

The 2006 Joint International Meeting will be held from October 29 to November 3, 2006. It combines the 210th Meeting of The Electrochemical Society and the XXI Congreso de la Sociedad Mexicana de Electroquímica, and is cosponsored by the Sociedad Iberoamericana de Electroquímica. This major international conference offers a unique blend of electrochemical and solid-state science and technology; and serves as a major forum for the discussion of interdisciplinary research from around the world through a variety of formats, such as oral presentations, poster sessions, exhibits, and tutorial sessions.

Abstract Submission and Deadlines

Abstracts are due **NOLATER than May 26, 2006**. Some abstracts are due **earlier**. Please carefully check each symposium listing for any **alternate abstract submission deadlines. Before submitting**, and for the latest details on abstract submission and symposium topics, please visit the ECS website (www.electrochem.org). Submit one original, meeting abstract electronically via the ECS website. Some symposia require that an abstract also be submitted to one or more organizer; check each symposium listing for details. Faxed abstracts, late abstracts, and abstracts more than one page in length will not be accepted. In July 2006, all presenting authors will receive a letter from ECS notifying them of the date and time of their presentation. Some papers will be scheduled for poster presentation.

Paper Presentation

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 pre-formatted template available from the ECS website. Oral presentations must be in English. **Presenting authors will be required to bring their own laptops to the meeting for presentation.** LCD projectors will be available for PowerPoint presentations. 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 ECS at time of abstract submission and appropriate arrangements will be worked out, subject to availability, at the expense of the author. Poster presentations will 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 their abstract number and day of presentation in the final program.

Manuscript Publication

All meeting abstracts will be published both on the ECS website and in the *Meeting Abstracts* (CD-ROM) copyrighted by The Electrochemical Society, and become the property of ECS upon presentation. Papers presented at the meeting 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 in the journals or from the ECS website. If publication is desired elsewhere after presentation, written permission from ECS is required.

New Publication: *ECS Transactions*

All full papers presented at ECS meetings are eligible for submission to the new online publication, *ECS Transactions* (ECST). Each meeting is represented by a "volume" in ECST, and each symposium is represented by an "issue." To determine acceptance in ECST, all submitted full papers will be reviewed by the organizers of the symposium at which the full papers were presented, or by the ECST Editorial Board. Some symposia will publish a hard-cover version of the issue, to be available for sale at the meeting. Please see each individual symposium listing to determine if there will be a hard-cover issue, which will require submission of a full paper to ECST, in advance of the meeting. After the meeting, all accepted papers in ECST will be available for sale, either individually, or by issue. Please visit the ECS website for more details.

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 contact ECS; such letters will not imply any financial responsibility of ECS. Students seeking financial assistance should consider awarded travel grants (see page 66 or visit the ECS website).

Second Meeting Announcement

The second meeting announcement will include details on the technical sessions, a meeting registration form, hotel reservation information, and other meeting information. An announcement will be e-mailed to all ECS members, authors of papers, and technical session co-chairs in July of 2006.

Hotel Reservations

The 2006 Joint International Meeting will be held at the Moon Palace Resort, located at Carretera Cancun-Chetumal, KM\m. 340, Cancun, Quintana Roo, Mexico, 77500. The Moon Palace, our headquarters hotel, is an all-inclusive resort, providing all registered guests with unlimited food and beverage at any of the eight food outlets and restaurants. Please see the ECS website for additional information on rates and reservations. The reservation deadline is **September 15, 2006**.

Meeting Registration

All participants, including authors and invited speakers, are required to pay the appropriate registration fees. Hotel and meeting registration materials will be distributed in July of 2006 and will also be available on the ECS website. The deadline for advance registration is **September 15, 2006**.

Short Courses

The meeting will also include several short courses on Sunday, October 29, 2006 from 09:00h to 16:30h. Short Course fees are currently \$470, and are subject to change. 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. The list of Short Courses for this meeting may include the following.

- Basic Electrochemical Measurements
- PEM Fuel Cells
- Electrochemical Capacitors
- Electrochemical Nanotechnology
- Lithium Batteries
- Battery Design and Simulation
- Basics of Impedance Spectroscopy

Please check the ECS website for the latest details.

Technical Exhibit

The meeting 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 staffed by company representatives cost \$1,800 and include one free meeting registration. Literature display tables (un-staffed by company representatives, with no meeting registration included) will also be available, for \$750. Parties interested in exhibiting should contact Amir Zaman at ECS for more information. Coffee breaks are scheduled each day in the exhibit hall along with evening poster sessions.

Sponsorship Opportunities

ECS biannual meetings provide great opportunities to market your company through sponsorship. Sponsors will be recognized by level in *Interface*, the Meeting Program, the Exhibit Guide, on registrant bags, and on the ECS website. Also, all Platinum Level sponsors will receive signage displaying their company logo at their sponsored activity.

Activities and events that your company may choose to sponsor include: evening events and mixers, coffee breaks, Internet café, and plenary talks. We can also create custom sponsorship packages to fit your company's needs.

Sponsorship levels are: Platinum \$5,000+; Gold \$2,500+; Silver \$1,000; and Bronze, less than \$1,000.

These opportunities include the recognition stated above along with additional personalized packages. Special event sponsorships will be assigned by ECS on a first-come, first served basis. For more information, contact Amir Zaman at amir.zaman@electrochem.org or 609.737.1902, ext. 103.

Contact Information

If you have any questions or require additional information, contact ECS - The Electrochemical Society, 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.

FOR LATEST
Information

VISIT

www.electrochem.org

A General Topics

- A1—General Student Poster Sessions
- A2—Nanotechnology General Session
- A3—Tutorials in Nanotechnology

B Batteries, Fuel Cells, and Energy Conversion

- B1—Electrochemical Capacitors and High Power Batteries
- B2—Intercalation Compounds for Batteries and Hybrid Supercapacitors
- B3—Lithium-Ion Batteries
- B4—Metal/Air and Metal/Water Batteries
- B5—Organic Photovoltaics
- B6—Proton Exchange Membrane Fuel Cells 6
- B7—Solid-State and Solid-Electrolyte Batteries

C Biomedical Applications and Organic Electrochemistry

- C1—Biological Nanostructures, Materials, and Applications
- C2—Molecular Electrochemistry
- C3—Nanoparticles, Electrons, and Photons
- C4—Pharmaco-electrochemistry

D Corrosion, Passivation, and Anodic Films

- D1—Corrosion General Poster Session
- D2—Corrosion of Electronic Materials and Devices
- D3—Corrosion of Infrastructure
- D4—Critical Factors in Localized Corrosion 5, a Symposium in Honor of Hugh S. Isaacs
- D5—High Temperature Corrosion and Materials Chemistry 6

E Dielectric and Semiconductor Materials, Devices, and Processing

- E1—Solid-State Joint General Session
- E2—Advanced Gate Stack, Source/Drain, and Channel Engineering for Si-Based CMOS 2: New Materials, Processes, and Equipment
- E3—Atomic Layer Deposition Applications 2
- E4—High Dielectric Constant Gate Stacks 4
- E5—Chemical Mechanical Polishing 8
- E6—Bioelectronics, Bionterfaces, and Biomedical Applications 2
- E7—High Purity Silicon 9
- E8—Integrated Optoelectronics 3
- E9—Multifunctional Carbon Materials for Electrochemical and Electronic Applications

- E10—Nitride and Wide Bandgap Semiconductors for Photonics and Electronic Devices and Sensors 7
- E11—Science and Technology of Dielectrics for Active and Passive Devices
- E12—Semiconductor Wafer Bonding 9: Science, Technology, and Applications
- E13—SiGe: Materials, Processing, and Devices
- E14—State-of-the-Art Program on Compound Semiconductors 45 (SOTAPOCS 45)
- E15—Thin Film Transistors 8 (TFT 8)

F Electrochemical/Chemical Deposition and Etching

- F1—Electrochemical Deposition onto Non-Metallic Surfaces
- F2—Electronics Packaging 2
- F3—Magnetic Materials, Processes, and Devices 9
- F4—Molecular Structure of the Solid-Liquid Interface and Its Relationship to Electrodeposition 5
- F5—Nanostructured Metal Oxides: Processing and Applications

G Electrochemical Synthesis and Engineering

- G1—Industrial and Environmental Electrochemistry

H Fullerenes, Nanotubes, and Carbon Nanostructures

- H1—Carbon Nanotubes: General Session
- H2—Recent Advances in Fullerene Science

I Physical and Analytical Electrochemistry

- I1—Physical and Analytical Electrochemistry General Session
- I2—Electrochemistry at Liquid-Liquid Interfaces
- I3—Electrochemical Surface Science: Recent Advances in the Study of The Electrode-Electrolyte Interface
- I4—Molten Salts 15, in Memory of Robert Osteryoung
- I5—Supramolecular Electrochemistry

J Sensors and Displays: Principles, Materials, and Processing

- J1—Biomedical and Clinical Sensors
- J2—Chemical Sensors 7: Chemical and Biological Sensors and Analytical Systems
- J3—Microfabricated and Nanofabricated Systems MEMS/NEMS 7
- J4—Physics and Chemistry of Luminescent Materials 15

Student Travel Grants

Several of the Society's Divisions offer travel assistance to students presenting papers at Society meetings. These travel grants are intended to aid students in attending the meeting. For additional information and online application form refer to the ECS website. To be eligible for a grant, applications must be scheduled to present a paper in a symposium or session sponsored or

cosponsored by the Division to which the application is made. For an up-to-date list of symposia and how to submit a paper, please visit www.electrochem.org. To apply for a travel grant use the application form below.

Application Requirements—All applications for the 210th meeting in Cancun, Mexico, October 29-November 3, 2006, **must be received no later than May 26, 2006**. To apply for travel

support, please complete the Student Travel Grant form below, return it with a letter of recommendation from a faculty advisor, and a copy of the meeting abstract. Travel grants range from \$250-\$750 depending on the student's estimated expenses and the funds available from Divisions. ■

Travel Grant Application Cancun, Mexico

The Society's Corrosion, Electrodeposition, Electronics and Photonics, Energy Technology, High Temperature Materials (HTM), Industrial Electrolysis and Electrochemical Engineering (IEEE), Organic and Biological Electrochemistry (O&BE), Physical and Analytical Electrochemistry, and Sensor Divisions offer travel grants to students presenting papers at the Society's next meeting in Cancun, Mexico, October 29-November 3, 2006. 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)*

- Corrosion—Send to: N. Missert, Sandia National Labs, MS 1415, P.O. Box 5800, Albuquerque, NM 87185-0100, USA. E-mail: namisse@sandia.gov
- Electrodeposition—Send to: C. Bonhote, Advanced Head of Development and Nanostructures, Hitachi Global Storage Technologies, San Jose Research Center, 650 Harry Rd., C1-430, San Jose, CA 95120-6001, USA. E-mail: Christian.Bohnote@hgst.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, Dept. of Chem. Engr., Columbia University, 500 W. 120th Street, Room 812, New York, NY 10027-6623, USA. E-mail: scb2001@columbia.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. Pillay, South Dakota School of Mines and Technology, 501 E. St. Joseph Street, Rapid City, SD 57701, USA. E-mail: gautum.pillay@sdsmt.edu
- O&BE—Send to: J. F. Rusling, Univ. of Connecticut, Dept. of Chemistry, U-60, Storrs, CT 06268, USA. E-mail: James.Rusling@uconn.edu
- Physical and Analytical Electrochemistry—Send to: P. Trulove, U.S. Naval Academy, Chemistry Department, 582M Holloway Road, Stop 9B, Annapolis, MD 21402-5026, USA. E-mail: trulove@usna.edu
- Sensor—Send to: Y-L. Chang, Nanomix, Inc., 5980 Horton Street, Suite 600, Emeryville, CA 94608, USA. E-mail: ychang@nano.com

Applications for Travel Grants for the Cancun, Mexico meeting must be received no later than May 26, 2006.

A—GENERAL TOPICS

A1 General Society Student Poster Session

All Divisions

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.

Abstracts, suggestions, and inquiries should be sent to the ECS headquarters office and to the session organizers: **G. Botte**, Ohio University, Russ College of Engr. & Tech., 183 Stocker Center, Athens, OH 45701, USA, tel: 740.593.9670, fax: 740.593.0873, e-mail: botte@bobcat.ent.ohiou.edu; **V. Desai**, University of Central Florida, AMPAC, 4000 Central Florida Blvd., Orlando, FL 32816-2455, USA, tel: 407.882.1458, fax: 407.882.1462, e-mail: vdesai@mail.ucf.edu; and **V. Subramanian**, Tennessee Technical University, Dept of Chemical Engineering, 307 Prescott Hall PO Box 5013, Cookeville, TN 38505, USA, tel: 931.372.3494, fax: 931.372.6352, e-mail: vsubramanian@tntech.edu.

