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Meeting Abstracts —MA2017-01

231st ECS Meeting

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[684\(Invited\) Carbon and Non-Carbon Nanomaterials for Sustainable Energy](#)

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[686\(Invited\) Carbon Nanotubes from Synthesis, Assembly to Electrochemical Sensors](#)

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[687\(Invited\) Carbon-Based Nanomaterials for Bioelectronics](#)

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[688Synthesis of Carbon Nanostructures over Catalytically Active Nanoporous Gold and Cu Foams](#)

[Enkeleda Dervishi, Bryce Tappan, William L Boncher](#)

[689The Electrochemical Performance of Nitrogen-Containing Carbon Nanotubes As the Electrode Material of Supercapacitors](#)

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[690Photoluminescent Readout of Molecular Information Using Local Sites Functionalized on Single-Walled Carbon Nanotubes](#)

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[691Quantitative Analysis of Aqueous Two Phase Separation of DNA-SWCNT Hybrids](#)

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[692Carbon-Based Electrodes for High Energy Electrochemical Capacitors](#)

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[693Carbon Nanotube Reinforced Structural Composite Supercapacitors](#)

[Andrew S Westover, Eti Teblum, Deanna Schauben, Anat Yitzhak, Nitin Muralidharan, Merav Muallem, Gilbert Nessim, Cary L. Pint](#)

[694\(Invited\) Modulation of Nanotube Optical Properties By Controlling the Dielectric Environment inside of Single-Wall Carbon Nanotubes](#)

[Jochen Campo, Bea Botka, Sofie Cambre, Wouter van Werveke, Wim Wenseleers, Jeffrey A. Fagan](#)

[695\(Invited\) Quasi Phase Transition in a Single File of Water Molecules Encapsulated inside \(6,5\) Carbon Nanotubes](#)

[Sofie Cambre, Xuedan Ma, Wim Wenseleers, Stephen K. Doorn, Han Htoon](#)

[696Optical Properties of a-Sexithiophene Dyes Aggregated inside Carbon and Boron Nitride Nanotubes](#)

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[697Variance Spectroscopy Monitors the Sonication-Induced Cutting and Debundling of Single-Walled Carbon Nanotubes](#)

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[698\(Invited\) Excited-State Dynamical Studies of Positively and Negatively Charged Excitons in Polymer-Wrapped Single-Walled Carbon Nanotube Superstructures](#)

[Yusong Bai, Jean-Hubert Olivier, George Bullard, Michael J. Therien](#)

[699\(Invited\) Waveguide Integrated Electrically Driven Carbon Nanotube Light Sources](#)

[Ralph Krupke](#)

[700\(Invited\) Radiation-Hard Semiconducting Carbon Nanotube Thin-Film Complementary Circuits](#)

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[701\(Invited\) Prospects for Wavelength-Tunable Photodetectors with Carbon Nanomaterials](#)

[François Léonard](#)

[702\(Invited\) Massively Parallel, Aligned Arrays of Semiconducting Carbon Nanotubes for Realizing Field Effect Transistors with Current Density Exceeding Silicon and Gallium Arsenide](#)

[Michael S Arnold](#)

[703Smart Carbon Nanotubes Assemblies for High Throughput Filtration Devices](#)

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704 Field Deployment of Printed Carbon Nanotube Gas Sensor Arrays for Natural Gas Leak Detection

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705 (Invited) Nanoscale Imaging of Exciton Localization in Carbon Nanotubes with Far-Field Microscopy

Noémie Danné, Antoine G Godin, Hyejin Kwon, Mijin Kim, Brahim Lounis, YuHuang Wang, Laurent Cognet

706 Quantum Optical Studies on Diazonium Doped Carbon Nanotubes

Xiaowei He, Nicolai F. Hartmann, Xuedan Ma, Weilu Gao, Junichiro Kono, Jeffrey L. Blackburn, Han Htoon, Stephen K. Doorn

707 (Invited) Environmental Effects in Cryogenic Carbon Nanotube Spectroscopy

Alexander Högele

708 Multi-Modal Spectroscopic and Microscopic Characterization of Thin-Film Networks of Semiconducting Carbon Nanotubes

Andrew Crandall Jones, Nicholas M Kearns, Thomas J McDonough, Martin Zanni

709 (Invited) Ultrafast Spectroscopy of Doped Carbon Nanotubes

Tobias Hertel, Klaus Eckstein

710 Quantum Near-Field Effects in Hybrid Carbon Nanotube Systems

Igor Bondarev

711 (Invited) Optical Signatures of Carbon Nanotube Excitons Coupled to Plasmonic Nanocavities and Metallo-Dielectric Antennas

[Stefan Strauf](#)

[712\(Invited\) Non-Markovian Decoherence and Purcell Effect: How to Enlarge the Bandwidth of a Carbon Nanotube Based Single-Photon Source](#)

[Adrien Jeantet, Yannick Chassagneux, Jean-Sébastien Lauret, Théo Claude, Jakob Reichel, Christophe Voisin](#)

[713\(Invited\) Optical Bistability in Air-Suspended Carbon Nanotubes](#)

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[714\(Invited\) On the Theory of Nanotube-Graphene Crossiton: A New Class of Topological Solutions](#)

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[715Unique Architectural Fidelity of C₆₀-Decorated Flavin-Wrapped Nanotubes](#)

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[716\(Invited\) Optical and Electrical Generation of Exciton-Polaritons in Single-Walled Carbon Nanotubes](#)

[Jana Zaumseil](#)

[717\(Invited\) Single Ion Adsorption on Individual Isolated Single Walled Carbon Nanotube Field Effect Transistors](#)

[Stephen B. Cronin, Adam Bushmaker](#)

[718\(Invited\) Sensitizing Carbon Nanotube Transistors for Single Molecule Sensor Applications](#)

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B04-Endofullerenes and Carbon Nanocapsules

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[Thomas Greber](#)

[720\(Invited\) New Developments in Single Molecule Magnetism of Endohedral Metallofullerenes](#)

[Denis Krylov, Chia-Hsiang Chen, Fupin Liu, Stanislav Avdoshenko, Ariane Brandenburg, Aram Kostanyan, Thomas Greber, Alexey A. Popov](#)

[721\(Invited\) Highly Ordered Endohedral Fullerene Derivatives for an Ensemble of Controllable Qubits](#)

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[722\(Invited\) Dielectric Response and Quantum Motion of Lithium Cations Trapped inside Carbon Cages](#)

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[723\(Invited\) Modification of Lithium-Ion-Containing \[60\]Fullerene: Synthesis and Successful Preparation of Each \[5,6\]- and \[6,6\]-Isomer](#)

[Yutaka Matsuo, Hiroshi Okada, Hiroshi Ueno, Shinobu Aoyagi](#)

[724\(Invited\) Uranium Endohedrals: New Frontiers in Fullerene Chemistry](#)

[Jesse Murillo, Wenting Cai, Xingxing Zhang, Daniel Najera, Elkin L. Romero, Catalina Suarez, Alejandro J. Metta-Magana, Ning Chen, Luis Echegoyen](#)

[725\(Invited\) Actinide Endohedral Fullerenes: Uranium-Based Systems with Unique Bonding Motifs](#)

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[726\(Invited\) Single Crystal Structures, Unique Bonds, Redox Properties and Photoluminescence Activity of Actinide Endohedral Fullerenes](#)

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[727\(Invited\) High Pressure Measurements of Two Polymorphs of C₆₀2S₈](#)

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[728\(Invited\) Molecular-Scale Evidence Provides New Insights into Fullerene Formation Mechanism](#)

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[729\(Invited\) Synthesis and Structural Elucidation of Y₂C₂@C_{2n} \(2n = 86, 88 and 90\)](#)

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[730\(Invited\) Recent Crystallographic Studies of Endohedral Fullerenes](#)

[Alan L. Balch, Marilyn M. Olmstead, Xian B. Powers, Faye L. Bowles](#)

[731\(Invited\) Non-IPR Monometallic Clusterfullerenes Entrapping a Nearly Linear Metal Cyanide Cluster](#)

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[732\(Invited\) Stabilization of Giant Fullerenes C₂\(41\)-C₉₀, D₃\(85\)-C₉₂, C₁\(132\)-C₉₄, C₂\(157\)-C₉₆, C₁\(175\)-C₉₈, D₅\(450\)-C₁₀₀, C₃\(574\)-C₁₀₂ and C₂\(816\)-C₁₀₄ by Encapsulation of a Large La₂C₂ Cluster](#)

