



PACIFIC RIM MEETING
ON ELECTROCHEMICAL
AND SOLID-STATE SCIENCE

Call for Papers

The joint international meeting of:



ECS — 214th Meeting • The Electrochemical Society of Japan — 2008 Fall Meeting

with the technical co-sponsorship of:



THE KOREAN
ELECTROCHEMICAL
SOCIETY



Chinese Society of
Electrochemistry

Japan Society of Applied Physics
Korean Electrochemical Society
Electrochemistry Division of the Royal Australian Chemical Institute
Chinese Society of Electrochemistry

Hilton Hawaiian Village Beach Resort & Spa, Honolulu, HI
October 12-17, 2008

PRiME 2008 ♦ Call for Papers ♦ October 12-17, 2008

Abstracts are due no later than May 30, 2008.

NOTE: Some abstracts are due earlier than May 30, 2008. Please carefully check the symposium listing for any alternate abstract submission deadlines. For complete details on abstract submission and symposia topics, please see www.electrochem.org.

Abstract Submission

Submit one original meeting abstract electronically via www.electrochem.org, no later than **May 30, 2008**. Faxed abstracts, late abstracts, and abstracts more than one page in length will not be accepted. In June 2008, all presenting authors will receive an email from the ECS headquarters office notifying them of the date and time of their presentation. Only authors with a non-U.S. address will receive a hardcopy acceptance letter. Other hardcopy letters will be sent only upon request.

Meeting abstracts should explicitly state objectives, new results, and conclusions or significance of the work. Abstracts **must** be properly formatted and no more than **one page in length**. Please use the preformatted template located at http://www.electrochem.org/meetings/guidelines/abst_sub.htm. Programming for this meeting will occur in June of 2008, with some papers scheduled for poster presentation. Check the ECS website for further program details.

Paper Presentation

All authors selected for either oral or poster presentations will be notified in June of 2008. Oral presentations must be in English. Only LCD projectors will be provided for oral presentations. **Presenting authors are required to bring their own laptops to the meeting.** We strongly suggest that presenting authors verify laptop/projector compatibility in the speaker ready room prior to their presentation at the meeting. Speakers requiring additional equipment must make written request to the ECS headquarters office at least two weeks prior to the meeting and appropriate arrangements will be worked out, subject to availability, and at the expense of the author. Poster presentations should be displayed in English, on a board approximately 4 feet high by 8 feet wide (1.22 meters high by 2.45 meters wide), corresponding to the abstract number and day of presentation in the final program.

Manuscript Publication

Meeting Abstracts — All meeting abstracts will be published both on the ECS website and in the Meeting Abstracts CD-ROM copyrighted by ECS, and become the property of ECS upon presentation.

ECS Transactions — All full papers presented at ECS meetings are eligible for submission to the online publication, *ECS Transactions* (ECST). Each meeting is represented by a "volume" of ECST, and each symposium is represented by an "issue."

Some symposia will publish their issues to be available for sale "AT" the meeting; some of these issues will also be available in a hard-cover edition. Please see each individual symposium listing in this Call to determine if there will be an "AT" meeting issue. In this case, submission to ECST is mandatory, and required in advance of the meeting.

Some symposia will publish their issues to be available "AFTER" the meeting. Even if an individual symposium listing does not specify publication of an ECST issue, all authors are still encouraged to submit their full papers. To determine acceptance in ECST, all submitted manuscripts will be reviewed, either by the symposium organizers or by the ECST Editorial Board. After the meeting, all accepted papers in ECST will be available for sale, either individually, or by issue.

Papers presented at the meeting, and papers submitted to ECST, may also be submitted to the Society's technical journals: the *Journal of The Electrochemical Society* or *Electrochemical and Solid-State Letters*. Full manuscripts must be submitted within six months of the symposium date. "Instructions to Authors" are available from the ECS headquarters office, the journals, or the ECS website.

Please visit the ECST website (<http://ecsd.org/ECST/>) for additional information, including overall guidelines, deadlines for submissions and reviews, author and editor instructions, a manuscript template, and much more.

If publication is desired elsewhere after presentation, written permission from ECS is required.

Financial Assistance

Financial assistance is very limited and generally governed by the symposium organizers. Individuals may inquire directly to the symposium organizers of the symposium in which they are presenting their paper to see if funding is available. Individuals requiring an official letter of invitation should write to the ECS headquarters office; such letters will not imply any financial responsibility of ECS. Students seeking financial assistance should consider awarded travel grants (see page 87).

Hotel Reservations

PRiME 2008 will be held at the Hilton Hawaiian Village Beach Resort and Spa, Honolulu, Hawaii.

Special rates have been reserved at the Hilton Hawaiian Village Beach Resort and Spa for participants attending this meeting. The reservation deadline is **September 12, 2008** please refer to ECS website for rates and reservations.

Meeting Registration

All participants, including authors and invited speakers of PRiME 2008, are required to pay the appropriate registration fees. Hotel and meeting registration materials will be distributed in July 2008 and will also be available on the ECS website. The deadline for advance registration is **September 12, 2008**.

Short Courses

PRiME 2008 will also include several short courses on Sunday, October 12, 2008 from 9:00 AM – 4:30 PM. Short Course fees are currently \$425 for members of participating societies, \$520 for nonmembers, and are subject to change without notice. A 50% discount will be given to students with student verification. Short Courses require advance registration and may be cancelled if enrollments are too low. Please check the ECS website for any last-minute details. The Short Course topics as of press-time are as follows: Basic Impedance Spectroscopy, PEM Fuel Cells, Electrodeposition of Magnetic Materials, Operation and Applications of Electrochemical Capacitors, Fundamentals of Electrochemistry, and Atomic Layer Deposition.

Technical Exhibit

PRiME 2008 will also include a Technical Exhibit, featuring presentations and displays by over 30 manufacturers of instruments, materials, systems, publications, and software of interest to meeting attendees. Full exhibit booths manned by company representatives cost \$1,800 and include one free meeting registration. Literature display tables (unstaffed by company representatives; no meeting registration included) will also be available for \$850. Parties interested in exhibiting should contact Amir Zaman at the ECS headquarters office for more information. Coffee breaks are scheduled each day in the exhibit hall along with evening poster sessions.

Sponsorship Opportunities

Sponsors will be recognized by level on the ECS website; in ECS's quarterly magazine, *Interface*; in the Meeting Program; in the Technical Exhibit Guide; by placement of the company logo on the registrant bags for Platinum and Gold levels, and company name for Silver and Bronze levels; and on signage at the event for all sponsors.

New for PRiME: Platinum level sponsors will receive one complimentary exhibit booth and three (3) complimentary meeting registrations. Gold level sponsors will receive two (2) complimentary meeting registrations.

The Levels are: Platinum: \$10,000+, Gold: \$5,000+, Silver: \$1,500+, and Bronze: less than \$1,500.

In addition, sponsorships are available for the plenary talks and other special events. These opportunities include the recognition stated above along with additional personalized packages. Special event sponsorships will be assigned on a first-come, first-served basis. For more information, contact Amir Zaman at ECS headquarters.

Contact Information

If you have any questions or require additional information, contact the meeting management: ECS, 65 South Main Street, Pennington, New Jersey, 08534-2839, USA, tel: 609.737.1902, fax: 609.737.2743, e-mail: ecs@electrochem.org; Web: www.electrochem.org.

SYMPOSIUM TOPICS

A General Topics

- A1 — General Student Poster Session
- A2 — Nanotechnology General Session
- A3 — Tutorials in Nanotechnology: Focus on Sensors

B Batteries, Fuel Cells, and Energy Conversion

- B1 — Battery and Energy Technology Joint General Session
- B2 — Electrochemical Capacitors and Hybrid Power Sources
- B3 — High Power Batteries for Hybrid EV and Portable Power
- B4 — Intercalation Compounds for Energy Conversion and Storage Devices
- B5 — Large Scale Energy Storage for Renewable Energy and Other Applications
- B6 — Micro Power Sources
- B7 — Non-Aqueous Electrolytes for Lithium Batteries
- B8 — PEM Fuel Cells 8
- B9 — Rechargeable Lithium and Lithium Ion Batteries
- B10 — Solid State Ionic Devices 6 – Nano Ionics

C Biomedical Applications and Organic Electrochemistry

- C1 — Biological Nanostructures, Materials, and Applications
- C2 — Challenges to Single-Cell Engineering and Imaging Technology
- C3 — New Frontiers of Synthetic and Mechanistic Organic Electrochemistry

D Corrosion, Passivation, and Anodic Films

- D1 — Corrosion General Poster Session
- D2 — Corrosion and Electrochemical Properties of Bulk Metallic Glasses and Mono-Crystalline Materials
- D3 — Corrosion in Marine and Saltwater Environments 3
- D4 — Critical Factors in Localized Corrosion 6, in Honor of Professor Shibata
- D5 — High Temperature Corrosion and Materials Chemistry 7
- D6 — Porous Semiconductors: A Symposium Held in Memory of Vitali Parhutik and Volker Lehmann

E Dielectric and Semiconductor Materials, Devices, and Processing

- E1 — Solid State Divisions General Session
- E2 — Atomic Layer Deposition Applications 4
- E3 — High k Dielectric Constant Materials and Gate Stacks
- E4 — High Purity Silicon 10
- E5 — Integrated Optoelectronics 4
- E6 — Low k Inter-Level Metal Dielectrics and New Contact and Barrier Metallurgies/Structures
- E7 — Nitrides and Wide-Bandgap Semiconductors for Sensors, Photonics, and Electronics 9
- E8 — Nonvolatile Memory and Its Evolution
- E9 — One-Dimensional Nanoscale Electronic and Photonic Devices 2

E10 — Science and Technology of Dielectrics for Active and Passive Devices

E11 — Semiconductor Wafer Bonding 10: Science, Technology, and Applications

E12 — State-of-the-Art Program on Compound Semiconductors 49 (SOTAPOCS 49)

E13 — Thin Film Transistors 10 (TFT 10)

E14 — ZnO Based Thin Films, Nano-Wires, and Nano-Belts for Photonic and Electronic Devices and Sensors

E15 through E23 — SiGe and Ge: Materials, Processing, and Devices 3

F Electrochemical / Chemical Deposition and Etching

- F1 — Bio-inspired Materials Synthesis
- F2 — Electronics Packaging 3
- F3 — Green Electrodeposition
- F4 — Magnetic Materials, Processes, and Devices 10
- F5 — Molecular Structure of the Solid-Liquid Interface and Its Relationship to Electrodeposition 6

G Electrochemical Synthesis and Engineering

- G1 — Electrodes for Industrial Electrochemistry
- G2 — Tutorial Symposium on Electrochemical Engineering in Honor of Professor John Newman's 70th Birthday

H Fullerenes, Nanotubes, and Carbon Nanostructures

- H1 — Nanostructure and Function of Fullerenes, Carbon Nanotubes, and Related Materials

I Physical and Analytical Electrochemistry

- I1 — Physical, Analytical, and Spectro-Electrochemistry General Session
- I2 — Bioelectroanalysis
- I3 — Electrocatalysis
- I4 — Environmental Electrochemistry
- I5 — Molten Salts and Ionic Liquids 16

J Sensors and Displays: Principles, Materials, and Processing

- J1 — Chemical Sensors 8: Chemical (Gas, Ion, Bio) Sensors and Analytical Systems
- J2 — Microfabricated and Nanofabricated Systems for MEMS/NEMS 8
- J3 — Phosphors for New-Generation Lighting
- J4 — Physics and Chemistry of Luminescent Materials, including the 4th Symposium on Persistent Phosphors

PRIME 2008 CALL FOR PAPERS

A — General Topics

A1 General Student Poster Session ECS / ECSJ

This poster session provides a forum for graduate and undergraduate students to present research results of general interest to ECS. The purpose of this session is to foster and promote work in both electrochemical and solid-state science and technology, and to stimulate active student interest and participation in ECS. A competition for the two best posters will be part of the session. A cash prize of \$250 and a scroll will be awarded to the winning student authors. In the case of coauthors, a maximum award of \$750 per winning poster will be divided equally between student coauthors. The awards will be made without regard to gender, citizenship, race, or financial need.

An issue of *ECS Transactions* is planned to be published "AFTER" the meeting. All authors accepted for presentation are encouraged to submit their full text manuscript for the issue no later than November 1, 2008. All manuscripts will be submitted online, and must be in either MS Word or PDF format.

Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **V. Desai**, New Mexico State University, e-mail: vimalc@nmsu.edu; **G. Botte**, Ohio University, e-mail: botte@bobcat.ent.ohiou.edu; **P. Kulesza**, University of Warsaw, e-mail: pkulesza@alfa.chem.uw.edu.pl; **H. Martin**, Case Western Reserve, e-mail: hbm@cwru.edu; **V. R. Subramanian**, Tennessee Tech Univ., e-mail: vsbramania@tntech.edu; **M. Watanabe**, Yokohama National University, e-mail: mwatanab@ynu.ac.jp; and **X. Zhang**, North Carolina State Univ., e-mail: xiangwu_zhang@ncsu.edu.

A2 Nanotechnology General Session ECS / ECSJ

The emergence of nanotechnology as a major field of research has touched almost every scientific discipline. The number of applications for materials that are prepared on a nanometer scale is expanding rapidly. The advancement of these applications is made possible by the new methods of preparation and characterization of materials and composites on a nanometer scale. Examples include catalysts for fuel cell applications, semiconductors for photovoltaic and photoelectrochemical solar energy conversion, and chemical and biological sensors.

This symposium will focus on critical issues and state-of-the-art developments in the science and technology of nanostructured materials and devices for electrochemistry applications. Papers are solicited in all areas related to materials including metals, ceramics, semiconductors, organic compounds and polymers, and to devices including molecular/nano electronics, chemical and biological sensors, and actuators.