A2 Nanotechnology General Session

Nanotechnology Subcommittee / Sensor

The number of applications for materials that are prepared on a nanometer scale is expanding rapidly. The preparation and characterization of materials and composites on a nanometer scale are of prime importance for the advancement of these applications. Examples include catalysts for fuel cell applications and semiconductors for photovoltaic and photoelectrochemical solar energy conversion, and chemical and biological sensors. This symposium will focus on critical issues and the latest advancements in the science and technology of nanostructured materials. Papers are solicited in all areas related to materials including metals, semiconductors, molecular electronics, and organic compounds/polymers. Areas of interest include: 1. semiconductor and metal nanoparticles and metal/semiconductor nanocomposites; 2. size quantization effects in semiconductor nanoparticles; 3. surface modification and characterization including tunneling and force microscopy; 4. photoinduced charge separation and interfacial charge transfer; 5. dye-sensitization of semiconductors; 6. photoelectrochemistry of nanostructured films; 7. photocatalysis and environmental applications; 8. nanostructured catalysts for fuel cells; 9. metal/polymer nanocomposites and membranes; 10. nanostructured sensor surfaces and biological applications of nanomaterials; and 11. sensors.

Abstracts, suggestions, and inquiries should be sent to the ECS headquarters office and to the symposium organizers: **W. van Schalkwijk**, EnergyPlex Corp., 7630 139th PL, NE, Redmond, WA 98052, USA, tel: 425.445.2181, fax: 425.671.0206, e-mail: walter@energyplex.com; **P. Kamat**, Radiation Lab, University of Notre Dame, Notre Dame, IN 46556, USA, tel: 219.631.5411, fax: 219.631.5411, e-mail: pkamat@nd.edu; and **M. López Tejero**, Universidad Nacional de Córdoba, Pabellón Argentina, Ciudad Universitaria, 5000 Córdoba, Argentina, tel: 54.351.4334169, fax: 54.351.4334188, e-mail: mlopez@mail.fcq.unc.edu.ar.

A3 Tutorials in Nanotechnology

Nanotechnology Subcommittee /
High Temperature Materials / Energy Technology

The emergence of nanotechnology as a major field of research has impacted various scientific disciplines. Of particular interest is its role in material science, catalysis, energy conversion processes, photonics, and biology. The tutorial session is intended to provide background of nanomaterial synthesis, characterization, size, and shape dependent properties, and their applications. These tutorial lectures will discuss both fundamentals of nanoscience and state-of-the-art developments in nanotechnology.

Organizers: **P. Kamat**, Radiation Laboratory, Univ. of Notre Dame, Notre Dame IN 46556-0579, USA, tel. 574.631.5411, fax. 574.631.8068, e-mail: pkamat@nd.edu, **W. van Schalkwijk**, EnergyPlex Corp., 7630 139th PL, NE, Redmond, WA 98052, USA, tel: 425.445.2181, fax: 425.671.0206, e-mail: walter@energyplex.com; and **E. Traversa**, University of Rome Tor Vergata, Department of Chemical Science and Technology, Via della Ricerca Scientifica, 00133 Roma, Italy, tel: 06.72594492, e-mail: traversa@uniroma2.it.

B—BATTERIES, FUEL CELLS, AND ENERGY CONVERSION

B1 Electrochemical Capacitors and High Power Batteries

Battery / Energy Technology /
Physical and Analytical Electrochemistry /
Committee of Capacitor Technology
of the Electrochemical Society of Japan /
Capacitor Division of the Korean Electrochemical Society

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 super-capacitor 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.

Authors accepted for presentation are obligated to supply a camera-ready manuscript at the meeting. Instructions for preparing the manuscript will be sent out by the symposium organizers after the notification of acceptance of the papers. **The ECS Transactions issue will be available after the meeting; the full manuscripts should be submitted no later than December 1, 2006**

Abstracts should be sent electronically to the ECS headquarters office and suggestions and inquiries should be sent to the symposium organizers: **R. J. Brodd**, Broddarp of Nevada, Inc. 6121 Fountain Springs Dr., Henderson NV 89014 USA, tel: 702.897.3027, fax: 702.897.5812; e-mail: dbrodd@broddarp.com; **D. H. Doughty**, Sandia National Labs., MS-0613, Lithium Battery R&D Department, PO Box 5800, Albuquerque, NM 87185-0613 USA, tel: 505.845.8105, fax: 505.844.6972, e-mail: dhought@sandia.gov; **K. Naoi**, Institute of Symbiotic Science and Technology, Tokyo University of Agriculture and Technology, 2-24-16 Naka-cho, Kognanei, Tokyo 184-8588, Japan, tel: 81.0423.88.7174, fax: 81.0423.87.8448, e-mail: k-naoi@cc.tuat.ac.jp; **M. Morita**, Department of Applied Chemistry, Yamaguchi University, 2-16-1 Tokiwadi, Ube 755-8611, Japan, tel: 81.836.85.9211, fax: 81.836.85.9201, e-mail: morita@yamaguchi-u.ac.jp; **J. H. Kim**, Energy Conversion and Storage Research Center, Korean Institute of Energy Research, Daeduck Science Town, 71-2 Jang-Dong Yousung-Gu, Taejon 305-343, Korea, tel: 82.42.860.3117, fax: 82.42.864.1801, e-mail: kjhy@kier.re.kr; **G. Nagasubramanian**, Lithium Battery R&D Dept., Sandia National Lab. MS-0613, PO Box 5800, Albuquerque, NM 871-0613, tel: 505.845.1684, fax: 505.844.6972, e-mail: gnagasu@sandia.gov.; **P. Simon**, Université Paul Sabatier CIRIMAT, Bat 2R1, 118 Route de Narbonne, 31062 Toulouse, France, tel: 33.561.556.802, fax: 33.561.556.163, e-mail: simon@chimie.ups-tlse.fr; and **Z. Ogumi**, Graduate School of Engineering, Kyoto University, Nishikyoku-ku, Kyoto 615-8510, Japan, tel: 81.75.383.2487, fax: 81.75.383.2488, ogumi@scl.kyoto-u.ac.jp.



Intercalation Compounds for Batteries and Hybrid Supercapacitors

Energy Technology / Battery

This symposium will provide an international forum to discuss recent progress toward the development of intercalation compounds for batteries and hybrid supercapacitors, and applications and advanced materials for energy storage and conversion. 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. Themes of the symposium will be intercalation anodes and cathodes for lithium ion batteries, doped polymers for energy storage and hybrid supercapacitors. Specific topics of interest include: 1. synthesis, characterization, and engineering of micro to nano materials; 2. electrochemical properties and cell performance characteristics; 3. structure and reaction mechanisms; 4. interface studies; 5. chemical, electrochemical, and structural stability as a function of the state-of-charge; 6. fundamental aspects of redox processes and charge transfer; 7. electronic properties; and 8. theoretical modeling of intercalation compounds for energy storage and conversion.

Publication of an ECS Transactions issue is planned. Acceptance of a paper in this symposium obligates the authors to submit a typed camera-ready copy of the full manuscript no later than December 1, 2006

Abstracts should be sent electronically to the ECS headquarters office, and suggestions and inquiries should be sent to the symposium organizers: **K. Zaghib**, Institut de Recherche d'Hydro-Québec (IREQ), 1800 Boul. Lionel Boulet Varennes (Québec), Canada, J3X 1S1, tel: 450.652.8019, fax: 450.652.8424, e-mail: karimz@ireq.ca; **C. Julien**, Institut des NanoSciences de Paris (INSP) CNRS - UMR 7588, Université Pierre et Marie Curie, Campus Boucicaut, 140 rue de Lourmel, 75015 Paris, France, tel: 33.1.44.27.45.61, fax: 33.1.44.27.38.82, e-mail: cjul@ccr.jussieu.fr; **A. Manthiram**, University of Texas, Austin, TX 78712-0292, tel: 512.471.1791, fax: 512.471.7681, e-mail: rmanth@mail.utexas.edu; and **A. Martínez**, División de Estudios de Posgrado, Facultad de Ingeniería Mecánica y Eléctrica-UANL, tel: 52.81.83.29.40.20 ext. 5950, fax: 52.81.83.32.09.04, e-mail: azmartin@fime.uanl.mx.



Lithium-Ion Batteries

Battery / Energy Technology

Lithium-ion batteries play a vital role in our lives as they are the prominent power sources for cellphones, laptop computers, digital cameras, and many other consumer products. Consequently a symposium to present and discuss the most recent results is timely. Papers are solicited on both fundamental and applied aspects of lithium ion batteries. Specific areas to be covered include but are not limited to: 1. alternative and traditional anode and cathode active materials design, preparation, characterization, and performance; 2. electrode processing and cell design; 3. studies of the interfaces; 4. design and characterization of electrolytes; 5. materials and cell modeling; and 6. performance, safety, and failure mechanisms of cells and batteries.

Publication of an ECS Transactions issue is planned. Presenting a paper at this symposium obligates the authors to submit a typed camera-ready manuscript and list of key words. Manuscripts should be submitted to the organizers no later than December 1, 2006 Instructions for preparing the manuscript can be found on the ECS website.

Abstracts should be sent electronically to the ECS headquarters, and suggestions and inquiries to the symposium organizers: **G. Amatucci**, Rutgers, The State University of New Jersey, Dept. of Materials Science and Engineering, ESRG, 607 Taylor Rd, Piscataway, NJ 08854, USA, tel: 732.932.6856, e-mail: gamatucc@rci.rutgers.edu; **K. Zaghib**, Institut de Recherche d'Hydro-Québec (IREQ), 1800 Blvd. Lionel Boulet, Varennes, Québec, Canada J3X 1S1, tel: 450.652.8019, fax: 450.652.8424, e-mail: zaghib.karim@ireq.ca; **R. Jow**, Army Research Lab, 2800 Powder Mill Road, Adelphi, MD 20783, USA, tel: 301.394.0340, e-mail: rjow@arl.army.mil; **Y.-K. Sun**, Hanyang University, Dept of Chemical Eng #17, Seoul 133-791, South Korea, tel: 2.2290.0524; fax: 2.2282.7329, e-mail: karimz@ireq.ca; and **K. M. Abraham**, E-KEM Sciences, PO Box 920401, Needham, MA, 02492, USA, tel: 781.444.8453; fax: 781.455.6893, e-mail: kmabraham@comcast.net.



Metal/Air and Metal/Water Batteries

Battery / Energy Technology

Metal/air and metal/water batteries possess very high theoretical energy densities and are potentially attractive for a variety of applications. Yet various technical obstacles have hindered their development and kept their potential advantages far from being fully utilized, despite the fact that some systems such as zinc/air batteries with aqueous alkaline electrolytes have long been commercialized for certain niche applications. In recent years there has been a renewed interest in metal/air and metal/water batteries and various new approaches and designs, as well as new materials have been or are being developed. This symposium covers all aspects of metal/air and metal/water batteries. Topics of interest include but are not limited to: 1. catalysts for the air electrode and bi-functional catalysts; 2. design of the air electrode; 3. anode passivation and kinetics and design of the anode; 4. choice of electrolyte; 5. system design; 6. non-aqueous and polymer electrolytes and metal/air and metal/water batteries based on them; 7. primary and rechargeable systems; and 8. applications of metal/air and metal/water batteries.

Publication of an ECS Transactions issue is planned to be available after the meeting. All authors accepted for presentation are obligated to submit camera-ready manuscripts for the issue no later than December 1, 2006

Abstracts should be sent electronically to the ECS headquarters, and suggestions and inquiries should be sent to the symposium organizers: **J. J. Xu**, Materials Science and

Engineering, Rutgers, The State University of New Jersey, Piscataway, 607 Taylor Road, NJ 08854, USA, tel: 732.445.5606, fax: 732.445.3258, e-mail: johnxu@rci.rutgers.edu; **K. Zaghbi**, Institut de Recherche d'Hydro-Québec (IREQ), 1800 Blvd. Lionel Boulet, Varennes, Québec, Canada J3X 1S1, tel: 450.652.8019, fax: 450.652.8424, e-mail: zaghbi.karim@ireq.ca; and **D. A. Scherson**, Department of Chemistry, Case Western Reserve University, 10900 Euclid Ave., Cleveland, OH, USA, tel: 216.368.5186, fax: 216.368.3006, e-mail: dxs16@po.cwru.edu.



Organic Photovoltaics

New Technology Subcommittee / Energy Technology / Fullerenes, Nanotubes, and Carbon Nanostructures

Photovoltaic (PV) technology is making entry into various commercial markets and is likely to contribute significantly to global power generation in the 21st century. This symposium centers on the science and technology of organic photovoltaics, with a particular focus on fundamental and applied aspects of materials and device development for high efficiency light-harvesting and carrier transport. Organic PV technology still must demonstrate a substantial increase in performance and increase in durability to demonstrate the potential cost reductions from the low energy payback time of organic materials relative to inorganic materials such as silicon. Some suggested general areas of interest are: 1. modeling and simulations of devices; 2. fundamental photophysics, charge transfer mechanisms, carrier transport, and band-gap tuning; 3. excitonic solar cells based on organic molecules, polymers, dyes, and chromophores; 4. molecular and film deposition techniques and other industrial scale manufacturing processes including encapsulation and packaging; 5. optical designs including reflective, refractive, holographic, luminescent, and fluorescent concepts; 6. new materials and technologies for photon management and charge carrier control; 7. interfaces between materials; 8. durability and lifetime studies; and 9. applications of organic photovoltaic devices.