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[733\(Invited\) Use of Support-Free Amines to Isolate Larger Cage Endohedral Metallofullerenes](#)

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[Filip Uhlik, Zdenek Slanina, Takeshi Akasaka, Xing Lu](#)

[736\(Invited\) Extending the Spiral Algorithm to Non-Classical Isomers and Metallofullerenes](#)

[Li-Hua Gan, P.W. Fowler](#)

[737\(Invited\) Growth of Endohedral Metallofullerenes: The Transformation of Sc₃n@D₃-C₆₈ into Sc₃n@C₈₀](#)

[Josep M. Poblet, Laura Abella, Antonio Rodríguez-Forteza, Marc Mulet, Paul W. Dunk, Luis Echegoyen](#)

[738\(Invited\) Gas-Phase Self-Assembly of Group III-Based Nitride Clusterfullerenes By Laser Plasma Synthesis](#)

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[739\(Invited\) Efficient Fullerene-Based Electron Acceptors for Planar Perovskite Solar Cells](#)

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[740\(Invited\) Molecular Recognition and Assembly of Fullerene and Carbon-Based Materials with Biomolecules](#)

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[744 \(Invited\) Effect of Covalent Chemistry on the Electronic Structure and Properties of the Carbon Allotropes](#)

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[746 \(Invited\) Stereodivergent-at-Metal Synthesis of \[60\]Fullerene Hybrids](#)

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[749\(Invited\) Fullerene Cation-Mediated Demethylation/Cyclization to 5- and 7-Membered Cyclo\[60\]Fullerene Derivatives](#)

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[Catalina Suarez, Luis Echegoyen](#)

[752\(Invited\) Perixanthenoxanthene \(PXX\) As Molecular Dye for Fullerene-Based Reaction Centers](#)

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[753\(Invited\) Multichromophoric Perylenediimide-Silicon Phthalocyanine-C₆₀ System As an Artificial Photosynthetic Analogue](#)

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[Shunichi Fukuzumi](#)

[755\(Invited\) Electron-Donor Behavior of Carbon Nanotubes and Graphene](#)

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[756\(Invited\) Electron Donor-Nanocarbon Electron Acceptor Composites Linked with Oligophenylene Bridge](#)

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[757\(Invited\) Axially Assembled Photosynthetic Antenna-Reaction Center Mimics](#)

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[758\(Invited\) Tuning Molecular Singlet Fission – Strong Versus Weak Electronic Coupling](#)

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[Juan Luis Delgado, Nazario Martín, Silvia Collavini, Ramón Tena-Zaera, Jorge Pascual, Ivet Kosta, Rafael Sandoval-Torrientes, Inés García-Benito](#)

[761\(Invited\) High Temperature and High Magnetic Field Superconductivity in Fullerides](#)

[Kosmas Prassides](#)

[762\(Invited\) Site-Selective Covalent Patterning of Epitaxial Graphene with Periodicity at the Nanometer Scale](#)

[Rodolfo Miranda, Emilio M Perez, Fabian Calleja, Juan Jesus Navarro, Amadeo L. Vazquez de Parga](#)

[763\(Invited\) Computational Studies on Exohedral Metallofullerenes and Multiadduct C₆₀ Systems](#)

[Antonio Rodriguez-Fortea, Antonio Moreno-Vicente, Khalid Azmani, Josep M. Poble](#)

[764\(Invited\) Separation and Photophysical Properties of C₈₄ Minor Isomer D_{2d}\(I\)](#)

[Eric Booth, Sanichiro Yoshida, Yao Jin, Mandy Mitchell, Ju Chou](#)

[765\(Invited\) Excited State of Y-Nitride Clusterfullerene: Luminescence and EPR Spectroscopy Study](#)

[Denis Krylov, Michal Zalibera, Sandra Schiemenz, Frank Ziegls, Marco Rosenkranz, Anton Savitsky, Alexey A. Popov](#)

[766\(Invited\) Endohedral Metallofullerene-Based Lewis Acid-Base Pairs](#)

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[Nataliya Samoylova, Steven Stevenson, Fupin Liu, Alexey A. Popov](#)

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[Christoforos Panteli, Oleksiy Sydoruk, Kristel Fobelets](#)

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[777Novel Lead-Graphene Positive Grids for a Motive Power Lead-Acid Battery](#)

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[783 Comparison of Graphene Materials for Supercapacitor Electrodes](#)

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790[Tuning the Optical Band Gap of Graphene Oxide By Ozone Treatment](#)

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791[Investigating Properties of Graphene Oxide As a Drug Delivery/Imaging Platform](#)

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792(a href="#">Invited) Fundamentals of Oxo-Functionalized Graphene and Graphene Oxide

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796(Invited) Processing and Applications of Monodisperse Two-Dimensional Nanomaterial Inks

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797A New Form of Electrochemical Kinetics, at the Single Layer Graphene – Electrolyte Interface

Prabhakar R Bandaru, Rajaram Narayanan, Hidenori Yamada, Darren Lipomi, Brandon Marin

798Ionic Solutions of Two-Dimensional Materials

Patrick Linden Cullen, Kathleen M Cox, Mohammed K Bin Subhan, Loren Picco, Oliver D Payton, David J Buckley, Tom Miller, Stephen A Hodge, Neal T Skipper, Vasiliki Tileli, Christopher A Howard

799Liquid-Exfoliated Transition Metal Dichalcogenides: A Story of Excitons, Spectroscopic Metrics and Functionalisation

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800Heterostructures Beyond Van Der Waals

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801(Invited) Eau De Graphene : Additive Free, Single Layer Graphene in Water

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802Chemically Modified Graphene and Carbon Quantum Dots: Structural, Electronic and Chiroptical Characterization

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[803\(Invited\) Chemistry of Novel 2D Materials: Black Phosphorus and Antimonene](#)

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[804Substrate Modulated Reductive Graphene Functionalization](#)

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[805>24h Stabilization of Silicon Photoanode Operation in Aqueous Media Using a Fluorinated Graphene Protection Layer](#)

[Annelise C. Thompson, Adam C. Nielander, Nathan S Lewis](#)

[806\(Invited\) New Functionalities of 2-Dimensional Materials: Graphene, Doped-Graphene, Tough Fibers and Beyond](#)

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[807\(Invited\) Atomic-Scale Exploration of Synthetic Low Dimensional Materials](#)

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[808A Wafer-Scale Bernal Stacked Bilayer Graphene Film Obtained on a Cu\(0.5 %at Ni\) Foil Using Atmospheric Pressure Vapour Deposition](#)

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[809In Situ variable-Temperature Scanning Tunneling Microscopy Studies of 2D Graphene and Hexagonal Boron Nitride \(hBN\) Layer Growth Kinetic](#)

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[810Graphene Nanoribbon Heterojunctions with Dbtp Precursors on Ag\(111\)](#)

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[811Graphene Nanoribbon Synthesis with a Fluorinated Molecular Precursor](#)

Hironobu Hayashi, Junichi Yamaguchi, Hideyuki Jippo, Shintaro Sato, Hiroko Yamada

812Nanowire Templated Growth of Three-Dimensional Fuzzy Graphene

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813Quantum Chemical Predictions for Alkaline Earth (AE)-Doped Graphene: A Density Functional Theory (DFT) Based Investigation for a Novel Class of Carbon-Based Two-Dimensional Nanomaterials Toward Electrochemical, Catalytic and Electronic Applications

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814(Invited) Strongly-Bound Interlayer Exciton States in Twisted Bilayer Materials

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815Excitonic Properties and Ultrafast Carrier Dynamics in 2D Hybrid Organic-Perovskites

Katia Abdelbaki, Hiba Diab, Ferdinand Lédée, Damien Garrot, Emmanuelle Deleporte, Jean-Sébastien Lauret

816Phonon and Defect Induced Transparencies in the Mid-Infrared Spectrum of Grafted Single Layer Graphene

François Lapointe, Bruno Rousseau, Minh Nguyen, Vincent Aymong, Maxime Biron, Étienne Gaufrès, Patrick Desjardins, Michel Côté, Richard Martel

817Classification of Graphene Islands Via Confocal Raman Spectra Cluster Analysis

