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Meeting Abstracts —MA2014-02

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October 5, 2014 - October 9, 2014 —Cancun, Mexico

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194Ion Intercalation into 2D Titanium Carbide Based MXenes: Applications for Electrochemical Capacitors

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206 Supercapacitors Based on Propylene Carbonate Solution Operating from -45 °C to 100 °C

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208 All Solid State Activated Carbon Supercapacitor with Silica Ionogel As Electrolyte

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220Electrochemical Energy Storage in $Cs_2Zn_3[Fe(CN)_6]$ and Their Use As Cathode at Na-Ion Batteries in Aqueous Media

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221Molecular Structure and Ion Transport Near Electrode-Electrolyte Interfaces in Lithium-Ion Batteries

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233Bis(fluorosulfonyl)Amide Anion Transfer at Graphite Electrode

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235XPS Study of the Porous Carbonaceous Positive Electrode Interface in Li-O_2 Batteries upon Cycling

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237Invited: Surface Modification of Positive Electrode and its Effect to Bulk

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239Invited: Ab Initio Molecular Dynamics Study of Electrochemical Reaction at EC-Li_2O_2 Interfaces

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240Current State of Understanding of the Solid-Electrolyte Interphase (SEI) in Lithium-Ion Cells and Its Relationship to Formation Cycling

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241Electrochemical Performance and Electrodes Surface Analysis of He-NCM¦LTO Cells – Ionic Liquid vs.Carbonate Based Electrolytes

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242Investigating Surface and Interface Phenomena in $LiFeBO_3$ Electrodes Using Photoelectron Spectroscopy Depth Profiling

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248Local State-of-Charge Inhomogeneities in Charged and Cycled High Capacity Lithium-Manganese-Rich Composite Cathodes

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254Electrochemical Activity and Li-Disordering of Li_2MnO_3 by Coexisting with CuO

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255Battery Division Research Award: From Insertion-compound Electrodes to Conversion-reaction Electrodes for Energy Storage

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258Enhanced Electrochemical Performance of Monoclinic $LiMnBO_3$-Based Li Storage Material Via Partial Substitution

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259Novel Vanadium Oxide Polycrystalline Nanorods for Enhanced Lithium Intercalation

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262 Isotopically Labeled Carbon and Water to Deconvolute CO_2 Evolution in Li-Batteries by on-Line Electrochemical Mass Spectrometry

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268 (Student Research Award of the Battery Division) The Importance of Microstructure in Lithium Ion Batteries

Sang-Pil Kim, Dibakar Datta, Vivek B. Shenoy

277Ex-Situ TEM Analysis on Electrochemical Reactions of Tin Based Anode Materials in Lithium Ion Batteries

Seung-Yong Lee, Kyu-Young Park, Kisuk Kang, Miyoung Kim

278Synthesis of SnO_2/Transition Metal Oxide Hollow Nanospheres and Their Electrochemical Properties As Anode for Li-Ion Battery

Jonghyun Choi, Won-Sik Kim, Seong-Hyeon Hong

279Enabling the Next Generation of High Energy Lithium-Ion Battery Cathodes

Jason R. Croy, Brandon R. Long, Joong Sun Park, Kevin G. Gallagher, Mahalingam Balasubramanian, Dean Miller, Michael M. Thackeray

280Structural and Chemical Transformations in Li_2MnO_3

Kristin Aslaug Persson, Eunseok Lee

281The Effect of Al and Fe Substitution on the Structure and the Electrochemical Properties of NMC Type Positive Electrode Materials for Lithium Ion Batteries

Wassima El Mofid, Svetlozar Ivanov, Andreas Bund

282Thermal and Structural Behavior of Surface-Modified $Li[Ni_{0.7}Co_{0.2}Mn_{0.1}]O_2$ As a Positive Electrode for Rechargeable Lithium Batteries

Chang Heum Jo, Seung-Taek Myung

283NH_4F Surface Modification of the Li-Rich Layered $Li_{1.2}Mn_{0.54}Ni_{0.13}Co_{0.13}O_2$ Cathode Material with Improved Rate Performance and Cycling Stability

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284A High Rate Lithium-Rich Layered MNC Cathode with Low Capacity Fade for Li-Ion Batteries

Mehmet Nurullah Ates, Sanjeev Mukerjee, K.M. Abraham

285 Characteristics and Performance of $LiMn_{0.3}Co_{0.3}Ni_{0.3}Ti_{0.1}O_2$ Cathode Materials

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286 In-Depth Investigation on Electrochemical Behaviors of Next Generation Cathode Materials for Lithium-Ion Batteries

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287 Reversible Nature of Impedance on $LiCoO_2$/Graphite and $Li[Ni_{0.42}Mn_{0.42}Co_{0.16}]O_2$/Graphite Pouch Cells Cycled to High Voltages

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288 Imaging and Spectroscopy of Pristine and Cycled Li_2MnO_3

Patrick J Phillips, Hakim Iddir, Daniel P Abraham, Robert F Klie

289 Effect of Metal Composition on the Electrochemical Properties of Lithium-Rich Positive Electrode Materials

Ramesh Shunmugasundaram, Jeff Dahn

290 On the Oxidation State of Manganese in Li-Ion Cells: A New Perspective

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291 Influence of Local Structure on the Structural and Electronic Mechanisms Occurring in Li-Rich Layered Oxides $Li_{1+X}M_{1-X}O_2$ during Cycling

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292 Study of the Impact of Electrolyte Additives on High Voltage $LiNi_{0.4}Mn_{0.4}Co_{0.2}O_2$/Graphite Cells by Electrochemical Impedance Spectroscopy

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293 Vinyl Cyclosiloxanes As New Electrolyte Additives for High-Voltage Li-Ion Batteries

Hiroyuki Yamaguchi, Hideyuki Koga, Shinji Nakanishi, Hideki Iba

294 Polycarbonate-Based Solid Polymer Electrolytes for Li-Ion Batteries

Bing Sun, Jonas Mindemark, Kristina Edström, Daniel Brandell

295 Li-Ion Coordination and Transport Properties in Gel Polymer Electrolytes Based on Amphiphilic Block Copolymers

Moritz Schaefer, Alexandra Lex-Balducci

296 Combinations of Ethylene Sulfite (ES) and Vinylene Carbonate (VC) As Electrolyte Additives in $Li(Ni_{1/3}Mn_{1/3}Co_{1/3})O_2$/Graphite Pouch Cells

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297 Comparative Study on the Solid Electrolyte Interface Formation by the Reduction of Alkyl Carbonates in Lithium Ion Battery

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298 Effect of Microstructure and Elemental Composition on Electrode Interfacial Impedance of $Li_7La_3Zr_2O_{12}$-based Batteries

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299 Synthesis of $Li_7La_3(Zr_{2-X}, Nb_X)O_{12}$ (X = 0 – 1) at Low Temperatures Using a Sol-Gel Process

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300Design of Solid Electrolyte Interphase to Improve Li-Ion Battery Cycle Efficiency

Peng Lu, Jung-Hyun Kim, Xingcheng Xiao, Stephen J Harris

301Libis(fluorosulfonyl)Imide-Based Low EC-Content Electrolyte with Specific Coordination/Solvation Process

Satoshi Uchida, Masaki Yamagata, Masashi Ishikawa

302On the Unusually High Fe^{3+}/Fe^{2+} Redox Potential Exceeding 4V

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303Stability of Carbon Coating Surrounding $LiMPO_4$ (M=Fe, Co) Particles in Water Free and Water Containing Electrolytes

Michael Metzger, Cyril Marino, Dominik Haering, Cüneyt Kavakli, Carlos Alarcon, Sreeraj Puravankara, Tom Nilges, Christoph Stinner, Hubert A. Gasteiger

304In Situ XANES Analysis of Olivine-Type Cathode Materials to Study Kinetically Preferred State

Yoshinori Satou, Yasuharu Kimura, Shigeki Komine, Shigeomi Takai, Takeshi Yao

305The Delithiation Behavior of $LiFePO_4$ Particles with Broad Particle Size Distribution during Chemically Delithiation

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306Degradation Mechanism of $LiCoPO_4$ As a Cathode for Li-Ion Batteries

Hidenori Miki, Xiang Gao, Yumi H. Ikuhara, Hideyuki Koga, Hideki Iba

307$LiCoPO_4$ Based High Energy Li-Ion Cathodes

Jan L. Allen, Jeff Wolfenstine, Joshua L. Allen, T. Richard Jow

308Evidence for Continuous Transformation in Mixed Manganese Iron Olivines

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309$Li_3V_2(PO_4)_3$ As a Positive Electrode Material for Rechargeable Lithium Batteries

Jae Sang Park, Seung-Taek Myung

310Improvement of Electrochemical Performance of Li-Rich Cathode Material with Specific Morphology for Lithium Ion Batteries

Xin He, Jun Wang, Jie Li

311Influences of Dopants on the Properties of $LiMnO_2$ and Li_2MnO_3 in Olo Cathode for Li Ion Batteries

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312Mechanism of Performance Improvement in $LiNi_{0.5}Mn_{1.5-X}Ti_XO_4$ High Voltage Spinel Full-cells paired with Graphite and $Li_4Ti_5O_{12}$ Negative Electrodes

Jung-Hyun Kim, Nicholas P. W. Pieczonka, Zhongyi Liu, Peng Lu, Bob R Powell, Yang-Kook Sun

313Fe and V Substituted Li_2MnSiO_4/C As Potential Cathode Material for Li-Ion Batteries

Nils Wagner, Ann Mari Svensson, Fride Vullum-Bruer

314Electronic Origin of Different Discharge Curves in Li_XCoO_2 and Na_XCoO_2 cathode Materials

Janina Molenda, Anna Milewska, Dominika Baster, Janusz Tobola

315A Semi-IPN Polymeric Binder for High Performance Silicone Negative Electrodes in Lithium Ion Batteries

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316Hydrogenated TiO_2 Nanotubes as High-Power Anode Materials for Lithium-Ion Batteries

Ji-Yong Eom, Ju-Ho Yun, Seung-Eul Yoo, Won-Hee Ryu, Sung-Jin Lim, HyukSang Kwon

317Studies of the Effect of Varying Prop-1-Ene-1,3-Sultone (PES) Concentration on Li-Ion Batteries

Kathlyne Nelson, Jian Xia, Jeff Dahn

318Synthesis and Lithium Storage Properties of Novel Flower-like Co_3O_4

Peng Liu, Xifeng Xia, Wenjuan Wang, Qingli Hao

319Hydrothermally Synthesized Mg-Doped $LiMn_{1-X}Fe_xPO_4/Li_4Ti_5O_{12}$ Li-Ion Batteries for Stationary Power Applications

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320Mapping the Entropic Coefficient of the NMC Pouch Cell at Various Temperatures and State-of-Charge Levels

Stephen John Bazinski, Xia Wang

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322Degradation Diagnosis of Aged $Li_4Ti_5O_{12}/LiFePO_4$ Batteries

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323Cost Reduction Strategies for Lithium Ion Electrode Processing and Pouch Cell Formation Steps

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324A Comparative Study of Sulphur-Containing Electrolyte Additives on the Reactivity Between Electrolytes and Charged Electrodes Using Accelerating Rate Calorimetry (ARC)

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469 Multinuclear Solid-State NMR Studies of Cathode Materials for Lithium and Sodium Ion Batteries

Danielle L. Smiley, Matteo Tessaro, Gillian R. Goward

470 Electron Microscopy Study of Structure and Defects in Li-Rich Layered Oxide

Alpesh Khushalchand Shukla, Quentin Ramasse, Amith Darbal, Partha Pratim Das, Joan Mendoza, Sonia Estrade, Colin Ophus, Hugues Duncan, Guoying Chen, Stavros Nicolopoulos, Lluis Yedra

471 Determination of the Voltage-Dependence of Parasitic Heat Flow in Lithium Ion Cells Using Isothermal Microcalorimetry

Laura Downie, Jeff Dahn

472 Electrochemical in-Situ Raman Spectroscopic Studies of Highly-Cycled Li(Ni/Co/Mn)O_2 Cathode Cells

Tadashi Awatani, Ritsuko Kitano, Teruhisa Baba, Hideto Imai

473 Study of the Consumption of Vinylene Carbonate in $LiNi_{0.3}Mn_{0.3}Co_{0.3}O_2$/Graphite Cells By Gas Chromatography Coupled with Mass Spectrometry (GC-MS)

Remi Petibon, Jeff Dahn

A6-Nano-Architectures for Next-Generation Energy Storage Technologies

Battery/Energy Technology

474Invited Talk: In Situ Formed Si Nanoparticle Network with Micron-Sized Si Particles for Lithium-Ion Battery Anodes

Mingyan Wu, Xiangyun Song, Andrew Minor, Vince Battaglia, Gao Liu

475Development of Bicontinuous Carbon Foam/ Metal Sulfide Composites As Free-Standing Electrodes for Lithium Ion Storage

Yue Ma, Habtom Desta Asfaw, Kristina Edstrom

476Electrochemical Lithiation of Two Dimensional Materials By Nano Battery---an in Situ Study

Jiayu Wan, Liangbing Hu, Wenzhong Bao, Michael Fuhrer, Yang Liu

477Understanding the Relationship of Nanostructure to Performance in Additive Free TiO_2 Anodes for Lithium-Ion Batteries

Tandeep Singh Chadha, Alok Mani Tripathi, Sagar Mitra, Venkat R. Subramanian, Pratim Biswas

478The Kinetics of Nanometer Sized TiO_2 Films as a Lithium-Ion Insertion Electrode

Sebastien Moitzheim, Philippe M. Vereecken

479Invited Talk: React-in-Place Battery Electrodes for Large Scale Energy Storage

Daniel A Steingart, Tanya Gupta, Barry Van Tassell, Alla Zamarayeva

480Oxidation State and Local Structure of a High-Capacity LiF/Fe(V_2O_5) Conversion Cathode for Li-Ion Batteries

Alexander Pohl, Alexander Guda, Viktor Shapovalov, Ralf Witte, Bijoy Das, Frieder Scheiba, Jörg Rothe, Alexander Soldatov, Maximilian Fichtner

481Study of High Performance $LiMn_2O_4$ Thin Films for Nanoscale Batteries

Brecht Put, Nouha Labyedh, Iuliana P. Radu, Cedric Huyghebaert, Philippe M. Vereecken, Andre Stesmans

482Coaxial Nanotube Battery inside Single Nanopore

Chanyuan Liu, Eleanor Gillette, Xinyi Chen, Alexander J Pearse, Alexander C Kozen, Marshall A Schroeder, Keith Gregorczyk, Sang Bok Lee, Gary W Rubloff

483Molecular and Electrode Arcitectures for Multivalent Conversion Electrodes

Jagjit Nanda, Hui Zhou, Surendra K Martha, Juchuan Li, Sheng Dai, Sreekanth Pannala, Junjie Wang, Paul V Braun, Nancy J Dudney, Jamie Adcock

484Vanadium Oxide 3-D Nanostructures for Lithium Ion Battery Cathodes

Eleanor Gillette, Chanyuan Liu, Gary W Rubloff, Sang Bok Lee

485Operando Electron Magnetic Measurements in Li-Ion Batteries

Gregory Gershinsky, Laure Monconduit, David Zitoun

486Lithium Alloying Nanoparticles Deposited 3D Carbon Architectures as Anodes for Li-Ion Batteries

Vilas G. Pol, Sean Fronczak, Arthur Dysart, Joseph Kubal, Vinod Etacheri, Lok-Kumar Shrestha, Ariga Katsuhiko

487In-Situ Nanomechanical Measurement of High-Capacity Battery Materials Using MEMS Cantilevers

Mark Ming-Cheng Cheng

488Single-Crystalline $LiFePO_4$ Nanosheets for High-Rate Lithium Batteries

Guihua Yu, Yu Zhao, Lele Peng

489Dependence of the Lithiation/Delithiation Potentials of Silicon Microwire Anodes on Their State of Charge and Sizes

Sandra Nöhren, Enrique Quiroga-González, Helmut Föll

490High-Capacity Si Microwire Anode with Enhanced Conductivity

Enrique Quiroga-González, Helmut Föll

491Invited Talk: Development of Nonaqueous Redox Flow Battery Technologies

Wei Wang, Murugesan Vijayakumar, Xiaoliang Wei, Lelia Cosimbescu, Wu Xu, Tianbiao Liu, Vincent Sprenkle

492Nanostructured V_2O_5 Cathode for Rechargeable Mg-Ion Batteries

Sanja Tepavcevic, Yuzi Liu, Barry Lai, Christopher S. Johnson, Tijana Rajh

493Hierarchically Structured N-Doped Carbon/Sulfur Composite Electrodes with a High Sulfur Loading for Application in Li/S Batteries

Torsten Brezesinski, Artur Schneider, Heino Sommer, Juergen Janek

494Ordered Distribution of S in a Multi Walled Carbon Nanotubes/Sulfur Composite Cathodes for Li/S Batteries

Roberto Hernandez-Maya, Homero Castaneda

495Invited Talk: Carbon Substrates Tuning and Improvement for Rechargeable Lithium-Oxygen Batteries

Jun Yin, Bharat Patel, Srinivasan Chakrapani, Sangho Lee, Yong Lak Joo

496Catalytic Polymer Membranes for Improved Oxygen Evolution Reaction in Lithium-Oxygen Batteries

Won-Hee Ryu, Forrest S Gittleson, André D. Taylor

497Applications of Dendrimer-Based Nano-Architectures in Li-Air and Li-Sulfur Batteries

Priyanka Bhattacharya, Lelia Cosimbescu, Eduard Nasybulin, Dongping Lu, Jianming Zheng, Wu Xu, Ji-Guang Zhang

498Binder-Free, Vertically Aligned Carbon Nanotubes on Nickel Foam as a Freestanding 3D Li-O_2 Battery Cathode

Marshall A Schroeder, Malachi Noked, Sang Bok Lee, Gary W Rubloff

499Nanocomposites of TiO_2 Nanoparticles-Graphene with High-Rate Performance for Li-Ion Battery

Xiangcheng Sun, Edward Hu, Yuefei Zhang, Min He, Lin Gu, Bo Cui

500Sulfur-TiO_2 Yolk-Shell Nanoarchitecture for Long-Cycle Lithium-Sulfur Batteries

Zhi Wei Seh, Weiyang Li, Yi Cui

501Nanocomposite of Iron Oxide-Reduced Graphene Oxide Applied as High-Performance Anode Materials for Lithium Ion Batteries

Edward Hu, Xiangcheng Sun, Yuefei Zhang

502In-Situ Growth of $LiMn_2O_4$ Nanocrystals Embedded in Three-Dimension Single-Walled Carbon Nanotube Macrofilms as Stretchable Composite Cathode for Lithium-Ion Batteries

Zeyuan Cao, Bingqing Wei

5033D-Nanostructures-Path to High Capacity Lithium Batteries

Jan Prochazka

504Modulating Effect of Core Composition in Au_xCu_y@Pt/C Core-Shell Nanoparticles for the Methanol Oxidation Reaction

Gerardo Vázquez-Huerta, Jorge Aldana-González, Maria Guadalupe Montes de Oca, Elizabeth Garfias-García, Mario Alberto Romero-Romo, Manuel Palomar-Pardavé

505Electrocatalytic Activity of Copper–Palladium Nanopaticles for Formic Acid Oxidation

Maria Guadalupe Montes de Oca-Yemha, Manuel Palomar-Pardavé, Mario Romero-Romo, Teresa de Jesús Licona-Sánchez, Miguel Torres-Rodríguez, Victor Alberto Medina-Rojano, Erika Gónzalez Martínez

506Electrochemical Properties of Gold-Palladium Core-Shell Nanostructures for Ethanol Oxidation

Manuel Palomar-Pardavé, Mario Alberto Romero-Romo, Maria Guadalupe Montes de Oca-Yemha, Teresa de Jesús Licona-Sánchez, Miguel Torres-Rodríguez, Jorge Aldana-González, Rey David Herrera-Toribio

507Pseudocapacitance of Copper-Nickel Nanowires for Transparent Electrochemical Capacitor Electrodes

Isvar A. Cordova, Ian E. Stewart, James O. Thostenson, Jason J. Amsden, Charles B. Parker, Jie Liu, Benjamin J. Wiley, Jeffrey T. Glass

508N/B Co-Doping Ultrathin Nanotube-Constructed Urchin Shaped Titania Enabling Superior Rate Capability for Advanced Lithium Ion Batteries

Chaoji Chen, Xianluo Hu, Pei Hu, Yunhui Huang

A7-Nonaqueous Electrolytes

Battery

509Investigation of the Performance Improvement of Silicon Electrodes Cycled with Electrolyte Containing FEC or VC

Brett L. Lucht, Cao Cuong Nguyen

510Electrolytes and Interphases for Beyond Li-Ion Chemistries

Kang Xu

511Optimizing Electrolyte Formulations for Better Lithium-Ion Batteries

Yaser Abu-Lebdeh

512Digging into Electrolyte Interactions—Challenging the Conventional Wisdom

Wesley Henderson, Daniel M. Seo, Sang-Don Han, Joshua L. Allen, Sung-Hyun Yun, James S. Daubert, Oleg Borodin

513Lithium-Rich NMC Cathodes and Si-C Anodes in Low Flammability Li-Ion Battery Electrolytes

Bugga V. Ratnakumar, Marshall C. Smart, Charlie Krause, Candace Seu, James Wu, Thomas Miller

514Effect of Adsorption or Electro-Adsorption of Electrolyte Components at Interfaces on the Electrochemical Performances of Li-Ion Batteries and Supercapacitors

Daniel Lemordant, Wanjie Zhang, Fouad Ghamouss, Mouad Dahbi, Encarnacion Raymondo-Pinero, Mériėm Anouti

515EC-Free Superconcentrated Electrolytes for Advanced Lithium-Ion Batteries

Yuki Yamada, Keitaro Sodeyama, Jianhui Wang, Keizo Furukawa, Yoshitaka Tateyama, Atsuo Yamada

5163M HQ-115 (LiTFSI) Electrolyte Additive Dramatically Improves Battery Performance in Electrolytes Containing Trace Amounts of Water

Ang Xiao, Kevin W Eberman, Bill Lamanna, Gaurav Jain, Hui Ye, John Chris Burns, Nupur Nikkan Sinha, Jeff Dahn

517Study on Fluorine Content in Phosphates Used as Flame Retardant Additives / Co-Solvents in Electrolytes for Lithium-Ion Batteries

Patrick Murmann, Nataliya Kalinovich, Michael Shevchuk, Isidora Cekic-Laskovic, Martin Winter, Gerd-Volker Roeschenthaler

518A New Family of Anion-Binding-Agent (ABA) Based Stable Salts for Li and Li-Ion Batteries

Ganesan Nagasubramanian, Christopher J. Orendorff, Kyle R Fenton

519Sacrificial Anion Reduction Mechanism for Electrochemical Stability Improvement in Highly Concentrated Li-Salt Electrolyte

Keitaro Sodeyama, Yuki Yamada, Atsuo Yamada, Yoshitaka Tateyama

520Charge Transport Regulating Films on Mg Anodes and Implications for Mg-Battery Electrolyte Evaluation

Nathan T Hahn, Kevin R Zavadil

521Development of Organic-Inorganic Hybrid Electrolytes Based on Ionic Liquid-Nanoparticles-Composite

Yan Sun, Takahiro Matsuo, Yoshiyuki Gambe, Itaru Honma

522Sulfone-Based Electrolyte Solutions for Rechargeable Magnesium Batteries Using 2,5-Dimethoxy-1,4-Benzoquinone Positive Electrode

Hiroshi Senoh, Hikari Sakaebe, Hikaru Sano, Masaru Yao, Kentaro Kuratani, Nobuhiko Takeichi, Tetsu Kiyobayashi

523Slice-Selective NMR Diffusion Measurements - a Tool for the Characterization of Ion Transport Properties in Lithium Ion Battery Electrolytes

Ion C. Halalay, Sergey Krachkovskiy, Allen D. Pauric, Gillian R. Goward

524Experimental Study on Performance Improvement of Laminar Flow-Based Fuel Cell

Eiji Ejiri, Shotaro Kubota

525Physicochemical and Electrochemical Properties of the Organic Solvent Electrolyte with Lithium Bis(fluorosulfonyl)Imide (LiFSI) As Lithium-Ion Conducting Salt for Lithium-Ion Batteries

Toshihiro Takekawa, Kazuhiro Kamiguchi, Hideto Imai, Masaharu Hatano

526Effect of Ionic Liquid Anion Type in the Performance of Solid Polymer Electrolytes Based on Poly(vinylidene fluoride-trifluoroethylene)

C. M. Costa, R. Leones, A. V. Machado, J.M. S.S. Esperança, M. M. Silva, Senentxu Lanceros-Méndez

527Computational Screening and Design of Fluorinated Solvents for High-Voltage Li-Ion Batteries

Stephen E. Burkhardt

528In Search of Electrolyte Additives for High Voltage $LiNi_{0.5}Mn_{1.5}O_4$/Graphite Batteries

Samuel A. Delp, Joshua L. Allen, T. Richard Jow

529Electrolytes for Li-Ion Batteries Based on High Voltage Cathodes

T. Richard Jow, Samuel A. Delp, Joshua L. Allen, Oleg Borodin, Jan L. Allen

530Electrolyte Additives for High Voltage Lithium Ion Batteries

Weishan Li, Lidan Xing, Mengqing Xu, Yuhao Liao, Xiaoping Li

531Improved Performance of Graphite/ $LiNi_{0.5}Mn_{1.5}O_4$ Cells Cycled to High Voltage (4.8 V) with Electrolyte Additives

Arnd Garsuch, Brett L. Lucht, Mengqing Xu, Yingnan Dong

532BASF - Lithium Ion Battery Electrolytes

Michael Schmidt, Frederick Francois Chesneau, Arnd Garsuch, Stefano Meini, René Schmitz

533Ionic Coordination in Magnesium Ionic Liquid-Based Electrolytes: Solvates with Mobile Mg^{2+} Cations

Guinevere A. Giffin, Arianna Moretti, Sangsik Jeong, Stefano Passerini

534The Beneficial Effect of Protic Ionic Liquids on the Lithium Environment in Electrolytes for Battery Applications

Andrea Balducci, Sebastian Menne, Thomas Vogl, Ruben-Simon Kühnel

535Atomic Force Microscopy Study of Ionic Liquid Structure at Carbon Interface

Jennifer Black, Guang Feng, M. Baris Okatan, Patrick C Hillesheim, Sheng Dai, Peter T Cummings, Sergei V. Kalinin, Nina Balke

536Imidazole Anions as Electrolyte Components: Ionic Liquids, Lithium Salts, Additives

Leszek Niedzicki, Tomasz Trzeciak, Ewelina Karpierz, Bartosz Brzozowski, Marta Kasprzyk, Piotr Wieczorek, Marek Marcinek

537NMR Studies of Sulfonamide Based Deep Eutectic Lithium Electrolytes

Allen D. Pauric, Sergey Krachkovskiy, Ion C. Halalay, Gillian R. Goward

538Physical and Electrochemical Characterization of Quaternary Ammonium Ionic Liquids and Polar Solvent Mixture as Electrolyte for Lithium Batteries

Man Van Tran, Truong Giang Nguyen, Dang Khoa Vo, Phung My Loan Le

539Enhancing the Stability of Non-Aqueous Electrolytes for Li-O_2 Batteries

Brian Adams, Robert Black, Zack Williams, Russel Fernandes, Marine Cuisinier, Erik J. Berg, Petr Novák, Graham K. Murphy, Linda F Nazar

540Lithium Ion Solvation and Diffusion in Bulk Organic Battery Electrolytes from First Principles Molecular Dynamics

Mitchell T. Ong, Vincenzo Lordi, Erik W. Draeger, John E. Pask

541Computational Modeling of Electrolyte/Cathode Interface for Li-Ion Batteries

Marco Olguin, Oleg Borodin, T. Richard Jow

542Co-Sinterable Lithium Garnet-Type Oxide Electrolyte with Cathode for All-Solid-State Lithium Ion Battery

Shingo Ohta, Yuki Kihira, Takahiko Asaoka

543Stable Lithium Electrodeposition in Liquid and Nanoporous Solid Electrolytes

Yingying Lu

544Electroactive Polymer Based Porous Membranes for Energy Storage Applications

C. M. Costa, Senentxu Lanceros-Méndez

545Synthesis and Characterization of Poly (ethylene glycol) Methacrylate with Sulfobetaine Pendants and Its Application as the Polymer Electrolyte

Judith Cardoso, Gregorio Guzman, Dora Nava, I. González

546Organization of the Polymeric Electrolytes Doped with Enantiomerically Pure Salts: Role of the Substituents of the Assymetric Carbon

Piotr Jankowski, Agnieszka Gajewska, Marcin Poterala, Michal Piszcz, Grazyna Zofia Zukowska, Michal Jan Kalita

A8-Solar Fuels and Photocatalysts 4

Energy Technology/Physical and Analytical Electrochemistry/Sensor

547Single Crystal, Cuprous Oxide Nanowire Arrays for Highly Stable Photocathodic Water Splitting

Sriya Banerjee, Fei Wu, Yoon Myung, Parag Banerjee

548 Behaviors and Energy States of Photogenerated Charge Carriers on Pt or CoO_x Loaded $LaTiO_2n$ Photocatalysts Studied By Time-Resolved Absorption Spectroscopy