Papers for oral presentation and poster presentation are encouraged. Abstracts, suggestions, and inquiries should be sent electronically to the ECS headquarters office and to the symposium organizers: **T. Fuller**, Georgia Institute of Technology, GTRI/ATAS, 7220 Richardson Rd., Smyrna, GA 30080, USA, tel: 770.528.7075, fax: 770.528.7028, e-mail: tom.fuller@gtri.gatech.edu; **K. Rajeshwar**, The University of Texas, Dept of Chemistry and Biochemistry, PO Box 19065, Arlington, TX 76019-0001, USA, tel: 817.272.3810, fax: 817.272.3808, e-mail: rajeshwar@uta.edu; and **B. Gregg**, National Renewable Energy Laboratory, 1617 Cole Blvd., Golden, CO. 80401, USA, tel: 303.384.6635, fax: 303.384.6432, e-mail: brian_gregg@nrel.gov.



Proton Exchange Membrane Fuel Cells 6

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

This international symposium will be devoted to all aspects of research, development, and engineering of proton exchange membrane (PEM) fuel cells and stacks, as well as direct methanol fuel cells or other 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 three different sections as outlined below. Abstracts for oral and poster contributions must be submitted to the symposium via the ECS website and copies of the abstracts need to be e-mailed to the organizers of the following sections.

Section A: New Materials and Electrode Processes
Organizers: E. Stuve, C. Bock, T. Zawodzinski

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; and 4. new ionomeric membrane development, especially for high temperature operation as well as improved resistance to fuel crossover.

Section B: Fuel Cell Systems, Cell Stack, and Component Hardware
Organizers: T. Fuller, T. V. Nguyen, M. F. Mathias

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); and 4. 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 C: Durability
Organizers: T. Jarvi, H. A. Gasteiger, S. Cleghorn

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 in electrolyte/electrode-assemblies); 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).

Publication of an ECS Transactions issue is planned to be available at the meeting. Papers will be accepted for oral presentation only with the submission of both a camera-ready manuscript and the abstract. Papers without a camera-ready manuscript may be submitted for a poster presentation. **The full manuscripts should be submitted no later than July 7, 2006.** Abstracts, suggestions, and inquiries should be sent electronically to the ECS headquarters office and to the appropriate section organizers of the symposium.

Section A: **E. Stuve**, University of Washington, Chemical Engineering, PO Box 351750, Seattle, WA 98195-1750, USA, tel: 206.543.2250, fax: 206.543.3778, e-mail: stuve@u.washington.edu; **C. Bock**, National Research Council of Canada, M-12 Montreal Rd., Ottawa ON K1A-0R6, Canada, tel: 613.990.2252, fax: 613.941.2529, e-mail: christina.bock@nrc.ca; and **T. Zawodzinski**, Case Western University, USA, e-mail: taz5@po.cwru.edu.

Section B: **T. Fuller**, Georgia Institute of Technology, GTRI/ATAS, 7220 Richardson Rd., Smyrna, GA 30080-0000, USA, tel: 770.528.7075, fax: 770.528.7028, e-mail: tom.fuller@gtri.gatech.edu; **T. V. Nguyen**, Univ. of Kansas, Chemical and Petroleum Engineering, 1530W 15th Street, Lawrence, KS 66045-7609, USA, tel: 785.864.3938, fax: 785.864.4967, e-mail: cptvn@ku.edu; and **M. F. Mathias**, General Motors Corp., Fuel Cell Activities, 10 Carriage Street, Honeoye Falls, NY 14472-0603, USA, tel: 585.624.6648, fax: 585.624.6680, e-mail: mark.mathias@gm.com.

Section C: **T. D. Jarvi**, UTC Fuel Cells, 195 Governors Highway, MS 601-11, South Windsor, CT 06074, USA, tel: 860.727.7265, fax: 860.998.9656, e-mail: tom.jarvi@utfuelcells.com; **H. A. Gasteiger**, General Motors Corp., Fuel Cell Activities, 10 Carriage Street, Honeoye Falls, NY 14472-0603, USA, tel: 585.624.6725, fax: 585.624.6680, e-mail: hubert.gasteiger@gm.com; and **S. Cleghorn**, W. L. Gore & Associates Inc., Elkton, MD 21922-1488, USA, tel: 410.506.7634, fax: 410.506.7633, e-mail: scelghorn@wlgore.com.

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 are a graduate student or postdoctoral fellow and 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. In addition, we are planning to award a **prize** for the best presentation within the symposium by a graduate student or postdoctoral fellow. A **Short Course** on fundamental catalysis and how it can be applied to low-temperature fuel cell diagnostics and kinetic studies will be held the Sunday of the meeting (for details see the ECS website).



Solid-State and Solid-Electrolyte Batteries

Battery / Energy Technology

Solid-state batteries potentially offer solutions to several key shortcomings of state-of-the-art lithium-ion batteries. The inherent stability associated with some solid electrolytes enables solid-state lithium batteries with outstanding durability for long cycle and calendar life. The solid electrolyte potentially allows for the use of lithium metal anodes compared with state-of-the-art carbonaceous anodes, for an approximate factor of ten improvement in anode specific capacity, thus increasing overall cell specific energy. Contributed papers addressing practical issues and fundamental studies are solicited in the following areas: micro, meso, or macro-scale solid-state batteries and associated materials, including electrodes, inorganic solid electrolytes, solvent-free polymer electrolytes, and thin film electrode or thin film electrolyte deposition techniques.

Abstracts should be sent electronically to ECS headquarters office and suggestions and inquiries should be sent to the symposium organizers: **J Alkridge**, Valence Technology, 6504 Bridge Point Parkway, Suite 415, Austin, Texas 78730, USA, tel: 888.825.3623, fax: 512.527.2910, e-mail: jim.alkridge@valence.com; **D. Sadoway**, Department of Materials Science, Massachusetts Institute of Technology, Room 35-213, 77 Mass. Ave., Cambridge, MA 02139, USA, tel: 617.253.3487, fax: 617.253.5418, e-mail: dsadoway@mit.edu; **W. West**, Jet Propulsion Laboratory, California Institute of Technology, 4800 Oak Grove Drive, M/S 277-207, Pasadena, CA 91109, USA, tel: 818.354.0053, fax: 818.393.6951, e-mail: william.c.west@jpl.nasa.gov; and **K. Kanamura**, Tokyo Metropolitan University, Graduate School of Engineering, Department of Applied Chemistry, Hachioji, Tokyo 1920397, Japan, e-mail: kanamura-kiyoshi@c.metro-u.ac.jp.

C-BIOMEDICAL APPLICATIONS AND ORGANIC ELECTROCHEMISTRY



Biological Nanostructures, Materials, and Applications

Nanotechnology Subcommittee / Organic and Biological Electrochemistry / Physical and Analytical Electrochemistry / Sensor

The interface of nanoengineered materials with biology and medicine is an emerging frontier with the potential to offer numerous therapeutic, diagnostic, and analytical solutions. At the nanoscale, materials exhibit size-induced properties which differ from those in the bulk. Nanoengineered materials find immediate use in biomedical imaging with no functional interaction with the bio-systems, as well as having the capability of providing specific interactions with biomolecules. Micro and nano fabricated surfaces have been used to control cell adhesion, proliferation, differentiation, and gene expression of cells.

We are calling for papers and posters related to, but not limited to, nanoengineered materials that serve as drug/gene delivery systems, scaffolds for cell adherence and guided tissue, biomedical sensors and bio-labels; protein adsorption on nanosurfaces and nanostructures; and new nanomaterials and fabrication techniques for cell-biomaterial interactions, including the aspects of cell biology engineering.

During this symposium, we plan to have a strong graduate student component. We want to use this symposium to attract

graduate students in this promising field of nanomaterials interacting with biological systems. We are planning to invite world class leaders in this area and we are expecting your participation.

Abstracts, suggestions, and inquiries should be sent to the ECS headquarters office and to the symposium organizers: **M Demirel**, Allen Pearce Assistant Professor, 212 EES Bldg, Pennsylvania State University, University Park, PA, 16802, USA, tel: 814.863.2270, fax: 814.865.9974, e-mail: mdemirel@engr.psu.edu; **J L. Moran Lopez**, Director of IPICYT, Department of Dirección General, Camino a la Presa San José 2055, Col. Lomas 4a. sección C.P. 78216, San Luis Potosí, San Luis Potosí, Mexico, tel: 52.444.8342000 ext. 2011, fax: 52.444.8342010, e-mail: moran-lopez@ipicyt.edu.mx; **H. De Long**, AFOSR/NL, e-mail: hugh.delong@afosr.af.mil; and **J Rusling**, University of Connecticut, e-mail: james.rusling@uconn.edu.



Molecular Electrochemistry

Organic and Biological Electrochemistry / Physical and Analytical Electrochemistry

Papers are invited in all areas of molecular electrochemistry, defined broadly here as including all aspects of organic, inorganic, organometallic, and bio-organic electrochemistry, as well as areas of analytical and physical electrochemistry not covered in other symposia. Areas of interest include synthetic and mechanistic electrochemistry as well as industrial and educational applications.

Organizers: **A. J Fry**, Chemistry Department, Wesleyan University, Middletown, CT 06459, USA, tel: 860.685.2622, fax: 860.685.2211, e-mail: afry@wesleyan.edu; **B. A. Frontana Uribe**, Universidad Nacional Autónoma de México, Instituto de Química, Circuito Exterior, Ciudad Universitaria, Coyoacán, México D.F. 04510, tel: 52.55.56224507, fax: 52.55.56162203 or 2217, e-mail: bafrontu@servidor.unam.mx; and **J Rusling**, Department of Chemistry, University of Connecticut, Storrs, CT 06269-3060, USA, tel: 860.486.4909, fax: 860.486.2981, e-mail: James.Rusling@uconn.edu.



Nanoparticles, Electrons, and Photons

Organic and Biological Electrochemistry / Physical and Analytical Electrochemistry

Understanding and manipulating the physical and chemical properties of nanoparticles is of broad fundamental and applied interest. In recent years, improved methods of preparation and characterization of various types of nanoparticles, including nanotubes, has led to an enormous increase in our knowledge of how their optical, magnetic, electronic, redox/capacitive, and chemical properties change with their size and shape. These properties can be modified also by adsorption of molecular layers carrying electro- or photo-active groups. One outcome of these endeavors has been the development of nanomaterial-based sensors and biosensors. The aim of the symposium is to focus on the most recent advances in the electrochemistry and optical properties of nanoparticles and their assemblies.

Abstracts, suggestions and inquiries should be sent electronically to the ECS headquarters office and to the symposium organizers: **F. Maran**, Department of Chemistry, University of Padova, via Marzolo 1, 35131 Padova, Italy, tel: 39.049.827.5147, fax: 39.049.827.5135, e-mail: flavio.maran@unipd.it; **D. Peters**, Indiana University, e-mail: peters@indiana.edu; **R. Whetten**, Schools of Chemistry and Physics, Georgia Institute of Technology, Atlanta, GA 30332-0400, USA, tel: 404.894.8255, fax: 404.894.7452, e-mail: whetten@chemistry.gatech.edu; and **H. DeLong**, AFOSR/NL, 875 N. Randolph St., Suite 325 Rm. 3112, Arlington, VA, 22203-1768, USA, tel: 703.696.7722, fax: 703.696.8449, e-mail: hugh.delong@afosr.af.mil.



Pharmaco-Electrochemistry

New Technology Subcommittee

There are two main impacts in the drug-human interaction: the effect of the body-metabolism on the drug and the effect of the drug on the body. These effects call for an understanding of several research areas (kinetics, thermodynamics, biology, chemistry, medicine, and modeling), as well as a thorough knowledge of the electrochemical process. We are calling for papers and posters related to, but not limited to, pharmacokinetic models, pharmacodynamic models, the electrochemistry of drug metabolism, the electrochemistry of drug-drug interaction, data mining modeling based on clinical and genetic data, and the electrochemical metabolic process.

During this symposium, we plan to have a strong graduate student component. We want to use this symposium to attract graduate students in this promising field of drug-drug interaction and drug-human interaction under the light of electrochemical experiments, and clinical and genetic data mining modeling. We are planning to invite world class leaders in this area and we are expecting your participation.

Send your extended abstract to: **M. Urquidi-Macdonald**, Penn State University, 203C Earth-Engineering Science Building, University Park, PA 16802, USA, tel: 814.863.4217, e-mail: mumesm@enr.psu.edu; or **I. González**, UAM Iztapalapa, Departamento de Química, San Rafael Atlixco 185, Col. Vicentina, Apartado Postal 55-534, 09340 Mexico, D.F., (Mexico), tel: 52.55.58044671 ext 2720-12, fax: 52.55.58044666, e-mail: igm@xanum.uam.mx.