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818Probing the Dielectric Response of Exfoliated Black Phosphorous in Free Standing Conditions

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819[\(Invited\) Black Phosphorus Field Effect Transistors: Passivation By Oxidation, and the Role of Anisotropy in Magnetotransport](#)

[Thomas Szkopek, Guillaume Gervais, Maurizio Peruzzini, Stefan Heun](#)

820[Hyperbolic Cooling of a Graphene on BN Transistor in the Zener-Klein Regime](#)

[Wei Yang, Simon Berthou, Xiaobo Lu, Kenji Watanabe, Guangyu Zhang, Emmanuel Baudin, Bernard Placais, Christophe Voisin](#)

821[Electrical Properties of the Multilayered Graphene in Terms of Carrier Density and Mobility](#)

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822[Trap Densities at Gate Dielectric/2D Channel Interface By Capacitance Measurements](#)

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823[Doping of Graphene By Atomic Layer Deposition of Ruthenium](#)

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824[Thickness Dependence of Graphene-Hexagonal Boron Nitride-Graphene Based 2D Capacitor](#)

[Yijing Stehle, Ivan Vlassiouk, Georgios Polyzos, Sergie Smirnov, Panos Datskos](#)

825[Electrostatic Double Layer Flash Memory Based on Two-Dimensional Crystals](#)

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[826Bright Multicolor Bandgap Fluorescent Carbon Quantum Dots for Electroluminescent Light-Emitting Diodes](#)

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[827A SPICE Compatible Model of Graphene/Silicon Schottky Barrier Photodiode](#)

[Xinlu Chen, Ashok Srivastava](#)

[828Capacitance of Graphene/Copper Hybrid Nano Ribbon Interconnect - a First Principle Study](#)

[K M Mohsin, Ashok Srivastava, Ashwani K Sharma, Clay Mayberry](#)

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[830\(Invited\) Plasmon-Induced Charge Separation and Electric Field Localization](#)

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980Investigation of Corrosion Resistance for Annealed and Hardened Stainless Steels

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Tetsu Tatsuma, Kun-Che Kao, Ling Wu, Yoshinori Kuroiwa, Hiroyasu Nishi

1538(Invited) Artificial Photosynthesis Using Plasmon-Mediated Electron Transfer

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1539Investigating the Plasmonic Hot-Carrier Injection Mechanism for CO₂ Reduction Using Nanostructured Ag Catalysts

Youngsang Kim, Erin Creel, Elizabeth Corson, Fen Qiu, Jeffrey J Urban, Bryan D McCloskey, Robert Kostecki

1540(Invited) Mathematical Modeling of Novel Artificial-Photosynthesis Devices

Rohini Bala Chandran, Lien-Chun Weng, Shane Ardo, Alexis T. Bell, Adam Z Weber

1541(Invited) High Performance Components for Solar-Driven Photoelectrochemical Fuel Generators

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1542(Invited) Novel Nanomaterials, Structures and Interfaces for Solar Fuel Production

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1543(Invited) Recent Advances in III-V Multijunction Semiconductor Photo-Electrochemical Water Splitting

Todd G Deutsch, James L. Young, Myles Steiner, Henning Döscher, John A Turner

1544Understanding and Mitigating Degradation Phenomena in Photoelectrochemical Devices

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1545Interplay Between Chemical and Optoelectronic Properties of III/V-Water Interfaces from Ab Initio Simulations

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1546 [Binary and Ternary Earth-Abundant Transition Metal Phosphides As Electrocatalysts and Photocatalysts for Water Splitting](#)

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1550 [Selective Electrocatalytic CO₂ Reduction to CO on Solid Nickel-Nitrogen-Doped Carbon Catalysts](#)

[Nathaniel Leonard, Wen Ju, Ana Sofia Varela, Julian Steinberg, Peter Strasser](#)

1551 (Invited) [Artificial Photosynthesis Using All-Solid-State Photocatalysts- Photocatalytic Conversion of CO₂ By H₂O As an Electron Donor-](#)

[Kentaro Teramura](#)

1552 (Invited) [Fast Detection Method for Analyzing CO₂ Electroreduction Products](#)

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1553 (Invited) [Modification of Electrocatalytic and Photoelectrochemical Interfaces Toward More Efficient Reduction of Carbon Dioxide](#)

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[1559 Surface-Modified Metal Sulfides As Stable H₂ Evolving Photocatalyst in Z-Scheme Water Splitting System with \[Fe\(CN\)₆\]^{3-/4-} Redox Mediator Under Visible Light Irradiation](#)

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[1560 Experimental Demonstration of Integrated Photo-Electrochemical Hydrogen Generation Utilizing Concentrated Irradiation](#)

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[1564 CO₂ Conversion Via Nanoporous PS-PVP Block Copolymer: Revisiting the Pyridyl Radical](#)

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1577 [Microstructure Degradation of Solid Oxide Fuel Cells Aged in Stack after Long Operation Time up to 20 000h using 3D Reconstructions by FIB Tomography](#)

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1578 [Impact of Dislocations on Surface Reactivity of Ceria with Single Atom Catalysts](#)

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1579 [Correlating Cathode/Electrolyte Interface Characteristics to SOFC Performance](#)

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1582 (Invited) [Contribution of Triple Phase Boundary Reaction in Mixed-Conducting SOFC Cathodes](#)

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1583 [\(Invited\) Descriptors, Defects, and DFT for Solid Oxide Fuel Cell Materials](#)

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1584 [Nanoscope Metal-Solid Electrolyte Interfaces in Electrochemical Promotion of Catalysis](#)

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1585 [\(Invited\) The Effect of \(La,Sr\)MnO₃ Cathode Surface Termination on Its Electronic Structure](#)

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1586 [Theoretical Approach for Solid Oxide Fuel Cell Electrode](#)

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1587 [Understanding charge transfer at Mg/MgH₂ interfaces for hydrogen storage](#)

[ShinYoung Kang, Tadashi Ogitsu, Stanimir A. Bonev, Tae Wook Heo, Mark D. Allendorf, Brandon C. Wood](#)

1588 [Correlating the Onset of CO Disproportionation to Surface Chemistry on Ceria](#)

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1589 [\(Invited\) Towards an Improved Understanding of Electrochemical Oxygen Exchange Reactions on Mixed Conducting Oxides](#)

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[1590\(Invited\) Understanding and Controlling Anionic Electrochemical Activity in High-Capacity Oxides for Next Generation Li-Ion Batteries](#)

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[1591\(Invited\) Cationic, Anionic & Electronic Disorder on Perovskite Oxide Surface for \(Electro\)Catalysis](#)

[William C Chueh](#)

[1592\(Invited\) In-Situ/Operando X-Ray Absorption Spectroscopy Technique for the Characterization of Electrode/Electrolyte Interfaces](#)

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[1593Thermostatics of Concentration Polarization and the Possible Effects of Surface Ad-Ions in SOFC Composite Cathodes](#)

[Roberto Janny Teixeira, José Luís de Paiva](#)

[1594Promoted Cr-Poisoning Resistance of \$\text{La}_2\text{NiO}_{4+\delta}\$ -Coated \$\text{PrBa}_{0.5}\text{Sr}_{0.5}\text{Co}_{1.5}\text{Fe}_{0.5}\text{O}_{5+\delta}\$ Cathode for Intermediate Temperature Solid Oxide Fuel Cells](#)

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[1595Selective Electrodes for Mixed Reactant Fuel Cells](#)

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[1596Self-Assembled La-Sr-Co-O Composite PLD Films: Morphology, Sr Distribution, and Oxygen Exchange Activity](#)

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[1597Extracting Material Properties from Relaxation Experiments](#)

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[1599 Electrochemical Analysis of Ni Infiltrated Nanoporous GDC Scaffold for Metal Supported SOFCs Anode](#)

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[1600 Understand the Hydrogen Electrode Reaction for Proton Conducting SOFC Via Controlled Poisoning Experiments Using Hydrogen Sulfide and Carbon Dioxide](#)

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[1601 Importance of the Formation of Dy⁴⁺ in BaZr_{0.9}Dy_{0.1}O_{3-δ} proton-Conducting Ceramics in Oxidizing Atmospheres](#)

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[Tatsumi Ishihara, Kuan-Ting Wu, Shijing Wang](#)

[1603 \(Invited\) Electrochemical Characterization of Complete La_{0.6}Sr_{0.4}Co_{1-x}Fe_xO_{3-δ} Composition Phase Space By Microelectrode Impedance Spectroscopy](#)