Akira Yamakata, Masayuki Kawaguchi, Jun Kubota, Kazunari Domen

549 Tuning Energy Band and Local Crystal Structure of Photocatalysts By Doping

Junying Zhang, Min Li, Nick Wu

550 Doped and Core/Shell Structured Hematite Nanorods for Improved Photoanodic Performance for Solar Water Splitting

Shaohua Shen

551 Enhanced Performance of IrO_x-Modified Copi Electrodes and the Characterization

Kyung Byung Yoon

552 Advanced Materials and Processes for Solar Energy Conversion

Yun Hang Hu

553 Developing Quantum Dots and Plasmonic Nanostructures for Solar Cell Applications

Dongling Ma

554 Observation and Alterations of Surface States on Hematite Photoelectrodes

Dunwei Wang

555 Nano Black Titania and Solar Applications

Chongyin Yang, Zhou Wang, Tianquan Lin, Fuqiang Huang

556Solar Photoconversion to Photovoltaic Electricity and Solar Fuels: Forty Years of History, Progress, New Concepts, and Prognosis

Arthur J. Nozik

557The Past and Present Quest for Storing Solar Energy as Fuel

Bruce A Parkinson

558A Comprehensive Electrochemical Solution to Climate Change: STEP, the Solar Thermal Electrochemical Pressure Process for the Production of Societal Staples

Stuart Licht

559Plasmon-Enhanced Photocatalysis on TiO_2-Passivated Gallium Phosphide

Stephen B. Cronin

560Underlying Mechanisms of Plasmon-Enhanced Photocatalysis and Photoelectrochemical Performance

Nick Wu, Scott Kevin Cushing, Jiangtian Li

561Photo-Chemical Reactions on Plasmonic Metal Nanostructures

Suljo Linic

562Plasmon Induced Resonant Energy Transfer and Hot Electron Injection in Plasmon Enhanced Photocatalysis

Scott Kevin Cushing, Jiangtian Li, Alan D. Bristow, Nick Wu

563Plasmonic Solar Fuels Based on Nanostructured Oxide Photocatalysts

Dong Ha KIM, Yoon Hee Jang, Saji Thomas Kochuveedu, Li Na Quan

564Light Management in Extremely Thin Photoelectrode Architectures

Curtis Doiron, Shah M Bahauddin, Hossein Robatjazi, Isabell Thomann

565Efficient Plasmon-Induced Hot Electron Transfer and Photochemistry in Semiconductor-Au Nanorod Nanoheterostructures

Tianquan Lian

566Generation and Injection of Hot Plasmonic Electrons from Optically-Excited Metal Nanocrystals for Photocatalysis and Solar Energy Applications

Alexander Govorov, Hui Zhang, Iouri Gun'ko

567Plasmon-Induced Water Splitting System

Hiroaki Misawa

568Plasmon-Enhanced Nanoparticles in Photoelectrochemical Water Splitting

Ru-Shi Liu, Shu-Fen Hu

569Periodic Mesoporous Materials for Overall Water Splitting: Design of an Artificial Leaf

Ranjit T Koodali, Rui Peng

570Interfacial Engineering for Efficient Solar Water Splitting

Lionel Vayssieres

571Nanostructured Water Splitting Photocatalysts

Frank E. Osterloh

572Photoelectrochemical Solar Energy Conversion and Hydrogen Evolution Catalysis Using Earth-Abundant Iron Pyrite and Cobalt Pyrite Nanostructures

Song Jin, Miguel Caban, Matthew S. Faber

573Toward Efficient Photocatalytic Materials

Pingyun Feng

574Wide Bandgap Copper Chalcopyrite Materials for Photoelectrochemical Hydrogen Production

Nicolas Gaillard

575New Visible Semiconductors for Photoelectrochemical Water Splitting

Mahendra Kumar Sunkara

576Blueprints for Photocatalytic Solar Fuel Applications

Engelbert Redel

577Cold Gas Sprayed Semiconductor-Based Electrodes for the Photooxidation of Water

Iris Herrmann-Geppert, Peter Bogdanoff, Thomas Emmler, Henning Gutzmann, Frank Gärtner, Thomas Dittrich, Thomas Klassen

578Enhanced Photoelectrochemical Water Oxidation via TiO_2-Coated Fluorine-Doped Tin Oxide Nanoparticle

Isvar A. Cordova, Qing Peng, Isa L. Ferrall, Adam Rieth, Paul G. Hoertz, Jeffrey T. Glass

579Synthesis of Pd-Based Nanoparticles and Its Photocatalytic Activity for Organic Compounds Decomposition

Arockiam John Jeevagan, Takao Gunji, Masanari Hashimoto, Shingo Kaneko, Futoshi Matsumoto

580CO_2 Electroreduction to Hydrocarbon Fuels on Carbon-Supported Copper Nanoparticles: Particle Size Effect

Olga A Baturina, Qin Lu, Le Xin, Wenzhen Li, Todd Brintlinger, Albert Epshteyn

581 Solar Fuel Production By Plasmonic Photocatalysts

Joeseph Bright, Jiangtian Li, Scott Kevin Cushing, Nick Wu

582 Using Metal Oxides for the Photo-Electrochemical Oxygen Evolution Reaction

Andrew M Herring, Satyander Kishore Pilli, Thomas E. Furtak, Todd G Deutsch, John A Turner

583 MoS_2-Nano Layers Deposited Onto Multi Walled Carbon Nanotubes As a Hydrogen Evolving Catalyst for PV-Hybrid Electrolyzers: A Structure-Activity Correlation Study

Peter Bogdanoff, Diana Stellmach, Onno Gabriel, Bernd Stannowski, Rutger Schlatmann, Roel van de Krol, Sebastian Fiechter

584 A Technical and Operational Perspective on the DOE Energy Innovation Hub in Fuels from Sunlight, the Joint Center for Artificial Photosynthesis

Nathan S. Lewis

585 Photoelectrochemical Water Oxidation and CO_2 Reduction for Artificial Photosynthesis

Hyunwoong Park

586 Application of Coordinatively Supported and Activated Palladium Nanoparticles to Enhance Electrocatalytic Reduction of Carbon Dioxide

Pawel J. Kulesza, Anna Wadas, Ewelina Szaniawska, Krzysztof Bienkowski, Renata Solarska, Iwona Agnieszka Rutkowska

587 Integrated CO_2 Capture and Photocatalytic Conversion to Solar Fuels Using Multifunctional Materials

Lianjun Liu, Jiatang Chen, Ying Li

588 Porous Coodination Networks for Artificial Photosynthesis

Spencer R Ahrenholtz, William A Maza, Amanda J Morris

589CO_2 Electroreduction to Hydrocarbons on Carbon-Supported Copper Nanoparticles

Olga A Baturina, Qin Lu, Monica Padilla, Le Xin, Wenzhen Li, Alexey Serov, Todd Brintlinger, Albert Epshteyn, Greg Collins

590Controlling the Selectivity of the CO_2 Electrochemical Reduction through Anion Effects

Ana Sofia Varela, Rulle Reske, Peter Strasser

591Structural Design and Characterizations for Perovskite Solar Cells

Eric Wei-Guang Diau

592Novel Photoelectrodes for the Flexible Mesoporous Sensitized Solar Cells

Min Jae Ko

593Bulk Heterojunction Organic Solar Cell Using Small Molecules

Sanghyun Paek, Kimin Lim, Kwangseok Do, Hyeju Choi, Sojin Park, Hyunjoon Jo, Hyejeong Lee, Janggeun Shim, Jaejung Ko

594Nanostructured Cu-Zn Oxides for Photocathodic Water Splitting

Sriya Banerjee, Yoon Myung, Hyungsoon Im, Jeunghee Park, Sankar Raman, Parag Banerjee

595High Photoelectrochemical Oxygen and Hydrogen Evolution Performance by Using a-Si/c-Si Heterojunction Solar Cells as Photoelectrodes

Hsin-Ping Wang, Ke Sun, Sun Young Noh, Alireza Kargar, Meng-Lin Tsai, Deli Wang, Jr-Hau He

596Fabrication of Transition Metal Doped TiO_2 Photocatlyst for Artificial Photosynthesis Applications

Amir Abidov, Bunyod Allabergenov, Feiyi Xiao, Xing Jin, Soon-Wook Jeong, Sungjin Kim

597Energy Payback Time Modeling of Integrated Photoelectrochemical Devices Using Concentrated Solar Irradiation

Mikael Dumortier, Sophia Haussener

598Coupled Multi-Physics Modeling of Integrated Photoelectrochemical Hydrogen Processing Devices Using Concentrated Irradiation

Saurabh Tembhurne, Mikael Dumortier, Sophia Haussener

599Comparison of the Photocatalytic and Photoelectrocatalytic Methyl Orange Color Removal over $TiO_{(2-x-y)}N_xF_y$

Edgar Leonardo Castellanos Leal

600Removal of Heavy Metal Ions by Photoelectrodeposition in Aqueous Solutions

Kazunori Sato, Yuhei Hoshi, Jirachaya Ayawanna, Teoh WahTzu, Nobuo Saito, Yasunobu Inoue, Hiroshi Nishiyama

A9-Stationary and Large-Scale Electrical Energy Storage Systems 4

Industrial Electrochemistry and Electrochemical Engineering/Battery/Energy Technology

601Invited: High Efficiency V/V Redox Flow Battery Stack Utilizing Mixed Acid Electrolyte Chemistry

Vincent Sprenkle, David Reed, Ed Thomsen, Wei Wang, Bin Li, Xiaoliang Wei, Zimin Nie, Brent Kirby, Vijayakumar Murugesan, Brian J Koeppel

602Advanced Redox Flow Battery Technology

Wei Wang, Zimin Nie, Murugesan Vijayakumar, Xiaoliang Wei, Bin Li, Ed Thomsen, Lelia Cosimbescu, Wu Xu, Tianbiao Liu, David Reed, Vincent Sprenkle

603In Situ Localized Current Distribution in a Vanadium Redox Flow Battery

Jason T. Clement, Thomas A. Zawodzinski, Matthew M. Mench

604Commercializing the Chloride-Containing All Vanadium Redox Flow Battery

Liyu Li

605Cell Performance Improvement By Surface Modification of Porous Carbon Electrodes in Vanadium Redox Flow Battery

Shohji Tsushima, Fumiya Kondo, Shuichiro Hirai

606High Power Density Vanadium Flow Batteries with Laser-Cut Flow Field Patterns on Carbon Paper Electrodes

Ertan Agar, Christopher R Dennison, Emin Caglan Kumbur

607The Influence of Electrode and Channel Configurations on Flow-Battery Performance

Robert M. Darling, Mike L. Perry

608A Novel in-Situ Synchrotron XANES Technique to Study All Vanadium Redox Flow Battery

Qi Liu, Chengjun Sun, Fan Yang, Yang Ren, Steve M Heald, Jian Xie

609Research and Development of Vanadium Flow Battery

Huamin Zhang

610Quinone-Based Flow Battery with Increased Open Circuit Voltage

Michael R. Gerhardt, Michael P. Marshak, Brian Huskinson, Roy G. Gordon, Michael J. Aziz

611Electrochemical Analysis of Chromium Acetylacetonate for Nonaqueous Flow Batteries

James Demetrios Saraidaridis, Charles W Monroe

612$Na_3V_2(PO_4)_3$-Graphene Nanocomposite As Stable Cathodes for Na-Ion Batteries

Xiaolin Li, Jun Liu, Chongmin Wang, Daiwon Choi, Wei Wang, Vincent Sprenkle

613Membrane and Electrode Effects in the Br_2 – H_2 Redox Flow Cell

Michael C Tucker, Venkat Srinivasan, Vince Battaglia, Kyu Taek Cho, Adam Z. Weber, Guangyu Lin, Pau Ying Chong, Trung Van Nguyen

614Advanced Hydrogen-Bromine Flow Battery for Energy Storage

Guangyu Lin, Pau Ying Chong, Trung Van Nguyen, Jahangir Masud, Ryszard Wycisk, Peter N. Pintauro

615New Development in the Alkaline-Based Hydrogen-Bromine Fuel Cell

Trung Van Nguyen, Venkata Yarlagadda, Dhrubajit Konwar, Kwong-Yu Chan

616Aqueous Manganese-Based Electrolytes for Redox Flow Batteries

Christopher R Swartz, Stephen M Lipka, Fon Rogers, Rong Chen, Thomas Kodenkandath

617Effect of Morphology and Size of Nickel Particles on Electrochemical Performance of Sodium Metal Chloride Rechargeable Battery

Joon-Hwan Choi, Min-Jung Park

618Further In Situ EDXRD Studies of the MnO_2 Cathode

Daniel A Steingart, Joshua W Gallaway, Benjamin Joseph Hertzberg, Can Erdonmez

619Electrolyzer for Hydrogenation of Organic Hydride with Oxygen Evolution Reaction from Water

627Novel Energy Storage System, bindbattery™, with an Intrinsic Overcharge Protection Capability

Ryo Tamaki, Hisashi Tsukamoto

6283D-Electrode Technology Platform for Energy Storage Safety

Jan Prochazka

629Distributed Diagnostic Techniques to Quantify Spatial and Temporal Voltage Gradients in Energy Storage Systems Utilizing Flowable Electrodes

Christopher R Dennison, Majid Beidaghi, Kelsey B. Hatzell, Yury Gogotsi, Emin Caglan Kumbur

630GPU-Accelerated Pore-Scale Transport Resolved Model for Flow-Assisted Battery Design

Charles Andersen, Gang Qiu, Nagarajan Kandasamy, Ying Sun

631Development of Megawatt Scale Proton Exchange Membrane Electrolysis for Energy Storage Applications

Katherine E. Ayers

632Autonomy and Battery Utilization within Microgrids and Solar-Battery Applications

Matthew T Lawder, Rachel K Fenton, Venkat R. Subramanian

B1-Chemical Sensors 11. Chemical and Biological Sensors and Analytical Systems

Sensor

633(Outstanding Achievement Award of the Sensor Division) From Antibody to X-ray 25 Years in MEMS Sensors

Peter Hesketh

634Study of the Chemical and Morphological Characteristics of Al_2O_3 and HfO^2 Surfaces after Immersion in Time-Dependent pH Solutions

Joel Molina Reyes, Berni Manolo Perez Ramos

635Invited: Wireless Mechatronic Sensing Device for Long Tube Internal Deformation Inspection

Liqiong Tang, Morio Fukuoka

636Miniaturization of Photothermal Cantilever Deflection Spectroscopy with an Electrical Readout

Seonghwan Kim, Dongkyu Lee, Thomas Thundat

637Development of CD Based Micro-Fluidics Device for High Throughput Particle Capture and Sampling

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708Effect of Nano-Encapsulated Corrosion Inhibitors on Self-Healing Corrosion Protection of Steel Sheets

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717(Morris Cohen Graduate Student Award of the Corrosion Division) Stainless Steel in Biological Environments – Relation Between Material, Surface Chemistry and Toxicity

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803A Chemical Sensing Plate for Simultaneous Measurements of pH and Cl^- Concentration Inside Crevice of Stainless Steel

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804Investigating the Initial Stages of KCl-Induced Corrosion of a Chromia Stainless Steel Using ESEM in-Situ and Well-Controlled Ex-Situ Exposures at 450°c

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806Conformal Electrodeposition for All-Solid-State 3D Thin-Film Batteries

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807Pulsed Potential based E-ALD of PV Materials

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808Development and STM Study of Hydrogen based Deposition of Pt on Pd Thin Films

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809Template-Assisted Electrochemical Liquid-Liquid-Solid Deposition of Crystalline Ge Nanowires

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810Electroplating of Aluminum with Nickel Particle Codeposition

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811Organometallic Deposition of Nickel: An Electroless Route to Nanoscale Films

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Rolf Grieseler, Magali Karina Camargo, Marcus Hopfeld, Andreas Bund, Peter Schaaf

813Surface Modification and Electrochemical Metallization of Advanced Polymers for Energy Application

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816Effect of Au Content in Aupd Electro-Synthesized Mixtures Toward Formic Acid/Formate Electro-Oxidation

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818Pt Monolayer Shell on Hollow Pd Core Electrocatalysts: Scale up Synthesis, Structure, and Activity for the Oxygen Reduction Reaction

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828Photoelectrochemical Behavior of Indium Sulphide Films

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831Brush Plated $CuInS_2$ Films and Their Photoelectrochemical Behaviour

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841 Electrochemical Deposition of Highly Efficient Cztsse Thin Film Solar Cells

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842 Long Term Degradation of the Crystalline Silicon Solar Cells with Electroplated Cu Grids

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850Zinc Dendrite Growth and Control: In Situ Techniques for Visualizing Micro- and Nano-Scale Morphology

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851Electrochemical Studies of the Lithium Deposition on Au(111) from a Piperidinium-Based Ionic Liquid

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852$LiCoO_2$ Thin Film Deposition Using a Low-Temperature Electrochemical-Hydrothermal Route

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853Controllable Fabrication of Nanostructured Sn-TiO_2 Composite Films on Cu Sheets as Anode Materials for Lithium-Ion Battery

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854Keynote: Product Development Based on Electrochemical Science and Engineering

Robert Spotnitz

855Keynote: Electropolishing of Niobium Superconducting Radio Frequency Cavities in a Low-Viscosity, Water-Based, HF-Free Electrolyte: From Coupons to Cavities

E. J. Taylor, Timothy D Hall, Stephen Snyder, Maria E. Inman

856Challenges in Electrolyzer Development and Translation from Lab to Product

Katherine E. Ayers

857Electrodeposition from Ionic Liquids: Which Processes Have the Potential for Commercialization ?

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858Keynote: Successful Electrochemical Energy Storage: A Battery Is More Than the Sum of Its Parts

Esther S Takeuchi, Kenneth J Takeuchi, Amy C Marschilok

859The 14 Year Path of Lithium-Ion Stacking Power Battery at Amita Technologies

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860Electrode Structures to Improve the Performance of Redox Flow Batteries

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861Enhancing Fuel Cell Vehicle Lifetime: A Case Study on the Development and Use of a Corrosion-Resistant Electrocatalyst Support

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862A Portable Oxygen Concentrator for Wound Healing Applications

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863Development of Electrokinetic Dewatering for Phosphate Mine Tailings

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864Electrolyte Circulation in Copper Refinery

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865Keynote: Corrosion-Electrochemistry Based Undergraduate Curricula: Finding a Balance Between Chemistry, Materials and Engineering

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877Electrodeposited Thin Film Solar Cells

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880Voltammetric and Electrochemical Impedance Study of Sm^{3+} Effect onto the Nickel Electrodeposition Process

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881Electroless Co-B Deposition Using Dimethylamine Borane as Reducing Agent in the Presence of Different Amines

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882Influence of Temperature on Electroless Copper Deposition from Formaldehyde-Containing Solutions Using 2-Hydroxy-1,2,3-Propanetricarboxylic Acid As Cu(II) Ligand

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883Via Superfill with Time Pulse Plating in a Dual Couple Redox System

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884Toward Industrialization on Semiconductor-Based Biosensors in Health and Medical Fields

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886Dual Damascene Copper Electroplating Enabled Scaling of the Wires and Multilevel Interconnects

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887Conditions at the Electrochemical Interface and Their Relation to Electrodeposition of High Moment Soft CoFe Alloys

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892In Situ Stress Measurements Using Cantilever Curvature

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893(Research Award of the Electrodeposition Division) Mathematical Modeling in Electrodeposition Studies

Alan West

894Reaction Mechanism of Thiourea as Suppressor in Electroless Cu Deposition Process

Masahiro Kunimoto, Takehiro Naito, Hiromi Nakai, Takayuki Homma

895Electrochemical Synthesis of High Strength Nanotwin Copper Films

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976Enhancement of $La_{0.6}Sr_{0.4}Co_{0.2}Fe_{0.8}O_{3-\delta}$ Activity by Ion Implantation for Low-Temperature SOFC Cathodes

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980Mechanical and Electrical Properties of Ceramic Electrodes for Solid Oxide Fuel Cells

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1007A New Family of Proton-Conducting Conducting Materials in Layered Oxides

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1008Nanostructured Low-Temperature Solid Oxide Fuel Cell with High Power Density

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1020Performance of Advanced Pt-Ni Alloy Catalysts in Polymer-Electrolyte Fuel Cells

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1021The Role of Transition Metals in the Catalytic Activity of Pt Alloys

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1022Invited: Electrochemical Properties for UHV-Prepared Pt/M Well-Defined Single Crystal Surfaces

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1024A Comprehensive Single-Phase, Non-Isothermal Mathematical MEA Model and Analysis of Non-Isothermal Effects

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1029Incorporation of the Stefan-Maxwell Multicomponent Diffusion Model into a Pore Network Model of the PEMFC Electrode

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1033Computational Modelling of Cation Contamination in PEFCs

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1034Full-Cell Simulation of Cathodic Degradation in Polymer Electrolyte Fuel Cell System at Start-up, with and without Control Method to Reduce Degradation

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1035Nickel Nanowire Oxidation and Its Effect on Platinum Galvanic Displacement and Methanol Oxidation

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1036Structural Characterization and Enhanced Oxygen Reduction Activity of Chemically-Ordered Intermetallic PtFeNi Catalysts

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1037A Study of Pt and Pt-Alloy Fuel Cell Catalyst Degradation in Aqueous and Membrane Electrode Assembly Environments Using In Situ Anomalous Small-Angle X-Ray Scattering

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1038Engineering the Activity and Stability of Pt-Alloy Cathode Fuel-Cell Electrocatalysts by Tuning the Pt-Pt Distance

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1039Rational Design of Nanocatalysts for Fuel Cell Reactions

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1040Improving the Activity and Stability of PdSn Catalyst for Oxygen Reduction by Heat Treatment

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1041Characteristics of Pd-Pt Nanoparticles with Core-Shell Structure on Polybenzimidazole-Wrapped Graphene for Fuel Cell Electrocatalyst

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1042Invited: Remaining Technical Challenges in R&D for Automotive PEM Fuel Cell System

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1043Invited: FCEV Development at Nissan

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1044Invited: Pore Network Modeling of the Full Membrane Electrode Assembly of a Polymer Electrolyte Membrane Fuel Cell

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1045Invited: Advanced Visualization Tools to Investigate PEM Fuel Cell Materials

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1047Invited: Bipolar Membrane Fuel Cells Using Anion Conductive Multiblock Copolymers

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1051Charles W.Tobias Young Investigator Award: Understanding Transport Phenomena in Polymer-Electrolyte Fuel Cells

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1055Invited: From PEM Fuel Cell Design to Biological Fuel Cells: The Status of Systems Development for Biological Fuel Cells

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1056Invited: Micro Fuel Cells: Can We Apply Them to a Successful Market?

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1057Novel Dead-Ended Anode Design for Self-Regulating Humidification in an Air-Breathing H_2-PEM Fuel Cell

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1058The Effect of Common Airborne Impurities and Mixtures on PEMFC Performance and Durability

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1059Potentiality of Hydrocarbon Membrane for Durability Improvement of Pt and PtCo Alloy Catalyst and Pt Loading Reduction

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1060PVA/Polyelectrolyte Bipolar Membranes for Fuel Cell Applications

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1065Invited: Enhanced Activities for the Oxygen Reduction Reaction at Pt-Skin Layers on Pt-Co Alloy Single-Crystal Electrodes

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1066Synchrotron-Based In Situ Characterization of Accelerated Degradation for Pt and Pt Monolayer Electrocatalysts

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1067MEA Pt/C Cathode Catalyst Degradation during Repeated Anode Gas Exchange Cycles: In-Situ XAFS, STEM-EDS and Electrochemical Analysis

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1070Investigation of Impact of Carbon Surface Oxidation on Wettability of PEMFC Cathode Electrode

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1071 RuO_2 Nanosheet as a Durability Enhancing Additive to Pt/C Catalyst: Model Electrode Studies

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1072 Application of Oxygen Evolution Reaction Catalyst to Polymer Electrolyte Membrane Fuel Cells for Protection of Carbon Corrosion during Transient Conditions in Fuel Cell Vehicle

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1073 Invited: Unraveling the Oxygen Reduction Reaction Mechanism and Activity of d-Band Perovskite Electrocatalysts for Low Temperature Alkaline Fuel Cells

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1074 Invited: Hydrogen Oxidation and Evolution Reaction (HOR/HER) on Pt Electrodes in Acid vs. Alkaline Electrolytes: Mechanism, Activity and Particle Size Effects

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1076 Defective Nitrogen-Doped Graphene Foam: A Non-Precious Electrocatalyst for the Oxygen Reduction Reaction in Alkaline Medium

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1077 Palladium Nanoparticles Supported on Nitrogen-Doped Graphene Nanosheets as a Highly Active Electrocatalyst for Oxygen Reduction Reaction

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1080 Analysis of the Electrochemical Performance of Ptni/MWCNT in Alkaline Media

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1081 Invited: Characterization of Polymer Electrolyte Fuel Cells with Ultra-Low Catalyst Loadings

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1082 Microstructure Characterization of a PEMFC Catalyst Layer: Effect on Performance

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1083 The Impacts of Cathode Catalyst Layer Morphology on PEMFC Design

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1084 Effect of Electrode Patterning on PEM Fuel Cell Performance using Ink-Jet Printing Method

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1085A New CCM/MPL Structure for High Power Density Polymer Electrolyte Fuel Cells

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1086Improved Cathode Catalyst Layers for Proton Exchange Membrane Fuel Cells

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1092Ceria and Doped Ceria Nanoparticle Additives for Polymer Fuel Cell Lifetime Improvement

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1093Mechanism of Perfluorosulfonic Acid Membrane Chemical Degradation under Low RH Conditions

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1110The Effect of Carbon Support Structure on Ionomer Distributions in PEM Fuel Cell Catalyst Layers

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1116Synthesis of Reduced Graphene Oxides-Supported Binary Catalysts and Its Electrocatalytic Activity

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1117Nitrogen-Doped Nanocarbon Supported Pt Electrocatalysts: Oxygen Reduction and Methanol Oxidation

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Christophe Coutanceau, Anna Zalineeva, Stève Baranton

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Christophe Coutanceau, Anna Zalineeva, Monica Padilla, Alexey Serov, Stève Baranton, Plamen Atanassov

1122Generation of Value-Added Products from Glycerol Oxidation by Pd Based Catalysts in Alkaline Medium

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1281 Evaluation of Cation and Backbone Chemistries for Electrospun and Crosslinked Nanofiber Composite Anion Exchange Membranes

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1282 "Hybrid" Anion-Exchange-Membranes for Direct Ethanol Fuel Cells

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1285 Invited: Advances in Structural Characterization of PEM Fuel Cell Catalyst Layers By Soft X-Ray Scanning Transmission Microscopy

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1289High-Resolution Mapping of the PFSA Polymer Distribution in PEFC Electrode Layers

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1293Electrospun Bipolar Membranes for Portable Fuel Cells

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1326The Role of Lipid-Membrane in the Direct Electrochemistry of Human Liver-Microsomal Films

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1328Detection of Dopamine Efflux in the Nucleus Accumbens caused by Electrical Stimulation of the Rat Fornix by Fast Scan Cyclic Voltammetry

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1330Quantification of Nitric Oxide Produced By Breast Cancer Cells Stimulated By Persistent Luminescent Nanoparticles: A Study of Nanotoxicity Mechanism

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1447Synthesis of Novel Ionic Liquids with Aromatic Trifluoroborate Anions

Kazuki Iwasaki, Kazuki Yoshii, Seiji Tsuzuki, Tetsuya Tsuda, Susumu Kuwabata

1448Electrochemical Synthesis of $NiSi_2$ from a NaCl-NaF-K_2SiF_6 Melt on a Ni Cathode

Svetlana Anatolevna Kochetova, Alexandr Dmitrievich Pisanenko, Sergei Vladimirovich Devyatkin

1449Carbon Fibers and Nanotubes as a Product of Interaction between Silicon Carbide and Carbonate Melt

Sergei Vladimirovich Devyatkin

1450Formation Features of Anodic Oxide Films in the KNO_3 Melt

Leonid Skatkov, Valeriy Gomozov

1451Electrochemical Synthesis of Composite Materials Based on Nanoscale Powders of Tungsten Carbides with Carbon Nanomaterials in NaCl-KCl Melt

Inessa Novoselova

1452Electrodeposition of Zn - Ni Alloys from Protic Ionic Liquids

Raul Martin Ortega Borges, Tania Garcia Ramos, Gabriel Trejo Córdova, Yunny Meas Vong

1453An Electrochemical Study of Uranium (III) and (IV) Species in Fused Alkali Chlorides

Dmitry S. Maltsev, Vladimir A. Volkovich, Evgeny N. Vladykin, Boris D. Vasin

1454Deposition and Dissolution of Lithium through Lithium Phosphorus Oxynitride Thin Film in Some Ionic Liquids

Ryota Furuya, Yasushi Katayama, Takashi Miura

1455Molybdenum(V) Species in Alkali Chloride Melts: An Electronic Absorption Spectroscopy Study

Robert V. Kamalov, Vladimir A. Volkovich, Alexander B. Ivanov, Boris D. Vasin, Trevor R. Griffiths

1456Separation of Uranium and Lanthanides in a Fused Salt – Liquid Gallium Based Alloy System

Stanislav Yu. Melchakov, Dmitry S. Maltsev, Vladimir A. Volkovich, Leonid F. Yamshchikov, Alexandr G. Osipenko

1457Comparison of Some Structural Parameters of the Model Systems $nM^{+}[CrX_6]^{3-}$ and $3M^{+}[CrX_6]^{3-}$ + 18MCl (M–Na, K, Cs; X–F, Cl; n=1–6)

Sergey A. Kuznetsov, Vyacheslav G. Kremenetsky

1458The Composition of the Second Coordination Sphere and Charge Transfer of the Nb(V)/Nb(IV) Redox Couple in Alkali Halide Melts

