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[532\(Invited\) Structure and Properties of Electrolyte Solutions Based on Fluorinated Alkylphosphates As Nonflammable Solvents for Lithium-Ion Batteries](#)

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1105Development of Estimation Model for Corrosion Rate of Silver in Hydrogen Sulfide Gas

Satoko Takahashi, Hisakatsu Kawai

1106Hydrogen Entry Behavior into Pre-Rusted Steel in an Atmospheric Corrosion Environment

Saya Kaneko, Eiji Tada, Atsushi Nishikata

1107Corrosion Behavior of Aluminium Bronze with Addition of Silicon Prepared By Powder Metallurgy

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1108Electrochemical Corrosion Behaviors of 304 Stainless Steel with the Bimodal Grain Size Distribution

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1109Effect of Zn Existence on Mg Corrosion Due to Cu

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[1116 Investigation of Electrochemical Properties Between Titanium Scraps and Recycled Titanium](#)

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[1125Effect of Sulfate on Corrosion Behavior of Reinforcing Steel in Simulated Concrete Pore Solutions](#)

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[1126Numerical Models of Cathodic Protection for Buried Steel Pipes Under Insulator Coating Layer](#)

Masashi Odahara, Hiroaki Tsuchiya, Shinji Fujimoto

1127Effects of Crystallinity of Spark Plasma Sintered Fe Base Nano-Composite Alloy

Hyunwoong Na, Ji-Won Oh, Hanshin Choi

1128Corrosion of Aluminum Alloy-Polymer Matrix Composite Interfaces in Diverse Natural Atmospheric Environments

Brent Ernest Howard, Lloyd H. Hihara

1129Effect of Green Corrosion Inhibitors on the Corrosion Behaviour of Nanocrystalline W-42Cr-5Ni Alloy in 0.5 M NaCl Solution

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1130Surface Analysis of 4-Methyl-2-Phenyl-Imidazole on the Cu Surface

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1131The Synthesis and Anticorrosion Performance of Polyaniline/SiO<sub>2</sub> Nanocomposites with Different Wettability

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1132Oxide Scale Analysis of the Carbon Steel Exposed to Bentonite after Electrochemical Test

Masao Uyama, Takashi Hitomi, Hiroyuki Saito, Kazuki Aoshima, Motoaki Osawa

1133Microstructure and Electrochemical Characterizations of Mn-Ce Conversion Coating on LZ91 Magnesium Alloy

Ko-Lun Chang, Shun-Yi Jian, M.D. Ger, Hung-Hua Sheu

1134Semiconductive Behavior of Anodic Titanium Oxide Films with Different Thicknesses



Eri Fujimura, Yuhei Fujioka, Hiroaki Tsuchiya, Shinji Fujimoto

1135 Formation of Nanotubular Oxide Layers on Ti Alloys Containing Noble Metal

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1136 Investigation of Anticorrosion Coatings for Iron Using Polyaniline By Electrochemical Impedance Method

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1137 Electrochemical Conversion of CoSb<sub>3</sub> in Various Acidic Electrolytes

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Florina Branzoi, Catalina Pacuretu, Roxana Branzoi

1139 The Contribution of Hydrogen to the Loss of Mechanical Properties of a 7046 Aluminium Alloy Pre-Exposed in a Chloride Media

Loïc Oger, Christine Blanc, Lionel Peguet, Gregory Odemer, Eric Andrieu

1140 Hydration Structures and Water Chemistry at Zirconia-Water Interface

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1141 Layer-By-Layer Assembly of Graphene Oxide/Polymer Coating Film to Improve Corrosion Resistance

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1142 Study of Micro-Scale Experimental Teaching Materials of Corrosion and Corrosion Protection for Maintenance Engineers

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[Philippe Marcus](#)

1144[Connection Between Atomic Scale Characterization and Electrochemical Behavior during Passivation of Single Crystals on Ni-Cr and Ni-Cr-Mo Alloys](#)

[Kateryna Gusieva, Katie Lutton, Gopalakrishnan Ramalingam, Petra Reinke, Xiao-Xiang Yu, Ahmet Gulec, Laurence Marks, Evan Zeitchick, John Preezko, John Scully](#)

11453D [Impedance Spectroscopy: Analysis of Formation of Chromate Film](#)

[Yoshinao Hoshi, Yuta Endo, Isao Shitanda, Masayuki Itagaki](#)

1146([Invited](#)) [STEM / EELS Characterization of Passive Films Formed on Stainless Steels](#)

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1147([Invited](#)) [Passivity and Localized Corrosion of Stainless Steels in Energy-Related Applications](#)

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1148([Invited](#)) [Liquid Phase Ion-Gun Technique for Degradation and Evaluation of Oxide Films](#)

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1149[Effect of Cr Content on Pit Initiation Behavior at MnS Inclusions in Fe-Cr Steels](#)

[Shinpei Asano, Izumi Muto, Yu Sugawara, Nobuyoshi Hara](#)

[1150Effects of Applied Strain and Sensitization on SCC Behavior of 304 Stainless Steel in Atmospheric Corrosion Environments](#)

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[1151Microelectrochemical Investigation of Atmospheric Aging Effect on Pitting Corrosion Resistance at Manganese Sulfide Inclusion in Type 304 Stainless Steel](#)

[Aya Chiba, Izumi Muto, Yu Sugawara, Nobuyoshi Hara](#)

[1152Recovery of the Pitting Corrosion Resistance for a Sensitized Duplex Stainless Steel Using Interstitial Hardening](#)

[Nicole R Tailleart, Farrel J Martin, Roy Rayne, Robert Bayles, Aron Rubinoff, Leroy Levenberry, Paul M. Natishan](#)

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[1155Investigation of Structural Change of Rust Layer of Steels during Wet and Dry Cycles By Synchrotron Radiation and Neutron Beams](#)

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[1156The Kinetics of the Metastable Pit Nucleation on Metal Surfaces](#)

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[1157Analysis of the Passivation and Local Dissolution of Ni-Cr-Based Alloys Using the Cabrera-Mott and Point Defect Models](#)

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1158 [Opto-Electrochemical Spectroscopy](#)

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1159 [Thin Metal Oxide Coatings for Lightweight Alloys](#)

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[1351A Novel, Highly Effective, Chrome-Free, Smart-Release, Economically Viable Corrosion Inhibitor- from Lab Kinetics through to Industrial Coating Incorporation](#)

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1571([Invited](#)) [Magnetic MEMS for Industry 4.0](#)

[Marc Christopher Wurz](#)

[1572 Unleashing the Magic of Nanomagnet Assemblies - Direct-Write Deposition of Nanomagnet Logic Circuitry](#)

[Heinz Wanzenboeck, Marco Gavagnin, Emmerich Bertagnoli](#)

[1573 \(Invited\) A Single-Molecule Spin-Based Transistor](#)

[W. Schwarzacher, Richard Brooke, Doug Szumski, Richard Nichols, Bing-Wei Mao, Chengjun Jin, Kristian Thygesen](#)

[1574 \(Invited\) New Developments in Magnetic Inductors for On-Chip Power Conversion, Including Fabrication](#)

[E. J. O'Sullivan, Naigang Wang, Hariklia \(Lili\) Deligianni, Bruce Doris, Andrea Bahgat Shehata, Bucknell C. Webb, Lubomyr Romankiw, William J. Gallagher](#)

[1575 Development and Optimization of Thin-Film Technology Based Micro Inductors and Transformers](#)

[Sebastian Beringer, Dragan Dinulovic, Martin Haug, Lutz Rissing, Marc Christopher Wurz](#)

[1576 \(Invited\) On-Wafer Microwave Devices Based on Magnetic Materials](#)

[Zbigniew Celinski, Robert Camley, Ian Harward, Sara Goldman](#)

[1577 Optimized Cofeb Alloy Films for Electroformed Resonators](#)

[Jamin Ryan Pillars, Eric Donald Langlois, Christian L. Arrington, Todd Monson, Margo Staruch, Peter Finkel](#)

[1578 Effect of Annealing Temperature on the Coercivity and the Electrical Resistivity of the Electroplated Ni-Fe-W Alloy Film](#)

[Brij Mohan Mundotiya, Lutz Rissing, Marc Christopher Wurz](#)

1579 [Structuring Methods of Plastic Substrates for Electroplating Applications](#)

[Sebastian Bengsch, Mathias Rechel, Esmail Asadi, Marc Christopher Wurz](#)

### **E03-Molecular Structure of the Solid-Liquid Interface and Its Relationship to Electrodeposition 8**

1580 [Self-Assembled Monolayers on Ferromagnetic Metals Prepared By an Electrochemical Method](#)

[Rashida Parveen, Walther Schwarzacher, Svetlana Ovchinnikova, Alexander Masliy](#)

1581 [Electrocatalytic Reduction of Selenate on Gold Electrodes Alongside Copper Deposition](#)

[Jonathan Strobl, Daniel Scherson](#)

1582 [Exploring Different Concepts for 2D Cu Growth on Ru\(0001\) Assisted By Pb UPD Monolayer](#)

[Dongjun Wu, Stanko R Brankovic](#)

1583 [Electrochemical Silver Deposition Onto Pt\(111\) Surfaces](#)

[Ludwig A. Kibler, Khaled A. Soliman, Alan Plumer, Eric Bringley, Christopher S. Wildi, Jonathan E. Mueller, Timo Jacob](#)

1584 [Superconformal Film Growth: Challenges and Opportunities](#)

[Thomas P. Moffat, Guokun Liu, Shouzhong Zou, Liang Yueh Ou Yang, Chang Hwa Lee, Daniel Josell](#)

1585 [The Electrodeposition of Germanene](#)

[John Lewellen Stickney, Maria Ledina, Jin Jung, Nhi Bui](#)

1586 [Induced Co-Deposition of Cu-Ge Alloys](#)

[Giovanni Zangari, Fu Zhao, Marcel Mibus](#)

1587 [Growth-Inhibited Nucleation Enhancement: from High Density Nanoparticle Deposits to Nanometer Thin Continuous Films](#)

[Philippe M. Vereecken, Johannes Vanpaemel, Magi Nagar, Katrien Strubbe, Aleksandar Radisic](#)

1588 [The Effect of Bath Condition on the Composition of Si Thin Films Electrodeposited in Non-Aqueous Solvents](#)

[Yasuhiro Tsuyuki, Minami Tsuzuki, Yasuhiro Fukunaka, Takayuki Homma](#)

1589 [Preparation of Composite Film from Non-Suspended Solution By Electrochemical Technique](#)

[Ichiro Koiwa, Kenta Chokki, Nobuaki Watanabe, Kazuhiro Yabe](#)

1590 [\(Electrodeposition Division Research Award\) Using Liquid Metals for Advanced Electrodepositions](#)

[Stephen Maldonado](#)

1591 [Self-Terminated Electrodeposition Reactions for Electrocatalysis](#)

[Thomas P. Moffat, Yihua Liu, Sang Hyun Ahn, Rongyue Wang, Nicole L. Ritzert, Dincer Gokcen, Carlos Hangarter, Ugo Bertocci](#)

1592 [High Activity Oxygen Evolution Reaction Catalysts from Additive-Controlled Electrodeposited Ni and NiFe Films](#)

[Andrew A. Gewirth, Thao Thi Huong Hoang, Kevin Gary Schmitt](#)

1593 [First Principles Studies of the Structural and Electrocatalytic Properties of Ultrathin \(OXY\)Hydroxide FILMS on Precious Metal Substrates](#)

[Zhenhua Zeng, Joseph J. Kubal, Hee-Joon Chun, Jeff Greeley](#)

1594 Theoretical Investigation of Atomic-Scale Structure and Energetics of the Metal-Electrolyte Interface

Kendra Letchworth-Weaver, Christine K. Umbright, Maria K. Y. Chan, T. A. Arias

1595 In-Situ Microfluidic Study with Kinetic-Monte Carlo Simulations to Investigate Zn Electroplating Morphology at High Overpotentials

Tanya Gupta, Greg Davies, Jeung Hun Park, Daniel A Steingart

1596 In-Situ Raman Spectroscopy Study on the Preferential Adsorption of Electrolyte Species on Electrode Surface of Lithium Ion Battery

Yingying Sun, Masahiro Yanagisawa, Takayuki Homma

1597 In-Situ Measurements of Stress during Electrodeposition of Copper Nanofilms: Surface and Grain-Boundary Migration of Atoms and the Effect of Chloride Ions

Joseph A Murphy, Catherine Lenihan, Robert Patrick Lynch, D. Noel Buckley

1598 In-Situ Stress Measurements during Cobalt Electrodeposition

Gery R. Stafford, Ugo Bertocci

1599 Self-Organized Porous Anodic Oxide Formation: Role of Oxide Flow Driven By Surface Stress

Kurt Hebert, Omer Capraz, Pratyush Mishra, Shinsuke Ide, Pranav Shrotriya

1600 Control of Accumulation of Cu(I) in Copper Sulfate Electroplating Plating Solution

Toshiaki Koga, Chieko Hirakawa, Yoshitaro Sakata, Hiroaki Noma, Kazuhiro Nonaka, Nao Terasaki

1601 Spectroscopic and Electrochemical Analysis of Cu(I) Complex of Copper Sulfate Electroplating Solution and Evaluation of Plated Films

[Toshiaki Koga, Chieko Hirakawa, Yoshitaro Sakata, Hiroaki Noma, Kazuhiro Nonaka, Nao Terasaki](#)

1602 [Electrodeposition of Cobalt Selenide Thin Films Using Combined Voltammetry and Electrochemical Quartz Crystal Microgravimetry](#)

[ki-Jung Paeng, hyung Woo Jee](#)

1603 [Effect of Amine Additive on Properties of Electrodeposited Nickel](#)

[Hyoung Chan Kim, Wook Jin Lee, Sang Joon Lee, Yang Do Kim](#)

#### **E04-Electrodeposition for Energy Applications**

1604 [\(Electrodeposition Division Early Career Investigator Award\) Self-terminated Electrodeposition – A New Way for Growing Metal Thin Films](#)

[Yihua Liu](#)

1605 [\(Invited\) Novel Method for Conformal  \$\text{LiMn}\_2\text{O}\_4\$  thin Films Fabrication on Planar and 3D Microstructured Substrates](#)

[Nouha Labyedh, Marina Timmermans, Felix Mattelaer, Maarten J. Mees, Christophe Detavernier, Philippe M. Vereecken](#)

1606 [\(Invited\) Photoelectrochemical Water Splitting with Doped  \$\text{TiO}\_2\$  Nanotube Arrays: Limits and Water Oxidation Efficiency](#)

[Lok-kun Tsui, Giovanni Zangari](#)

1607 [\(Invited\) The Effect of Size and Thickness of Pt Nanostructures on Au on Formic Acid Oxidation](#)

[Natasa Vasiljevic, Michael Peter Mercer, Zakiya Al Amri](#)

1608 [\(Invited\) De-Alloying of  \$\text{Cu}\_x\text{Au}\_{\(1-x\)}\$  Alloys at Different Length Scales for the Development of Active Nanoporous Au Catalysts](#)

[Nikolay Dimitrov, Jiaxin Xia, Stephen Ambrozik, Innocent Achari](#)

1609 [Electrodeposition and Characterization of Pt\(100\) Nanostructures](#)

[Erwan Bertin, Sebastien Garbarino, Magali Brunet, David Pech, Daniel Guay](#)

1610 [Cobalt-Palladium Alloys for Hydrogen Generation Via Water Electrolysis](#)

[Dawid Kutyla, Karolina Kolczyk, Remigiusz Kowalik, Krzysztof Mech, Piotr Zabinski](#)

1611 [Electrodeposition of Ni-Ga Alloy Catalyst from BMIM-Otf Ionic Liquid Electrolyte for Electroreduction of Carbon Dioxide](#)

[Jinqiu Zhang, Xing Gu, Peixia Yang, Maozhong An](#)

1612 (Invited) [Pt Monolayers and Submonolayers on Nobel Metal Nanoparticles: Substrate- and Coverage-Dependent Atomic Structures and Electrocatalytic Activities](#)

[Lingyi Peng, Hongda Du, Lin Gan](#)

1613 [Electrochemical Codeposition of Cobalt and Ruthenium from Acidic Chloride Electrolytes](#)

[Krzysztof Mech, Justyna Mech, Piotr Zabinski, Remigiusz Kowalik, Marek Wojnicki](#)

1614 [High Mass Activity and Stability of Core-Shell Pd-Ni Nanoparticles Electrodeposited on Diamond Electrodes for Direct Alcohol Fuel Cell Applications](#)

[Christos K. Mavrokefalos, Maksudul Hasan, James F. Rohan, John S. Foord](#)

1615 [Miniature Fuel Cell with Monolithically Fabricated Si Electrodes -Fabrication of Pd-Pt Catalyst By H-UPD-Slrr-](#)

[Toshimitsu Miyauchi, Natasa Vasiljevic, Masanori Hayase](#)

1616 [Redox Deposition of Hydrous Ruthenium Dioxide Onto Porous Vanadium Oxide Nanowires Prepared By Electroless Deposition](#)

Jing-Mei Li, Chi-Chang Hu, Yung Jung Hsu

1617 Electrochemical Decoration of Core Shell Metal Nano Particles over TiO<sub>2</sub> Nanotubes for Oxygen Reduction Reaction

Bukka Santhosh, Yuhei Umehara, Koichi Higashimine, Raman Vedarajan, Noriyoshi Matsumi

1618 (Invited) Electrochemical Deposition of Thick and Adherent MnO<sub>2</sub> Films for Thin-Film Batteries

Nouha Labyedh, Meryem Ozge Arman, Marina Timmermans, Stella Deheryan, Philippe M. Vereecken

1619 Electrodeposited and Oxidized Mn/Co-Fe As Bi-Functional Electrocatalysts for Rechargeable Zinc-Air Batteries

Ming Xiong, Douglas G Ivey

1620 Highly Glossy Copper Foil Electrodeposition Used As a Negative Electrode of Lithium Batteries

Chih-Han Yen, Chia-Fu Hsu, Wei-Ping Dow, Kuen-Yuen Hwang, Jui-Chang Chou, Kuei-Sen Cheng, Huei-Fang Hwang

1621 Electrodeposition As an Approach for Fabricating High Performance Battery Electrodes

Amy C Marschilok, Kenneth J Takeuchi, Esther S Takeuchi

1622 Mechanical Properties of Electrodeposited Al-W Alloy Films and the Effects of Subsequent Heat Treatment

Shota Higashino, Ayumu Takahashi, Ryuta Kasada, Masao Miyake, Tetsuji Hirato

1623 (Invited) Pulsed Electrodeposition of Metallic Nanoparticles for Energy Conversion and Storage Applications



[Shahram Karimi](#)

1624 [Gradient Morphologies in Electrodeposited Manganese Dioxide and Their Effect on Electrochemical Performance](#)

[Scott W Donne, Hannah Fellows, Yaser Beyad](#)

1625 [Polymeric-Metal Oxide Nanostructures As Future Materials for Energy Applications](#)

[Agnieszka Brzózka, Krzysztof Fic, Grzegorz Dariusz Sulka](#)

1626 [Microstructural Analysis of Initial Scale Formed on Stainless Steel Sheet Immersed in Hot Spring Water](#)

[Motoaki Morita, Wataru Shinohara, Ryohei Hashimoto, Shinichi Motoda](#)

1627 (Invited) [Electrodeposition of PbTe Thick Films for Micro Thermoelectric Devices](#)

[Tingjun Wu, Nosang Vincent Myung](#)

1628 [Copper\(II\) Complexes in Aqueous Alkaline Copper\(II\)-Lactate Solutions for Electrodeposition of Copper\(I\) Oxide](#)

[Tianyu Chen, Atsushi Kitada, Kazuhiro Fukami, Dilshadbek T. Usmanov, Lee Chuin Chen, Kenzo Hiraoka, Kuniaki Murase](#)

1629 [Electrodeposited ZnO Nanostructures Onto Transparent Metallic Web Electrodes for Photocatalytic Applications](#)

[Elena Matei, Lucian Diamandescu, Monica Enculescu, Irina Zgura, Ionut Enculescu](#)

1630 [Electrodeposition of Tellurium Thin Films from Citric Acid Bath](#)

[Remigiusz Kowalik, Dawid Kutyla, Karolina Kolczyk, Krzysztof Mech, Tomasz Tokarski, Piotr Zabinski](#)

1631 [Silver Electrodeposition Based Multicolor Electrochromic Cell Toward Energy Saving Applications](#)

Norihisa Kobayashi, Kazuki Nakamura, Jineui Hong, Riho Tejima

1632Enhanced Photoelectrochemical Behavior of Undoped and Doped BiVO<sub>4</sub> inverse Opal Photoelectrode for Photoelectrochemical Water Splitting

Balamurugan Maheswari, soon Hyung Kang

1633Anodized Porous Oxide Thin Films for Energy Application

Hua Cheng, Dehui Zhang, Dong Wu, Zhouguang Lu

1634Cascading Alignment of Multilayered SnO<sub>2</sub>/WO<sub>3</sub>/BiVO<sub>4</sub> Inverse Opal Skeletons in Photoelectrochemical Water Splitting

Gun Yun, Soon Hyung Kang

1635Pulse Electrodeposited AgGaS<sub>2</sub> Films and Their Optical Properties K.R.Murali

Kollegal Ramakrishna Murali

1636Effect of Oxide Intermediate Layers on Pyramidally Textured Cu<sub>2</sub>O/ZnO Solar Cells Prepared By Electrodeposition

Tsutomu Shinagawa, Masaya Chigane, Junichi Tani, Masanobu Izaki

1637Ionic Liquid-Assisted Electron Transfer in Micelles for Simultaneous Deposition of Uniform Ag Nanoparticles at Electrode Surface and in Bulk Microemulsions

Zenglin Wang, Yuhan Li, Chuan Zhao

1638Improving the Electrolytic Hydrogen Production Using Co-Cu-Mo Based Ionic Activator

