Catalytic Activity of Surface-Confined Copper Phenanthrolines for ORR by Shifting the Cu(II)/(I) Formal Potential of the Catalyst to More Positive Values
R. Venegas, J. Silva, and J. H. Zagal
- 1392 Nano-Particle Adhesion in PEM Fuel Cell Electrodes
Q. He, D. C. Joy, and D. J. Keffer
- 1393 Tungsten Carbide and Vanadium Carbide Derived Carbons as a Possible Catalyst Supports for PEMFC
E. Härk, K. Vaarmets, J. Nerut, R. Jäger, S. Sepp, P. Valk, and E. Lust
- 1394 The Oxygen Evolution Reaction at Hydrous Iron Oxide Films in Base: Kinetics and Mechanism
R. Doyle and M. Lyons
- 1395 Redox Switching and Oxygen Evolution at Hydrous Nickel Oxide Films in Aqueous Alkaline Solution
M. O'Brien, L. Russell, I. Godwin, R. Doyle, and M. Lyons
- 1396 Tailored Carbon Nanofibers for High-Rate Supercapacitor Applications
M. dela Cruz, N. Nijem, E. Perez, Y. Chabal, K. Balkus Jr, and J. P. Ferraris
- 1397 Optical Observation of Li Dendrite Growth in Ionic Liquid
T. Nishida, K. Nishikawa, T. Homma, and Y. Fukunaka
- 1398 Development and Applications of a Micro-Scale pH Probe for Localized pH Measurements with Scanning Ion-Conductance Microscopy
C. A. Morris, C. Chen, and L. Baker

- 1399 Water-Soluble Monolayer Protected Clusters as Redox Mediators in Scanning Electrochemical Microscopy
J. C. Tuberquia, R. Peterson, D. Crisostomo, and D. E. Cliffel
- 1400 Bringing Multianalyte Electrochemistry to Pharma
D. E. Cliffel and D. Kimmel
- 1401 Insights into the Molecular Mechanisms of Heterogeneous Electron Transfer between Multicopper Oxidases and Graphite Electrodes
F. tasca, C. Kjaergaard, N. Mano, and E. Solomon
- 1402 High Temporal Resolution Bio-Sensing Using Nitrogen-Incorporated Nanodiamond Ultra-Microelectrode Array by Fast Scan Cyclic Voltammetry
S. Raina, W. P. Kang, J. Davidson, and J. Huang
- 1403 Development of Biosensors for the Detection of Organophosphates in Waterways
J. Crumbley, E. Cho, and A. H. Suroviec
- 1404 Electrochemiluminescent (ECL) Microfluidic Array for Protein Cancer Biomarkers Using Single-Wall Carbon Nanotube Forests and $[\text{Ru}-(\text{bpy})_3]^{2+}$ -Doped Silica Nanoparticles
N. P. Sardesai, J. Barron, and J. F. Rusling
- 1405 Electrocatalytic Oxidation of NADH Using Alizarin Immobilized Carbon Nanotube Modified Electrode
S. Puchakayala and S. Annamalai
- 1406 Soft Microelectrode Arrays as SECM Probes for Biological Samples
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- 1407 Characterize Cell Function Using SECM-SICM
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- 1412 Nanocomposite Coatings Based on the Conductive Polymers and Functionalized Carbon Nanotubes
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- 1422 A DNA-Nickel Complex Based Fuel Cell for Deep Oxidation of Various Fuels
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- 1423 Progress Towards the Development of Deoxyribozyme-Based Biofuel Cells
M. Zhang, I. Emahi, C. Entrinken, D. Bhatnagar, D. Nightingale, and D. A. Baum
- 1424 Photosystem I Deposition on Electrode Surfaces Towards Solar H₂ Production in the Field
D. R. Baker, A. Manocchi, S. Pendley, J. Sumner, M. Hurley, K. Xu, B. Bruce, K. Nguyen, T. Zhu, and C. Lundgren
- 1425 Photo-electrochemical Activity of Thylakoids on Carbon Nanotube Modified Electrodes
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- 1426 Utilizing Natural and Synthetic Metabolic Pathways for Deep Oxidation of Biofuels in Enzymatic Biofuel Cells
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- 1427 Minimal Enzyme Cascade for Oxidation of Glucose to Carbon Dioxide at the Anode: Importance of Promiscuous Enzymes
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- 1428 Effective Immobilization of Biomolecules onto Bioanode for a Reusable Biofuel Cell
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- 1429 Redox Potential Tuning of the Small Multicopper Oxidase from *Streptomyces Coelicolor*
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L. Pelster, M. Meredith, and S. D. Minteer
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H. Beyenal and J. Babauta
- 1439 A Dual Extracellular Electron Transfer Mechanism Biofilm Model
R. S. Renslow, J. Babauta, J. O. Schenk, C. Ivory, and H. Beyenal