D-CORROSION, PASSIVATION, AND ANODIC FILMS



Corrosion General Poster Session

Corrosion

Presentations concerning all aspects of corrosion and associated phenomena in liquid and gaseous phases not covered by topic areas of other specialized Corrosion Division symposia at this meeting 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. Note that this session will consist of oral presentations. Abstracts, suggestions, and inquiries should be sent to the ECS headquarters office and to the session organizer: **P. Schmuki**, University of Erlangen-Nuremberg, Dept. of Materials Sci., WWIV-LKO, Martensstr. 7, D-91058 Erlangen, Germany, tel: 49.9131.852.75.75; fax: 49.9131.852.75.82, e-mail: schmuki@ww.uni-erlangen.de.



Corrosion of Electronic Materials and Devices

Corrosion / Electronics and Photonics

We invite members of academia, industry, and government laboratories to submit work dealing with the fundamental and applied aspects of corrosion, reliability, and materials degradation in the design, manufacture, and use of electronic and optoelectronic devices and equipment. Of particular interest are those papers dealing with the conversion to more environmentally friendly devices.

The specific areas to be covered include: 1. mechanistic studies of corrosion, reliability, and performance degradation; 2. degradation caused by processing and the processing environment, including processing variables and procedures, thermal effects, humidity effects, and the effects of airborne contaminants; 3. materials performance degradation inherent in the

design or operational characteristics of devices, including diffusion, electromigration, loss of surface insulation resistance, and thermal expansion mismatch; 4. surface modification and passivation techniques for improved resistance to degradation; 5. methods for evaluating reliability, improving yield and decreasing failure rate through appropriate materials selection, coatings, and other means of environmental protection; 6. environmental testing methods and strategies, including temperature-humidity-bias studies, mixed flowing corrosive gas and particle exposures, ion migration studies, and investigations relating environmental parameters to materials degradation; 7. packaging methods and strategies for high reliability applications; 8. solutions to problems related to the conversion to more environmentally friendly devices; and 9. models describing the effect of corrosion in micro-electronic devices.

The scope of this symposium will include: 1. fundamental corrosion and materials degradation studies of bulk and thin film metals, semiconductors, and optoelectronic devices; 2. design and materials selection for components and ICs, including bipolar, MOS, high voltage devices, and photonic devices; and 3. packaging and interconnect technologies, connector designs, and contact materials.

Organizers: **L. F. Garfias**, S. C. Johnson & Son, Inc, Enterprise, Innovation and Technology, 1525 Howe Street, MS 051, Racine WI 53403, USA, tel: 262.260.0975, fax: 262.260.4420, e-mail: LFGarfia@scj.com; **R. Sorensen**, Sandia National Laboratories, Department 1832, MS 0889, PO Box 5800, Albuquerque, NM 87185-0889, USA, tel: 505.844.5558, fax 505.844.5558, e-mail nrsoren@sandia.gov; **R. Frankenthal**, Frankenthal Associates, 49 Arbor Circle, Basking Ridge, NJ 07920-3167, USA, e-mail: rfrankenthal@juno.com; and **L. Diaz-Ballote**, CINVESTAV-Merida, Km 6 Antigua Carretera a Progreso, CP 97310, Mérida Yucatán, Mexico, fax: 52.9999.812917, tel: 52.9999.812973, e-mail: luisdiaz@mda.cinvestav.mx.



Corrosion of Infrastructure

Corrosion

The durability of buildings, bridges, roads, and other components of civil infrastructure is seriously limited by corrosion from aggressive service environments. Papers are requested on electrochemical aspects of mechanisms, measurement methods, forecasting, and control of corrosion of steel in cementitious systems. Papers on electrochemical issues on other forms of infrastructure deterioration such as atmospheric corrosion of building materials are also encouraged.

Publication of an ECS Transactions issue is planned to be available after the meeting. Acceptance for presentation at this meeting obligates the authors to providing a typed camera-ready hard copy, or electronic copy suitable for preparing a camera-ready paper, and a list of key words at the time of the meeting. Instructions for preparing the paper can be found on the ECS website. **The full manuscript should be submitted no later than December 1, 2006**

Questions or suggestions should be directed to the organizers: **A. A. Sagüés**, Dept. of Civil and Environmental Engineering, University of South Florida, Tampa, Florida 33620, USA, tel: 813.974.5819, fax: 813.974.2957, e-mail sagues@eng.usf.edu; **H. Castañeda-Lopez**, Instituto Mexicano del Petroleo, e-mail: hcastan@imp.mx or CastanedaH-c@battelle.org, Applied Energy Systems, 505 King Avenue Columbus Ohio 43201, USA, tel: 614.424.4794; **P. Castro-Borges**, CINVESTAV-Merida, Researcher, Km 6 Carretera Antigua a Progreso, Merida, Yucatan, Mexico 97310, tel: 52.999.981.2960, fax 52.999.981.2917, e-mail: pcastro@mda.cinvestav.mx or pecasbor@gamil.com; **A. A. Torres Acosta**, Marist University of Queretaro, Graduate and Research Coordination, Marte #2, Colonia Centro, Queretaro, Queretaro, Mexico 76000, tel: 52.442.214.5929, fax 52.442.214.5930, e-mail: atorres@imt.mx.



Critical Factors in Localized Corrosion 5, a Symposium in Honor of Hugh S. Isaacs

Corrosion

This symposium will be held in honor of Hugh S. Isaacs for his extensive contributions to the field of localized corrosion over the past 34 years. Hugh's work has furthered our understanding of the mechanisms associated with various aspects of pitting in passive metals, passive film growth, dissolution, and properties, and chromate and Ce inhibitors. He has pioneered several in situ techniques to study these aspects of corrosion including scanning electrodes for current density and potential mapping, scanning AC impedance, x-ray absorption near-edge spectroscopy, and visualizing corrosion through pH mapping and optical image analysis. Hugh has personally had a tremendous influence on at least three generations of corrosion scientists, as a mentor, a colleague, and a friend. In order to celebrate these accomplishments, papers are solicited describing recent progress relating to the areas mentioned above, and all other areas of localized corrosion. Of particular interest are studies on advanced materials, the influence of microstructure, and in situ electrochemical microscopic studies of localized processes.

Publication of an issue of *ECS Transactions* issue is planned to be available after the meeting. All authors accepted for presentation (oral or poster) are obligated to submit a camera-ready manuscript no later than December 1, 2006. Instructions for preparing the manuscript will be sent out by the symposium organizers after the notification of acceptance of the papers.

Abstracts, suggestions and inquiries should be sent to the ECS headquarters office and the symposium organizers: **N. Missert**, Nanostructure and Semiconductor Physics Department, MS1415, Sandia National Laboratories, Albuquerque, NM 87185-1415, USA, tel: 505.844.2234, fax: 505.844.1197, e-mail: namisse@sandia.gov, **S. Virtanen**, Univ. of Erlangen-Nuremberg, Dept. of Materials Sci., WWIV-LKO, Martensstrasse 7, Erlangen, Germany, D-91058, tel: 91318527577, fax: 91318527582, e-mail: virtanen@wwv.uni-erlangen.de, **A. J. Davenport**, Univ. of Birmingham, Metallurgy and Materials, Edgbaston, Birmingham, UK, B15-2TT, tel: 1214145191, fax: 1214145232, e-mail: a.davenport@bham.ac.uk, and **M. P. Ryan**, Imperial College, Dept. of Materials, London, UK, tel: 44 020.7594.6755, e-mail: m.p.ryan@imperial.ac.uk.



High Temperature Corrosion and Materials Chemistry 6

High Temperature Materials / Corrosion

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.

Authors are strongly encouraged to submit a written paper to the new online publication, *ECS Transactions*. Instructions for preparing manuscripts will be sent out by the symposium organizers after the official notification of acceptance is distributed by the ECS headquarters office. The conference organizers will serve as editors for papers from this symposium, and all papers will be peer-reviewed, largely by other symposium participants. **Papers will be published in an online issue of *ECS Transactions* after the meeting. Full Manuscripts should be submitted no later than December 1, 2006.**

Abstracts, suggestions and inquiries should be sent electronically to the ECS headquarters office and to the symposium organizers: **E. Opila**, NASA Glenn Research Center, MS 106-1, 21000 Brookpark Rd., Cleveland, OH 44135, USA, tel: 216.433.8904, fax: 216.433.5544, e-mail: opila@nasa.gov; **J. Fergus**, Auburn University, Materials Research and Education Center, 275 Wilmore Laboratories, Auburn, AL 36849, USA, tel: 334.844.3405, fax: 334.844.3400, e-mail: jwfergus@eng.auburn.edu; **A. Martínez-Villafañe**, Centro de Investigación en Materiales Avanzados, Miguel de Cervantes 120, Complejo Industrial Chihuahua, CP. 31109, Chihuahua, Chih., Mexico, tel: 01.614.439.11.45, fax: 01.614.439.11.12, e-mail: martinez.villafane@cimav.edu.mx; **D. Shifler**, Materials Science and Technology Division, Code 332, Office of Naval Research, One Liberty Center, 875 North Randolph Street, Arlington, VA 22203-1995, USA, tel: 301.432.2572, fax: 703.696.0934, e-mail: david.shifler@navy.mil; and **E. Wuchina**, Naval Surface Warfare Center, Carderock Division, Code 645, 9500 MacArthur Boulevard, West Bethesda, MD 20817-5700, USA, tel: 301.227.3949, fax: 301.227.4732, e-mail: eric.wuchina@navy.mil.

E-DIELECTRIC AND SEMICONDUCTOR MATERIALS, DEVICES, AND PROCESSING



Solid-State Joint General Session

Dielectric Science and Technology / Electronics

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

Abstracts, suggestions and inquiries should be sent electronically to the ECS headquarters office and to the symposium organizers: **K. B. Sundaram**, School of Electrical and Computer Engineering, University of Central Florida, Orlando, FL 32816, USA, tel: 407.823.5326, e-mail: sundaram@mail.ucf.edu; and **S. Seal**, University of Central Florida, Dept of Engineering, 4000 University Blvd, Orlando, FL 32816, USA, tel: 407.977.4834, fax: 407.823.0208, e-mail: sseal@pegasus.cc.ucf.edu.



Advanced Gate Stack, Source/Drain, and Channel Engineering for Si-Based CMOS 2: New Materials, Processes, and Equipment

Electronics and Photonics /

Dielectric Science and Technology / High Temperature Materials

This symposium will cover the latest developments in advanced processes and materials for CMOS front-end integration including gate stack, source/drain and channel engineering.

Researchers and technologists are encouraged to submit their abstracts on applications in the areas of: advanced channel engineering approaches including strained Si, Si-Ge and Ge channels, strained silicon/SiGe on insulator; new high mobility channel materials including InSb, GaN and other compound semiconductors and their nanowires and carbon nanotubes; formation and/or deposition of ultra-thin gate dielectrics (including novel higher dielectric constant materials) and their gate electrodes (including metal and FUSI materials); advanced doping and annealing technologies to form ultra-shallow junctions; formation of low-resistivity contacts to such junctions; formation of MOS gate stacks, ultra-shallow junctions and low-resistivity contacts to new channel materials including compound semiconductors, nanowires and nanotubes.

Processing technologies of interest include but are not limited to advanced chemical vapor deposition processes (ALD, MOCVD, RTCVD, UHV-CVD and molecular beam epitaxy), rapid thermal, UV, plasma or laser-assisted processes.

Finally, new developments in advanced equipment for the above processes and inspection equipment to improve throughput, uniformity, in-situ monitoring, non-intrusive wafer inspection, process control and modelling are of special interest to this symposium.

We intend to hold joint sessions with the related Fourth International Symposium on High Dielectric Constant Gate Stacks at this meeting.

The list of invited speakers contains: J. Kittl (Texas Instruments), B. Lee (Sematech), V. Misra (NCSSU), C. Wajda (TEL), Heon-Do Kim (Jusung), S. Jain (IBM), R. Duffy (Philips Research, Belgium), A. Dimoulas (NCSR DEMOKRITOS, Greece), D. K. Sadana (IBM), C. Arena (ASM Int.), E. Bakkers (Philips Research, Netherlands), T. Ashley (QinetiQ, UK), S. Guha (IBM) and H. Minghwei (Nat.Tsing-Hua Univ.).

Publication of an ECS Transactions issue is planned to be available at the meeting. The deadline for abstract submission is May 26, 2006 All authors accepted for presentation are obligated to submit a camera-ready manuscript, which will be produced prior to the meeting. As such, the hard deadline for full **manuscript submission is July 21, 2006** Instructions for preparing the manuscript will be sent out by the symposium organizers after official notification of acceptance.

Detailed information about the symposium including invited speakers, sponsors and manuscript preparation can be found at the symposium web site: <http://www.ece.ncsu.edu/research/ecs-fep/>.