Milica P Marceta Kaninski, Sladjana Lj Maslovara, Petar Z Lausevic, Djordje P Saponjic, Zeljka M Nikolic, Gvozden S Tasic, Vladimir M Nikolic

1639Direct Growth of Birnessite-Type MnO<sub>2</sub> on Activated Carbon Cloth for a Flexible Supercapacitor

[Masaharu Nakayama, Koki Kaneshige, Kyohei Komine](#)

1640 [Fine Grained Au Films with Controllable Mechanical Strength By Pulse Plating for Micro-Electrical-Mechanical System Accelerometer](#)

[Chun-Yi Chen, Masaharu Yoshida, Tso-Fu Mark Chang, Daisuke Yamane, Katsuyuki Machida, Kazuya Masu, Masato Sone](#)

1641 [CuIn\(Ga\)Se<sub>2</sub> Solar Cell Fabricated By All Wet-Processes](#)

[Kangju Park, Sungkyu Park, Dajeong Lee, Hyunsoo Jin, Jihye Gwak, Yang Do Kim, Dongyun Lee](#)

1642 [Sn-Cu Alloy Microtubes for Li-Ion Battery Anode Prepared By Electroless Plating](#)

[Yutaka Fujiwara, Shingo Ikeda, Masanari Takahashi, Yasuyuki Kobayashi](#)

1643 [Effects of Additives on Performance of Zinc Air Battery](#)

[Ching-Chen Wu, Shih-Hsuan Huang, Kan-Lin Hsueh, Wen-Sheng Chang, Chang-Chung Yang](#)

1644 [Effect of Supporting Electrolytes on AlCl<sub>3</sub>/Diglyme Aluminum Electrodeposition Bath](#)

[Yukiya Kato, Atsushi Kitada, Kazuhiro Fukami, Kuniaki Murase](#)

1645 [Flexible CIGS Thin Film Solar Cell from Electrodeposited Precursors](#)

[Youngho Kim, Daejung Kim, Hyunpil Oh](#)

## **F01-Industrial Electrochemistry and Electrochemical Engineering General Session**

1646 [Ni/SiC Composite Coating on Graphite– Geometry Effect on the Coatings](#)

[S Harinipriya, Belal Usmani](#)

[1647On the Dynamics of Solid Oxide Fuel Cell Stacks: Preliminary Model-Driven Design and Control](#)

[Carlos Boigues Muñoz, Lorenzo Abate, Stephen J. McPhail](#)

[1648Experimental and Numerical Study of Small Lead Acid Batteries Regeneration](#)

[Francois Astier, Philippe Mandin, Jeremy Boyer, Odile Merdrignac, Nicolas Noiret](#)

[1649Improvement of Current Efficiency for a Hydrogenation Electrolyzer with Low Concentration of Toluene](#)

[Yuki Sawaguchi, Naoto Morita, Kensaku Nagasawa, Koichi Matsuzawa, Akihiro Kato, Yoshinori Nishiki, Shigenori Mitsushima](#)

[1650Systematic Characterization of a SOFC Short Stack in Multiple Operation Modes](#)

[Stephen J. McPhail, Bruno Conti, Marco Graziadio](#)

[1651A Study on Workability and Durability of Different Plating Thickness of Silver on Monel As a Cathode Material for Oxygen Reduction](#)

[Utsav Raj DoteI](#)

[1652Influence of Different Operating Parameters on the Partial Reduction of Oxygen for Hydrogen Peroxide Production](#)

[Carsten Cremers, Birgit Kintzel, Keerthi Priya Duraisamy, Karsten Pinkwart, Jens Tübke](#)

[1653Electrochemical Behaviour of Industrial IrO<sub>2</sub>-Ta<sub>2</sub>O<sub>5</sub> Anodes for Copper Electrowinning](#)

[Wenting Xu, Geir Martin Haarberg, Svein Sunde, Frode Seland, Arne petter Ratvik, Erik Zimmerman, Torjus Åkre](#)

[1654Synthesis of Novel Graphene Composite Adsorbent for Water Treatment By Adsorption and Electrochemical Regeneration](#)

[Farbod Sharif, E.P.L. Roberts](#)

1655 [Nanoscale Size Effects in Catalytic Activity of RuO<sub>2</sub> for Oxygen Evolution](#)

[Shuhei Kimura, Kenji Kawaguchi, Masatsugu Morimitsu](#)

1656 [Gas Anodes for Electrowinning of Aluminium](#)

[Tommy Mokkelbost, Babak Khalaghi, Karen Sende Osen, Wei Bai, Ole Sigmund Kjos, Geir Martin Haarberg](#)

1657 [Highly Stable Mixed Metal Oxide Anodes for Industrial Electrochemical Processes](#)

[Satyananda Kishore Pilli, Bryan K Boggs](#)

1658 [A Generalized Numerical Method for Approximating Equilibrium Reactions for Electrochemistry Simulations](#)

[Kyle Lange, Graham Goldin, Chris Lueth, Christian Walchshofer, Alexandros Makridis](#)

1659 [Investigation of the Optimum Operative Conditions for a Parallel Plate Electrochemical Reactor](#)

[Giuliana Litrico, Pierre Proulx](#)

1660 [An Electrochemical Study of Sb and Ni Doped SnO<sub>2</sub> Electrodes for Ozone Electrolysis](#)

[Staffan Sandin, Joakim Bäckström, Ann Cornell](#)

1661 [Electrochemical Kinetics during Production of Liquid Iron at 1550 C Via Molten Oxide Electrolysis](#)

[Jan-Christian Wiencke, Hervé Lavelaine, Christophe Rapin, Pierre-Jean Panteix, Carine Petitjean](#)

1662 [Electrochemical Oxidation of Lignin for Production of Value Added Chemicals](#)

[Raziyeh Ghahremani, John A Staser](#)

[1663A Novel Approach to Coal Processing - Electrochemical Solutions to Pollution Reduction and Material Synthesis](#)

[Aliakbar Yazdani, Gerardine G Botte, Santosh H. Vijapur, Dan Wang, Yuxuan Wang, Ben Sheets](#)

[1664Facile Fabrication of Large-Area and Free-Standing Ni Inverse Opals](#)

[Pei-Sung Hung, Chen-Hong Liao, Bo-Han Huang, Wei-Shen Chiang, Tsung-Lin Hsieh, Pu-Wei Wu](#)

[1665Bimetallic Pt-Based Electrocatalysts Supported on Carbon Fiber for Coal Electrooxidation to Produce Hydrogen](#)

[Ping Yu](#)

[1666Present Status of Electrolytic Technologies in the Field of Functional Water Treatment](#)

[Yoshinori Nishiki](#)

[1667The Characteristics of the Bismuth Telluride Based Materials Via Gas Phase Reaction Method](#)

[Hye Young Koo, Gook Hyun Ha](#)

[1668Corrosion Resistance Properties of Cu-Sn Electrodeposits from Cyanide-Free Bath](#)

[Toshihiro Nakamura, Yoshiki Konno, Takayo Yamamoto, Tomio Nagayama](#)

[1669Electrodeposition of Nickel from Aqueous Chloride Electrolytes](#)

[Mats Jensen, Geir Martin Haarberg, Frode Seland, Svein Sunde, Arne Petter Ratvik, Torjus Åkre](#)

[1670Electrodeposition of Invar Fe-Ni Alloy/SiC Particle Composite](#)

[Tomio Nagayama, Takayo Yamamoto, Toshihiro Nakamura](#)

[1671 Electrochemical Reactor Design and Operation for the Simons Fluorination of Methyl Sulfonyl Fluoride](#)

[Dawei WANG, Yaqiong WANG, Wenlin Xu](#)

[1672 Paired Electro-Synthesis of PbO<sub>2</sub> and Pb As Lead Storage Battery Active Materials Using Pb\(NO<sub>3</sub>\)<sub>2</sub> as a Precursor](#)

[Yaqiong WANG, Baotong LI, Wenlin Xu](#)

[1673 Paired Electro-Synthesis of PbO<sub>2</sub> and Pb As Lead Storage Battery Active Materials Using PbSO<sub>4</sub> As a Precursor](#)

[Yaqiong WANG, Xuan Zhao, Wenlin Xu](#)

[1674 Preparation of Multi-Walled Carbon Nano-Tube Composite Copper Plating from Acidic Solution](#)

[Yota Kamebuchi, Yuki Kamimoto, Ryoichi Ichino, Takeshi Bessho](#)

[1675 Evaluation of Leak and Reverse Current in a Bipolar Electrolyzer](#)

[Takayuki Kobayashi, Yousuke Uchino, Shinji Hasegawa, Ikuo Nagashima, Yoshio Sunada, Akiyoshi Manabe, Koichi Matsuzawa, Shigenori Mitsushima](#)

## **F02-Electrochemical Impedance Spectroscopy: In Honor of Bernard Tribollet**

[1676 \(Keynote\) Interrogation of the Interfacial Capacitance By a Double Modulation Technique](#)

[Rene Antaño López, Michel Keddad, Hisasi Takenouti, Mireille Turmine, Vincent Vivier](#)

[1677 \(Invited\) Synergistic Use of Electrochemical Impedance Spectroscopy and Photoelectrochemical Measurements for Studying Solid State Properties of Anodic HfO<sub>2</sub>](#)

Monica Santamaria, Giada Tranchida, Andrea Zaffora, Francesco Di Franco, Hiroki Habazaki, Francesco Di Quarto

1678(Invited) Phenomena in Mass-Transport Electrochemical Impedance Spectroscopy at Channel Electrodes

Thomas Holm, Mats Ingdal, Espen Vinge Fanavoll, Svein Sunde, Frode Seland, David A. Harrington

1679(Invited) Secondary Modulation in Electrochemical Impedance Spectroscopy Instrumentation

Xueyuan Zhang, Dominik Moosbauer

1680(Invited) Transmission Line Modelling of Thin Film Graphene Electrodes: Capacitance of Chemically-Derived Graphene in Monolayer State

Wataru Sugimoto, Zhongwei Lei, Takahiro Mitsui, Masayuki Itagaki

1681(Invited) Theory of Impedance Response of Porous Electrodes: Simplifications, Inhomogeneities, Non-Stationarities and Applications

Jun Huang, Jianbo Zhang

1682The Influence of Homogeneous Reactions on the Impedance Response of a Rotating Disk Electrode

Morgan Harding, Bernard Tribollet, Mark E. Orazem

1683The Ohmic Impedance Contribution to the Indirect Impedance Measurement

Christopher L. Alexander, Mark E. Orazem

1684(Invited) Modeling Current-Distribution Effects on the Impedance of Electrodes Covered with Films

Svein Sunde, Morten Tjelta



1685(Invited) Characterization of Thin Passive Film-Electrolyte Junctions. Amorphous Semiconductor (a-SC) Schottky Barrier Approach

Francesco Di Quarto, Francesco Di Franco, Shahab Miraghaei, Monica Santamaria, Fabio La Mantia

1686(Keynote) Electrochemical Impedance Spectroscopy Characterization of Advanced Materials for Energy

Thomas Collet, Dries Van Laethem, Xinhua Zhu, Nils Van den Steen, Rodrigo Montoya, Lucia Fernandez Macia, Johan Deconinck, Annick Hubin

1687Approximability of Impedance Spectra By RC Elements and Implications for Impedance Analysis

Michael Schoenleber, Ellen Ivers-Tiffée

1688(Invited) Linear and Nonlinear Electrochemical Impedance Spectroscopy: A Data Science Perspective

Matthew D Murbach, Daniel T. Schwartz

1689(Invited) Thermoelectrochemical Impedance Method Fundamental Aspect and Applications

OMAR Aaboubi

1690Using of Finite Elements Modeling Computer Simulation in Impedance Prediction and Data Evaluation

Petr Vanýsek, Petr Vyroubal, Vitězslav Novák

1691(Keynote) The Electrochemical Behavior of an Inhibitor Containing Ce<sup>3+</sup> for a Low-Alloy Steel in a 3.5% NaCl Solution

Xingyue Yong, Ranran Du, Yong Fu, Ying Wnag, Zhenglin Chen, Ning Xiao

1692(Invited) Mechanisms of Inhibition of Corrosion of Metal Reinforcements for Eco Friendly Concrete Containing a Biological Admixture

[Françoise Feugeas, Sara Chakri, Essia Belhaj, Eliane Sutter, Vincent Vivier, Thierry Meylheuc, Bernard Tribollet](#)

[1693\(Invited\) An Impedance Study of the Factors Affecting the Passivity of Steel in Concrete](#)

[J.M. Deus, B. Díaz, X.R. Nóvoa, M. C. Pérez](#)

[1694\(Invited\) Improved the Impedance Spectroscopy Measurements with Non-Contact Microelectrodes Embedded into a Flexible Polymer Comprising a Microfluidic Network](#)

[Mohammed Kechadi, Bernard Tribollet, Jean Gamby](#)

[1695\(Invited\) Localized Electrochemical Techniques for Characterizing Welded Areas of Dissimilar Al Alloys Joined By FSW](#)

[Caio Palumbo Abreu, Hercilio G. de Melo, Mireille Turmine, Nadine Pebere, Isolda Costa, Vincent Vivier](#)

[1696\(Invited\) Electrochemical Impedance Study on Anodic Dissolution of Magnesium in Sodium Sulfate Solution](#)

[Keita Umetsu, Yoshinao Hoshi, Isao Shitanda, Masayuki Itagaki](#)

[1697Magnesium Alloy Corrosion Under Thin Electrolyte Layer Using Electrochemical Impedance Spectroscopy and Polarization Curve](#)

[Fahe Cao, Zejie Zhu, Xiaoyan Liu, Jianqing Zhang](#)

[1698\(Invited\) Impedance Analysis of the Aluminum Oxide Formation](#)

[Mamié Sancy, Fabiola Pineda](#)

[1699\(Invited\) Study of Barrier Oxide Growth on Impure Aluminum in Aqueous Solution By Chronoamperometry and Electrochemical Impedance Spectroscopy](#)

[Nils-Håvard Giskeødegård, Kemal Nisancioglu](#)

[1700 On Interpretation of Constant-Phase Elements](#)

[Mark E. Orazem, Bernard Tribollet, Vincent Vivier, Marco Musiani, Nadine Pebere](#)

[1701 \(Keynote\) Local Electrochemical Impedance Spectroscopy: A Powerful Tool for Studying Corrosion Inhibition Mechanisms on 2024 Aluminum Alloy](#)

[Nadine Pebere, Emilie Lebon](#)

[1702 \(Invited\) EIS Analysis of the Water Uptake Process in Model Epoxy Coatings and Free Films](#)

[Coralie Vosgien Lacombe, Geoffrey Bouvet, Dao Trinh, Stéphanie Mallarino, Sébastien Touzain](#)

[1703 \(Invited\) Relating Paint Structure to Electrochemical Impedance Spectroscopy](#)

[Anthony ewart Hughes, Shyama Deepak Ranade, Mike yongjun Tan, Y Sam Yang, Maria Forsyth](#)

[1704 \(Invited\) New Benzoxazine Resins Coated on Anodized Aluminium Alloys: Electrochemical Behaviour of Efficient Corrosion Protection Systems](#)

[Marjorie Olivier, Alexis Renaud, Ludovic Dumas, Adrien Delangre, Yoann Paint, Leila Bonnaud, Marc Poorteman, Philippe Dubois](#)

[1705 \(Invited\) Discussion on the Way\(s\) to Analyze the Electrochemical Impedance Spectroscopy Spectra for the Reduction of Nitric Acid on Passive Metals](#)

[Marie Benoit, Christian Bataillon, Benoit Gwinner, Frédéric Miserque, Carlos Sanchez-Sanchez, Bernard Tribollet, Vincent Vivier](#)

[1706 \(Invited\) EIS for the Early Detection of Unexpected Corrosion Phenomena in Highly Resistive Organic Solutions: Multiple Electrical Equivalent Circuit Fitting Validated By Parametric Continuity Conditions](#)

[Ricardo P. Nogueira, Clément Boissy, Aurélien Percheron, Virginie Roche, Lionel Renaud, Pierre Mékarbané, Denis Siguret](#)

1707(Invited) Parameter Identification in Electrochemical Impedance Spectroscopy Applications: Analysis of Sensitivity

Mickael Boinet, Cyril Condolf, Remi Goulet, Bernard Tribollet, Vincent Vivier

1708 Impedance Spectroscopy and Differential Electrochemical Mass Spectrometry As Tools for Characterization of Mediated Oxidation of Organic Pollutants

Piotr Polczynski, Rafal Robert Jurczakowski, Wojciech Grochala

1709(Invited) Electrochemical Impedance Study of Lithium Cobalt Oxide Thin Film in Some Ionic Liquids

Yasushi Katayama, Shin-ichiro Fujimoto, Naoki Tachikawa, Kazuki Yoshii, Tetsuo Nishida, Hideto Imai, Toshihiro Takekawa

1710(Invited) Synergy of Nyquist and Bode Electrochemical Impedance Spectroscopy Studies to Stoba in Lithium Ion Battery

Fu-Ming Wang, Lyu-Ye Yang

1711(Keynote) Non-Destructive Analysis of Electrochemical Systems By Electrochemical Impedance Spectroscopy

Tetsuya Osaka, Daikichi Mukoyama, Hiroki Nara, Tokihiko Yokoshima, Toshiyuki Momma

1712(Invited) in-Situ Impedance of Lithium-Ion Rechargeable Batteries during Charge and Discharge

Masayuki Itagaki, Yoshinao Hoshi, Isao Shitanda

1713 Interfacial Impedance Characterization and Equivalent Circuit Modeling Analysis of a Li-O<sub>2</sub> Battery

Ruben Nelson, Mark H Weatherspoon

1714(Invited) Effect of Position of Reference Electrode on Electrochemical Impedance in Laminated Lithium-Ion Rechargeable Batteries

[Yoshinao Hoshi, Yuki Narita, Isao Shitanda, Masayuki Itagaki](#)

[1715\(Invited\) Analysis of Li-Ion Battery By EIS Response By Equivalent Circuit and Verification of Estimated Parameters](#)

[Toshiyuki Momma, Daikichi Mukoyama, Hiroki Nara, Tokihiko Yokoshima, Tetsuya Osaka](#)

[1716\(Invited\) Impedance Analysis Using Equivalent Circuits with Transmission Line Model for Reaction Distribution in Polymer Electrolyte Fuel Cell and Li-Ion Battery](#)

[Hiroki Nara, Daikichi Mukoyama, Tokihiko Yokoshima, Toshiyuki Momma, Tetsuya Osaka](#)

[1717Quantitative Reconstruction of Half-Cell Impedances of Commercial Lithium-Ion Cells By Three Electrode Measurements and Impedance Modeling](#)

[Stefan Schindler, Michael A. Danzer](#)

[1718Quantitative Analysis of Time-Domain Supported Electrochemical Impedance Spectroscopy Data of Li-Ion Batteries: Reliable Activation Energy Determination at Low Frequencies](#)

[Andreas Mertens, Izaak C. Vinke, Hermann Tempel, Hans Kungl, L.G.J. de Haart, Rüdiger-Albrecht Eichel, Josef Granwehr](#)

[1719\(Invited\) AC Impedance Studies on Electrode/Electrolyte Interface in Lithium-Ion Batteries](#)

[Takeshi Abe](#)

[1720\(Invited\) Electrochemical Impedance Spectroscopy for Polymer Electrolyte Membrane Fuel Cells: Understanding the Relationship Between Liquid Water and Performance](#)

[Aimy Bazylak](#)

[1721\(Keynote\) Electrochemical Impedance Spectroscopy for Sensor and Biosensor Characterization and for Impedimetric Sensing](#)

Christopher Brett, Madalina Barsan, Mariana Ghica

1722(Invited) The Impedance of Bioelectrochemical Interfaces

Manuela Rueda, Francisco Prieto, Julia Alvarez-Malmagro

1723(Invited) Evaluating Corrosion Processes in an Aluminum Alloy, AA2024, Assisted By a Consortium of Microorganisms

Maritza Angelica Paez, Claudia Alvarado, Miguel Gulppi, Grace Gomez, Mamie Sancy, Manuel Ignacio Azocar, Nelson Vejar, Jenny Blamey, Paulo Molina, Jose H Zagal

1724Gentle, Nondestructive Monitoring of Wound Healing in Cell-Based Assays Using Electrochemical Impedance Spectroscopy

Heinz Wanzenboeck, Emmerich Bertagnolli

1725(Invited) Correlation of Electrochemical Dissolution and Impedance of Active Implant Electrodes from Platinum and Iridium

Achim Walter Hassel, Jan Philipp Kollender, Georg Sprinzl, Theo Doll

1726(Invited) Corrosion Inhibitor (Decanethiol) for Carbon Steels Exposed to Aqueous CO<sub>2</sub>

Zineb Belarbi, Fernando Farelas, Marc Singer, David Young, Srdjan Nesic

1727(Invited) Using High Frequency Impedance Measurements for Phase Wetting Detection and Water Layer Thickness Characterization in Two-Phase Oil-Water Flow

Luciano Paolinelli, Srdjan Nesic, Yao Juncheng, Ahmadreza Rashedi

1728Dynamic Stress Analysis at Solid Electrodes

Gery R. Stafford, Ugo Bertocci

1729(Invited) Effect of Mechanical Stress on the Passivity of Steel

[Dominique Thierry, Andrej Nazarov, Vincent Vivier](#)

[1730\(Invited\) Electrochemical Impedance Analysis of Printable Porous Carbon Electrode for Realization of High-Power Biofuel Cell and Wearable Self-Powered Biosensor](#)

[Isao Shitanda, Yoshinao Hoshi, Masayuki Itagaki](#)

[1731 Impedance Spectroscopy of Direct Ethanol Fuel Cells with Anodes Containing Pt Group Metals](#)

[Piotr Polczynski, Aleksandra Mikolajczak, Adam Lewera, Rafal Robert Jurczakowski](#)

[1732 Monitoring of Corrosion Resistance of Steel in Simulated Concrete Pore Solution By EIS](#)