- 1440 pH and Redox Potential Variations in an Anodic Biofilm Located in a Three-Electrode Bioreactor and a Microbial Fuel Cell
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- 1442 Use of Interdigitated Microelectrode Arrays (IDAs) to Investigate Extracellular Electron Transport Through *Geobacter Sulfurreducens* Biofilms
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- 1477 Highly Active and Durable Pt/Graphene Electrocatalysts for Fuel Cells
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- 1481 Impact of the Various Catalysts (Pt, Pt-Ru) Deposited onto Carbon Support to the Slow Oxygen Reduction Reaction Kinetics
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- 1482 Direct Four-Electron Oxygen Reduction Reaction on Core-Shell Nano-Structured Pt-Pb Catalysts
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- 1484 Effective Use of Catalysts in Low Temperature Fuel Cells
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- 1492 Rutile-Phased Nb-Doped TiO₂ and Its Supported Pt Electrocatalysts for PEM Fuel Cell Oxygen Reduction
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- 1500 Electrochemical Properties of CoTMPP/C Prepared with Various Methods as Catalyst for Oxygen Reduction Reaction
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- 1501 Ultra-Low Platinum Electrocatalyst for Oxygen Reduction Reaction in Acidic Media
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- 1503 Synthesis Iridium Nanodendrites Catalyst for Oxygen Evolution Reaction
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- 1511 Development and Study of Tantalum and Niobium Carbides as Catalyst Supports for the Oxygen Evolution Reaction (OER) for PEM Water Electrolysis at Elevated Temperatures
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- 1523 Stability of Transition Metal Compounds for Oxygen Electrode Reaction in Sulfuric Acid
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- 1564 Probing the Molecular Structure of Electrode–Electrolyte Interfaces with Broadband Sum-Frequency Generation
B. Braunschweig, R. Kutz, P. Mukherjee, D. D. Dlott, and A. Wieckowski
- 1565 Ultra-broadband Vibrational Sum-Frequency Spectroscopy of OH Groups at a Charged Mineral/Aqueous Interface
O. Isaienko, S. Nihonyanagi, D. Sil, and E. Borguet
- 1566 Comparative Study on the Reaction Intermediates of Ethanol Electro-Oxidation Over Pt Probed by FTIR and SFG Spectroscopies
J. Fernandes Gomes, G. Tremiliosi-Filho, K. Bergamaski, and P. Barbeitas Miranda
- 1567 A Combined In Situ Spectroelectrochemical NMR and IR Investigations of Ru@Pt and Au@Pt Nanoparticles
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- 1569 IR Analysis of Polymer Electrolytes Using a "Color-coded" Coordinate Subset Representation of Functional Groups
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- 1570 In-situ Infrared Spectroscopy at Solid-Liquid Interfaces as a Tool for Evaluation of Nanoscale Surface Morphology
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- 1571 Interfacial Water Structure at the Aqueous Salt-Fused Silica Interface
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- 1572 The Electrochemistry of Hydroxylamine on Au and Pd@Au Surfaces: Electrochemical and In Situ Spectroscopic Studies
A. Jacob Jebaraj, D. Godoi, and D. Scherson
- 1573 Competitive and Co-Adsorption of Additives for Cu Electrodeposition Investigated by SEIRAS
G. Liu, S. Zou, L. Richter, and T. Moffat
- 1574 In Situ XAS and IRRAS of Platinum Monolayer Fuel Cell Electrocatalysts
M. Li, K. Sasaki, M. B. Vukmirovic, and R. R. Adzic
- 1575 In-operando study of PEM Fuel Cells using Ambient Pressure Photoemission
H. G. Sanchez Casalongue, S. Kaya, H. Ogasawara, S. Cho, D. Miller, D. Friebe, and A. Nilsson
- 1576 Study of Electrode Surface Dynamics Using Coherent Surface X-ray Scattering
M. Pierce, V. Komanicky, A. Barbour, C. Zhu, and H. You
- 1577 In Situ and Operando Site Specific Surface Probe Using Synchrotron XANES for Investigating Ensemble and Morphology Effects in Electrocatalysis
S. Mukerjee, D. Ramaker, N. Ramaswamy, B. Shyam, and Q. Jia