Areas of interest include: semiconductor and metal nanoparticles and metal/semiconductor nanocomposites; size quantization effects in semiconductor nanoparticles; fundamentals of nucleation and growth of nanoparticles; novel synthesis methods of nanostructured materials; processing

of nanostructured materials; advanced characterization techniques for nanostructured materials; modelling and tailoring of nanostructured materials; nanocomposites and interfacial phenomena; photoinduced charge separation and interfacial charge transfer; photoelectrochemistry of nanostructured films; photocatalysis and environmental applications; nano-ionics; nanostructured catalysts for fuel cells; nanostructured sensor surfaces; and biological applications of nanomaterials.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **E. Traversa**, University of Rome Tor Vergata, e-mail: traversa@uniroma2.it; **C. Bock**, National Research Council of Canada, Institute for Chemical Processes and Environmental Technologies, e-mail: Christina.Bock@nrc-cnrc.gc.ca; **J. Li**, NASA Ames Research Center, e-mail: jingli@mail.arc.nasa.gov; **Z-F. Liu**, Peking University, e-mail: zfliu@pku.edu.cn; **G. Sandi**, Argonne National Laboratory, e-mail: gsandi@anl.gov; **T. Tatsuma**, Institute of Industrial Sciences, University of Tokyo, e-mail: tatsuma@iis.u-tokyo.ac.jp; and **W. van Schalkwijk**, EnergyPlex Corp., e-mail: walter@energyplex.com.

A3 Tutorials in Nanotechnology: Focus on Sensors ECS / ECSJ

The objective of this session is to provide a tutorial on pertinent topics in nanotechnology related to sensors and NEMS. The field is rapidly advancing and it has experienced renewed activity of relevance to sensors and nanomechanical systems. In addition to the controversy over opposing methods of nanofabrication viewed as "top-down" or "bottom-up" methods, analysis and implementation of nanostructures in chemical and biosensors is generating new insights. Nanoscale sensors offer higher sensitivity and the opportunity for molecular tailoring of the interface for chemical and biological selective binding which can have significant impact on future sensing methods. Potential topics include: atomic layer deposition, atomic force microscopy, template methods of nanostructure fabrication, nanoelectronic sensors, nanomaterials for sensors and nanobio-fluidic systems and sensors. Papers will be by invitation only; abstracts will be submitted via the ECS website.

An issue of *ECS Transactions* is planned to be published "AFTER" the meeting. All authors accepted for presentation are encouraged to submit their full text manuscript for the issue no later than November 1, 2008. All manuscripts will be submitted online, and must be in either MS Word or PDF format.

Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **P. J. Hesketh**, Georgia Institute of Technology, e-mail: peter.hesketh@me.gatech.edu; **C. Bock**, National Research Council of Canada, e-mail: Christina.Bock@nrc-cnrc.gc.ca; **F. Kitamura**, Tokyo Institute of Technology, e-mail: kitamura@echem.titech.ac.jp; **M. Saito**, Tokyo University of Agriculture and Technology, e-mail: mikako@cc.tuat.ac.jp; **G. Sandi**, Argonne National Laboratory, e-mail: gsandi@anl.gov; **M. Tabib-Azar**, Case Western Reserve University, e-mail: Mxt7@po.cwru.edu; and **P. Vanýsek**, Northern Illinois University, e-mail: pvanýsek@niu.edu.

B — Batteries, Fuel Cells, and Energy Conversion

B1 Battery and Energy Technology Joint General Session

ECS Battery / ECS Energy Technology / ECSJ Battery Committee

Papers are solicited on the fundamental and applied aspects of energy storage and energy conversion not covered by other symposia at this meeting. Of particular interest are new materials and designs, performance studies, and modeling of all types of batteries and fuel cells including aqueous, non-aqueous, polymer electrolyte, ionic liquids, and solid electrolyte systems.

An issue of *ECS Transactions* is planned to be published "AFTER" the meeting. All authors accepted for presentation are encouraged to submit their full text manuscript for the issue no later than November 1, 2008. All manuscripts will be submitted online, and must be in either MS Word or PDF format.

Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **C. Walk**, BAE Systems Applied technologies, e-mail: dick.walk@gmail.com; **N. Imanishi**, Mie University, e-mail: imanishi@chem.mie-u.ac.jp; **S. R. Narayan**, Jet Propulsion Laboratory, e-mail: s.r.narayanan@jpl.nasa.gov; and **Y. Takeda**, Mie University, e-mail: takeda@chem.mie-u.ac.jp.

B2 Electrochemical Capacitors and Hybrid Power Sources

ECS Battery / ECS Energy Technology / ECS Industrial Electrochemistry and Electrochemical Engineering / ECSJ Capacitor Committee / KECS Capacitor Committee

Electrochemical capacitors based in part or in whole on the electrical double layer at electrode interfaces have found application in a variety of energy storage applications. Papers for the symposium are solicited that cover all fundamental and practical aspects of ultracapacitors, supercapacitors and similar electrochemical energy conversion devices, including: (1.) double layer and/or pseudo-capacitance of carbons, conducting polymers, and advanced inorganic materials; (2.) syntheses and characterization of high surface area materials for electrochemical capacitors; (3.) development and optimization of practical ultra- and supercapacitor components, including current collectors, electrodes, electrolytes, separators and packaging; (4.) performance of new device designs and constructions using symmetric and asymmetric electrode constructions; (5.) mathematical models for performance characterization; and (6.) comparison of energy, power and lifetime characteristics of hybrid fuel cell and battery power sources utilizing electrochemical capacitors. Keynote speakers will present tutorials covering recent advances, and future directions for electrochemical capacitor technology.

A hard-cover issue of *ECS Transactions* is planned to be available "AT" the meeting. All authors accepted for presentation are obligated to submit their full text manuscript for the issue no later than July 1, 2008. All manuscripts will be submitted online, and must be in either MS Word or PDF format.

Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **R. J. Brodd**, Broddarp of Nevada, e-mail: Ralph.brodd@broddarp.com; **K. Abraham**, E-Kem

Sciences, e-mail: kmabraham@comcast.net; **K. B. Kim**, Yonsei University, e-mail: kbkim@yonsei.ac.kr; **M. Morita**, Yamaguchi University, e-mail: morita@yamaguchi-u.ac.jp; **K. Naoi**, Tokyo University of Agriculture and Technology, e-mail: k-naoi@cc.tuat.ac.jp; **S.-G. Park**, Chungbuk University, e-mail: sgpark@cbnu.ac.kr; **V. Srinivasan**, Lawrence Berkeley National Laboratory, e-mail: vsrinivasan@lbl.gov; **P. Simon**, Université Paul Sabatier, LCMIE/CIRIMAT, France, e-mail: simon@chimie.ups-tlse.fr; **W. Sugimoto**, Shinshu University, e-mail: wsugi@gipctc.shinshu-u.ac.jp; and **K. Zaghib**, Hydro-Quebec, IREQ - Service Chimie des Matériaux, e-mail: Zaghib.Karim@ireq.ca.

B3 High Power Batteries for Hybrid EV and Portable Power Sources

ECS Battery / ECSJ Battery Committee

High power applications including hybrid electric vehicles (HEV), plug-in hybrids (PHEV), power tools, and back-up power represent the most rapidly growing area of battery technology today. Papers are solicited on fundamental and applied aspects of new materials, components, and cell designs for high power systems. Submissions on modeling, mechanical and thermal design, performance testing, and life evaluation of high power batteries are also welcome.

An issue of *ECS Transactions* is planned to be published "AFTER" the meeting. All authors accepted for presentation are encouraged to submit their full text manuscript for the issue no later than November 1, 2008. All manuscripts will be submitted online, and must be in either MS Word or PDF format.

Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **Y.-M. Chiang**, Massachusetts Institute of Technology, e-mail: ychiang@mit.edu; **Z. Ogumi**, Kyoto University, e-mail: ogumi@scl.kyoto-u.ac.jp; and **K. Tatsumi**, National Institute of Advanced Industrial Science and Technology (AIST); e-mail: tatsumi-kuniaki@aist.go.jp.

B4 Intercalation Compounds for Energy Conversion and Storage Devices

ECS Energy Technology / ECS Battery / ECS Physical and Analytical Electrochemistry / ECSJ Battery Committee

This symposium will provide an international forum to discuss recent progress that has been made in the development of intercalation compounds for energy conversion and storage. The symposium will focus on both basic and applied research findings that have led to improved materials and to the understanding of the fundamental processes that determine and control electrochemical performance. A major (but not exclusive) theme of the symposium will be intercalation anodes and cathodes for batteries based on lithium or hydrogen transport. Specific topics of interest include: (1.) synthesis and characterization; (2.) materials processing and engineering; (3.) structure and reaction mechanisms; (4.) electrochemical properties and cell performance; (5.) structural stability as a function of state-of-charge and cycling; (6.) fundamental aspects of redox processes and charge transfer; (7.) physical characterization of intercalation compounds, including NMR, electronic, magnetic, spectroscopic and other methods; and (8.) theoretical modeling of intercalation compounds and electrochemical processes. Papers will be presented in both oral and poster sessions. Each session will contain both invited and contributed papers.

An issue of *ECS Transactions* is planned to be published "AFTER" the meeting. All authors

accepted for presentation are encouraged to submit their full text manuscript for the issue no later than November 1, 2008. All manuscripts will be submitted online, and must be in either MS Word or PDF format.

Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **K. Zaghib**, Institut de Recherche d'Hydro-Québec (IREQ), e-mail: zaghib.karim@ireq.ca; **C. M. Julien**, Université P. et M. Curie, e-mail: cjul@ccr.jussieu.fr; **R. Mantz**, U.S. Army Research Office, e-mail: Robert.a.mantz@us.army.mil; **T. Ohzuku**, Osaka City University (OCU), e-mail: ohzuku@a-chem.eng.osaka-cu.ac.jp; **S. Whittingham**, State University of New York at Binghamton (SUNY), e-mail: stanwhit@binghamton.edu; and **Y.-Y. Xia**, Fudan University, email: yxyxia@fudan.edu.cn.

B5 Large Scale Energy Storage for Renewable Energy and Other Applications

ECS Energy Technology / ECSJ Energy Committee

Renewable energies, such as solar and wind, have enjoyed great technology advancement in recent years, and they are ideal energy resources for the sustainable growth of our society. In order to capture energy generated from renewable sources, it is critical to have adequate energy storage, especially at large scale. This symposium is to focus on large-scale energy storage systems and papers are welcomed from both fundamental studies and practical applications. Areas of interest for this symposium include: (1.) large scale storage of solar energy; (2.) large scale storage of wind energy; (3.) large scale batteries for transportation and undisrupted power supply; (4.) hydrogen energy; and (5.) other related applications. Technology areas related to flow batteries, lithium batteries, nickel metal hydride batteries, air metal batteries, high temperature batteries, and supercapacitors are welcome.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **C. Wei**, General Electric Global Research, e-mail: weic@crd.ge.com; **W. Cai**, General Electric Global Research, e-mail: wei.cai@ge.com; **A. Negishi**, National Institute of Advanced Industrial Science and Technology (AIST), e-mail: a.negishi@aist.go.jp; and **K. Ota**, Yokohama National University, e-mail: ken-ota@ynu.ac.jp.

B6 Micro Power Sources

ECS Battery / ECS Energy Technology / ECSJ Battery Committee

From smart cards to wireless networks and sensors, there are many autonomous applications where the power source must be much smaller, thinner, or longer lived than commercial battery button cells. This symposium will address fundamental challenges and advances to reduce the size of battery, capacitor, or fuel cell systems to the mm³ range. Novel micro-specific approaches to the chemistry, electrochemistry, modeling, fabrication, integration, design, performance, and components are all encompassed within this symposium. Specific advances in thin film, 3D, and thick film power source architectures which may enhance

the power density and volumetric energy density are strongly encouraged for submission. Papers addressing challenges to recharge battery and capacitors using harvested energy through micro photovoltaics, thermoelectrics, and other means are also solicited.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **N. Dudney**, Oak Ridge National Lab, e-mail: dudney@ornl.gov; **G. Amatucci**, Rutgers University, e-mail: gamatucc@rci.rutgers.edu; and **R. Kanno**, Tokyo Institute of Technology, e-mail: kanno@echem.titech.ac.jp.

B7 Non-Aqueous Electrolytes for Lithium Batteries

ECS Battery / ECS Physical and Analytical Electrochemistry / ECSJ Battery Committee

The electrolyte plays a vital role for the performance of rechargeable lithium batteries with a Li metal anode as well as Li-ion batteries. A better understanding of the elementary processes involved in the formation of the electrolyte/electrode interface and charge transfer kinetics in relation to solvent, salt, additive, and electrode material is crucial to the further optimization of Li and Li-ion batteries. This symposium will focus on both the fundamental and applied aspects of the electrolyte for Li and Li-ion batteries. Topics of interest include, but are not restricted to, the theoretical and experimental studies of structure-property relationships of electrolytes; development of new salts, solvents and additives; development of electrolytes for 5 V Li and Li-ion batteries; studies and approaches leading to the understanding of electrode/electrolyte interfacial phenomena and the charge transfer processes; electrolytes with enhanced non-flammability; electrolytes for wide temperature range operations; and cell performance improvement with respect to that of electrolyte materials.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **R. Jow**, U.S. Army Research Laboratory, e-mail: rjow@arl.army.mil; **W. Henderson**, North Carolina State University, e-mail: whender@ncsu.edu; **B. Lucht**, University of Rhode Island, e-mail: blucht@chm.uri.edu; and **M. Ue**, Mitsubishi Chemical Corporation, e-mail: 3707052@cc.m-kagaku.co.jp.