[Tatsuki Okamoto, Hiroyuki Tokieda, Yoshinao Hoshi, Isao Shitanda, Masayuki Itagaki](#)

[1733 Detection Method of Corrosion Site of Reinforcing Steel in Concrete By Two Electrode System](#)

[Taisuke Koike, Hiroyuki Tokieda, Yoshinao Hoshi, Isao Shitanda, Masayuki Itagaki](#)

[1734 Influence of C-Rate on Impedance Spectra in Lithium-Ion Rechargeable Batteries By in-Situ EIS](#)

[Hirotaka Kato, Yoshinao Hoshi, Isao Shitanda, Masayuki Itagaki](#)

[1735 EIS Study on Solid Electrolyte Deposition of Copper Film](#)

[Yuka Narui, Kenta Kojima, Toru Iwabuchi, Yoshinao Hoshi, Isao Shitanda, Masayuki Itagaki, Hiroshi Yanagimoto, Motoki Hiraoka, Hirofumi Iisaka](#)

[1736 Analysis of Warburg Impedance of Lithium-Ion Rechargeable Batteries By Wavelet Transformation](#)

[Yusuke Gamano, Yoshinao Hoshi, Isao Shitanda, Masayuki Itagaki](#)

[1737Evaluation of Photoelectrochemical Glutathione Sensors Using of Electrochemical Impedance Spectroscopy](#)

[Kensuke Katagishi, Asako Kuragano, Chiaki Terashima, Norihiro Suzuki, Kazuya Nakata, K. Katsumata, Yoshinao Hoshi, Isao Shitanda, T. Kondo, M. Yuasa, Masayuki Itagaki, Akira Fujishima](#)

## **F03-Contemporary Issues and Case Studies in Electrochemical Innovation 2**

[1738\(Invited\) Using Industry to Inspire Academic Research](#)

[Esther S Takeuchi, Amy C Marschilok, Kenneth J Takeuchi](#)

[1739\(Invited\) Vionx Energy: A Small Company Leveraging Large-Company Innovations](#)

[Mike L. Perry, Robert M. Darling](#)

[1740The Joint Center for Energy Storage Research: Integration of Research, Development, and Demonstration](#)

[Fikile R. Brushett, Lynn Trahey, Devin Hodge](#)

[1741Lithium Battery Start-Ups](#)

[Nitash P Balsara](#)

[1742Model Based Battery Management Systems \(BMS\) - from Theory to Commercialization](#)

[Manan Pathak, Neil-Dawson Elli, Tae-Jin Jang, Chintan Pathak, Venkat R. Subramanian](#)

[1743Leveraging Available Resources: A Small Business Perspective on Collaboration and Commercialization](#)

[Katherine E Ayers](#)

[1744Center Approach to Accelerate Technology Commercialization](#)



[Gerardine G Botte](#)

1745([Invited](#)) [Industrialization Trial of a Biosensor Technology](#)

[Keishi Ohashi, Tetsuya Osaka](#)

1746[Electrochemical Innovation in Electronics: Is Success Sustainable?](#)

[Hariklia \(Lili\) Deligianni](#)

1747[Trials, Tribulations, and Some Success in Developing Modeling Tools for the Electrochemical Industry](#)

[Uziel Landau](#)

1748([Invited](#)) [Stable Nanocrystalline Electrodeposits: Case Studies Spanning from Theory to Products](#)

[Christopher Allan Schuh](#)

1749[Electrolyte Maintenance Technology Platform: Applying Learning Across Electrochemical Machining and Stripping Processes](#)

[Maria E. Inman, E. J. Taylor, Brian Skinn, Timothy D Hall, Stephen Snyder, Heather McCrabb, Savidra Lucatero, Holly Garich](#)

1750[Development of Magnetic Films for Encoding of Information on Heavy Equipment Parts](#)

[Fu Zhao, Tom Pechan, Steve Wilmeth, Paolo Sechi, Don Arns, Giovanni Zangari](#)

1751[Development of a Functional Trivalent Chromium Electroplating Process: An Innovation Is Not Equivalent to an Invention](#)

[E. J. Taylor, Maria E. Inman, Timothy D Hall, Stephen Snyder, Savidra Lucatero](#)

1752([Invited](#)) [Electrokinetic Separations to Increase the Percent Solids of the Effluent from a Phosphate Mine](#)

[Mark E. Orazem, Rui Kong, Yuelong Huang, Arthur Dizon, Saeed Moghaddam, David Bloomquist](#)

[1753Playing with Fire: Commercialization of a Metal-Supported SOFC Product for Use in Charcoal Cookstoves](#)

[Michael C Tucker, Craig P Jacobson, Bernard Carreon, Jeffrey Charyasatit, Kenny Langston, Cindy Taylor, Jose Manjarrez, Nicholas Burton, Mark LaBarbera](#)

[1754Analyzing the Prospects of Electroreduction of Carbon Dioxide to Value-Added Chemicals](#)

[Paul J.A. Kenis](#)

[1755Monitoring of Diaphragm Cell Chlor-Alkali Plants for Improved Safety and Performance](#)

[Peter C. Foller, Jason Gu](#)

## **F04-Membrane-based Electrochemical Separations 2**

[1756\(Invited\) Membrane Development for Energy Technologies](#)

[Grigorii L. Soloveichik](#)

[1757\(Invited\) Capturing and Converting CO<sub>2</sub> with High Temperature Electrochemical Methods](#)

[Kevin Huang](#)

[1758\(Invited\) Ceramic Membranes for Gas Separation and Electro-Synthesis: Effect of Surface and Interfaces](#)

[Yu Chen, Meilin Liu](#)

[1759\(Invited\) Electrochemical Membrane Technology for Carbon Dioxide Capture from Flue Gas](#)

Hossein Ghezel-Ayagh, Stephen Jolly, Frank Dobek, Frank Chimbole, Carl Willman

1760PBI-HFA Hollow Fiber Membrane for Selective Hydrogen Separation

Sun Hee Choi, Do Young Kim, Chang Won Yoon, Jonghee Han

1761(Invited) Versatile Hydrogen Separations at Intermediate Temperatures with Solid Acid Membranes

Alexander B. Papandrew, David L. Wilson, Thomas A. Zawodzinski

1762(Invited) Electrically Conductive Diamond Membrane for Electrochemical Separation Processes

Fang Gao, Christoph E. Nebel

1763Ion Conducting Conduits with a Tortuosity of One from One Electrode to Another: The Role of Domain Connectivity and Tortuosity on Ion Conductivity in Block Copolymer Electrolyte Thin Films

Yu Kambe, Christopher George Arges, David A. Czaplewski, Paul F. Nealey

1764Selective Separation of Organics and Inorganics with Ion-Exchange Membranes: Influence of Solution Matrix and Organics Properties

Marjolein Vanoppen, Griet Stoffels, Lingshan Ma, Evelyn De Meyer, Klaas V.K.M. Schoutteten, Julie Vanden Bussche, Lynn Vanhaecke, Arne R.D. Verliefde

1765(Invited) Electrospun Nanofiber Composite Bipolar Membranes

Peter N. Pintauro, Ryszard Wycisk, Marc Cunningham, Chunhui Shen

1766Lithium Conducting Solid Electrolytes for Electrolysis of Lithium Tritide and Enrichment of Lithium-6

Luke Christopher Olson, Brenda L. Garcia-Diaz, Hector Colon-Mercado, Joseph Teprovich

1767 [Electrochemical Synthesis of Ammonia: Status, Challenges and Opportunities](#)

[Hui Xu, Tom McCallum](#)

1768 [Highly Stable Dual-Phase  \$Y\_{0.8}Ca\_{0.2}Cr\_{0.8}Co\_{0.2}O\_3 - Sm\_{0.2}Ce\_{0.8}O\_{1.9}\$  ceramic Composite Membrane for Oxygen Separation](#)

[Kyung Joong Yoon, Olga A Marina](#)

1769 [Electrochemical CO<sub>2</sub> Reduction in Ionic Liquid Using Two Compartment Cell Separated with Proton-Conducting Membrane](#)

[Hayato Yoshikawa, Kazuhisa Azumi](#)

## **G01-High Purity and High Mobility Semiconductors 14**

1770 [\(Keynote\) Metrology for Nanoscale Complex Semiconductor Systems](#)

[Wilfried Vandervorst](#)

1771 [\(Invited\) Characterization of Semiconductor Materials Using Synchrotron Radiation, XAFS and X-Ray CTR Scattering](#)

[Masao Tabuchi](#)

1772 [\(Invited\) Non-Visual Defect Monitoring with Surface Photovoltage Mapping](#)

[Andrew David Findlay, Dmitriy Marinskiy, Piotr Edelman, Marshall Wilson, Alexandre Savtchouk, Carlos Almeida, Jacek Lagowski](#)

1773 [\(Invited\) Characterization of Interface Defects by the Charge Pumping Technique](#)

[Toshiaki Tsuchiya](#)

1774 [\(Invited\) DLTS Studies of Defects in n-GaN](#)

[Yutaka Tokuda](#)

[1775Substitutional Carbon Loss in Si:C Stressor Layers Probed by Deep-Level Transient Spectroscopy](#)

[Eddy Simoen, Sathish Kumar Dhayalan, Andriy Yakovitch Hikavyi, Roger Loo, Erik Rosseel, Henk Vrielinck, Johan Lauwaert](#)

[1776\(Invited\) Current Stage of the Investigation of the Composition of Oxygen Precipitates in Czochralski Silicon Wafers](#)

[Dawid Kot, Gudrun Kissinger, Markus Andreas Schubert, Andreas Sattler](#)

[1777Practical Evaluation Method of Oxygen Precipitation in the Czochralski Silicon](#)

[Anselmo Jaehyeong Lee, Sejun Hong, Ja-Young Kim, Hee-Bog Kang, Sung-Wook Lee](#)

[1778Combined Effect of Rapid Thermal Annealing and Crystal Nature on the Gate Oxide Reliability of Czochralski Silicon](#)

[Jung-Won Shin, Woo-Sung Lee, Ja-Young Kim, Anselmo Jaehyeong Lee, Hee-Bog Kang, Sung-Wook Lee](#)

[1779Investigation of the Composition of the Si/SiO<sub>2</sub> Interface in Oxide Precipitates and Oxide Layers on Silicon by STEM/EELS](#)

[Gudrun Kissinger, Markus Andreas Schubert, Dawid Kot, Thomas Grabolla](#)

[1780Depth Profile Analysis of Metals Gettered By Bulk Micro-Defects \(BMDs\) in Silicon Substrates](#)

[Koichiro Saga, Rikiichi Ohno](#)

[1781Development of Silicon Substrate for Advanced Multi-Chip Packaging Process with the Enhanced Gettering Ability](#)

[Jeong-Hoon An, Jang-Seop Kim, Anselmo Jaehyeong Lee, Hyung-Kook Park, Hyeung-il Park, Byeong-Sam Moon, Sang-Hyun Lee, Jea-Gun Park](#)

[1782\(Invited\) Application of DFT Calculation for the Development of High Quality Si and Ge Substrates: From Ultra Large Diameter Crystal Pulling to Metal Gettering](#)

[Koji Sueoka](#)

[1783\(Invited\) Multiscale Modeling of Stress-Mediated Compositional Patterning in SiGe Substrates](#)

[Daniel Kaiser, Swapnadip Ghosh, Sang Han, Talid Sinno](#)

[1784\(Invited\) Modeling Extended Defects in Semiconductor Devices](#)

[Victor Moroz, Hiu Yung Wong, Munkang Choi](#)

[1785\(Invited\) Defect Evolution during Silicon Smartcut™](#)

[François Rieutord, Samuel Tardif, Frédéric Mazen, Didier Landru, Oleg Kononchuk](#)

[1786 Nano Crystals to Micro Crystals: Organolead Triiodide Perovskite Crystal Growth from Isopropanol Solution](#)

[Malin Birgitta Johansson, Tomas Edvinsson, Stefan Bitter, Anna I. K. Eriksson, Erik M. J. Johansson, Mats Göthelid, Gerrit Boschloo](#)

[1787\(Invited\) Silicon Nanowires: Donors, Surfaces and Interface Defects](#)

[Marco Fanciulli, Stefano Paleari, Matteo Belli, Alessio Lamperti](#)

[1788\(Invited\) Characterization of Group IV Based Nanowires Manufactured on Advanced Engineered Substrates](#)

[Henry H. Radamson, Mohammad Noroozi, Muhammet Toprak, Jun Luo, Guilei Wang, Chao Zhao](#)

[1789\(Invited\) Straining of Group IV Semiconductor Materials for Bandgap and Mobility Engineering](#)

[Kentarou Sawano, Xuejun Xu, Shiori Konoshima, Nayuta Shitara, Takeshi Ohno, Takuya Maruizumi](#)

[1790 High Electron and Hole Mobility by Localized Tensile & Compressive Strain Formation Using Ion Implantation and Advanced Annealing of Group IV Materials \(Si+C, Si+Ge & Ge+Sn\)](#)

[John O Borland](#)

[1791 Low Temperature Effect on Strained and Relaxed Ge pFinFETs STI Last Processes](#)

[Alberto Vinícius de Oliveira, Eddy Simoen, Paula Ghedini Der Agopian, Joao Antonio Martino, Jerome Mitard, Liesbeth Witters, Robert Langer, Nadine Collaert, Aaron Thean, Cor Claeys](#)

[1792 \(Invited\) On the Manipulation of Phosphorus Diffusion as Well as the Reduction of Specific Contact Resistivity in Ge by Carbon Co-Doping](#)

[Jun Luo, Jinbiao Liu, Eddy Simoen, Guilei Wang, Shujuan Mao, Henry H Radamson, Ningyuan Duan, Junfeng Li, Wenwu Wang, Dapeng Chen, Chao Zhao, Tianchun Ye](#)

[1793 \(Invited\) Significant Reduction of Leakage Currents in Reverse-Biased Ge n<sup>+</sup>/p Junctions by Taking Care of Peripheral Passivation Layer](#)

[Chi Liu, Hiroki Ikegaya, Tomonori Nishimura, Akira Toriumi](#)

[1794 Chemical Bath Deposited ZnO:Al Thin Films and Their Application to CuInGaSe<sub>2</sub> Thin Film Solar Cells](#)

[Yesol Choi, Hyun Jun Jang, Ki-Ha Hong, Choong-Heui Chung](#)

[1795 Building III-V Devices onto Large Si Wafers](#)

[Xin-Yu Bao, Zhiyuan Ye, David Carlson, Errol Sanchez](#)

[1796 Density Functional Theory Study on Frenkel Pair Formation from Oxygen Clusters in Si Crystal](#)

[Hiroaki Fukuda, Koji Sueoka](#)

[1797 High Purity Analysis of Low Melting Point Such As Gallium By Glow Discharge Mass Spectrometry](#)

[Jaesik Yoon](#)

1798[Ab-Initio Studies of Acceptor Impurities and Stability of Complexes in Ge](#)

[Igumbor Emmanuel, Edwin R Mapasha, Andrew C Richard, Walter E Meyer](#)

1799[Electrical Characterization of Defects Introduced By Electron Beam Deposition in n-GaAs](#)

[Shandirai Tunhuma, Mmantsae Diale, Matshisa Legodi, Danie Auret](#)

## **G02-Semiconductors, Dielectrics, and Metals for Nanoelectronics 14**

1800[Conductive AFM Topography of Intrinsic Conductivity Variations in Silica Based Dielectrics for Memory Applications](#)

[Mark Buckwell, Konstantin Zarudnyi, Luca Montesi, Wing Hung Ng, Stephen Hudziak, Adnan Mehonic, Anthony Joseph Kenyon](#)

1801[Nonvolatile Memory Characteristics of CdS Embedded Zr-Doped HfO<sub>2</sub> High-k Dielectric MOS Capacitors](#)

[Shumao Zhang, Yue Kuo](#)

1802[\(Invited\) Memcomputing \(Memristor + Computing\) in Intrinsic SiO<sub>x</sub>-Based Resistive Switching Memory](#)

[Ying-Chen Chen, Xiaohan Wu, Meiqi Guo, Fei Zhou, Yao-Feng Chang, Burt Fowler, Chih-Hung Pan, Ting-Chang Chang, Jack C. Lee](#)

1803[\(Invited\) Physical Models of Program and Read Fluctuations in Metal Oxide Resistive RAM](#)

[Daniele Ielmini](#)

1804[\(Invited\) Mobile Ions, Transport and Redox Processes in Memristive Devices](#)

[Iliia Valov, Michael Luebben, Anja Wedig, Rainer Waser](#)



1805(Invited) Environmental Resistance of Resistive Random Access Memory

Kentaro Kinoshita

1806(Invited) Conductive Bridging RAM (CBRAM): Then, Now, and Tomorrow

John R. Jameson, Philippe Blanchard, John Dinh, Nathan Gonzales, Vasudevan Gopalakrishnan, Berenice Guichet, Shane Hollmer, Sue Hsu, Gideon Intrater, Deepak Kamalanathan, David Kim, Foroozan Koushan, Ming Kwan, Derric Lewis, Bård Pedersen, Mark Ramsbey, Ed Runnion, Jeffrey Shields, Kevin Tsai, Aaron Tysdal, Daniel Wang, Venkatesh Gopinath

1807Charge Transport Mechanism of Stress Induced Leakage Current in Thermal Silicon Oxide

Damir R. Islamov, Vladimir A. Gritsenko, Timofey V. Perevalov, Oleg M. Orlov, Gennady Ja. Krasnikov

1808Local Thinning Induced Less Oxide Breakdown in MOS Structures Due to Lateral Non-Uniformity Effect

Huang-Hsuan Lin, Jenn-Gwo Hwu

1809A Method for Effective Work Function Monitoring

Dmitriy Marinskiy, Thy Chong Loy, Piotr Edelman, Jacek Lagowski

1810Current Coupling Effect in MIS Tunnel Diode with Coupled Open-Gated MIS Structure

Chien-Shun Liao, Jenn-Gwo Hwu

1811Mechanical/Structural Properties of the Key Thin Film Materials Ag, Cu, & Ni for Electronics Applications

Yousuf Mohammed, Daniel Josell, Helmut Baumgart, A A Elmustafa

1812(Invited) Large Mobility Modulation Due to Discrete Impurities in Nanowires

[Nobuyuki Sano](#)

[1813\(Invited\) Electrochemical Gating-Induced Hydrogenation in VO<sub>2</sub> Nanowires at Room Temperature](#)

[Teruo Kanki, Tusbasa Sasaki, Hidekazu Tanaka](#)

[1814\(Invited\) Generation-Recombination Noise in Advanced CMOS Devices](#)

[Eddy Simoen, Alberto Vinícius de Oliveira, Dimitri Boudier, Jerome Mitard, Liesbeth Witters, Anabela Veloso, Paula Ghedini Der Agopian, Joao Antonio Martino, Regis Carin, Bogdan Cretu, Robert Langer, Nadine Collaert, Aaron Thean, Cor Claeys](#)

[1815\(Invited\) Gate Stack Technology for Advanced AlGa<sub>N</sub>/Ga<sub>N</sub> Mos-Hemt Power Devices](#)

[Heiji Watanabe, Ryohei Asahara, Joyo Ito, Kenta Watanabe, Mikito Nozaki, Takahiro Yamada, Satoshi Nakazawa, Yoshiharu Anda, Masahiro Ishida, Tetsuzo Ueda, Akitaka Yoshigoe, Takuji Hosoi, Takayoshi Shimura](#)

[1816\(Invited\) First-Principles Study on Electron Conduction at 4H-SiC\(0001\)/SiO<sub>2</sub> Interface](#)

[Tomoya Ono, Christopher Kirkham, Shigeru Iwase](#)

[1817\(Invited\) Recent Progress in Vertical Si/III-V Tunnel FETs: From Fundamentals to Current-Boosting Technology](#)

[Katsuhiro Tomioka, Junichi Motohisa, Takashi Fukui](#)

[1818Electrically Scaled Hafnium Oxide Based Ge Devices](#)

[Kandabara Tapily, Sonal Dey, Steven Consiglio, Robert D. Clark, Cory S. Wajda, Gert J. Leusink, Alain C. Diebold](#)

[1819\(Invited\) Mechanism of Low Temperature ALD of Al<sub>2</sub>O<sub>3</sub> on Graphene Terraces](#)

[Iljo Kwak, Jun Hong Park, Larry Grissom, Bernd Fruhberger, Andrew Kummel](#)

[1820High-Performance Thin-Film Transistors Based on Highly Crystalline CVD-Grown Multilayer MoSe<sub>2</sub> Films](#)

[Na Liu, Chulseung Jung, Hyunseong Moon, Seongin Hong, Young Ki Hong, Inturu Omkaram, Sunkook Kim](#)

[1821\(Invited\) Evaluation of Few-Layer MoS<sub>2</sub> Transistors with a Top Gate and HfO<sub>2</sub> Dielectric](#)

[Chadwin D Young, Peng Zhao, Pavel Bolshakov-Barrett, Angelica Azcatl, P. K. Hurley, Y. Y. Gomeniuk, Michael Schmidt, Christopher L Hinkle, Robert M Wallace](#)

[1822\(Invited\) Xenex: A New Emerging Two-Dimensional Materials Platform for Nanoelectronics](#)

[Alessandro Molle](#)

[1823\(Invited\) Reliability Study on Layered 2D Insulator](#)

[Kosuke Nagashio](#)

[1824Silicene Nanoribbon Tunnel Field Effect Transistor](#)

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

[1825Multiple Magnetic Resonance of Nuclei in a Two-Dimensional Electron System](#)

[Xuan Qian, Yang Ji, Vladimir Umansky](#)

[1826CMP Development for New Generation Materials through Metal Oxide Thin Film Characterization](#)

[G. Bahar Basim](#)

[1827Particle Removal in Wet Wafer Cleaning Processes](#)

[Ji Zhu, Man Xia, David Mui, Mark Kawaguchi](#)

1828 [Advanced Wet Clean Technology at Lightly Doped Drain Layers in FinFET](#)

[Jian Li, Vincent Sih, Hui Zhan](#)