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- 1578 Investigation of Artfactual Impedance in High Frequency Range by Highly Resistive Reference Electrode
K. Kasahara, I. Shitanda, and M. Itagaki
- 1579 Characterization of Cathode Material/Current Collector Interface of Li-ion Rechargeable Battery by Electrochemical Impedance Spectroscopy
T. Kawaguchi, I. Shitanda, M. Itagaki, Y. Hongawa, and Y. Kojima
- 1580 Investigating the Effect of Accelerated Catalyst Durability Tests on PEM Fuel Cell Performance Using Electrochemical Impedance Spectroscopy
G. DiLeo, R. Yadav, N. Dale, and K. Adjemian
- 1581 Electrochemical Impedance Study of Direct Electron Transfer Type Enzymes Immobilized on Carbon Cryogel
H. Yanai, I. Shitanda, M. Itagaki, and S. Tsujimura
- 1582 Dynamic and Coverage Effects in EIS
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- 1583 Interpretation of Dielectric Properties for Materials showing Constant-Phase Element (CPE) Impedance Response
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- 1584 Derivation of Impedance Spectra out of Time Domain Data
D. Klotz, J. Schmidt, M. Schönleber, and E. Ivers-Tiffée
- 1585 Wavelet Transformation to Determine Impedance Spectra of Energy Conversion Devices
M. Itagaki, T. Saito, and I. Shitanda
- 1586 Multi-Sine EIS- Drift and Non Linearity Effects
S. Ramanathan and V. Ramani
- 1587 Linear Potential Scan vs. Impedance for Charge Transfer Resistance
P. Vanysek
- 1588 Optical Impedance Spectroscopy as a New Characterization Method for Electrochromic Windows
D. Manka, C. Schiller, A. Weber, and E. Ivers-Tiffée
- 1589 Electrolyte Ion Adsorption at the Hematite/Water Interface: Cryogenic x-ray Photoelectron Spectroscopy and Electrochemical Impedance Studies
K. Shimizu, A. Shchukarev, and J. Boily
- 1590 EIS Study of Ion Transport Behavior and Capacitive Performance in a 3D Hierarchical Carbon with Hollow Core-Mesoporous Shell Structures
C. Yang, F. Li, and K. Chan
- 1591 1D and 2D Simulation of Impedances in an Anode-Supported SOFC
H. O. Finklea, X. Chen, I. Celik, S. R. Pakalapati, K. Gerdes, and Y. Chen
- 1592 Investigation of Hydrogen Adsorption at Stepped Single Crystal Platinum by EIS: The Effect of Site Confinement
C. Molls, M. Walter, and H. Baltruschat
- 1593 Oxidation of Small Organic Molecules by Dynamic Electrochemical Impedance Spectroscopy
P. Dahlstrøm, F. Seland, and D. A. Harrington
- 1594 Electrochemical Impedance Study of Open-air Type Biofuel Cell Cathode
I. Shitanda, S. Ogawa, and M. Itagaki
- 1595 In Situ Performance Analysis of a High Temperature PEM Fuel Cell Stack
Y. Zhu, W. Zhu, and B. Tatarchuk
- 1596 The French SIMCAL Research Network for Modelling of Energy Storage System Calendar Ageing in EVs and HEVs - EIS Analysis
S. Grolleau, B. Molina-Concha, A. Delaille, P. Gyan, J. Vinassa, O. Briat, A. Eddahech, R. Revel, and J. Bernard