Anna V. Popova, Vyacheslav G. Kremenetsky, Sergey A. Kuznetsov

1459Electrochemical Properties of Molybdenum in Alkali Chloride Melts

Alexander B. Ivanov, Vladimir A. Volkovich, Pavel Yu. Likhachev, Robert V. Kamalov

1460Physicochemical Properties of Nonvariant Compositions of Ternary NaF-LiF-LnF_3 Systems (Ln = La, Nd)

Nataliya V Faidyuk, Ruslan N Savchuk, Anatolii A Omel'chuk

1461Charge and Mass Transfer on a La_2O_3 Added Li/Na or Li/K Molten Carbonate Meniscus Electrode of $LaNiO_3$ Coated Au Ring for Oxygen Reduction Reaction

1469Applications of Ionic Liquids in Electrochemical Energy Conversion and Storage

Jiwei Ma, Lukas Seidl, Wenbo Ju, Ehab Mostafa, Ludwig Asen, Sladjana Martens, Ulrich Stimming, Oliver Schneider

1470The High Temperature Operation of Lithium Secondary Batteries with Using Ionic Liquids

Hajime Matsumoto, Keigo Kubota

1471Microstructure at the Ionic Liquid/Electrode Interface

Luke M. Haverhals, Christina Zibart, Bryce Egan, Daniel Parr

1472Inorganic-Organic Hybrid Ionic Liquid Electrolytes for Na Secondary Batteries

Kazuhiko Matsumoto, Ryosuke Taniki, Toshiyuki Nohira, Rika Hagiwara

1473Zn-Sn Electrochemical Cells with Molten Salt Eutectic Electrolytes and Their Potential for Energy Storage Applications

Nick Holubowitch, Stephen Manek, James Landon, Cameron Lippert, Susan A Odom, Kunlei Liu

1474Determination of Charge and Mass Transfer for Molten Carbonate Fuel Cell Cathode Using NiO Coated Ring Electrode

Shigenori Mitsushima, Yuki Takeuchi, Yuji Kohno, Koichi Matsuzawa

1475Use of Fluorescence Imaging and Ionic Liquids in the Study of Carbon, Clay, and Cellulose Based-Nanomaterials

Jeffrey W. Gilman

1476Synthesis and Characterizations of Cobalt Films Electrochemically Deposited from Aqueous and Non-Aqueous Media

Thomas Dushatinski, Clay Huff, Tarek M Abdel-Fattah

1477Preparation of Pt Nanoparticle-Adsorbed Carbon Nanotubes Using Room Temperature Ionic Liquid and Their Use as Electrocatalyst for Oxygen Reduction

Susumu Kuwabata, Kazuki Yoshii, Tetsuya Tsuda, Tsukasa Torimoto

1478Cellulose-Chitosan-Keratin Composite Materials: Synthesis, Immunological and Antibacterial Properties

Meghann Rosewald, Fang Yao Stephen Hou, Tamutsiwa m Mututuvari, April Harkins, Chieu d Tran

1479Laser Induced Natural Fiber Welding of Cellulosic Substrates

E. Kathryn Brown, Kathleen Dennis, Luke M. Haverhals, Kurt D. Sweely, Hugh C. De Long, Paul C. Trulove

1480The Utilization of Ionic Liquid Technology for the Degradation of Biopolymers

William Matthew Reichert, Taylor Goodie, Andrew M Pischek, Alexandra C. Stenson, Jacqueline Gayton

1481Porous Carbon Anodes for the Supply of Methane during Electrowinning of Aluminium

Babak Khalaghi, Tommy Mokkelbost, Ole Sigmund Kjos, Henrik Gudbrandsen, Geir Martin Haarberg

1482Natural Fiber Welded Composite Yarns

E. Kathryn Brown, David P. Durkin, Eric T. Fox, Luke M. Haverhals, Kurt D. Sweely, Hugh C. De Long, Paul C. Trulove

1483Ionic Liquid-Based Solvents for Natural Fiber Welding: Impact of Solvent System Composition

E. Kathryn Brown, Luke M. Haverhals, Douglas M Fox, Hugh C. De Long, Paul C. Trulove

1484The Structure of Electrodeposited Aluminum Alloys from Chloroaluminate Ionic Liquids: Let's Not Ignore the Temperature

Gery R. Stafford, Tetsuya Tsuda, Charles L. Hussey

1485Corrosion Resistance of Aluminum Films Electroplated on Steel from Chloroaluminate Ionic Liquids Containing Toluene as a Co-Solvent

Li-Hsien Chou, Charles L. Hussey

1486A Strategy for Making Metal-Containing Ionic Liquids and Their Applications in Electrochemical Deposition

Sheng Dai

1487Electrodeposition of Al-W-Mn Alloy from Lewis Acidic $AlCl_3$−1-Ethyl-3-Methylimidazolium Chloride Ionic Liquid

Tetsuya Tsuda, Yuichi Ikeda, Susumu Kuwabata, Gery R. Stafford, Charles L. Hussey

1488Inkjet Printing Ionic Liquids for the Fabrication of Surface Structures on Biopolymer Substrates

Kurt D. Sweely, Eric T. Fox, E. Kathryn Brown, Luke M. Haverhals, Hugh C. De Long, Paul C. Trulove

1489An Overview of the REFINE Project --- The Sustainable Reduction of Spent Fuel Vital in a Closed Loop Nuclear Energy Cycle

Di Hu, Anthony Stevenson, George Zheng Chen

1490Separation of Dy from Nd-Fe-B Magnet Scraps Using Molten Salt Electrolysis

Hirokazu Konishi, Hideki Ono, Eiichi Takeuchi, Toshiyuki Nohira, Tetsuo Oishi

1491Selective Formation of Rare Earth-Nickel Alloys via Electrochemical Reactions in NaCl-KCl Molten Salt

Kouji Yasuda, Katsuya Kondo, Seitaro Kobayashi, Toshiyuki Nohira, Rika Hagiwara

1492Recovery and Electrowinning of Strategic Critical Materials from Molten Salts

Ana Maria Martinez

1493Electrochemical Fluorination of Uranium to UF_6

Michael J. Martinez-Rodriguez, Luke Christopher Olson, Joshua R. Gray, Brenda L. Garcia-Diaz

1494Efficient Rare Earth Separation Technology

Karen D. Jayne, David Hatchett, Kyle Boutin, Michael C. Kimble

1495Electrorefining Process for the Treatment of Zr-Alloy Cladding Hull Wastes from Used Nuclear Fuels

Chang Hwa Lee, Yoo Lee Lee, Min Ku Jeon, Yong Taek Choi, Kweon Ho Kang, Guen-Il Park, Kyung-Tae Park

1496Solid Oxide Membrane for Reduction of $Ce_{0.8}Gd_{0.2}O_2$ and TiO_2 in LiCl-Li_2O

Luke Christopher Olson, Brenda L. Garcia-Diaz, Kyle Brinkman

1497An Electrochemical and Spectroelectrochemical Study of Ln(II) (Ln = Sm, Eu, Yb) Species in NaCl-2CsCl Melt

Vladimir A. Volkovich, Alexander B. Ivanov, Alexander A. Sobolev, Boris D. Vasin, Trevor R. Griffiths

1498(Max Bredig Award in Molten Salt & Ionic Liquid Chemistry) Molten Salts and Ionic Liquids: Where Have We Been and Where Are We Going? An Electrochemist's Perspective

Charles L. Hussey

H7-Oxygen Reduction Reactions

Physical and Analytical Electrochemistry/Battery/Energy Technology/High Temperature Materials

1499"Core-Shell" ORR Nano-Electrocatalysts Based on a PtNi Carbon Nitride "Shell" and Cu NP "Core"

Vito Di Noto, Enrico Negro, Keti Vezzù, Federico Bertasi

1500Enhanced Oxygen Reduction Using Triode Fuel Cells

Costas G Vayenas, Eftyhia Martino, Alexandros Katsaounis

1501Importance of Specific Interactions between Support, Metal Oxide Nanostructures and Noble Metal or Organometallic Sites in Efficient Electrocatalytic and Bioelectrocatalytic Reduction of Oxygen

Pawel J. Kulesza

1502ORR on Platinum Single Crystal Electrodes. pH Effects

Enrique Herrero

1503Electroreduction of Oxygen on Electrochemically Deposited Palladium-Gold Alloys on Glassy Carbon

Heiki Erikson, Ave Sarapuu, Jekaterina Kozlova, Leonard Matisen, Väino Sammelselg, Kaido Tammeveski

1504Carbide Derived Carbon as a Possible Catalyst Support for PEMFC

Enn Lust, Eneli Härk, Rutha Jäger, Piia Ereth Kasatkin, Vahur Steinberg, Heisi Kurig, Indrek Tallo

1505Oxygen Reduction by Enzyme-Carbon Nanotube Composites for the Development of Biofuel Cells

Serge Cosnier

1506Electrocatalysis of the Oxygen Reduction in Alkaline Media: Comparison of Predominant Reaction Pathways on Various Electrode Materials

Tiphaine Poux, Elena R. Savinova, Antoine Bonnefont, Lai Truong Phuoc, Anna Ryabova, Gwénaëlle Kéranguéven, Galina Tsirlina, Cuong Pham-Huu

1507Materials for ORR Electrocatalysis: Catalytic Center and Substrate Effects

Yun Luo, M. Unni Sreekuttan, Juan Manuel Mora-Hernandez, Nicolas Alonso-Vante

1508Oxygen Electrocatalysis on High-Surface Area at Non-Pt Modified Carbon Catalysts

Eneli Härk, Rutha Jäger, Piia Ereth Kasatkin, Vahur Steinberg, Enn Lust

1509Stability and Activity of Core-Shell and Alloy Catalysts for Proton Exchange Membrane Fuel Cells (PEMFC)

Anil V. Virkar

1510Electrocatalytic Pathways for Oxygen Reduction and Evolution in Aqueous and Non Aqueous Electrolytes

Sanjeev Mukerjee, Urszula Tylus, Kara Strickland, Qingying Jia

1511Evaluation of $Ru_{CORE}@Pt_{SHELL}$ Structure for the Oxygen Reduction Reaction (ORR) with Methanol-Crossover during DMFC Operation

Jørgen Svendby, Jose L. Gomez de la Fuente, Frode Seland, Svein Sunde

1512Pt, Au and Pd Based Binary and Ternary Catalysts for the Oxygen Reduction Reaction

Stève Baranton, Styven Lankiang, Christophe Coutanceau

1513Novel Pathways for Improving the ORR Rate

Joshua David Snyder, Yijin Kang, Dusan Strmcnik, Dongguo Li, Nenad M Markovic, Vojislav R Stamenkovic

1514Mechanism of ORR on Non-PGM M-N-C Catalysts

Plamen Atanassov, Kateryna Artyushkova, Alexey Serov, Boris Kiefer

1515Electrocatalytic Activities of Pt Monolayer Covered Ni and Co Core-Shell Nanoparticles for Oxygen Reduction Reaction

Toshihiro Kondo, Haruna Nagai, Sae Shibata, Misako Hirota

1516Durability of Active ORR Electrocatalysts

Perla B Balbuena, G Ramos-Sanchez, Fernando Godinez, O. Solorza-Feria, Mayra Polett Gurrola, Luis Gerardo Arriaga

1517Mediated Electron Transfer for ORR Catalysis with Transition-Metal Macrocycles

Lior Elbaz

1518Investigation of Active Sites for the Oxygen Reduction Reaction on Nitrogen-Doped Carbon Nanomaterials

Marthe Emelie Melandsø Buan, Navaneethan Muthuswamy, Ida Hjorth, De Chen, Magnus Rønning

1519A Formic Acid Air-Breathing Microfluidic Fuel Cell Feeding with a Single Stream

Euth Ortiz-Ortega, Francisco Mherande Cuevas-Muñiz, Angélica Janeth Armenta-González, Minerva Guerra-Balcázar, Janet Ledesma-García, Luis Gerardo Arriaga

1520Oxide-Based Electrocatalysts toward Oxygen Reduction Reaction as Non Pt Cathodes for PEFC

Naoki Uehara, Akimitsu Ishihara, Hideto Imai, Masashi Matsumoto, Masazumi Arao, Yoshiro Ohgi, Yuji Kohno, Koichi Matsuzawa, Shigenori Mitsushima, Ken-ichiro Ota

1521Graphene-Polyaniline Nanofibers Composite as Electrocatalyst for Oxygen Reduction Reaction in Alkaline Media

Mutyala Sankararao, Jayaraman Mathiyarasu

1522Correlation between Electrocatalytic Oxygen Reduction Reaction and Structure of Mononuclear Cu^{II} Complex at Various pH

Masafumi Asahi, Shin-ichi Yamazaki, Zyun Siroma, Naoko Fujiwara, Tsukasa Nagai, Shinobu Itoh, Tsutomu Ioroi

1523Comparative Study of Nitrogen Doped Carbon Nanofibers Obtained on Fe and Ni Based Catalysts for the Oxygen Reduction Reaction

Navaneethan Muthuswamy, Marthe Emelie Melandsø Buan, Enrique Garcia-Bordeje, De Chen, Magnus Rønning

1524Kinetics of Reaction with Oxygen of $LnBa_{1-X}Sr_xCo_{2-Y}Fe_yO_{6-\delta}$ (Ln - Selected Lanthanides) Oxides as Studied by Relaxation Methods

Konrad Swierczek, Kun Zheng, Alicja Klimkowicz

1525Novel Non-Carbon Support Compositions and Architectures: Elaboration, Characterisation, Integration and Fuel Cell Testing

Deborah J Jones, Jacques Roziere, Sara Cavaliere, Surya Subianto

1526Catalysis of the Oxygen Reduction Reaction: Thin Layer Sonoelectrochemistry

Chester G Duda, Johna Leddy

1527Recent Progress in New Nanocatalysts for Oxygen Reduction Reaction

Shaojun Guo

1528Model Systems and Modeling of Non-Precious Metal Oxygen Reduction Catalysts

Ulises Martinez, Edward F. Holby, Geraldine M Purdy, Gautam Gupta, Aditya Mohite, Gang Wu, Hoon T Chung, Andrew M Dattelbaum, Piotr Zelenay

1529An Efficient Silver-Metal Oxide Hybrid Bifunctional Catalyst for Alkaline Air-Electrodes: DEMS and RRDE Study

Helmut Baltruschat, Hatem M.A. Amin, Lingxing Zan, Sevda Ayata, Mohammad Soltani

1530DFT Study of Oxygen Reduction Reaction on Pt-Zr Catalysts

Boris V Merinov, Ho-Cheng Tsai, Ted H Yu, William A Goddard

1531Mediation of the Oxygen Reduction in Non-Aqueous Lithium-Air Batteries

Luyi Yang, Nuria Garcia-Araez, John R. Owen

1532Highly Tunable and Ordered Graphene-Oxide-Based Materials for Energy Applications

Ulises Martinez, Aditya Mohite, Geraldine M Purdy, Andrew M Dattelbaum, Piotr Zelenay, Gautam Gupta

1533Nitrogen-Containing Carbon Nanostructures (CN_x) Iron-Nitrogen-Carbon (Fe-N-C) as Non-Noble Metal Catalysts for Oxygen Reduction Reaction (ORR) in Acidic Media

Umit S. Ozkan, Kuldeep Mamtani, Deepika Singh, Juan Tian, Jeffrey T Miller

1534Preparation of TaO_x by Electrochemical Technique and Its Application to Electrocatalytic Oxygen Reduction

Zaenal Awaludin, Mohd Safuan, Xiao Ye, Takeyoshi Okajima, Takeo Ohsaka

1535Pt-Lanthanide Alloys for Oxygen Reduction: Relating Active Surface Phase and Catalytic Performance

Paolo Malacrida, Maria Escudero-Escribano, Arnau Verdaguer-Casdevall, Ulrik Grønbjerg Vej-Hansen, Jan Rossmeisl, Ifan E. L. Stephens, Ib Chorkendorff

1536ORR Activity for Pt-Ni Nanoparticles on HOPG Prepared by Arc Plasma Deposition

Naoto Todoroki, Takashi Kato, Shuntaro Takahashi, Toshimasa Wadayama

1537Oxygen Reduction Reaction at Multi-Copper Complexes Investigated by Modified Electrode and In Situ XAFS

Ichizo Yagi, Mari Shibata, Ken'ichi Kimijima, Hideo Notsu, Kazuya Ogino, Kiyoshi Inokuma, Nobuhisa Oyaizu, Hiromitsu Uehara, Satoru Takakusagi, Kiyotaka Asakura

1538Separating Electron Transfer and Product Nucleation Sites on a Model Li-O_2 Battery Cathode to Explore Proximity Relationships for ORR in Aprotic Organic Electrolytes

Kevin R Zavadil, Katharine Lee Harrison

H8-Systems Electrochemistry

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

1539Systems Electrochemistry

Hamilton Varela, Istvan Z Kiss

1540Keynote: In-Situ Visualization of Non-Linear Phenomena during Metastable Pitting Corrosion on Stainless Steel

Harm Hinrich Rotermund

1541The Electro-Oxidation of H_2, CO in a Model PEM Fuel Cell: Oscillations, Chaos, Pulses

Sebastian Kirsch, Richard Hanke-Rauschenbach, Kai Sundmacher

1542Porosification of Silicon from the Viewpoint of Nonlinear Dynamics

Kazuhiro Fukami

1543Multi-Physics Modeling of Electrochemical Conversion of Carbon Dioxide to Formic Acid

Swati Jain, Chara Georgopoulou, Arun Agarwal, Edward Rode, Narasi Sridhar, Nikolaos Kakalis

1544Electrochemical Regulation of the Cyanobacterial Circadian Oscillation

Shuji Nakanishi, Kazuhito Hashimoto

1545Electrochemistry of Inorganic Precipitates Formed in Self-Organizing Chemical Systems

Laura M Barge, Michael J Russell

1546Coupling Chemo-Mechanical Oscillators

Punit Parmananda

1547Electrochemical Micro-Oscillator Networks

Yanxin Jia, Istvan Z Kiss

1548Construction of Arnold Tongue Structures for Coupled Periodic Oscillators

Fernando Montoya, Marco Antonio Rivera, Joaquín Escalona, Punit Parmananda

1549Induced Coherence Resonance in an Electrochemical System

Ramiro Rico-Martínez, Mario Calderón-Ramírez, Elizeth Ramírez-Álvarez, Punit Parmananda

1550Rotational Waves in Rings of Electrochemical Oscillators

Michael L Sebek, Istvan Z Kiss

1551Electrochemical Dissolution in the Presence of Time Delayed Feedback

Levent Organ

1552Synergy in the Hydrazine Assisted Electro-Oxidation of Formic Acid

Eduardo Giangrossi Machado, Hamilton Varela

1553Electrochemical and Chemical Mechanistic Aspects of Temporal and Spatiotemporal Instabilities in the Hydrogen Peroxide – Thiocyanate – Copper(II) Homogeneous Oscillator

Marek Orlik

1554Kinetic Resistance: Concept for Elecrochemical and Catalytic Kinetics

Gregory S Yablonsky

1555Spatiotemporal Patterns Formed on p-Type Silicon Electrodes during Electrochemical Dissolution

Yuya Suzuki, Tomoko Urata, Kazuhiro Fukami, Atsushi Kitada, Kuniaki Murase

1556Mechanism of Potential Oscillation Induced by $Na_2so_4$and K_2so_4 in H_2O_2-H_2so_4-Pt System

Yoshiharu Mukouyama, Mitsuhisa Hasegawa, Shuji Nakanishi

1557Effect of Hydration Property of Insulative Surfaces on Polypyrrole Thin Film Formation over the Surfaces

Akira Koyama, Kazuhiro Fukami, Takeshi Yamauchi, Naoya Nishi, Tetsuo Sakka, Atsushi Kitada, Kuniaki Murase

1558Potential Oscillations in a PEMFC with a Pd/C Anode and Fed with H_2/CO

Jéssica Alves Nogueira, Pietro Papa Lopes, Hamilton Varela

M1-Nanocarbon Fundamentals and Applications - from Fullerenes to Graphene

Nanocarbons/Dielectric Science and Technology/Physical and Analytical Electrochemistry/SMEQ

1559A Metal-Ion Adsorbent Based on Composite of Graphene Oxide/Poly (1-(3-aminopropyl) Pyrrole)

Hongyi Qin, Tao Gong, Yujin Cho, Changgu Lee, Taesung Kim

1560New Spectroscopic Methods for Characterizing Single-Walled Carbon Nanotubes

R. Bruce Weisman, Jason K. Streit, Sergei M. Bachilo, Saunab Ghosh

1561EIS Study of the MWCNT Effect in MWCNT@TiO_2 Anodes for Li-ion Batteries

Prospero Acevedo-Peña, Marta Haro, Marina E. Rincón, Juan Bisquert, Germà García-Belmonte

1562Controlled CVD Growth of Carbon Nanotubes on Monolayer Graphene Substrates

Younsu Kim, Kitu Kumar, Frank T Fisher, Eui-Hyeok Yang

1563Fabrication and Characterization of Conductive Transparent Film Based on Carbon Nanotube for Optoelectronic Devices

Tarek M Abdel-Fattah, Thomas Dushatinski

1564Highly Parallelized Carbon Nanotubes for Field-Effect Device Applications

Martin Keyn, Udo Schwalke

1565Selective Precipitation Strategies for Isolating Metallofullerenes

Steven Stevenson

1566Carbon Nitrides: New Electroactive Materials for Energy Conversion and Storage Applications

Ana Belen Jorge Sobrido, Noramalina Mansor, Rhodri Jervis, Furio Corà, Christopher Gibbs, Paul F. McMillan, Dan J. L. Brett

1567Perylenediimide-Graphene Donor-Acceptor Nanoensembles: Synthesis, Characterization and Photophysics

Nikolaos Karousis, Luis Martin-Gomis, Kei Ohkubo, Taku Hasobe, Angela Sastre-Santos, S. Fukuzumi, Nikos Tagmatarchis

1568Controllable Phosphorus Doped Graphene Field Effect Transistor Using Phosphosilicate-Glass Films

Jin-sang Yoon

1569Improved Bilayer Graphene Transistors for Applications in Nanoelectronics

Udo Schwalke, Pia Wessely

1570Graphene-Based Hybrid Materials Incorporating Multichromophores

Solon P. Economopoulos, Nikos Tagmatarchis

1571Improved Resistive Memory Switching Characteristics of Gold Nanoparticles Embedded Graphene Oxide

Geetika Khurana, Pankaj Misra, Ram S. Katiyar

1572Processing of 2D Layered Materials for Supercapacitors Applications

Valeria Nicolosi, Beatriz Mendoza, Joao Cohelo, Sean O'Brien, Henrik Pettersson, Eva McGuire, Hannah Nerl, Evie Doherthy, Edmund Long, Jesus Barco, Jonathan Coleman

1573Study of Electrochemical Behavior of Hybrid Materials Based on GO/ PMo12/Conducting Polymer Obtained By Interfacial Polymerization

José Martin Baas-López, Ceyli García- Chan, Ana Karina Cuentas-Gallegos, Daniella Pacheco

1574Surrounding Media Sensitive Photoluminescence of Boron-Doped Graphene Quantum Dots

Louzhen Fan

1575MWCNT TiO2 Composite Films for Li Ion Batteries Anodes with Improved Rate Capability

Prospero Acevedo-Peña, Julio C. Calva-Yañez, Marina E. Rincón

1576Synthesis and Characterization of Graphene-Polyaniline Composites Preparated in Site for Fuel Cell Applications

Elsa Pereyra, Carmina Menchaca, Ulises Cano, Loyda Albañil, René Guardian, Jorge Uruchurtu

1577EIS Evaluation and Synthesis Nylon/Graphene Oxide Electrospun Composite Coating

Carmina Menchaca, César García, Miguel Angel García, Jorge Uruchurtu

1578Structural and Electronic Properties of Carbon-Nanotube/Graphene Junction: A First-Principles Study

Brahim Akdim, Ruth Pachter

1579Direct Hybridization of Graphene and Metal Oxide Nanoparticles for High Performance Electrochemical Supercapacitors

Hun Park, Tae Hee Han

N1-Thermal and Plasma CVD of Nanostructures and Their Applications

Dielectric Science and Technology/High Temperature Materials/Sensor

1580Invited: Non-Equilibrium Effects of Non-Equilibrium Plasmas: From Nanoscale Synthesis to Applications in Energy and Medicine

Kostya (Ken) Ostrikov

1581Invited: Large-Scale Production and Assembly of Nanowires for the Fabrication of Highly Efficient Thermoelctrics

Sreeram Vaddiraju

1582Invited: In Situ Characterization of Plasma Assisted Hydrogenation/Fluorination of Graphene and CFx Battery Applications

Ruwantha Jayasinghe, Gamini U Sumanasekera, Arjun K Thapa, Bhabendra Pradhan

1583Invited: iCVD Synthesis of Polymer Electrolytes for Application in Dye Sensitized Solar Cells (DSSCs)

Yuriy Y. Smolin, Chia-Yun Hsieh, Siamak Nejati, Masoud Soroush, Kenneth K.S. Lau

1584Invited: Atmospheric-Pressure Plasmas Processes for Third Generation Photovoltaics

Davide Mariotti, Sadegh Askari, Somak Mitra, Vladimir Svrcek, Thierry Belmonte, Paul Maguire

1585Invited: Nanopartilce Composite Plasma CVD Films and Some Applications

Masaharu Shiratani, Kazunori Koga

1586Invited: Plasmaelectrochemistry in Ionic Liquids: Challenges to Make Silicon Nanoparticles

Frank Endres

1587Invited: Advantages of Plasma Synthesis of Copper Oxide Nanowires

Gregor Filipič, Uro Cvelbar

1588Invited: Novel Plasma Enhanced Chemical Vapor Deposition Methods Utilizing Radical Reactions

Makoto Sekine

1589Invited: Microplasma Spray Deposition of Nanostructured Films for Catalytic, Magnetic, and Photonic Applications

Travis Koh, Andrew Pebley, Katie Mackie, Michael Gordon

1590Invited: Controlled Growth of Hierarchical Metal Oxide Nanoarchitectures by an Atmospheric Pressure Micro-Afterglow

Thomas Gries, Ayman Altaweel, Duclair Kuete Saa, Thierry Belmonte

1591Invited: Nanowire Growth Mechanism upon Treatment of Metals with Non-Equilibrium Oxygen Plasma

Miran Mozetič

1592Invited: Scalable Production of Nanowire Arrays and Powders Using Plasmas

Mahendra Kumar Sunkara

1593Invited: Atmospheric Pressure Plasma Modified Polyaniline Crystals for Detection of Volatile Organic Compounds

Harinarayanan Puliyalil, Petr Slobodian, Michal Sedlacik, Pavel Riha, Uros Cvelbar

1594High Quality Inductively Coupled Plasma Chemical Vapor Deposited SiOxNy Gas Barrier Films for OLED Display

S-H Bang, Jae-Ho Suk, Dio Choi, Kunsu Kim, Nong M Hwang

1595Characterization of Tinbcn Coatings Subject to Micro-Abrasion Wear and Corrosion Phenomena in a Simulated Biological Fluid

José Luis Caballero, Willian Arnulfo Aperador Chaparro, Jaime Duque

1596Dependence of Spatial Uniformity of Nanocrystalline Silicon and Silicon Nitride Films on the Thermal Profile of Low Temperature Catalytic CVD Reactor

Tae-Ho Song, Se Myoung Noh, Wan-Shick Hong

P1-Atomic Layer Deposition Applications 10

Dielectric Science and Technology/Electronics and Photonics

1597Atomic Layer Deposition of Nanostructured Tunable Resistance Coatings: Growth, Characterization, and Electrical Properties

Anil U. Mane, William M. Tong, Alan D. Brodie, Mark A. McCord, Jeffrey W. Elam

1598Study of Y_2O_3 Thin Film Prepared by Plasma Enhanced Atomic Layer Deposition

Gu Young Cho, Seungtak Noh, Yoon Ho Lee, Sanghoon Ji, Suk Won Cha

1599ALD Applied to Conformal Rare-Earth Coating of ZnO Nanoparticles for Low Temperature Thermal Imaging Applications

Erwan Rauwel, Augustinas Galeckas, Protima Rauwel, Per-Anders Hansen, David Wragg, Ola Nilsen, Helmer Fjellvåg

1600$BiFeO_3$ Thin Films Prepared by ALD

Andrew R. Akbashev, Jonathan E. Spanier

1601ALD Synthesis of Ternary PbSeTe Layers Alternating with the Binary PbTe in Nanolaminate Structures for High Zt Thermoelectric Materials

Xin Chen, Kai Zhang, Arun Deepak Ramalingom Pillai, Helmut Baumgart, Vladimir Kochergin

1602Merits of Batch ALD

Gijs Dingemans, Bert Jongbloed, Werner Knaepen, Dieter Pierreux, Lucian Jdira, Herbert Terhorst

1603Plasma Enhanced Atomic Layer Deposition on Powders

Geert Rampelberg, Delphine Longrie, Davy Deduytsche, C. Detavernier

1604Multiscale Simulations of ALD in Cross Flow Reactors

Angel Yanguas-Gil, Joseph A. Libera, J. W. Elam

1605Design Considerations for ZnO Transistors Made Using Spatial ALD

Shelby F. Nelson, Carolyn R. Ellinger, Lee W. Tutt

1606Molecular Layer Deposition of Nanoscale Organic Films for Nanoelectronics Applications