1829 [An Insightful Review of Galvanic Formations and Dynamic Interactions in Selectively Corroding Silicon Surfaces during Wafer Manufacturing](#)

[Lieyi Sheng](#)

1830 [Microstructural Dependence of Performance in Potentiostatically Electrodeposited Soft Gold Coatings](#)

[Dhego Banga](#)

1831 [Preventing TSV Protrusion Via Controlling Impurity Content in Copper Electrodeposits](#)

[Ui-Hyoung Lee, Chae-Min Park, Hyo-Jong Lee, Kihyeob Lee, Kangsoo Kim](#)

1832 [\(Invited\) Ferroelectric \(Hf,Zr\)O<sub>2</sub> Films](#)

[C. S. Hwang](#)

1833 [Broadband Spectroscopic Characterization of Hybrid Low-k Dielectric Thin Films for Micro- and Nanoelectronic Applications](#)

[Yaw S. Obeng, Chukwudi A. Okoro, Karl R. Montgomery, Papa K. Amoah, Lin You, Joseph J. Kopanski, Jan Obrzut](#)

1834 [Self-Assembled Monolayer-Based Gate Dielectrics for MoS<sub>2</sub> FETs](#)

[Takamasa Kawanago, Shunri Oda](#)

1835 [UV Cure Enabled Robust STI Oxide Gap Fill Solution for Thermally Limited Flow in Advanced Logic Devices](#)

[Sanjay C Mehta, Richard Conti, Thamarai Devarajan, Matthew P Wright, Yiping Yao, Stephan A Cohen, Todd Ryan, Thomas J Haigh, Paul Hall, Donald F Canaperi, Leo Tai](#)

[1836Oxidizing Species Dependence of the Interface Reaction during Atomic-Layer-Deposition Process and Post-Deposition-Anneal](#)

[Tomoyuki Suwa, Akinobu Teramoto, Yasumasa Koda, Masaya Saito, Hisaya Sugita, Marie Hayashi, Junichi Tsuchimoto, Hidekazu Ishii, Yoshinobu Shiba, Yasuyuki Shirai, Shigetoshi Sugawa](#)

[1837Impact of Sacrificial Consumption of Substrate By Thermal Oxidation on Electron Mobility of 4H-SiC Mosfets](#)

[Koji Kita, Hirohisa Hirai](#)

[1838\(Invited\) Silicon Emission Mechanism for Oxidation Process of Non-Planar Silicon](#)

[Hiroyuki Kageshima, Kenji Shiraishi, Tetsuo Endoh](#)

[1839Electronic Structure of Oxygen Deficient Noncentrosymmetric Orthorhombic  \$\text{Hf}\_{0.5}\text{Zr}\_{0.5}\text{O}\_2\$](#)

[Timofey V. Perevalov, Damir R. Islamov, Vladimir A. Gritsenko, Andrey A. Saraev](#)

[1840Studies of Parylene C Microfibrous Thin Films Electrical Properties](#)

[Ibrahim H Khawaji, Osama O. Awadelkarim, Akhlesh Lakhtakia](#)

[1841Selected Success Stories from Twenty Years of High-k Gate Dielectric Research](#)

[Samares Kar](#)

[1842Development of High Performance p-Type Bisbte Based Alloys By Powder Metallurgy](#)

[Babu Madavali, Chul-Hee Lee, Dong-Won Shin, Femi Olu Emmanuel, Soon Jik Hong](#)

[1843Selective-Area Growth of Vertical InGaAs Nanowires on Ge for Transistor Applications](#)

[Akinobu Yoshida, Katsuhiro Tomioka, Fumiya Ishizaka, Kohei Chiba, Junichi Motohisa](#)

[1844Temperature-Dependent and Dielectric Relaxation of Porous Silicon Prepared by Electrochemical Etching](#)

[Faruk Fonthal Rico, Edward Steven Oliveros, Mario Chavarria](#)

[1845Deposition and Electrical Characterization of CaCu<sub>3</sub>Ti<sub>3</sub>FeO<sub>12</sub> Thin Films](#)

[Giji Skaria, Shraddha Nehate](#)

[1846Electrical Properties of Al<sub>2</sub>O<sub>3</sub> Incorporated CeO<sub>2</sub> Thin Films Deposited by RF Magnetron Sputtering](#)

[Junya Konishi, Takashi Ohsawa, Setsu Suzuki, Keiji Ishibashi, Sung-Gi Ri, Kenichiro Takahashi, Yasuhiro Yamamoto](#)

[1847Unidirectional Oxide Hetero-Interface Thin-Film Diode with Improved Electrical Current](#)

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Mitsuru Takenaka, Younghyun Kim, Jae-Hoon Han, Jian Kang, Shinichi Takagi

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Yu-Hung Liao, Sheng-Ting Fan, C. W. Liu

1970 (Invited) Anisotropic Strain Introduction into Si/Ge Hetero Structures

[Kentarou Sawano, Shiori Konoshima, Junji Yamanaka, Keisuke Arimoto, Kiyokazu Nakagawa](#)

1971 [Investigation of the Low Temperature / High Temperature Approach to Produce Si<sub>0.5</sub>Ge<sub>0.5</sub> and Pure Ge Strain Relaxed Buffers](#)

[Jean-Michel Hartmann, Joris Aubin, Yann Bogumilowicz, Vincent Delaye, Anne-Marie Papon](#)

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[Ahmad Abedin, Ali Asadollahi, Konstantinos Garidis, Per-Erik Hellström, Mikael Ostling](#)

1974 (Invited) [Silicene: Silicon at the Two Dimensional Limit and Its Applications to Nanoelectronics](#)

[Alessandro Molle, Carlo Grazianetti, Eugenio Cinquanta](#)

1975 (Invited) [Strain Engineered Crack-Free GaN on Si for Integrated Vertical High Power GaN Devices with Si CMOS](#)

[Shadi Dayeh, Atsunori Tanaka, Woojin Choi, Renjie Chen](#)

1976 (Invited) [Realizing 2D Materials Via MOCVD](#)

[Natalie Briggs, Shruti Subramanian, Yu-Chuan Lin, Sarah Eichfeld, Bhakti Jariwala, Ganesh Bhimanapati, Kehao Zhang, Joshua A Robinson](#)

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Mengqi Fu, Tuanwei Shi, Xing Li, Qing Chen

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Hsu-Sheng Tsai, Jenq-Horng Liang

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Héctor Pérez Ladrón de Guevara, Miguel Angel Vidal Borbolla, Angel Gabriel Rodriguez Vazquez, Hugo Ricardo Navarro Contreras

1980Development of Interatomic Potential of Group IV Alloy Semiconductors for Lattice Dynamics Simulation

Motohiro Tomita, Atsushi Ogura, Takanobu Watanabe

1981Fabrication and Characterization of SiGe on Insulator through Condensation and Wafer Bonding Techniques

Mohammad Noroozi, Bejan Hamawandi, Muhammet Toprak, Henry H. Radamson

1982(Invited) Processing Technologies for Advanced Ge Devices

Roger Loo, Andriy Yakovitch Hikavy, Liesbeth Witters, Andreas Schulze, Hiroaki Arimura, Daire Cott, Jerome Mitard, Clement Porret, Hans Mertens, Paul Ryan, John Wall, Kevin Matney, Matthew Wormington, Paola Favia, Olivier Richard, Hugo Bender, Naoto Horiguchi, Nadine Collaert, Aaron Thean

1983(Invited) Germanium Enrichment for Planar-, Fin- and Nanowire-Channel MOSFETs Made on SOI

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Krishna C. Saraswat, Gautam Shine

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Jie Zhang, Xiaolei Wang, Jing Zhang, Shuhua Wei, Wenwu Wang

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Fan Yang, Xuan Xiong Zhang, Yuming Shen, Yi Ou, Jiwei Jiao, Hua Meng

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1988On the Challenges of SiGe HBTs in Advanced BiCMOS Technology Toward Half THz  $f_{MAX}$

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Dieter Knoll, Stefan Lischke, Ahmed Awany, Lars Zimmermann

1991(Invited) A Brief History of Selective Epitaxy (at IBM SRDC)

Judson Robert Holt, Matthew Wahlquist Stoker, Timothy J Mcardle, Annie Levesque

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Yi Qi, Jianwei Peng, Hsien-Ching Lo, Judson Robert Holt, Michael Willemann, Churamani Gaire, Sarah Evans, Patrick Flanagan, Hong Yu, Owen Hu, Michael Kennett

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Guilei Wang, Jun Luo, Changliang Qin, Hushan Cui, Jinbiao Liu, Kunpeng Jia, Junjie Li, Tao Yang, Junfeng Li, Huaxiang Yin, Chao Zhao, Tianchun Ye, Ping Yang, Ganesh Jayakumar, Henry H Radamson

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Benjamin P Colombeau, Matthias Bauer, Bingxi Sun Wood, Hua Chung, Jeffrey Hebb, Yi-Chiau Huang, Xianzhi Tao, Saurabh Chopra, Abhishek Dube, Michael Chudzik, Schubert Chu

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Mindaugas Lukosius, Gunther Lippert, J Dabrowski, Julia Kitzmann, Marco Lisker, P Kulse, Andreas Krüger, Oksana Fursenko, Ioan Costina, Andreas Trusch, Yuji Yamamoto, Andre Wolff, Andreas Mai, Thomas Schroeder, Grzegorz Lupina

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Chun-Lin Chu, Bo-Yuan Chen Chen, Guang-Li Luo, Mei-Yi Li

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Andreas Mai, Ioan Costina, Thomas Lenke, Yuji Yamamoto

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Clayton Adam Jackson, Adam J Williams, Peter W Deelman

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Didier Dutartre

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Erik Rosseel, Sathish Kumar Dhayalan, Andriy Yakovitch Hikavyy, Roger Loo, Harald Benjamin Profijt, David Kohen, Stefan Kubicek, Thomas Chiarella, Hao Yu, Naoto Horiguchi, Dan Mocuta, Kathy Barla, Aaron Thean, Gregory Bartlett, Joe Margetis, Nupur Bhargava, John Tolle

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Jian Min Zuo, Honggyu Kim, Jiong Zhang, Jean-Ruc Rouviere

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[Taishi Yamamoto, Akio Ohta, Mitsuhsa Ikeda, Katsunori Makihara, Seiichi Miyazaki](#)

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[2018Physics of Metal/Ge Interfaces; Interface Defects and Fermi-Level Depinning](#)

[Takashi Nakayama, Shogo Sasaki, Yoshihiro Asayama](#)

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[Kohei Hamaya, Shinya Yamada, Kenji Kasahara, Takeshi Kanashima](#)

[2020Remote Coulomb Scattering in Ge MOSFET with GeO<sub>x</sub>/Al<sub>2</sub>O<sub>3</sub> Gate Dielectrics](#)

[Haoyu Xu, Xiaolei Wang, Jing Zhang, Shuhua Wei, Wenwu Wang](#)

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[Ghada Dushaq, Mahmoud Rasras, Ammar Nayfeh](#)

2022 [Role of High-k Interlayer in ZrO<sub>2</sub>/High-k/ZrO<sub>2</sub> Insulating Multilayer on Electrical Properties for DRAM Capacitor](#)

[Takashi Onaya, Toshihide Nabatame, Tomomi Sawada, Kazunori Kurishima, Naomi Sawamoto, Akihiko Ohi, Toyohiro Chikyow, Atsushi Ogura](#)

2023 [\(Invited\) Optimal Target Functions for Epitaxy in New Channel Applications Such As Horizontal Gate-All-Around \(h-GAA\) Device Architectures Using Nano-Sheets or Nanowires](#)

[Matthias Bauer](#)

2024 [Annihilation of Threading Dislocations in Strain-Relaxed Si<sub>1-x</sub>Ge<sub>x</sub> Layer By Hydrogen Ion Implantation](#)

[Jun-Seong Park, Il-Hwan Kim, Hyeon-Ju Shin, Tae-Hun Shim, Gon-Sub Lee, Jea-Gun Park](#)

2025 [High Thermal Stability of Tensile Strained Direct Gap GeSn Crystallized on Amorphous Layers](#)

[Haofeng Li, Alejandra Cuervo Covian, Xiaoxin Wang, Jifeng Liu](#)

2026 [Engineering Large In-Plane Tensile Strains in Ge Microdisks, Microrings and Racetrack Optical Cavities](#)

[Ross Millar, Kevin Gallacher, Jacopo Frigerio, Andrea Ballabio, Aneeqa Bashir, Ian MacLaren, Giovanni Isella, Douglas J Paul](#)

2027 [\(Invited\) Future Applications of SiGeSn and GeSn](#)

[Detlev Grützmacher](#)

2028 [\(Invited\) The Use of Silicon-Germanium Superlattices in Thermoelectric Devices and Microfabricated Generators](#)

[Lourdes Ferre Llin, Francesco Mirando, Antonio Samarelli, Ameze Odia, Stefano Cecchi, Tanja Etzelstorfer, Elisabeth Müller Gubler, Daniel Chrastina, Giovanni Isella, Julian Stangl, John M R Weaver, Phil Dobson, Douglas J Paul](#)

2029(Invited) [Graphene for Biosensor Applications](#)

[Kazuhiko Matsumoto](#)

2030 [Thermoelectric Properties of Ge-Rich GeSn Films Grown on Insulators](#)

[Masashi Kurosawa, Kun Liu, Momoka Izawa, Isao Tsunoda, Shigeaki Zaima](#)

2031(Invited) [In-Situ Doped Epitaxial Growth of Highly Dopant-Activated n<sup>+</sup>-Ge Layers for Reduction of Parasitic Resistance of Ge-nMISFETs](#)

[Yoshihiko Moriyama, Yuuichi Kamimuta, Keiji Ikeda, Akira Sakai, Tsutomu Tezuka](#)

2032 [Very Low Temperature Epitaxy of Heavily In-situ Phosphorous Doped Ge Layers and High Sn Content GeSn Layers](#)

[Joris Aubin, Jean-Michel Hartmann, Jean-Paul Barnes, Jean-Baptiste Pin, Matthias Bauer](#)

2033 [Growth and Etch Forms of Germanium Microcrystals on a Silicon Oxide Substrate](#)

[Yi-Chiau Huang, Man-Ping Cai, Hongwen Zhou, Hua Chung](#)

2034(Invited) [Integration of III/V Hetero-Structures By Selective Area Growth on Si for Nano- and Optoelectronics](#)

[Bernardette Kunert, Weiming Guo, Yves Mols, Robert Langer, Kathy Barla](#)

2035 [Integration of High Quality III-V Materials on Si Using the Aspect-Ratio-Trapping Technique](#)

[Xuliang Zhou, Shiyang Li, Jiaoqing Pan](#)

[2036\(Invited\) Silicon Nano-Tip Pattern Approach for Surface and Interface Engineering of Fully Coherent, High Ge Content Nanostructure Arrays for High Performance Photodetection](#)

[Gang Niu, Giovanni Capellini, Grzegorz Lupina, Tore Niermann, Marco Salvalaglio, Anna Marzegalli, Markus Andreas Schubert, Peter Zaumseil, Hans-Michael Krause, Oliver Skibitzki, Michael Lehmann, Francesco Montalenti, Ya-Hong Xie, Thomas Schroeder](#)

[2037\(Invited\) The Effect of Germanium/Silicon Interface on Germanium Photonics](#)

[Daeik Kim, Shuyu Bao, Chuan Seng Tan, Ju Hyung Nam, K. C. Saraswat, Donguk Nam](#)

[2038Enhanced Light Emission from N-Doped Ge Microdisks by Thermal Oxidation](#)

[Hideaki Hashimoto, Xuejun Xu, Kentarou Sawano, Takuya Maruizumi](#)

[2039Effect of Ge Core Size on Photoluminescence from Si Quantum Dots with Ge Core](#)

[Kentaro Yamada, Keigo Kondo, Katsunori Makihara, Mitsuhsa Ikeda, Akio Ohta, Seiichi Miyazaki](#)

[2040The Improvement of GeO<sub>2</sub> Film Characteristics on Ge Substrates Using Ultrathin Hf Metal Deposition Followed by Annealing](#)

[Tomo Ueno, Jun-pei Niida, Marina Yamaguchi, Yoshitaka Iwazaki](#)

## **H01-State-of-the-Art Program on Compound Semiconductors 59 (SOTAPOCS 59)**

[2041\(Electronics and Photonics Division Award\) Physics of Wide Band Gap Semiconductor Devices](#)

[Michael Shur](#)

[2042\(Invited\) InGaN/GaN Nanowire LEDs and Lasers on Nonconventional Substrates](#)

[Boon S Ooi, Chao Zhao, Tien Khee Ng](#)



[2043\(Invited\) Periodically Oriented Gallium Nitride for Frequency Conversion](#)

[Jennifer K Hite, Jaime A. Freitas, Michael A Mastro, Igor Vurgaftman, Jerry R. Meyer, Christopher G. Brown, Jacob Leach, Kevin Udvary, Steven R. Bowman, Charles R. Eddy, Francis J Kub](#)

[2044\(Invited\) Epitaxial Transition Metal Nitrides for III-Nitride Devices: Application for Epitaxial Lift-Off and Transfer](#)

[Brian P. Downey, David J. Meyer, D. Scott Katzer, Neeraj Nepal, Virginia D. Wheeler, David F. Storm, Travis J Anderson, Matthew T Hardy](#)

[2045\(Invited\) Ultra-Wide-Bandgap AlGaN Power Diodes and Transistors](#)

[Robert J. Kaplar, Andrew A. Allerman, Andrew M. Armstrong, Mary H. Crawford, Jeramy R. Dickerson, Arthur J. Fischer, Michael P. King, Albert G. Baca, Erica A. Douglas](#)

[2046\(Invited\) GaN/Si Buffer Development for RF and Power Applications](#)

[Chien-Fong Lo, O. Laboutin, C.-K. Kao, Hugues Marchand, Rytis Dargis, Andrew Clark, Rodney Pelzel, W. Johnson](#)

[2047AlGaIn/GaN High Electron Mobility Transistor Grown and Fabricated on Lattice Matched Metallic Layers](#)

[Fan Ren, Stephen J. Pearton, Shihyun Ahn, Yi-Hsuan Lin, Francisco Machuca, Robert Weiss, Alex Welsh, David Smith, Ivan Kravchenko](#)

[2048\(Invited\) Toward an Understanding of Defects and Device Reliability in GaN Hemts](#)

[Aaron R Arehart](#)

[2049Rectification Properties of Boron Nitride/Silicon Heterostructure Diodes](#)

[Kungen Teii, Hiroyuki Ito, Naoki Katayama, Seiichiro Matsumoto](#)

[2050GaIn Based Ethanol Sensor](#)

Sunwoo Jung, Kwang Hyeon Baik, Seoung Jai Bai, Soohwan Jang

2051(Invited) Displacement Damage and Single Event Effects in AlGa<sub>N</sub>/Ga<sub>N</sub> HEMTs

Andrew D. Koehler, Travis J Anderson, Ani Khachatryan, Nicolas J.-H. Roche, Stephen Buchner, Brad D Weaver, Karl D Hobart, Francis J Kub

2052(Invited) Chemical Sensors Based on AlGa<sub>N</sub>/Ga<sub>N</sub> Transistors

Giacinta Parish

2053 Direct Detection of Low Concentration DNA in High Ionic Strength Solution with AlGa<sub>N</sub>/Ga<sub>N</sub> High Electron Mobility Transistors

Yen Wen Chen, Yu-Lin Wang

2054(Invited) Development of Nitride Photocatalysts for Artificial Photosynthesis

Kazuhiro Ohkawa

2055(Invited) Expectations for High-Power Semiconductors in Microwave-Assisted Chemistry

Tomohiko Mitani, Naoki Shinohara

2056(Invited) Advanced Photonic Circuits Using III-V Semiconductors

Anna Tauke-Pedretti, G. Allen Vawter, Erik Skogen, Gregory Peake, M. E. Overberg, Charles Alford, Florante Cajas

2057(Invited) Photonic Chip for Laser Stabilization to a Rubidium Atomic Vapor

Matthew Taylor Hummon, Argyris Dellis, Songbai Kang, John E Kitching, Vladimir A Aksyuk, Kartik Srinivasan, Daron A Westly, Qing Li, Brian J Roxworthy

2058(Invited) Towards Topological Antiferromagnetic Spintronics

[Qinglin He, Lei Pan, Koichi Murata, Kang L. Wang](#)

[2059\(Invited\) Monolithic Integration of n-In<sub>0.53</sub>Ga<sub>0.47</sub>As and p-Ge FinFETs on Si](#)

[Shih-Pang Chang, Kun-Lin Lin, Chien-Ting Wu, Cheng-Yu Chen, Mon-Yang Chen, Rong-Ren Lee, Wen-Da Hsu, Shih-Hong Chen, Chun-Jung Su, Guang-Li Luo, Shih-Chang Lee, Ta-Cheng Hsu, Wen-Kuan Yeh, Jen-Inn Chyi](#)

[2060 Electrochemical Pore Formation in InP: Understanding and Controlling Pore Morphology](#)

[Nathan Quill, Laura Green, Colm O'Dwyer, D. Noel Buckley, Robert Patrick Lynch](#)

[2061 Behaviors of GaSb and InSb III-V Semiconductor Surfaces in the Wet Chemical Solutions](#)

[Sangwoo Lim, Dongwan Seo, Jihoon Na, Eunseok Oh](#)

[2062 Characterization of Aggregated Carbon Compounds at SiO<sub>2</sub>/SiC Interface after Plasma Oxidation at Near Room Temperature](#)

[Kenta Arima, Kohei Hosoo, Ryota Ito, Naoki Saito, Kentaro Kawai, Yasuhisa Sano, Mizuho Morita](#)

[2063 Fabrication of  \$\alpha\$ -Ga<sub>2</sub>O<sub>3</sub> Thin Films Using  \$\alpha\$ -\(Al<sub>x</sub>Ga<sub>1-x</sub>\)<sub>2</sub>O<sub>3</sub> Multi Buffer Layers and Its Crystal Structure Properties](#)