The abstracts should be sent to the ECS headquarters office electronically. Suggestions and inquiries about the symposium can be sent to the Symposium Organizers: **F. Roozeboom**, Philips Research, High Tech Campus, Building HTC 04-3.21 (WAG 02), Prof. Holstlaan 4, 5656 AE Eindhoven, The Netherlands, tel: 31.402742767, fax: 31.402743352, e-mail: Fred.Roozeboom@philips.com; **M. C. Öztürk**, North Carolina State University, Dept. of Electrical and Computer Engineering, Centennial Campus, 1010 Main Campus Drive, EGRC Building, Rm 339, Campus Box 7920, Raleigh, NC 27695-7920, USA, tel: 919.515.5245, fax: 919.515.5055, e-mail: mco@eos.ncsu.edu; **D.-L. Kwong**, University of Texas at Austin, MER 2.60A, Mailcode R9950, Austin, TX 78712-1100, USA, tel: 512.471.5922, fax: 512.471.4345, e-mail: dlkwong@mail.utexas.edu and kwongdl@ime.a-star.edu.sg; **P. J. Timans**, Mattson Technology Inc., 47131 Bayside Parkway, Fremont, CA 94538, USA, tel: 510.492.5992, fax: 510.492.5911, e-mail: Paul.Timans@mattson.com; **H. Iwai**, Frontier Collaborative Research Center, Tokyo Institute of Technology, 226-8502 4259, Nagatsuta-cho, Midori-ku, Yokohama-shi, Japan, tel: 81.45924547, fax: 81.459245584, e-mail: iwai@ae.titech.ac.jp; **E. P. Gusev**, Qualcomm MEMS Technologies, 2581 Junction Ave., San Jose, CA 95134, USA, tel: 408.546.2096, fax: 408.546.1225, e-mail: gusev@qualcomm.com.

rent applications, face a number of challenges, such as process integration, productivity enhancement, development of ALD precursors and associated delivery systems, and overall COO. In some applications the industry may need to simultaneously change both the material and deposition technology, which involves exhaustive integration efforts and high risk. Emerging applications requiring the fabrication and functionalization of nanostructured materials, such as sensor development, catalysis and photonics, pose a unique set of challenges to ALD technology, and this is currently a fruitful and active branch of ALD research.

Joint sessions are planned for the following symposia: E2-Advanced Gate Stack, Source Drain, and Channel Engineering for Si-Based CMOS 2: New Materials, Processes, and Equipment; E3-Atomic Layer Deposition Applications 2; and E4-High Dielectric Constant Gate Stacks 4.

This symposium seeks to become a forum for sharing of cutting edge research in the various areas where ALD can be used, enabling the identification of issues, challenges, and areas where further research is needed. Emerging and non-mainstream ALD applications are also of special interest to this symposium. Contributions are solicited in the following areas: 1. volatile and non volatile memory applications: integration of ALD high-k oxides and metal electrodes, extendibility, Flash, MIM, MIS, RF capacitors; 2. interconnects and contacts: integration of ALD films with Cu and low-k materials; 3. productivity enhancement of ALD equipment and processes; 4. precursor and delivery systems development for ALD; 5. advanced and novel integration schemes of ALD films; 6. ALD for optical and photonic applications; 7. coating of nanoporous materials by ALD; 8. fabrication of sensors and catalysts using ALD; and 9. applications for ALD in other areas, such as disk drives, MEMS, nanotechnology, deposition on polymers.

Publication of an ECS Transactions issue is planned to be available after the meeting The full manuscripts should be submitted no later than December 1, 2006. Acceptance of a paper for an oral or poster presentation obligates the author/s to submit a camera-ready softcopy of manuscript by December 1, 2006. The abstracts should be sent to the ECS headquarters office electronically.

Symposium organizers: **A. Londergan**, Qualcomm MEMS Technologies, 2581 Junction Ave., San Jose, CA 95134, USA, tel: 408.546.1258, fax: 408.546.1220, e-mail: alondergan@qualcomm.com; **S. De Gendt**, High-k and Metal Gate, IMEC, Kapeldreef 75, B-3001Leuven, Belgium, tel: 32.16.28.1386, e-mail: Stefan.Degendt@imec.be; **J. Elam**, Energy Systems Division, Argonne National Laboratory, 9700 South Cass Avenue, Argonne, IL 60439, USA, tel: 630.252.7979, fax: 630.252.9555, e-mail: jelam@anl.gov; **G. S. Mathad**, S/C Technology Consulting, 5 Spurway, Poughkeepsie, NY 12603-5522, USA, tel/fax: 845.462.6312, e-mail: swami_mathad@hotmail.com; **O. van der Straten**, IBM Research, Silicon Technology, T. J. Watson Research Center, Rt. 134, PO Box 218, Yorktown Heights, NY 10598, USA, tel: 914.945.3230, e-mail: ovander@us.ibm.com; and **S. B. Kang**, Semiconductor R&D Center, Samsung Electronics, Yongin-City, Kyunggi-Do, Korea 449-711, tel: 82.312099502, fax: 82.312096299, e-mail: sbkangh@samsung.com.

E3

Atomic Layer Deposition Applications 2

Dielectric Science and Technology

This symposium will focus on the current and future applications for Atomic Layer Deposition (ALD). While the first ALD processes were run more than 30 years ago, the continuous scaling of semiconductor devices has brought considerable attention to ALD. In addition, a broad array of applications outside of the semiconductor industry have emerged, in which ALD promises great impact. ALD can enable the precise deposition of ultra-thin, highly conformal coatings with controlled composition and low sensitivity to substrate size. To date ALD has been introduced in the manufacturing of disk drive recording heads, DRAM capacitors, and IC interconnects. The wider adoption of ALD, as well as the extendibility of cur-

E4

High Dielectric Constant Gate Stacks 4

Dielectric Science and Technology / Electronics and Photonics

Papers are solicited in all areas related to advanced gate stacks for CMOS and memory applications in sub-65 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; 2. high k gate dielectric materials and processing: trends in high k gate dielectric technologies for 65 nm and beyond, novel high k materials, advanced oxynitrides for 65 nm and beyond, high k gate dielectric growth techniques, high k gate dielectric deposition methods, advanced precursors for CVD; 3. gate electrode materials and processing: trends in

gate electrode technologies for 65 nm and beyond, poly-Si, silycided, and metal gate electrodes, band-edge and midgap work-function materials, gate electrode deposition methods; 4. high k gate dielectric interfaces: silicon/high-k and high-k/gate-electrode interfaces, oxygen diffusion and mechanisms of interface layer formation interface preparation, passivation, engineering, and control; 5. 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 electron mobility, degradation, thermal stability of new materials; 6. high k gate dielectric characterization and methodologies: advanced physical, chemical, and electrical characterization of gate stacks, accurate determination of dielectric capacitance trap parameter extraction, non-contact electrical characterization, work-function, extraction methodologies, determination of tunneling electron/hole mass; and 7. DRAM and non-volatile memory materials: trends in high k DRAM capacitor technologies, electrode/dielectric chemical interactions, thermal stability of structures, non-volatile and novel memory applications.

Joint sessions are planned for the following symposia: E2-Advanced Gate Stack, Source Drain, and Channel Engineering for Si-Based CMOS 2; New Materials, Processes, and Equipment; E3-Atomic Layer Deposition Applications 2; and E4-High Dielectric Constant Gate Stacks 4.

Publication of an ECS Transaction issue is planned at the meeting. Acceptance of a paper in this symposium obligates the authors to submit a typed camera ready copy of the full manuscript and a list of key words by July 7, 2006

Abstracts, suggestions, and inquiries should be sent electronically to the ECS headquarters office and the symposium organizers: **S. Kar**, Department of Electrical Engineering, Indian Institute of Technology, Kanpur-208016, India, tel: 91.512.2597876, fax: 91.512.2590063, e-mail: skar@iitk.ac.in; **D. Misra**, Department of Electrical and Computer Engineering, New Jersey Institute of Technology, University Heights, Newark, NJ 07172, USA, tel: 973.596.5739, fax: 973.596.5680, e-mail: dmisra@njit.edu; **H. Iwai**, Frontier Collaborative Research Center, Interdisciplinary Graduate School of Science and Engineering, Tokyo Institute of Technology, 4259 Nagatsuta, Midori-ku, Yokohama, 226-8502, Japan, tel: 81.45.924.5471, fax: 81.45.924.5584, e-mail: iwai@ae.titech.ac.jp; **M. Houssa**, High-k and Metal Gates, IMEC vzw, Kapeldreef 75, B-3001 Leuven, Belgium, tel: 32.16.288.732, fax: 32.16.281.315, e-mail: houssa@imec.be; **D. Landheer**, Surfaces and Interfaces Group, Institute for Microstructural Sciences, National Research Council, Building M-50, Montreal Road, Ottawa, Ontario, Canada K1A 0R6, tel: 613.993.0560, fax: 613.990.0202, e-mail: dolf.landheer@nrc.ca; **W. Tsai**, Intel Corporation, SC1-05, 2200 Mission College Boulevard, Santa Clara, CA 95054-1549, USA, tel: 408.765.2261, fax: 408.765.2554, e-mail: wilman.tsai@intel.com; and **S. De Gendt**, High-k and Metal Gates, IMEC vzw, Kapeldreef 75, B-3001 Leuven, Belgium, tel: 32.16.281.386, fax: 32.16.281.316, e-mail: degendt@imec.be.



Chemical Mechanical Polishing 8

Dielectric Science and Technology

This symposium will address the fundamentals of chemical mechanical planarization (CMP) and its application in inter layer dielectrics (ILD) polishing, metal polishing, and trench and mesa isolation. The symposium will also discuss post CMP cleaning, consumable characterization, polish end point detection, CMP process integration, and manufacturability issues, as well as other pertinent issues of this technology. Papers will be solicited in the following areas: 1. CMP polishing science and technology; 2. CMP process modeling; 3. CMP process optimization and control; 4. CMP consumables characterization; 5. CMP process integration issues; 6. surface and electrochemical aspects of CMP; 7. surface and electrochemical aspects of post CMP cleaning; 8. CMP related defect detection and characterization; 9. electrical characterization of post CMP surfaces; 10. aspects of nanotechnology in CMP; and 11. environmental

aspects of CMP.

Publication of an ECS Transactions issue is planned to be available at the meeting. Acceptance of a paper in this symposium (oral or poster) obligates the authors to submit a typed camera ready copy of the full manuscript and a list of key words by July 7, 2006 Instructions for preparing the manuscript will be sent out by the symposium organizers after the official notification of acceptance is distributed by the ECS headquarters office.

Abstracts, suggestions, and inquiries should be sent to the ECS headquarters office and to the symposium organizers: **S. Seal**, Univ. of Central Florida, Dept. of Engineering, 4000 University Blvd., Orlando, FL, 32816-0001, USA, tel: 407.823.5277, fax: 407.823.0208, e-mail: sseal@mail.ucf.edu; **S. Beaudoin**, Purdue University, Chemical Engineering, 480 Stadium Mall Drive, W Lafayette, IN 47906, USA, tel: 765.494.7944, fax: 765.494.0805, e-mail: sbeaudoi@purdue.edu; **V. Desai**, University of Central Florida, Mechanical, Materials, and Aerospace Engineering, 4000 Central Florida Blvd., Orlando, FL 32816-2455, USA, tel: 407.207.4966; fax: 407.207.4967; vdesai@mail.ucf.edu; **K. Sundaram**, University of Central Florida, School of Electrical Engineering & Computer Science, Orlando, FL 32819-2450, USA, tel: 407.823.5326, fax: 407.823.5835, e-mail: sundaram@mail.ucf.edu; **Y. Obeng**, SiTD, Texas Instruments, 13570 North Central Expressway, Dallas, TX 75243, USA, tel: 214.567.6636; fax: 972.686.3434, e-mail: yobeng@ti.com.



Bioelectronics, Biointerfaces, and Biomedical Applications 2

Dielectric Science and Technology / Sensor

Dielectrics and other electronic materials are critical to many of the new developments in the burgeoning field of biotechnology and they form the substrates or critical interfaces in many new applications. For example, where electric fields are applied to separate bio-molecules or transport liquids by electro-osmotic flow, dielectric layers with particular properties are required. Because many important biological molecules are insulators, the similarities in the approaches of scientists studying, for example, porous dielectric nanostructures and cells in solution, are converging. Bio-molecules are also being increasingly interfaced with electronic and semiconducting materials. Furthermore, the most sophisticated high-resolution analysis, materials processing, and nanofabrication techniques are being employed in all our disciplines.

This symposium is intended to bring together scientists and technologists working at the forefront of chemistry, physics, biology, and materials science to focus on the critical aspects of the interfaces in biomedical devices and applications. It will provide invaluable links between those investigating and characterizing the basic phenomena and those developing the latest lab-on-a-chip systems, sensors, biochips, or other devices.