David Bergsman, Han Zhou, Stacey F. Bent

1607Highly Luminescent Monolayers Prepared by Molecular Layer Deposition

André Räupke, Fabian Albrecht, Julia Maibach, Andreas Behrendt, Andreas Polywka, Ralf Heiderhoff, Jonathan Helzel, Torsten Rabe, Hans-Hermann Johannes, Wolfgang Kowalsky, Eric Mankel, Thomas Mayer, Patrick Görrn, Thomas Riedl

1608Challenges with Industrialization of Atomic Layer Deposition of Silicon Nitride

Dennis Hausmann, Jon Henri, Jim Sims, Kathryn Kelchner, Sathish Janjam, Shane Tang

1609 In-Situ Studies on 2D Materials

Robert M Wallace

1610Enabling Sub-10nm Lithography with Atomic Layer Deposition and Block Copolymer Self Assembly

Ricardo Ruiz, Yves-Andre Chapuis, Lei Wan, Shisheng Xiong, He Gao, Kanayialal Patel, Elizabeth Dobisz, Alexei Bogdanov, Paul Nealey, Thomas Albrecht

1611ALD and PVD Tantalum Nitride Barrier Resistivity and Their Significance in via Resistance Trends

O. van der Straten, X. Zhang, K. Motoyama, C. Penny, J. Maniscalco, S. Knupp

1612Higher-K Formation in Atomic Layer Deposited $Hf_{1-X}Al_xO_y$

Kandabara Tapily, Steve Consiglio, Robert Clark, Relja Vasic, Cory Wajda, Jean Jordan-Sweet, Gert Leusink, A.C Diebold

1613Engineering the III-V Gate Stack Properties by Optimization of the ALD Process

Sonja Sioncke, Laura Nyns, Tsvetan Ivanov, D Lin, Jacopo Franco, Abhitosh Vais, Mahmoud Ameen, Annelies Delabie, Qi Xie, Jan Willem Maes, Fu Tang, Michael Givens, S. Van Elshocht, Frank Holsteyns, Kathy Barla, Nadine Collaert, Aaron Thean, Stefan De Gendt, Marc Heyns

1614Manganese Precursor Selection and the Thermal Atomic Layer Deposition of Copper/Manganese Alloy Films

Lakmal C. Kalutarage, Scott B. Clendenning, Charles H. Winter

1615Promoted Platinum Catalytic Activity and Thermal Stability with Nano-Scale Cobalt Oxide Coating via Atomic Layer Deposition

Kun Cao, Bin Huang, Yihang Zhang, Xiao Liu, Bin Shan, Rong Chen

1616Flash-Lamp-Enhanced Atomic Layer Deposition of Thin Films

Thomas Henke, Martin Knaut, Christoph Hossbach, Marion Geidel, Lars Rebohle, Matthias Albert, Wolfgang Skorupa, Johann W. Bartha

1617RF Power Effect of Post-Deposition Oxygen Plasma Treatment on HfO_2 Gate Dielectrics

Tian-Cih Bo, Yi-Lung Cheng

1618Precursor Development and Application for Atomic Layer Deposition

Taek-Mo Chung

1619Development of Continuous and Ultrathin Pt Electrocatalysts Using Plasma-Assisted ALD

Joel W. Clancey, Andrew S. Cavanagh, Ratandeep Kukreja, Anusorn Kongkanand, Steven M. George

1620Growth of Al Doped ZnO Thin Films by Atomic Layer Deposition Process

Kai Zhang, Xin Chen, Pengtao Lin, Santosh Kumar Reddy Obulreddy, Helmut Baumgart

1621Mechanical/Structural Properties of ALD Zirconium Oxide (ZrO_2) Thin Films for High-Tech Applications

M A Mamun, Helmut Baumgart, A A Elmustafa

1622Nanomechanical Properties of Titanium Oxide (TiO_2) Grown by Atomic Layer Deposition

M A Mamun, Helmut Baumgart, A A Elmustafa

1623Nanomechanical Properties of Tungsten Oxide (WO_3) Grown by Atomic Layer Deposition

M A Mamun, Kai Zhang, Helmut Baumgart, A A Elmustafa

1624Heteroleptic Precursors for Atomic Layer Deposition

Jaakko Niinistö, Timothee Blanquart, Sanni Seppälä, Mikko Ritala, Markku Leskelä

1625Design, Synthesis and ALD Assessment of Organometallic Precursors for Semiconductor Applications

Christian Dussarrat

1626Thin-film Deposition of Silicon Nitrides and Oxides from Trihydridosilanes

Barry Arkles, Youlin Pan, Alain Kaloyeros

1627Doping Mechanism in Transparent Conductive ZnO Films Grown by Atomic Layer Deposition

Do-Joong Lee, Jang-Yeon Kwon, Soo-Hyun Kim, Hyun-Mi Kim, Jimmy Xu, Ki-Bum Kim

1628Tuning Photoresponse of Ultrathin ZnO Films Using Few Angstrom Al_2O_3 Overlayers

Fei Wu, Yoon Myung, Parag Banerjee

1629Selective-Area Atomic Layer Deposition of Copper Nanostructures for Direct Electro-Optical Solar Energy Conversion

Brian G. Willis, Jie Qi, Xiaoqiang Jiang, James Chen, Gary J. Weisel, Darin T. Zimmerman

1630Enhanced Visible-Light Photoelectrochemical Performance of Titana Nanotubes Modified by Atomic Layer Deposited Cobalt Oxide

Bin Huang, Yanwei Wen, Bin Shan, Rong Chen

1631Electrical Properties of High Mobility Ultrathin Amorphous Indium Zinc Oxide Deposited by Atomic Layer Deposition

Yeong-Ho Cho, Do-Joong Lee, Seong-Yong Cho, Hyun-Mi Kim, Ki-Bum Kim

1632The Effect of SPA-SiO_2 Tunnel Oxide Thickness for Metal-Insulator-Silicon Photoelectrochemical Cells

Andrew G. Scheuermann, David Q. Lu, Toru Ito, Christopher E.D. Chidsey, Paul C. McIntyre

1633Self Assembled Metamaterials Formed via Plasma Enhanced ALD of Ag Thin Films

S. M. Prokes, Orest J. Glembocki

1634Plasmonics and Metamaterials with Transparent Conducting Oxides

Martina Abb, Yudong Wang, D Traviss, R Bruck, C. H. de Groot, Harold Chong, Borja Sepulveda, Otto L. Muskens

P3-High Purity and High Mobility Semiconductors 13

Electronics and Photonics

1635Invited; Growth of Czochralski Silicon Crystals with Ultralow Carbon Concentrations for High-Power Insulated-Gate Bipolar Transistor Devices

Yuta Nagai, Satoko Nakagawa, Mitsuo Higasa, Kazuhiko Kashima

1636Invited; Stress and Doping Impact on Intrinsic Point Defect Behavior in Growing Single Crystal Silicon

Koji Sueoka, Eiji Kamiyama, Jan Vanhellemont

1637Absolute Value Determination of Vacancy Concentration in Silicon Crystals Using Low-Temperature Ultrasonic Measurements

Hiroshi Yamada-Kaneta, Kazuki Okabe, Mitsuhiro Akatsu, Shotaro Baba, Keisuke Mitsumoto, Yuichi Nemoto, Terutaka Goto, Hiroyuki Saito, Kazuhiko Kashima, Yoshihiko Saito

1638Highly Sensitive and Accurate Infrared Absorption Measurement of Carbon Concentration in Si Crystal

Naohisa Inoue, Kaori Watanabe, Hirofumi Seki, Hiroyuki Uno, Hidenori Oyama, Yuichi Kawamura

1639Invited; Oxygen Precipitation and Defect Generation in Cz Silicon during Second and Millisecond Annealing

Gudrun Helga Kissinger, Dawid Kot, Markus Andreas Schubert, Andreas Sattler

1640Invited; Modeling of Oxygen Precipitation in Silicon

Scott T. Dunham, Bart C. Trzynadlowski

1641Precipitation Behaviors of Rapid Thermal Annealing Treated Silicon Wafers under Various Thermal Cycles

DongMyun Lee, TaeHyeong Kim, SoonSung Park, TaeHoon Kim, YongHyun Lee, EunSik Park, Hwankug Yeo, Robert Falster

1642Morphology of Oxygen Precipitates in RTA Pre-Treated Czochralski Silicon Wafers Investigated by FTIR Spectroscopy and STEM

Dawid Kot, Gudrun Kissinger, Markus Andreas Schubert, Andreas Sattler

1643Proximity Gettering of Copper via Oxygen Precipitates for Silicon-on-Insulator Wafer

Jun-Seong Park, Il-Hwan Kim, Gon-Sub Lee, Jea-Gun Park

1644Keynote; Epitaxy-Based Strain-Engineering Methods for Advanced Devices

Detlev Grützmacher, Stephan Wirths, Torsten Rieger, Dan Buca, Toma Stoica, Mihail Ion Lepsa, Qing-Tai Zhao, Siegfried Mantl

1645Keynote; Material Challenges and Opportunities in Ge/III-V Channel MOSFETs

Shinichi Takagi, Sang-Hyeon Kim, Masafumi Yokoyama, Koichi Nishi, Rui Zhang, Mitsuru Takenaka

1646Invited; First-Principles Studies of the Defect Formation in III-V FETs Grown by Fin Replacement Method

Hideki Minari, Shinichi Yoshida, Ken Sawada, Masashi Nakazawa, Matty Caymax, Clement Merckling, Niamh Waldron, Weiming Guo, Sijia Jiang, Nadine Collaert, Eddy Simoen, D Lin, Geoffrey Pourtois

1647Profiling of Border Traps at GeSn and High-K Oxide Interface

Somya Gupta, Eddy Simoen, Adam Dobri, Henk Vrielinck, Johan Lauwaert, Clement Merckling, Federica Gencarelli, Yosuke Shimura, Roger Loo, Marc Heyns

1648Invited: The Impact of a (Si)Ge Heterojunction on the Analog Performance of Vertical Tunnel FETs

Paula Ghedini Der Agopian, J. A. Martino, Anne Vandooren, Rita Rooyackers, Eddy Simoen, Aaron Thean, Cor Claeys

1649Invited; Ge-on-Insulator MOSFETs for High-Performance and 3D-LSI Applications

Tsutomu Tezuka, Keiji Ikeda, Yoshiki Kamata, Yuuichi Kamimuta, Koji Usuda, Yoshihiko Moriyama, Mizuki Ono, Masahiro Koike, Minoru Oda, Toshifumi Irisawa, Eiko Mieda, Tatsuro Maeda, Wipakorn Jevasuwan, Yuichi Kurashima, Hideki Takagi, Kiyoe Furuse, Etsuo Kurosawa

1650Invited; Solid Phase Epitaxy of GeSn Alloys on Silicon and Integration in MOSFET Devices

Ruben R. Lieten, Tatsuro Maeda, Jin Won Seo, Wipakorn Jevasuwan, Hiroyuki Hattori, Noriyuki Uchida, Shu Miura, Masatoshi Tanaka, Claudia Fleischmann, Andre Vantomme, Brett C. Johnson, Jean-Pierre Locquet

1651Invited; Alternative High n-Type Doping Techniques in Germanium

Giovanni Capellini, Wolfgang M. Klesse, Giordano Mattoni, Michelle Y. Simmons, Giordano Scappucci

1652Deep-Level Defects in High-Dose Proton Implanted and High-Temperature Annealed Silicon

Moriz Jelinek, Johannes Laven, Mathias Rommel, Werner Schustereder, Hans-Joachim Schulze, Lothar Frey, Reinhart Job

1653Formation of Shallow n-p Junctions in Cz-Si by Low-Energy Implantation of Carbon Ions

B. Romanyuk, V. Melnik, V. Popov, V. Litovchenko, V. Babich, V. Ilchenko, V. Kladko, J. Vanhellemont

1654A New Method to Increase the Doping Efficiency of Proton Implantation in a High-Dose Regime

Moriz Jelinek, Johannes Laven, Reinhart Job, Werner Schustereder, Hans-Joachim Schulze, Mathias Rommel, Lothar Frey

1655Modeling of Carbon Clustering and Associated Metal Gettering

Yu Jin, Scott T. Dunham

1656Deep Levels in W-Doped Czochralski Silicon

Eddy Simoen, Koichiro Saga, Johan Lauwaert, Henk Vrielinck

1657Ab Initio Analysis on Stability of Metal Atoms in β-Si_3N_4/Si Structure

Daiki Shibata, Syunsuke Kobayashi, Koji Sueoka, Jun Komachi, Koichiro Saga

1658Mn Related Defect Levels in Germanium

Johan Lauwaert, Filip Moens, Siegfried H. Segers, Karl Opsomer, Eddy Simoen, Jan Vanhellemont, Paul Clauws, Freddy Callens, Henk Vrielinck

1659Electrical and Structural Properties of W-Capped Er Ohmic Contact to n-Type $in_{0.53}Ga_{0.47}As$ Channel

Chang-Hyun Leem, Min-Sung Kang, Ye-Ji Lee, Yi-Rang Lim, Kyu-Hwan Shim, Chel-Jong Choi

1660Self-Aligned Ni-Germanide Ohmic Contact to n-Type GaAs Substrate for High Mobility III-V Channel Metal-Oxide Semiconductor Field-Effect Transistor (MOSFET)

Min-Sung Kang, Chang-Hyun Leem, Ye-Ji Lee, Yi-Rang Lim, Kyu-Hwan Shim, Chel-Jong Choi

1661Invited; Positron Annihilation Spectroscopy on Open-Volume Defects in Group IV Semiconductors

Jonatan Slotte, Filip Tuomisto, Jiri Kujala, Andreas M. Holm, Natalie Segercrantz, Simo Kilpeläinen, Katja Kuitunen, Eddy Simoen, Federica Gencarelli, R Loo, Yosuke Shimura

1662Invited; Synchrotron Radiation Based X-ray Microdiffraction of Advanced Semiconductor Materials

Akira Sakai

1663Invited; Single Dislocations as Nanostructure Devices: Physics and Applications

Manfred Reiche, Martin Kittler, Hartmut Uebensee, Eckhard Pippel, Winfried Erfurth

1664Temperature Dependent Young's Modulus of Si and Ge

Jan Vanhellemont, Akhilesh Kumar Swarnakar, Omer Van der Biest

1665Invited; Nature of Point Defects at High-Mobility Semiconductor/Interfaces Probed by Electron Spin Resonance: Thermal GaAs/GaAs-Oxide Structures

Andre Stesmans, Sang Nguyen, Valery V Afanas'ev

1666Invited; Light Induced Degradation in Compensated B-Doped Czochralski Silicon

Deren Yang

P4-Plasma Processing 20

Dielectric Science and Technology/Electronics and Photonics

1667Fabrication of Uniform Sized Metal Spheres by Plasma Induced Dewetting

Dong-Hoon Han, Seung Moo Lee, Jung-Joong Lee, Dohyung Kim, Jinho Choi, Jaihyung Won

1668Nuclear Forensics Using Plasma Source Ion Beams

Rod Boswell, Noel Smith, Christine Charles, Noel Martin, Paul Tesch

1669Experiments and Modeling of Gas Heating in a Radio-Frequency Plasma Jet

Rod Boswell, Christine Charles, Amelia Greig, Sam Dixon

1670Overcoming High Performance Semiconductor Packaging Challenges Using Plasma

David Foote

1671Plasma Solutions for Life Sciences and Medical Device Manufacturing

David Foote

1672Cryogenic Etching of Submicronic Features in Silicon Using Masks Based on Porous Polymer Films

Thomas Tillocher, Alexane Vitale, Marylene Vayer, Nicolas Gosset, Philippe Lefaucheux, Christophe Sinturel, Mohamed Boufnichel, Remi Dussart

1673Plasma Etch in the Era of Atomic Scale Fidelity

Thorsten Lill, Harmeet Singh, Gowri Kamarthy, Keren J. Kanarik, Andy Cohen, Aaron Eppler, John Holland, Andreas Fischer, Meihua Shen, Jeff Marks, Richard A. Gottscho, Vahid Vahedi

1674Alternative to H_3PO_4 for Si_3N_4 removal by using chemical downstream etching

Côme de Buttet, Olivier Gourhant, Stephane Zoll, Régis Bouyssou

1675Ge FET Fabrication by Plasma Etch at 45nm Pitch

Alexey Milenin, Liebeth Witters

1676Etch Challenges for 3D NAND Flash Technology

Anisul Haque Khan, Sunil Srinivasan, Jinhan Choi, Amulya Athayde, Raman Achutharaman

1677HfO_2 Gate Stack Engineering by Post-Gate Cleaning Using NF_3/NH_3 Plasma

Min Seon Lee, Hoon Jung Oh, Joo Hee Lee, In Geun Lee, Woo Gon Shin, Sung Yong Kang, Dae Hong Ko

P5-Processing Materials of 3D Interconnects, Damascene, and Electronics Packaging 6

Electronics and Photonics/Dielectric Science and Technology/Electrodeposition

1678R&D Overview of 3D Integration Technology Using TSV in Japan

Morihiro Kada

16795minutes TSV Filling

Chikara Funaahashi, Kazuo Kondo, Masayuki Yokoi, Naoki Okamoto, Takeyasu Saito

1680Low Cost, Scalable and Selective Electrochemical TSV Fill Technology for 3D IC Interconnects

Val M Dubin

16813D Wafer Level Heterogeneous Integration

M Juergen Wolf, Klaus-Dieter Lang

1682A Stable Cu Nanoparticles Used for Seed Layer Deposition of through Silicon Via

Yao-Lin Tsai, Wei-Ping Dow

1683Effect of Cupric Methanesulfonate on through-Hole Filling by Copper Electroplating

Ji-Xun Ye, Wei-Ping Dow

1684Recent Progress in Cu Electrodeposition for TSV (Through Silicon Via)

Jae Jeong Kim, Myung Jun Kim, Seunghoe Choe, Kwang Hwan Kim, Hoe Chul Kim, Anna Lee

1685Kinetic Monte Carlo Simulation of Filling High-Aspect-Ratio through Silicon Via - III

Yutaka Kaneko, Yuki Fukiage, Akira Morita, Taro Hayashi, Kazuo Kondo, Katsuhiko Ohara, Fujio Asa

1686Plating through Hole with High Throwing Power Using Dual Levelers

Chia-Fu Hsu, Wei-Ping Dow, Su-Mei Huang

1687Through Silicon via Filling by Electroplating Using Reduced Graphene Oxide (rGO) as a Conducting Layer

Shih-Cheng Chang, Wei-Ping Dow

1688Through-Silicon-Via(TSV) Filling by Electrochemical Deposition with Pulse-Reverse Current

Snaghyun Jin, Bongyoung Yoo

1689Cryoetching of Silicon and Advanced Materials for 3D Interconnects

Remi Dussart, Thomas Tillocher, Nicolas Gosset, Philippe Lefaucheux, Rami L'jazouli, Mohamed Boufnichel, Liping Zhang, Jean-Francois de Marneffe, Mikhail Baklanov, Eiichi Nishimura, Koichi Yatsuda, Kaoru Maekawa

1690Electrografted Copper Seed Layer for High Aspect Ratio TSVs Interposer Metallization

Frédéric Gaillard, Thierry Mourier, Laurent Vandroux, Laurianne Religieux, Dominique Suhr, Frédéric Raynal, Vincent Mevellec

1691Electroless Plating for Seed Layer Deposition and Direct Metallization of Glass for Interposer Fabrication

Christopher Cordonier, Kyouhei Okabe, Hideo Honma

1692Low-Cost MEMS Packaging Using Sacrificial Polymer-Based In-Situ Airgap Creation

Erdal Uzunlar, Oluwadamilola Philips, Zhiyuan Zhu, Paul A Kohl

1693Advances in Wafer Bonding for 3D Integration and Other Applications

James J-Q Lu

1694 Anodic Oxidation of SPS Resulting in PDS Formation and the Influence of PDS on Electrolytic Copper Via Filling Performance

Ryoichi Kimizuka, Hisayuki Toda, Tetsuro Eda, Osamu Takai

1695 Numerical Analysis of the Correlation between the Cu^{+} Ion Concentration and the Current Density

Taro Hayashi, Kazuo Kondo, Masayuki Yokoi, Takeyasu Saito, Naoki Okamoto

1696 Bottom-up Copper Deposition in Damascene Features Using Alkali Electrolytes

Daniel Josell, Thomas P. Moffat

1697 Behavior of Cuprous Intermediate by RRDE

Kouhei NIshimura, Masayuki Yokoi, Kazuo Kondo, Taro Hayashi, Naoki Okamoto, Takeyasu Saito

1698 Degradation of Organic Additives and Its Influences on Cu Electrodeposition

Seunghoe Choe, Myung Jun Kim, Kwang Hwan Kim, Hoe Chul Kim, Anna Lee, Soo-Kil Kim, Jae Jeong Kim

1699 Electrodeposited Copper Wire for Transparent Conductive Film

Kazuo Kondo, Yuichi Ikeda, Masayuki Yokoi, Naoki Okamoto, Takeyasu Saito

1700 Applying the Co-Injection Test to Extract Difficult to Measure Process Parameters

Lindsay Boehme, Uziel Landau

1701 Development of Glyoxylic Acid Based Electroless Copper Deposition on Ruthenium

Fumihiro Inoue, Harold Philipsen, Marleen van der Veen, Silvia Armini, Stefaan Van Huylenbroeck, Herbert Struyf, Shoso Shingubara, Tetsu Tanaka

1702Cu Displacement Plating on Electroless Plated CoWB Layer on SiO_2 and Its Adhesion Property

Kohei Ohta, Fumihiro Inoue, Tomohiro Shimizu, Shoso Shingubara

1703Glyoxylic Acid as Reducing Agent for Electroless Copper Deposition on Cobalt Liner

Fumihiro Inoue, Harold Philipsen, Marleen van der Veen, Stefaan Van Huylenbroeck, Silvia Armini, Herbert Struyf, Shoso Shingubara, Tetsu Tanaka

1704Stability Evaluation of Non-Agglomerated Pd Nanoparticle Catalysts for Electroless Deposition

Noriaki Nakamura, Junichi Taniuchi, Takayuki Sone, Kotoe Sasaki, Fumihiro Inoue, Tomohiro Shimizu, Shoso Shingubara

1705Impurity in the Electroplated Sub-50nm Cu Lines

Qiang Huang, Alex Avekians, Shafaat Ahmed, Christopher Parks, Brett Baker-O'Neal, Sathana Kitayaporn, Asli Sahin, Ying Sun, Tien Cheng

1706Effect of Flow and Wafer Rotation on the Metallization of Copper Interconnects

Lindsay Boehme, Uziel Landau

1707Electroless Deposition of Cu-Mn Alloy

Lu Yu, Rohan Akolkar

1708Barrier Metal Slurry for Low Defect Copper Damascene Chemical Mechanical Polishing

Hojoong Kim, Kyewon Seo, Jinok Moon, Hyunsoo Kim, Hasub Hwang

1709Case Study of Early Detection of Iron Contamination in Copper Damascene Plating Process by In-Situ Electrochemical Sensor

Aleksander Jaworski, Hanna Wikiel, Kazimierz Wikiel, Peter Holverson, Andrew Nelson

1710Electrodeposition and Characterisation of Novel Ni-NbO_x Composite Coatings as a Diffusion Barrier for Liquid Solder Interconnects - Part II: Diffusion Barrier Performance

Jing Wang, Geoffrey D Wilcox, Roger J Mortimer, Changqing Liu, Mark A Ashworth

1711Comparison of Cu-Sn Compound Formation Between Snag and Pure Sn Solder Bumps by EBSD

Ui-Hyoung Lee, Hyo-Jong Lee, Sang-Hyuk Kim, Chae-Min Park, Han Kyun Shin, Jong-yong Bae, Jaihyung Won

1712High Sensitivity, Positive Tone, Low-k Polynorbornene Permanent Dielectric for Electronics Packaging

Brennen K Mueller, Jared Schwartz, Alexandra Sutlief, Paul A Kohl

1713On the Fabrication of Backside Illuminated Image Sensors: Bonding Oxide, Edge Trimming and CMP Rework Routes

Celso Cavaco, Lan Peng, Farid Sebaai, Greet Verbinnen, Jakob Visker, Jan Olmen, Deniz Sabuncuoglu Tezcan, Haris Osman

1714Advanced Process Control of Nickel Electrodeposition for Packaging in Semiconductor Industry

Eugene Shalyt, Jingjing Wang, Vishal Parekh, Mchael MacEwan

P6-Semiconductor Wafer Bonding 13: Science, Technology, and Applications

Electronics and Photonics

1715Invited: Glass-Glass Direct Bonding

Elodie Beche, Frank Fournel, Vincent Larrey, François Rieutord, Christophe Morales, Anne-Marie Charvet, Florence Madeira, Guillaume Audoit, Jean-Marc Fabbri

1723Invited: Wafer Bonding: An Integration Route for Hybrid III-V/SiGe CMOS on 300mm

Lukas Czornomaz, Nicolas Daix, Emanuele Uccelli, Vladimir Djara, Daniele Caimi, Christophe Rossel, Marilyne Sousa, Heinz Siegwart, Chiara Marchiori, Jean-Michel Hartmann, Jean Fompeyrine

1724Invited: Heterogeneously Integrated III-V on Silicon Lasers

Badhise Ben Bakir, Corrado Sciancalepore, Antoine Descos, Hélène Duprez, Damien Bordel, Loic Sanchez, Christophe Jany, Karim Hassan, Pierre Brianceau, Veronique Carron, Sylvie Menezo

1725Effects of Miscut Substrates on Electrical Conductivity Across InP and GaAs Wafer-Bonded Structures

Jeffrey McKay, Mark Seal, K. Yeung, M. Jackson, M. S. Goorsky

1726Type-II Band Profile of GaAs/Si Hetero Junctions by Surface Activated Bonding for Hybrid Tandem Cells

Naoteru Shigekawa, Jianbo Liang, Masashi Morimoto, Shota Nishida

1727Chemical Mechanical Polishing of III-V Materials for Wafer Bonding Applications

Jeffrey McKay, M. S. Goorsky, Douglas Chen, Sahar Sareminaeini

1728Invited: Water Stress Corrosion in Bonded Structures

Frank Fournel, Chloé Martin-Cocher, Damien Radisson, Vincent Larrey, Elodie Beche, Christophe Morales, Pierre-Antoine Delean, François Rieutord, H. Moriceau

1729Surface Characterization for and by Semiconductor Wafer Direct Bonding

Roy Knechtel, Natalie Frohn, Holger Klingner

1730AlN-AlN Wafer Bonding and Its Thermal Characteristics

Shuyu Bao, Kwang Hong Lee, Gang Yih Chong, Eugene A Fitzgerald, Chuan Seng Tan

1731Temporary Wafer Bonding by Polyelectrolyte Interlayers

Marko Eichler, Helena Dillmann, Leo Clemens Reim, Michael Thomas, Claus-Peter Klages

1732Delamination Root Cause in Temporary Bonding

Karine Vial, Frank Fournel, Markus Wimplinger, Jürgen Burggraf, Julian Bravin, Pierre Montméat, Michel Pellat

1733New Temporary Bonding Solution Based on a Vacuum Wafer Carrier

Tony Rogers, Rob Santilli

1734Hermeticity and Reliability of Al-Al Thermocompression Wafer Bonding

Nisant Malik, Erik Poppe, Kari Schjolberg-Henriksen, Maaike Margrete Visser Taklo, Terje G Finstad

1735Large Area Plan-View Transmission Electron Microscopy Sample Preparation for Direct-Bonded Interfaces

Brett Beekley, C.R. Roberts, M. S. Salazar, M. S. Goorsky

1736Hermeticity and Reliability of Au-Au Thermocompression Bonds, Realized at Low Temperature

Nisant Malik, Hannah Tofteberg, Erik Poppe, Terje G Finstad, Kari Schjolberg-Henriksen

1737Invited: Wafer-Bonding for MEMS – Status and Trends

Ralf Hausner

1738Invited: Wafer-Level Integration of Embedded Cooling Approaches

Stephan Paredes, Yassir Madhour, Gerd Schlottig, Chin Lee Ong, Thomas Brunschwiler

1739Low-Temperature Solid-State Bonding Using Hydrogen Radical Treated Solder for Optoelectronic and MEMS Packaging

Eiji Higurashi, Hiromu Kawai, Tadatomo Suga, Sakie Okada, Taizoh Hagihara

1740Electrical, Mechanical, and Hermeticity Properties of Low-Temperature, Plasma Activated Direct Silicon Bonded Joints

Kari Schjølberg-Henriksen, Nishant Malik, Elin Vold Gundersen, Oscar Rincon Christiansen, Kristin Imenes, Sigurd Teodor Moe

1741Materials Issues in Hermetic Wafer Level Packaging Using Au Thermocompression and Au-Sn Transient Liquid Phase Bonding

Dany Chagnon, Dilek Isik, Pierre Lévesque, François Lewis, Marie-Ève Caza, Xuan Tuan Le, Jean-Sébastien Poirier, Damien Michel, Ronan Larger, Oussama Moutanabbir

1742Detailed Investgations of Inner Cavity Pressure of MEMS Devices Sealed by Wafer Bonding

Roy Knechtel, Sophia Dempwolf, Siegfried Hering

1743Low Activation Temperature Au/Ti Getter Films for Wafer-Level Vacuum Packaging

Ming Wu, Johan Moulin, Guillaume Agnus, Alain Bosseboeuf

1744Leak Rates and Residual Gas Pressure in Cavities Sealed by Metal Thermo-Compression Bonding and Silicon Direct Bonding

Kari Schjølberg-Henriksen, Nishant Malik, Asmund Sandvand, Gjermund Kittilsland, Sigurd Teodor Moe