- 1597 Electrochemical Oxidation of Zinc in Alkaline Media Studied by Real-Time Impedance Measurements
Y. Ko and S. Park

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- 1598 High-Temperature Compatible Electrodes with Various Microstructural Architectures for Electrochemical Sensor Applications
E. Ciftyurek, K. Sabolsky, and E. M. Sabolsky
- 1599 Influence of Design Parameters on Performance of Mixed Potential Sensors
C. R. Kreller, P. K. Sekhar, R. Mukundan, E. L. Brosha, and F. H. Garzon
- 1600 Substrate Effects on Electrochemical NO_x Sensor Based on Porous Y₂O₃-Stabilized ZrO₂ (YSZ) and Sr-doped LaMnO₃ (LSM)
W. L. Du Frane, L. Woo, R. Glass, R. Novak, and J. Visser
- 1601 Growth of Epitaxial Orthorhombic Tin Oxide Films on Various YSZ Substrates for Gas Sensing Applications
S. Kim, D. Kim, and S. Hong
- 1602 Printed Low Power Amperometric Gas Sensors Employing RF Energy Harvesting
M. Carter, J. Stetter, J. Smith, A. Parks, Y. Zhao, M. Findlay, and V. Patel
- 1603 Multimode Sensors - A New Concept in Sensors' Technology
R.I. Stefan-Van Staden
- 1604 Micron-Scale, Phage-Immobilized Magnetoelastic Biosensors Enabling Enhanced, Direct Detection of *Salmonella* Typhimurium on Fresh Spinach Leaves
S. Horikawa, S. Li, Y. Chai, M. Park, K. Vaglenov, D. M. Gerken, J. M. Barbaree, V. A. Petrenko, and B. A. Chin
- 1605 Integration of ZnO-based Gateless Ion-Selective Field-Effect-Transistor pH Sensors
C. Lee, Y. Chiu, S. Ho, and Y. Lee
- 1606 Electrochemical Sensors as Detectors in Flow Systems
J. F. van Staden
- 1607 Printed Amperometric Gas Sensors
M. Carter, J. Stetter, M. Findlay, and V. Patel
- 1608 Versatile In-Situ Engine Lubricant Health Sensor
F. Zhao, M. Hurley, and A. Elangovan
- 1609 *Salmonella* Typhimurium detection on Shell Eggs Using Magnetoelastic Biosensors
Y. Chai, S. Horikawa, S. Li, V. A. Petrenko, and B. A. Chin