B8 PEM Fuel Cells 8

ECS Energy Technology / ECS Physical and Analytical Electrochemistry / ECS Battery / ECS Industrial Electrochemistry and Electrochemical Engineering / ECSJ Fuel Cell

This international symposium is devoted to all aspects of research, development, and engineering of proton exchange membrane (PEM) fuel cells and stacks, as well as low-temperature direct-fuel cells. The intention is to bring together the international community working on

the subject and to enable effective interactions between research and engineering communities. The symposium is coordinated by means of four different sections as outlined below. Abstracts for oral and poster contributions must be submitted to the symposium via the ECS website.

Section A: Fuel Cell Systems, Cell Stack, and Component Hardware

Organizers: T. Fuller, K. Shinohara, V. Ramani, and P. Shirvanian

Presentations that discuss: (1.) new cell and stack structures, including new types of bipolar plates and flow fields; (2.) novel gas diffusion medium substrates and micro-porous layer designs; (3.) modeling and diagnostic methods to characterize mass- and heat-transport related phenomena (e.g., water flooding); (4.) in-situ measurement or visualization of reactants and products, and (5.) design and specifics of complete power systems in the context of transportation and stationary power generation applications as well as for micro-fuel cell systems.

Section B: Durability

Organizers: H. Uchida, S. Cleghorn, and M. Inaba

Presentations that discuss: (1.) fundamental degradation mechanisms of fuel-cell materials (e.g., materials corrosion, decomposition, and contamination); (2.) the durability of complex fuel-cell components (e.g., voltage degradation mechanisms); (3.) the impact of transient operating conditions on fuel cell durability/reliability; and (4.) the reliability of fuel cell systems for power generation (e.g., maintenance, and reliability of ancillary components).

Section C: New Materials and Electrode Processes

Organizers: S. Mitsushima, P. Strasser, and H. Nakagawa

Presentations that discuss: (1.) electrocatalysis of fuel cell reactions, particularly at the catalyst/ionomer interface and methods to increase anode and cathode performance; (2.) computational approaches and experiments with idealized model surfaces used toward the design of novel catalysts and/or catalyst supports; (3.) ionomeric membrane thermodynamics and transport characteristics; (4.) new ionomeric membrane development, especially for high temperature, and (5.) in situ materials diagnostics

Section D: Direct Fuel Cells

Organizers: H. A. Gasteiger, T. Zawodzinski, and C. Lamy

Presentations that discuss: (1.) Mechanisms of fuel-cell reactions occurring by direct oxidation fuels other than hydrogen, including alcohols, hydrogen carriers, such as borohydrides, ammonia, and ethers; (2.) new materials addressing specific challenges for direct fuel cells, e.g., crossover and oxidation catalysts; (3.) general operational aspects of direct fuel cells; and (4.) development of new membranes with lower rates of crossover, such as anionic ionomers.

In order to encourage active participation of new and talented researchers in the field, we anticipate awarding **Travel Grants** of at least \$500 in support of outstanding abstract submissions made by **graduate students** and **postdoctoral fellows** to the symposium. Awards will be made based on originality of the work and importance to the field. If you would like to apply for the travel grant, please submit your abstract, your resume, and your publication list to the organizers listed for your section. To be eligible for a student travel award, you must submit a manuscript for the transactions. In addition, we are planning to award a prize for the best presentation within the symposium by

a graduate student or postdoctoral fellow. If you would like to be considered for this award, please send an email to S. Cleghorn indicating your interest and student/postdoc status. Again submission of a manuscript is required. A **Short Course** on PEM Fuel Cells will be held the Sunday of the meeting.

A hard-cover issue of ECS Transactions is planned to be available "AT" the meeting. All authors accepted for presentation are obligated to submit their full text manuscript for the issue no later than July 1, 2008. All manuscripts will be submitted online, and must be in either MS Word or PDF format.

Section A: T. Fuller, Georgia Institute of Technology, e-mail: tom.fuller@gttri.gatech.edu; **K. Shinohara**, Nissan Motor Co. LTD, e-mail: k-shino@mail.nissan.co.jp; **V. Ramani**, Illinois Institute of Technology, e-mail: ramani@iit.edu; and **P. Shirvanian**, Ford Motor Co., e-mail: ashirvan@ford.com.

Section B: H. Uchida, University of Yamanashi, e-mail: h-uchida@yamanashi.ac.jp; **S. Cleghorn**, W. L. Gore & Associates, e-mail: scelghorn@wlgore.com; and **M. Inaba**, Doshisha University, e-mail: minaba@mail.doshisha.ac.jp.

Section C: S. Mitsushima, Yokohama National University, e-mail: mitsushi@ynu.ac.jp; **P. Strasser**, University of Houston, e-mail: PStrasser@uh.edu; and **H. Nakagawa**, Asahi Glass Co. LTD, e-mail: hideki-nakagawa@agc.co.jp.

Section D: H. A. Gasteiger, Acta, e-mail: hubert.gasteiger@gmail.com; **T. Zawodzinski**, CWRU, e-mail: taz5@po.cwru.edu; and **C. Lamy**, Universite de Poitiers, e-mail: claude.lamy@univ-poitiers.fr.



Rechargeable Lithium and Lithium Ion Batteries

ECS Battery / ECSJ Battery Committee

Lithium ion batteries have revolutionized the portable electronics market, and there is immense global interest to develop them for hybrid electric vehicles and plug-in hybrid electric vehicles. This symposium provides a forum for recent advances in rechargeable lithium and lithium ion batteries. Papers are solicited on both fundamental and applied aspects of rechargeable lithium and lithium ion batteries. Specific areas to be covered include but not limited to: (1.) cathode design, synthesis, characterization, and performance; (2.) anode design, synthesis, characterization, and performance; (3.) electrolyte design, synthesis, characterization, and performance; (4.) electrode processing and cell design; (5.) interfacial studies; (6.) materials and cell modeling; (7.) failure modes and mechanisms of cells and batteries; and (8.) performance and safety characteristics of cells and batteries.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **A. Manthiram**, University of Texas at Austin, e-mail: rmanth@mail.utexas.edu; **T. Abe**, Kyoto University, e-mail: abe@elech.kuic.kyoto-u.ac.jp; **K. M. Abraham**, Northeastern University, e-mail: kmabraham@comcast.net; **J.-I. Yamaki**, Kyushu University, e-mail: yamaki@cm.kyushu-u.ac.jp; and **J. Xu**, Rutgers, The State University of New Jersey, e-mail: johnxu@rci.rutgers.edu.

Solid State Ionic Devices 6 – Nano Ionics

ECS High Temperature Materials / ECS Energy Technology / ECS Battery / ECS Physical and Analytical Electrochemistry / ECS Organic and Biological Electrochemistry / ECS Sensor / ECSJ SOFC, Solid State Chemistry

Solid-state electrochemical devices, such as batteries, fuel cells, membranes, and sensors, are critical components of technologically advanced societies in the 21st Century and beyond. The development of these devices involves common research themes such as ion transport, interfacial phenomena, and device design and performance, regardless of the class of materials or whether the solid state is amorphous or crystalline. The intent of this international symposia series is to provide a forum for recent advances in solid-state ion conducting materials and the design, fabrication, and performance of devices that utilize them.

For this, the 6th in the series of international symposia, emphasis will be given to nano-ionics. Papers on nanostructured materials and devices; and the effect of nanostructures on ionic transport and electrocatalytic activity are particularly encouraged. In addition, papers are solicited in such topics as modeling and characterization of defect equilibria, ionic and electronic transport; novel synthesis and processing of thin films, membranes; permeation studies; materials characterization and crystallographic investigations; extreme engineering applications (e.g., aero-space), and the design, and performance of solid state ionic devices: fuel cells, thermal energy converters, solid-state batteries and microbatteries, chemical sensors, supercapacitors, membranes, and electrochromic devices.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **E. D. Wachsman**, University of Florida, e-mail: ewach@mse.ufl.edu; **K. M. Abraham**, E-KEM Sciences, e-mail: kmabraham@comcast.net; e-mail: mukundan@lanl.gov; **E. Traversa**, University of Rome "Tor Vergata," e-mail: traversa@uniroma2.it; **S. Yamaguchi**, The University of Tokyo, e-mail: yamaguchi@material.t.u-tokyo.ac.jp; **K. Zaghib**, HydroQuebec, e-mail: zaghib.karim@ireq.ca; and **T. Zawodzinski**, Case Western Reserve University, e-mail: thomas.zawodzinski@cwru.edu.

C — Biomedical Applications and Organic Electrochemistry

C1

Biological Nanostructures, Materials, and Applications

ECS Organic and Biological Electrochemistry / ECS Physical and Analytical Electrochemistry / ECS Sensor / ECSJ Bioengineering

Despite the advantages of and numerous successes in biological electrochemistry, development of new concepts and materials are still strongly needed in order to propel the field forward. New materials and techniques developed outside of biological electrochemistry are awaiting exploitation: ionic liquids, nanowires, and new molecular assemblies, just to

name a few. It would be useful to discuss the contributions of these novel materials and techniques, as well as others, to address what impact they have had on the field of biological electrochemistry. Similarly, energy conversion is one of the most important subjects for addressing the next stage of environmental concerns, and biosystems have an important role to play in energy production. In this symposium, prospects for bioelectrochemistry will be discussed that will include these additional technologies not previously encountered in bioelectrochemistry. The following is a partial list of proposed topics to be represented in this symposium: (1.) electrified interface (electric double layers, adsorption, electron transfer through biomolecules); (2.) biomembranes and model membranes; (3.) novel materials (ionic liquids, biological nanowires, molecular wires); (4.) biosensors (enzymatic, microbial, immunological, and DNA); (5.) biofuel cells (enzymatic and microbial), and (6.) electrochemotherapy. Other presentations on novel approaches for the above subjects are also welcome.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **M. Demirel**, Pennsylvania State University, e-mail: mdemirel@engr.psu.edu; **H. De Long**, Air Force Office Scientific Research, e-mail: hugh.delong@afosr.af.mil; **K. Kano**, Kyoto University, e-mail: kkano@kais.kyoto-u.ac.jp; **J. L. Moran Lopez**, IPICYT, A.C., e-mail: moran-lopez@ipicyt.edu.mx; **H. Ohno**, Tokyo University of Agriculture & Technology, e-mail: ohnoh@cc.tuat.ac.jp; and **I. Taniguchi**, Kumamoto University, e-mail: taniguch@gpo.kumamota-u.ac.jp.

C2

Challenges to Single-Cell Engineering and Imaging Technology

ECS Organic and Biological Electrochemistry / ECSJ Bioengineering

This symposium will be a showcase of methodologies for monitoring, imaging, microinjection, tracking, sorting, and functional control of single-cells, biomolecules, and nanoparticles in confined small space of micro-, nano-, and femto-scale. Special emphasis is on electrochemical methods and techniques. This symposium also welcomes presentations focusing single molecule detection, bioinformatics for cell assessment, applications to health science and ecological issues, and related interdisciplinary topics.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **H. Matsuoka**, Tokyo University of Agriculture and Technology, e-mail: mhide@cc.tuat.ac.jp; **D.-W. Pang**, Wuhan University, e-mail: dwpang@whu.edu.cn; **J. Rusling**, University of Connecticut, e-mail: James.Rusling@uconn.edu; and **E. Tamiya**, Osaka University, e-mail: tamiya@ap.eng.osaka-u.ac.jp.

New Frontiers of Synthetic and Mechanistic Organic Electrochemistry

ECS Organic and Biological Electrochemistry /
ECSJ Organic Electrochemistry

Papers are invited dealing with all aspects of both electro-organic synthesis and mechanistic studies in organic, organometallic, and bio-organic electrochemistry. Areas of interest include synthetic and mechanistic electrochemistry as well as industrial and educational applications.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **T. Fuchigami**, Tokyo Institute of Technology, e-mail: fuchi@echem.titech.ac.jp; **A. Fry**, Wesleyan University, e-mail: afry@wesleyan.edu; **K. Moeller**, Washington University at St. Louis, e-mail: moeller@wustl.edu; and **H. Tanaka**, Okayama University, e-mail: tanaka95@cc.okayama-u.ac.jp.

D — Corrosion, Passivation, and Anodic Films

Corrosion General Poster Session

ECS Corrosion / ECSJ Corrosion Committee

Poster presentations concerning all aspects of corrosion and associated phenomena in liquid and gaseous phases are welcome. Theoretical analyses, experimental investigations, descriptions of new techniques for the study of corrosion, and analyses of corrosion products and films are of interest.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **A. Davenport**, University of Birmingham, e-mail: a.davenport@bham.ac.uk; and **E. Akiyama**, NIMS, e-mail: akiyama.eiji@nims.go.jp.

Corrosion and Electrochemical Properties of Bulk Metallic Glasses and Mono-Crystalline Materials

ECS Corrosion / ECSJ Corrosion Committee

This symposium is interested in papers on all aspects of the corrosion and electrochemical properties of bulk metallic glasses and mono-crystalline materials. Papers are invited that address electrochemical properties in such alloys, development of new corrosion-resistant alloys, as well as the effects of novel fabrication methods such as thermal spray deposition and laser surfaces modification on alloy performance. Theoretical analyses, experimental investigations, descriptions of new techniques for the study of corrosion, and analyses of corrosion products and films are, also, of interest. Note that this session will consist of oral presentations.

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accepted for presentation are encouraged to submit their full text manuscript for the issue no later than November 1, 2008. All manuscripts will be submitted online, and must be in either MS Word or PDF format.

Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **J. Scully**, University of Virginia, e-mail: jrs8d@virginia.edu; and **M. Yamasaki**, Kumamoto University, e-mail: yamasaki@gpo.kumamoto-u.ac.jp.