1745Invited: Direct Bonding: A Key Enabler for 3D Monolithic Integration

Laurent Brunet, Perrine Batude, Frank Fournel, Lamine Benaissa, Claire Fenouillet-Beranger, Luca Pasini, Fabien Deprat, Bernard Previtali, Fabienne Ponthenier, Aurélien Seignard, Catherine Euvrard-Colnat, Maurice Rivoire, Pascal Besson, Christian Arvet, Elodie Beche, Olivier Rozeau, Olivier Billoint, Ogun Turkyilmaz, Fabien Clermidy, Thomas Signamarcheix, Maud Vinet

1746Three-Dimensional Integration of Fully Depleted Silicon-on-Insulator Transistor Substrates for CMOS Image Sensors Using Au/SiO_2 Hybrid Bonding and XeF_2 Etching

Kei Hagiwara, Masahide Goto, Yoshinori Iguchi, Hiroshi Ohtake, Takuya Saraya, Hiroshi Toshiyoshi, Eiji Higurashi, Toshiro Hiramoto

1747Development of Materials Integration for Laser Gain Media: Single Crystals and Ceramic (Polycrystalline) Materials and Applications

Jeffrey McKay, Tingyu Bai, M. S. Goorsky

1748Room-Temperature Wafer Direct Bonding Using Ne-Beam Surface-Activation

Hideki Takagi, Yuichi Kurashima, Atsuhiko Maeda

1749Surface Inspection of Cu-Cu Non-Thermal Compression Bonding for Wafer-to-Wafer 3D Stacking

Doowon Kwon, Young-Uk Song, Pilkyu Kang, Taeseok Oh, Chang-Rok Moon, Duckhyung Lee

1750Combined Surface-Activated Bonding (SAB) Technologies for New Approach to Low Temperature Wafer Bonding

Ran He, Masahisa Fujino, Akira Yamauchi, Tadatomo Suga

1751Monolithic Thin Wafer Stacking Using Low Temperture Direct Bonding

Jürgen Burggraf, Julian Bravin, Harald Wiesbauer, Viorel Dragoi

1752Novel Surface Preparation Methods for Covalent and Conductive Bonded Interfaces Fabrication

P7-SiGe, Ge, and Related Compounds: Materials, Processing, and Devices 6

Electronics and Photonics

1760(Plenary) Extending the FETs: Challenges and Opportunities for New Materials and Structures

Ken Uchida, Tsunaki Takahashi

1761(Plenary) High-Performance Photonic BiCMOS – Next Generation More-than-Moore Technology for the Large Bandwidth Era

Lars Zimmermann

1762(Invited) Towards 0.7 Terahertz Silicon Germanium Heterojunction Bipolar Technology – The DOTSEVEN Project

Rudolf Lachner

1763(Invited) Reliability of SiGe HBTs in Long-Term Operation

Gerhard G. Fischer

1764A Novel Approach to Isolating the Edge of the Shallow Trench Isolation in SiGe HBTs for Improved Device Performance

Renata A. Camillo-Castillo, Qizhi Z. Liu, Vibhor Jain, James W. Adkisson, Marwan H. Khater, Peter Gray, John Jack Pekarik, R Malladi, D. L. Harame

1765(Invited) Anisotropoic Strain Evaluation in the Finite Si Area by Surface Plasmon Enhanced Raman Spectroscopy

Atsushi Ogura, Daisuke Kosemura

1766Detection of Ge and Si Intermixing in Ge/Si Using Multiwavelength Micro-Raman Spectroscopy

Woo Sik Yoo, Kitaek Kang, Takeshi Ueda, Toshikazu Ishigaki, Hiroshi Nishigaki, Noriyuki Hasuike, Hiroshi Harima, Masahiro Yoshimoto, Chuan Seng Tan

1767(Invited) Si Ultrathin Films on Silver Surfaces: An Intriguing Epitaxial System

Thomas Leoni, Romain Bernard, Alain Ranguis, Yves Borensztein, Geoffroy Prévot, Laurence Masson

1768Surface Reaction in Thin Film Formation of $Si_{1-x}Ge_x$ Alloys on Si(100) by Electron-Cyclotron-Resonance Ar Plasma Chemical Vapor Deposition without Substrate Heating

Naofumi Ueno, Masao Sakuraba, Shigeo Sato

1769Ni(SiGeSn) Metal Contact Formation on Low Bandgap Strained (Si)Ge(Sn) Semiconductors

Stephan Wirths, Rene Troitsch, Gregor Mussler, Peter Zaumseil, Jean-Michel Hartmann, Thomas Schroeder, Siegfried Mantl, Dan Buca

1770(Invited) UV Excimer Laser Assisted Heteroepitaxy of (Si)GeSn on Si(100)

Stefano Chiussi, Stefan Stefanov, Alessandro Benedetti, Carmen Serra, Dan Buca, Jörg Schulze, Pio González

1771Liquid Phase Epitaxy (LPE) Formation of Localized High Quality and Mobility Ge & SiGe by High Dose Ge-Implantation with Laser Melt Annealing for 10nm and 7nm Node CMOS Technology

John O Borland, Michiro Sugitani, Peter Oesterlin, Walt Johnson, Temel Buyuklimanli, Robert Hengstebeck, Ethan Kennon, Kevin Scott Jones, Abhijeet Joshi

1772(Invited) Challenges and Developments in GeSn Process Technology for Si Nanoelectronics

Shigeaki Zaima, Osamu Nakatsuka, Noriyuki Taoka, Kimihiko Kato, Wakana Takeuchi, Mitsuo Sakashita

1773Silicon Diffusion Engineering in Rapid Melt Growth of Silicon-Germanium on Insulator

Callum G Littlejohns, Frederic Y Gardes, M. Nedeljkovic, Goran Z Mashanovich, Graham T Reed

1774Electrical and Microstructural Characterization of Cu-Germanide Contacts Formed on p-Type Ge Substrate

Yi-Rang Lim, Ye-Ji Lee, Min-Sung Kang, Chang-Hyun Leem, I. Jyothi, Kyu-Hwan Shim, Chel-Jong Choi

1775Fabrications of Size- Controlled SiGe Nanowires Using I-Line Lithography and Focused Ion Beam Technique

Mohammad Noroozi, Adem Ergül, Ahmad Abedin, Muhammet Toprak, Henry H Radamson

1776(Invited) Combining SiGe BiCMOS and InP Processing in an on-top of Chip Integration Approach

Marco Lisker, Andreas Trusch, Andreas Krüger, Mirko Fraschke, Philipp Kulse, Steffen Marschmeyer, Jens Schmidt, Chafik Meliani, Bernd Tillack, Nils Weimann, Tomas Kraemer, Ina Ostermay, Olaf Krüger, Thomas Jensen, Thualfiqar Al-Sawaf, Viktor Krozer, Wolfgang Heinrich

1777Temperature Dependent Internal Friction Behavior of Single Crystal Germanium Studied by the Impulse Excitation Technique

Akhilesh Kumar Swarnakar, Omer Van der Biest, Jan Van Humbeeck, Jan Vanhellemont

1778(Invited) “Small Size” Effects in Si-Based Epitaxies for Advanced CMOS Technologies

Didier Dutartre, Birgit Seiss, David Barge, Nicolas Loubet

1779Etch Pit Formation on Germanium Alloys by in situ Gaseous Hydrogen Chloride Etching

Yi-Chiau Huang, Charles Wang, Yihwan Kim

1780Reduction of RIE Induced Ge Surface Roughness by SF_6-CF_4 Cyclic Etching Method

Xuezhi Ma, Rui Zhang, Yi Zhao

1781(Invited) Application-Specific SiGe HBT Optimization

Peter H.C. Magnée, Rob van Dalen, Hans Mertens, Tony Vanhoucke

1782SiGe HBTs in 90nm BiCMOS Technology Demonstrating f_T/f_{MAX} 285GHz/475GHz through Simultaneous Reduction of Base Resistance and Extrinsic Collector Capacitance

Qizhi Z. Liu, James W. Adkisson, Vibhor Jain, Renata A. Camillo-Castillo, Marwan H. Khater, Peter B. Gray, John Jack Pekarik, Bjorn Zetterlund, Adam W. Divergilio, Michael L. Kerbaugh, D. L. Harame

1783(Invited) Electro-Thermal Characterization of SiGe HBT PA-Cells

Thomas Zimmer, Mario Weiß, M. De Matos, Cristell Maneux, Sebastien Fregonese

1784Second Order Intermodulation Linearity of a 200 GHz SiGe HBT Technology

Zhen Li, G. Niu, Xiaoyun Wei

1785Characterization of Chemical Bonding Features and Interfacial Reactions in Ge-MIS Structure with $HfO_2/TaGe_xO_y$ Dielectric Stack

Akio Ohta, Hideki Murakami, Kuniaki Hashimoto, Katsunori Makihara, Seiichi Miyazaki

1786Interfacial Layer Engineering Using Thulium Silicate/Germanate for High-k/Metal Gate MOSFETs

Per-Erik Hellström, Eugenio Dentoni Litta, Mikael Östling

1787Investigation of Al-PMA Effect on Al_2O_3/GeO_X/Ge Gate Stack

Yuta Nagatomi, Yuichi Nagaoka, Keisuke Yamamoto, Dong Wang, Hiroshi Nakashima

1788Ultra-Thin, High Quality HfO_2 on Strained-Ge MOS Capacitors with Low Leakage Current

James T. Teherani, Winston Chern, Dimitri A. Antoniadis, Judy L. Hoyt

1789(Invited) Gate-All-Around Ge FETs

C. W. Liu, Yen-Ting Chen, Shu-Han Hsu

1790Plasma Post-Oxidation for High Mobility Strained-Ge pFETs with Aggressively Scaled High-κ Dielectrics

Winston Chern, Pouya Hashemi, Masaharu Kobayashi, Dae-Gyu Park, Judy L. Hoyt

1791(Invited) Silicon Germanium FinFET Device Physics, Process Integration and Modeling Considerations

Darsen Lu, Pierre Morin, Bhagawan Sahu, Terence B Hook, Pouya Hashemi, Andreas Scholze, Bomsoo Kim, Pranita Kerber, Ali Khakifirooz, Philip Oldiges, Ken Rim, Bruce Doris

1792(Invited) Mobility Enhancement of Uniaxially Strained Germanium Nanowire MOSFETs

Keiji Ikeda, Yuuichi Kamimuta, Yoshihiko Moriyama, Mizuki Ono, Koji Usuda, Minoru Oda, Toshifumi Irisawa, Daisuke Kosemura, Atsushi Ogura, Tsutomu Tezuka

1793Design and Simulation of Ge Based Optically Controlled Field Effect Transistor

Vito Sorianello, Saravanan Rajamani, Andrea De Iacovo, Lorenzo Colace

1794Highly-Doped, Highly-Strained Germanium and Schottky Electroluminescent Diodes

Moustafa El Kurdi, Mathias Prost, Abdelhamid Ghrib, Xavier Checoury, Sébastien Sauvage, Nicolas Zerounian, Frederic Aniel, Gregoire Beaudoin, Isabelle Sagnes, Vinh Le Thanh, T.P.K. Luong, Marc Chaigneau, Razvigor Ossikovski, Charles Baudot, Frederic Boeuf, Philippe Boucaud

1795Photoluminescence Study of Si Quantum Dots with Ge Core

Katsunori Makihara, Keigo Kondo, Mitsuhisa Ikeda, Akio Ohta, Seiichi Miyazaki

1796(Invited) Light Emission from Highly-Strained Germanium for On-Chip Optical Interconnects

D. Nam, D. S. Sukhdeo, B. R. Dutt, K. C. Saraswat

1797Franz-Keldysh Effect in GeSn Detectors

Stefan Bechler, Michael Oehme, Oliver Latzel, Marc Schmid, Konrad Kostecki, Roman Koerner, Martin Gollhofer, Erich Kasper, Joerg Schulze

1798Structural and Optical Properties of $Ge_{1-X}Sn_x$ Alloys Grown on GaAs (001) by R. F. Magnetron Sputtering

Héctor Pérez Ladrón de Guevara, A. G. Rodríguez, H. Navarro-Contreras, M. a. Vidal

1799A Study on the Sensitivity between Oxygen Radical and Negative Color PR in Exposure Process of CMOS Image Sensor

Sang Duk Hwang, J N Kim, Y J Kim, J K Choi

1800Low-Temperature Deposition of Thin Si, Ge, and SiGe Films Using Reducing Activity of Ballistic Hot Electrons

Nobuyoshi Koshida, Ryutaro Suda, Mamiko Yagi, Akira Kojima, Romain Mentek, Bernard Gelloz, Nobuya Mori, Junichi Shirakashi

1801Fermi-Level Depinning of Ge Schottky Junction Using Se Treatment

Yi-Rang Lim, Ye-Ji Lee, Ku-Hwan Shim, V. Janardhanam, Chel-Jong Choi

1802Fast and Accurate in-Line Monitor of Boron Implantation Energy and Dose by Spectroscopic Ellipsometry

Tsai-Yu Wen, Tsuo-Wen Lu, Yu-Ren Wang, Chin-Fu Lin, J Y Wu, Shao-Ju Chang, Sheng-Min Chiu, Chien-Jen Huang, Chao-Yu Cheng, Juli Cheng, Getin Raphael, Zhiming Jiang, Zhengquan Tan

1803Pre-Amorphization and Low-Temperature Implantation for Efficient Activation of Implanted As in Ge(100)

Hideki Murakami, Shinya Hamada, Takahiro Ono, Kuniaki Hashimoto, Akio Ohta, Hiroaki Hanafusa, Seiichiro Higashi, Seiichi Miyazaki

1804Detection of Effect of Strain on the Valence Band Structure of SiGe by HXPES with High Spatial Resolution

Shunta Yamahori, Tomoya Sasago, Takuya Sakurai, Eisuke Yonekura, Kentarou Sawano, Eiji Ikenaga, Hiroshi Nohira

1805The Use of Dopants for Defect Monitoring for Silicon-Germanium Ultra-High Vaccuum Chemical Vapor Deposition

Ramsey Hazbun, John Hart, James Nakos, Dean Siegel, Christopher Funch, Vikas Kaushal, David Scott Hazel, James Kolodzey

1806Optical Constants Determination of Pseudomorphic $Si_{1-X}Ge_x$ Layers on Si(001), with $0<x<0.54$

Emmanuel Nolot, Jean-Michel Hartmann, J. Hilfiker

1807Ge Condensation Using Rapid Thermal Oxidation for SGOI Substrate Preparation

Olivier Gourhant, Clement Pribat, David Barge, Vincent Mazzocchi, François Andrieu, Francesco Abbate, Marc Juhel, Clement Gaumer, Elise Baylac, Alexandre Pofelski, Maud Bidaud, Germain Serventon

1808Effect of Graphene Passivation on Ge Pin Photodiode

Khurelbaatar Zagarzusem, Joung-Hee Kim, Yeon-Ho Kil, Taek Sung Kim, Chel-Jong Choi, Kyu-Hwan Shim

1809(Invited) Wrinkling Graphene with Bacteria and Functionalization of MoS_2 for Electronic Applications

Donovan Briggs, Shikai Deng, Vikas Berry

1810(Invited) Thin Epitaxial Film of Ge and III-V Directly Bonded onto Si Substrate

Tatsuro Maeda, Eiko Mieda, Hiroyuki Ishii, Taro Itatani, H Hattori, Tetsuji Yasuda, Atsuhiko Maeda, Yuichi Kurashima, Hideki Takagi, T Aoki, T Yamamoto, Osamu Ichikawa, T Osada, T Takada, Masahiko Hata, J Yugami, A Ogawa, T Kikuchi, Y Kunii

1811Influence of Trench Width on III-V Nucleation during InP Selective Area Growth on Patterned Si(001) Substrate

Sijia Jiang, Clement Merckling, Alain Moussa, Weiming Guo, Niamh Waldron, Matty Caymax, Wilfried Vandervorst, Marc Seefeldt, Marc Heyns

1812(Invited) Selective-Area Metal Organic Vapor-Phase Epitaxy of III-V on Si: What About Defect Density?

Clement Merckling, Niamh Waldron, Sijia Jiang, Weiming Guo, Kathy Barla, Marc Heyns, Nadine Collaert, Aaron Thean, Wilfried Vandervorst

1813(Invited) Monolithic Integration of InP Based Structures on Silicon for Optical Interconnects

Himanshu Kataria, Wondwosen Metaferia, Carl Junesand, Yan-Ting Sun, Sebastian Loududoss

1814Fabrication of Relaxed Germanium on Insulator via Room Temperature Wafer Bonding

Ali Asadollahi, Thomas Zabel, Gabriel Roupillard, Henry H Radamson, Per-Erik Hellström, Mikael Östling

1815(Invited) Strained SiGe on Insulator FinFETs: a P-FET Candidate for 10nm Node

Pouya Hashemi, Karthik Balakrishnan, Amlan Majumdar, Sebastian Engelmann, Marinus Hopstaken, Wanki Kim, John A. Ott, Effendi Leobandung, Dae-Gyu Park

1816Atomistic Modeling of Strained SiGe Nanofins

Scott T. Dunham, Haoyu Lai, Renyu Chen

1817SOI and Bulk FinFET Alternatives from the Perspective of Strain Engineering

Igor V Peidous, Charles Lottes, Christopher Jost

1818(Invited) Challenges and Opportunities in the Design of Tunnel FETs: Materials, Device Architectures, and Defects

David Esseni, Marco G. Pala, Alberto Revelant, Pierpaolo Palestri, Luca Selmi, Mingda (Oscar) Li, Gregory Snider, Debdeep Jena, Huili Grace Xing

1819(Invited) Spin Transport in Germanium

Roland Kenji Kawakami

1820Spin Transport in Ge Nanowires for Diluted Magnetic Semiconductor-Based Nonvolatile Transpinor

Jianshi Tang, Tianxiao Nie, Kang L. Wang

1821(Invited) Germanium at the Atomic Scale

Joshua E. Goldberger

1822(Invited) Three-Dimensional Epitaxial $Si_{1-x}Ge_x$, Ge and SiC Crystals on Deeply Patterned Si Substrates

Hans von Känel, Fabio Isa, Claudiu V. Falub, Eszter Judit Barthazy, Elisabeth Müller Gubler, Daniel Chrastina, Giovanni Isella, Thomas Kreiliger, Alfonso Gonzalez Taboada, Mojmir Meduna, Rolf Kaufmann, Antonia Neels, Alex Dommann, Philippe Niedermann, Fulvio Mancarella, Marco Mauceri, Marco Puglisi, Danilo Crippa, Francesco La Via, Ruggero Anzalone, Nicolo Piluso, Roberto Bergamaschini, Anna Marzegalli, Leo Miglio

1823Lateral Gemanium Growth for Local GeOI Fabrication

Yuji Yamamoto, Markus Andreas Schubert, Christian Reich, Bernd Tillack

1824Morphological Instability of High Ge Percent SiGe Films Grown by Ultra-High Vacuum Chemical Vapor Deposition

John Hart, Ramsey Hazbun, James Nakos, Dean Siegel, Chris Funch, James Kolodzey, D. L. Harame

1825Use of a Purged FOUP to Improve H-Terminated Silicon Surface Stability Prior to Epitaxial Growth

Kurt Wostyn, Dirk Rondas, Karine Kenis, Roger Loo, Andriy Yakovitch Hikavyy, Bastien Douhard, Paul W. Mertens, Frank Holsteyns, Stefan De Gendt, Lucia D'Urzo, Luc Van Autryve

1826(Invited) $Ge_{1-x}Sn_x$ Optical Devices: Growth and Applications

Yosuke Shimura, Wei Wang, Wilfried Vandervorst, Federica Gencarelli, Alban Gassenq, Gunther Roelkens, Andre Vantomme, Matty Caymax, Roger Loo

1827Growth Studies of Doped SiGeSn/Strained Ge(Sn) Heterostructures

Stephan Wirths, Zoran Ikonic, Nils von den Driesch, Gregor Mussler, Uwe Breuer, Andreas Tiedemann, Patric Bernardy, Bernd Holländer, Toma Stoica, Jean-Michel Hartmann, Detlev Grützmacher, Siegfried Mantl, Dan Buca

1828$Ge_{1-x}Sn_x$ Epitaxial Growth on Ge Substrate by MOCVD

Kohei Suda, Seiya Ishihara, Naomi Sawamoto, Hideaki Machida, Masato Ishikawa, Hiroshi Sudoh, Yoshio Ohshita, Atsushi Ogura

1829CVD Growth of GeSnSiC Alloys Using Disilane, Digermane, Tin Tetrachloride and Methylsilane

Mohammad Noroozi, Ahmad Abedin, Mahdi Moeen, Mikael Östling, Henry H Radamson

1830Growth and Characterization of Epitaxial $Ge_{1-X}Sn_x$ Alloys and Heterostructures Using a Commercial CVD System

Joe Margetis, Seyed Amir Ghetmiri, Wei Du, Benjamin R Conley, Aboozar Mosleh, Richard Soref, Greg Sun, Lucas Domulevicz, Hameed A Naseem, Shui-Qing Yu, John Tolle

1831(Invited) Si Waveguide-Integrated High-Speed Ge Photodetector

Junichi Fujikata, Makoto Miura, Masataka Noguchi, Yasuhiko Arakawa

1832(Invited) Waveguide Germanium PIN Photodiodes for Optical Communication Applications

Laurent Vivien, Léopold Virot, Jean-Michel Hartmann, jean-Marc Fédéli, Delphine Marris-Morini, Eric Cassan, Charles Baudot, Frédéric Boeuf

1833(Invited) Fabrication of Pure-GaB Ge-on-Si Photodiodes for Well-Controlled 100-pA-Level Dark Currents

Amir Sammak, Mahdi Aminian, Lin Qi, Wiebe B. de Boer, Edoardo Charbon, Lis K. Nanver

1834(Invited) Epitaxial Growth of GeSn Layers on (001), (110), and (111) Si and Ge Substrates

Osamu Nakatsuka, Noriyuki Taoka, Takanori Asano, Takashi Yamaha, Masashi Kurosawa, Wakana Takeuchi, Shigeaki Zaima

1835Characterization of $Ge_{1-x-y}Si_xSn_y$ Ternary Alloys – Comparison of UHV-CVD and Gas Source MBE Growth

Bruce Claflin, Arnold Kiefer, Richard Beeler, Z.-Q. Fang, Gordon Grzybowski

1836Virtual Substrate Technology for $Ge_{1-X}Sn_X$ Heteroepitaxy on Si Substrates

Konrad Kostecki, Michael Oehme, Roman Koerner, Daniel Widmann, Martin Gollhofer, Stefan Bechler, Gregor Mussler, Dan Buca, Erich Kasper, Joerg Schulze

1837Low Temperature Geometrically Confined Growth of Pseudo Single Crystalline GeSn on Amorphous Layers for Advanced Optoelectronics

Haofeng Li, Jeremy Brouillet, Alan Salas, Ian Chaffin, Xiaoxin Wang, Jifeng Liu

1838Silicon-Germanium-Silica Monolithic Photonic Integration Platform for High-Performance Optical Data Communication Systems

Koji Yamada, Tai Tsuchizawa, Hidetaka Nishi, Rai Kou, Tatsurou Hiraki, Kotarou Takeda, Hiroshi Fukuda, Kota Okazaki, Yasuhiko Ishikawa, Kazumi Wada, Tsuyoshi Yamamoto

1839(Invited) Photonic Interconnection Made by a Ge/SiGe MQW Modulator Connected to a Ge/SiGe MQW Photodetector through a SiGe Waveguide

Jacopo Frigerio, Papichaya Chaisakul, Delphine Marris-Morini, Mohamed-Said Rouifed, Stefano Cecchi, Daniel Chrastina, Giovanni Isella, Laurent Vivien

1840Post-Growth Laser Annealing for High-Performance Ge Photodiodes on Si

Yuta Kawamata, Sho Nagatomo, Kotaro Fukuda, Yusaku Izawa, Satohiko Hoshino, Yasuhiko Ishikawa

1841The Dual-Heterojunction Ge on Si Photodetector

Subal Sahni, N. K. Hon, Gianlorenzo Masini

1842(Invited) Germanium-Tin P-Channel Field-Effect Transistor with Low-Temperature Si_2H_6 Passivation

Xiao Gong, Yue Yang, Pengfei Guo, Wei Wang, Ran Cheng, Lanxiang Wang, Eng Soon Tok, Y. C. Yeo

1843Optical and Electronic Propreties of GeSn and GeSiSn Heterostructures and Nanowires

Anis Attiaoui, Oussama Moutanabbir

1844Stability of Pseudomorphic and Compressively Strained $Ge_{1-X}Sn_x$ Thin Films under Rapid Thermal Annealing

Benjamin R Conley, Aboozar Mosleh, Seyed Amir Ghetmiri, Wei Du, Greg Sun, Richard Soref, Joe Margetis, John Tolle, Hameed A Naseem, Shui-Qing Yu

1845Investigation on the Formation and Propagation of Defects in GeSn Thin Films

Aboozar Mosleh, Mourad Benamara, Seyed Amir Ghetmiri, Benjamin R Conley, Murtadha Abdulmueen Alher, Wei Du, Greg Sun, Richard Soref, Joe Margetis, John Tolle, Shui-Qing Yu, Hameed A Naseem

1846In Situ Studies of Germanium-Tin and Silicon-Germanium-Tin Thermal Stability

Jean-Hughes Fournier-Lupien, Dany Chagnon, Pierre Lévesque, AbdulAziz Awadh AlMutairi, Stephan Wirths, Eckhard Pippel, Gregor Mussler, Jean-Michel Hartmann, Siegfried Mantl, Dan Buca, Oussama Moutanabbir

1847(Invited) High Ge Content SiGe Thin Films: Growth, Properties and Integration

Andriy Yakovitch Hikavyy, Erik Rosseel, Sathish Kumar Dhayalan, Liesbeth Witters, Hans Mertens, Hugo Bender, Paola Favia, Roger Loo

1848Evaluation of Anisotropic Biaxial Stress in Thin Strained-SiGe Layer Using Surface Enhanced Raman Spectroscopy

Shotaro Yamamoto, Daisuke Kosemura, S.Norhidayah C.M.Yusoff, Takahiro Kijima, Ryosuke Imai, Kazuma Takeuchi, Ryo Yokogawa, Koji Usuda, Atsushi Ogura

1849(Invited) Integrating Classical Semiconductor Devices with Si/Sige Quantum Dots

Daniel R Ward, Ryan H Foote, John King Gamble, Donald E Savage, Max G Lagally, Susan N Coppersmith, Mark A Eriksson

1850Characterization of Electron Emission from High Density Self-Aligned Si-Based Quantum Dots by Conducting-Probe Atomic Force Microscopy

Daichi Takeuchi, Katsunori Makihara, Akio Ohta, Mitsuhisa Ikeda, Seiichi Miyazaki

1851(Invited) The Thermoelectric Properties of Ge/SiGe Based Superlattices: from Materials to Energy Harvesting Modules

Antonio Samarelli, Lourdes Ferre Llin, Stefano Cecchi, Jacopo Frigerio, Tanja Etzelstorfer, Elisabeth Müller Gubler, Julian Stangl, Daniel Chrastina, Giovanni Isella, Douglas Paul

1852Very Low Temperature (Cyclic) Deposition / Etch of In-Situ Raised Sources and Drains

Jean-Michel Hartmann, Véronique Benevent, Agathe André, Chutchamon Sirisopanaporn, Marc Veillerot, Marie-Pierre Samson, Sylvain Barraud

1853Selective Epitaxial Si:P Film for nMOSFET Application: High Phosphorous Concentration and High Tensile Strain

Xuebin Li, Abhishek Dube, Zhiyuan Ye, Shashank Sharma, Yihwan Kim, Schubert Chu

1854Investigation of Growth Mechanism and Role of H_2 in Very Low Temperature Si Epitaxy

Aboozar Mosleh, Seyed Amir Ghetmiri, Benjamin R Conley, Husam Hamza Abu-Safe, Mourad Benamara, Zafar Waqar, Samir El-Ghazaly, Shui-Qing Yu, Hameed A Naseem

1855Characterization of Epitaxial Si:C:P and Si:P Layers for Source/Drain Formation in Advanced Bulk FinFETs

Erik Rosseel, Harald Benjamin Profijt, Andriy Yakovitch Hikavyy, John Tolle, Stefan Kubicek, Geert Mannaert, Caroline L'abbe, Kurt Wostyn, Naoto Horiguchi, Trudo Clarysse, Brigitte Parmentier, Sathishkumar Dhayalan, Hugo Bender, Jan Willem Maes, Sandeep Mehta, Roger Loo

1856Evaluation of the $Si_{0.8}Ge_{0.2}$-on-Si Epitaxial Quality by Inline Surface Light Scattering: A Case Study on the Impact of Interfacial Oxygen

Kurt Wostyn, Karine Kenis, Dirk Rondas, Roger Loo, Andriy Yakovitch Hikavyy, Sathish Dhayalan, Bastien Douhard, Paul W. Mertens, Frank Holsteyns, Stefan De Gendt, Gavin Simpson, Gerhard Bast, Karthik Swaminathan

1857Shape and Orientation Controlled Vapor-Liquid-Solid growth of Si and Ge Nanowires for Monolithic Device Integration

Alois Lugstein, Wolfgang Molnar, Clemens Zeiner, Emmerich Bertagnolli

1858Material Studies on Si:C Epitaxial Films Grown by CVD

Sathishkumar Dhayalan, Roger Loo, Erik Rosseel, Andriy Yakovitch Hikavyy, Yosuke Shimura, Thomas Nuytten, Olivier Richard, Hugo Bender, Bastien Douhard, Wilfried Vandervorst