[Riena Jinno, Takayuki Uchida, Kentaro Kaneko, Shizuo Fujita](#)

[2064 Band Gap Engineering of Wurtzite-Type Narrow Band Gap Oxide Semiconductor  \$\beta\$ -CuGaO<sub>2</sub>](#)

[Takahisa Omata, Yuki Mizuno, Hiraku Nagatani, Issei Suzuki, Masao Kita](#)

## **H02-Semiconductor Wafer Bonding: Science, Technology and Applications 14**

[2065\(Invited\) Surface Activated Wafer Bonding; Principle and Current Status](#)

Hideki Takagi, Yuichi Kurashima, Tadatomo Suga

2066Surface Activation and Planarization with Gas Cluster Ion Beam for Wafer Bonding

Noriaki Toyoda, Tomoya Sasaki, Isao Yamada, Tadatomo Suga

2067Low-Temperature Aluminum-Aluminum Wafer Bonding

Bernhard Rebhan, Andreas Hinterreiter, Nishant Malik, Kari Schjøberg-Henriksen, Viorel Dragoi, Kurt Hingerl

2068Ultra-Thick Metal Ohmic Contact Fabrication Using Surface Activated Bonding

Jianbo Liang, Katuya Furuna, Moeko Matsubara, Marwan Dhamrin, Yositaka Nishio, Naoteru Shigekawa

2069(Invited) Analysis of Defect Levels at GaAs/GaAs Surface-Activated Bonding Interface for Multi-Junction Solar Cells

Masakazu Sugiyama, Daiji Yamashita, Kentaroh Watanabe, Masahisa Fujino, Tadatomo Suga, Yoshiaki Nakano

2070The Roles of Band Bending, Surface Misorientation, and Passivation on Electrical Transport Across III-V Bonded Structures

Matthew Yee, Michael Liao, Mark Seal, Mark S. Goorsky

2071Conductive Semiconductor Interfaces Fabricated by Room Temperature Covalent Wafer Bonding

Christoph Flötgen, Nasser Razek, Viorel Dragoi, Markus Wimplinger

2072(Invited) High Output Power Deep Ultraviolet Light-Emitting Diodes with Hemispherical Lenses Fabricated Using Room Temperature Bonding

Masatsugu Ichikawa, Shinya Endo, Harunobu Sagawa, Akira Fujioka, Takao Kosugi, Takashi Mukai, Miyuki Uomoto, Takehito Shimatsu

[2073 Necessary Thickness of Au Capping Layers for Room Temperature Bonding of Wafers in Air Using Thin Metal Films with Au Capping Layers](#)

[Miyuki Uomoto, Takehito Shimatsu](#)

[2074 Direct Wafer Bonding of SiC-SiC at Room Temperature by SAB Method](#)

[Fengwen Mu, Kenichi Iguchi, Haruo Nakazawa, Yoshikazu Takahashi, Masahisa Fujino, Tadatomo Suga](#)

[2075 \(Invited\) Diverse Accessible Heterogeneous Integration \(DAHI\) Foundry at Northrop Grumman Aerospace Systems \(NGAS\)](#)

[Augusto Gutierrez-Aitken, Dennis Scott, Ken Sato, Ben Poust, Eric Nakamura, Khanh Thai, Wes Chan, Eric Kaneshiro, Cedric Monier, Ioulia Smorchkova, Nancy Lin, Dino Ferizovic, Xiang Zeng, Aaron Oki, Reynold Kagiwada](#)

[2076 Suppressed Self-Heating in Multi-Finger InP-Based DHBTs with Au Subcollector Fabricated on SiC Substrate by Surface-Activated Bonding](#)

[Yuta Shiratori, Takuya Hoshi, Norihide Kashio, Kenji Kurishima, Eiji Higurashi, Hideaki Matsuzaki](#)

[2077 Au / SiO<sub>2</sub> Hybrid Bonding with 6- \$\mu\$ m-Pitch Au Electrodes for 3D Structured Image Sensors](#)

[Yuki Honda, Kei Hagiwara, Masahide Goto, Toshihisa Watabe, Masakazu Nanba, Yoshinori Iguchi, Takuya Saraya, Masaharu Kobayashi, Hiroshi Toshiyoshi, Eiji Higurashi, Toshiro Hiramoto](#)

[2078 Novell Plating Processes for Silicon Based Pixel Detectors](#)

[Mathias Fritz, Sabine Nieland, Tobias Wittig, Andreas Bund](#)

[2079 III-V/Si Hybrid Laser Array with Dbr on Si Waveguide](#)

[Ran Guang Zhao, Tao Li, Li Yanping, Weixi Chen, Jiaoqing Pan, Lijun Yuan](#)

[2080\(Invited\) Thermomechanical Finite Element Modeling of Cu-SiO<sub>2</sub> Direct Hybrid Bonding with a Dishing Effect on Cu Surfaces](#)

[Rafael Estevez, Y. Beilliard, G. Parr, P. McGarry, P. Coudrain, L. Di Cioccio](#)

[2081Cu-Cu Die to Die Surface Activated Bonding in Atmospheric Environment Using Ar and Ar/N<sub>2</sub> Plasma](#)

[Shen Lin Chua, Chuan Seng Tan](#)

[2082Combined Surface Activated Bonding Technique for Hydrophilic SiO<sub>2</sub>-SiO<sub>2</sub> and Cu-Cu Bonding](#)

[Ran He, Masahisa Fujino, Akira Yamauchi, Tadatomo Suga](#)

[2083Impact of Water Edge Absorption on Silicon Oxide Direct Bonding Energy](#)

[Frank Fournel, Marwan Tedjini, Vincent Larrey, François Rieutord, Christophe Morales, Claudine Bridoux, Hubert Moriceau](#)

[2084Control of Direct Bonding Behavior by Interlayers](#)

[Marko Eichler, Helena Dillmann, Krees Nagel, Claus-Peter Klages](#)

[2085Adhesion Energy and Bonding Wave Velocity Measurements](#)

[Vincent Larrey, Gaelle Mauguen, Frank Fournel, Damien Radisson, François Rieutord, Christophe Morales, Claudine Bridoux, Hubert Moriceau](#)

[2086A Study of Void Formation in Fluorine Containing Plasma Activated Wafer Bonding](#)

[Chenxi Wang, Yannan Liu, Tadatomo Suga](#)

[2087Edge Water Penetration in Direct Bonding Interface](#)

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[2088\(Invited\) Locally Measuring the Adhesion of InP Membranes Directly Bonded on Silicon](#)

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[2091Nanomechanical Analysis of Polydimethylglutarimide Based Lift Off Resist Used for Temporary Bonding and Film Transfers](#)

[Yousuf Mohammed, Takashi Matsumae, Andrew D. Koehler, Tadatomo Suga, Helmut Baumgart, Karl D Hobart, A A Elmustafa](#)

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[2093Thin Layer Transfer Using Room Temperature Wafer-Level Bonding Process](#)

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[2094Optical Isolator with Si Guiding Layer Fabricated by Photosensitive Adhesive Bonding](#)

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2108[Surface Protection for Semiconductor Direct Bonding](#)

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[2120\(Invited\) A New Materials Concept for High Performance Organic Thin Film Transistors](#)

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[2121Controllably Aligned Ultra-Flexible and High-Performance Organic Single-Crystal Arrays Via Solvent Vapor Annealing for Large Area Soft Electronics](#)

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2128(Invited) Unseeded Growth of Poly-Crystalline Ge with (111) Surface Orientation on Insulator by Pulsed Green Laser Annealing

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2129Cooling Rate Dependent High Substitutional Sn Concentration (>10%) in GeSn Crystals on Insulator by Pulsed Laser-Annealing

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2131(Invited) Low-Temperature Processed and Self-Aligned InGaZnO Thin-Film Transistor with an Organic Gate Insulator for Flexible Device Applications

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2132Highly Stable Zinc Oxynitride Thin-Film Transistors with Field-Effect Mobility Exceeding 100 cm<sup>2</sup>/Vs

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2133Light Gated Zinc Tin Oxide Thin Film Transistor Fabricated Via Solution Process

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2134Improvement of TFT Characteristics for Low-Temperature Solution-Processed Oxide Semiconductors with Hydrogen Injection and Oxidation Process

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2135(Invited) Low-Temperature Sol-Gel Derived Ultra-Flexible Metal-Oxide Thin-Film-Transistors and Their Applications

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2136Low-Temperature Processed Metal-Semiconductor Field-Effect Transistor with In-Ga-Zn-O/AgO<sub>x</sub> Schottky Gate

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2137(Invited) The Compact Models and Parameter Extraction for Thin Film Transistors

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2138(Invited) Stability under Gate Bias Stressing of Amorphous Oxide Thin Film Transistors

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2140(Invited) Selection of Channel Layer for the Vertical Oxide TFT

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2141(Invited) Vertical Channel Amorphous Indium Gallium Zinc Oxide Thin Film Transistors

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2142Stretched-Exponential Trends in a-IGZO Tfts

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2143Investigation on the Gate Electrode Configuration of IGZO TFTs for Improved Channel Control and Suppression of Bias-Stress Induced Instability

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2144Comprehensive Depletion-Mode Model for TFT Assessment

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[2154Extended-Gate pH Sensors Using Self-Aligned Four-Terminal Metal Double-Gate Low-Temperature Polycrystalline-Silicon Thin-Film Transistors on Glass Substrate](#)

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2160 Heterostructure Source-Gated Transistors: Challenges in Design and Fabrication

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2162 Amplifier Circuit with Oxide TFT

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2164 The Oxide TFT with Solution Based Gate Insulator



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2224 Enhancement of Light Extraction Efficiency in Organic Light Emitting Diode with Nano-Scaled Random Patterns

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2235Heterogeneous Integration of InGaAs Nanowires on Si(111) for Si Photonics

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[2236 Synthesis of Alternate Layered Structure of Ruthenate Nanosheet-Graphene Oxide for Electrochemical Applications](#)

[Dai Mochizuki, Keita Ishimoto, Yusuke Ayato, Wataru Sugimoto](#)

[2237 Effects of Asymmetric Local Joule Heating on Silicon Nanowire-Based Devices and Their Applications](#)

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[2238 Controlling the Temporal Pulse Shape of the Passively Q-Switched Laser by Nonlinear Feedback Control](#)

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[2239 ZnO Nanowire Device Fabricated By Hydrothermal Synthesis and Dielectrophoresis Method for Gas Sensor Applications](#)

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[2241 Dielectrophoretic Alignment of Functional Nanowires for Chemical Sensing Application](#)

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[2243 Ultra Large Scale Manufacturing Challenges of Silicon Carbide and Gallium Nitride Based Power Devices and Systems](#)

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[2244 \(Invited\) Vertical GaN High Voltage Transistors: Comparison with SiC Switches](#)

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[2245 \(Invited\) Methods for Dynamic Analysis and Stability Assurance of Power Modules with Wide Bandgap Devices](#)

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[2246 \(Invited\) Wide Band-Gap on Its Hard Way up - The Trouble Starts Just Outside the Chip](#)

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[2247 \(Invited\) Novel Integrated Circuit Platforms Employing Monolithic Silicon CMOS + GaN Devices](#)

[Eugene A Fitzgerald, K.E. Lee, Li Zhang, C.C. Huang, A. Kadir, Shuyu Bao, Z. Ren, C. Wang, Y. Wang, Kwang Hong Lee, Z.H. Liu, Tomas Palacios, Chuan Seng Tan, G.I. Ng, S.J. Chua](#)

[2248 \(Invited\) Silicon Carbide as a Robust Neural Interface](#)

[Christopher L. Frewin, Evans E. Bernardin, Felix Deku, Richard Everly, Jawad Hassan, Joseph J. Pancrazio, Stephen E. Saddow](#)

[2249 \(Invited\) Probability of Low Off Angled 4H-SiC Epitaxial Wafers on Power Device Applications](#)

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[2250\(Invited\) Practical Considerations of Si Vs SiC Technology in High POWER, High Frequency Inverters for Industrial Induction Heating Applications](#)

[Enrique J. Dede, Jose Jordan, Vicente Esteve](#)

[2251\(Invited\) Reliability Study of RF Power Amplifiers with GaN-on-SiC HEMTs](#)

[Jenny Lang, Jang-Kwon Lim, Johan Hellen, Torbjörn M.J. Nilsson, Bo Schodt, Ralf Poder, Ilja Belov, Mietek Bakowski, Peter Leisner](#)

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[2253\(Invited\) Physics of GaN High Electron Mobility Transistors](#)

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[2254\(Invited\) Electric Field Control in AlGaIn/GaN HEMTs Operating in the Kilovolt Regime](#)

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[2255\(Invited\) Manufacturing Microwave AlGaIn/GaN High Electron Mobility Transistors \(HEMTs\) on Truly Bulk Semi-Insulating GaN Substrates](#)

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[2256\(Invited\) RF Power Performance of Nanocrystalline Diamond Coated InAlN/AlN/GaN HEMTs](#)

[Brian P. Downey, David J. Meyer, Mario G. Ancona, Tatyana I Feygelson, Bradford B Pate, Jason A. Roussos, Marko J. Tadjer, Travis J Anderson, Matthew T Hardy, Neeraj Nepal, Charles R. Eddy](#)

[2257\(Invited\) Improved Vertical GaN Diodes with Mg Ion Implanted Junction Termination Extension](#)

[Travis J Anderson, Andrew D. Koehler, Boris Feigelson, Karl D Hobart, Francis J Kub](#)

2258 [Advances in AlGaIn/GaN HEMT Surface Passivation](#)

[Andrew D. Koehler, Marko J. Tadjer, Travis J Anderson, P. Chojecki, Karl D Hobart, Francis J Kub](#)

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[Shrijit Mukherjee, Erin Patrick, Mark E Law, Fan Ren, Stephen J. Pearton](#)

2260 [Non-Pressure Joining Method for Zn-Al Solder by Pre-Ultrasonic Bonding](#)

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[Yoshitaro Sakata, Nao Terasaki, Kazuhiro Nonaka](#)

2264 [Characterization and Comparison of Planar and Trench Silicon Carbide \(SiC\) Power MOSFETs](#)

[Zhiqiang Wang, Madhu Chinthavali, Steven Campbell](#)

2265(Invited) SiC Growth Parameter Evolution Utilizing Infrared Thermal Imaging Towards Realization of Extremely Low Dislocation Bulk SiC

Andrew Joseph Trunek

2266(Invited) Investigation on the Carbon Supply in the Top Seeded Solution Growth of SiC Bulk Crystal

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2267(Invited) Sublimation Growth of 3C-SiC: Status and Prospects

Valdas Jokubavicius, Mikael Syväjärvi, Rositsa Yakimova

2268(Invited) Schematic Description of the Internal Stress Distribution Responsible for Defect Generation in Larger-Diameter PVT-Grown 4H-SiC Single Crystals

Tatsuo Fujimoto, Masashi Nakabayashi, Shohji Ushio, Komomo Tani, Masakazu Katsuno, Shinya Sato, Hiroshi Tsuge

2269(Invited) Study on the Role of Thermal Stress on Prismatic Slip of Dislocations in 4H-SiC Crystals Grown by PVT Method

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2270(Invited) 4H-SiC Ion Implanted Bipolar Junctions: Relevance of the 1950°C Temperature for Post Implantation Annealing

Roberta Nipoti, Antonella Parisini, Giovanna Sozzi, Maurizio Puzanghera, Andrea Parisini, Alberto Carnera

2271(Invited) Progress in Buried Grid Technology for Improvements in on-Resistance of High Voltage SiC Devices

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[2273\(Invited\) Threshold Voltage Modulation By Interface Charge Engineering for High Performance Enhancement-Mode Al<sub>2</sub>O<sub>3</sub>/GaN Power Mosfets](#)

[Qi Zhou, Anbang Zhang, Yuanyuan Shi, Zeheng Wang, Li Liu, Wanjun Chen, Bo Zhang](#)

[2274Characterization of Interface State Density of SiO<sub>2</sub>/SiC \(000-1\) Based on Oxygen Concentration at the Interface during Thermal Oxidation](#)

[Ryu Hasunuma, Kohei Hanasato, Kikuo Yamabe](#)

[2275Direct Observation of Energy Distribution of Interface States at SiO<sub>2</sub>/4H-SiC Interface](#)

[Yoshiyuki Yamashita, Ryu Hasunuma, Takahiro Nagata, Toyohiro Chikyow](#)

[2276\(Invited\) Study of Minority Carrier Lifetime Killer by Synchrotron X-Ray Topography](#)

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[2277Characterization of Leakage Causing Visible Epitaxial Defects Nucleating from Crystal Defects in the Substrate](#)

[Hrishikesh Das, Swapna Sunkari, Hans Naas](#)

[2278TEM Study on Microstructure of Stacking Fault Nucleation Sites in 4H-SiC P-I-N Diodes](#)

[Yu Nakamura, Tomoaki Frushou, Shigehisa Yamamoto](#)

[2279Investigation of Penetration Depth and Defect Image Contrast Formation in Grazing Incidence X-ray Topography of 4H-SiC Wafers](#)

[Yu Yang, Jianqiu Guo, Ouloide Yannick Goue, Balaji Raghothamachar, Michael Dudley, G Chung, E Sanchez, I Maning](#)

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2281([Invited](#)) [Analytical Models for Field Effect Control of Electrokinetic Transport Phenomena in Nanofluidics](#)

[Yu Ma, Shizhi Qian, Li-Hsien Yeh](#)

2282 [Noise and Sensitivity Characteristics of Solid-State Nanopores with 2-D Membranes](#)

[Kyeong-Beom Park, Hyung-Jun Kim, Hyun-Mi Kim, Ki-Bum Kim](#)

2283 [Towards Understanding the Ion Transport in Polyelectrolyte-Modified Nanopores with Bipolar Charges](#)

[Chih-Yuan Lin, Li-Hsien Yeh, J.P. Hsu](#)

2284 [Photo-Induced Ionic Noise in Si and Quartz Based Solid-State Nanopore Device](#)

[Hyung-Jun Kim, William H Pitchford, Kyeong-Beom Park, Hyun-Mi Kim, Joshua B Edel, Ki-Bum Kim](#)

2285 [Temperature Sensitive of Ionic Conductance in Alumina Nanochannels](#)

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2286([Invited](#)) [Microfluidic Synthesis of Functional Nanomaterials](#)

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[2287Design and Fabrication of Ag / AgCl Composite Reference Electrode Based on Microfluidic Chip](#)

[Li Chen, Xiaolin Zheng, Ning Hu, Yanjian Liao](#)

[2288Comparison of Six Different Printed Ag Inks for Coulometric Removal of Chloride Ions from Seawater: Towards an Integrated Microfluidic Platform for Desalination](#)

[Marianna Figuera, Peter D. Van der wal, Herbert Shea](#)

[2289Deformation Measurement of the Hybrid Cells Using a Microfluidic Array Device](#)

[Xiaoling Zhang, Jun Yang, Ning Hu, Xiaolin Zheng](#)

[2290How Microfluidics Can Help to Understand and Promote Nerve Healing after Injury: A Neurobiological Microfluidic Device with Electrophysiological Functionality](#)

[Heinz Wanzenboeck, Patrick Schuller, Emmerich Bertagnolli](#)

[2291\(Invited\) Automatic Particle and Cell Detection and Manipulation in a Microfluidic Chip](#)

[Yongxin Song](#)

[2292\(Invited\) Electroosmotic Flow-Driven Ion Current Rectification and Negative Differential Electrolyte Resistance in Nanofluidics](#)

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[2293Heat Transfer Enhancement By Elastic Turbulence in a Micro Curvilinear Channel](#)

[Hong Na Zhang, Dong Yang Li, Xiao Bin Li, Feng Chen Li](#)

[2294A Microfluidic Electrochemical Cell with Integrated Palladium Hydride Reference Electrode](#)

[Espen Vinge Fanavoll, David A. Harrington, Svein Sunde, Frode Seland](#)

[2295 Direct Numerical Simulation of Particle Segregation and Dynamics in Inertial Microfluidics By Discrete External Boundary Force-Lattice Boltzmann Method](#)

[Yi Huang, Zhaohui Liu, Chuguang Zheng, Shizhi Qian](#)

[2296 \(Invited\) Engineering Nonlinear Electrokinetic Flows at Polarizable Interfaces](#)

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[2297 Dynamics of High Weber Number Droplets Impacting on Hydrophobic Surfaces with Closed Micro-Cells](#)

[Rui Zhang, Feng He, Pengfei Hao](#)

[2298 Numerical Study on the Heat Transfer Performance of Non-Newtonian Fluid Flow in a Manifold Microchannel Heat Sink](#)

[Si Ning Li, Hong Na Zhang, Qian Li, Meng Zhang, Xiao Bin Li, Feng Chen Li](#)

[2299 Dynamic Characteristics of Air-Water Interface in a Patterned Microchannel](#)

[Jingxian Zhang, Yucheng Jie, Zhaohui Yao](#)

[2300 A Computational Model for Natural Convection and Forced Convection in Redox MHD Systems Based on Electroneutrality and Migration](#)

[KM Isaac, Fangping Yuan](#)

[2301 Numerical Simulation of Thermal Diffusion and Convection in Electrokinetic Microchannel Flow](#)

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[2302 Miniaturized Redox Flow Batteries for Electronic Applications: CFD Modeling](#)

[Brijesh Kumar, Atul Bhargav, Patrick Ruch](#)

[2303 Viscoelastic Slip Velocity for Microscale Electrokinetic Flows](#)

[Sang W. Joo, Amir Saadat, Bamin Khomami](#)

2304[Micro Printing Using Microfluidics for Printed Biodegradable Devices in Trillion Sensing](#)

[Nao Terasaki, Kristen Dorsey, Mitsutoshi Makihata, Albert P Pisano](#)

2305[Electric Field-Driven Particle Separation in a Bifurcating Microchannel](#)

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2306[Electroosmotic Flow through a Tubular Channel](#)