Areas of interest include: 1. surface-electrolyte interactions: site binding equilibria, specific absorption, charge transfer reactions, double layer properties, dispersion and electrostatic forces, surface-particle forces, interparticle and intercellular forces, wetting, adhesion, functionalized inorganic surfaces (gold, silica, glass, diamond), biocompatible layers, binding properties of surfaces, coating effects on electro-osmotic flow, dielectric surfaces in nanocapillaries, dielectrophoresis and insulating particle manipulation, charge inversion, condensation, correlation of biological poly-ions, conduction in biological molecules; 2. processing: chemical and physical vapor deposition, deposition from the liquid phase, surface reactions, self-assembled monolayers, electrochemical formation of micro- and nanoporous insulators, formation of insulating beads, nanoparticles, nanotubes, nanorods, nanocomposites, insulating templates and membranes, formation of synthetic biomaterials, patterning, fabrication of microfluidic and structures, bio-MEMS and bio-nanotechnology, integration of electronic devices with biological components; 3. electronic materials in biomedical sensors and applications: sensors for DNA fragments and oligonucleotides, sensors for proteins and viruses, amperometric sensors, field-effect sensors (ISFETs and BioFETs), pH and ion sensors, sensors for oxygen and other bioactive gases, surfaces

for bioelectronic sniffers, biochips (DNA, protein sensor arrays), genomic and proteomic analysis, functionalization of waveguides and surfaces in optical detection (e.g., SPR, enhanced Raman) systems, biocompatible materials and surfaces, surfaces for lab-on-chip devices; and 4. analysis: microscopy (optical, electron, electrochemical, STM and AFM techniques), X-ray diffraction, electrical characterization, modeling chemical and physical characterization, separation and size distributions of particles and biomolecules, mass spectrometry, optical detection and analysis.

Invited Speakers: A. Alam, Purdue University; R. Bashir, Purdue University; M. Grinstaff, Boston University; J. Han, MIT; M. Hersam, Northwestern University; K. Kawai, Osaka University; W. Knoll, Max-Planck-Institute; M. Lonergan, University of Oregon; M. Madou, University of California at Irvine; R. McKendry, University College, London; M. Meyyappan, NASA Ames Research Center; C.S. Ozkan, University of California at Riverside; M. Ozkan, University of California at Riverside; R. Penner, University of California at Irvine; M. Reed, Yale University; R. Rinaldi, University of Lecce; J. Ruehe, University of Freiburg; R.B.M. Schasfoort, University of Twente; P. Ugo, University of Venice; C. Wang, University of California at Irvine; Y.K. Yap, Michigan Technological University.

Organizers: **D. Landheer**, National Research Council of Canada, Building M50, Room 190J, 1200 Montreal Rd., Ottawa, ON, K1A 0R6, Canada, tel: 613.993.0560, fax: 613.990.0202, e-mail: dolf.landheer@nrc.ca; **M. J. Deen**, Electrical and Computer Engineering Department, CRL 226, McMaster University, 1280 Main Street, West Hamilton, ON L8S 4K1, Canada, tel: 905.525.9140 ext. 27137, fax: 905.523.4407, e-mail: jamal@mcmaster.ca; **C. Kranz**, Georgia Institute of Technology, School of Chemistry and Biochemistry, Office L2120, 311 Ferst Drive, Atlanta, GA 030332-0400, USA, tel: 404.385.1794, fax: 404.385.6447, e-mail: christine.kranz@chemistry.gatech.edu; **M. Madou**, University of California-Irvine, Department of Mechanical and Aerospace Engineering and Biomedical Engineering Department, 4200 Engineering Gateway Building, Rm# S3231, Irvine, CA 92697-3975, USA, tel: 949.824.6585, fax: 949.824.8585, e-mail: mmadou@uci.edu; **R. Schasfoort**, MESA+ Research Institute, University of Twente, Hagekamp 10214, PO Box 217, 7500AE Enschede, The Netherlands, tel: 31.53.4895621, fax: 31.53.4891105, e-mail: r.b.m.schasfoort@utwente.nl; **R. Bashir**, School of Electrical and Computer Engineering, Purdue University, Electrical Engineering Building, 465 Northwestern Ave., West Lafayette, Indiana 47907-2035, USA, tel: 765.496.6229, fax: 765.494.6441, e-mail: bashir@ecn.purdue.edu; **A. Offenhaeuser**, Institute of Thin Films & Interfaces (ISG2), Research Center Juelich, D-52425 Juelich, Germany, tel: 49.0.2461.61.2330, fax: 49.0.2461.61.8733, e-mail: a.offenhaeuser@fz-juelich.de; and **C. C. Liu**, Electronics Design Center, Bingham Hall, Case Western Reserve University, 10900 Euclid Avenue, Cleveland, OH 44106-7200, USA, tel: 216.368.2935, fax: 216.368.8738, e-mail: cxl9@po.cwru.edu.



High Purity Silicon 9

Electronics and Photonics

This symposium 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. High Purity VIII took place in Honolulu in 2004. 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 areas: 1. high purity bulk growth techniques: Czochralski (Cz), float zone, magnetic Cz, and other novel growth techniques, prog-

ress in polysilicon manufacturing, influence of poly quality on the purity of monocrystals, impact of auxiliaries like 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; 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, and reliability aspects.

Meeting abstracts must be submitted to one of the symposium organizers, no later than **April 10, 2006**. Notification of the acceptance and instructions for the preparation of the manuscripts will be given by **April 28, 2006**. **Publication of an ECS Transactions issue is planned to be available at the meeting. Acceptance of a paper in this symposium (oral or poster) obligates the authors to submit a typed camera-ready copy of the full manuscript and a list of key words by July 7, 2006**. Instructions for preparing the manuscript will be sent out by the symposium organizers after the official notification of acceptance is distributed by the ECS headquarters office.

Organizers: **C. L. Claeys**, IMEC, Belgium, claeys@imec.com; **R. Falster**, MEMC, Italy, rfalster@memc.com; **M. Watanabe**, Japan ADE Ltd., WatanabeADE@aol.com; and **P. Stallhofer**, Siltronic, Germany, peter.stallhofer@siltronic.com.



Integrated Optoelectronics 3

Electronics and Photonics / Dielectric Science and Technology

This symposium will address issues on integrated optoelectronics. Original contributions are solicited on all topics related to integrated optoelectronics: technology and fabrication, components and systems manufacturing, testing, performance, reliability, 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 and transmitters; 3. optoelectronic components based on nanocrystalline materials; 4. integration of silicon 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 systems; 6. integrated lasers/modulators or multi-wavelength laser arrays; 7. optoelectronic integrated circuit (OEIC) receivers; 8. transceivers systems and integration issues; integration technologies based on quantum well materials; 9. advanced epitaxial growth and device processing technologies; 10. planar lightwave integrated devices and circuits; and 11. integrated optoelectronic passive components. The symposium will consist of invited as well as contributed papers.

Abstracts, suggestions, and inquiries should be sent electronically to the ECS headquarters office and to the symposium organizers: **M. J. Deen**, Department of Electrical and Computer Engineering, CRL Room 226, McMaster University, 1280 Main Street West, Hamilton, Ontario, Canada L8S 4K1, tel: 905.525.9140 ext. 27137; fax: 905.523.4407; e-mail: jamal@mcmaster.ca; **P. C. Chang**, Northrop Grumman Space

Technologies, One Space Park, D1/1050, Redondo Beach, CA 90278, USA, tel: 310.812.9067, fax: 310.813.0418, e-mail: pablo.chang@ngc.com; and **C. Jagadish**, Department of Electronic Materials Engineering, Research School of Physical Sciences and Engineering, The Australian National University, Canberra, ACT 0200, Australia, tel: 61.2.6125.0363, fax: 61.2.6125.0511, e-mail: c.jagadish@ieee.org



Multifunctional Carbon Materials for Electrochemical and Electronic Applications

Physical and Analytical Electrochemistry /

Fullerenes, Nanotubes, and Carbon Nanostructures / Dielectric Science and Technology / Energy Technology / Battery / Industrial Electrolysis and Electrochemical Engineering

Carbon materials are employed in numerous electrochemical and electronic technologies, and there are a wide range of microstructures utilized by researchers, such as diamond, diamond-like carbon, graphite, amorphous carbon, carbon fiber, glassy carbon, nanotubes, and fullerenes. In order for these carbons to function properly and optimally, one needs to understand how factors such as the surface chemistry, microstructure, and electrical properties, affect the electrical and electrochemical behavior. The objective of this symposium is to provide a forum for the presentation and discussion of recent developments in the science, technology, and application of carbon materials including: 1. diamond and diamond-like carbons; 2. nanotubes and fullerenes; and 3. amorphous and graphitic carbons.

Papers are also sought in the following areas: 1. carbon materials in electroanalysis; 2. carbon materials in energy storage and conversion devices; 3. activated carbons, carbon fibers, and conducting diamond for use in the electrochemical treatment (remediation and disinfection) of water; 4. carbon materials as platforms for chemical and biological sensing, and molecular electronics, and 5. carbon materials for electronic devices and electron emission.

Papers describing both basic and applied research are desired but the authors should place emphasis on addressing the processing and fabrication of the carbon, the control of the surface microstructure, chemistry and electrical properties, and their effect on the material properties and performance. Both oral and poster presentations are welcome.

Publication of an ECS Transactions issue is planned and will be available after the meeting. Acceptance of a paper in this symposium (both oral and poster) obligates the author(s) to submit a typed, camera-ready copy of the full manuscript and a list of key words to the symposium organizers no later than December 1, 2006. Instructions for manuscript preparation can be found at the ECS website, and will be provided to the author(s) by the symposium organizers after the official notification of acceptance is distributed by the ECS headquarters office.

Abstracts should be submitted electronically to ECS and to the symposium organizers: **G. M. Swain**, Department of Chemistry, Michigan State University, East Lansing, MI 48823-1322, USA, tel: 517.355.9715 ext. 229, fax: 517.353.1793, e-mail: swain@chemistry.msu.edu; **M. D. Porter**, Department of Chemistry, Iowa State University, 1605 Gilman Hall, Ames, IA 50013-3111, USA, tel: 515.294.6433, fax: 515.294.0105, e-mail: mporter@porter1.ameslab.gov; **R. L. McCreery**, Department of Chemistry, The Ohio State University, 100 W. 18th Ave., Columbus, OH 43210, USA, tel: 614.292.2021, fax: 614.292.1685, e-mail: mcCreery@chemistry.ohio-state.edu; **D. Scherson**, Department of Chemistry, Case Western Reserve University, 10900 Euclid Ave. Cleveland, OH 44106-7078, USA, tel: 216.368.5186, fax: 216.368.3006, e-mail: daniel.scherson@case.edu; **J. L. Davidson**, Department of Electrical Engineering and Computer Science, Vanderbilt University, Box 1611 Station B, Nashville, TN 37235, USA, tel: 615.343.7886, fax: 615.343.6614, e-mail: jim.davidson@vanderbilt.edu; **P. V. Kamat**, Department of Chemistry and Biochemistry, University of Notre Dame, Notre Dame, IN 46556-0579, USA, tel: 574.631.5411, fax: 574.631.8068, e-mail: pkamat@nd.edu;

and **A. Wieckowski**, Department of Chemistry, University of Illinois, 58 Roger Adams Laboratory, Urbana, IL 61801, USA, tel: 217.333.7943, fax: 217.244.8068, e-mail: andrzej@scs.uiuc.edu.



Wide Bandgap Semiconductor Materials and Devices 7

Electronics and Photonics / Sensor

This symposium will focus on all issues pertinent to development and application of wide-bandgap semiconductors. The following five technical areas are of particular interest to the organizers: (1) light emitters, particularly in the green and ultraviolet efficiency "valleys", (2) native nitride substrates, including GaN and AlN, (3) recent developments in wide-bandgap avalanche photodiodes, (4) ZnO substrates, materials, and devices, and (5) high temperature, high power, and high frequency wide-bandgap semiconductor electronics, including SiC and III-nitride materials. The goal 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 wide-bandgap semiconductor materials. As usual, this symposium will be held in conjunction with the ECS State of the Art Program on Compound Semiconductors (E14-SOTAPOCS 45), and will consist of both invited and contributed papers and posters.

The following invited speakers are expected to attend: **Joe Campbell** (University of Virginia), **Amir Dabiran** (SVT Associates), **Mark D'Evelyn** (General Electric Global Research Center), **Nate Gardner** (LumiLEDs), **Remis Gaska** (Sensor Electronic Technologies), **Yicheng Lu** (Rutgers University), **Joe Smart** (Crystal IS), **Jesse Tucker** (General Electric Global Research Center), **John Zavada** (US Army Research Office).

Abstracts submission is via the ECS website <http://www.electrochem.org>. **The abstract submission deadline is May 26, 2006. A joint ECS Transactions (ECST) issue will be published with E14-SOTAPOCS, and will be available at the meeting. Acceptance of a paper in this symposium (oral or poster) obligates the authors to submit a typed camera ready copy of the full ECST manuscript and a list of key words to the symposium organizers by July 21, 2006.** Instructions for preparing the manuscript may be obtained from symposium organizers.