P8-Thermoelectric and Thermal Interface Materials

Electronics and Photonics

1859Electrochemical Control of Thermal Conduction in Thin Films

David G Cahill, Jiung Cho, Paul V Braun

1860Thermoelectric Properties of Small Bandgap Semiconductor Nanowires: The Effects of 1D Electron Subband Formation and Phonon Boundary Scattering

Xuan Gao

1861Enhanced Thermoelectric Efficiency of Si-Ni Nanocomposite Films Grown on SOI and SOQ Substrates

Noriyuki Uchida, Yuji Ohishi, Yoshinobu Miyazaki, Ken Kurosaki, Shinsuke Yamanaka, Tetsuya Tada

1862Metallic Nanowire-Polymer Composite as Thermal Interface Material

Kafil M. Razeeb, Maksudul Hasan, Devendraprakash Gautam, Eric Dalton

1863Phonon Transport and Scattering in Rough and Porous Silicon Nanowires

Colm Glynn, Kim Jones, William McSweeney, Olan Lotty, Hugh Geaney, Clivia M Sotomayor Torres, Justin D Holmes, Colm O'Dwyer

1864Electrical and Thermoelectric Performance of 2D Layered Materials: Atomic Simulation Study

Gengchiau Liang

1865Paintable Thermoelectric Materials from Polymer Blends of Exfoliated 2D Nanosheets

Elaine Carroll, Darragh Buckley, Gillian Collins, Colm O'Dwyer

1866Ge-Si based Nanowire Thermoelectric Materials in the Phonon Confinement Regime

Jie Xiang

1867Nanoengineering Pure Polymers with High Thermal Conductivity

Baratunde Cola

1868Thermal and Thermoelectric Transport in Semiconductor Nanostructures

Renkun Chen

1869Advanced Nanostructured Thermoelectric Materials for Energy Conversion

Yue Wu

1870Atomic-Monolayer Thermoelectric Conversion in Two-Dimensional Chalcogenides

M.-H. Jo

1871Thermoelectric Performance of Nanostructured Bismuth-Tellurium and Bismuth-Antimony-Tellurium Powders Fabricated by Galvanic Displacement Reaction Process

Chang Yong An, Jun Young Park, Chan-Hwa Chung

1872ALD Synthesis of PbSe Thin Films inside Porous Si Templates for Innovative Thermoelectric Applications

Kai Zhang, Arun Deepak Ramalingom Pillai, Xin Chen, Helmut Baumgart, Vladimir Kochergin

P9-Transparent Conducting Materials for Electronic and Photonics

Electronics and Photonics/Dielectric Science and Technology

1873Transparent Conducting ITO Nanowires: Orientation Control, Phase Selection, and Light Emission

Tao Wu

1874Transparent Electrodes Based on Three-Dimensional Nanohelixes Light Harvesting Applications

Jong Kyu Kim, Ilyong Choi, Hyunah Kwon, Seung Hee Lee, Seung Jae Oh

1875Wrappable, Stretchable and Transparent Photodetectors using a Printed Nanowire Network Scheme

Der-Hsien Lien, Shih-Bin Chen, Yu-Chieh Chi, Chung-Lun Wu, Ying-Chih Liao, Gong-Ru Lin, Si-Chen Lee, Jr-Hau He

1876Graded Index Transparent Conducting Materials with Enhanced Optical Functionality

Colm O'Dwyer

1877Transparent Ga_2O_3 Photodetectors for Harsh Optoelectronics

Tzu-Chiao Wei, Dung-Sheng Tsai, Parvaneh Ravadgar, Jr-Jian Ke, Meng-Lin Tsai, Der-Hsien Lien, Chiung-Yi Huang, Ray-Hua Horng, Jr-Hau He

1878Metal Decorated Carbon-Based Materials for Transparent Conductive Thin Films

Po-Hsuan Wang, Wei-Hung Chiang, Ying-Chih Liao

1879Transparent Graphene Nanoplatelets for Charge Storage in Memory Devices

Ammar Nayfeh, Ali Okyay, Nazek El-Atab, Furkan Cimen, Sabri Alkis

1880Flexible and Pixelated Textile Pressure Sensor Fabricated with Weaving Techniques

Jaehong Lee, Hyukho Kwon, Jungmok Seo, Sera Shin, Dayeong Kim, Taeyoon Lee

1881Transparent Conductive Vanadium Oxide-Based Thin Films from Liquid Precursors

Colm Glynn, Damien Aureau, Gillian Collins, Arnaud Etcheberry, Colm O'Dwyer

1882The Effect of Band-Bending on Hybrid Bulk Heterojunction Solar Cell Performance

Andrew J Haring, Amanda J Morris

1883Microdroplet Manipulation at Ultra-Low Voltages on Conjugated Polymer Using Electrochemical Tunable Wetting

Wei Xu, Chang-Hwan Choi, Eui-Hyeok Yang

1884Control of Thickness, Morphology and Band Gap of Poly-(3.4-ethylenedioxythiophene) Electrochemically Growth (e-PEDOT) to Use It as Anodic Buffer Layer in Organic Photovoltaic Cells

José Alfredo del Oso-Acevedo, Bernardo A. Frontana-Uribe, José Luis Maldonado-Rivera, G. Roa-Morales, Margarita Rivera Hernández

1885A Scanning Kelvin Probe Investigation of the Interaction of PEDOT:PSS Films with Metal Surfaces

Carol Frances Glover, Trystan Watson, Daniel Bryant, Geraint Williams

1886Sol Gel Dip Coated CdO : Ga Films

Kollegal Ramakrishna Murali

1887The Influence of Trifluoroacetic Acid on the Poly(3,4-ethylenedioxythiophene):Poly(styrenesulfonate)

Yi-Chang Du, Li-Duan Tsai, Jason Fang

Q1-Emerging Nanomaterials and Devices

Electronics and Photonics/Dielectric Science and Technology

1888Invited: Electron Flow in GC8 DNA Strand

Jianqing Qi, M. P. Anantram

1889 Functionalized Germanene as Emerging Nanomaterials

Junwen Li, Dibakar Datta, Vivek B. Shenoy

1890 Study on Thermal Stability of Dendritic Silver-Coated Copper Powders Fabricated by Galvanic Displacement Reaction

Kai Zhuo, Yu-Seon Park, Nary Seo, Chan-Hwa Chung

1891 Synthesis of Metal Nano-Powders in Nonstationary Electrolysis Conditions

Mikhail Semenovich Lipkin, Valery Mikhailovich Lipkin, Alexander Alexandrovich Naumenko, Alexander Sergeevich Misharev, Firuza Rakhimzhonovna Tulaeva, Elena Alexandrovna Rybalko, Nikolay Alexabdrovich Lytkin, Vasily Grigorievich Shishka, Anatoly Nikolaevich Bogdanchenko

1892 Invited: Electronic Devices Based on Vertical Si Nanowires

Hongyu Yu

1893 Invited: Scaling Mosfets with Self-Aligned Super-Steep-Retrograde-Well

Huilong Zhu

1894 Crossover from Band-like to Thermally Activated Charge Transport in Organic Thin-Film Transistors as a Result of Microstress

Yaochuan Mei, Marcia M Payne, Cynthia S Day, John E Anthony, Oana D Jurchescu

1895 Novel Electrostatically Doped Planar Field-Effect Transistor for High Temperature Applications

Tillmann Adrian Krauss, Frank Wessely, Udo Schwalke

1896 Synthesis and Characterization of CuO Nanotubes (NTs) Formed By Anodization Sonoelectrochemical

Paula Carolina Grez, Luis Alberto Ballesteros, Carlos Eduardo Celedón, Ricardo Silvio Schrebler

1897Invited: From Graphene to Transition-Metal Dichalcogenide (TMDs) Semiconductors: Probing at Atomic Scale

Minghu Pan

1898Invited: Room Temperature Hydrogen Generation from Hydrolysis of Ammonia-Borane over an Efficient Niagpd/C Catalyst

Kuo-Wei Huang

1899Effects of Doping, Strain and Size on the Electrical Properties of MoS_2 Nanoribbons

Sheng Yu, Qiliang Li, Kwesi Eshun

1900Pd/TiO_2-Multiwall Nanotubes toward Electrocatalytic Oxidation of Formic Acid in Acid Media

Jorge Aldana-González, Maria Guadalupe Montes de Oca, Juan Carlos Olvera, Rebeca Sánchez-Guajardo, Elizabeth Garfias-García, Mario Alberto Romero-Romo, Manuel Palomar-Pardavé

19011D Photonic and Electrochromic Nanomaterials Applications

Engelbert Redel

Q10-Thin Film Transistors 12 (TFT 12)

Electronics and Photonics

1902Unipolar CMOS Logic for Thin-Film Transistor Technology

T.P. Ma

1903A Bottom-up SiNW AMOSFET Fabrication Approach Giving SOI Level Performance

Wook Jun Nam, Suxing Pan, Pranav Garg, Stephen J Fonash

1904 Thinning the Active Layer of TFTs

Mamadou Lamine Samb, HanPeng Dong, Emmanuel Jacques, Gregoire Sissoko, Ahmadou Seidou Maiga, Tayeb Mohammed-Brahim

1905 Extraction of Trap Densities in TFTs using C-V Characteristics

Mutsumi Kimura, Tokiyoshi Matsuda

1906 Characteristics of Poly-Si Thin Film Transistors with Highly Biaxially Oriented Linearly Arranged Poly-Si Thin Films Using Double Line Beam Continuous-Wave Laser Lateral Crystallization

Masayuki Yamano, Shin-Ichiro Kuroki, Tatsuaki Hirata, Tadashi Sato, Koji Kotani, Takamaro Kikkawa

1907 Single-Grain Si Tfts Fabricated on a Precursor from Doctor-Blade Coated Liquid-Si

Jin Zhang, Miki Trifunovic, Michiel van der Zwan, Hideyuki Takagishi, Tatsuya Shimoda, Ryoichi Ishihara

1908 Effect of Grain Growth Control by Atmospheric Micro-Thermal- Plasma-Jet Crystallization of Amorphous Silicon Strips on TFT Characteristics

Seiji Morisaki, Shohei Hayashi, Shogo Yamamoto, Taichi Nakatani, Seiichiro Higashi

1909 Investigation on Metal-Induced Crystallization of Amorphous Silicon Using Xenon Flash-Lamp

Tarun Mudgal, Christopher Reepmeyer, Denis Cormier, Robert G. Manley, Karl D Hirschman

1910 Contact Effects in Organic Thin Film Transistors with Different Device Structures

Luigi Mariucci, Matteo Rapisarda, Antonio Valletta, Sabrina Calvi, Mohammed Benwadih, Romain Coppard, Guglielmo Fortunato

1911Improvement of Electrical Characteristic of P3HT Organic Electrochemical Transistors with Ionic Liquid by Slow Cooling in Annealing Process

Daisuke Tadaki, Shohei Iino, Teng Ma, Jinyu Zhang, Yasuo Kimura, Michio Niwano

1912High Temperature Performance of MoS_2 Thin Film Transistors

Michael Shur, Sergey Rumyantsev, Rameez Samnakay, Chenglong Jiang, Pradyumna Goli, Alexander Balandin

1913Crystalline Oxide Semiconductor Using CAAC-IGZO and its Application

Shunpei Yamazaki

1914Gate Insulator for High Mobility Oxide TFT

Sang-Hee Ko Park, Hee-Ok Kim, Sung-Heang Cho, Min Ki Ryu, Jong-Heon Yang, Jong-Beom Ko, Chi-Sun Hwang

1915Gate-Insulator-Capacitance-Dependent Field-Effect Mobility in Solution-Processed Oxide Semiconductor Thin-Film Transistors

Eungkyu Lee, Keon-Hee Lim, Si Yun Park, Kyongjun Kim, Youn Sang Kim

1916Self-Aligned Bottom-Gate InGaZnO Thin-Film Transistor with Source and Drain Regions Formed by Selective Deposition of Fluorinated SiNx Passivation

Mamoru Furuta, Jingxin Jiang, Gengo Tatsuoka, Dapeng Wang

1917Solution Processed Oxide Thin Film Transistors

Christophe Avis, Jin Jang

1918The Role of Passivation Layer during Thermal Annealing for Oxide Semiconductor Thin Films

Chi-Sun Hwang, Sang-Hee Ko Park, Sung-Heang Cho, Min Ki Ryu, Himchan Oh, Su Jae Lee, Jong-Heon Yang, Chunwon Byun, Jonghyurk Park, Kyung Ik Cho, Hye Yong Chu

1919Flash Lamp Annealing Effect on Stability of Oxide TFT

Seung Jae Moon, Kyeong Min Yu, So Hyun Jeong, Ju Yeon Kim, Byung Kuk Kim, Hyoung June Kim, Eui Jung Yun, Byung Seong Bae

1920Effect of Negative Oxygen Ions on a-IGZO Thin Films by Superimposed RF/DC Magnetron Sputtering

Doohyun Kim, JinNyoung Jang, Soobok Yoon, MunPyo Hong

1921Analysis of Thermal Degradation in Oxide Thin Film Transistors

Yukiharu Uraoka, Satoshi Urakawa, Yasuaki Ishikawa

1922Effects of the Bombardment of Negative Oxygen Ions on Gate Bias Stability of InGaZnO Thin Film Transistors

Doohyun Kim, Soobok Yoon, MunPyo Hong

1923Drain Bias Effect on the Instability of Amorphous InGaZnO Thin-Film Transistors under Negative Gate Bias and Illumination Stress

Dapeng Wang, Mai Phi Hung, Jingxin Jiang, Tatsuya Toda, Mamoru Furuta

1924Interpretation of Defect States in Sputtered IGZO Devices Using I-V and C-V Analysis

Tarun Mudgal, Nathaniel Walsh, Nicholas Edwards, Robert G. Manley, Karl D Hirschman

1925Improvement of Electrical Properties and Bias Stability of InGaZnO Thin-Film Transistors by Fluorinated Silicon Nitride Passivation

Jingxin Jiang, Toda Tatsuya, Gengo Tatsuoka, Dapeng Wang, Mamoru Furuta

1926Solution- Processed Alkali Metals-Doped Amorphous Zinc Tin Oxide Thin-Film Transistors and Analysis of Alkali Metal Doping Mechanism through the UV-Visible Spectroscopic

Keon-Hee Lim, Eungkyu Lee, Kyongjun Kim, Youn Sang Kim

1927Stability of Amorphous in-Ga-Zn-O Thin Film Transistors with Silicon-Doped Back-Channel Layer under Temperature Humidity Stresses

Hyoung-Rae Lee, Yun-Hyuk Ko, Jea-Gun Park

1928Fabricating High-Performance Silicon Thin-Film Transistor by Meniscus Force Mediated Layer Transfer Technique

Kohei Sakaike, Muneki Akazawa, Akitoshi Nakagawa, Seiichiro Higashi

1929Pedagogical Approach for Higher Education in Microelectronics and Nanotechnologies in France: Specific Actions on the Thin Film Technologies

Olivier Bonnaud, Tayeb Mohammed-Brahim, Ahmad Bsiesy

1930Thin Film Transistors as Driving Devices for Attached Devices

Yue Kuo, Geng-Wei Chang

1931Flexible Sensors Based on Low-Temperature Polycrystalline Silicon Thin Film Transistor Technology

Guglielmo Fortunato, Luca Maiolo, Francesco Maita, Antonio Minotti, Salvo Mirabella, Vicky Strano, Giorgio Metta, Davide Ricci, Alessandro Pecora

1932Nano-Crystalline Oxide Semiconductor Materials for Display and Semiconductor Device Applications

Sanghun Jeon

1933High-Performance Biosensors Based on Solution-Gated Thin Film Transistors

Feng Yan

1934Hybrid Nonvolatile Memory Devices with Ferroelectric Copolymers Based on ZnO Nanowire Field Effect Transistors

Young Tea Chun, Daping Chu

1935Nonvolatile Memory Device Using Mobile Protons via Insertion Hydrogen Neutral Beam Treatment Process between SiO_2 Deposition Processes at Room Temperature

Jin Nyoung Jang, Dong hyeok Lee, Sanghun Jeon, Jeunghak Park, MunPyo Hong

Q2-Fundamentals and Applications of Microfluidic and Nanofluidic Devices 2

Electronics and Photonics/Physical and Analytical Electrochemistry

1936Continuous Electrokinetic Separation of Particles Via Wall-Induced Non-Inertial Lift

Xinyu Lu, Xiangchun Xuan

1937Simulation of the Cell Electrofusion Chip

Xianwei Han, Jun Yang, Ning Hu, Yan-jian Liao

1938Electrokinetic-Flow Driven Rectification of Ion Current in a Tunable Polymer Nanopore

Li-Hsien Yeh, Ming-Jiang Huang, Shizhi Qian

1939Deformation and Approaching of Droplet Pair in a Microchannel under AC Electric Fields

Xiaodong Chen, Chundong Xue, Guoqing Hu

1940Electrokinetic Trapping and Patterning of Colloidal Particles in Asymmetric Ratchet Microchannels

Akshay Kale, Xinyu Lu, Saurin Patel, Xiangchun Xuan

1941Influence of Lipid Droplet Dripping on the Formation of Lipid Film and Liposomes

Wen Man Li, Jun Yang, Hong Yan Luo, Yan Jian Liao, Ning Hu

1942 Surface Charge Properties of Nanoparticle: Size Dependency and Boundary Effect

Selcuk Atalay, Ali Beskok, Shizhi Qian

1943 Simulation on the Microelectrode of Cell Electrofusion Chip

Han Xianwei

1944 Centrifugation and Negative-Dielectrophoresis Assisted Cell Separation Method

Xianwei Han, Jun Yang, Ning Hu, Yan-jian Liao

1945 Size-Based Separation of Particles and Biological Cells Using Surface Acoustic Waves

Ye Ai

1946 Synthesis and Characterization of Silver-Doped TiO_2 Nanotubes on Dye-Sensitized Solar Cells

Chien-Hung Wu, Kuen-Song Lin, Ching-Hao Yang

1947 Micro-Fabrication of a Compact Air-Breathing Microfluidic Fuel Cell and Its Electrochemical Evaluation for Formic Acid and Glucose

Ulises Chávez, Andres Dector, Alonso Moreno, Janet Ledesma-García, Luis Gerardo Arriaga

1948 Design and Performance of Microdevices for High-Efficiency Sterilization of Bacteria

Jun Yang, Hong-yan Luo, Ning Hu, Yan-jian Liao, Lisa Zeng

1949 Electroformation of Guvs on Microchip with Coplanar Microelectrodes

Qiong Wang, Jun Yang, Yan-jian Liao, Ning Hu, Hong-yan Luo

1950Simulation and Experimental Studies of the Impact of EOF on the Electroformation of GUVs

Qiong Wang, Jun Yang, Ning Hu, Yan-jian Liao, Hong-yan Luo

1951Study on Processing Technique of 3-D PDMS-Ag Composite Microelectrodes Integrated in Microfluidic Systems

Fan Jiang, Xiao-lin Zheng, Li Chen, De-yan Zhang, Ning Hu, Yan-jian Liao, Hong-yan Luo

1952Design of a Microfluidic Chip System Based on Magnetoelastic Sensors for Blood Coagulation Measurement

Xi Chen, Jun Yang, Ning Hu, Hong-yan Luo, Xue-mei Gao, Ling-ju Song, Yan-jian Liao

1953Electroformation on 3D Chip with "Holes" and "Inlands"

Qiong Wang, Jun Yang, Ning Hu, Yan-jian Liao, Hong-yan Luo

1954Study on a Microchip-Integrated Hemorrheology Analysis System

Li Chen, Xiao-lin Zheng, Ning Hu, Fan Jiang, Bing-wen Lin, Jun Yang, Yan-jian Liao, Hong-yan Luo

1955Design and Fabrication of Ag / AgCl Reference Electrode Based on PDMS Conductive Composite Material

Li Chen, Xiao-lin Zheng, Ning Hu, Fan Jiang, Fei Zheng, Hong-yan Luo, Jun Yang, Yan-jian Liao

Q3-GaN and SiC Power Technologies 4

Electronics and Photonics/Dielectric Science and Technology

1956Medium Voltage Hybrid Si IGBT/SiC JBS Diode Module Development

Karl D Hobart, Eugene A Imhoff, Biswajit Ray

1957A Critique of Wide Bandgap (WBG) Power Semiconductor Datasheets

Krishna Shenai

1958GaN Based Optoelectronic Devices: From Ultraviolet Detectors and Visible Emitters Towards THz Intersubband Devices

Ryan McClintock, Manijeh Razeghi

1959Fabrication and Performance of 16-kV Ultrahigh-Voltage SiC Power Devices

Yoshiyuki Yonezawa, Tomonori Mizushima, Kensuke Takenaka, Hiroyuki Fujisawa, Tomohisa Kato, Dai Okamoto, Mitsuru Sometani, Tadayoshi Deguchi, Shinsuke Harada, Yasunori Tanaka, Shinichiro Matsunaga, Tetsuo Hatakeyama, Mitsuo Okamoto, Mitsuru Yoshikawa, Naoyuki Oose, Mina Ryo, Hiroshi Kimura, Masaaki Miyajima, Naoki Kumagai, Manabu Takei, Manabu Arai, Kazuto Takao, Toru Izumi, Toshihiko Hayashi, Koji Nakayama, Katsunori Asano, Akihiro Otsuki, Kenji Fukuda, Hajime Okumura, Tsunenobu Kimoto

1960Progress on Large Diameter Single Crystal Growth of SiC

Gary Ruland, Ping Wu, Xueping Xu, Varatharajan Rengarajan, Ilya Zwieback, Avi Gupta, Mark Ramm

1961Multi-Cycle High Temperature Rapid Thermal Annealing for Dislocation Elimination in 4H-SiC Epitaxy

Nadeemullah A Mahadik, Marko J Tadjer, Robert E Stahlbush, Eugene A Imhoff, Boris Feigelson

1962An Ultra Compact GaN 3x3 Matrix Converter

Shuichi Nagai, Yasuhiro Yamada, Yasufumi Kawai, Noboru Negoro, Hiroyuki Handa, Masahiro Ishida, Tetsuzo Ueda, Kenji Mizutani, Yuji Kudoh, Nobuyuki Otsuka, Daisuke Ueda

1963SiC Power Devices in a Soft Switching Converter, Including Aspects on Packaging

Per Ranstad, Mietek Bakowski, Georg Tolstoy, Jang-Kwon Lim, Florian Giezendanner, Anton Ranstad

1964 Design and Performance of Compact Air-Cooled SiC Mosfet Inverters for Low-Power Variable Speed Drive Applications

Dakshina-Murthy Bellur, Sergey Kunin, Elias Ayana, Brad Palmer, Jaroslaw Leonarski, Subbarao Varigonda, Krishna Shenai

1965 Reliability of Commercially Available SiC Power Mosfets

Aivars Lelis, Ron Green, Mooro El, Dan Habersat

1966 Characterization of Reliability in SiC Power Devices

Jack D. Flicker, David R. Hughart, Stan Atcitty, Robert J. Kaplar, Matthew Marinella

1967 A Simple and Accurate Circuit Simulation Model for High-Voltage SiC Power MOSFETs

Alejandro Pozo Arribas, Mahesh Krishnamurthy, Krishna Shenai

1968 High, Low, and Zero Field Spin Dependent Recombination in 4H SiC Mosfets

Patrick M Lenahan, Corey Cochrane, Aivars Lelis

1969 Invited: Solidstate Engineering at Northwestern University

Manijeh Razeghi, Ryan McClintock

1970 The Materials and Reliability of Power Electronics Devices

Aris Christou, P McCluskey

1971 Workforce Development for Electric Power Engineers

Liping Guo

1972Innovative Solutions to Materials Challenges for High-Voltage SiC Power Devices

D. Kurt Gaskill, R.L. Myers-Ward, P.B. Klein, N.a. Mahadik, R.E. Stahlbush, C.R. Eddy

1973Stacking Fault Formation during Homo-Epitaxy of 4H-SiC

Michael Dudley, Huanhuan Wang, Fangzhen Wu, Yu Yang, Jianqiu Guo, Jie Zhang, Berndt Thomas, Edward K Sanchez, Stephan Mueller, Darren Hansen, Mark Loboda

1974Thermodynamics and Kinetics of SiC CVD Epitaxy

Angel Yanguas-Gil, Krishna Shenai

1975Characterization of Defects in SiC Substrates and Epilayers

Michael Dudley, Huanhuan Wang, Fangzhen Wu, Yu Yang, Jianqiu Guo, Gil Chung, Berndt Thomas, Edward K Sanchez, Stephan Mueller, Darren Hansen, Mark Loboda, Jie Zhang

1976Digital Control of DC-DC Converters Employing Wide Band Gap (WBG) Power Devices

Liping Guo, Alejandro Pozo Arribas, Mahesh Krishnamurthy, Krishna Shenai, Ju Wang

1977New Material Technologies in AlGaN/GaN Based Electronic Devices

Mike Leszczynski

1978Novel Oxide Buffer for Scalable GaN-on-Silicon

Andrew Clark, Rytis Dargis, F. E. Arkun, Robin S. Smith

1979An Industrial 650V GaN DHEMT Cascode Technology

Marnix Tack, Peter Moens, Charlie Liu, Filip Bauwens

1980Advances in Diamond Integration for Thermal Management in GaN Power HEMTs

Travis J Anderson, Karl D Hobart, Marko J Tadjer, Andrew D. Koehler, Tatyana I Feygelson, Bradford B Pate, Jennifer K. Hite, Fritz J Kub, Charles R. Eddy

1981On the Power-Handling Capability of Wide Bandgap (WBG) Semiconductor Power Switching Devices

Krishna Shenai

1982Direct Observation of Bandgap Shift in the Dislocations Using High Resolution Cathodoluminescence in Transmission Electron Microscopy

Sung-Dae Kim, Soon Yong Kwon, Mi-Hyang Sheen, Youngwoon Kim

1983GaN/Si(111) Device Defects and HFET Degradation Mechanisms

Aristos Christou, David Shahin

1984Studies of Relaxation Processes and Basal Plane Dislocations in CVD Grown Homoepitaxial Layers of 4H-SiC

Michael Dudley, Huanhuan Wang, Fangzhen Wu, Yu Yang, Jianqiu Guo, Gil Chung, Jie Zhang, Berndt Thomas, Edward K Sanchez, Stephan Mueller, Darren Hansen, Mark Loboda

1985Comparison of the Forward Voltage Drop of Si and SiC High Voltage Diodes

Tanya Gachovska, Jerry L Hudgins

1986PECVD and Thermal Gate Oxides on 3C Vs. 4H SiC – Impact on Traps, Leakage and Energy Offsets

Tomasz Gutt, Henryk Maria Przewlocki, Krzysztof Piskorski, Aleksey Mikhaylov, Mietek Bakowski

1987Angle-Resolved Photoelectron Spectroscopy Studies of Initial Stage of Oxidation on C-Face 4H-SiC

Tomoya Sasago, Shunta Yamahori, Hiroshi Nohira

1988Workforce Development at PEIC – Power Electronics Industry Collaborative

John N. Hryn

1989Work Force Development Challenges in the Wide Band Gap Supply Chain Industry

Gary Ruland, Tom Wessel

1990Wide Bandgap Semiconductor Research Interests at Navy Laboratories

Karl D Hobart

1991Investigation on Polarization Induced Electro-Optical Property of GaN LED Using TEM-EBIC Combined with Cathodoluminescenc

Mi-Hyang Sheen, Sung-Dae Kim, Youngwoon Kim

1992Improvement of GaN Deep Etched Surface State by Fluorination Dedicated to Power Devices

Nicolas Gosset, Julien Ladroue, Thomas Tillocher, Philippe Lefaucheux, Mohamed Boufnichel, Rémi Dussart

1993Study of Ti-Rich and Al-Rich Contact Metallization for AlGaN/GaN HEMT Power Devices

Dimitri Bertrand, Murielle Fayolle, Elisabeth Blanquet, Alphonse Torres, Fabien Volpi

1994Characterization of GaN Switches for Solar Invertors

Tanya Gachovska, Nikolay Radimov, Chris Gerolami, Ray Orr, Jerry L Hudgins, Krishna Shenai

1995Accurate Estimation of Switching Losses in SiC Power MOSFET's

Alejandro Pozo Arribas, Mahesh Krishnamurthy, Krishna Shenai

1996High-Heat-Resistance Polymers for SiC Power Modules

Akio Takahashi

1997Full Epitaxial Trench Type Buried Grid SiC JBS Diodes

Sergey A. Reshanov, Adolf Schöner, Wlodek Kaplan, Andy Zhang, Jang-Kwon Lim, Mietek Bakowski

Q4-Low-dimensional Nanoscale Electronic and Photonic Devices 7

Electronics and Photonics/Dielectric Science and Technology/Sensor

1998Exploring the Flatlands: Synthesis, Characterization and Engineering of Two-Dimensional Materials

Jun Lou

1999Vertical Heterostructures of Layered Metal Chalcogenides by Van Der Waals Epitaxy for Solar Energy Conversion and Catalysis

Song Jin

2000Growth of Transition Metal Dichalcogenide Monolayers with Chemical Vapor Deposition

Lain-Jong Li

2001Generalized Self-Assembly of Two-Dimensional Transition Metal Oxide Nanosheets on Flexible Graphene

Jung Ho Kim

2002Nanomaterial-Based Macroscale Printable Flexible Sensors

Kuniharu Takei, Shingo Harada, Wataru Honda, Takayuki Arie, Seiji Akita

2003Carbon Nanotube Flexible Electronics

Chuan Wang

2004Fast Responsive of Ultraviolet-Light VO_2 Flexible Photodetector

Jyh Ming Wu

2005Control of Metal-Insulator Transition of Vanadium Dioxide Thin Film Grown by Excimer Laser Assisted Metal Organic Deposition