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[Hiroshi Mizuta, Jian Sun, Marek E. Schmidt, Manoharan Muruganathan](#)

2308[Enhancement of the Extent of In Situ Transfer-Free Few-Layer Graphene by Solid Carbon Source for Use in Gas Sensor Applications](#)

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2309[Electrical Measurement of the Band Gap of Molybdenum Ditelluride and Black Phosphorus in Ambipolar Transistors with Graphene Source/Drain Contact](#)

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2310[\(Invited\) Emerging Graphene Device Technologies](#)

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2311[Titanium Carbide MXene Flakes as Novel 2D Metallic Solution-Processed Films](#)

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2312 Single and Few Layered WS<sub>2</sub> Nanoflowers: Synthesis, Characterization and Their Piezoresponce

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2313 Theoretical Analysis and Experimental Optimization of Graphene/TMD Heterojunction Barristors

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2314 Current Transport in Graphene/Copper Hybrid Nano Ribbon Interconnect: A First Principle Study

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2315 (Invited) High-Yield Reconfigurable Silicon and Germanium Nanowire Transistors and Compact Logic Circuits

Walter M. Weber, André Heinzig, Jens Trommer, Tim Baldauf, Michael Raitza, Matthias Grube, Sebastian Pregl, D.-Y. Jeon, S.-J. Park, Violetta Sessi, Thomas Mikolajick

2316 Dual Gate Black Phosphorous Field Effect Transistors on Glass for NOR Logic and OLED Switching

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2317 Favorable Combination of Schottky Barrier and Junctionless Properties in Field-Effect Transistors for High Temperature Applications

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2318 High Photoresponsivity Multilayer MoS<sub>2</sub> Thin-Film Transistors with Local Bottom Gate Structure

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2319 [Turning the n-Type CdS to p-Type CdS Nanowires By Surface Charge Transfer Doping](#)

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2322 [Yolk-Shell Nanocrystals for Efficient Photoelectrochemical Water Splitting](#)

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2323 [Surmofs and Cncs As Novel Tuneable Materials for Optical, Photonic and Solar Energy Materials](#)

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2324 [\(Invited\) Compliance-Free Pulse Forming of Filamentary RRAM](#)

[Pragya Shrestha, David Malien Nminibapiel, J. H. Kim, Helmut Baumgart, K. P. Cheung, J P Campbell](#)

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[Karsten Beckmann, Josh Holt, Wilkie Olin-Ammentorp, Joseph Van Nostrand, Nathaniel Cady](#)

2326 [One Step Synthesis of Au Nanoparticle-Cyclized Polyacrylonitrile Composite Films and Their Use in Organic Nano-Floating Gate Memory Applications](#)

[Se-Phin Cho, Sukjae Jang, Hae-Na Jo, Sang-A Lee, Sukang Bae, Sang Hyun Lee, Junyeon Hwang, Han-Ik Joh, Gunuk Wang, Tae-Wook Kim](#)

2327 [Resistance Switching in Individual Hydrogen Silsesquioxane \(HSQ\) Nanopillars](#)

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2328 [\(Invited\) Epitaxial Oxides on Silicon for CMOS and Beyond](#)

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2329 [Effect of MoO<sub>3</sub> Vapor Flow to Large Area MoS<sub>2</sub> Few-Layered Films Growth](#)

[Hung-Yi Chen, Hsiang-Chen Wang, Wen-Wei Wu, Ming-Pei Lu, Ming-Yen Lu](#)

2330 [Probing the Growth Mechanisms of Vertical-Stacked and Lateral-Grown MoS<sub>2</sub> Few Layers](#)

[Ya-Ting Chung, Ming-Yen Lu, Hsiang-Chen Wang](#)

2331 [Mechanical Transfer of Large-Scale Two-Dimensional Materials Onto Arbitrary Substrates Via Water-Penetration-Assisted Method](#)

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2332 [Fabrication of MoS<sub>2</sub> Thin Film at Low Temperature By Atmospheric-Pressure Solution Based Mist CVD](#)

[Shota Sato, Toshiyuki Kawaharamura](#)

2333 [\(Invited\) All-Carbon Integrated Circuits for Flexible/Stretchable Electronics](#)

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2334 [Evaluation of Different High K Materials for In situ Growth of Carbon Nanotubes](#)

[Martin Keyn, Tillmann Adrian Krauss, Andreas Kramer, Udo Schwalke](#)

[2335High-Performance Photodetectors Using Transition Metal Dichalcogenide \(TMD\)-based Hybrid Structures](#)

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[2336Multiphysics Simulations of Photoelectron Generation and Transport in Dye Sensitized TiO<sub>2</sub> Nanorod-Based Solar Cells](#)

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[2337Thermoelectric Properties of Highly Ordered Metal-Organic Framework Films](#)

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[2338Direct Determination of the Barrier Height of Au Contact on p-Type Ultrananocrystalline Diamond/Hydrogenated Amorphous Carbon Composite Films](#)

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[2339Oxidation of CuSn Alloy Nano-Tree and Application for Gas Sensors](#)

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[2340Photoconduction of p-type Ultrananocrystalline Diamond/Hydrogenated Amorphous Carbon Composite Films in Metal-Semiconductor-Metal Geometry](#)

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[2341Enhanced Photocurrents in the Vertically Aligned Hybrid CdTe-Si One-Dimensional Nanostructures with High Surface Area](#)

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[2342An Organic Metal Halide Tandem Solar Cell Embracing Non-Toxic Tin Perovskite](#)

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2343 Wafer-Level Fabrication and Characterization of Amorphous Thin Films MoS<sub>2</sub> Prepared by RF Magnetron Sputtering Technique

Kim R Gustavsen, Ken A Nygård, Preben Honerød-Bentsen, Kang Du, Guohua Liu, Muhammad Tayyib, Dag W Breiby, Kristian Weibye, Ola Nilsen, Knut E Aasmundevit, Kaiying Wang

2344 Nizo/Ag/Nizo Multilayer Films for Transparent Conducting Electrodes of Polymer Dispersed Liquid Crystal-Based Smart Windows

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2345 Medical Implants from a Unique Technology Combining a Highly Flexible Integration of Passives with Outstanding Performances

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2346 Fabrication of a-C Semiconductor Nanoparticles for Quantum Dots Surface Emitting Laser Using High-Density Plasma in Localized Area

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2347 Development of Silicon and Carbon Based p-Type Amorphous Semiconductor Films with Optical Gap Variable for High-Efficiency Multi-Junction Solar Cells

Hiroshi Naragino, Yoshiya Nagata, Keigo Okafuji, Shinpei Ohtomo, Yuta Shimizu, Kensuke Honda

2348 Roll-to-Roll Sputtered ITO/Ag/ITO Multilayers for Highly Transparent and Flexible Electrochromic Applications

Tae-Ho Kim, Sung-Hyun Park, Doo-Hee Kim, Yoon-Chae Nah, Han-Ki Kim

2349 Template-Free Electrochemical Synthesis of Selenium Nanowires

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[2350Operando Resonant Soft X-Ray Scattering As a Spatio-Chemical Characterization Technique for Electrochemistry](#)

[Isvar A. Cordova, Cheng Wang, Adam Z Weber, Rachel A. Segalman, Michael A. Brady, Gregory M. Su](#)

[2351Effect of Flow Field Configuration on Oxygen Transport Resistances in Proton Exchange Membrane Fuel Cell Cathode](#)

[Jash Karani, Udit N Shrivastava, Kazuya Tajiri](#)

[2352Relation Between Current Density Distribution in Land-Channel Direction and Presence of Liquid Water in Proton Exchange Membrane Fuel Cell Flow Channel](#)

[Jash Karani, Udit N Shrivastava, Kazuya Tajiri](#)

[2353Identification of Polarization Losses in High-Temperature PEM Fuel Cells by Distribution of Relaxation Times Analysis](#)

[Stefan Schindler, Alexandra Weiß, Samuele Galbiati, Florian Mack, Michael A. Danzer, Roswitha Zeis](#)

[2354A New Membrane Electrode Assembly Structure with Novel Flow Fields for Polymer Electrolyte Fuel Cells](#)

[Jaehyung Park, Ugur Pasaogullari, Leonard J. Bonville](#)

[2355Optimization of Polymer Electrolyte Membrane Fuel Cells with a Large Number of Degrees of Freedom](#)

[Petru Andrei, James Lamb, Grayson Mixon](#)

[2356PEMFC Reactant Mass Transfer Coefficient Measurement and Separation – Method Extension to the Mixed Kinetic and Mass Transfer Control Regime](#)

[Jean St-Pierre, Tatyana V. Reshetenko](#)

[2357Investigation of MPL Effect on PEFC Cold Start](#)

[Jiaxun Zhou, Xu Xie, Kui Jiao](#)

[2358 Failure Point Analysis of Membrane Electrode Assemblies with Coating Irregularities](#)

[Adam Phillips, Guido Bender, Jocelyn Mackay, Jason Morgan Porter, Michael Ulsh](#)

[2359 Accelerated Degradation of Polymer Electrolyte Membrane Fuel Cell Gas Diffusion Layers: Mass Transport Resistance and Liquid Water Accumulation at Limiting Current Density with in operando Synchrotron X-ray Radiography](#)

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[2360 The Effect of Nitrogen Cross-Over on Water Balance Measurements in Proton Exchange Membrane Fuel Cell Using Constant Temperature Anemometry](#)

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[2361 Advanced Characterization of Electrocatalyst Interfaces](#)

[Yuyan Shao, Langli Luo, Yingwen Cheng, Mark H Engelhard, Jun Liu, Chongmin Wang](#)

[2362 Cobalt Phosphide Based Nanostructures as Bifunctional Electrocatalysts for Low Temperature Alkaline Water Splitting](#)

[Timothy N. Lambert, Julian A. Vigil, Ben Christensen](#)

[2363 A Hydrogen Evolution Reaction Catalyst Using Nickel Phosphides with Mixed Crystalline Structure](#)

[Gaoyang Liu, Juyuan Xu, Xindong Wang, Hui Li, Haijiang Wang](#)

[2364 Monocrystalline Ni<sub>12</sub>P<sub>5</sub> Hollow Spheres with Ultrahigh Specific Surface Area As Advanced Electrocatalysts for the Hydrogen Evolution Reaction](#)

[Jinfa Chang, Songtao Li, Guoqiang Li, Liang Liang, Junjie Ge, Changpeng Liu, Wei Xing](#)

2365 [Deposition of Nickel Hydroxide on Pt/C to Improve the Efficiency of the Hydrogen Evolution Reaction in Solid-State Alkaline Water Electrolyzers](#)

[Guanxiong Wang, Javier Parrondo, Cheng He, Yanxin Li, Vijay K Ramani](#)

2366 [Hydrogen Evolution Reaction on Pt/RuO<sub>2</sub>-TiO<sub>2</sub> Electrocatalyst in Alkaline Media](#)

[Cheng He, Guanxiong Wang, Javier Parrondo, Vijay K Ramani](#)

2367 [Novel PGM-Free Electrocatalysts for Alkaline Electrolyzers](#)

[Alexey Serov, Nalin Andersen, Morgan George, Chris Capuano, Katherine E Ayers, Plamen Atanassov](#)

2368 [\(Invited\) Alkaline Water Electrolysis: Achieving High Current Densities](#)

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3071(Invited) Direct Conversion of Methane to Methanol and Other Value Products in SOFC

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3072Correlating the Onset of Coking with Electrode Surface Chemistry during CO<sub>2</sub> Electrolysis with Near Ambient Pressure X-Ray Photoelectron Spectroscopy

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3074(Invited) Synthesis and Upgrading of Fuels Using Solid State Electrochemical Devices

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3075(Invited) Reversible Operation of Solid Oxide Cells for Sustainable Fuel Production and Solar/Wind Load-Balancing

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3077Characterisation of a Planar Solid Oxide Cell Stack Operated at Elevated Pressure

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3087Hydrogen Production through a Multi-Ion Exchange Membrane Based Electrolysis System

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3088Experimental Investigation of Operating Parameters in Power Generation By Lab-Scale Reverse Electro-Dialysis (RED)

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3089A New Mode of Reverse Electrodialysis Operation to Reduce Seawater RO Energy Demand

Marjolein Vanoppen, Griet Walpot, Ella Criel, Arne R.D. Verliefde

3090Improvement of Reverse Electrodialysis Cells for Generating Electrical Power from Salinity Gradient

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3091Solar Generation of Ion Gradients Using Dye-Sensitized Ion-Exchange Membranes

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3119Microelectrode-Less Control of Semiconducting Fluorescent Nanoparticles By Dielectrophoretic (DEP) Force for High Degree of Freedom

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3271([Invited](#)) [Diamond Electrodes for Sensitive Electrochemical Detection](#)

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[Yo-Han Kim, Hunsang Jung, Hyun Ho Lee](#)

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[3278 Highly Sensitive Detection of Catalase Modified Magnetic Nanoparticle Using Signal-Off ECL Imaging of Multichamber Electrode](#)

[Yuki Inoue, Akiko Araki, Hiroyuki Yoshikawa, Masato Saito, Eiichi Tamiya](#)

[3279 Electrochemical Measurement of Coenzyme Q<sub>10</sub> Using Disposable Interdigitated Array Electrode](#)

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[Takashi Koike](#)

[3282 Electrochemical Reduction of Alkenes Mediated By Vitamin B12 Model Complex](#)

[Hisashi Shimakoshi, Luo Zhongli, Yoshio Hisaeda](#)

[3283 Electrochemical Reduction of Primary Alkyl Halides with the Aid of a Structurally Modified Nickel Salen Catalyst](#)

[Austin Goodson, Caitlyn M. McGuire, Mohammad S. Mubarak, Dennis G Peters](#)

[3284 Efficient Diels-Alder Reaction of O-Quinone Electrogenerated in a Flow Microreactor](#)

[Hirona Yoshizawa, Hiroyuki Tateno, Mahito Atobe](#)

[3285 Competition Studies and the Use of Mechanistic Insight to Overcome Synthetic Barriers](#)

[Kevin D Moeller, Robert J Perkins, Luisalberto Gonzalez, Ruozhu Feng](#)

3286 [\(Invited\) Electron-Transfer Approaches to Metal-Free Ring-Opening Metathesis Polymerization](#)

[Andrew J Boydston, Adam E Goetz, Laura M M Pascual, Yosuke Ashikari, Kelli A Ogawa](#)

3287 [Anodic Chlorination of Chalcogenophenes in Conjugated Polymers](#)

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3288 [Electrooxidative Polymerization of 3-Hexylthiophene in a Flow Microreactor](#)

[Masatsugu Mizuno, Hiroyuki Tateno, Mahito Atobe](#)

3289 [Highly Soluble Quinones As Active Materials for Nonaqueous Redox Flow Batteries](#)

[Keisuke Takenaka, Akihiro Shimizu, Jun-ichi Yoshida](#)

3290 [Synthesis and Electrochemical Properties of Thiophene-Based Polymers As Organic Cathode Materials for Lithium-Ion Batteries](#)

[Hideya Tanizawa, Akihiro Shimizu, Yusuke Yaso, Yuu Inatomi, Nobuhiko Hojo, Hirotetsu Suzuki, Jun-ichi Yoshida](#)

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[Kei Ohkubo](#)

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[Ryota Sakamoto, Hiroshi Nishihara](#)

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[Laura M M Pascual, Adam E Goetz, Damian G Dunford, Kelli A Ogawa, Yosuke Ashikari, Andrew J Boydston](#)

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[Keisuke Naba, Takashi Yamamoto, Tsuyoshi Saitoh, Rika Obata, Shigeru Nishiyama, Yasuaki Einaga](#)

3295 [Microelectrode Arrays and the Move Toward Practical Applications](#)

[Kevin D Moeller, Sakshi Uppal, Matthew Graaf, Nai-Hua Yeh, Weiqiang Li](#)

3296 [Electrochemical Transformation of 2,5-Diphenyltellurophene](#)

[Naoki Shida, Yusuke Komatsuzaki, Dwight Seferos, Hiroki Nishiyama, Ikuyoshi Tomita, Shinsuke Inagi](#)

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[Jun-ichi Yoshida, Tatsuya Morofuji, Akihiro Shimizu](#)

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[Diane K. Smith, Mario Cedano](#)

3301 [Zinc and Nickel-Salophen Catalysts in Mediated Electrohydrocyclization Reactions](#)

[James A Miranda, Nancy Zepeda, Lauren Littell, Brittanie Clendenin](#)

3302 [Cyclic Voltammetry Studies of a Redox-Responsive 4 H-Bond Ureidopyrimidinone Alkyl-Pyridinium Capable of Self-Dimerization](#)

[Ghazwan M Darzi, Diane K. Smith](#)

3303 [Electrocatalytic Generation of Amidyl Radicals for N-Heterocycle Synthesis](#)

[Hai-Chao Xu](#)

3304 [Coupling Xanthine Dehydrogenase to Electrodes By Means of a Polymer and 3D Structures](#)

[Fred Lisdat](#)

3305 [Synthesis of Fluorinated Triazole and Isoxazole Derivatives By Electrochemical Fluorination](#)

[Shunsuke Kuribayashi, Naoki Shida, Shinsuke Inagi, Toshio Fuchigami](#)

3306 [Electrochemical Studies of Cysteine](#)

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

3307 [Electroreduction of Nitrobenzene: Nominal Simulation of Voltammogram](#)

[Inam ul Haque](#)

3308 [Hole Transfer Property at Single Crystal Prepared from Triphenylamine-Derivative Based on Solubility and Supersolubility Curves](#)

[Yasuaki Nakasone, Sayoko Shironita, Norio Nagayama, Minoru Umeda](#)

3309 [Electrochemical Homo-Coupling Reaction of Brominated Phenols](#)

[Rika Obata, Takashi Yamamoto, Keisuke Naba, Shigeru Ohba, Yasuaki Einaga, Shigeru Nishiyama](#)

3310 [Electrochemical Behavior of Aromatic Diamines and the Growth of Conducting Films](#)

[Katsuhiko Tsunashima, Naoki Minami, Yasushi Ono, Mitsutaka Imoto, Seiichi Mori, Motonori Takeda](#)

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[Nobuo Kitada, Satoshi Iwano, Masahiro Kiyama, Ryohei Saito, Takashi Hirano, Haruki Niwa, Shojiro Maki](#)

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[Ryohei Saito, Masahiro Kiyama, Nobuo Kitada, Shoko Higashi, Satoshi Iwano, Rika Obata, Haruki Niwa, Takashi Hirano, Shojiro Maki](#)

3313 [Metal Nanoparticles Dispersion By Chaperonin Complexes](#)

[Hiromi Yoda, Ayumi Koike-Takeshita](#)

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3315 [Biological Decontamination of Water Using Non-Thermal Plasma Treatment](#)

[Tarek M Abdel-Fattah, Ekrem Cetinkaya, William Pell, Muhammad Malik](#)

3316 [The Unusual Redox Properties of Fluoroferrocenes Revealed through a Comprehensive Study of the Haloferrocenes](#)

[Michael Inkpen, Shuoren Du, Mariana Hildebrand, Andrew White, Nicholas Harrison, Tim Albrecht, Nicholas Long, Nicholas Long](#)



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[3318Copper-Modified Covalent Triazine Frameworks As Efficient Electrocatalysts for Oxygen Reduction Reactions](#)

[Kazuyuki Iwase, Kazuhide Kamiya, Shuji Nakanishi, Kazuhito Hashimoto](#)

[3319Exploring Selective, Efficient 2 e<sup>-</sup> and 4 e<sup>-</sup> Electrochemical Oxygen Reduction Using Electrocatlays Based on Reduced Graphene Oxide](#)

[Hyo Won Kim, Bryan D McCloskey](#)

[3320Rationalized Onion-like Non-PGM Catalyst Development for Oxygen Reduction Reaction](#)

[Claudia Wuillma Narvaez Villarrubia, Hung-Ju Yen, Gen Chen, Hombo Li, Ming Zhou, Ying-Bing Jiang, Kateryna Artyushkova, Plamen Atanassov, Gautam Gupta, Gang Wu, Hsing-Lin Wang](#)

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[Krzysztof Miecznikowski, Beata Dembinska, Sylwia Zoladek, Iwona Agnieszka Rutkowska, Magdalena Skunik-Nuckowska, Enrico Negro, Pawel J Kulesza, Vito Di Noto](#)

[3322Electrochemiluminescence Resonance Energy Transfer Between Traditional Luminescent Reagents and Nanomaterials and Their Biosensing Application](#)

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[3323 Structural Manipulation of Carbon Nitride for Electrochemiluminescent Analysis](#)

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[3324 Electrochemiluminescence Microscopy Imaging Using Ru\(bpy\)<sub>3</sub><sup>2+</sup> Doped in Silica Microspheres](#)

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[3325 Enhanced Electrochemiluminescence on Indium Tin Oxide Modified with Dendrimer-Encapsulated Nanoparticles](#)

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[3326 Electrochemiluminescent Molecular Sensor for Point of Care Testing for Homocysteine Measurement](#)

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[3327 The Oxygen Evolution Reaction at Transition Metal Oxide \(TMO\) Films in Alkaline Media](#)

[Michelle Phillipa Browne, Shelley Stafford, Maria O'Brien, Hugo Nolan, Nina Berner, Georg S. Duesberg, Paula E Colavita, Micheal E.G Lyons](#)

[3328 Cobalt Oxide Nanoflake Modified Electrodes and Their Application As Supercapacitors and Oxygen Evolution Catalysts](#)

[Aur lie A. S. Rovetta, Andrew Harvey, Michelle Phillipa Browne, Jonathan N Coleman, Micheal E.G Lyons](#)

[3329 Enhancement of the Oxygen Evolution and the Oxygen Reduction Reactions in Mn<sup>3+</sup> based Electrocatalysts](#)

[Shigeto Hirai, Shunsuke Yagi, Masaya Fujioka, Tomoya Ohno, Takeshi Matsuda](#)