[Christopher J Kucharczyk, Yangang Liang, Sihyuk Choi, Xiaohang Zhang, Ichiro Takeuchi, Sossina M Haile](#)

[1604 Effect of Fe Doping on Oxygen Anion Diffusion in PrBaCo_{2-x}Fe_xO_{5+δ} Double Perovskite Electrodes for Solid Oxide Fuel Cells](#)

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[1605 Bulk defect chemistry of PCFC cathode materials: discussion of defect interactions](#)

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[1607 Understanding the Cathode Reaction Process for Proton Conducting Intermediate Temperature Solid Oxide Fuel Cells Using Comparison Between BSCF and Other Cathode Materials](#)

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[1608 Influence of the Activation Catalyst on the Polarization Resistance of Electroless Cu Electrodes on \$\text{BaCe}_{0.1}\text{Zr}_{0.8}\text{Y}_{0.1}\text{O}_{3-\delta}\$ proton-Conducting Ceramics](#)

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[1609 \(Invited\) Sulfur Poisoning of Ni-Based SOFC-Anodes – Short and Long Term Behavior](#)

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[1610 Assessment of Sulfur Poisoning of Ni/Cgo-Based SOFC Anodes](#)

[Matthias Riegraf, Atef Zekri, Vitaliy Yurkiv, Rémi Costa, Guenter Schiller, K. Andreas Friedrich](#)

[1611 Improve Activity and Stability of Ni-Ce_{0.8}Sm_{0.2}O_{1.9} As the Anode of a Methanol Fuelled Solid Oxide Fuel Cell](#)

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[1612 Electrochemical Promotion of Propene Combustion on Ag Catalytic Coatings](#)

[Ioanna Kalaitzidou, Thomas Cavoué, Antoinette Boreave, Elena A. Baranova, Mathilde Rieu, Jean-Paul Viricelle, David Horwat, Philippe Vernoux](#)

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1614([Invited](#)) [Advancements and Prospects of DOE Fuel Cell Research and Development Activities](#)

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1616([Invited](#)) [The Importance of the Cathode Catalyst Support in the Pursuit of Low-Cost PEM Fuel Cells](#)

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1617([Invited](#)) [High Temperature Membrane Electrode Assemblies for Intermediate Temperature Fuel Cells: Past, Present, and Future](#)

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1618([Invited](#)) [Alkaline Fuel Cells \(AFCs\) and Alkaline Membrane Fuel Cells \(AMFCs\)](#)

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1619([Invited](#)) [Key Contributions in the Fundamental Understanding of Carbonate Fuel Cells](#)

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[1622\(Invited\) Advances in PEM and Phosphoric Acid Fuel Cells](#)

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[1623\(Invited\) Phosphoric Acid Migration in Fuel Cells](#)

[Felix N Büchi, Jonathan Halter, Sebastian H. Eberhardt, Thomas J. Schmidt](#)

[1624\(Invited\) Using Heteropoly Acids As a Proton Conductor in High Temperature Proton Exchange Membrane Fuel Cells](#)

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[1625\(Invited\) Hydroxide Exchange Membrane Fuel Cells](#)

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[1626\(Invited\) Membrane Electrode Assembly for Alkaline Anion Exchange Membrane Fuel Cell](#)

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[1627\(Invited\) The Growing Importance of Hydrogen in Our Energy System and Extended Surface Electrocatalyst Development and Implementation](#)

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[1629\(Invited\) Current Status on Ballard Fuel Cells and Future Catalyst Development](#)

[Siyu Ye, Dustin Banham, Lijun Yang, Shanna Knights](#)

[1630\(Invited\) From Fundamentals to PEMFC Systems](#)

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[1631\(Invited\) How Oxygen-Containing Intermediates and Surface Charge Regulate Oxygen Reduction Reaction of Platinum Electrocatalysts](#)

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[1632\(Invited\) Pt/RuO₂-TiO₂ \(RTO\) As Cell Reversal Tolerant Anode Catalyst for PEFCs](#)

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[1633\(Invited\) High Performance Pt-Based Octahedral Nanocatalysts in Fuel Cells](#)

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[1634Characterization of Inkjet Printed Electrodes with Improved Porosity](#)

[Shantanu Shukla, David Stanier, Madhu S Saha, Beniamin Zahiri, Mickey Tam, Jürgen Stumper, Marc Secanell](#)

[1635\(Invited\) High-Performance PGM-Free Electrocatalysts for the Polymer Electrolyte Fuel Cell Cathode](#)

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1636(Invited) Development of Non Platinum Group Metal Oxide Cathode without Carbon Support for PEFCs

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1637(Invited) Fundamental and Practical Aspects of Implementing Non PGM Based Cathodes in Low and Medium Temperature PEM Fuel Cells

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1638(Invited) Elucidating Optimal Carbon Morphologies and Structures in Highly Active PGM-Free Cathodes for PEM Fuel Cells

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1639(Invited) Porous Electrode Engineering for Platinum Group Metal-Free Oxygen Reduction Reaction Catalysts

Siddharth Komini Babu, Shohei Ogawa, Hoon T Chung, Piotr Zelenay, Shawn Litster

1640(Invited) Solid Oxide Fuel Cell Powered Small Unmanned Aerial Systems for Long Endurance

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1641(Invited) Smart Electrolyte Matrix for Enhanced Carbonate Fuel Cell Life

Abdelkader Hilmi, Arun Surendranath, Chao-Yi Yuh

1642(Invited) The Effect of Heat-Treatment on Mechanical Property and Wetting Behavior of α -LiAlO₂

Liangjuan Gao, J. Robert Selman, Philip Nash

1643 Model-based Analysis of Carbon Corrosion in Start-up/Shutdown, Fuel Starvation, and Voltage Reversal of a Polymer Electrolyte Fuel Cell

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1644 [Numerical Study of Roughness and Contact Angle Effects on Water Transport in a Gas Channel](#)

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1645 [Four-in-One Electrode for Micro Polymer Electrolyte Membrane Fuel Cells](#)

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1646 [\(Invited\) Polymer Electrolyte Fuel Cell Diagnostics](#)

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1647 [\(Invited\) Tortuosity and Effective Transport Properties for Porous Materials in Electrochemical System](#)

[Thomas F Fuller, Andrew G. Star](#)

1648 [\(Invited\) Material Degradation in PEM Fuel Cell Electrodes](#)

[Rod L. Borup, Rangachary Mukundan, Andrew M. Baker, Dusan Spornjak, David A. Langlois, Sarah Stariha, Natalia Macauley, Karren L. More, Shyam S. Kocha, Adam Z Weber, Deborah J Myers, Rajesh Ahluwalia](#)

1649 [\(Invited\) Understanding Fuel Cell Materials Degradation through the Use of Advanced Microscopy Methods](#)

[Karren L. More](#)

1650 [\(Invited\) Imaging Techniques for Investigating Multiphase Transport Behaviour in Polymer Electrolyte Membrane Fuel Cells](#)

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1651 [\(Invited\) Measuring Transport in Polymer Electrolyte Membranes](#)

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1652([Invited](#)) [Open-Source Macro- and Meso-Scale Modeling of PEFCs](#)

[Marc Secanell, Andreas Michael Vincent Putz, Jie Zhou, Mayank Sabharwal, Alex Jarauta, Aslan Kosakian](#)

1653([Invited](#)) [An Activity Model for Swelling of Nafion[®] in Varied Solvents](#)

[Johna Leddy, Nadeesha Rathuwadu](#)

1654[Modeling of Performance Loss and pH Gradients in Hydroxide Exchange Membrane Fuel Cells Exposed to Carbon Dioxide](#)

[Brian P. Setzler, Yushan Yan](#)

1655([Invited](#)) [Hydrogen Fuel Cells for Small Unmanned Air Vehicles](#)

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1656([Invited](#)) [Commercialization Road Map of Fuel Cell Commercial Vehicle \(FCCV\) at Telos Auto Power Systems Inc \(TAPS\)](#)

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1657([Invited](#)) [The Fuel Cell Solution for Automobile Industry](#)

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1658([Invited](#)) [The U.S. Department of Energy's Energy Materials Network](#)

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[1659\(Invited\) An Overview of Hydro GEN, a DOE Energy Materials Network Consortium Aimed at Accelerating the Development of Advanced Water Splitting Materials](#)