Corrosion in Marine and Saltwater Environments 3

ECS Corrosion / ECSJ Corrosion Committee

The goal of the symposium is to address a wide spectrum of corrosion research in marine and other saltwater environments and to provide a forum to examine the most recent ideas and advances in the understanding of corrosion processes, mechanisms, and means of corrosion prevention or control from both a basic and applied research approach. Topic areas may include, but are not limited to: (1.) general corrosion mechanisms of steels and other materials in seawater and other saltwater media; (2.) marine atmospheric corrosion of metals and alloys; (3.) microbiologically influenced corrosion; (4.) environmentally assisted cracking of materials in marine environments; (5.) design, processing variables, surface preparation, and pretreatments affecting corrosion and corrosion control; (6.) environmentally compliant inhibitors, biocides, and coatings; (7.) cathodic protection and innovative anode materials; (8.) composites and other advanced materials; (9.) use of electrochemical, surface analytical, and nondestructive detection methods; and (10.) predictive and mechanistic corrosion modeling.

An issue of the *ECS Transactions* is planned to be published "AFTER" the meeting. All authors accepted for presentations are obligated to give the organizers their full-text manuscripts at the meeting, and then also submit them to the ECST website no later than November 1, 2008. All manuscripts submitted online must be in either MS Word or PDF format.

Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **D. Shifler**, Office of Naval Research, e-mail: david.shifler@navy.mil; **S. Fujimoto**, Osaka University, e-mail: fujimoto@mat.eng.osaka-u.ac.jp; **H. Kihira**, Nippon Steel Corporation, e-mail: kihira.hiroshi@nsc.co.jp; and **F. Martin**, SAIC, c/o Naval Research Laboratory, e-mail: farrel.martin@nrl.navy.mil.

Critical Factors in Localized Corrosion 6, in Honor of Professor Shibata

ECS Corrosion / ECSJ Corrosion Committee

This symposium will be held in honor of Professor Toshio Shibata for his outstanding achievements to the field of corrosion science and engineering. Toshio Shibata has made major contributions to passivity and localized corrosion such as, pitting, and stress corrosion cracking. The introduction of stochastic and statistical approach for localized corrosion has been now developed into life prediction and risk based management of plants, structures, devices and etc. Papers are solicited describing recent progress in above mentioned area, and all other areas of localized corrosion including passivity and its breakdown. Of particular interest are studies on experimental, modelling and numerical approach to localized corrosion.

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their full text manuscript for the issue no later than November 1, 2008. All manuscripts will be submitted online, and must be in either MS Word or PDF format.

Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **S. Fujimoto**, Osaka University, e-mail: fujimoto@mat.eng.osaka-u.ac.jp; **G. S. Frankel**, Ohio State University, e-mail: frankel.10@osu.edu; and **T. Haruna**, Kansai University, e-mail: haruna@ipcku.kansai-u.ac.jp.

D5 High Temperature Corrosion and Materials Chemistry 7

ECS High Temperature Materials / ECS Corrosion / ECSJ Corrosion Committee

This symposium will focus on the fundamental thermodynamic and kinetic aspects of high temperature oxidation and corrosion, as well as other chemical reactions involving inorganic materials at high temperatures. Both theoretical and experimental papers are encouraged. Specifically, contributions on the following topics in the area of oxidation/corrosion are solicited: (1.) fundamental mechanisms of high temperature oxidation, (2.) reactions in complex environments and/or ultra high temperatures (>1500°C), and (3.) response of protective coatings in high temperature environments. In the area of high temperature chemistry, papers on the following topics are solicited: (4.) thermodynamic property determination, (5.) phase equilibria and phase transformations, (6.) solid state diffusion, and (7.) volatilization reactions.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **E. Wuchina**, Naval Surface Warfare Center, e-mail: eric.wuchina@navy.mil; **E. Opila**, NASA Glenn Research Center, e-mail: opila@nasa.gov; **J. Fergus**, Auburn University, e-mail: jwfergus@eng.auburn.edu; **T. Maruyama**, Tokyo Institute of Technology, e-mail: maruyama@mtl.titech.ac.jp; **T. Narita**, Hokkaido University, narita@eng.hokudai.ac.jp; and **D. Shifler**, Office of Naval Research, e-mail: shifled@onr.navy.mil.

D6 Porous Semiconductors: A Symposium Held in Memory of Vitali Parhutik and Volker Lehmann

ECS Corrosion / ECS Luminescence and Display Materials / ECSJ Corrosion Committee

The symposium is aimed at a more detailed understanding of growth mechanisms and the physical and chemical properties of all types of porous semiconductors. It is being held in memory of Volker Lehmann and Vitali Parhutik, two key scientists in the field of porous semiconductors, who recently passed away. The symposium addresses research in the various sub-fields of porous semiconductors such as semiconductor electrochemistry, deposition into pores, matrix materials, optical spectroscopy and transdisciplinary approaches to the topic as well as work relevant to the formation of advanced materials such as, for example, porous silicon, matrix composites and nanoclusters and their applications such as chemical and biological sensors.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **P. Schmuki**, University of Erlangen-Nuremberg, e-mail: schmuki@www.uni-erlangen.de; **H. Foell**, University of Kiel, e-mail: hf@tf.uni-kiel.de; **U. Goesele**, MPI Halle, e-mail: goesele@mpi-halle.mpg.de; **J. J. Kelly**, Utrecht University, e-mail: j.j.kelly@phys.uu.nl; **D. J. Lockwood**, National Research Council of Canada, e-mail: david.lockwood@nrc-cnrc.gc.ca; and **Y. H. Ogata**, Kyoto University, e-mail: y-ogata@iae.kyoto-u.ac.jp.

E — Dielectric and Semiconductor Materials, Devices, and Processing

E1 Solid State Divisions General Session ECS Dielectric Science and Technology / ECS Electronics and Photonics

Original papers are solicited on all aspects of electronic materials, devices, and processing technologies not covered by specialized topical symposia at this meeting.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **K. B. Sundaram**, University of Central Florida, e-mail: sundaram@mail.ucf.edu; **H. Iwai**, Tokyo Institute of Technology, e-mail: h.iwai@ieee.org; **O. Leone**, Lam Research, e-mail: odleone@comcast.net; **R. Todt**, University of Central Florida, e-mail: rtodi@mail.ucf.edu; and **X. Wang**, Georgia Southern University, e-mail: xwang@georgiasouthern.edu.

E2 Atomic Layer Deposition Applications 4 ECS Dielectric Science and Technology

Recent advances in nanotechnology have created a need for precise, conformal, atomic level deposition of thin film materials. Atomic Layer Deposition (ALD) can enable the precise deposition of ultra-thin, highly conformal coatings over complex 3D topography, with controlled composition and properties. Consequently, ALD has become a technology of choice for a large variety of applications for and beyond the semiconductor industry, as proven from the countless applications emerging.

Over the past three years, this symposium has earned a leading position among the technology symposia where atomic layer deposition is being discussed. This symposium offers an excellent forum for sharing of cutting edge research on emerging and non-mainstream ALD applications, as well as fundamental aspects of ALD technologies.

Contributions are solicited in the following areas: (1.) semiconductor mainstream CMOS applications: development and integration of ALD high-k oxides and metal electrodes; (2.) volatile and non volatile memory applications: extendibility, Flash, MIM, MIS, RF capacitors, etc.; (3.) interconnects and contacts: integration of ALD

films with Cu and low-k materials; (4.) fundamentals of ALD processing; (5.) productivity enhancement of ALD equipment and processes; (6.) precursor and delivery systems development for ALD; (7.) advanced and novel integration schemes of ALD films; (8.) ALD for optical and photonic applications; (9) coating of nanoporous materials by ALD; (10.) selective area ALD for patterning of nanoscale films; and (11.) applications for ALD in other areas, such as disk drives, MEMS, nanotechnology, deposition on polymers, fuel cells, and other novel energy applications, etc. In order to encourage active student participation we anticipate to cover the registration fee for all students who are the presenting authors of accepted presentations, both oral and posters, provided that the manuscript is submitted by the deadline.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **A. Londergan**, Qualcomm MEMS Technologies, e-mail: alondergan@qualcomm.com; **S. F. Bent**, Stanford University, e-mail: bent@stanford.edu; **S. De Gendt**, IMEC, e-mail: Stefan.Degendt@imec.be; **J. W. Elam**, Argonne National Laboratory, e-mail: jelam@anl.gov; **S. B. Kang**, Samsung Electronics, e-mail: sbkangh@samsung.com; and **O. van der Straten**, IBM Research, e-mail: ovander@us.ibm.com.

E3

High k Dielectric Constant Materials and Gate Stacks

ECS Dielectric Science and Technology / ECS Electronics and Photonics

Papers are solicited in all areas related to advanced gate stacks for CMOS and memory applications in sub-45 nm feature size integrated circuits, including the following: (1.) **substrates**: higher mobility semiconductors such as strained Si, (110) and (111) Si, SiGe, Ge, GaAs, and other III-V compounds, GeOI, GaAs-on-insulator, and SOI; passivation of non-Si surfaces. (2.) **high k gate dielectric materials**: trends in high k gate dielectric technologies for 45 nm and beyond targeting logic, non-volatile memory, and DRAM capacitor technologies; novel high and higher-k materials; advanced oxynitrides for 45 nm and beyond. (3.) **gate electrode materials**: trends in gate electrode technologies for 45 nm and beyond targeting logic, non-volatile memory, and DRAM capacitor technologies; poly-Si, silicided, and metal gate electrodes; band-edge and midgap work-function materials; gate electrode deposition methods. (4.) **deposition techniques**: Growth and deposition techniques for high k dielectric and metal gates; advanced precursors for CVD; alternative deposition techniques. (5.) **bulk material properties**: thermal stability of novel materials; ternary dielectric and metal gate compounds; effects of composition on material properties; material interactions. (6.) **interfaces**: silicon/high-k and high-k/gate-electrode interfaces; oxygen diffusion and mechanisms of interface layer formation; interface preparation, passivation, engineering, and control; bottom and top electrode/dielectric chemical interactions; interface modification by monolayer/capping layer; thermal stability of interfaces. (7.) **advanced gate stack reliability**: identification of main reliability problems in low voltage application and new reliability; models; bias temperature instability; metallic cross-contamination across layers; mechanisms of mobility degradation; thermal stability of new materials. (8.) **characterization and methodologies for high-k**

gate dielectrics and metal gates: advanced physical, chemical, and electrical characterization of gate stacks; accurate determination of layer composition and depth profiles; accurate determination of dielectric capacitance; trap parameter extraction; non-contact electrical characterization; work-function extraction methodologies; determination of tunneling electron/hole mass.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **S. Kar**, Indian Institute of Technology, e-mail: skar@iitk.ac.in; **M. Houssa**, Ge and III-V CMOS, IMEC vzw, e-mail: houssa@imec.be; **H. Iwai**, Tokyo Institute of Technology, e-mail: iwai.h.aa@m.titech.ac.jp; **D. Landheer**, Institute for Microstructural Sciences, National Research Council, e-mail: dolf.landheer@nrc.ca; **D. Misra**, New Jersey Institute of Technology, e-mail: dmisra@njit.edu; and **S. Van Elshocht**, Thin Film Deposition Group, IMEC vzw, e-mail: sven.vanelshocht@imec.be.

E4

High Purity Silicon 10

ECS Electronics and Photonics

The tenth symposium on High Purity Silicon provides a forum for discussion of the latest developments in the growth, characterization, device processing, and applications of high purity silicon in either bulk or epitaxial form. The emphasis is on the control and prevention of impurity incorporation, characterization and detection of defects and impurity states in high purity and high resistivity silicon for superior device performances. Device and circuit aspects related to the application of devices fabricated on high resistivity silicon wafers will also be addressed. Special attention will be given to alternative substrates.

Contributed papers are solicited in the following main areas: (1.) **high purity bulk growth techniques**: Czochralski (Cz), float zone, magnetic Cz, and other novel growth techniques; progress in polysilicon manufacturing, influence of poly quality on the purity of monocrystals; impact of auxiliaries such as quartz, graphite, furnace parts, and gas media purity on crystal properties; (2.) **impurity related and intrinsic bulk defects**: point defect mechanisms, influence of doping concentrations, carrier lifetime behavior; denuded zone (DZ) formation and influence of bulk quality (e.g. D-defects) on defect kinetics behavior; oxygen, nitrogen, carbon and hydrogen in silicon; defect engineering and control; (3.) **diagnostic techniques**: lifetime and impurity level studies, spectroscopic techniques, spreading resistance probing, Hall-effect; contamination detection and monitoring in handling and packaging high purity silicon; characterization techniques relevant to the assessment of impurities and defects; (4.) **epitaxial wafers and alternative substrates**: epitaxial fabrication techniques, epi layer processing, interaction with substrate properties; bulk and interface defect control and characterization; silicon-on-insulator (SOI) and germanium-on-insulator (GeOI); strained layers on silicon; high-mobility substrates; (5.) **device and circuit applications**: radiation and high energy particle detectors, avalanche photodiodes, strip- and pixel detectors, infrared components, power devices; radiation hardening of silicon materials; device physics, radiation sensitivity, noise performance, low temperature operation, reliability aspects.

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2008. All manuscripts will be submitted online, and must be in either MS Word or PDF format.

Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **C. Claeys**, IMEC Belgium, e-mail: claeys@imec.be; **R. Falster**, MEMC, Italy, e-mail: rfalster@memc.com; **P. Stallhofer**, Siltronic, Germany, e-mail: peter.stallhofer@siltronic.com; and **M. Watanabe**, SEZ Japan, e-mail: WatanabeSEZ@aol.com.