[3330 Validation of a Central Approximation in Theories of Regular and Random Electrochemical Electrode Arrays. Extraction of Statistical Information from Amperometric Response of Random Electrode Arrays](#)

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[3331 Morphology-Controllable Ni<sub>3</sub>Se<sub>2</sub> Nanostructures; Synthesis, Characterization and Electrocatalytic Activity Towards Oxygen Evolution Reaction](#)

[Abdurazag T Swesi, Jahangir Masud, Manashi Nath](#)

[3332 A New Family of Perovskite Catalysts for Oxygenevolution Reaction in Alkaline Media: BaNiO<sub>3</sub> and BaNi<sub>0.83</sub>O](#)

[Byungchan Han, Jeemin Hwang](#)

[3333 Production of Ni\(OH\)<sub>2</sub> Nanosheets By Liquid Phase Exfoliation: High Performance Oxygen Evolution Catalysts and Supercapacitor Electrodes](#)

[Ian Godwin, Andrew Harvey, Xiaoyun He, David McAteer, Micheal E.G Lyons, Jonathan N Coleman](#)

[3334 Microkinetic Modeling of the Oxygen Evolution Reaction on Oxide Surfaces](#)

[Charlotte S Kirk, Colin F Dickens, Joseph H Montoya, Jens Nørskov](#)

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[3336 Electrocatalytic Reduction of CO<sub>2</sub> on Cu and Au/W Electrode Surfaces: Empirical \(DEMS\) Confirmation of Computational \(DFT\) Predictions](#)

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[3337 Electrochemical Reduction of CO<sub>2</sub> on Copper Oxidized By Electrochemical Methods](#)

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[3338 Identification of Carbon Dioxide Electroreduction Products on Multilayered Metallic Catalysts Based on Palladium](#)

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[3339 Electrochemical Reduction of CO<sub>2</sub> over Phase Segregated Cuag Bimetallic Electrodes with Enhanced Oxygenate Selectivity By CO Spillover](#)

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[3340 \(Invited\) Enhanced Hydrogen Oxidation Activity at Pt-M Alloy Catalysts in Acid: A DFT Study](#)

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[3341 \(Invited\) Structural Stability and Ionic Defects in Transition Metal-Oxides from Diffusion Quantum Monte Carlo](#)

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[3342 \(Invited\) A First-Principles Molecular Dynamics Study on Active Sites on Metal Nano Particles: Application of the Compressed Gas Model](#)

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[3343 \(Invited\) Theoretical Investigation on Proton Conductance Mechanism in Proton Exchange Membranes](#)

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[3344 \(Invited\) First-Principles Simulations of Electrochemical Reactions and Properties at Water|Pt Interfaces](#)

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[3345 Rational Band Structure Engineering of TiO<sub>2</sub> for Photoelectrochemical Water Splitting](#)

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[3346 Nitrogen and Transition-Metal Codoped Titania Nanotube Arrays for Visible-Light-Sensitive Photoelectrochemical Water Oxidation](#)

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[3347 Engineering Molybdenum Disulfide Protected Silicon Photocathodes for Corrosion Resistance in Acid](#)

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[3348 Designing IrO<sub>2</sub> Nanoparticles for Oxygen Evolution](#)

[Fatih G. Sen, Alper Kinaci, Badri Narayanan, Michael J. Davis, Stephen K. Gray, Subramanian K. R. S. Sankaranarayanan, Maria K. Y. Chan](#)

[3349 Electrochemical Reduction of Hydrogen Carbonate Using Porous Diodes](#)

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[3351 \(Keynote\) Artificial Photosynthesis: Synthesis of Organic Substances from CO<sub>2</sub>, H<sub>2</sub>O and Sunlight Using Semiconductor Photoelectrodes Coupled with Metal-Complex Catalysts](#)

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[3359Electrocatalysis for Carbon Dioxide Reduction By Molecular Cobalt Complexes Adsorbed at Liquid/Liquid Interfaces](#)

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[3360Lipophilic Redox Buffers for Polymeric Solid-Contact Electrodes](#)

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[3362 Investigating the Photo-Electrochemical Properties of Quantum Rods Using Scanning Electrochemical Microscopy](#)

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[3363 Photoelectrochemical Evaluation of Single Nanoparticles](#)

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[3364 \(Invited\) Utilization of Photoluminescence from Semiconductor Nanoparticles to Probe Electron Transfer Reactions Influenced By Their Surface Conditions](#)

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[3369 Profiling Carrier Generation in Semiconductor Microwire Arrays Via Photoelectrochemical Metal Deposition](#)

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[3373 Enhanced Photoelectrochemical Performance of Nanostructured Zinc Oxide Photoelectrodes Via Morphology Control](#)

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[3377The Effect of Oxidation Ratio of Conducting Polymer on Potential Stability of the Conducting Polymer-Coated Electrode](#)

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[3378Highly Efficient Electrogenerated Chemiluminescence of Au<sub>22</sub>SG<sub>18</sub> Nanocluster in Aqueous Solution](#)

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[3380Electrochemical Property of Boron-Doped Heteroepitaxial Diamond Treated By Different Oxidation Method](#)

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[3382The Electrostatics of the Semiconductor-Electrolyte Interface](#)

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[3383Modified Electrodes with Nanocomposite Films Based on Conducting Polymers and Functionalized Carbon Nanotubes](#)

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[3387 Quartz Crystal Microbalance Electrode Modified with Thermoresponsive Crosslinked and Non-Crosslinked N- Isopropylacrylamide Polymers. Response to Changes in Temperature](#)

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3393 [Modification of Microelectrode Surface with Hydrogel Layers and Determination of Pore Size in Layers](#)

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3399 [Study of the Ammonia Oxidation Mechanism By a Normal Pusle Voltammetry](#)

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3400 New Insights on Formic Acid Electrooxidation at a Polycrystalline Au Film Electrode: Simultaneous in Situ ATR-Ftirs and Online Dems Measurements

Zenonas Jusys, Rolf Jürgen Behm

3401 Mechanism of Ethanol Oxidation on Unsupported Noble Metal Nanoalloys Studied By Differential Electrochemical Mass Spectrometry

Justyna Piwowar, Adam Lewera

3402 Towards Rational Optimization of a Wastewater Treatment Electrocatalyst for the Chlorine Evolution Reaction Using a Method for Finding Active Sites on Brush Coated Samples

Cody Enslin Finke, Stefan R Omelchenko, Michael R Hoffmann

3403 Comparison of Voltammetric Techniques for the Electroanalysis of Dissolved Solids and Gases in Water, Acetonitrile and Room Temperature Ionic Liquids (RTILs): Unusual Behaviour for Gases

Ghulam Hussain, Debbie S. Silvester

3404 Validation of Mixed Potential Theory Using Formic Acid and Ferric Ion As a Redox Couple

Nilam L. Chauhan, Arindam Sarkar, Vinay A Juvekar, Sanjay M. Mahajani, A.K. Suresh

3405 Structure, Electronic Properties and Electrochemical Behavior of a Boron-Doped Diamond/Quartz Optically Transparent Electrode

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3406 New Advances in Ambient Pressure X-Ray Photoelectron Spectroscopy: Operando Probing of the Electrical Double Layer at the Solid/Liquid Interfac

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3407In-Situ Electrochemical Microscopy Techniques (AFM-SECM, sMIM and Liquid SEM) to Study Solid/Liquid Interface

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3685(Invited) Bioinspired Water Oxidation and CO<sub>2</sub> Reduction Electrocatalysts

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3686(Invited) Development of Photocatalytic and Photoelectrochemical CO<sub>2</sub> Reduction System

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3687(Invited) Regulating the CO-Reduction Product Distribution by the Atomic-Level Structural Modification of the Cu Electrode Surface

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3688(Invited) Enhanced Photocatalysis on TiO<sub>2</sub>-Passivated III-V Compounds for Water Splitting and CO<sub>2</sub> Reduction

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[3802Impedance-Based Biosensing Using Virus-Poly\(3,4-ethylenedioxythiophene\)](#)

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[3803Graphene Oxide-Based Supercapacitor Immunosensor for D-Dimer Detection](#)

[Allen Armando Rodriguez-Silva, Omar Movil-Cabrera, John A Staser](#)



3804 [Ultrasensitive Biosensors Based on Redox Cycling](#)

[Haesik Yang](#)

3805 [Thermal Stability of Phage Peptide Probes Vs. Aptamer for Salmonella Detection on Magnetoelastic Biosensors Platform](#)

[I-Hsuan Chen, Shin Horikawa, Songtao Du, Yuzhe Liu, Howard Clyde Wikle, James M Barbaree, Bryan A Chin](#)

3806 [A Single Protein Detection Using a Biological Nanopore Formed By Perforin](#)

[Hirokazu Watanabe, Ryuji Kawano](#)

3807 [Active Airflow Generation to Assist Robotic Gas Source Localization: Initial Experiments in Outdoor Environment](#)

[Ayano Murai, Haruka Matsukura, Ryuichi Takemura, Hiroshi Ishida](#)

3808 [Blackening in Zirconia-Based Electrochemical Oxygen Sensor at High Pumping Potentials](#)

[Richard E Soltis, Michael McQuillen, Gopichandra Surnilla](#)

3809 [Determination of Low Concentration of Multi-Target Gas Species Exhaled with the Breath](#)

[Kunihiko Nakamura, Teppei Hosokawa, Yukihiro Morita, Mikihiko Nishitani, Yoshihiko Sadaoka](#)

3810 [Amperometric Gas Sensors: From Classical Industrial Health and Safety to Environmental Awareness and Public Health](#)

[Michael T Carter, Joseph R Stetter, Melvin W Findlay, Bennett J. Meulendyk, Vinay Patel, David Peaslee](#)

3811 [Estimation of Gas Source Location from Fluctuating Readings of Gas Sensors and Anemometer on Mobile Robot in Outdoor Environment](#)

Yuta Wada, Haruka Matsukura, Hiroshi Ishida

3812Quantitative Decoding of Complex Gas Mixtures Using Mixed-Potential Sensor Arrays

Kannan Pasupathikovil Ramaiyan, Cortney R Kreller, Eric L. Brosha, Rangachary Mukundan, Unab Javed, Alexandre V Morozov

3813Sensor Design and New Material for an Intelligent System for People with Musculoskeletal Tension Problems

Mauricio Plaza, Willian Aperador, Mauricio Cifuentes

3814Ultra Stable Dual Functionalized Gold Nanoparticles for the Effective Colorimetric Detection of Clenbuterol

Turibius Simon, Ching-Chang Lin, Fu-Hsiang Ko

3815Probing the Small-Molecule Inhibition of an Anticancer Therapeutic Protein-Protein Interaction Using a Solid-State Nanopore

Ki-Bum Kim, Hongsik Chae, Dong-Kyu Kwak, Mi-Kyung Lee, Ji-Hyang Ha, Gaurav Goyal, Min Jun Kim, Seung-Wook Chi

3816Artificial Siderophore-Fe(III) Complexes-Modified Au Substrates for Microbe-Adsorption/Detection Tools

Tomohiko Inomata, Suguru Endo, Hiroki Ido, Takanori Murase, Tomohiro Ozawa, Hideki Masuda

3817Real-Time Monitoring of Bacterial Metabolites By Scanning Electrochemical Microscopy (SECM)

Vrushali S Joshi, Jens Kreth, Dipankar Koley

3818The Bathtub Method for Detecting Small Quantities of Specific Pathogens

[Shin Horikawa, Songtao Du, Yuzhe Liu, I-Hsuan Chen, Yating Chai, Howard Clyde Wikle, Bryan A Chin](#)

3819[Fabrication of the TiN-Ag Double-Shell Hollow Nanosphere Structure As the Highly Sensitive Substrate](#)

[Rongcheng Ban, Jun Yin, Jing Li](#)

3820[Optimization of GaN-Based HEMTs for Chemical Sensing: A Simulation Study](#)

[Madeline Sciallo, Mohua Choudhury, Erin Patrick, Mark E Law](#)

3821[Direct Vacuum Inlet System Enabling Ultra-Sensitive in-Situ Analysis of Chemical Reaction Products](#)

[Daniel Bøndergaard Trimarco, Søren Bertelsen Scott, Thomas Pedersen, Ole Hansen, Ib Chorkendorff, Peter C. K. Vesborg](#)

3822[Pumping Induced By Bio-Mimetic Magnetic Micro-Cilia in Creeping Flows](#)

[Peter Hesketh, Srinivas Hanasoge, Matt Ballard, Marilyn Erickson, Jie Xu, Alexander Alexeev](#)

3823[Fiber Optic Sensors Based on Fiber Bragg Gratings for Methanol Steam Reforming Temperature Monitoring](#)

[Elizabeth Trudel, Brant A. Peppley, Peter Wild](#)

3824[Piezoelectric Bending Motion Sensor for Simultaneous Detection of Bending Curvature and Speed](#)

[Sung Yun Chung, Hwa -Jin Lee, Duck-Jae You, Sanghun Cho, Buil Nam, Tae Il Lee, Youn Sang Kim](#)

3825[Fabrication of Nanopore on Electron Beam Induced Membrane for Single Molecule Analysis](#)

[Seong Soo Choi, Myoung Jin Park, Tokutaro Yamaguchi, Chul Hee Han, Sae-Joong Oh, Kyoung Jin Park, Jung Ho Yoo, Yong-Sang Kim, Nam kyou Park](#)

3826 [Thin Film Surface Chemo-Resistivity Tuning Using Metal Deposition Via Slrr](#)

[Kamyar Ahmadi, Dongjun Wu, Othon Monteiro, Stanko R Brankovic](#)

3827 [Chemical Vapor Deposition Graphene Sensors for Scale Detection](#)

[Hammad Younes, Souhila Kaddour, Amal Al Ghaferi, Irfan Saadat, Lina Tizani](#)

3828 [The Study of Self-Assembled Au Nanoparticles As an Efficient SERS Substrate for Environmental Sensing Applications](#)

[Jasmin Flowers, Gugu Rutherford, Erin Jenrette, Monique Farrell, Jonathan Skuza, Sha'La Fletcher, Christian G Carvajal, Aswini K Pradhan](#)

3829 [Applications of Electrochemical Impedance Spectroscopy in pH Sensor Characterization and Failure Analysis](#)

[Jinshan Huo](#)

3830 [Three-Electrode on-Chip Sensors for Voltammetric Detection of Trace Metals in Natural Waters](#)

[Marianna Figuera, Peter D. Van der wal, Mary-Lou Tercier-Waeber, Herbert Shea](#)

3831 [Porous Co-Cu Electrode Fabricated By Electroplating through Sacrificial Glass Fiber Paper Template](#)

[Xiaochen Wang, Jared Church, Woo Hyoung Lee, Hyoung J. Cho](#)

3832 [Mobile Water Kit 2.0: A Field Deployable Solution for E. coli Detection in Potable Water](#)

[Naga Siva Gunda, Ravi Chavali, Sushanta Mitra](#)

[3833Cd \(II\) Ion-Selective Electrode Based on 2 –Acetylthiophene Semicarbazone in Polymeric Membrane](#)

[Chandra Mohan, Kusum Sharma, Sulekh Chandra](#)

[3834Ion Selective Microelectrodes and Scanning Electrochemical Microscopy to Study Dental Materials](#)

[Jyothir Ganesh Ummadi, Corey Downs, Dipankar Koley](#)

## **M02-Microfabricated and Nanofabricated Systems for MEMS/NEMS 12**

[3835\(Keynote\) Quantum Biophotonics and Its Applications in Life Sciences and Medicine](#)

[Luke Lee](#)

[3836\(Invited\) Single Molecule SERS with Directionally Arrayed Gold Nanoparticle Dimers on Substrate](#)

[Koji Sugano](#)

[3837\(Invited\) Where Is Dielectrophoresis \(DEP\) Going?](#)

[Ronald Pethig](#)

[3838\(Invited\) Fluorescent Frequency Domain Oxygen Sensing and Gradient Imaging within Microfluidic Structures](#)

[Jay W Grate, Ryan Kelly, Norm Anheier, Jonathan Suter, Bingwen Liu, Hans Bernstein, Andreas Vasdekis, Tom Schmidt, Ruby Ghosh](#)

[3839\(Invited\) Integrated Selection of Aptamers Against Biomolecules in Microfluidic Devices](#)

[Qiao Lin](#)

[3840In Vitro Angiogenesis: Co-Culture Model of the Retina in Microfluidic Devices](#)

[Li Jiun Chen, Nobuhiro Nagai, Matsuhiko Nishizawa, Toshiaki Abe, Hirokazu Kaji](#)

3841 [Enzyme-Immobilized Electrode Prepared Using Cellulose Nanofiber](#)

[Mikito Yasuzawa, Daisuke Mima, Yusuke Fuchiwaki, Toshihiko Harada](#)

3842 [Exosomes Detection by a Label-free Localized Surface Plasmonic Resonance Method](#)

[R. Duraichelvan, B. Srinivas, S. Badilescu, R. Ouellette, A. Ghosh, Muthukumar  
Packirisamy](#)

3843 (Keynote) [Chemical Selectivity and Micro/Nano Sensors](#)

[K Prashanthi, A Phani, Thomas George Thundat](#)

3844 (Invited) [Cantilever-Based Resonant Chemical Microsensors](#)

[Oliver Brand, Patrick Getz, Christopher Carron](#)

3845 (Invited) [Microheater-Based Gas Sensing Platform for Low-Power Environmental Monitoring](#)

[Roya Maboudian, Carlo Carraro](#)

3846 (Invited) [Effect of Microfabrication Induced Stresses on the Sensing Characteristics of Dynamic MEMS Devices](#)

[Rudra Pratap, Ajay Dangi, Amruta Ranjan Behera](#)

3847 [Platinum Microscale Sensor for Electrochemical Determination of Manganese](#)

[Wenjing Kang, Cory Rusinek, Adam Bange, Erin Haynes, William R. Heineman, Ian  
Papautsky](#)

3848 (Keynote) [3D Gel Printer for Soft and Wet Matter Engineering and Gel MEMS](#)

[Hidemitsu Furukawa](#)

3849 [Sensor Based Low Cost Agriculture Monitoring System Using Polymeric Hydrogel](#)

[M. Hasnat Kabir, Kumkum Ahmed, Hidemitsu Furukawa](#)

3850 [Reduced Graphene Oxide \(rGO\) Based Alzheimer's Disease Diagnosing Biosensor with High Throughput](#)

[Jinsik Kim, Myung-Sic Chae, Dahye Jeong, Yong Kyoung Yoo, Gangeun Kim, Kyo Seon Hwang](#)

3851 [Ion Trap Micro-Fabrication on High Reflective Coatings](#)

[Christian L. Arrington, Patrick Sean Finnegan, Andrew E Hollowell, Peter L. Maunz, Jungsang Kim](#)

3852 [Process Integration of Electroformed MEMS Variable Capacitors for Magnetostriction Measurements](#)

[Patrick Sean Finnegan, Eric D Langlois, Christian L. Arrington, Andrew E Hollowell, Jamin Ryan Pillars, Todd Monson, Christopher R. St. John](#)

3853 [Magnetolastic Smart Tags Using Electroformed Cobalt Iron Boron](#)

[Eric Donald Langlois, Jamin Ryan Pillars, Todd Monson, Christian L. Arrington, Patrick Finnegan, Adam Thorpe, Christopher R. St. John](#)

3854 [Modeling and Characterization of Electroformed MEMS Variable Capacitors for Cobalt Iron Magnetostriction Measurements](#)

[Eric Donald Langlois, Patrick Finnegan, Mark Harry Ballance, Jamin Ryan Pillars, Todd Monson, Andrew E Hollowell, Christian L. Arrington, Charles Joseph Pearce, Christopher R. St. John](#)

3855 [A Photodetector Based on a Conjugated Polymer and PbS Colloidal Quantum Dots](#)

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

[3856Development of Some Alternative Chalcogenide Materials, Thin Films and Diodes for Fabrication of Low Cost Solar Cells](#)

[Naresh Padha, Chetan J. Panchal](#)

[3857Step Response Analysis of MEMS Electro-Thermal Gas Sensors of Differing Geometry](#)

[Peter Hesketh, Alireza Mahdavifar, Amol Shirke, Joseph R Stetter, Daniel Struk](#)

[3858Multi Factorial Study of Megasonic Enhanced Photoresist Strip with  \$\text{DiO}\_3\$](#)

[Jens Fittkau, Donald Dussault, Christiane Gottschalk, Conny Vikström, Tobias Zenger, Johannes Spreitzer, Laurent Bouvot](#)

[3859Enhanced ZnO Nanorods Field Emitter with Adsorbed Silver Nanoparticles](#)

[Sheng-Joue Young](#)

[3860Development of Instrument for Simultaneous Measurement of Rotating and Sliding Friction of Hydrogels](#)

[Masato Wada, Naoya Yamada, Ajit Khosla, Masato Makino, Masaru Kawakami, Hidemitsu Furukawa](#)

[38613-D Printed Polymer MEMS](#)

[Kyuichiro Takamatsu, Naoya Yamada, Masato Wada, Kumkum Ahmed, Masaru Kawakami, Sam Kassegne, Hidemitsu Furukawa, Ajit Khosla](#)

[3862Hydrogel Coating on Soft Polymeric Substrates for Microfabricated Devices](#)

[Kumkum Ahmed, Naoya Yamada, Masato Wada, Toshiki Kameyama, Masaru Kawakami, Ajit Khosla, Hidemitsu Furukawa](#)

[3863Effect of Post Deposition Annealing on ALD- \$\text{ZrO}\_2\$ /SiON Gate Stacks for Advanced CMOS Technology](#)



[Richa Gupta, Rakesh Vaid](#)

3864 [Electrocatalytic Sensing of Carbon Dioxide, Oxygen and Inert Inorganic Analytes at Network Films of Transition Metal Complexes](#)

[Pawel J Kulesza, Anna Wadas, Weronika Ozimek, Malgorzata Frik, Iwona Agnieszka Rutkowska](#)

3865 [Study of Alcohol Sensing Devices Using DMFC Technology](#)