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[1661\(Invited\) Duramat - a Systems Driven Approach to Improving Module Material Durability in the Energy Materials Network](#)

[Teresa M. Barnes, Dana Olson, Margaret Gordon, David Ginley, Michael F Toney, Anubhav Jain, Randy Schunk, Sarah Kurtz](#)

[1662\(Invited\) The Electrocat \(Electrocatalysis\) Consortium](#)

[Adria R Wilson, Dimitrios C Papageorgopoulos, Deborah J Myers, Piotr Zelenay, Huyen N Dinh, Karren L. More](#)

[1663\(Invited\) An Overview of the Hydrogen Materials - Advanced Research Consortium \(HyMARC\), a DOE Energy Materials Network Consortium, to Accelerate Development of Hydrogen Storage Materials](#)

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[1664\(Invited\) Chemcatbio: Chemical Catalysis for Bioenergy](#)

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[Lauren Garten, Shyam Dwaraknath, Riley Whitehead, Praneetha Selvarasu, Debora R. Barcellos de Oliveira, Zamyra Chan, Chuancheng Duan, Kevin Stone, Kristin A Persson, Ryan O'Hayre, Dan Nocera, David Ginley](#)

[1668\(Invited\) Exploring and Understanding Energy Conversion at Interfaces By Combining Simulations and X-Ray Spectroscopy](#)

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[1670\(Invited\) Predicting Properties of Complex Interfaces for Photoelectrochemistry: Challenges and Strategies](#)

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[1671\(Invited\) Mesoscale Modeling Approaches for Hydrogen Generation and Storage](#)

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[1672\(Invited\) Synthetic Screening of Electrolytes for Li-Air Batteries](#)

[Reese E Jones, Forrest S Gittleson, Michael E. Foster, Donald K Ward](#)

[1673\(Invited\) Integrating Theory and Experiment to Understand and Control Reaction Pathways](#)

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[1674\(Invited\) Materials By Design for Energy Applications: Incorporating Metastability](#)

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[1675\(Invited\) Crosscutting Research in the Critical Materials Institute](#)

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[1677\(Invited\) Water Splitting Catalyst Performance Benchmarking in the Joint Center for Artificial Photosynthesis](#)

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[1678\(Invited\) Hydrogen Storage Characterization and Optimization Research Effort, Hyscore](#)

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[1679\(Invited\) The FC-PAD Consortium: Advancing Fuel Cell Performance and Durability](#)

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[1680\(Invited\) Benchmarking and Round Robin Testing for Polymer Electrolyte Membrane Water Electrolysis](#)

[Marcelo Carmo, Guido Bender, Tom Smolinka, Aldo Saul Gago, Nemanja Danilovic, Martin Müller, Fabrizio Ganci, Shaun M Alia, Arne Fallisch, Philipp Lettenmeier, K. Andreas Friedrich, Katherine E Ayers, Bryan S Pivovar, Jürgen Mergel, Detlef Stolten](#)

[1681Benchmarking Water Electrolysis Catalysts: Making the Right Comparisons](#)

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1729 [Invited: Ammonia Generation at Algae Modified Electrodes: Some Mechanistic Considerations Drawn from Redox Potentials](#)

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1730 [Enhanced Harvesting of Photosynthetic Electrons from Isolated Thylakoid Membranes By Geometry-Optimized Microelectrodes](#)

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1732 [Real-Time Imaging of Oxygenic Photosynthesis in Spinach Using Bio-LSI](#)

[Shigenobu Kasai, Yamato Sugiura, A. Prasad, Teruya Sato, Kumi Y. Inoue, Kosuke Ino, Tomokazu Matsue](#)

1733 [Photobioelectrochemistry of Intact Chloroplasts for Solar Energy Conversion](#)

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1734 [Orientational Control of Photosystem I on Electrodes](#)

[David E Cliffler, Evan Alexander Gizzie, Carson J Bryant](#)

1735 [Understanding Electron Transport in Photosynthetic Membranes for Electrochemical Energy Conversion](#)

[Ramaraja P. Ramasamy, Narendran Sekar](#)

1736 [Exploratory Analysis of Bacterial Raman Spectra in Electroactive Biofilms](#)

[Nikolai Lebedev, Sarah Strycharz-Glaven, Leonard M Tender](#)

1737 [Electrochemical Studies of Zinc/Cysteine Interactions](#)

[Michelle Y Doan, Matthew A. Worosz, Graham T. Cheek](#)

1738 [Electrodeposited Cadmium Oxide Semiconductor Electrodes for Protein Redox Characterization](#)

[Dennis G Peters, Benjamin Gerroll](#)

1739 [Extracellular Electron Transfer in Mixed Species Biofilms: The Role of Rikenella Microfusis](#)

[Matteo Grattieri, Sofiene Abdellaoui, Kamrul Hasan, Shelley D. Minter](#)

1740 [X-Ray Spectroscopic and Electroanalytical Studies on the Bio-Electic Interface of Metal Oxide Semiconductors and Algal Proteins and Biofilms](#)

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[Shigenobu Kasai, A. Prasad, R. Matsuoka, A. Takahashi, Atsushi Nakagawa, Yamato Sugiura, Hiroki Koriyama, S. Aoyagi, T. Aikawa, T. Kondo, M. Yuasa](#)

1742 [Electron Transport Between an Electrode and Red Blood Cells](#)

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1743 [Direct Electrochemical Determination of Erythrocyte Concentration and Morphology](#)

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1744 [Bactosomal Bioelectrode Design on a Cysteamine Self-Assembled Monolayer](#)

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1745 [Nano/Micro Fabricated Sensor Chips for Human Sensing Platform](#)

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1746 [Combined Covalent and Noncovalent Functionalization of Carbon Nanotubes for Sensitivity Improvement of Electrochemical Biosensors](#)

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1747 [A Novel Graphene Modified Electrochemical Sensor for Ultrasensitive Detection of T1D Serum Autoantibody](#)

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1748 [Equivalent Circuit Modeling of Microbial Fuel Cells Using Impedance Spectroscopy](#)

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1749 [Advanced Biocathode and Its Application in Battery](#)

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1750 [Biological Power Sources Based on Transparent and Capacitive Electrodes](#)

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1752 [Selective Nanomaterials for Glucose-to-Gluconate Oxidation in an Electrochemical Energy Converter: Cogenerating Organic Electrosynthesis](#)

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[1760Magnetite Nanospheres As Modifier of Carbon Paste Electrode for Determination of Inhibition Kinetics of Syzygiumpolyanthum extract Toward Xanthine Oxidase](#)

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[1761Metal-Organic Framework-Derived Atomic Iron-Dispersed Carbon Electrocatalysts for Oxygen Reduction in Acidic Polymer Electrolyte Fuel Cells](#)

[Hanguang Zhang, Hoon T Chung, David A. Cullen, Karren L. More, Piotr Zelenay, Gang Wu](#)

[1762Nanocrystalline \$\text{Co}_{3-x}\text{Ni}_x\text{O}_4\$ with Low Ni Concentration: Enhanced Oxygen Evolution Activity Compared to \$\text{Co}_3\text{O}_4\$](#)

[Aditi Singhal, Anuj Bisth](#)

[1763Iron Phosphide Nanoparticles As an Efficient Electrocatalyst for the Oxygen Evolution Reaction in Alkaline Solution](#)

[Siddesh Umaphathi, Jahangir Masud, Nikitaa Ashokan, Manashi Nath](#)

[1764Tunable Pt Alloys for Oxygen Reduction and Alcohol Oxidation](#)

[Anne C. Co, Eric J. Coleman, Heewon Choi](#)

[1765Combinatorial Synthesis of High-Efficiency Transition Metal Selenides As Oxygen Evolution Electrocatalysts](#)

[Xi Cao, Qingzhi Chen, Jahangir Masud, Manashi Nath](#)

[1766Highly Durable Carbon-Supported Pt Nanoparticles Electrocatalyst for Oxygen Reduction Prepared Using Protic Ionic Liquids As Adhesive Agent](#)

[Susumu Kuwabata, Reiko Izumi, Tetsuya Tsuda, Tsukasa Torimoto](#)

[1767CO Adsorption on Different Oxide-Supported Catalysts Studied By a Combination of in Situ X-Ray Absorption Spectroscopy \(XAS\) and Diffuse Reflectance Infrared Fourier Transform Spectroscopy \(DRIFTS\)](#)