Abstracts, suggestions, and inquiries should be sent electronically to the ECS headquarters office and to the symposium organizers: **E. B. Stokes**, Dept of Electrical and Computer Engineering, University of North Carolina at Charlotte, 9201 University City Blvd, Charlotte, NC 28223, USA, tel: 704.687.8425, fax: 704.687.4762, e-mail: ebstokes@uncc.edu; **J. Bardwell**, National Research Council, Bldg M-50, Rm. A122, Ottawa, ON K1A-0R6, Canada, tel: 613.993.8572, fax: 613.990.0202, e-mail: jennifer.bardwell@nrc.ca; **R. C. Fitch**, AFRL/SNDD, Bldg 620, 2241 Avionics Circle, Wright-Patterson AFB, OH 45433, USA, tel: 937.255.1874, ext. 3453, e-mail: Robert.Fitch@wpafb.af.mil; **D. W. Merfeld**, GE Research Lab - KW-C1325, PO Box 8, Schenectady, NY 12301-0008, USA, tel: 518.387.4252, fax: 518.387.5997, e-mail: merfeldw@crd.ge.com; **P. H. Shen**, AMSRL-SE-EM, 2800 Powder Mill Rd., Adelphi, MD 20783-1197, USA, tel: 301.394.1531, e-mail: pshen@arl.army.mil; and **J. Han**, Dept. of Electrical Engr., Yale University, 15 Prospect Street, PO Box 208284, New Haven, CT 06520, USA, tel: 203.432.7567, fax: 203.432.7769, e-mail: jung.han@yale.edu.



Science and Technology of Dielectrics for Active and Passive Devices

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.

The abstract submission deadline for this symposium is **May 26, 2006**. **Acceptance of a paper for presentation (oral or poster) obligates the author(s) to submit an electronic camera-ready manuscript to be published in an issue of ECS Transactions**. Instructions for preparing the manuscript will be sent out by the symposium organizers after the notification of acceptance of the paper.

Abstracts, suggestions, and inquiries should be sent to the ECS headquarters office and the symposium organizers: **P. Mascher**, Department of Engineering Physics, McMaster University, Hamilton, Ontario, Canada L8S 4K1, tel. 905.525.9140, ext. 24963, fax 905.525.1062, e-mail: mascher@mcmaster.ca; **K. Würhoff**, University of Twente, Department of Electrical Engineering, Mathematics and Computational Sciences, Integrated Optical MicroSystems Group, PO Box 217, 7500 AE Enschede, The Netherlands, tel: 31.53.489.3477, fax: 31.53.489.3343, e-mail: K.Worhoff@el.utwente.nl; and **D. Misra**, Department of Electrical and Computer Engineering, New Jersey Institute of Technology, Newark, NJ 07102, USA, tel: 973.596.5739, fax: 973.596.5680, e-mail: dmisra@njit.edu.



Semiconductor Wafer Bonding 9: Science, Technology, and Applications

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 silicon micromechanics for sensors and actuators, high quality silicon-on-insulator (SOI) materials for electronic device applications (high performance CMOS logic platforms, bipolar, BiCMOS, power), three-dimensional (3-D) device integration, layer transfer of strained Si layers by process-induced methodologies as well as built in strain in the bonding wafer, Si-Ge, Germanium-on-Insulator (GeOI), Si on quartz and Si on glass for active matrix addressed thin film displays, Micro-Electro-Mechanical Systems (MEMS) and compound semiconductor-on-Si heterostructures. During recent years wafer bonding and exfoliation techniques have sufficiently matured to make their mark on the commercial semiconductor substrate market. This symposium brings together materials, device, and process engineers from these and related interdisciplinary areas.

The ninth 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 exploratory modifications of exfoliation techniques, 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, MEMS, sensors, photonics, micro- or 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: physics, chemistry, and elastomechanics of wafer bonding; characterization of

bonding interfaces; bonding techniques; generalized bonding (e.g., GaAs-on-Si, bonding via deposited films); layer transfer and exfoliation methods; electronic device applications (bipolar, high voltage and power, CMOS, microwave); 3D integration, micro-electro-mechanical, photonic, sensor and other applications.

Publication of an ECS Transactions (ECST) issue is planned to be available in time for sale at the meeting. The deadline for abstract submission is April 1, 2006. All authors who present a paper in the symposium are obligated to submit a full manuscript in camera ready form by July 7, 2006 because the book will be printed prior to the meeting. Detailed instructions for abstract and full manuscript preparation are available at the ECS website. Papers published in and ECST issue may also be submitted to the ECS Journal, provided they are submitted no later than six months after the date of the symposium in which they were presented.

Authors must submit electronically a 500-word abstract to ECS headquarters by **April 1, 2006**. The abstract should include sections on objective, approach, results, and conclusions to assist the reviewers in evaluating the suitability of the paper for oral presentation at the symposium. For their paper to be considered for inclusion in the symposium, authors are also required to submit electronic copies of their abstracts to all symposium co-organizer no later than **April 1, 2006**. Abstracts submitted beyond this date will not be accepted. **(Note: the Wafer Bonding symposium deadlines are different from the general ECS meeting deadlines.)** Indicate preference for verbal or poster presentation, underline the expected presenter, and advise if the submission is a student presentation. Authors will receive electronic notification of acceptance or rejection no later than April 30, 2006. Complete paper or electronic manuscripts must be received by H. Baumgart or another symposium organizer no later than July 7, 2006.

Questions or inquiries may be directed to any of the symposium organizers: **H. Baumgart**, Old Dominion University, Frank Batten College of Engineering and Technology and Applied Research Center (ARC-ODU), Department of Electrical and Computer Engineering, 231-E Kaufman Hall, Norfolk, Virginia 23529 USA, tel: 757.269.7710, fax: 757.269.5644, e-mail: hbaumgar@odu.edu; **K. D. Hobart**, Naval Research Laboratory, Washington DC 20375, USA, tel: 202.404.8542, fax: 202.404.1271, e-mail: karl.hobart@nrl.navy.mil; **S. Bengtsson**, Department of Microtechnology and Nanoscience, Chalmers University of Technology, SE-41296 Göteborg, Sweden, tel: 46.0.31.772.1881, fax: 46.0.31.772.8498, e-mail: stefan.bengtsson@mc2.chalmers.se; **T. Suga**, The University of Tokyo, School of Engineering, Department of Precision Engineering, Address: Hongo 7-3-1, Bunkyo-ku, Tokyo 113-8656, Japan, tel: 81.0.3.5452.5180, fax: 81.0.3.5452.5184, e-mail: suga@pe.u-tokyo.ac.jp; **H. Moriceau**, CEA-LETI (Commissariat à l'Énergie Atomique - Laboratoire d'Électronique et de Technologie de l'Information), 17, rue des Martyrs, F-38054 Grenoble, France, tel: 33.4.38.78.48.23, fax: 33.4.38.78.24.34, e-mail: hubert.moriceau@cea.fr; and C. Colinge, California State University, Dept. of Electrical and Electronic Engineering, Sacramento, CA 95818, USA, tel: 916.278.7335, fax: 916.278.5949, e-mail: colinge@csus.edu.



SiGe: Materials, Processing, and Devices

Electronics and Photonics

1. Growth and characterization of the Si-Ge-C/Ge system: novel growth techniques, 300mm tooling, selective growth of $\text{Si}_{1-x}\text{Ge}_x$ or Ge, high Ge content growth, novel in-situ doping, growth of III-V on $\text{Si}_{1-x}\text{Ge}_x$ layers or Ge, quantum wire/dot formation, defect control in $\text{Si}_{1-x}\text{Ge}_x$ buffer layers, pseudomorphic layers, relaxed SiGe, tensile-strained Si, thermally mixed $\text{Si}_{1-x}\text{Ge}_x$, wafer fabrication, superlattice growth, manufacturing control, measurement of defects and strain, oxidation of $\text{Si}_{1-x}\text{Ge}_x$ layers, and incorporation of novel elements during

growth e.g. erbium. 2. SiGe/Ge process technology: impurity diffusion and diffusion suppression, Si and Ge intermixing during processing, oxidation and nitridation, cleaning and treatment of SiGeC surfaces, novel wet and dry etching of $\text{Si}_{1-x}\text{Ge}_x$ films, selective etching of $\text{Si}_{1-x}\text{Ge}_x$ films, passivation of $\text{Si}_{1-x}\text{Ge}_x$ films, contact formation, thermal stability, defect engineering, characterization of polycrystalline $\text{Si}_{1-x}\text{Ge}_x$, e.g. dopant activation and workfunction, raised $\text{Si}_{1-x}\text{Ge}_x$ source/drain, channel engineering, and modulation doping. 3. SiGe/Ge device technology: HBT, SSCMOS, SiGe FET structures, SiGe HEMTs, SiGe MODFETs, BiCMOS, SiGe FET structures on SOI, RTD, low voltage-low power devices. 4. SiGe/Ge optoelectronics: detectors, receivers, waveguides, quantum cascade structures, photoemission, photoluminescence, electroluminescence, and photovoltaic cells. 5. SiGe/Ge nanoelectronics: small structure formation, self-assembled island nucleation, quantum wires and dots, and calculation of electronic properties including band structures. 6. SiGe/Ge surface and interface: high k interface, metal contact, interfacial electrical properties and its characterization; and 7. simulation and modeling of SiGe/Ge materials, structures, processes, or devices.

Authors must submit an extended abstract to the ECS website by March 13, 2006. Detailed instructions for the preparation of the 1 page ECS extended abstract and the full-length manuscript for ECS Transactions is available on the ECS website. For conference details please see: www.ecs2006sige.org or www.electrochem.org

Organizers: **D. Harame** (dharam@us.ibm.com), **J. Murota** (murota@iec.tohoku.ac.jp), **H. Iwai** (Iwai@titech.ac.jp), **M. Caymax** (caymax@imec.be), **J. Cressler** (cressler@ece.gatech.edu), **K. Rim** (rim@us.ibm.com), **G. Masini** (masini@ele.uniroma3.it), **B. Tillack** (tillack@ihp-microelectronics.com), **S. Zaima** (zaima@alice.xtal.nagoya-u.ac.jp), and **D. Houghton** (sige@rogers.com).

E14

State-of-the-Art Program on Compound Semiconductors 45 (SOTAPOCS 45)

Electronics and Photonics

The SOTAPOCS 45 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 III-V semiconductors and wide-bandgap nitrides; 2. doping control; 3. wet and dry etching; 4. fine-line patterning and nanostructure fabrication, metallization, Schottky and ohmic contact formation; 5. dielectric deposition; 6. ion implantation, activation, and isolation; 7. passivation and annealing, microcleaving; 8. bonding and packaging; 9. in situ and ex situ process monitoring; 10. materials characterization and wafer level testing and mapping; 11. process induced defects; 12. reliability and device degradation mechanisms, 13. novel devices for high speed information superhighways, and 14. advances in organic semiconductors. The symposium will consist of both invited and contributed papers. Abstract can be submitted by mail or via the ECS website.

A joint issue of ECS Transactions, with E10-Nitride and Wide Bandgap Semiconductors for Photonics and Electronic Devices and Sensors 7 is planned to be available at the meeting. Acceptance of a paper in this symposium (oral or poster) obligates the authors to submit a typed camera ready copy of the full manuscript and a list of key words to the symposium organizers by July 7, 2006. Instructions for preparing the manuscript can be found on the ECS website.

Abstracts, suggestions, and inquiries should be sent electronically to the ECS headquarters office and to the symposium organizers: **F. Ren**, Department of Chemical Engineering, University of Florida, 227 Chemical Engineering Blvd., Room 317, Gainesville, FL 32611, USA, tel: 352.392.4727, fax:

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W. Johnson Nitronex Corporation, tel: 919.807.9100 x 155, fax: 919.807.9200, e-mail: wjohnson@nitronex.com; **W. B. Luo** Rockwell Scientific, 1049 Camino Dos Rios, Thousand Oaks, CA 91360, USA, tel: 805.373.4056, fax: 805.373.4869, e-mail: wluo@rwsc.com; **A. G. Baca** Sandia National Laboratories, PO Box 5800, MS 0603, Albuquerque, NM 87185-0603, USA, tel: 505.844.7127, fax: 505.844.8985, e-mail: agbaca@sandia.gov; **J. LaRoche** Raytheon RF Components, 362 Lowell Street, Andover, MA 01810, USA, tel: 978.684.8636, fax: 978.684.5480, e-mail: jeffrey_r_laroche@raytheon.com; **J. Kim** Department of Chemical & Biological Engineering, College of Engineering, Korea University, Anam-dong 5-1, Sungbuk-gu, Seoul 136-701, Korea, tel: 02.926.6102, fax: 02.3290.3291, e-mail: jhkim@prosys.korea.ac.kr.