- 1610 SnO₂/Pd Nanoparticle Chemical Sensor for Room Temperature CO Detection
N. Mariani, B. Kim, Y. Lu, and J. Li
- 1611 Magnetic Nanoparticle-Mediated Circulating Tumor Cell Separation
Z. Aguilar, H. Xu, and A. Wang
- 1612 A Ta₂O₅/Zinc-Indium-Tin-Oxide Thin Film Transistor Solar Blind Photodetector
S. Shih, C. Chiu, W. Weng, S. Chang, S. Chang, Z. Huang, and T. Tsai
- 1613 GaN MSM UV Photodetectors with an Al_{0.82}In_{0.18}N Intermediate Layer
Z. Huang, W. Weng, S. Chang, C. Chiu, and T. Tsai
- 1614 An (Al_xGa_{1-x})₂O₃Metal-Semiconductor-Metal VUV Photodetector
Y. L. Wu, W. Weng, S. Chang, Z. Huang, and C. Chiu
- 1615 Thermal Stable Structure of Green Selective Organic Photo-Diode
K. Park, S. Lim, K. Lee, D. Leem, Y. Jin, S. Lee, and K. Kim
- 1616 Reduced Graphene Oxide Field Effect Transistor for Multi-Stimuli Responsiveness
Q. Tran
- 1617 Electrodeposition of Thick SmCo Films: Influence of Current Density and Time Deposition
K. Chouarbi, M. Woytazik, E. Dufour-Gergam, E. Lefevre, and J. Moulin
- 1618 Modeling a Novel MEMS Gyroscope
N. Zarei, A. Leung, and J. D. Jones
- 1619 Third-Generation Image Sensors: Opportunities and Challenges
O. Skorka and D. Joseph
- 1620 Deposition and Characterization of FeB thin films by Electrochemical Method
H. PARK, H. Ahn, S. Kim, J. Jeong, and D. Kim
- 1621 Ta₂O₅ Solar-Blind Photodetectors
C. Chiu, W. Weng, S. Chang, G. Huang, Z. Huang, and T. Tsai
- 1622 Chemical MIS Sensor with Nanoporous Carbon Adsorbed Layer Using Deep Level Transient Spectroscopy as Sensing Method
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- 1623 Oxidation study of Ge Condensation on SGOI Nanowire Biosensor Fabrication
K. Chang, C. Chen, C. Lai, C. Wu, C. Hsieh, Y. Wang, and C. Liu
- 1624 Temperature Dependence of Polyaniline Sensors Detecting Insect Infestation
K. A. Weerakoon and B. A. Chin

- 1625 Driving Voltage for Compensating Capacitance Variation Along Sidewall in Electrowetting Microprism Arrays
E. Kim, Y. Choi, K. Choi, H. Song, J. Bae, and S. Lee
- 1626 Novel Projection Display Pixels Using Micro Vessel Structures
B. Amirsolaimani, S. Mohajerzadeh, and S. Azimi

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- 1627 Graphene Based Materials for Biosensing and Imaging
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- 1628 Nanoparticles Based Immunosensors for Detection of Biomarkers
D. Du and Y. Lin
- 1629 Surface Enhanced Raman Scattering Biosensor on Gold@Silica Core-Shell Nanoparticles
M. Li, J. Zhang, D. Ma, and N. Wu
- 1630 A Comparative Study of Aminosilanes for the Application of Reproducible, Ultralow Detection of Biomolecules
G. A. Mahmud, O. Seitz, R. Chapman, H. Stiegler, E. Vogel, and C. Yves
- 1631 Nano, Micro, and Thin Film Fluorescent Dye/Polymer Composites as in situ Oxygen Sensors for Life Sciences Research and Applications
J. W. Grate, N. Anheier, M. Warner, J. Pittman, and J. Suter
- 1632 High Performance Single In₂Se₃ Nanowire Photodetector
Q. Li, Y. Li, J. Gao, S. Wang, and X. Sun
- 1633 Non-Enzymatic Hydrogen Peroxide Sensor based on Nanostructured Metallic Array Electrodes: A Comparative Study
M. Jamal, B. Aslam, M. Hasan, A. Mathewson, and K. Razeeb
- 1634 pH Sensor Using CdSe/ZnS Quantum Dots
P. Kumar, A. Prakash, and S. Maikap
- 1635 Quantum Dots-Based Sensors for Prion
Z. Aguilar, H. Xu, J. Dixon, J. Alarcon, and A. Wang
- 1636 Nanoparticle Effects on Planar Lipid Bilayers in Silicon-Nitride Nanopores
Y. Liu, A. Negoda, Q. Zhang, G. Baker, and R. Worden
- 1637 Monitoring the Movement of Reductively Desorbed Self Assembled Monolayers via Fluorescence Microscopy
J. R. Casanova-Moreno and D. Bizzotto
- 1638 Monitoring Electrically Induced DNA "Switching" Using Fluorescence Microscopy
J. R. Casanova-Moreno and D. Bizzotto