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[François Lapointe, Yujin Tong, R. Kramer Campen](#)

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[1775 Impedance of Mediated Electrochemical Processes at Microelectrodes](#)

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[1776 Conduction Properties of Polyethersulfone/Carbon Nanotubes \(CNTs\)-Based Membranes for Water Treatment: Forecast By Electrochemical Impedance Spectroscopy](#)

[Edgard Ngaboyamahina, Nathan Bossa, Jeffrey T. Glass, Mark R. Wiesner](#)

[1777 Study of Low Frequency Electrolytic Behavior with an Accurate Impedance Method](#)

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[Viola Birss](#)

[1779 \(Invited\) Evidence for Magnetic Effects on Electron Transfer](#)

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[Petr Vanýsek, Vitězslav Novák, Klára Částková, Ladislav Chladil](#)

[1782 \(Invited\) Polyoxometalate Modified Biomass Carbon for Supercapacitor Electrodes](#)

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[1783\(Invited\) Build Effective Cathode Nanocatalysts to Improve Performance of Proton Exchange Membrane Fuel Cells](#)

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[1785Enhanced Photoelectrocatalytic Activity in Ni-TiO₂ Nanocomposites Fabricated By Pulse Potential Deposition](#)

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[1789Palladium Electrocatalysts Synthesis: Probing Reducing Agent Effect By XRD, XPS and ORR](#)

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[1790Atomic Palladium](#)

[Erin L. Gawron, Steven M. Hira, Alex P Jonke, Mira A Josowicz, Jiri Janata](#)

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[Ian T. McCrum, Michael J. Janik](#)

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[Nicole Goodwin, David Hatchett](#)

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[Dustin J. Walczyk, Daniel Mason, Naquan McRae, Gregory Taylor, Zach Norris, Kyle Linderman, Jeffrey Hettinger, Lei Yu](#)

[1794Dependence of Photoelectrochemical Properties on Geometry Factors of ZnO Nanostructured Networks](#)

[Yuanbing Mao](#)

[1795Electrochemical Characterization of Magnetite Samples from Natural, Commercial, and Laboratory Sources and Implications for Remediation Research](#)

[Miranda J Bradley, Paul G Tratnyek](#)

[1796Hybrid Catalytic Materials for Determination and Speciation of Electrochemically Inert Analytes: Arsenic\(III\) and Arsenic\(V\)](#)

[Pawel J Kulesza, Weronika Ozimek, James A. Cox, Iwona Agnieszka Rutkowska](#)

[1797Toward the Conversion of Nitrate into Dinitrogen in Aqueous Electrolytes: On Line Mass Spectrometry Studies](#)

[Bogusław Pozniak, Daniel Scherson](#)

[1798The Improvement of Boron-Doped Diamond Anode System in Electrochemical Oxidation and Fenton Coupling System Degradation of p-Nitrophenol By Sensing Electrode of Iron](#)

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1799 [Electrolytes Related Dynamic Mechanical Properties of Nanoconfined Water](#)

[Shah Haidar Khan, Peter Manfred Hoffmann](#)

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[Martina Čížková, Laurent Cattiaux, Jean-Maurice Mallet, Eric Labbé, Olivier Buriez](#)

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[Ramakrishna Murali](#)

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[Rafael Ribadeneira Paz](#)

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[1815Rrde Studies of Glycerol Electro-Oxidation: Local pH Variation and Oscillatory Dynamics](#)

[Alana Zülke, Paula Perroni, Eduardo Giangrossi Machado, Hamilton Varela](#)

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[1817The Influence of Anions on the Release of Ag\(I\) Ions from Silver Nanoparticles \(AgNPs\)](#)

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[1818High Performance Bioelectrocatalytic Interconversion Between Formate and Carbon Dioxide](#)

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[1821Ionic Liquid Based Sensors for Sensitive Detection](#)

[Rajeev Jain](#)

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L02-Ion-Conducting Polymeric (or, Polymer-based) Materials

[1826\(Keynote\) Mechanisms in Ion Conducting Polymer Materials By Broadband Electrical Spectroscopy \(BES\)](#)

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[Jing Peng, Gabriel A. Goenaga, Thomas A. Zawodzinski](#)

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[Nachiket Paranjape, Haiqing Lin, Gang Wu, Praphulla Mandadapu](#)

[1830\(Energy Technology Division Supramaniam Srinivasan Young Investigator Award Address\) New Insights into PFSA Ionomers - from Membranes to Thin Films](#)

[Ahmet Kusoglu](#)

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[Demetra M Pantelis, Juliette Experton, Charles R Martin](#)

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[Syed D. Sajjad, Yan Gao, Zengcai Liu, Hongzhou Yang, Rich Masel](#)

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[Fei Huang, Wenjian Zheng, Chris Cornelius](#)

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[William White, Christopher D. Sanborn, Ronald S. Reiter, Joseph M. Cardon, Shane Ardo](#)

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[Yuchen Wang, Xiaoyao Qiao, Chen Zhang, Xiangyang Zhou](#)

1838 [Mediator Effects on Solid-State Mediator Doped Polymer Electrolyte Membrane](#)

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1839 [Formation/Dissolution of Conductive Silver Filaments through an Ionic Liquid/Polymer Electrolyte Thin Film](#)

[Zhongmou Chao, Garrison Crouch, Donghoon Han, Paul W. Bohn, David B. Go, Susan Fullerton](#)

1840 [Electrodeposition with Nanoparticles As Nano-Bioplax Electrodes](#)

[Garrison Crouch, Donghoon Han, Susan Fullerton, David B. Go, Paul W. Bohn](#)

1841 [Nanostructured Polypyrrole-Based Materials](#)

[Krzysztof Winkler, Monika Wysocka-Zolopa](#)

1842 [Sulfonated Block Copolyphenylchinoxalines As Proton Exchange Membranes](#)

[Silvia Janietz, Tatjana Egorov-Brening](#)

L03-Electrochromic and Chromogenic Materials

1843 [\(Invited\) Durability of Electrochromic Films: Ageing Kinetics and Rejuvenation](#)

[Gunnar A. Niklasson, Rui-Tao Wen, Huiying Qu, Miguel A Arvizu, Claes-Goran Granqvist](#)

1844 [Influence of the Temperature on the Electrochromic Properties of Complementary and Symmetrical WO₃/NiO Devices](#)

[Yingchun He, Mathias Da Rocha, Xungang Diao, Aline Rougier](#)

1845 [\(Invited\) Smart Optical Coatings for Energy Saving, Anticounterfeiting and More](#)

[Bill Baloukas, Francis Blanchard, Simon Loquai, Ludvik Martinu](#)

1846 [Reflective Electrochromic Device with Gelatin-Nanocomposite Electrolyte](#)

[Franciani C Sentanin, Rodrigo César Sabadini, Carla C Cavalheiro, Jerzy Kanicki, M. M. Silva, Agnieszka Pawlicka](#)

1847 [Near Infrared Selective WO_x-Based Electrochromic Devices Regulated By Charge Transfer Impedance at the Counter Electrode](#)

[Praveen Pattathil, Riccardo Scarfiello, Roberto Giannuzzi, P. Davide Cozzoli, Michele Manca](#)

1848 [Effect of Oxygen Partial Pressure on the Fabrication and Characterization of LaB₆-Doped-NiO_x Thin Films Produced By Magnetron Sputtering](#)

[Mengying Wang, Xungang Diao](#)

1849 [\(Invited\) Ultrasonic Spray Coating of Electrochromic Nanomaterials](#)

[Anthony Maho, Laura Mancერი, Pierre Colson, Catherine Henrist, Bénédicte Vertruyen, Rudi Cloots](#)

1850 [\(Invited\) Aspects of Vibrational Spectroscopy in Investigation of Low-Temperature Pigmented V-Oxide Films](#)

[Angelja Kjara Surca, Goran Dražić, Mohor Mihelčič](#)

1851 [Multi-Color Electrochromism in Vanadium Oxide Thin Films](#)

[Giljoo Song, Issam Mjejri, Manuel Gaudon, Aline Rougier](#)

1852 [From Capacitance-Controlled to Diffusion-Controlled Electrochromism in Nb-Doped TiO₂ Nanocrystalline Electrodes](#)