Tetsuo Tsuchiya, Tomohiko Nakajima, Kentaro Shinoda, Nakamura Takako

2006Fast Sensitive Ultra-Low Power Micro Thermal Conductivity Gas Sensor

Alireza Mahdavifar, Peter Hesketh, Melvin W Findlay, Joseph R Stetter

2007Graphene Synthesis By Plasma Technique Toward Transparent Conductive Film Applications

Masataka Hasegawa, Ryuichi Kato, Yuki Okigawa, Masatou Isihara, Takatoshi Yamada

2008Study of 1/f Noise in Graphene Based Field-Effect-Transistors

Yuegang Zhang

2009Scalable Growth of Single-Crystal Graphene on Hydrogen-Terminated Germanium

Dongmok Whang

2010Fast Direct Growth of Self-Crystallized Graphene-from Controllable Growth to Material Characterization and Device Applications

Yu-Lun Chueh

2011Direct CVD Growth of High Quality Single Layer Graphene on Dielectric Substrates

Hee Cheul Choi

2012Towards Highly Transparent and Flexible Field Emission Displays Based on Low-Dimensional Nanocarbon

Masaki Tanemura

2013III-V Nanostructures Grown by Molecular Beam Epitaxy for High Efficiency Solar Cells

Jiang Wu, Phu Lam, Yunyan Zhang, Mingchu Tang, Sabina Hatch, Huiyun Liu

2014Epitaxial Transfer Printing of Compound Semiconductor Nanomembranes and Device Applications

Doo-Seung Um, Youngsu Lee, Hochan Lee, Seongdong Lim, Hyunhyub Ko

2015Heterointegration Technologies for Advanced 3D Neural Interfaces

Shadi A Dayeh, Renjie Chen

2016Ultrashort Channel Silicon Nanowire Transistors with Nickel Silicide Source/Drain Contacts

Wei Tang, Shadi A Dayeh, S Tom Picraux, King-Ning Tu

2017Prolonged Hot Electron Dynamics in Plasmonic-Metal/Semiconductor (Au/TiO_2) Heterostructures with Implications for Solar Photocatalysis

Wei David Wei

2018Omnidirectional Broadband Silicon-Based Solar Cells

Jr-Hau He

2019Methods of Patterned Mist Deposition of Nano-Crystalline Quantum Dot Films

Ala Sabeeh, Yash Thakur, Ju-Hung Chao, Aditya Kshirsagar, Jerzy Ruzyllo

2020Geometry Controlled Growth of Single Crystalline CdS Nanopillar Arrays and the Investigation of Their Electrical Properties

Leilei Gu

2021 Templated Shadowing-Growth for Photonics and Plasmonics

Motofumi Suzuki

2022 Pushing the Limits of Plasmonic Nanoantenna Design Using New Materials and Nanofabrication Tools

Otto L. Muskens

2023 Crystalline Submicrometer Spherical Particles with High Refractive Index for Optical Applications

Naoto Koshizaki, Yoshie Ishikawa

2024 Large-Area, Cost-Effective Nanoplasmonic Structures and Their Applications

Dukhyun Choi

2025 Photoacoustic Drive of Microfluid Using Au/SiO_2 Heterostructured Nanorods Array

Kyoko Namura, Kaoru Nakajima, Kenji Kimura, Motofumi Suzuki

2026 All Printable ZnO Nanowire Photodetectors with Ultra-High Detectivity

Xi Liu, Leilei Gu, Qianpeng Zheng, Jiyuan Wu, Yunze Long, Zhiyong Fan

2027 Flexible Nanocone Anti-Reflection Films for High-Efficiency Photovoltaics

Zhiyong Fan, Qingfeng Lin, Kwong-Hoi Tsui, Qianpeng Zhang, Huiying Fu

2028 Chemically Integrated Hybrid 2-D Materials for Flexible Energy Storage Devices

Guihua Yu

2029Growth of High-Quality Arbitrary-Shape Compound Semiconductors on Non-Epitaxial Substrates for Photovoltaic and Optoelectronic Device Applications

Rehan Kapadia

2030Optimal $BaTiO_3$ $BaTiO_3$ Cluster Formation for High Performance Piezoelectric Nanogenerators

Sung-Ho Shin, Min Hyung Lee, Junghyo Nah

2031Solar Water Splitting Photoelectrodes Utilizing Oxide 2-Dimensional Electron Gas and Plasmonic Nanoparticles

Ho Won Jang

2032Atomic-Level Tailoring Lithium-Intercalation Hosts for Stable Rechargeable Magnesium Ion Cathodes

Yan Yao

20331D Photonic and Electrochromic Nanomaterials Application

Engelbert Redel

Q5-Nonvolatile Memories

Dielectric Science and Technology/Electronics and Photonics

2034Atomic Scale and Interface Interactions in Redox-Based Resistive Switching Memories

Ilia Valov, Stefan Tappertzhofen, Eike Linn, Stephan Menzel, Jan van den Hurk, Rainer Waser

2035Elucidating the Origin of Resistive Switching in Ultrathin Hafnium Oxides through High Spatial Resolution Tools

Yuanyuan Shi, Yanfeng Ji, Fei Hui, Vanessa Iglesias, Marc Porti, Montserrat Nafria, Enrique Miranda, Gennadi Bersuker, Mario Lanza

Takasumi Ohyanagi, Masahito Kitamura, Mitsuharu Tai, Masaharu Kinoshita, Takahiro Morikawa, Kennichi Akita, Norikatsu Takaura

2044Semiconductor-Based Magnetic Switching Device

Sungjung Joo, Byungchan Lee, Kungwon Rhie

2045Effect of Selenium Doping on GeSb for Phase Change Memory Applications

Dae Hong Ko, Jeong Hoon Kim, Dae-Seoup Byeon, Jeong hee Park

2046Charge Trapping Properties of Silicon Carbonitride Storage Layers for Nonvolatile Memories

Kiyoteru Kobayashi, Shinji Naito, Shin Tanaka, Yoshina Ito

2047Study on Oxide Thickness Dependence of Current-Voltage Characteristics for HfO_x Based ReRAM Device

Yoshifumi Hamada, Shintaro Otsuka, Tomohiro Shimizu, Shoso Shingubara

2048Ovonic Threshold Switching Selection Device Based on Chalcogenide ZnTe for Cross-Point ReRAM Device

Youngjae Kim, Yoonki Min, Jimin Lee, Hyunchul Sohn

2049Effect of Valence State of Doping Materials on Resistance Switching Characteristics of Doped HfO2 Films

Kyumin Lee, Young jae Kim, Jong il Kim, Tae ho Kim, Hyunchul Sohn

2050Development, Characterization, and Modeling of a TaO_x ReRAM for a Neuromorphic Accelerator

Matthew J. Marinella, Patrick R Mickel, Andrew J Lohn, David R. Hughart, Robert Bondi, Denis Mamaluy, Harold P. Hjalmarson, James E Stevens, Seth Decker, Roger T Apodaca, Brian Evans, James Bradley Aimone, Fred Rothganger, Conrad D. James, Erik P DeBenedictis

2051Progresses in Modeling HfO_x RRAM Operations and Variability

Luca Larcher, Onofrio Pirrotta, Francesco Maria Puglisi, Andrea Padovani, Paolo Pavan, Luca Vandelli

2052Reason and Role of Atomic Layer Deposition for PCRAM and ReRAM Films

Zia Karim, Kay Song, Lin Yang, Brian Lu

2053Implications of Lower Zero-Field Activation Energy of Dielectric in Al_2O_3/HfO_2 Bi-Layer Dielectric RRAM Forming Process

Biplab Sarkar, Bongmook Lee, Veena Misra

2054Multilevel Cell Nonvolatile Memory with Field-effect Transistor Using Crystalline Oxide Semiconductor

Takanori Matsuzaki, Tatsuya Onuki, Shuhei Nagatsuka, Hiroki Inoue, Takahiko Ishizu, Hidekazu Miyairi, Masayuki Sakakura, Tomoaki Atsumi, Yutaka Shionoiri, Kiyoshi Kato, Takashi Okuda, Yoshitaka Yamamoto, Jun Koyama, Shunpei Yamazaki

2055Defect Generation Mechanism and Its Impact on Reliability Properties in MONOS Devices

Shosuke Fujii, Haruka Kusai, Kiwamu Sakuma, Masato Koyama

2056Temperature Effect on Memory Functions of the nc-CdSe Embedded ZrHfO High-k MOS Device

Shumao Zhang, Yue Kuo

2057Materials and Physics Challenges for Spin Transfer Torque Magnetic Random Access Memories

Olle Heinonen

2058Thermal Stability Enhancement of Cofeb Pinned Layer for Perpendicular-Magnetic Tunnel Junction with Multi-$[Co/Pt]_n$-Synthetic-Anti-Ferro-Magnetic Layer

Seung-Eun Lee, Tae-Hun Shim, Jin-Pyo Hong, Jea-Gun Park

2059 Thermal Stability Enhancement for Perpendicular-Magnetic Tunnel Junctions Grown on Bcc Crystalline Seed-Layer

Du-Yeong Lee, Min-Su Jeon, Jin-Pyo Hong, Jea-Gun Park

Q6-Photovoltaics for the 21st Century 10

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

2060 Effect of Organic Solar Cell Using Double Cathode Buffer Layers

Yeong-Her Wang, Jhong-Ciao Ke, Kan-Lin Chen, I-Tseng Tang, Kuan-Wei Lee, Liang-Wen Ji, Chien-Jung Huang

2061 Electrolytes Based on Binary-Redox Couples for High Voltage Dye-Sensitized Solar Cells

Narayan Chandra Deb Nath, In Soo Jeong, Jaecheon Chandra Deb Kim, Chulwoo Chandra Deb Kim, Jae-Joon Lee

2062 Dependence of Dark Processes on Film Thickness in Dye Sensitized Solar Cells

Rodrigo Garcia, Julio Villanueva, Renán Escalante, Beatriz Heredia, Gerko Oskam

2063 Application of ZnO with Different Morphologies to DSSCs

Francisco Ivan Lizama-Tzec, Geonel Rodriguez-Gattorno, U. Pal, Gerko Oskam

2064 New Redox Mediators for Quantum Dot Sensitized Solar Cells

Andrew J Haring, Amanda J Morris

2065 Effect of $Cd_{0.5}Zn_{0.5}S$/ZnS Core/Shell Quantum Dots on Power-Conversion-Efficiency Enhancement for Silicon Solar Cells

Yun-Hyuk Ko, Seung-Wook Baek, Jea-Gun Park

2066Random Walk Numerical Simulation of Disordered Semiconductor Heterojunctions

Humberto julián Mandujano-Ramírez, Gerko Oskam, José Pablo Gonzalez-Vazquez, Juan Antonio Anta

2067Evaluation of ALD-Grown Metal Oxide Tunnel Junction Layer for Organic Tandem Cells

Minjae Kim, Conner Chambers, Paul R. Berger

2068Microstructure Control of Absorber Sb_2S_3 and p-Type Semiconductor CuSCN for Semiconductor-Sensitized Solar Cells (TiO_2/Sb_2S_3/CuSCN)

Xi Zhang, Shohei Yoshioka, Noya Loew, Manabu Ihara

2069Rapid Directed Sintering of CdTe/CdS Thin Film Solar Cells Using Intense Pulsed Light

Ruvini Dharmadasa, Thad Druffel

2070Electroplating of Al on Si for Crystalline-Si Solar Cells

Wen-Cheng Sun, Xiaofei Han, Meng Tao

2071Design of Next Generation Full Spectrum Solar Cells Using Intermediate Band Semiconductors

Alexander Luce, Y J Kuang, Oscar Dubon, Junqiao Wu, C W Tu, Kin Man Yu, Wladek Walukiewicz

2072Roll-to-Roll Fabrication of Large Scale and Regular Arrays of Three-Dimensional Nanospikes for High Efficiency and Flexible Photovoltaics

Siu-Fung Leung, Leilei Gu, Qianpeng Zhang, Qingfeng Lin, Zhiyong Fan

2073Photon-Assisted Electrochemical Construction of <0001>-n-ZnO/<111>-p-Cu_2O Photovoltaic Devices with Intermediate TiO_2 Layer

Mohammad Zain Mohd Zamzuri, Junji Sasano, Fariza Binti Mohamad, Masanobu Izaki

2074Defect Analysis of Monolithic GaInP/GaInAs/Ge Triple-Junction Solar Cells by Luminescence Technology

Shih-Hung Lin, Tzu-Huan Cheng

2075High-Aspect-Ratio Silicon Microwire Arrays By Metal-Assisted Chemical Etching for Photovoltaic Applications

Han-Don Um, Inchan Hwang, Kangmin Lee, Ji Hoon Seo, Kwanyong Seo

2076Templated Growth of Multilayer Graphene from Cellulose for the Fabrication of Photovoltaic Devices

Mallika Dasari, Mathew Hautzinger, Punit Kohli, Haiyan Fan-Hagenstein

2077Structural, Optical and Electrical Properties of Spray Pyrolysed Ti-Doped ZnO Films

Kollegal Ramakrishna Murali

2078Spray Pyrloysed TiO_2 Dye Sensitized Solar Cells

Kollegal Ramakrishna Murali

2079Detail Analysis of External Quantum Efficiency Measurement for Tandem Junction Solar Cells

Tzu-Huan Cheng, Shih-Hung Lin

2080Effect of Organic Solar Cells by Inserting Pentacene Layer

Pao-Hsun Huang, Kan-Lin Chen, Neng-Lang Shih, Teen-Hang Meen, Chien-Jung Huang

2081Performance Improvement of Bulk Heterojunction Polymer Solar Cells with Metal Oxide Nanoparticles

Tarek M Abdel-Fattah, Enas m Younes, Gon Namkoong, E. M. El-Maghraby, Adly Elsayed, A. H. Abo Elazm

2082Water Soluble CdTe Quantum Dots for Mercury Detection

Mohmed Elnagar, Abdel-Hamid Sakr, Moataz Soliman, Shaker Ebrahim, Tarek M Abdel-Fattah

2083New Integration Approaches for Highly Arrayed Nanostructures for Organic/Inorganic Solar Cells

Gon Namkoong, Ilho Nam, Kai Zhang, Helmut Baumgart

Q7-Semiconductors, Dielectrics, and Metals for Nanoelectronics 12

Dielectric Science and Technology/Electronics and Photonics

2084Molecular Dynamics Simulation of Dipole Layer Formation at High-k/SiO_2 Interfaces

Takanobu Watanabe, Ryo Kuriyama, Masahiro Hashiguchi, Ryusuke Takahashi, Kosuke Shimura, Atsushi Ogura, Shinichi Satoh

2085Spectroscopy of Deep Gap States in High-k Insulators

Valery V Afanas'ev, Wan Chih Wang, Florin Cerbu, Oreste Madia, Michel Houssa, Andre Stesmans

2086The First Principles Investigation of SiC/SiO_2 Interfaces Obtained by Thermal Oxidation

Kenji Shiraishi, Kenta Chokawa, Katsumasa Kamiya, Shigenori Kato, Kentaro Endo, Masaaki Araidai

2087Control of 4H-SiC (0001) Thermal Oxidation Process for Reduction of Interface State Density

Koji Kita, Richard Heihachiro Kikuchi, Hirohisa Hirai, Yuki Fujino

2088 Effect of Al Doping on the Reliability of ALD HfO_2

Mdnasiruddin Bhuyian, Durga Misra, Kandabara Tapily, Robert Clark, Steve Consiglio, Cory Wajda, G. Nakamura, Gert Leusink

2089 High-Temperature Reverse-Bias Stressing of Thin Gate Oxides in Power Transistors

Samia Ahmed Suliman, Osama Osman Awadelkarim, Jifa Hao, Mark Rioux

2090 High Electron Mobility n-Channel Ge MOSFETs with Sub-Nm EOT

Akira Toriumi, Choonghyun Lee, Cimang Lu, Tomonori Nishimura

2091 In Depth Study of Ge Impact on Advanced SiGe PMOS Transistors

Assawer Soussou, Mikael Cassé, Gilles Reimbold, Charles Leroux, François Andrieu, Denis Rideau, Vincent Delaye, Marc Juhel, Remy Berthelon, Gerard Ghibaudo, Clément Tavernier

2092 ALD Grown Rare-Earth High-k Oxides on Ge: Lowering of the Interface Trap Density and EOT Scalability

Ole Bethge, Christina Zimmermann, Bernhard Lutzer, Sinan Simsek, Stephan Abermann, Emmerich Bertagnolli

2093 Ambient-Pressure XPS Study of GeO_2/Ge(100) and SiO_2/Si(100) at Controlled Relative Humidity

Kenta Arima, Yoshie Kawai, Yuya Minoura, Yusuke Saito, Daichi Mori, Hiroshi Oka, Kentaro Kawai, Takuji Hosoi, Zhi Liu, Heiji Watanabe, Mizuho Morita

2094 In Situ TEM Study on Au Mediated Growth of $NiSi_2$ in Si Nanowire: A Vapor-Liquid-Solid Analogy

Wei Tang, S Tom Picraux, Xiaohua Liu, King-Ning Tu, Shadi A Dayeh

2095Effect of the Diameter on the Band Gap of ZnO Nanorods

Muhd Firdaus Kasim, Norlida Kamarulzaman, Roshidah Rusdi

2096Dislocated Semiconductor Nanowire Heterostructures

Karen L Kavanagh

2097Kinetics and Structure of Nickelide Contact Formation to Ingaas Fin Channels

Renjie Chen, Shadi A Dayeh

2098Epitaxial Growth of Nanodots on Si Substrates with Controlled Interfaces and Their Application to Electronics and Thermoelectronics

Yoshiaki Nakamura, Akira Sakai

2099Influence of Surface States on Electronic Band Structure and Electron Density in InAs Nanowires and InAs Shell Nanowires

Nataliya Demarina, Detlev Grützmacher

2100Dynamical Imaging of Nickel Disilicide Nucleation and Step Flow Propagation in Defect-Engineered Si Nanowire

Wei Tang, S Tom Picraux, Andriy M Gusak, King-Ning Tu, Shadi A Dayeh

2101Interaction of Silicene and Germanene with Non-Metallic Substrates

Michel Houssa, Emilio Scalise, Bas van den Broek, Augustin Lu, Geoffrey Pourtois, Valeri V. Afanas'ev, Andre Stesmans

2102Graphene and 2-Dimensional Materials for Nanoelectronics Applications

Max Christian Lemme

2103Doping, Functionalization, and Permeability of Graphene: Insights from First-Principles Studies

Leonidas Tsetseris, Bin Wang, Sokrates T Pantelides

2104 Electron Device Potential of 2D Crystal Semiconductors

Debdeep Jena

2105 Molecule@MOF: A New Class of Electronic Materials

Albert Alec Talin, Vitalie Stavila, Michael E. Foster, Farid El Gabaly, Alexandra C. Ford, François Léonard, Mark D Allendorf

2106 Electrical Characteristics of Multilayer MoS_2 Transistors at Real Operating Temperatures and Different Ambient Conditions

Hyuk-Jun Kwon, Jaewon Jang, Hongki Kang, Sunkook Kim, Vivek Subramanian, Costas P. Grigoropoulos

2107 Synthesis of MoS_2 Thin Film

Jihun Mun, Dongbin Kim, Yonghyeon Shin, Juyoung Yun, Sangwoo Kang, Taesung Kim

2108 Enhanced Energy Harvesting Scheme Utilizing Hierarchical Nanostructures

Yu-Lun Chueh

2109 Radial Epitaxy of Silicon for Optoelectronic Applications

Jinkyoung Yoo, Shadi A Dayeh, Norman Bartelt, S Tom Picraux

2110 High Quality Low-k Spacer Deposited at Low Temperatures

Bhadri N Varadarajan, Bo Gong

2111 Investigation of Frenkel-Pair Formation in HfO_2 and Its Influence on OxRAM Memory Reliability

Elisa Vianello, Philippe Blaise, Boubacar Traoré, Kanhao Xue, Leonardo Fonseca, Gabriel Molas, Barbara de Salvo, Luca Perniola, Yoshio Nishi

2112Memory and Logic Electronics Based on Nanoscale Resistive Switches (Memristors)

Wei Lu

2113Resistive Switching Characteristics and Controllable Quantized Conductance in Single-Crystal Anatase TiO_2 on Si (001)

Edward T. Yu, Chengqing Hu, Martin D. McDaniel, Agham B. Posadas, Alexander A. Demkov, John G. Ekerdt

2114The Interplay between Electronic and Ionic Transport in the Resistive Switching Process of Random Access Memory Devices

Blanka Magyari-Kope, Liang Zhao, Katsumasa Kamiya, Moon Young Yang, Masaaki Niwa, Kenji Shiraishi, Yoshio Nishi

2115Ferroelectric Hafnium Oxide Based Materials and Devices: Assessment of Current Status and Future Prospects

Johannes Müller, Patrick Polakowski, Stefan Müller, Thomas Mikolajick

2116Stress-Induced Asymmetric Switching and Filament Instability in Electrochemical Memories

Daniele Ielmini, Stefano Ambrogio, Simone Balatti

2117The Study of Charge Trapping in Mahas Memory Structure with Various HfO_2 Trap Layer Thicknesses

Heedo Na, Jinho Oh, Kyumin Lee, Hyunchul Sohn

2118Fabrication and Physical Properties of Thin Films TiN_x for Infrared Absorption

Bo Jiang, Tao Dong, Yong He, Zhaochu Yang, Yan Su, Kaiying Wang

2119Comparison of O_2 Plasma Treatment on Porous Low Dielectric Constant Material in Sidewall and Bottom of Trench Structure

Yi-Lung Cheng, Bing-Hong Lin, Wei-Syuan Haung

2120Fabrication and Characteristic of Wrinkled Stiff Thin Films on Elastomeric Substrates by Surface Treatments

Sang Chul Lim, Jae Bon Koo, Chan Woo Park, Ji Young Oh, Soon-Won Jung, Bock Soon Na, Sang Seok Lee, Hye Yong Chu

2121Characteristics of Inkjet-Printed Separators in Graphene-Based Supercapacitors

Yong Suk Yang, In-Kyu You, Sung-Hoon Hong, Ho-Gyeong Yun

2122SURMOFs as Ultra-low k Dielectric Thin Films

Engelbert Redel

Q8-Solid-state Electronics and Photonics in Biology and Medicine

Electronics and Photonics/Sensor

2123Invited: Dual-Faced Nano-Mushrooms for Multi-Functional Cell Diagnosis

Hsin-Yi Hsieh, Fan-Gang Tseng

2124Invited: Finite Element Model Simulations to Assist the Design of Microdevices Dedicated to the Localized Electroporation of Mouse Embryos

Xuan Zhao, Elsa Mazari, Diana Suárez-Boomgaard, Isabelle Migeotte, Aitana Perea-Gomez, Charlie Gosse

2125Invited: Detection of the Secretome and Transfection of a Single Cell Using a Nanopore

Volker Kurz, Edward Nelson, Tetsuya Tanaka, Gregory Timp

2126Plasmonically Targeted Laser Treatment of Human Endothelial Cells

Otto L. Muskens

2127Invited: Nanowire Field-Effect Transistor-Based Biosensors as a Tool for Life Science

Yit-Tsong Chen

2128Invited: Metal-Semiconductor-Metal Photocurrent Chip for Hydrogen Peroxide and Biomolecular Sensing with Chemiluminescence

Fu-Hsiang Ko, Ching-Chang Lin, Da-Shiuan Sun, Tung-Ming Pan

2129A Novel Ultra-Low Detection Limit Hydrogen Peroxide Sensor Based on Horseradish Peroxidase Immobilized Polyaniline Film

Kuan Chung Fang, Chia Ho Chu, Chen-Pin Hsu, Yen-Wen Kang, Jung-Ying Fang, Chia-Hsien Hsu, Yu-Fen Huang, Chih-Chen Chen, Sheng-Shian Li, J. Andrew Yeh, Da-Jeng Yao, Yu-Lin Wang

2130Measurement and Modeling of the M13 Bacteriophages Transport in the Conical-Shaped Nanopore

Che-Yen Lee, Yi-Hsin Hsiao, Ji-Cheng Yu, Chih-Wei Hsu, Chia-Hsien Hsu, Chihchen Chen

2131Capacitive Current Induced by dsDNA for Biosensor Applications

Chen-Pin Hsu, Yu-Fen Huang, Yu-Lin Wang

2132Investigation of the Hydroxyl Radical Sensor with Conductance Change of Polyaniline

Jung-Ying Fang, Kuan Chung Fang, Chen-Pin Hsu, Chia Ho Chu, Johnny Liu, Yu-Lin Wang

2133Novel Cholesterol Sensor Based on Ultra-Low Detection Limit Hydrogen Peroxide Sensor

Chia Ho Chu, Kuan Chung Fang, Chen-Pin Hsu, Yen-Wen Kang, Jung-Ying Fang, Chia-Hsien Hsu, Yu-Fen Huang, Chih-Chen Chen, Sheng-Shian Li, J. Andrew Yeh, Da-Jeng Yao, Yu-Lin Wang

2134Fabrication of Low Cost Conducting Papers for Miniaturized Electronic Biomedical Sensors

Yi-Ting Chen, Chia Ho Chu, Kuan Chung Fang, Chen-Pin Hsu, Yen-Wen Kang, Jung-Ying Fang, Yu-Lin Wang

2135Synthesis of Gold@Iron Oxide Core-Shell Nanostructures via an Electrochemical Procedure

Kuan-Che Lin, Celeste del Valle, Yu-Fen Huang

Q9-State-of-the-Art Program on Compound Semiconductors 56 (SOTAPOCS 56)

Electronics and Photonics

2136CMOS Inverters and P-N Junction Diodes Based on Transition Metal Dichalcogenide Monolayers

Taishi Takenobu

2137Crafting Semiconductor Organic-inorganic Nanocomposites Via Placing Conjugated Polymers in Intimate Contact with Nanocrystals for Hybrid Solar Cells

Zhiqun Lin, Jaehan Jung, Youngjun Yoon, Xinchang Pang

2138Recent Advances in Semiconductor Nanowire Heterostructures

Howard E Jackson, Leigh M. Smith, Chennupati Jagadish

2139Integration of Photodefinable Polybenzoxazole as Intermetal Dielectric for GaAs HBT Technology

Jiro Yota, Benny Do

2140Behaviors of Carbon Atoms during Plasma Oxidation of 4H-SiC(0001) Surfaces near Room Temperature

Naoki Saito, Daichi Mori, Akito Imafuku, Kentaro Kawai, Yasuhisa Sano, Mizuho Morita, Kenta Arima

2141New Approaches to Realizing High Power Nitride Based Field Effect Transistors

Michael Shur, Grigory Simin, Remis Gaska

2142Simulation of Radiation Damage in GaN HEMT Structures

Erin Patrick, Mo Choudhury, Mark E Law

2143Low Power Zinc-Oxide Based Charge Trapping Memory with Embedded Silicon Nanoparticles

Ammar Nayfeh, Ali Okyay, Nazek El-Atab, Ayse Ozcan, Sabri Alkis

2144InAs/InP Quantum Dash Nanostructure Based Broadband Emitters: A Step Towards Energy Efficient Optical Communication

Mohammed Zahed Mustafa Khan, Tien K Ng, Boon S Ooi

2145Topological Insulator Bi_2Se_3 Nanowire Field Effect Transistors

Hao Zhu, Erhai Zhao, Curt A. Richter, Qiliang Li

2146Optical Properties and Defect Formation in Gallium Phosphide/Gallium Nitrogen Phosphide Core/Shell Nanowires

A. Dobrovolsky, J E Stehr, Y J Kuang, S Sukrittanon, C W Tu, W M Chen, I A Buyanova

2147Compound Semiconductor Nanowires for Optoelectronic Device Applications

Hoe Tan

2148High-Performance Sb-Based III-V Nanowires Synthesized on Amorphous Substrates: From the Formation Mechanism to p-Channel Transistor Applications

Johnny C Ho

2149Room-Temperature Defect-Enabled Spin Functionality in GaAs-Based Coumpound Semiconductors

Weimin M Chen, Irina A Buyanova

2150A Quick and a Flexible Hydride Vapor Phase Epitaxy Process to Achieve Buried Heterostructure Quantum Cascade Lasers

Wondwosen Metaferia, Bouzid Simozrag, Carl Junesand, Yan-Ting Sun, Mathieu Carras, Sebastian Lourdudoss

2151Innovative III-Nitride Epitaxy Approach for Low Dislocation GaN and Free-Standing GaN Substrate

Xiao Dong Hu, Jie Jun Wu, Ding Li, Lei Li, Qingbin Ji, Hua Zong, Tong Han, Yahong Xie

2152III-V Nanowire MOSFETs in RF-Applications

Lars-Erik Wernersson

2153Surface Roughness Influences on the ZnO Reram

Jr-Jian Ke, Kyoko Namura, Tzu-Chiao Wei, Jr-Hau He, Motofumi Suzuki

R1-Luminescence and Display Materials: Fundamentals and Applications (in Honor of Hajime Yamamoto)

Luminescence and Display Materials

2154Lattice Strain Control Luminescence of Phosphors for LEDs

Ru-Shi Liu

2155Single-Component White Emitting Silicate Glass Triply Activated by $Ce^{3+}/Tb^{3+}/Mn^{2+}$ for Organic-Resin-Free White LEDs