[Muthuraja Soundrapandian, Subramaniam Chittur Krishnaswamy](#)

3866 [New Top-Down Approach for Fabricating Si-Based Nanostructures](#)

[Lingkuan Meng, Xiaobin He, Jianfeng Gao, Junjie Li, Yayi Wei, Jiang Yan](#)

3867 [Plasmonic Nanostructures for High-Performance Biosensing Devices](#)

[Bo Xiao, Sangram Pradhan, Kevin Santiago, Gugu Rutherford, Aswini K Pradhan](#)

3868 [An Inkjet-Printed Hydrogen Peroxide Sensor on Paper](#)

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

### **M03-Electrochemical Analysis with Nanomaterials and Nanodevices**

3869 [Photoelectrochemistry for Biosensors](#)

[Jun-Jie Zhu, Gao-Chao Fan, Jian-Rong Zhang](#)

3870 [Detection of Telomerase Activity Based on the Steric Hindrance Change in the Pore of Anodic Alumina Nanochannels](#)

[Xu Liu, Yuan Jian Liu, Wei Wei](#)

3871 [Signal Switch and Signal Amplification for Electrochemical Biosensing](#)

[Huangxian Ju](#)

[3872 Probe Sensor Using Nano-Structured Multi Walled Carbon Nanotube Yarn for Direct Selective and Sensitive Dopamine Detection](#)

[Wed Al-Graiti, Javad Foroughi, Zhilian Yue, Xu- Feng, Gordon Wallace, Jun Chen](#)

[3873 A Universal Strategy for Aptamer-Based Nanopore Sensing Throughhost-Guest Interactions inside a-Hemolysin](#)

[Ting Li](#)

[3874 Investigation of the Hybrid Catalytic System GC/Conducting Polymer/CdS/Enzyme for the Detection of Phenolic Compounds.](#)

[Justyna Widera, Diana Chaykina, Sophia King, Magdalena E Osial, Krystyna Jackowska](#)

[3875 Iron Oxide Plasmonic Nanostructures for Energy Harvesting](#)

[Naresh Das, Joshua P. McClure, Kyle N. Grew](#)

[3876 Investigation on High Charge Density of States in Electrochemical Polymer Transistor](#)

[Jiyoul Lee](#)

[3877 Bismuth-Activated Graphene Nanocomposite Modified Electrode for Electrochemical Determination of Trace Heavy Metals](#)

[Sohee Lee, Yuanzhe Piao](#)

[3878 Plasmonics Enhanced Spectroscopic and Electrochemical Analysis](#)

[Xing-Hua Xia](#)

[3879 Anionic-Exchange Ionomer-Films for Electrocatalytic Applications](#)

[Paolo Bertoncello, Thomas Ross Jones, Sandra Aldave Hernandez, Robert Kaspar, Michael Letterio, Yushan Yan](#)

3880 [Enabling Local Electrochemistry in Fast, High-Resolution Scanning Probe Microscopy](#)

[Nathan D. Kirchhofer, Roger Proksch, Maarten Rutgers, Irene Revenko](#)

3881 [Reduced Graphene Oxide Bridging Oriented Copper Nanowires for a Flexible, Annealing-Free and Air-Stable Electrode](#)

[Wang Zhang, Zhenxing Yin, Youn Sang Kim, Yuanzhe Piao](#)

3882 [Real-Time Monitoring of DNA Amplification By Nanogap Impedimetric Sensor](#)

[Hyunjung Lee, Joo-Oak Keem, Hyunmin Cho, Neha Verma, Junghoon Lee, Bong Hyun Chung](#)

3883 [Fabrication of Paper-Based Electrochemical Devices and Detection of Acetaminophen](#)

[Woo Sung Chung, Sung Hwan Lee, Joo Heon Lee, Van-Khue Tran, Euna Ko, Chan Ho Park, Gi Hun Seong](#)

3884 [An Novel Electrochemical Sensor for Indole-3-Acetic Acid Detection Based on the Peroxidase-like Activity of Hemin/Boron Nitride Composite Nanocomposite](#)

[Qin Xu, Jiaqian Tang, Fengping Liu, Xiaoya Hu](#)

3885 [Development of Film-Based Electrochemical Integrated Microfluidic Chip for Identification of Food-Borne Pathogens](#)

[Sujeong Shin, Tae Jae Lee, Sun Young Lim, Moon Keun Lee, Nam Ho Bae, Soon Woo Jeong, So Young Han, Min Ho Yang, Kyoung G Lee, Seok Oh Yun, Seok Jae Lee](#)

3886 [Mesoporous Hollow MnO<sub>2</sub> nanotubes Confined Sulfur As Cathode](#)

[Guowang Diao, Zhen Wu, Lubin Ni](#)

[3887 Electrochemistry and STM Observation of a Copper Complex-Based Molecular Rotor on Gold](#)

[Yusuke Takara, Amane Ohkubo, Tetsuro Kusamoto, Tetsuya Kambe, Michihiro Nishikawa, Yutaka Majima, Shoko Kume, Hiroshi Nishihara](#)

[3888 Facile Synthesis of Graphitic Carbon Nitride /Iron Oxide Composites and Their Enhanced Electrochemical Performance in the Supercapacitor and Enzyme-Free Glucose Sensor](#)

[Lin Liu, Hongying Lyu, Zhenyuan Teng, Chengyin Wang, Huaiguo Xue](#)

[3889 Graphene Polyaniline/Polyoxometalate Hybrid As Cathode for Lithium Ion Batteries with Improved Lithium Storage Capacity](#)

[Guowang Diao](#)

[3890 Preparation of  \$\text{Li}\_4\text{Ti}\_5\text{O}\_{12}\$  Nanosheets/Carbon Nanotube Composites and Application of Anode Materials for Lithium-Ion Batteries](#)

[Guowang Diao, Pengfei Zhang, Ming Chen](#)

[3891 Core/Shell  \$\text{Fe}\_3\text{O}\_4\$ @PANI and  \$\text{Fe}\_3\text{O}\_4\$ @C@PANI Nanospheres Nanospheres Nanocomposites for High-Performance Electrochemical Supercapacitors](#)

[Guowang Diao, Qianhui Wu](#)

[3892 Yb,Er-Doped  \$\text{CeO}\_2\$  Nanotubes for Photoconversion-Enhanced Dye-Sensitized Solar Cells](#)

[Guowang Diao, Rongfang Zhao](#)

[3893 Study about an Experimental Design for CdTe Quantum Dots Synthesis. Analysis of the Optical and Electrochemical Changes after Their Interaction with Hydroxyl Radicals](#)

[Eduardo Carlo Muñoz, Emilio Alonso Navarrete, Rodrigo Gonzalo Henríquez, Ricardo Silvio Schrebler, Ricardo Alejandro Córdova, Luis Felipe Aguilar, Manuel Andrés Bravo](#)

[3894Hybrid and Flexible Nanocomposite Paper of Porous Mn<sub>3</sub>O<sub>4</sub> Nanorod/Reduced Graphene Oxide for Lithium Ion Battery Anode](#)

[Chae-Yong Seong, Yuanzhe Piao](#)

[3895Detection of Heavy Metals By Anodic Stripping Voltammetry Using Nanocarbon Thin Film Electrodes in an Electrochemical Flow Cell](#)

[Yuka Miyao, Osamu Niwa, Ryoji Kurita, Tomoyuki Kamata, Hiromitsu Hachiya](#)

[3896Ionic Liquid Modified Carbon Paste Sensor Electrode for Determination of Antihypertensive Drug](#)

[Mohammad BinSabt, Nada Farouk Atta, Samar Hassan, Ahmed Galal](#)

[3897Electrochemical Analysis of Optical Switchable Filter with a NiO Thin Film for High-Performance Incubators](#)

[Kazuki Tajima, Machiko Nakagawa, Yoshihisa Oishi, Hidenobu Ohta](#)

[3898Preparation and Characterization for Ionic Liquid Coated Graphene Oxide Nanoparticles](#)

[Songqing Chen, Xiashi Zhu](#)

[3899Electrochemical Molecular Recognition System Utilizing Current Amplification of Metal Complexes Assembled on Gold Nanoparticles](#)

[Akira Endo, Takeshi Hashimoto, Takashi Hayashita](#)

[3900A Sensitive Electrochemical Glucose Biosensor Based on Flower-Shaped Zinc Oxide Nanostructures](#)

[Juan Li, Jingjing Tong](#)

[3901Streptavidin-Functionalized Nitrogen Doped Graphene Platform for Sensitive Electrochemical Immunoassay of Tumor Marker](#)

[Zhanjun Yang, Qingchun Lan](#)

[3902The Electrochemical Sugar Recognition Using a  \$\beta\$ -Cyclodextrin Assembled on the Gold Electrode](#)

[Keita Inoue, Akira Endo, Takashi Hayashita, Takeshi Hashimoto](#)

### **Z01-General Student Poster Session**

[3903Development of a Therapeutic Device for Wound Healing with Enzymatic Biofuel Cells](#)

[Ayaka Tsubota, Yudai Ogawa, Takeshi Yamauchi, Hiroyuki Kai, Kenshi Yamasaki, Matsuhiko Nishizawa](#)

[3904High Performance Piezoelectric Nanogenerators Using Vanadium-Doped Ferroelectric ZnO Nanosheets and Polymer Composite](#)

[Junghyo Nah, Sung-Ho Shin, Yang Hyeog Kwon, Min Hyung Lee](#)

[3905Nano-Biosensors: An Advanced and Essential Tool in Monitoring Microcystins in Water](#)

[Vasileia Vogiazzi, Lu Zhang, Daoli Zhao, Noe Alvarez, Soryong Chae, Laura Sagle, William R. Heineman, Vesselin N. Shanov, Ian Papautsky, Dionysios D. Dionysiou](#)

[3906Approaches for Extractive Hydrometallurgy of Niobium and Tantalum from Ethiopian Kenticha Ores](#)

[Goitom Gebreyohannes Berhe](#)

[3907Improvement of Hot Hole-Induced Degradation in HV Pmosfets](#)

[Dongjun Lee, Changsub Lee, Duheon Song, Byoung-deog Choi](#)

[3908Effect of Plasma Carburizing Treatment on Pitting Corrosion Resistance of Type 304 Stainless Steel](#)

Waka Inoue, Izumi Muto, Yu Sugawara, Nobuyoshi Hara

3909 Fabrication of TiO<sub>2</sub> Based Microspheres By Spray Drying Method and Their Application for Dye-Sensitized Solar Cells

Maho Mizuno, Koji Tomita, Yoshihito Kunugi

3910 CFD Systems Level Modeling of a Protonic Ceramic Fuel Cell

Kevin Anderson, Chris McNamara, Neal P Sullivan, Andrew Murphy

3911 Selenium-Decorated Graphene for Peroxynitrite Detection

Haitham Kalil, Shaimaa Maher, Mekki Bayachou

3912 Development of Novel Electrolyte for Rechargeable Aluminum Battery with a Wide Potential Window

Shota Matsumura, Eiji Higuchi, Masanobu Chiku, Hiroshi Inoue

3913 Development of a Flow Injection Biosensor System Enables Glucose and Cortisol Simultaneous Measurement for the Evaluation of Fish Stress

Haiyun Wu, Miri Arai, Hitoshi Ohnuki, Yasutoshi Yoshiura, Hideaki Endo

3914 Self-Standing Carbonaceous Sheets Composed of Micro and Nanometer Fibers Derived Bamboo and Application to PEFC and Edlc

Haruka Miyoshi, Taro Kinumoto, Takuya Matsumura, Miki Matsuoka, Yasuhiko Arai, Tomoki Tsumura, Masahiro Toyoda

3915 Reducing Polarization Using Novel Carbon Support in Polymer Electrolyte Fuel Cells

Koki Baba, Wataru Ozawa, Mikka Nishitani-Gamo, Toshihiro Ando, Mika Eguchi

3916 Capacity Enhancement of Electrochemical Flow Capacitor Using Quinonic Compounds Couple

Hayate Saito, Takaaki Tomai, Itaru Honma

3917 Porous Silicon Nanoparticles Prepared By an Alkaline Process As an Anode for Use in Lithium Ion Batteries

Yu Sugawara, Masahiro Shimizu, Susumu Arai

3918 Effect of Impurities on Electrochemical Performance of Low-Purity Natural Graphite As Anode Active Material for Lithium Ion Batteries

Yoon-Tae Park, Ki-Tae Lee, Jae-Woo Park, Sang-Hun Lee

3919 Development of Potentiometric Lspr Sensors with Au and Au@TiO<sub>2</sub> Nanoparticles

Kazutaka Akiyoshi, Tetsu Tatsuma

3920 Tetraethylammonium Hydroxide with Polyacrylamide As Hydroxide Conducting Polymer Electrolytes for Electrochemical Capacitors

Jak Li, Keryn Lian

3921 Evaluation of the Durable Performance of the Pt/Marimo Carbon Catalyst in PEFC

Keisuke Odakura, Koki Baba, Mikka Nishitani-Gamo, Toshihiro Ando, Mika Eguchi

3922 the Relationship Between Brightness of Aluminum Films Fabricated Using an AlCl<sub>3</sub>-1-Ethyl-3-Methylimidazolium Chloride-Toluene Bath and Molecular Structure of Additives

Takao Gunji, Shingo Kaneko, Toyokazu Tanabe, Takeo Ohsaka, Futoshi Matsumoto

3923 the Application of a Water-Based Hybrid Polymer Binder to a High-Voltage and High-Capacity Li-Rich Solid-Solution Cathode and Its Performance in Li-Ion Batteries

Koki Miyamoto, Youhei Honma, Takao Gunji, Toyokazu Tanabe, Shingo Kaneko, Takeo Ohsaka, Shinsaku Ugawa, Hojin -J Lee, Yoshiharu Ootsuka, Futoshi Matsumoto



[3924Development of Metal Oxide-Supported Metal and Ordered Intermetallic Nanoparticles to Enhance the Oxygen Reduction Reaction in PEMFC](#)

[Fuma Ando, Takao Gunji, Toyokazu Tanabe, Shingo Kaneko, Takeo Ohsaka, Futoshi Matsumoto](#)

[3925Electrical Characterization of Electron Beam Induced Damage on Sub-10nm SRAM Using Nano-Probing Technique](#)

[Jonghyuk Kang, Sungho Lee, Byoung-deog Choi](#)

[3926Effect of Polyhydric Alcohol Addition on Electrodeposition of Fe-Al Alloy in AlCl<sub>3</sub>-NaCl-KCl-FeCl<sub>2</sub> Molten Salts](#)

[Hiroaki Yamamoto, Masao Morishita, Akihiro Isoya](#)

[3927Effect of Epitaxially Deposited Gold Nanoparticles on Electroless Metallization of Silicon Wafers](#)

[Naoki Yamada, Susumu Sakamoto, Naoki Fukumuro, Shinji Yae](#)

[3928Effect of Disulfite on the Solubility of Molybdate and Passivation of Iron in Concentrated LiBr Solution](#)

[Hanami Tezuka, Shogo Tsukazawa, Hitoshi Yashiro, Yoichi Hirata, Takashi Hishinuma](#)

[3929Etching Studies of Mo in Aqueous Solutions](#)

[Sang-Min Lee, Chan-Yong Jung, Chi-Woo Lee](#)

[3930Development of Novel Immunosenser System for Sex Determination of Fish](#)

[Taro Sakurai, Haiyun Wu, Goro Yoshizaki, Hitoshi Ohnuki, Hideaki Endo](#)

[3931Crystal Structures and Ferroelectric Properties of \(0.4-y\) Bi<sub>0.5</sub>K<sub>0.5</sub>TiO<sub>3</sub>-0.6BiFeO<sub>3</sub>-y K\(Nb<sub>x</sub>Ta<sub>1-x</sub>\)O<sub>3</sub>](#)

[Toru Iwabuchi, Naoya Ishida, Naoto Kitamura, Yasushi Idemoto](#)

[3932 Synthesis, Crystal Structure and Electrochemical Properties of Rock-Salt Type \(Mg,Ni,Co\)O<sub>2</sub> As Cathode Materials for Mg Secondary Battery](#)

[Tsukiko Takahashi, Naoya Ishida, Naoto Kitamura, Yasushi Idemoto](#)

[3933 Local Structure Analysis of Na<sub>0.5</sub>Bi<sub>0.5</sub>TiO<sub>3</sub> based Oxide Ion Conductor By DFT Calculations and RMC Method](#)

[Naoya Hayashi, Naoto Kitamura, Naoya Ishida, Yasushi Idemoto](#)

[3934 Microscopic Polarization Behavior of Cerium Sulfide Inclusions in Stainless Steel](#)

[Masashi Nishimoto, Izumi Muto, Yu Sugawara, Nobuyoshi Hara](#)

[3935 Synthesis of Al-Substituted Lanthanum Silicate with Oxyapatite Structure By Hydrothermal Method and Local Structural Analysis](#)

[Shohei Fujisawa, Naoto Kitamura, Naoya Ishida, Yasushi Idemoto](#)

[3936 Aqueous Phase Synthesis of Cu/Pt Core-Shell Nanoparticles Supported on Carbon Black By Controlling Cu and Pt Complexes for a PEFC Cathode Catalyst](#)

[Yosuke Terui, Shun Yokoyama, Shuzo Tsuchida, Ryohei Seki, Yasushi Taniguchi, Yasuhiro Ueyama, Hideyuki Takahashi, Kazuyuki Tohji](#)

[3937 Synthesis of CIGS\(Cu\(In,Ga\)Se<sub>2</sub>\) Photovoltaic Materials in an Aqueous Solution for the Printable Solar Cell Application](#)

[Masaki Takagi, Shun Yokoyama, Hideyuki Takahashi, Kazuyuki Tohji](#)

[3938 Synthesis of Oxidation-Resistant Copper Nanoparticles for Fabricating Conductive Patterns in Aqueous Solution](#)

[Ippei Suzuki, Shun Yokoyama, Kenichi Motomiya, Hideyuki Takahashi, Kazuyuki Tohji](#)

[3939 Local Structure and in-Situ Average Structure Analysis of LiNi<sub>0.8</sub>Co<sub>0.2</sub>O<sub>2</sub> Electrode during Charge-Discharge Process By Using Quantum Beam](#)

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4115 [2D Metal Carbide\( \$Ti\_3C\_2T\_x\$ \) Electrochemical Capacitors in Ionic Liquids](#)

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[Andrew M Herring, Andrew R Motz, Himanshu N Sarode, Tara P Pandey, Ye Liu, Ashutosh Divekar, Vinh Nguyen, Mei-Chen Kuo, James L Horan](#)

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4167 [Aerosol Synthesis of Mesoporous Carbon Spheres with High Electrochemical Double-Layer Capacitance](#)

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4168 [Development of Lithium Ion Conducting Glass-Ceramics and Their Properties](#)



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[4169 Characteristics of  \$\text{Sr}\_x\text{Y}\_{1-x}\text{Ti}\_y\text{Ni}\_{1-y}\text{O}\_{3-d}\$  anode in Humidified Methane Fuel for Intermediate-Temperature Solid Oxide Fuel Cells](#)

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[4170 Electrochemistry Modeling for Energy Conversion and Storage](#)

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[4171 Electrochemical and Impedance Investigation of Ni-Rich  \$\text{LiNi}\_{1-x-y}\text{Co}\_x\text{Al}\_y\text{O}\_2\$  Cathode Material for Lithium-Ion Batteries](#)

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[4172 Estimation Technology of Residual Life of HEV Batteries Using Electrochemical Impedance Spectroscopy](#)

[Shinichiro Ito, Daisuke Koba, Hiroki Nishi, Takeshi Yao, Daikichi Mukoyama, Hiroki Nara, Shingo Tsuda, Toshiyuki Momma, Tetsuya Osaka](#)

[4173 Electrospun Polyimide Based Composite Fibrous Separator with High Heat Resistance for Lithium Ion Batteries](#)

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[4174 Development of Community Energy Management System \(CEMS\) to Introduce Next Generation Secondary-Batteries into Market](#)

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[4175 The Effect of the Amount of Intercalated Li-Ions on the Electrochemical Performances and the Color Changes in the Electrochromic Layer](#)

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4176[Hydrogen Trap in Seashells](#)

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[Eiji Ohira](#)

4181[\(Keynote\) DOE's Efforts to Accelerate Federally-Funded Technology to the Marketplace](#)

[Robert K. Dixon](#)

4182[\(Keynote\) Recent Trend in New and Renewable Energy Generation in Korea and KIER's R&D Activities](#)

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[Juergen Fleig, Stefanie Taibl, Guenter Fafilek](#)

4184[Solid Oxide Photo-electrochemistry with Oxides "Breathing" upon UV Light and Solar Cells Operating at 400°C](#)

Juergen Fleig, Gregor Walch, Alexander Karl Opitz, Markus Kubicek, Georg Christoph Brunauer, Bernhard Rotter, Karl Ponweiser

4185 Investigating the Effect of Chlorides on the Reaction Kinetics of a Copper Electrodeposition Process

Ritesh Vyas, Michael Kubicko

4186 Electrochemical Detection of Low-Concentration Ammonia Gas on Miniaturised Electrodes in Room Temperature Ionic Liquids

Ghulam Hussain, Debbie S. Silvester

4187 Design and Fabrication of an Ultrasonic Waveguide for Microchip Cooling Applications

Hyunse Kim, Euisu Lim

4188 Visual Detection of Denatured Ferritin via Plasmonic Gold Nanoparticle Exposure through an Aminosilane

Monique Farrell, R. Reaume, D. Franklins, Erin Jenrette, Jasmin Flowers, Aswini K Pradhan

N/A High-Rate Supercapacitors with Mesoporous Carbons for AC Line Filtering

Yongju Yoo, Woong Kim

N/A Mesoporous Materials

Duc Tai Dam, Jong-Min Lee

4191 Ceramic Polymer Composite Electrolytes (CPCE) for Wearable Metal Battery

Brian E Henslee, Jitendra Kumar, Priyanka Bhattacharya, Guru Subramanyam