E5 Integrated Optoelectronics 4

ECS Electronics and Photonics / ECS Dielectric Science and Technology

This fourth international symposium will address issues on integrated optoelectronics and its applications to emerging areas such as biophotonics. Original contributions are solicited on all topics related to integrated optoelectronics: technology and fabrication, components and systems manufacturing, testing, performance, reliability, biophotonics, and other related topics. Contributions that span fundamental as well as applied aspects of integrated optoelectronics are welcome. Examples of topics in integrated optoelectronics of interest are: (1.) current, emerging, and novel materials and devices; (2.) advanced detectors, detector arrays, and transmitters; (3.) optoelectronic components based on nanocrystalline materials; (4.) integration of silicon optoelectronics and electronics circuitry and compound semiconductor components: fabrication issues, reliability, and performance; (5.) micro-opto-electro-mechanical systems (MOEMS); integration issues related to improving the performance of high speed and high-sensitivity systems; (6.) biophotonics and related areas; (7.) integrated lasers/modulators or multi-wavelength laser arrays; (8.) optoelectronic integrated circuit (OEIC) receivers and imaging arrays; (9.) transceivers systems and integration issues; (10.) integration technologies based on quantum well and quantum dot structures; (11.) advanced epitaxial growth and device processing technologies; (12.) planar lightwave integrated devices and circuits; and (13.) integrated optoelectronic passive components. The symposium will consist of invited as well as contributed papers.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **M. J. Deen**, McMaster University, e-mail: jamal@mcmaster.ca; **Q. Fang**, McMaster University, e-mail: qfang@mcmaster.ca; **C. Jagadish**, The Australian National University, e-mail: c.jagadish@ieee.org; and **K. Ohashi**, NEC Corporation, e-mail: k-ohashi@cb.jp.nec.com.

E6 Low k Inter-Level Metal Dielectrics and New Contact and Barrier Metallurgies/ Structures

ECS Dielectric Science and Technology

This symposium is aimed at bringing together scientists and technologists engaged in the development and practice of multi-level-metal (MLM) interconnections using copper and low-k dielectric films used in current generation circuits and advanced interconnect systems. Four focus areas are planned: (1.) copper interconnections, (2.) new contact metallurgies and structures, (3.) low-k materials for inter-level dielectrics (ILD), and (4.) advanced interconnect systems.

Suggested topics include: (1.) new developments in processes/equipment for electrolytic copper deposition, seedless electroplating, electro-less plating of seed layers, CVD, ALD, ionized, and collimated PVD of seed/barrier films; (2.) air-gap processes and integration; (3.) scaling of ultra-thin barrier, seed layer, and adhesive films in copper wiring; (4.) new contact metals; (5.) chemical-mechanical polishing of damascene structures, slurry composition and performance, and process control; (6.) reactors/processes for plasma etching dual damascene low-k structures, poisoning issues, CD control; (7.) low-k/ultra low-k inorganic and organic materials such as CVD fluorinated oxides, spin-on-glasses and polymers, aero-gels, nano-foams, and air-gaps; (8.) methods for low-k film deposition and integration issues with copper; (9.) reliability, electro-migration, and migration resistance of copper/alloys; (10.) reliability of low-k materials such as stability, hot carrier and k-value degradation, resistance to copper diffusion; (11.) wear-out phenomena in copper, stress migration, mechanical and thermal stressing in MLM wiring with copper/alloys and low-k ILD films; and (12.) advanced interconnects: 3D packaging & integration, system-on-chip architecture and integration, chip scale and wafer scale packaging.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **G. S. Mathad**, S/C Technology Consulting, e-mail: swami_mathad@hotmail.com; **J. Flake**, Louisiana State University, e-mail: john.flake@gmail.com; **H. Iwai**, Tokyo Institute of Technology, e-mail: iwai.h.aa@m.titech.ac.jp; and **H. S. Rathore**, IBM Microelectronics, e-mail: rathore@us.ibm.com.

E7 Nitrides and Wide-Bandgap Semiconductors for Sensors, Photonics, and Electronics 9

ECS Electronics and Photonics / ECS Sensor

This symposium will focus on issues pertinent to development and application of wide bandgap semiconductor materials and devices. The following six technical areas are of particular interest: (1.) emitters: light emitting diodes, laser diodes, and displays; (2.) detectors, including solar cells and avalanche photodiodes; (3.) alternate substrates, including GaN, AlN, and ZnO; (4.) material characterization: synthesis, defect structure, and luminescence; (5.) high temperature, high power, and high frequency electronics; and (6.) sensor applications. The goal of this symposium is to bring together the wide bandgap crystal growth, device processing, circuit design, and applications communities to review current issues in wide-bandgap semiconductors. As usual, this symposium will be held in conjunction with the ECS State-of-the-Art Program on Compound Semiconductors (SOTAPOCS), and will consist of both invited and contributed papers and posters.

A hard-cover *ECS Transactions* issue, jointly published with SOTAPOCS 49 symposium, is planned to be available "AT" the meeting. All authors accepted for presentation are obligated to submit their full text manuscript for the issue no later than July 1, 2008. All manuscripts will be submitted online, and must be in either MS Word or PDF format.

ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **K. Shiojima**, University of Fukui, e-mail: shiojima@fuee.fukui-u.ac.jp; **D. Bohr**,

e-mail: davidpbour@gmail.com; **M. Goorsky**, UCLA, e-mail: goorsky@seas.ucla.edu; **T. Hashizume**, Hokkaido University, e-mail: hashit@rciqe.hokudai.ac.jp; **T. Kikkawa**, Fujitsu Laboratories, e-mail: kikkawa.toshi@jp.fujitsu.com; **Y. Sano**, Oki Electric Industry, e-mail: sano567@oki.com; and **E. B. Stokes**, University of North Carolina at Charlotte, e-mail: ebstokes@uncc.edu.

E8

Nonvolatile Memory and Its Evolution

ECS Electronics and Photonics

The symposium will address the recent developments in nonvolatile memory devices such as FeRAM, MRAM, ReRAM, PRAM, flash memory and other advanced nonvolatile memory devices and their related materials and technologies. The program will consist of both invited and contributed papers. Papers will cover both practical issues and fundamental studies and are solicited in the following suggested areas: (1.) advanced devices, device structures and performances, and device design; (2.) memory related materials and their growth and deposition processes; (3.) device fabrication processing; (4.) structure analyses and material and process characterization; (5.) device functional characterization, device physics, and modeling; (6.) system applications; and (7.) other related technologies.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **H. Ohno**, Tohoku University, e-mail: ohno@iec.tohoku.ac.jp; **Y. Suda**, Tokyo University of Agriculture & Technology, e-mail: sudayos@cc.tuat.ac.jp; **Y. Sugiyama**, Fujitsu Laboratories Ltd., e-mail: sugiyama.y@jp.fujitsu.com; and **N. Takaura**, Hitachi, Ltd., e-mail: norikatsu.takaura.nd@hitachi.com.

E9

One-Dimensional Nanoscale Electronic and Photonic Devices 2

ECS Electronics and Photonics

The second NODEPD Symposium will address the most recent developments in nanoscale electronic and photonic devices, encompassing one dimensional novel devices, processing, device fabrication, reliability, and other related topics. Papers on both practical issues and other fundamental studies are solicited.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **L.-J. Chou**, Tsing-hua University, e-mail: ljchou@mx.nthu.edu.tw; **C. Chang**, University of California, Berkeley, e-mail: cch@eecs.uchb.edu; **K. Matsumoto**, Osaka University, e-mail: k-matsumoto@sanken.osaka-u.ac.jp; and **Z. L. Wang**, Georgia Tech, e-mail: zhong.wang@mse.gatech.edu.

E10

Science and Technology of Dielectrics for Active and Passive Devices

ECS Dielectric Science and Technology

This symposium will address the science and technology of dielectric films, ranging from the nanoscale up to the micrometer scale, with emphasis on applications in photonics. Research fields of interest are related but not necessarily limited to the following topics: (1.) dielectrics for passive photonics, such as deposition and patterning for optical waveguides, optical interconnects, and integrated photonic systems; (2.) dielectrics for active devices, such as light sources, switches, and modulators; (3.) devices for optical communications and computing; (4.) micro-opto-electro-mechanical systems (MOEMS); and (5.) integration of photonic devices with existing silicon-based electronic platforms. Invited and contributed papers will discuss both the fundamental aspects underlying certain applications and the particular challenges regarding technology, fabrication processes, and reliability.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **K. Wörhoff**, University of Twente, e-mail: K.Worhoff@el.utwente.nl; **H. Iwai**, Tokyo Institute of Technology, e-mail: iwai.h.aa@m.titech.ac.jp; **P. Mascher**, McMaster University, e-mail: mascher@mcmaster.ca; **D. Misra**, New Jersey Institute of Technology, e-mail: dmisra@njit.edu; and **K. Shiraishi**, University of Tsukuba, e-mail: shiraishi@comas.frcs.tsukuba.ac.jp.

E11

Semiconductor Wafer Bonding 10: Science, Technology, and Applications

ECS Electronics and Photonics

Semiconductor wafer bonding continues to evolve as a crucial technology extending new integration schemes and disseminating new product architectures in such diverse areas as high quality silicon-on-insulator (SOI) materials for electronic device applications (high performance CMOS logic platforms, bipolar, BiCMOS, power), strained Si layers by process-induced methodologies as well as built in strain in the bonding wafer, Si-Ge, germanium-on-insulator (GeOI), three-dimensional (3D) device integration, Si on quartz and Si on glass for active matrix addressed thin film displays, compound semiconductor-on-Si heterostructures and micro-electro-mechanical systems (MEMS). During recent years layer transfer by wafer bonding and exfoliation techniques have sufficiently matured not only to make their mark on the commercial semiconductor substrate market but also to extend to 3D integration of various materials and devices. This symposium, sponsored by the ECS Electronics and Photonics Division, brings together materials, device, and process engineers from these and related interdisciplinary areas.

The tenth symposium solicits original theoretical and experimental papers that document new developments and cover the full range of basic science, process technologies, and product applications of semiconductor wafer bonding. Fundamental aspects of interest include the influence of surface treatments on bonding and wafer splitting, low temperature bonding, surface plasma activation of bonding interfaces, molecular wafer bonding and bonding of novel materials composites to synthesize heterostructures. Presentations characterizing currently utilized materials and processes, as well as novel approaches to new materials

systems and modeling and process simulations are encouraged. Practical aspects of interest include innovative developments in product architecture and new integration and processing schemes for microelectronics, photonics, MEMS, nanotechnologies, and other relevant applications.

All papers will be grouped into topical sessions which will be preceded by a selection of invited review papers. A poster session will be held as well as the normal oral sessions. Sessions will include the following topics: (1.) physics, chemistry, and mechanics of wafer bonding; (2.) characterization of bonding interfaces; (3.) bonding techniques and equipment; (4.) generalized bonding (e.g., GaAs-on-Si, bonding via deposited films); (5.) layer transfer and exfoliation methods; (6.) electronic device applications (bipolar, high voltage and power, CMOS, microwave); (7.) 3D integration and packaging; and (8.) photonic, micro-electro-mechanical, and other applications.

A hard-cover issue of *ECS Transactions* is planned to be available "AT" the meeting. All authors accepted for presentation are obligated to submit their full text manuscript for the issue no later than July 1, 2008. All manuscripts will be submitted online, and must be in either MS Word or PDF format.

Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **T. Suga**, The University of Tokyo, e-mail: suga@pe.t.u-tokyo.ac.jp; **J. Bagdahn**, Fraunhofer Institute for Mechanics of Materials, e-mail: bagdahn@iwmm.fraunhofer.de; **H. Baumgart**, Old Dominion University, e-mail: hbaumgar@odu.edu; **C. Colinge**, California State University, e-mail: colinge@csu.edu; **K. D. Hobart**, Naval Research Laboratory, e-mail: karl.hobart@nrl.navy.mil; and **H. Moriceau**, CEA Leti – Minatec, e-mail: Hubert.moriceau@cea.fr.

E12 State-of-the-Art Program on Compound Semiconductors 49 (SOTAPOCS 49) ECS Electronics and Photonics

The SOTAPOCS 49 symposium will address the most recent developments in compound semiconductors encompassing advanced devices, materials growth, characterization, processing, device fabrication, reliability, and other related topics. Papers on both practical issues and fundamental studies are solicited. The following areas are of particular interest: (1.) advances in bulk and epitaxial growth technologies of compound semiconductors (CS); (2.) advances in CS processing; (3.) novel electronic and optoelectronic CS devices; (4.) Schottky and ohmic contact technology for CS; (5.) dielectric and passivation for CS; (6.) bonding and packaging; (7.) *in situ* and *ex situ* process monitoring; (8.) material characterization and wafer level testing and mapping; (9.) process induced defects; (10.) reliability and device degradation mechanisms, and (11.) advances in organic semiconductors. The symposium will consist of both invited and contributed papers. Acceptance of a paper for presentation obligates the author to submit a full manuscript in camera-ready form for inclusion in the ECST volume. The symposium will consist of both invited and contributed papers.

A hard-cover *ECS Transactions* issue, jointly published with Nitrides and Wide-Bandgap Semiconductors for Sensors, Photonics, and Electronics 9 symposium, is planned to be available "AT" the meeting. All authors accepted for presentation are obligated to submit their full text manuscript for the issue no later than July 1, 2008. All manuscripts will be submitted online, and must be in either MS Word or PDF format.

Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to

the symposium organizers: **J. Wang**, Northrop Grumman Space Technologies, e-mail: jennifer.wang@ngc.com; **J. Kim**, Korea University, e-mail: jhkim@prosys.korea.ac.kr; **H. C. Kuo**, National Chiao-Tung University, hckuo@faculty.nctu.edu.tw; and **M. Overberg**, Sandia National Laboratories, e-mail: meoverb@sandia.gov.