[Mariam Barawi, Rafael Da Silva, Roberto Giannuzzi, Luca De Trizio, Liberato Manna, Michele Manca](#)

[1853 Active Layer Thickness Dependent Electro-Optical and -Chemical Properties of Inorganic All-Solid-State Electrochromic devices: WO₃/Ta₂O₅H⁺/NiO](#)

[JunJi Guo, Xungang Diao](#)

[1854 \(Invited\) Conjugated Polymers in Redox Active Devices: Electrochromism As a Case Study](#)

[John R Reynolds](#)

[1855 Preparation and Electrochromic Performances of Structural Derivatives and Hybrid Homo-/Co-Polymers of Poly\(3,4-ethylenedioxythiophene\)s](#)

[Shuai Chen, Jingkun Xu](#)

[1856 \(Invited\) Inkjet Printed Multifunctional Smart Windows](#)

[Guofa Cai, Pooi See Lee](#)

[1857 One-Step Process to Fabricate Transparent Polymer Gel Electrolyte for Electrochromic Window](#)

[Minji Lee, Hyungsub Kim, Dahyun Choi, Wonshik Chu, Dooman Chun, Caroline Sunyong Lee](#)

[1858 Structure-Dependent Response Characteristics of Electrochromic Dye-Modified Transparent Conductive Oxide Porous Electrode](#)

[Yuichi Watanabe, Kouji Suemori, Toshihide Kamata](#)

[1859 Insertion of Cesium in Prussian Blue Films](#)

[Francisco Vicente, Jeronimo Agrisuelas, Alejandro Cuenca, Antoni Francesc Roig, Jose García, Ana San Matías, Gema Alfonso](#)

[1860 \(Invited\) Solution-Processed Nanostructured Electrochromic Materials: Preparation and Application](#)

[Dongyun Ma, Zhongping Xu, Jinmin Wang](#)

1861 [\(Invited\) Organic Based Electrochromic and Thermochemical Materials: Design, Characterization and Integration in Flexible Devices](#)

[Luca Beverina, Mauro Sassi, Paolo Brazzo, Daniela Galliani](#)

1862 [Conductive PEDOT:PSS Electrodes in Electrochromic Devices](#)

[Michel De Keersmaecker, Augustus Lang, Anna Åsterholm, John R Reynolds](#)

1863 [Modification of Thin Films of Poly\(3,4-ethylenedioxythiophene\) for Enhanced Electrochromic Performance](#)

[Chung-Min Kao, Chih-Wei Hu, Ramamurthy Vittal, Kuo-Chuan Ho](#)

1864 [\(Invited\) Electrochemically Controllable Emission and Coloration Using Luminescent Europium\(III\) Complex and Electrochromic Viologen Derivatives](#)

[Kazuki Nakamura, Kenji Kanazawa, Norihisa Kobayashi](#)

1865 [Hydrothermal Growth of Hierarchical NiO Nanostructures and Their Application in a Complementary Electrochromic Device](#)

[Dongyun Ma, Hongzhi Wang, Jinmin Wang](#)

1866 [Optimization of NiO Thin Films By Sol-Gel for Electrochromic Properties](#)

[Khawla Zrikem, Mathias Da Rocha, Ahmed Ait Aghzzaf, M'Barek Amjoud, Daoud Mezzane, Aline Rougier](#)

M01-Sensors, Actuators and Microsystems General Session

1867 [Low Frequency Analysis of Acidic and Neutral Electrolytes with a Highly-Sensitive Microfluidic Sensor](#)

[Jia-Hao Ye, Kung-Chu Ho, Vin-Cent Su, Chieh-Hsiung Kuan](#)

[1868 Simultaneous Multi-Analyte Detection of Neurotransmitters Using Polypyrrole-Based Molecularly Imprinted Conducting Polymers](#)

[Bo Si, Edward Song](#)

[1869 A Miniaturized High-Throughput Flow Injection Analysis System for Electrochemiluminescence Detection](#)

[Pablo Fanjul Bolado, Marta Maria Pereira Silva Neves, María Begoña González García, David Hernández Santos](#)

[1870 \(Invited\) Characterization of an Optically Transparent Thin-Film Electrode Chip for Spectroelectrochemical Sensors](#)

[Shirmir D. Branch, John Lynch, Job M. Bello, William R. Heineman, Samuel A. Bryan](#)

[1871 \(Invited\) T-Chip, a Biosensor Based on the Electron Tunneling: Theory and Experiment](#)

[Young June Park, Jun Yeon Yun, Won Cheol Lee, Young Eun Lee, Kyoung Yeon Kim](#)

[1872 Point-of-Use Detection of Organosulfate Contaminants Associated with Cyanotoxins in Water Using Electrochemical Methods](#)

[Christina Nicole Willis, Mano Misra, Swomitra Mohanty](#)

[1873 Penetrating Nanoelectrodes for Stimulation of Single-Cells](#)

[Komal Garde, Shyam Aravamudhan](#)

[1874 Boron-Doped Ultrananocrystalline Diamond Microelectrodes for Chronic Dopamine Monitoring](#)

[Gaurab Dutta, An-Yi Chang, Shabnam Siddiqui, Prabhu Arumugam](#)

[1875 Toward an in Situ Electrochemical Sensor Measuring Phosphate Concentration in Seawater](#)

[Carole Barus, Ivan Romanytsia, Nicolas Striebig, Véronique Garcon](#)

1876 [Enzyme-Based Electrochemical Lactate Biosensors Capable of Operating in Low-Oxygen Environments](#)

[Aytekın Uzunoglu, Lia Stanciu](#)

1877 (Invited) [Electrochemical Paper-Based Sensors for Clinical and Environmental Diagnostics](#)

[Charles S Henry](#)

1878 [Integration of Graphene Oxide on Nylon/Polyester/Cotton Fabrics for a Wearable Electronic Nose Sensor](#)

[Eunji Lee, Yoonsung Chung, Doohee Lee, Jaesik Yoon, Christopher Lincoln, Bart Charles Prorok, Sungpil Woo, Youngsoo Yoon, Dong-Joo Kim](#)

1879 [A Fully Inkjet-Printed Sensor for Electrochemical Detection of Heavy Metals](#)

[Hamed Shamkhalichenar, Jin-Woo Choi](#)

1880 [An Electrochemical Ammonia Sensor on Paper Substrate](#)

[Praveen K. Sekhar, Jesse Kysar](#)

1881 [Novel Films Based on Inexpensive and Readily Available Materials for Use As a Hydrocarbon Sensor](#)

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1882 [Preparation of High Charge Storage Capacity PEDOT/Functionalized Mwent Hybrid Nanocomposite for Neural Electrode Applications](#)

[D V Santhosh Kumar Gunapu, Siva Rama Krishna Vanjari](#)

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[Wenjian Zheng, Chris Cornelius](#)

[1884Impedancemetric NO_x Sensors Based on LSM and LSM-Au Sensing Electrodes](#)

[Nabamita Pal, Erica P Murray](#)

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[Taher Ghomian, Samaneh Farimand, Jin-Woo Choi](#)

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[1888\(Invited\) Suspended Polymer Nanobridge on a Quartz Resonator](#)

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Yoonsung Chung, Eunji Lee, Doohee Lee, Jaesik Yoon, Christopher Lincoln, Bart Charles Prorok, Sungpil Woo, Youngsoo Yoon, Dong-Joo Kim

1893 Portable High Surface Area TiO₂ Nanotube Array Sensor for the Detection of Benzene at Room Temperature

Shruti Hegde, Swomitra Mohanty, Kerry E. Kelly

1894 Synthetic Polypyrrole/Titanium Dioxide (Ppyl/TiO₂) Nanocomposite As Potential Electroactive Material for the Voltammetric Quantification of Sulfamoxole

AB Lateef Khan, Rajeev Jain

1895 Measurement of Thickness of High-Resistivity Substrate By Photoconduction Enhanced Capacitance Displacement Sensor

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1896 Real Time Quantification of Phenolic Compounds in Oil and Gas Wells Produced Wastewater Using a QCM Sensor

Magda Lorena Lorena Barrera, Julio Andrés Pedraza, Fabián Alirio Ríos

1897 Patchable Ion Channel Pressure Sensors Inspired By Somatic Organs

Kyoung-Yong Chun, Young Jun Son, Chang-Soo Han

1898 Thin Layer Disposable Flow Cells As (Spectro)Electrochemical Detectors in FIA Systems

Pablo Fanjul Bolado, Hussein Kanso, María Begoña González García, David Hernández Santos