Xuejie Zhang, Jing Wang, Qiang Su

2156Microreactor System with in-Situ pH Monitor for Synthesizing YVO_4: Bi, Eu Nanophosphor

Tadashi Ishigaki, Ryousuke Sakata, Kenji Yamashina, Hiroshi Okura, Ryohei Komiyama, Hidetoshi Miyashita, Sang-Seok Lee, Koutoku Ohmi

2157Growth and Structural Analysis of Silicate Phosphor Single Crystal Using Gas Phase Method

Shota Hasegawa, Sun Woog Kim, Kazuyoshi Uematsu, Tadashi Ishigaki, Kenji Toda, Mineo Sato, Takaki Masaki, Dae Ho Yoon, Junko Koide, Masako Toda, Yoshiaki Kudo

2158Crystallographic and Luminescent Characteristics of New Blue Phosphor $(Sr,Ba)Al_2Si_3O_4N_4:Eu^{2+}$

Ryo Yoshimatsu, Shiro Funahashi, Suzuya Yamada, Naoto Hirosaki, Tadashi Ishigaki, Koutoku Ohmi

2159Optical Spectroscopy of Ce^{3+}, Eu^{3+} and Pr^{3+} in $(M^{2+})_9M^{3+}(PO_4)_7$ (M^{2+}=Ca, Sr) (M^{3+}=Al, Ga, In, Sc, Y, Lu, Gd, La)

Sam Jospeh Camardello, Alok Srivastava, Paul Toscano

2160Comparative Systematic Study of Covalent Effects for the Cr^{3+}-, Mn^{4+}- and Ni^{2+}-Doped Optical Materials

Alok M Srivastava, Mikhail G. Brik

2161White-Light Emission from Sputter Deposited TiO_x Thin Film on Si Wafer

Chi-Chou Lin, Yue Kuo, Xiaoning Zhang

2162Plasma Enhanced Electrochemical Preparation for Photo-Luminescent Metal Oxide Films on Al Foil

2171Li^{+} Co-Doping Effect on the Photoluminescence Time Decay Behavior of Y_2O_3: Er^{3+} Films

Abraham Meza.Rocha, Evelyn Huerta, Efrain Zaleta-Alejandre, Ciro Falcony

2172Transient Electroluminescence Measurement on Organic Light-Emitting Diodes (OLED) of Mutilayer Electron-Injection Structure

Chia-Yuan Gao, Ying-Chung Chen, Dei-Wei Chou, Chern-Hwa Chen, Chien-Jung Huang

2173Oxide Materials with Near Ultra Violet Broadband Absorption for Potential Photovoltaic Applications

Federico González, Germán López-Pacheco, Gloria Santillán-Reyes, Rigoberto López-Juárez, Enrique Barrera

2174CdSe Nanorods Synthesis By Chemical Bath Deposition

Armando Gregorio Rojas Hernández, Ana Lilia Leal Cruz, Carlos Villa Velázquez Mendoza, Alicia Vera Marquina, Roberto Gomez Fuentes, Dainet Berman Mendoza, Alejandro Garcia Juárez, Ignacio Enrique Zaldívar Huerta, Luis Arturo Garcia Delgado, Thomas M Piters Droog

Z1-Student Poster Session

All Divisions/SMEQ

2175Microelectrochemical Properties of Ti(C,N) Inclusion of High Strength Martensitic Carbon Steel

Yuta Watanabe, Izumi Muto, Tomohiko Ohmura, Nobuyoshi Hara, Yu Sugawara

2176Improving Lithium-Ion Battery Performance of Metal Oxide Nanoparticles By Organic Hybridization Using Anchoring Carbon Precursor Polymers

Bernd Oschmann, Dominic Bresser, Muhammad Nawaz Tahir, Franziska Mueller, Ingo Lieberwirth, Rudolf Zentel, Stefano Passerini, Wolfgang Tremel

2177Fabrication of Gold Nanoparticles on Porous Silicon and Its Application to (Bio) Chemical Sensing Platforms

Euna Ko, Ji Hye Kim, Xuan-Hung Pham, Buu-Chau Huynh-Nguyen, Thanh-Hai Le, Gi Hun Seong

2178Micropatterning of Transparent, Flexible Graphene Films By Oxygen Plasma

Ji-hye Kim, Joo Heon Lee, Euna Ko, Xuan-Hung Pham, Buu-Chau Huynh-Nguyen, Le Thanh-Hai, Gi Hun Seong

2179Improvement of Thermal Reliability and Power Density of SOFCs By Preparing Nano LSC Particles Between GDC Electrolyte and Lscf Cathode

Takehito Mukai, Takahiro Fujita, Shigeki Tsukui, Motoaki Adachi, Kenichi Yoshida, Hiroyuki Iwai, Yosuke Takahashi, Kenneth C Goretta

2180Study of a Biocathode Based on the Physical Immobilization of Crude-Extract with Laccase Activity for Oxygen Reduction

Berenice López-González, María Guadalupe Ramírez-Ledesma, Francisco Mherande Cuevas-Muñiz, Ainhoa Arana-Cuenca, Janet Ledesma-García, Luis Gerardo Arriaga

2181Electrodeposition of Co-Pd Alloys from Chloride Solutions

Krzysztof Mech, Piotr Zabinski, Remigiusz Kowalik

2182Improved Performance of an MH/Air Secondary Battery Using a Low Polarization Air Electrode

Shintaro Terui, Masatsugu Morimitsu

2183Mechanism Analysis of Nonvolatile Graphene Oxide Based Reram with Laterally Structured Device

Youngmin Park, Jieun Ko, Jung Ah Lim, Sanghun Cho, Jeeyoung Yoo, Youn Sang Kim

2184Preparation of IrO_2-Ta_2O_5 Coatings on Ni Substrate and Oxygen Evolution in Alkaline Aqueous Solution

Sanghun Cho, Keon-Hee Lim, Jeeyoung Yoo, Si Yun Park, Youngmin Park, Youn Sang Kim

2193 Effect of Hydrogen Neutral Beam on the Growth of Nanocrystalline Silicon

Dong Hyeok Lee, Jin Nyoung Jang, MunPyo Hong

2194 Pulsed Electrodeposition for Preparing Hollow, Conical Needles with Sub-Micron Dimensions

Andrew Durney, Elizabeth Claire Hotvedt, Hitomi Mukaibo

2195 Silver Removal from Polluted Effluents Using a Rotating Cylinder Electrode Reactor (RCE) Potential Application for Valuable Metal Removal from Plating Industry Waste Waters

Jose Luis Arredondo, Fernando Felipe Rivera, José Luis Nava

2196 Effect of the Components of the Electrode on the Morphological and Electrochemical Performance of Manganese Dioxide-Based Electrode for Application in Hybrid Electrochemical Capacitor [1]

Axel Gambou-Bosca, Daniel Bélanger

2197 Electrochemical Scanning Tunneling Microscopic Observations of Pt Nanostructures Prepared by Ultra-High Vacuum Deposition Methods

Yu Asakimori, Ryutaro Kawamura, Naoto Todoroki, Toshimasa Wadayama

2198 Crystal Structure and Ferroelectric Properties of $Bi_{0.5}K_{0.5}TiO_3$-$BiFeO_3$-K(Nb, Ta)O_3 Ferroelectric Oxide

Kousuke Miyazaki, Naoya Ishida, Naoto Kitamura, Yasushi Idemoto

2199 Analysis of Crystal and Electronic Structure of Reduced Layered Material $0.5Li_2MnO_3$-$0.5LiMn_{5/12}Ni_{5/12}Co_{1/6}O_2$ during Electrochemical Cycling

Seiji Nakayama, Naoya Ishida, Naoto Kitamura, Yasushi Idemoto

2200Composition Dependence of Average and Local Structures, Electron Density Distribution and Ferroelectric Properties in (Pb,RE)(Zr,Ti,Nb)O_3 (RE=La,Nd)

Takuya Tamura, Naoya Ishida, Naoto Kitamura, Yasushi Idemoto

2201ORR Activity for Pt/Pd(111) Bimetallic Surface Prepared By Molecular Beam Epitaxy

Yohe Bando, Yu Takahashi, Erina Ueta, Naoto Todoroki, Toshimasa Wadayama

2202Effects of Morphology on Nanostructured Cobalt Oxides for Oxygen Evolution Reaction

Sung-Hwa Cho, Gilltae Roh, Jun-Young Park

2203Enhanced Oxygen Evolution Activity of 3D Nanostructured Cobalt Oxides through Doping with Various Transition Metal Oxides

Nam-In Kim, InSeop So, Jun-Young Park

2204Failure Mode and Effect Analysis of Composite Cathode on Anode-Supported SOFCs under the Accelerated Durability Testing

Tae-Hee Lee, Ka-Young Park, Ji-Tae Kim, Gilltae Roh, Jun-Young Park

2205Average, Local and Electronic Structures of $LiMn_{2-X}Al_xO_4$(x=0, 0.2) in Charge-Discharge Process by Neutron and Synchrotron X-ray

Fumihiro Tejima, Naoya Ishida, Naoto Kitamura, Yasushi Idemoto

2206Composition Dependences of Property and Conductivity in $(Sr,Ca)_3Nb_2O_{7-\delta}$

Daichi Fukuda, Naoya Ishida, Naoto Kitamura, Yasushi Idemoto

2207Electroconductive Gold Deposited Silicon Nanoparticles for Lithium Ion Battery Anode Prepared by Immersion Plating Method

Richie Kurnia Arief, Susumu Arai

2208Preparation of Carbonaceous Fiber Sheets Derived from Bamboo and Application to Gas Diffusion Layer of Proton Exchange Membrane Fuel Cells

Takuya Matsumura, Taro Kinumoto, Miki Matsuoka, Tomoki Tsumura, Masahiro Toyoda

2209Preparation of $LaMnO_3$-CNF and Its Activity for Oxygen Electrode Reaction in Alkaline Electrolyte Solution

Taro Kinumoto, Tomoki Tsumura, Masahiro Toyoda, Kohei Ono

2210Electrochemical Characterization of Lithiation and De-Lithiation of Ultra-Thin Amorphous TiO_2 Films

Sebastien Moitzheim, Shaoren Deng, Cedric Huyghebaert, Christophe Detavernier, Stefan De Gendt, Philippe M. Vereecken

2211Self-Propelled Motion of Oil Droplets on Au Electrode during Sn Electrodeposition

Tetsuaki Shiono, Yoshiharu Mukouyama

2212Electrochemical Oscillation during H_2O_2 Reduction in Basic Solutions

Mitsuhisa Hasegawa, Shuji Nakanishi, Yoshiharu Mukouyama

2213Urea Oxidation on $Ni(OH)_{2-X}(SO_4)_{0.5x}$:$yH_2o$ / C-PVC Composite Electrodes

Alejandra Romero-Morán, Miguel Ángel González Fuentes, Ma. de la Paz Elizalde-González, M. M. Dávila-Jiménez

2214Pattern Formation in the Mercury Beating Heart System

Jorge Luis Ocampo-Espindola, Elizeth Ramírez-Álvarez, Fernando Montoya, Marco Antonio Rivera

2215White Light Emission of Polystyrene (PS) Thin Films Deposited by Spray Pyrolysis

2223Determination of Methylparaben by Square Wave Voltammetry at Boron-Doped Diamond Electrode

Camila Domingues Mendonça, Sergio Antonio Spinola Machado

2224In Operando Observation of (La, Sr)CoO_3 Perovskite Oxide Solid/Gas Interface by X-ray Absorption Spectroscopy

Shinnosuke Sako, Tatsuro Haruki, Toshiaki Ina, Kiyofumi Nitta, Yuki Orikasa, Yoshiharu Uchimoto

2225Electrodeposition and Evaluation of Ruthenium Film from Divalent Ruthenium Electrolyte

Shintarou Chiba, Tomoyuki Fujinami, Susumu Arai

2226Structure and Synthesis of Bi_2S_3 Nanocrystals for Thermoelectric Device

Yu-Jen Hsiao, Te-Hua Fang, Cheng-Da Wu, Shi-Hao Wang, Bo-Yi Yang

2227New Insights on Naproxen Quantification Using Voltammetry and Graphite Electrodes: Development of an Optimized and Competitive Methodology

Guadalupe Yoselin Aguilar-Lira, Giaan Arturo Álvarez-Romero, Alberto Rojas-Hernández, María Elena Páez-Hernández, Jose Antonio Rodríguez-Ávila, Mario Alberto Romero-Romo

2228Microelectrochemical Property of δ / γ Boundary in Cast Stainless Steel

Asako Otake, Izumi Muto, Yu Sugawara, Nobuyoshi Hara

2229Elimination of Boron from Soluble Silica Via Solvent Extraction with 2,2,4-Trimethyl-1,3-Pentanediol Using a Multistage Flow-Type Reactor

Nobufumi Matsuo, Takafumi Ishihara, Takahiro Oyanagi, Kazuki Nakajima, Yasuhiro Fukunaka, Takayuki Homma

2230Superionic Conductivities in $Li_{1.7}Al_{0.3}Ti_{1.7}Si_{0.4}P_{2.6}O_{12}$ Made Using LF-FSP (Liquid-Feed Flame Spray Pyrolysis) Processing to Free Standing Thin Films

Eongyu Yi, Weimin Wang, Som Mohanty, John Kieffer, Ryo Tamaki, Richard Laine

2231Effects of the Cross-Linking Agent on Electrochemical Performances of the Lithium Metal Polymer Batteries Prepared by In-Situ Thermal Polymerization with Trimethylolpropane Treiacrylate

Jiseon Jeong, Hoogil Lee, Gyuho Shin, Insung Cho, Jaecheol Choi, Myung-Hyun Ryou, Yong Min Lee

2232The Study of Electrodeposition of Si in Tmhatfsi-$SiCl_4$ analyzed by EQCM Method

Yasuhiro Tsuyuki, Anh Huynh Tram Pham, Jason Komadina, Yasuhiro Fukunaka, Takayuki Homma

2233Characterization of Electrodeposited Co-Pt Nano-Dot Array at Initial Deposition Stage

Siggi Wodarz, Tomohiro Otani, Hiroki Hagiwara, Takayuki Homma

2234Electrochemical Characterization of Li_2s-P_2S_5 Glass-Ceramic Solid Electrolyte/Li Metal Electrode Interface

Naoto Koretaka, Eiji Higuchi, Masanobu Chiku, Hiroshi Inoue

2235New Computational Insights to Describe the Oxygen Reduction Reaction on Graphene Containing Multiple Nitrogen Functional Groups

H. Ortiz-García, J. Vazquez-Arenas, . Annia Galano, Ignacio González

2236Relaxation Rietveld Stage Analysis of Li Inserted Graphite

Takashi Kitamura, Shigeomi Takai, Takeshi Yao

2237Electrochemical Deposition of Zinc Oxide Nanotubes with Countless Small Dimples on the External Surface

Keisuke Osamura, Mariko Matsunaga

2238Catalytic Activity of Spherical Meso-Porous Pt Films-Deposited Fluorine-Doped Tin Oxide Substrate Covered By Multi-Walled Carbon Nanotube for Iodine Reduction

Michinori Endo, Hiroyuki Aoyama, Mariko Matsunaga

2239Niobium Phosphate Glass Thin Film As an Intermediate-Temperature Proton Conductor

Dae Ho Kim, Sung Bum Park, Yong-il Park

2240Improvement in Cycle-Stability of Naphthoquinone-Based Rechargeable Organic Batteries By Polymerization

Tatsuhiro Numoto, Masaru Yao, Hisanori Ando, Tetsu Kiyobayashi, Ryota Kondo, Hiroyuki T Takeshita

2241The Oxygen Reduction Reaction in Alkaline Solution

Piia Ereth Kasatkin, Eneli Härk, Rutha Jäger, Enn Lust

2242Electrochemical and Physical Characterization of Ru Activated Carbon Supported Electrodes in Alkaline Solution

Vahur Steinberg, Eneli Härk, Rutha Jäger, Enn Lust

2243Efficient Electrochemical Reduction of CO_2 to Formic Acid

Narayan Chandra Deb Nath, Hyunwoong Park, Seung Yo Choi, Jae-Joon Lee

2244Mass Transfer in an Anode-Supported Honeycomb Solid Oxide Fuel Cell

Shota Kotake, Hironori Nakajima, Tatsumi Kitahara

2245Thin Films and Superlattices in the Bi-Fe-O System Prepared by ALD

Andrew R. Akbashev, Jonathan E. Spanier

2246Cation Intercalation and High Volumetric Capacitance of Two-Dimensional Titanium Carbide

Maria R. Lukatskaya, Chang E. Ren, Olha Mashtalir, Yohan Dall'Agnese, Michel W. Barsoum, Yury Gogotsi, Patrice Simon

2247Electrochemical Characterization of Vanadium Nitride as Pseudocapacitive Electrode for Aqueous Electrochemical Capacitor

Alban Morel, RaÅ«l Lucio Porto, Saïd Bouhtiyya, Jean-François Pierson, Thierry Brousse, Daniel Bélanger

2248Oxygen Evolution at Thermally Prepared Fe_2O_3 Electrodes in Alkaline Solution

Aurélie Rovetta, Micheal E.G Lyons

2249An Investigation into the Oxygen Evolution Reaction at Manganese/ Manganese Ruthenium and Ruthenium Oxide Films in Base

Michelle Phillippa Browne, Ronan J. Cullen, Paula E Colavita, Micheal E.G Lyons

2250Effect of Local Cell Reaction on γ-NiOOH Formation in Nickel Hydrogen Battery

Taichi Iwai, Shigeomi Takai, Takeshi Yao

2251Flowable Electrodes: A Review of the Material Aspects of Capacitive Suspension Electrodes for Grid Energy Storage and Desalination Applications

Kelsey B. Hatzell, Emin Caglan Kumbur, Yury Gogotsi

2252Electrokinetic Removal of Na-24 and Tc-99m Scintillation Liquid Content Absorbed in Soil Type Phaeozem

Viridiana Valdovinos, Erika Bustos, Fabiola Monroy

2253Comparative Study of Borohydride Oxidation, at Polycrystalline and Nanostructured Copper Electrodes

Julio Ernesto Donato Moreno, Diana Elizabeth García-Rodríguez, Martín Alejandro Alatorre Ordaz, Ignacio René Galindo Esquivel, Carlos Ponce de León, Pilar Herrasti, Luis Humberto Mendoza-Huizar

2254Electrocatalytic Activity and Stability of Supported Palladium Nanoparticles

Wenbo Ju, Tine Brülle, Marco Favaro, Stefano Agnoli, Gaetano Granozzi, Oliver Schneider, Ulrich Stimming

2255Voltammetric Determination of Cisteine by Carbon Paste Electrode Cu-Hg Amalgamated

Mayela Molina, Paulina Obdulia Gil, Gabriela Roa, Guadalupe Macedo, Patricia Balderas

2256Effects of Stack Stress on Lithium-Ion Cell Degradation

John Cannarella, Craig B. Arnold

2257Free Platinum Electrcatalyts Based on Sulfur Doped Carbon Nanotubes as Electrocatalyst in Fuel Cells

Elizabeth Montiel-Macias, Ivonne Alonso-Lemus, Ysmael Verde Gomez, Perla B Balbuena

2258Robust Microbial Carbon Based Electrode System for Ureolysis of Urine

Myreisa Morales-Cruz, Roberto Morales, Roberto A. Martínez-Rodríguez, Ileana Gonzalez-Gonzalez, Gary A. Toranzos, Carlos R Cabrera

2259Effect of Surface Morphology and Pore Structure on the Water Electrolysis, O_2 Evolution Activity of Sb-Doped SnO_2 Supported IrO_2

Parisa Karimi, Brant Peppley, Aimy Bazylak, Ela Halliop

2260Study of Corrosion Inhibitors for Mg Alloy AZ31B with Variations of PCO_2 and Electrolyte Layer Thickness

Daniel Kaminski, R. Buchheit

2261Synthesis of Mesoporous Ordered $LiFePO_4$ /C Structures for Cathodes of Li-Ion Batteries

Ana Y. Palacios Enriquez, J. Vazquez-Arenas, L.I. Vera-Robles, I. González

2262All-Solid-State Thin-Film Electrochemical Capacitors Using Inorganic Nanosheets Electrolytes

Syota Ito, Shinya Suzuki, Masaru Miyayama

2263Fabrication and Evaluation of Quasi-All-Solid-State Electrochemical Capacitors with High Energy Densities

Seiji Uchida, Suzuki S., M. Miyayama

2264Enhanced Hydrogen Separation in Multilayered Ni-Zr Thin-Film

Sung Bum Park, Deok-hwan Yun, Yong-il Park

2265Thermal Conductivity Measurements of Bi_2Te_3 Nanostructure By Raman Thermography

Dambi Park, Sungjin Park, Kwaungsik Jeong, Bongyoung Yoo, Mann-Ho Cho

2266Structural and Optical Properties of Phase Change Material in Sb2Te3 Thin Film

Hyejin Choi, Seonghoon Jung, Taehyeon Kim, Jaehun Park, KwangHo Jeong, Mann-Ho Cho

2267Defect States in ALD-HfO_2 Films on InP Compound Semiconductor as a Function of Film Thickness

YuSeon Kang, DaeKyoung Kim, HangKyu Kang, Mann-Ho Cho, SangWan Cho, Hyoungsub Kim

2268Effect of Annealing Temperature on Electrochemical and Mechanical Properties of STS with Titanium Carbonitride Composites Synthesized By Spark Plasma Sintering

Bunyod Allabergenov, Amir Abidov, Soon-Wook Jeong, Sungjin Kim

2269The Effect of Etching Temperature upon the Optical Reflactance on Silicon Nanowires Grown By Electroless Etching

Victor H. Velez, Robert George Mertens, Kalpathy B Sundaram

2270Investigation of Electrical Characterization of Hetero-Junctions Formed by RF Sputtered Indium Tin Oxide on Silicon

Ashwin Kumar Saikumar, Giji Skaria, Kalpathy B Sundaram

2271Studies on Dielectric Properties of Annealed Reactively Co-Sputtered Bcn Thin Films

Adithya Prakash, Kalpathy B Sundaram

2272Unique Layered Tin Oxide Structure Via Buffered Anodization

Nils Erich Karl Mohri, Wolfgang Tremel

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2273Addressing Energy-Water Challenges Through Transformative Research

James Klausner

2274Electrochemistry and Co-Generation in Arid Regions

Ahmed Daghash Aljaberi

2275SPUDS: Self Powered Useful Devices – What We Need to Know to Make Them Useful, and Why Should We Care?

Kenneth Nealson

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Eric D. Wachsman

2277Wastewater Treatment for Water Recycling Using Microbial Fuel Cells

Orianna Bretschger

2278Systematic Variation of Membrane Chemistry and Biofilm Composition in Strategic Modifications of Microbial Fuel Cells (MFC) and Other Bio-Electrochemical Systems (BES)

John Varcoe, Claudio Avignone-Rossa, Robert CT Slade

2279Quantitative Modeling of Microbial Fuel Cells for Water Purification

Scott Calabrese Barton

2280Simultaneous Electricity Generation and Microbially-Assisted Electrosynthesis in MFCs

Iwona Gajda, John Greenman, Chris Melhuish, Ioannis Ieropolous

2281Application Driven Fundamental Research on Microbial Electrochemical Technologies: From Components to System

Uwe Schroder, Falk Harnisch

2282Bio-Electrochemical Treatment of Wastewater Organic Load: Comparison of Microbial Electrolysis, Microbial Fuel Cell and Microbial Electrochemical Snorkel Performances

B Erable, E Blanchet, L. Etcheverry, E Desmond, A Bridier, T Bouchez, A Bergel

2283In Field Applications of Single Chamber Membraneless Microbial Fuel Cells (SCMFCs) for Wastewater Treatment, Metal Reduction and Nutrients Removal

Pierangela Cristiani, Stefano P. Trasatti

2284Microbial Fuel Cell for Energy Generation and Wastewater Treatment

Yevgenia Ulyanova, Sameer Singhal

2285Research and Study of Low-cost and Reliable Materials for Anode and Cathode Electrodes in Bioelectrochemical Systems (BESs): Scale Up of Materials for Real Application

Carlo Santoro, Sofia Babanova, Plamen Atanassov, Stefano P. Trasatti, Pierangela Cristiani

2286Engineering of Microbial Fuel Cells: The Things We Need to Know to Move Forward

Sofia Babanova, Orianna Bretschger, Kateryna Artyushkova, Plamen Atanassov

2287Engineered, Modular Microbial Communities for Simultaneous Wastewater Decontamination and Energy Generation

Linnea K Ista, Plamen Atanassov, David T Hanson, Mohamed El-Naggar

2288Low Energy High Rate Anaerobic – Aerobic Digestion (HRAAD) and Applications

Michael John Cooney

2289Anaerobic Electrochemical Membrane Bioreactor (AnEMBR) for Low-Strength Wastewater Treatment with Resource Recovery

Krishna Katuri, Craig Werner, Rodrigo Jimenez-Sandoval, Wei Chen, Sungil Jeon, Zhiping Lai, Gary Amy, Pascal Saikaly

2290Electrofuel Production Using Genetically Engineered Acidithiobacillus Ferrooxidans

Scott Banta, Alan West

2291Membrane Design for Water Separation Technologies

Suzana Pereira Nunes

2292Electrically Conducting Membranes - Challenges and Opportunities

David Jassby

2293Bi-Directional DC/DC Converter Coupled with Capacitive Deionization for Efficient Desalination

Ayokunle Omosebi, Xin Gao, James Landon, Kunlei Liu, Aaron M Cramer, Zhiao Li

2294PV-Powered Electrochemical Toilet Wastewater Treatment with Hydrogen Gas Cogeneration: Field Application

Clement Cid, Michael Hoffmann, Kangwoo Cho, Yan Qu, Asghar Aryanfar, Daejung Kwon, Cody Finke

2295Electrochemical Disinfection of Liquid Human Waste for Developing World Application

Tate Rogers, Kathryn Jackson, Michael Flynn, Brian R. Stoner, Brfent R Rowe

2296Electrochemical Oxidation of Phenol Using Boron-Doped Diamond Electrodes

Carlos M Hangarter, William E. O'Grady, Brian R. Stoner, Paul Natishan

2297Water Quality and Water Toxicity Sensing

Shelley D. Minteer

2298(High Temperature Materials Division Outstanding Achievement Award) Semiconducting Properties and Defect Disorder of Indium-Doped Titanium Dioxide

Janusz Nowotny, Tadeusz Bak

2299Disinfection of Liquid Human Waste through Photoelectrochemical Treatment

Qing Peng, Akshay S. Raut, Isvar A. Cordova, Charles B. Parker, Jason J. Amsden, Brian R. Stoner, Jeffrey T. Glass

2300Two Peas in a Pod: Sustainable Electrochemical Solutions for Waste and Water Reuse

Gemma Reguera

2301The Right Tool for the Job: Genetic, Genomic, and Evolutionary Studies of Organisms Suited for Industrial Strength Bioelectrocatalysis

Daniel R Bond

2302Enrichment of Novel Electroactive Bacteria from Sediments via Potentiostatic Growth

Lucinda Doyle, Stefan Wuertz, Enrico Marsili

2303Electron and Ionic Transport in Microbial Anode Respiration and Their Importance in Microbial Electrochemical Cell Applications

Sudeep Popat, Prathap Parameswaran, César Torres

2304Biofilms in Water-Energy-Nexus

Haluk Beyenal

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2305Growth and Features of TiO_2 Nanotubes Surfaces on Industrial Titanium by Anodizing in Organic Medium

Ildefonso Zamudio-Torres, José Jesús Perez-Bueno, Yunny Meas-Vong

2306Assessment of Cytocompatibility and Magnetic Properties of Nanostructured Silicon Loaded with Superparamagnetic Iron Oxide Nanoparticles

Petra Granitzer, Klemens Rumpf, Yuan Tian, Jeffery Coffer, Giri Akkaraju, Peter Poelt, Michael Reissner

2307Morphology Controlled Magnetic Interactions of Porous Silicon Embedded Nanostructures

Klemens Rumpf, Petra Granitzer, Nobuyoshi Koshida, Peter Poelt, Herwig Michor

2308Effect of Metal Thickness and Pattern Size on Micro-Scale Metal-Assisted Chemical Etching on Silicon

Keorock Choi, Yunwon Song, Jungwoo Oh

2309The Morphology and Electrochemical Properties of Pt and GDC Nano Composite Films Using Co-Sputtering Method

Yoon Ho Lee, Suk Won Cha, Gu Young Cho, Sanghoon Ji, Joonho Park, Ikwhang Chang

2310Antirefletive Characteristics of Disordered GaAs Subwavelength Structures Realized By Metal-Assisted Chemical Etching Using Thermally Dewetted Au Catalytic Nanoparticles

Yunwon Song, Keorock Choi, Jungwoo Oh

2311Electrochemical Formation of GaN Porous Structures Under UV-Light Irradiation for Photoelectrochemical Application

Taketomo Sato, Akio Watanabe, Yusuke Kumazaki, Zenji Yatabe

2312Ultrastable Surfactant Free Silver Nanoparticles Study for Application in Green Housing and Cancer Treatment

Erwan Rauwel, Siim Küünal, Protima Rauwel, Mithu Guha, Sander Kutti, David Wragg

2313Real-Time FET-Based Biosensor Using the Wet Cyclone Air Sampler

Gi-woon Sung, Chisung Ahn, Taesung Kim

2321NiO-SDC Mixed Ionic Electronic Conducting Anode for Low Temperature Thin Film SOFCs

Gu Young Cho, Suk Won Cha, Yoon Ho Lee, Taehyun Park, Seungtak Noh