- 1639 Functionalized Three-Dimensional Carbon Microarrays for Cancer Biomarker Detection
V. Penmatsa, R. Rahim, H. Kawarada, M. Beidaghi, and C. Wang
- 1640 Gigantic Enhancement in Signal Current Output and Room Temperature Gas Sensitivity by Using ZnO Nanowire Arrays
J. Song, W. Wang, W. Wu, and P. Yeh
- 1641 Spontaneous Growth ZnO Nanobranches Form ZnO Nanowires Humidity Sensor
C. Lai, W. Wu, and P. Yeh
- 1642 Surface Passivation Effect on SGOI Nanowire Biosensor in High Ge Fraction Fabrication
K. Chang, C. Chen, C. Lai, C. Hsieh, C. Wu, Y. Wang, and C. Liu
- 1643 Ultrahigh Sensitivity ZnO Nanosensor with Schottky Nanojunction
H. Fu, W. Wang, W. Wu, and P. Yeh

J3 - Sensors for Safety and Security

Sensor, Physical and Analytical Electrochemistry, New Technology Subcommittee

- 1644 Ionic Liquids as Electrolytes for Electrochemical Gas Sensors
P. Tschuncky
- 1645 Detection of Propylamine Using a Ni Screen-Printed Sensor
T. Shiu, W. Yuan, C. Hsu, C. Chang, and Y. Weng
- 1646 Electrochemical Gas Sensors Based Detection and Discrimination of Trace Explosives/Energetic Materials
P. K. Sekhar, E. L. Brosha, R. Mukundan, and F. H. Garzon
- 1647 Catalyst Development for Thermodynamic Based Gas Sensors Using Combinatorial Chemistry
Y. Chu, C. Pryde, C. Hurley, M. Amani, M. Platek, and O. Gregory
- 1648 Electrochemical Sensors for Detection of Biomarkers of Exposure to Pesticides and Nerve Agents
D. Du
- 1649 Prevention of Electrode Fouling Can Significantly Improve an Accuracy of Tricresyl Phosphate Detection
X. Yang, A. Zitova, J. Kirsch, J. W. Fergus, R. A. Overfelt, and A. L. Simonian
- 1650 Development of a Mitochondria-Based Electrochemical Sensor for Pesticides in Water
S. L. Maltzman and S. D. Minteer
- 1651 Towards the Design of a Breath Sensor for Acetone
N. Z. Hausmann and S. D. Minteer
- 1652 CO Gas Sensing by PdO Nanoflake Thin Film
Y. Chiang, B. Shih, S. Lin, and F. Pan

- 1653 Development of an Orthogonal Electrochemical, Fluorescent and Colorimetric Detection Mode Living Cell-Based Biosensor for Environmental Monitoring
J. C. Harper, T. Edwards, T. Savage, C. Brinker, and S. Brozik
- 1654 Humidity Tolerance of Electrochemical Hydrogen Safety Sensors Based on Yttria-Stabilized Zirconia (YSZ) and Tin-doped Indium Oxide (ITO)
L. Woo, R. Glass, E. L. Brosha, R. Mukundan, F. H. Garzon, W. Buttner, M. Post, C. Rivkin, and R. Burgess
- 1655 Preparation of Pd Thin Films and their Application in Surface Acoustic Wave Devices for Sensing Hydrogen
D. sil, A. Malhotra, O. Katz, J. Hines, and E. Borguet
- 1656 Application of Commercial Manufacturing Methods to the Fabrication of Mixed Potential Sensors for Energy, Environmental, and National Security Roles
E. L. Brosha, C. R. Kreller, P. K. Sekhar, W. Li, R. Mukundan, P. Palanisamy, and F. H. Garzon