E13 Thin Film Transistors 10 (TFT 10) ECS Electronics and Photonics

The TFT 10 symposium is organized with the intention of providing a forum for the presenting and discussion of the latest developments in thin film transistors (TFTs) and related fields. The symposium is aimed at providing a forum for synergistic interactions among those working in TFTs, those working in other high-tech fields, and those applying TFTs to products or research areas. Papers which deal with all aspects of fabrication processes, materials, device physics, characterization, structures, and applications of TFTs are solicited. Topics to be addressed in this symposium are: (1.) new TFT Structures; (2.) novel or new processes; (3.) organic, inorganic, oxide, etc. thin film materials; (4.) device physics, modeling, characterization, and reliability; (5.) applications in LCDs, imagers, sensors, biochips, MEMS, etc.; (6.) applications in circuits; and (7.) integration of TFTs to large area displays, VLSIC, and other complex systems.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **Y. Kuo**, Texas A&M University, e-mail: yuekuo@tamu.edu; **D. Ast**, Cornell University, e-mail: dast@ccmr.cornell.edu; **O. Bonnaud**, University de Rennes 1, e-mail: bonnaud@univ-rennes1.fr; **S. Fonash**, Pennsylvania State University, e-mail: sfonash@psu.edu; **M. K. Han**, Seoul National University, e-mail: mkh@snu.ac.kr; **M. Hatano**, Hitachi, e-mail: m-hatano@crl.hitachi.co.jp; **J. Jang**, Kyung Hee University, e-mail: jjang@khu.ac.kr; **M. Matsumura**, ALTEDEC, matsumura.masakiyo@nifty.com; **A. Nathan**, University College London, e-mail: anathan@ucl.ac.uk; **M. Shur**, RPI, e-mail: shurm@rpi.edu; **S. Uchikoga**, Toshiba, e-mail: shuichi.uchikoga@toshiba.co.jp; and **Y. Uraoka**, NAIST, e-mail: uraoka@ms.naist.jp.

E14 ZnO Based Thin Films, Nano-Wires, and Nano-Belts for Photonic and Electronic Devices and Sensors ECS Electronics and Photonics / ECS Sensor

The purpose of this symposium is to bring together the crystal growth, device processing, circuit design, and applications communities to discuss basic science and technology issues related to utilization of ZnO-based semiconductors. Papers are solicited in the following areas: (1.) substrates and bulk growth; (2.) epitaxial growth; (3.) nano-wire and nano-belt growth; (4.) wet and dry etching techniques; (5.) ion implantation and diffusion; (6.) contact technology; (7.) fundamental optical, physical, and electrical properties; (8.) materials and device characterization; and (9.) novel applications for ZnO based materials. The program will consist of both invited and contributed papers.

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online, and must be in either MS Word or PDF format.

Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **F. Ren**, University of Florida, e-mail: ren@che.ufl.edu; **L.-C. Chen**, National Taiwan University, e-mail: chenlc@ntu.edu.tw; **G. M. Kale**, University of Leeds, e-mail: g.m.kale@leeds.ac.uk; **S. P. Lau**, Nanyang Technological University, e-mail: esplau@ntu.edu.cn; **A. Waag**, Technical University at Brunswick, e-mail: a.waag@tu-bs.de; and **Z. L. Wang**, Georgia Institute of Technology, e-mail: zhong.wang@mse.gatech.edu.

E15 through E23

SiGe and Ge: Materials, Processing, and Devices 3

ECS Electronics and Photonics

This symposium will provide a forum for reviewing and discussing all materials and device related aspects of SiGe, Ge, and related compounds (SiC, SiGeC, etc). There are 9 areas of interest one can submit to for this Symposium (**E15 – E23**) described below.

E15

SiGe and Ge: Materials, Processing, and Devices 3: Heterojunction Bipolar Transistors

Device physics, process technology, modeling issues, reliability, and circuit applications (analog, digital, and RF to mm-wave).

E16

SiGe and Ge: Materials, Processing, and Devices 3: FET Technology

SSCMOS, SiGe FET structures, SiGe HEMTs, SiGe MODFETs, SiGe FET structures on SOI, RTD, Ge-FETs, Low voltage, and low power.

E17

SiGe and Ge: Materials, Processing, and Devices 3: Optoelectronics

Detectors, waveguides, quantum cascade structures, photovoltaic cells, photoluminescence, electroluminescence, integration with CMOS electronics, Ge buffers for III-V optoelectronics on Si, and monolithic optoelectronic integrated circuits (OEICs).

E18

SiGe and Ge: Materials, Processing, and Devices 3: Epitaxy

All aspects of surface preparation and growth of epitaxial Si, SiGe, SiGe:C, and Ge layers; novel growth techniques and tools; selective growth; high Ge content growth; novel in-situ doping approaches; growth of SiC or III-V on SiGe layers or Ge; and quantum wire/dot growth.

E19

SiGe and Ge: Materials, Processing, and Devices 3: Processing

All aspects of processing including diffusion, oxidation, strain, thermal mixing, and defects; impurity diffusion and diffusion suppression; Si and Ge intermixing; oxidation and nitridation; cleaning and etching of SiGe, Ge, and SiGeC films.

E20

SiGe and Ge: Materials, Processing, and Devices 3: Strain Engineering

Relaxed SiGe buffer layers, pseudomorphic SiGe, superlattices, embedded SiGe, Ge condensation, SSOI, SGOI substrates, global strain, local / process-induced strain, strain characterization, strain modeling and simulation, defects, and manufacturing issues.

E21

SiGe and Ge: Materials, Processing, and Devices 3: Surfaces and Interfaces

High k interface; metal contact; interfacial electrical properties and its characterization; electro-mechanical properties of SiGe layers, MEMs, and TFTs.

E22

SiGe and Ge: Materials, Processing, and Devices 3: Germanium and Related Compounds

Novel structures growth (Si:C, III-V on Ge/SiGe), strain, devices, defects, diffusion, dielectric deposition, and surface effects.

E23

SiGe and Ge: Materials, Processing, and Devices 3: Emerging Applications

Nano-structured devices, quantum computing, THz devices, electro-mechanical properties of SiGe layers, MEMs, TFTs, and amorphous SiGe layer applications.

There will be a Special Evening Workshop on SiGe Nanotechnology. A panel of experts will discuss issues related to SiGe nanotechnology. There will also be an evening poster session. All posters will be part of an evening program with a 3-minute short talk as well as the conference poster display session. See the ECS website for all information about registration and hotel arrangements. For the latest symposium details please see the symposium website at: www.ecssige.org. The symposium website is maintained by Elizabeth Meier (emeier@us.ibm.com). **There are three steps to submit a paper for this symposium.**

Step 1: Abstract paper submission (abstract submission deadline: March 3, 2008; www.electrochem.org). Authors should submit an ECS abstract (using the ECS provided template) to the ECS website. The ECS website will be open for abstract submission from January 1, 2008 and closed for final abstract on March 3, 2008. Please note that this deadline is earlier than the general ECS meeting deadline of May 30. All authors will receive a confirmation from ECS and note with the disposition of the paper into the symposium (invited 30-minute oral presentation, contributed 20-minute oral presentation, or poster 3-minute short oral presentation). **Note that each of the symposium topics above will be designated in the abstract submission system as if it were a separate symposium. Please submit your abstract to your intended topic designation.**

Step 2: Proceedings Manuscript Submission (proceedings manuscript submission deadline: June 7, 2008, www.ecssige.org). The symposium proceedings will be available at the time of the symposium and will serve as the digest of technical papers. All regular and invited paper authors must submit a full-length manuscript to the symposium website (www.ecssige.org) for review before June 7. Authors are required to follow detailed instructions and templates for the preparation of the manuscript, which may be found at the symposium website open for submission or the ECS website.

Step 3: Proceedings Manuscript Upload (ECS Transactions deadline: July 1, 2008, www.electrochem.org). After review by the SiGe, Ge, & Related Compounds area committee, the paper will need to be uploaded to the *ECS Transactions* website between June 20, 2008 and July 1, 2008. Directions will be sent to the corresponding authors.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **D. Harame**, General Chair, IBM Systems and Technology Group, Essex Junction, VT USA, e-mail: dharam@us.ibm.com; **J. Boquet**, Publications Chair, IBM Systems and Technology Group, Essex Junction, VT, USA, e-mail: boquet@us.ibm.com; **M. Caymax**, Epitaxy Committee Chair, IMEC, Leuven, Belgium, email: caymax@imec.be; **J. Cressler**, HBT Committee Chair, Georgia Institute of Technology, Atlanta, Georgia, USA, email: cressler@ece.gatech.edu; **S. Koester**, Emerging Technologies Committee Chair, IBM Research, Yorktown Heights, New York, USA, email: skoester@us.ibm.com; **G. Masini**, Optoelectronics Committee Chair, Luxtera Inc., Carlsbad, California, USA, email: gmasini@luxtera.com; **S. Miyazaki**, Surfaces and Interfaces Committee Chair, Hiroshima University, Hiroshima, Japan, email: semiya@hiroshima-u.ac.jp; **A. Reznicek**, Ge & Related Compounds Chair, IBM Research, Yorktown Heights, New York, USA, email: alexrez@us.ibm.com; **K. Rim**, FET Committee Chair, IBM System and Technology Group, East Fishkill, New York, USA, email: rim@us.ibm.com; **S. Takagi**, Strain Committee Chair, Tokyo University, Tokyo, Japan, email: takagi@ee.t.u-tokyo.ac.jp; and **B. Tillack**, Processing Committee Chair, IHP, Frankfurt (Oder), Germany, email: tillack@ihp-microelectronics.com.

F — Electrochemical / Chemical Deposition and Etching

F1 Bio-inspired Materials Synthesis ECS Electrodeposition / ECS Physical and Analytical Electrochemistry / ECSJ Electronic Materials Committee

Biomaterialization and electrodeposition research communities are converging toward a set of similar questions but, in many cases, they tackle these questions with complimentary tools and approaches. Some of these questions include (1.) the role of surface active agents (proteins, synthetic molecules, or ionic adsorbates) on the kinetics and thermodynamics of new phase formation, growth, epitaxy, and recrystallization; (2.) the nature of the interfacial region between the inorganic material and its biological template where, for example, complex protein structures can create highly localized environments that influence growth processes; (3.) the role of microelectrochemical environments (in specialized deposition vesicles or microfabricated structures) on material structure and composition; (4.) the control of factors that drive formation of hierarchical structures with interesting and useful material properties; and (5.) the integration of new understanding and materials into systems that can be used to pattern, build, and grow heterogeneous, multi-element devices.

This symposium seeks to be a forum for bringing the perspective, expertise, tools, and methodologies of these complementary fields together, creating synergy. It will feature invited review and keynote talks from both the biomaterialization and electrodeposition communities, as well as contributed talks.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **D. Schwartz**, University of Washington, e-mail: dts@u.washington.edu; **H. De Long**, Air Force Office of Scientific Research, e-mail: hugh.

delong@afosr.af.mil; **T. Homma**, Waseda University, e-mail: homma@mse.waseda.ac.jp; and **C. Orme**, Lawrence Livermore National Laboratory, e-mail: orme1@llnl.gov.

F2 Electronics Packaging 3 ECS Electrodeposition

This symposium will cover the scientific and technological advances in electrochemical technology as applied to electronics packaging. Recent progress in high speed ULSI triggered technological revolution of electronics packaging. Both electronics packaging and ULSI research topics are invited as abstracts. Because electrochemical processes are the ultimate solution to create smaller size and lower cost devices, both practical and fundamental aspects of electrochemical processes are highly demanded in this area. Special interests are shape evolution and additive chemistry of high-aspect ratio, mathematical modeling of deposition and etching, through-mask plating, nano-fabrication and MEMS.

Some suggested topics include, but are not restricted to: (1.) advanced substrates and packaging; three-dimensional chip stacking, system in packaging (SIP), high speed and optical packaging, wireless, and micro CSP; (2.) chip interconnect metallization; damascene plating, copper, copper-alloys, silver etc., seed/barrier layers, sputter seeding, metal migration, and planarization; (3.) chip-package interconnection, flip-chip (C4) technology, Pb-free C4s, wire bonding, TAB, compliant chip-package interconnection and room temperature joint; (4.) surface treatment, conductor, dielectric, pad and Au/other plating; and (5.) MEMS of micromechanics, transducers bio-sensors, and bio-materials.

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F3 Green Electrodeposition ECS Electrodeposition / ECSJ Electronic Materials Committee

Chemical and electrochemical methods to deposit metals, alloys, oxides, composites, etc. have been developed over centuries. Until recently, most methods have not taken into account the environmental impact of the process or product. However, the environmental viability and sustainability of products and processes are becoming more important. Eventually, the viability of any process will be strongly dependent on its environmental impact.

We recognize that dry and wet deposition methods can offer alternatives to non-sustainable materials, processes and devices, and current processes should be improved to lower their environmental impact. We are thus inviting contributions that address a wide variety of problems to reduce the environmental impact of dry and wet deposition processes and the resulting products. Workers involved in, but not limited to the following areas of research, are invited to submit a paper at our symposium: (1.) new electrolyte formulations and processes; (2.) alternatives to additives;

(3.) reduction of chemicals, energy, and materials used in a process; (4.) new concepts which reduce energy and material requirement in a deposition process; (5.) novel materials and products with low environmental impact; (6.) process monitoring, as well as analysis and control methods that reduce overall environmental impact; (7.) measurement methods to monitor environmental impact of electrodeposition and electrodeposited products; (8.) methods for recycling of materials, products, process waste, and chemicals; and (9.) development of zero emission deposition processes.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **S. Roy**, Newcastle University, e-mail: S.Roy@ncl.ac.uk; **S. Yoshihara**, Utsunomiya University, e-mail: sachiy@cc.utsunomiya-u.ac.jp; and **G. Zangari**, University of Virginia, e-mail: gz3e@virginia.edu.

F4 Magnetic Materials, Processes, and Devices 10

ECS Electrodeposition / ECSJ Electronic Materials Committee

Magnetic thin films play important roles in data recording systems, sensors, microelectromechanical systems (MEMS), and other devices. New knowledge continues to be acquired in magnetic film processing including: film nucleation and growth, structure of deposits, stress and micromagnetics of films, thermal and magnetic annealing, electrochemical and electroless plating systems, etching, process chemistry, tool design, process control, etc. Our understanding of the correlations between deposition parameters, film composition, structure, properties, and device performance also continues to improve.