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M02-Nano/Bio Sensors

[1912\(Invited\) Substance Release Triggered By Biomolecular Signals in Bioelectronic Systems](#)

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[Robert Matthew Mayall](#)

[1923\(Invited\) Bottom-up Fabrication of Unique Nanostructured Biosensors and Bioanodes](#)

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2024 [The Improved Photocatalytic Ability for \$\text{Ag}_3\text{PO}_4\$ through the Use of a PEDOT:PSS Layer](#)

[Ming-Tong Syue, Jyh-Ming Ting](#)

2025 [Waste Water Purification By \$\text{TiO}_2\$ anodically Grown in Different Geometries](#)

[Beatriz Sanabria, Maria Vittoria Diamanti, MariaPia Pedferri](#)

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[John Peter Miras Alido, Jyh-Ming Ting](#)

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[Zhengning GAO, Yoon Myung, Xing Huang, Rohan Mishra, Ravi Kanjolia, Jeunghee Park, Parag Banerjee](#)

2028 [Efficiency Optimization of Pyramid-Textured Crystalline Solar Cells with Metal-Assisted Chemical Etching](#)

[Vin-Cent Su, Yan-Chun Liu, Chieh-Hsiung Kuan](#)

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[Halema Ali Al-Kandari, Aboubakr Moustafa Abdullah, Shekhah Ali Al-Kandari, Ahmed meslam Mohamed](#)

[2030Bi-Continuous Nanoporous Metal Formation Via Compound Decomposition](#)

[Qing Chen, Congcheng Wang](#)

[2031Effects of Additives on the Electrodeposition of Nano-Grained Ni-Mo Alloys](#)

[Y.N. Shi, J. Hu, X.G. Zheng, K. Lu](#)

[2032Atom Probe Tomography of Dealloyed Materials](#)

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[Hyeryeong Lee, Yooseok Lee, Soo-Kyung Lee, Jae-Hyung Jang, In Seop Chang](#)

[2035Copper Nanowire Array Electrodes with Electropolymerized Polyaniline Corrosion Barrier](#)

[Jorge Moncada, Carlos Carrero, Tae-Sik Oh](#)

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[2039 Dye - Sensitized Solar Cell Photoanode Based on Silver – Doped Titanium Dioxide Nanoparticles](#)

[Hoang Thai Nguyen, Long Thanh Vo, Lan Thi Kim Nguyen, Hien Quoc Nguyen](#)

[2040 Mechanical and Electrical Properties of Electrostatic Sprun Carbon Nanotubes Embedded in P3HT:PCBM](#)

[Te-Hua Fang, Zhe-Wei Chiu, Yu-Jen Hsiao](#)

[2041 A Way to New Smart Materials – Hierarchical 3D Structures Produced Via Self-Organization of Nanowires](#)

[Galina Strukova, Gennadii Strukov](#)

[2042 Synthesis and Characterization of Green Emitting Erbium Doped BaY₂ZnO₅ Nanophosphors](#)

[Vinod Bala Taxak](#)

[2043 Sol-Gel Synthesis and Photoluminescent Investigation of SrZnV₂O₇:Eu³⁺ Nanophosphors](#)

[Satyender Pal Khatkar](#)

[2044 Dissolution and Shape Controlling of Crystalline ZnO](#)

[Ji Yong Chung, Taekyung Yu](#)

2045 [Aqueous-Phase Synthesis of Metal Nanoparticles Using Phosphates As Stabilizers](#)

[Inho KIM, Taekyung Yu](#)

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2046 [A Study of the Conduction Processes in Organic Schottky Diodes](#)

[Munira Raja](#)

2047 [Air Dependence of Electrical Performance Parameters in Polymeric Organic Solar Cell](#)

[Victor Samuel Balderrama, Jose G. Sanchez, Magali Estrada, Josep Pallares, Josep Ferré-Borrull, Lluís F Marsal](#)

2048 [Using Memristor Formalism in Semiconductor Device Modeling](#)

[Rodrigo Picos, Eugeni Garcia-Moreno, M. Moner Al Chawa, Leon O. Chua](#)

2049 [Effect of the Metal-Organic Interfaces in Analytical Modeling of Organic Solar Cells](#)

[J. a. Jiménez Tejada, P. López Varo, O. Marinov, C. H. Chen, M. Jamal Deen](#)

2050 [Charge-Based Compact Model for DC Current in Organic TFT Including Non-Linear Injection Effects with a Close Link to Electrical Device Parameter](#)

[Alexander Kloes, Franziska Hain, Michael Graef, B. Iniguez](#)

2051 [Use of Microdischarge Lithography for Development of Organic Electronic Devices over Large Areas](#)

[Angel Luis Alvarez, Fernando Borrás, Jorge Sebastián Moreno, Miguel García-Vélez, Juan Jiménez-Trillo, Carmen Coya](#)

2052 [Physics of Graphene/Organic Heterojunction Devices](#)

[Chang-Hyun Kim, Ioannis Kymissis](#)

2053 [Physical SPICE Model of Organic Thin Film Transistor](#)

[Yvan Bonnasieux, Sungyeop Jung, Gilles Horowitz](#)

2054 [Newly Introduced Green Solvent for Organic Photovoltaics Processing](#)

[Mahmoud Farhat, Chih-Wei Chu](#)

2055 [Effect of Inserting Nanoscale-Thick Inorganic Interlayer Between Metal Electrode and Organic Layers on Photo-Sensitivity Enhancement of Organic Photo Diodes](#)

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2056 [Development of Printed OTFTs and Logic Circuits](#)

[Ta-Ya Chu, Afshin Dadvand, Neil Graddage, Py Christophe, Stephen Lang, Ye Tao](#)

2057 [High Throughput Experimental Solutions for Solid State Lithium-Ion Battery Research](#)

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2058 [Investigation of Alternative Mixed-Conducting Oxides for SOFC Anode Applications](#)

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2059 [Metal-Organic Framework-Based Flexible Resistive Switching Memory Devices](#)

[Myung-Joo Park, Jang-Sik Lee](#)

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[2061 Mapping Changes Induced By Few Monolayers of Al₂O₃ on a CuO Nanowire Surface](#)

[Sriya Banerjee, Zhengning Gao, Yoon Myung, Parag Banerjee](#)

[2062 Frequency and Area Dependence of High-K/Ge Mos Capacitors](#)

[Ivan Mitevski, Yiming Ding, Durga Misra](#)

[2063 Hydrothermally Synthesized Copper Gallium Delafossite Nanoflakes for \(Photo\)Electrocatalytic Water Splitting](#)

[Yuanbing Mao, Swati Mohan](#)

[2064 Raman Mapping and Delineation of III-V Semiconductor Band Bending Characteristics](#)

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2069 [A Novel Photodetector Based on Azo/SiO_x/N-Si Heterojunction Structure](#)

[Tsung-Cheng Tien, Tsung-Eong Hsieh, Bing-Chien Wu](#)

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[Meng-Huan Lee, Yu-Pin Lin, Tsung-Eong Hsieh](#)

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[Grigorii L. Soloveichik](#)

2072 [A Novel Approach to the Sustainable Synthesis of Carbon Fibers](#)

[Devin Monroe Keck, Monsur Islam, Rodrigo Martinez-Duarte](#)

2073 [Production of Hydrogen through Photo-Electro-Catalytic Oxidation of Coal Using TiO₂ Nanotube Arrays](#)

[Ding Wang, Bobby Mohanty, Bonan Wang, Eric Eddings](#)

2074 [Understanding the Electrochemically Induced Conversion of Urea to Ammonia for Direct Ammonia SCR Processes](#)

[Fei Lu, Gerardine G Botte](#)

[2075](#)[RBa\(Co, Ga\)4O7 Cathodes with High-Temperature Phase Stability for Solid Oxide Fuel Cells](#)

[Ke-Yu Lai, Arumugam Manthiram](#)

[2076](#)[Alternative Ion-Exchange Materials for Membrane Capacitive Deionization](#)

[Varada Menon Palakkal, Christopher George Arges](#)

[2077](#)[Electrochemical Reduction of Carbon Dioxide to Hydrocarbons Using Copper Nanocomposite Catalyst](#)

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