The purpose of the symposium is to bring together electrochemists, physicists, engineers, and device designers who are working in the area of magnetic thin-film technology to review the present state of the field and to point out fruitful new areas for research. Materials of interest include Fe, Ni, Co, and their alloys, as well as laterally patterned, laminated or compositionally modulated structures, including nanowires and self-organized films.

The symposium will further cover subjects specific to the fabrication of thin-film heads, microelectromechanical systems, micromotors, and other magnetic devices. The symposium will include invited review or tutorial papers and contributed papers.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **C. Bonhôte**, Hitachi Global Storage Technologies, e-mail: Christian.Bonhote@hitachigst.com; **S. R. Brankovic**, University of Houston, e-mail: Stanko.Brankovic@mail.uh.edu; **H. H. Gatzen**, University of Hannover, e-mail: gatzen@imt.uni-hannover.de; **Y. Kitamoto**, Tokyo Institute of Technology, e-mail: kitamoto.ya@mt.titech.ac.jp; **T. Osaka**, Waseda University, e-mail: osakatets@waseda.jp; **W. Schwarzhacher**, University of Bristol, e-mail: w.schwarzhacher@bristol.ac.uk; and **G. Zangari**, University of Virginia, email: gz3e@virginia.edu.

F5 Molecular Structure of the Solid-Liquid Interface and Its Relationship to Electrodeposition 6

ECS Electrodeposition / ECSJ Electronic Materials Committee

New techniques for characterizing the solid-liquid interface at the molecular scale have the potential for guiding fundamental advances related to electrodeposition. Events at the molecular scale play a significant role in determining product quality in many technological processes. The goal of this symposium is to draw together the collective interests of scientists and engineers skilled in new experimental and computational methods involving electrodeposition applications.

The symposium will provide a forum for advances in understanding of key fundamental phenomena such as the role of defects, additives, solvent effects, nanoscale phenomena, surface films, mechanisms of lattice formation, and hydrodynamic phenomena. Papers are solicited on *in situ* and *ex situ* experimental methods, time- and frequency-domain modulation, surface microscopies, linear and nonlinear surface spectroscopies. Numerical simulations and mathematical methods of interest include continuum as well as non-continuum scales, methods for predicting force fields associated with the interface including self-assembly, and numerical techniques for simulating system-wide behavior over multiple time- and distance-scales.

In addition, the symposium will provide non-electrodeposition scientists with a platform for presenting novel and non-traditional approaches to research on electrodeposition.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **R. Alkire**, University of Illinois, e-mail: r-alkire@uiuc.edu; **Y. Fukunaka**, Kyoto University, e-mail: fukunaka@energy.kyoto-u.ac.jp; **T. Homma**, Waseda University, e-mail: homma@mse.waseda.ac.jp; and **D. Kolb**, University of Ulm, e-mail: dieter.kolb@uni-ulm.de.

G — Electrochemical Synthesis and Engineering

G1 Electrodes for Industrial Electrochemistry

ECS Industrial Electrochemistry and Electrochemical Engineering / ECSJ Industrial Electrolysis Committee

This symposium focuses on the practice, the art, and the science behind electrodes for industrial electrochemistry. Electrodes for industrial electrochemistry are employed in electrolysis whereby electricity is utilized to convert raw materials into useful chemicals such as chlorine, caustic soda, and aluminum; in power generation and storage such as battery and fuel cell applications whereby chemicals are converted to electricity; and in other electrochemical applications involving corrosion prevention, analytical instrumentation, or environmental remediation. Delivering new or improved electrodes into the electrochemical industries is a challenging endeavor requiring not only a technical advantage; but also the ability to maintain the

improved performance in an industrial environment while also providing an economic advantage to the end user.

Topics of interest may include case histories, tutorials, design guidelines, and methodologies and the identification of areas for future research. Authors are encouraged to discuss their experiences in bringing new electrode research and development concepts to the industrial sector. What was the industrial need to stimulate the change in electrode technology? How was the research and development carried out? How was the electrode engineered to meet the industry needs? What was required as far as enabling technologies, such as manufacturing technology, other science and engineering technologies, and retrofitting of existing industrial infrastructure, to reduce the electrode concept for industrial use? How well did the electrode meet performance expectations? What future challenges exist for electrodes for industrial electrochemistry? Furthermore, other electrochemical technologies that complement industrial electrodes such as membranes, separators and diaphragms, advances in electrochemical cell designs, new or enhanced industrial electrosynthesis routes, and any fundamental investigations relating to industrial electrochemical science and technology will be welcomed to this symposium.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **D. T. Mah**, DuPont Engineering Research & Technology (DuET), DuPont Company, e-mail: doctor_electro@msn.com; and **Y. Takasu**, Shinshu University, e-mail: ytakasu@shinshu-u.ac.jp.

G2

Tutorial Symposium on Electrochemical Engineering in Honor of Professor John Newman's 70th Birthday

ECS Industrial Electrochemistry and
Electrochemical Engineering

Quantitative methods for the analysis and design of electrochemical systems have progressed greatly over the past forty years. Much of this progress is due to the work of Professor John Newman of the University of California, Berkeley. This tutorial symposium has been organized to recognize Prof. Newman's contributions on the occasion of his 70th birthday. The symposium will comprise a series of invited lectures covering the basic principles of electrochemical engineering as well as a variety of examples of applications in electrodeposition, fuel cells, batteries, and electrolytic processes.

A hard-cover issue of *ECS Transactions* is planned to be available "AT" the meeting. All authors accepted for presentation are obligated to submit their full text manuscript for the issue no later than July 1, 2008. All manuscripts will be submitted online, and must be in either MS Word or PDF format.

Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **T. W. Chapman**, University of Wisconsin, Madison, e-mail: Chapman_Tom@yahoo.com; **J. A. Trainham**, PPG Industries, e-mail: Trainham@ppg.com; and **R. E. White**, University of South Carolina, e-mail: White@enr.sc.edu.

H — Fullerenes, Nanotubes, and Carbon Nanostructures

H1

Nanostructure and Function of Fullerenes, Carbon Nanotubes, and Related Materials

ECS Fullerenes, Nanotubes, and Carbon Nanostructures

This symposium will focus on the nanostructure and function of fullerenes, carbon nanotubes, and related materials. Papers are invited in the following areas of nanotubes and fullerenes: (1.) functionalization of fullerene and nanotubes for nanostructure and functional material development; (2.) nanostructure and function of solid nanotubes, fullerene peapods, and soluble carbon nanotubes; (3.) nanostructure, (photo-) electron transfer, spectroelectrochemistry, and solid-state physics of fullerenes and metallofullerenes.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **N. Nakashima**, Kyushu University, e-mail: nakashima-tcm@mbx.nc.kyushu-u.ac.jp; **T. Akasaka**, University of Tsukuba, e-mail: akasaka@ara.tsukuba.ac.jp; **F. D'Souza**, Wichita State University, e-mail: Francis.DSouza@wichita.edu; **S. Fukuzumi**, Osaka University, e-mail: fukuzumi@chem.eng.osaka-u.ac.jp; **D. M. Guldi**, Friedrich-Alexander-Universität, e-mail: dirk.guldi@chemie.uni-erlangen.de; **H. Imahori**, Kyoto University, e-mail: imahori@moleng.kyoto-u.ac.jp; **S. Maruyama**, The University of Tokyo, e-mail: maruyama@photon.t.u-tokyo.ac.jp; **Y. Murata**, Kyoto University, e-mail: yasujiro@scl.kyoto-u.ac.jp; and **J. Nishimura**, Gunma University, e-mail: nisimura@chem.gunma-u.ac.jp.

I — Physical and Analytical Electrochemistry

I1

Physical, Analytical, and Spectro-Electrochemistry General Session

ECS Physical and Analytical Electrochemistry / ECSJ

Papers concerning any aspect of physical electrochemistry, analytical electrochemistry, and spectro-electrochemistry not covered by topic areas of other specialized symposia at this meeting are welcome. Contributed papers will be programmed in some related order, depending on the titles and contents of the submitted abstracts.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **P. Trulove**, U.S. Naval Academy, e-mail: trulove@usna.edu; **K. Shimazu**, Hokkaido University, e-mail: shimazu@ees.hokudai.ac.jp; **S. Sun**, Xiamen University, e-mail: sgsun@xmu.edu.cn; and **E. Wang**, Changchun Inst. Applied Chem, e-mail: ekwang@ciac.jl.cn.

12

Bioelectroanalysis

ECS Physical and Analytical Electrochemistry /
ECS Organic and Biological Electrochemistry /
ECSJ Bioengineering

Papers are solicited on fundamental and applied aspects of charge transfer phenomena involving bio/electrochemical interfaces. The biological component of interest includes enzymes, multi-enzyme complexes, organelles, and whole microorganisms. It is also extended to other biological species as catalysts, substrates, transport agents, mediators, or other such roles. Of interest are fundamental studies focusing on heterogeneous electron transfer coupled with oxidation or reduction reactions, including direct or mediated electron transfer between electrodes and enzymes or microbes; catalysis at electrode-supported membranes, electrode modification chemistries for immobilization or stabilization of electrochemically addressable catalytic moieties; and engineered electrode systems facilitating mass transfer of substrates and products. Our goal is to bring together a multidisciplinary representation of research in this broad area to redefine the existing state-of-the-art, and address remaining challenges for practical implementation of these technologies. The applications towards sensors, actuator, biofuel cells or other bio-devices are of interest.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **S. Minteer**, Saint Louis University, e-mail: minteers@slu.edu; **P. Atanasov**, University of New Mexico, e-mail: plamen@unm.edu; **J. Burgess**, Case Western Reserve University, e-mail: jdb22@case.edu; **S. Calabrese Barton**, Michigan State University, e-mail: scb@msu.edu; **I-M. Hsing**, Hong Kong University of Science and Technology, e-mail: kehsing@ust.hk; and **I. Taniguchi**, Kumamoto University, e-mail: taniguch@gpo.kumamoto-u.ac.jp.

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Electrocatalysis

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

The symposium will provide an interdisciplinary forum to discuss new results, concepts and methodologies in the field of electrocatalysis. True revolution put in force in recent years is due to the application of high-level theoretical tools and computational methods for increasing understanding of surface reactions involved in electrocatalysis, and new *in situ* techniques with atomic-level specificity. The primary objective of these approaches is to help with synthesizing new catalytic materials, as well as to enhance the significance of electrocatalysis in fuel cell science and technology. A continuous addition of new experimental tools for investigations of surface processes on fuel cell catalysts, and on model surfaces supports a rapid growth of the field. The progress in theory and experiment is intimately connected to surface science and heterogeneous catalysis where the demand for theory is likewise overwhelming.

The following topics will be highlighted: (1.) PEM electrocatalysis, ligand (electronic) and ensemble effects, bifunctional mechanism, structure and composition of reaction site on bimetallic and ternary electrocatalysts (also: islands, defects and surface clusters, etc.); (2.)

theoretical description: accuracy and predictability; (3.) surface diffusion; (4.) intermediates: stable vs. transient; (5.) single crystal electrodes (adsorbates and deposits); (6.) nanotechnology and/or the application of nanoparticles; (7.) new trends in the applications of vibrational methods, methods from UHV surface science and synchrotron X-ray, methods in studies of electrochemical interfaces; (8.) other non-electrochemical techniques for the study of interfacial structure; and (9.) electrical double layer measurements and modeling *in situ*, and in UHV.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **G. Brisard**, Université de Sherbrooke, e-mail: Gessie.Brisard@USherbrooke.ca; **M. Osawa**, Hokkaido University, e-mail: osawam@cat.hokudai.ac.jp; **J. Prakash**, Illinois Institute of Technology, e-mail: prakash@iit.edu; and **A. Wieckowski**, University of Illinois, e-mail: andrzej@scs.uiuc.edu.

14

Environmental Electrochemistry

ECS Physical and Analytical Electrochemistry /
ECS Industrial Electrochemistry and
Electrochemical Engineering

There is presently great interest in understanding the environment, in elucidating natural processes and in improving remediation and treatment strategies. Electrochemistry is involved in environmental research in a number of ways. Many environmental processes are fundamentally electrochemical and are amenable to study using electroanalytical techniques, both *in situ* and *ex situ*. The fate and transport of environmental contaminants is a major area of such study. A number of electrochemical remediation technologies (ECRTs) are being developed. These methods exploit the advantages of electrodes as renewable or recyclable heterogeneous catalysts. Electrochemical remediation methods are energy efficient, environmentally benign (electrons are "clean" reagents), and are readily integrated into waste management systems. They can be applied before or after more conventional biological processes and are especially applicable in water treatment. Partial or total degradation has been reported via electrochemical techniques for contaminants not treatable with biological methods. Electrochemical methods are not confined to liquid media. Methods for remediation of soils have been demonstrated for removal of organics and heavy metals including radionuclides. Field applicable electrochemical sensors for environmentally important species facilitate the detection of electroactive species and hold the promise of real-time, continuous monitoring, including applications in sensor arrays and networks. Such sensors and sensor arrays could contribute to the development of "smart" technologies for waste handling, water treatment, and monitoring contaminants in the shallow geological subsurface.

This symposium invites papers that present all applications of electrochemistry to environmental questions. These include but are not limited to electrochemical methods for remediation of contaminated sites, waste water treatment, tracking contaminant fate and transport, and electrochemical methods of elucidating environmental reaction mechanisms. Papers are also invited on topics such as research and development of electrochemical sensors with direct application to environmental issues.

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accepted for presentation are encouraged to submit their full text manuscript for the issue no later than November 1, 2008. All manuscripts will be submitted online, and must be in either MS Word or PDF format.

Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **D. D. Russell**, Boise State University, e-mail: drussell@boisestate.edu; and **D. T. Mah**, DuPont Engineering Research & Technology (DuET), DuPont Company, e-mail: doctor_electro@msn.com.

15

Molten Salts and Ionic Liquids 16

ECS Physical and Analytical Electrochemistry /
ECS High Temperature Materials / ECS
Electrodeposition / ECS Energy Technology /
ECSJ Molten Salt Committee

This symposium will provide an international and interdisciplinary forum for researchers to present their latest research on systems involving molten salts and ionic liquids. Papers on basic and applied research in all areas of chemistry, engineering, electrochemical systems, and physics related to molten salts and ionic liquids are solicited. The topics will include: (1.) electrochemical power (e.g., batteries, fuel cells, semiconductors, and photovoltaics); (2.) rare earth and nuclear chemistry (e.g., lanthanides, actinides, radioisotopes, nuclear reprocessing); (3.) electrodeposition (e.g., deposition of alloys, characterization of electroactive species, and surface characterization); (4.) reactions (e.g., catalysis, synthesis, oligomerizations, and polymerizations); (5.) separations (e.g., selective extractions and biphasic systems); (6.) corrosion phenomena (e.g., corrosion protection and molten salt promoted corrosion); (7.) solute and solvent properties (e.g., structural investigations, melting behavior, dynamics, and stability of molten salts); (8.) biochemical and biomedical applications (e.g., dissolution of biopolymer, enzymatic reactions, and bioelectrocatalysis); (9.) applications of molten salts to "green" chemical reactions and processes; and (10.) new ionic liquids, molten salts, and mixtures (e.g., liquid clathrates, binary and ternary melts, and task-specific ionic liquids).

Keynote lectures will be presented by invited speakers. A poster session may be planned. Student participation is highly encouraged. We anticipate some funds will be available for partial support travel/registration. Priority for funding will be given to students and other junior researchers. To be considered for support, the individual must be presenting a talk or a poster.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **H. De Long**, AFRL/AFOSR, e-mail: hugh.delong@afosr.af.mil; **S. Dai**, Oak Ridge National Laboratory, e-mail: dais@ornl.gov; **D. Fox**, American University, e-mail: dfox@american.edu; **R. Hagiwara**, Kyoto University, e-mail: hagiwara@energy.kyoto-u.ac.jp; **R. Mantz**, ARO, e-mail: robert.a.mantz@us.army.mil; **P. C. Trulove**, U.S. Naval Academy, e-mail: trulove@usna.edu; and **K. Zaghib**, Hydro-Quebec, e-mail: Zaghib.Karim@ireq.ca.

J — Sensors and Displays: Principles, Materials, and Processing

J1

Chemical Sensors 8: Chemical (Gas, Ion, Bio) Sensors and Analytical Systems

ECS Sensor / ECSJ Sensor Committee

This symposium will provide a forum for the discussion of the research and development in the field of chemical (gas, ion, bio, and other) sensors, including molecular recognition surface, transduction methods, and integrated and micro sensor systems. Topics of interest include: (1.) development of new selective molecular recognition surfaces and materials; (2.) sensors and analytical systems for safety and security; (3.) sensors for energy and environment; (4.) novel methods for signal amplification and detection; (5.) development and analysis of sensor arrays for the simultaneous detection of multiple analytes; and (6.) micro total analysis systems (μ -TAS). All transduction methods are of interest for this symposium (e.g., electrochemical, optical, acoustic, gravimetric, and thermal).

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **R. Mukundan**, Los Alamos National Lab, e-mail: mukundan@lanl.gov; **Z. Aguilar**, Vegrandis LLC, e-mail: zapaguilar@yahoo.com; **C. Bruckner-Lea**, Pacific Northwest National Laboratory, e-mail: cindy.bruckner-lea@pnl.gov; **M. Carter**, Eltron Research, Inc., e-mail: mcarter@eltronresearch.com; **G. Hunter**, NASA Glenn Research Center, e-mail: ghunter@grc.nasa.gov; **N. Miura**, Kyushu University, e-mail: miurano@astec.kyushu-u.ac.jp; **F. Mizutani**, University of Hyogo, e-mail: mizutani@sci.u-hyogo.ac.jp; and **Y. Shimizu**, Nagasaki University, e-mail: shimizu@nagasaki-u.ac.jp.

J2

Microfabricated and Nanofabricated Systems for MEMS/NEMS 8

ECS Sensor / ECS Dielectric Science and
Technology / ECS Physical and Analytical
Electrochemistry / ECS Electronics and Photonics

This symposium continues the series of symposia that focus on all aspects of MEMS/NEMS technology including micro/nanomachining, fabrication processes, packaging, and the application of these structures and processes to the miniaturization of chemical sensors, physical sensors, biosensors, miniature chemical analysis systems, and other devices. Particular emphasis should be placed on processes and potential applications of these devices. The following is a partial list of topics to be solicited: (1.) fabrication and processing of nano/microsystems; (2.) nanomaterials for sensors and actuators; (3.) novel methods of processing at the nano/microscale; (4.) use of nano/microstructures applicable to environmental and biological studies; (5.) chemical, electrical, and physical testing of devices; (6.) integrated microfabricated sensors into arrays; (7.) reliability of micro/nanomechanical structures; (8.) signal processing of nano/micro devices systems; and (9.) silicon carbide films and devices.

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than July 1, 2008. All manuscripts will be submitted online, and must be in either MS Word or PDF format.

Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **P. J. Hesketh**, Georgia Institute of Technology, e-mail: peter.hesketh@me.gatech.edu; **J. L. Davidson**, Vanderbilt University, e-mail: jim.davidson@vanderbilt.edu; **J. Li**, NASA Ames Research Center, e-mail: jingli@mail.arc.nasa.gov; **S. Shoji**, Waseda University, e-mail: shojis@waseda.jp; and **K. B. Sundaram**, University of Central Florida, e-mail: sundaram@mail.ucf.edu.

J3

Phosphors for New-Generation Lighting

ECS Luminescence and Display Materials / ECSJ Phosphor Research

The purpose of this symposium is to highlight recent advances in phosphors for new generation lighting including inorganic and organic light emitting diodes (LED and OLED), field emission lamps, plasma panels and other devices. Through this symposium, we intend to cover a wide range of topics in order to generate discussions between interdisciplinary participants to favor the exchange of new ideas. We are thus soliciting contributions in areas ranging from the synthesis of challenging phosphor materials and the characterization of luminescence behavior of new phosphor materials to lighting applications. Submission of papers is encouraged in the following topics: (1.) synthesis and characterization of new phosphor materials; (2.) design of luminescence properties for next generation lighting applications; (3.) integration of new phosphors into next generation lighting applications; (4.) new lighting devices; and (5.) lighting applications for energy savings and other functionalities. Selected abstracts will be also chosen by the organizers for longer invited talks.

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Abstracts should be submitted electronically to ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **S. Okamoto**, Japan Broadcasting Corporation, e-mail: okamoto.s-gq@nhk.or.jp; and **A. A. Setlur**, GE Global Research Center, e-mail: setlur@crd.ge.com.

J4

Physics and Chemistry of Luminescent Materials, including the 4th Symposium on Persistent Phosphors

ECS Luminescence and Display Materials / ECSJ Phosphor Research

This symposium will focus on all aspects of luminescence in inorganic and organic systems and will address current and emerging technical and scientific issues in luminescence. Presentations at this meeting will cover photoluminescent materials, laser materials, cathodoluminescent materials, X-ray phosphors, scintillators, electroluminescent materials, persistent phosphors, phosphors for VUV excitation, nanophosphors for biochemical applications, and other optical devices. Presentations can involve the physics, chemistry, and engineering of luminescent materials including: (1.) persistent phosphors (materials, fundamental mechanisms, applications); (2.) synthesis and characterization of luminescence in nanoparticles (brightness, color, response time, life time, excitation spectra, etc, via modification of particle and surface characteristics); (3.) new phosphor discovery and synthesis via combinatorial chemistry or traditional solid-state chemistry methods; (4.) identification of luminescent centers, loss centers, and non-radiative processes; (5.) high energy (x-ray, gamma-ray, cathode ray) excitation and mechanisms; (6.) energy transfer and concentration effects; (7.) complex luminescence processes such as multiphoton transitions, core-valence luminescence, and cooperative phenomena; (8.) advanced experimental spectroscopic techniques to evaluate inorganic and luminescent materials; (9.) nonlinear optical processes and ultra-fast transitions; (10.) applications and mechanisms of electroluminescence; (11.) luminescence from novel materials such as ceramics, glass; and (11.) theoretical analyses or simulations of luminescence phenomena and crystal structures. Selected abstracts will be also chosen by the organizers for longer invited talks.

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Young Faculty Travel Grant Application PRiME 2008

The Society's **Battery** and **High Temperature Materials (HTM)** Divisions offer travel grants to postdoctoral associates, junior faculty, and other young investigators presenting papers at the PRiME 2008 meeting in Honolulu, Hawaii, October 12-17, 2008. To apply, complete this application and send it along with a copy of your CV and a letter of recommendation from an established researcher attesting both to the quality of the applicant's work and financial needs, and a copy of the applicant's meeting abstract. For additional information please contact the Division contact below, as requirement might differ between Divisions.

Meeting Site: _____

Name: _____

Organization: _____

Address: _____

E-mail: _____ Phone #: _____

Symposium Title (#): _____

Title of paper to be presented at the meeting: _____

Estimated meeting expenditures: \$ _____

Signature: _____ Date: _____

Check Division under which award is being applied for: *(Applications made to multiple Divisions will be rejected)*

☐ **Battery**—Send to: B. Y. Liaw, University of Hawaii Natural Energy Institute, 1680 East-West Road, Post 109, Honolulu, HI 96822, USA.
E-mail: bliaw@hawaii.edu

☐ **HTM**—Send to: J. Fergus, Materials Research and Education Center, 275 Wilmore Laboratories, Auburn, AL 36849, USA. E-mail: jwfergus@eng.auburn.edu

Applications for Travel Grants for the Honolulu, Hawaii meeting must be received no later than May 30, 2008.

Student Travel Grant Application PRiME 2008

The Society's **Battery, Corrosion, Dielectric, Electrodeposition, Electronics and Photonics, Energy Technology, High Temperature Materials (HTM), Industrial Electrolysis and Electrochemical Engineering (IEEE), Organic and Biological Electrochemistry (OBE), Physical and Analytical Electrochemistry, and Sensor Divisions** offer travel grants to students presenting papers at the PRiME 2008 meeting in Honolulu, Hawaii, October 12-17, 2008. To apply, complete this application and send it along with a copy of your transcript and a letter from an involved faculty member attesting both to the quality of the student's work and financial needs, and a copy of the student's meeting abstract. For additional information please contact the Division contact below, as requirement might differ between Divisions.

Meeting Site: _____

Name: _____

School Address: _____

E-mail: _____ Phone #: _____

Undergraduate Year (U) or Graduate Year (G) - circle one: U3 U4 G1 G2 G3 G4 G5

Major Subject: _____ Grade point average _____ out of possible _____
(please provide a letter of recommendation from your faculty advisor and a copy of your transcript)

Symposium Title (#): _____

Title of paper to be presented at the meeting: _____

Are you an ECS Student Member of the Society? ☐ yes ☐ no
(if not, please additionally submit the Awarded Student Membership application.)

Estimated meeting expenditures: \$ _____

Signature: _____ Date: _____

Check Division under which award is being applied for: (Applications made to multiple Divisions will be rejected)

- ☐ **Battery**—Send to: A. Manthiram, Univ. of Texas, ETC 9-104, Austin, TX 78712-0292, USA. E-mail: rmanth@mail.utexas.edu.
- ☐ **Corrosion**—Send to: N. Missert, Sandia National Labs, MS 1415, P.O. Box 5800, Albuquerque, NM 87185-0100, USA. E-mail: namisse@sandia.gov
- ☐ **Dielectric Science & Technology**—Send to: H. Rathore, IBM, Internal Mail Stop AE1,B/640, 2070 Rte 52, Hopewell Junction, NY 12533, USA. E-mail: rathore@us.ibm.com
- ☐ **Electrodeposition**—Send to: L. Deligianni, IBM T J Watson Research Center, 1101 Kitchawan, Yorktown Heights, NY 10598, USA. E-mail: lili@us.ibm.com
- ☐ **Electronics and Photonics**—Send to: F. Ren, University of Florida, Dept. of Chem. Engr., Gainesville, FL 32611, USA. E-mail: ren@che.ufl.edu
- ☐ **Energy Technology**—Send to: S. Calabrese Barton, Michigan State University, Dept. of Chem. Eng. and Matls., Sci, 2527 Engineering Building, East Lansing, MI 48824, USA. E-mail: scb@msu.edu
- ☐ **HTM**—Send to: J. Fergus, Materials Research and Education Center, 275 Wilmore Laboratories, Auburn, AL 36849, USA. E-mail: jwfergus@eng.auburn.edu
- ☐ **IEEE**—Send to: G. Botte, Ohio University, Russ College of Eng & Tech, 183 Stocker Center, Athens, OH 45701, USA. E-mail: botte@bobcat.ent.ohiou.edu
- ☐ **OBE**—Send to: I. Taniguchi, Kumamoto University, Fac. of Appl. Chem & Biochem., 2-39-1 Kurokami, Kumamoto 860-8555, Japan. E-mail: taniguch@gpo.kumamoto-u.ac.jp
- ☐ **Physical and Analytical Electrochemistry**—Send to: S. Minteer, Saint louis University, Dept of Chemistry, 221 N Grand Blvd, Saint Louis, MO 63103, USA. E-mail: minteers@slu.edu
- ☐ **Sensor**—Send to: Y-L. Chang, Nanomix, Inc., 5980 Horton Street, Suite 600, Emeryville, CA 94608, USA. E-mail: ychang@nano.com

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