E15

Thin Film Transistors 8 (TFT 8)

Electronics and Photonics

The TFTT 8 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 processing techniques; 3. organic and inorganic thin film materials; 4. device physics, characterization, and reliability; 5. applications in LCDs, imagers, detectors, chemical sensing, biochips, MEMS; 6. TFT applications in circuits; and 7. integration of TFTs to large area displays, VLSIC, and other complicated systems.

Publication of an ECS Transactions issue is planned. Acceptance of a paper in this symposium obligates the authors to submit an electronic camera-ready copy of

the full manuscript and a list of key words to the new online publication, ECS Transactions by July 7, 2006

Abstracts, suggestions and inquiries should be sent electronically to the ECS headquarters office and the symposium organizer: **Y. Kuo** Texas A&M University, Chem. Eng. MS 3122, 335-0 Zachry Engineering Center, College Station, TX, 77843, USA, tel: 979.845.9807, fax: 979.458.8836, e-mail: yuekuo@tamu.edu; **D. Ast** Cornell Univ., Ithaca, NY, tel. (607) 255-4140, e-mail: dast@ccmr.cornell.edu; **O. Bonnaud** Université de Rennes 1, France, tel. 33-0-2-99-28-6071, e-mail: bonnaud@univ-rennes1.fr; **S. Fonash** Pennsylvania State University, University Park, PA, tel. (814) 865-4931, e-mail: sfonash@psu.edu; **M. Hatano** Hitachi Ltd., Tokyo, Japan, tel. 81-42-323-1111 X-3144, e-mail: m-hatano@cr.hitachi.co.jp; **J. Jang** Kyung Hee Univ., Seoul, Korea, tel. 82-2-961-0270 e-mail: jjang@khu.ac.kr; **O.-K. Kwon** Hanyang Univ., Seoul, Korea, tel. 82-2-2290-0359, e-mail: okwon@hanyang.ac.kr; **E. Lueder**, Univ. Stuttgart, Stuttgart, Germany tel. (480) 451-8074, e-mail: e.lueder@cox.net; **M. Matsumura** ALTEDEC, Tokyo, Japan, tel. 81-3-3728-3394, e-mail: matsumura.masakiyo@nifty.com; **P. Migliorato** Cambridge University, Cambridge UK, tel. 44-1223-332663 e-mail: pm@eng.cam.ac.uk; **M. Shur**, Rensselaer Polytechnic Institute, Troy, NY, tel. (518) 276-2201 e-mail: shurm@rpi.edu; **S. Uchikoga** Toshiba Corp., Kawasaki, Japan, tel. 81-44-549-2180 e-mail: shuichi.uchikoga@toshiba.co.jp; **Y. Uraoka**, Nara Institute of Sci. and Technol., Japan, tel. 81-743-72-6071 e-mail: uraoka@ms.naist.jp.

F-ELECTROCHEMICAL/CHEMICAL DEPOSITION AND ETCHING

F1

Electrochemical Deposition onto Non-Metallic Surfaces

Electrodeposition

In this age of constant miniaturization for micro- and nano-technology, electrochemical deposition has already earned its merits as a technique for metallization in difficult to reach places such as crevices, pores, and fibrous structures. A disadvantage is that a metallic layer or seed is usually required as an electrode for electrodeposition. Therefore, electrochemical processes enabling deposition onto non-metallic and strongly resistive substrates are of great technological interest.

We invite papers that address electrochemical deposition, electroless activation for electrodeposition, and electroless deposition, onto non-metallic surfaces, patterned substrates, and templates. Non-metallic substrates include semiconductors, oxides, organic materials (plastics), and resistive thin films. Patterned substrates and templates include inorganic and organic materials, as well as biological templates such as viruses. Topics of interest are summarized as follows: 1. electrodeposition on semiconductor surfaces for nanostructure fabrication, metal/semiconductor contacts, and catalysis; 2. electrodeposition onto thin oxides; 3. electrodeposition onto resistive substrates, including direct copper plating on barrier / liner materials for microelectronics; 4. electroless activation of non-conductive surfaces, such as organic films and oxides; 5. electroless deposition onto non-metallic surfaces, including semiconductor substrates, non-conducting substrates such as oxides and organic films; 6. electrodeposition of semiconductors, including thin films, nanowires and dots, and porous films; 7. electroless deposition using inorganic, organic, and biological templates.

Publication of an ECS Transactions issue is planned to be available after the meeting. Authors accepted for an oral or poster presentation in this symposium are expected to submit a camera-ready soft copy of the manuscript before the meeting (October 26, 2006) to the symposium organizers. Instructions for preparing the manuscript will be sent out by the symposium organizers after the ECS headquarters office has distributed the notification of acceptance.

Abstracts, suggestions, and inquiries should be sent electronically to the ECS headquarters office and the symposium organizers: **P. M. Vereecken**, Nano Department, IMEC vzw, Kapeldreef 75, B-3001 Leuven, Belgium, e-mail: Philippe.Vereecken@imec.be; **G. Oskam**, Cinvestav, Department of Applied Physics, A. P. 73, Cordemex, Mérida, Yuc, 97310, Mexico, e-mail: oskam@mda.cinvestav.mx; **P. C. Se arson**, Johns Hopkins University, Department of Materials Science and Engineering, 3400 N. Charles Street, Baltimore, MD 21218, USA, e-mail: se arson@jhu.edu; and **K. Strubbe**, Gent University, Laboratory of Physical Chemistry, Krijgslaan 281 (S12), B-9000 Gent, Belgium, e-mail: Katrien.Strubbe@rug.ac.be.

F2

Electronics Packaging 2

Electrodeposition

This symposium will cover the scientific and technological advances in electrochemical technology as applied to electronics packaging. Recent progress in high speed ULSI has 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 evolu-

tion and additive chemistry of high-aspect ratio, mathematical modeling of deposition and etching, through-mask plating, nanofabrication, 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, 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 surface treatment; 4. conductor, dielectric, pad and Au/other plating; and 5. MEMS of micromechanics, transducers, bio-sensors, and bio-materials.

Abstracts, suggestions and inquiries should be sent electronically to the ECS headquarters office and to the symposium organizers: **K. Kondo**, Chemical Engineering, Osaka Prefecture University, 1-1, Gakuen-cho, Sakai, Osaka, 599-8531, Japan, tel: 81.72.254.9304, fax: 81.72.254.9304, e-mail: kkondo@chemeng.osakafu-u.ac.jp; **D. Barkey**, University of New Hampshire, Department of Chemical Engineering, Kingsbury Hall, Durham, NH 03824, USA, tel: 603.862.1918, fax: 603.862.3747, e-mail: dpb@cisunix.unh.edu; **T. Ritzdorf**, 665 West Reserve Drive, Kalispell, MT 59901, USA, tel: 406.250.2911, fax: 406.755.3226, e-mail: tritzdorf@semitool.com; **B. Wu**, Nexx Systems, 5 Suburban Park Drive, Billerica, MA 01821, USA, tel: 978.932.2019, fax: 978.932.2099, e-mail: bill_wu@nexxsystems.com.

F3

Magnetic Materials, Processes, and Devices 9

Electrodeposition

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, and process control. 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.

Acceptance of a paper in this symposium (oral or poster) obligates the authors to submit an electronic camera-ready copy of the full manuscript to the new online publication, ECS Transactions. Instructions for preparing the manuscript will be sent out by the symposium organizers to each author upon acceptance of their abstract.

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F4

Molecular Structure of the Solid-Liquid Interface and Its Relationship to Electrodeposition 5

Electrodeposition

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, and 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.

Abstracts and inquiries should be sent electronically to the symposium organizers: **R. C. Alkire**, University of Illinois, 600 South Mathews Avenue, Urbana, IL 61801, USA, tel: 217.333.0063, fax: 217.333.5052, e-mail: r-alkire@uiuc.edu; and **D. M. Kolb**, University of Ulm, D-89069, Ulm, Germany, tel: 49.731.502.5400, fax: 49.731.502.5409, e-mail: dieter.kolb@chemie.uni-ulm.de.

F5

Nanostructured Metal Oxides: Processing and Applications

Nanotechnology Subcommittee /
High Temperature Materials / Electrodeposition /
Physical and Analytical Electrochemistry / Sensor

The use of metal oxides in nanostructured form allows the exploitation of unique physical and chemical properties of materials that can lead to improved performance for applications. This is made possible by recent advances in the synthesis of metal oxide nanomaterials. With improved understanding of the fundamental mechanisms of metal oxide nanoparticle nucleation and growth, a large number of materials have been prepared with controlled particle size, relatively narrow size distributions, and controlled shape. Moreover, chemical routes allow also control of porosity (pore size and distribution) with the possibility to tailor matter and void. Therefore, it is now possible to engineer particles with controlled electrical, optical, magnetic, and chemical properties. This can be obtained also

preparing functional core-shell nanoparticles and modifying the particle surface with selective functional ligands for molecular recognition and other specific binding interactions. Due to improved control, nanoparticles can be integrated into 2D and 3D hierarchies, leading to new, ordered materials.

There are now a number of chemical and physical methods that allow the synthesis of nanostructured oxide particles and films; however, there are still problems in maintaining the structure at the nano-sized level after sintering and in the final device, especially for high temperature applications. Another important issue for these applications is the thermal stability of nanostructured materials under operation, which in some cases has been achieved with suitable doping.

The aim of this symposium is to provide a forum for the latest advances in the controlled synthesis and processing of nanostructured oxides, and the design, fabrication, and performance of devices that utilize them. The emphasis will be on the beneficial effects of using nanostructured materials in solid-state and electrochemical applications. The development of nanostructured materials is expected to play a major role in the exploitation of environmental-friendly applications such as photocatalysis, sensors, solar cells, fuel cells, batteries, and supercapacitors.

Papers are solicited in the following and related areas: fundamentals of nucleation and growth of metal oxide nanoparticles; novel synthesis methods of nanostructured metal oxides; nanoparticles, core-shell nanoparticles, nanostructured films, ordered 2D and 3D nanoparticle structures; shape-controlled oxide nanoparticles; wires, rods, springs; processing of nanostructured materials and investigation of their thermal and chemical stability; advanced characterization techniques for nanostructured oxides; modelling and tailoring of nanostructured oxides; nanocomposites and interfacial phenomena; nano-ionics; nanostructured oxides for photocatalysis and solid-state chemical sensors; nanostructured oxides for fuel cells, batteries, solar cells, and supercapacitors; and nanostructured oxides for magnetic, dielectric, piezoelectric, and ferroelectric applications.

Acceptance of a paper in this symposium (oral or poster) obligates the author to submit an electronic camera-ready copy of the full manuscript to ECS Transactions by July 7, 2006 to allow time for both full manuscript review and the publication of the issue to be made available for sale AT the meeting. Instructions for preparing the manuscript will be sent out by symposium organizers after acceptance of the abstract.

Abstracts, suggestions, and inquiries should be sent electronically to the ECS headquarters office and to the symposium organizers: **E. Traversa**, University of Rome Tor Vergata, Department of Chemical Science and Technology, Via della Ricerca Scientifica, 00133 Roma, Italy, tel 06.72594492, e-mail: traversa@uniroma2.it; **G. Oskam**, Cinvestav, Department of Applied Physics, A.P. 73, Cordemex, Mérida, Yuc., 97310, Mexico, e-mail: oskam@mda.cinvestav.mx; **G. Hunter**, NASA Glenn Research Center, 21000 Brookpark Rd. MS 77-1, Cleveland, OH 44135, USA, tel: 216.433.6459, fax: 216.433.8643, e-mail: Gary.W.Hunter@nasa.gov; **R. L. Penn**, University of Minnesota, Department of Chemistry, B4, 139 Smith Hall, 207 Pleasant Street SE, Minneapolis, MN 55455, USA, e-mail: penn@chem.umn.edu; **P. C. Searson**, Johns Hopkins University, Department of Materials Science and Engineering, 3400 N. Charles Street, Baltimore, MD 21218, USA, e-mail: searson@jhu.edu; and **D. A. Scherson**, Case Western Reserve University, Department of Chemistry, 10900 Euclid Avenue, Cleveland, OH 44106-7078, USA, e-mail: dxsl6@po.cwru.edu.

G-ELECTROCHEMICAL SYNTHESIS AND ENGINEERING

G

Industrial and Environmental Electrochemistry

Industrial Electrolysis and Electrochemical Engineering

This symposium focuses on: 1. industrial applications of electrochemistry in the manufacture of chemicals and/or electric power that may benefit society either as final consumer goods and services, or as precursors for further downstream processing to finished products; and also on 2. environmental applications of electrochemistry to mitigate the effects of the release potential industrial pollutants through the conversion of these species to more benign species or recycle recovery. Topics of interest include work leading to commercial and/or precommercial (*e.g.*, pilot plant demonstrations) "reductions to practice" of inorganic or organic electrosynthesis; direct or mediated electrochemistries; paired electrosynthesis; electrolyte systems including aqueous, nonaqueous, polymer, molten salts or ionic liquids; systems involving liquid, gaseous or multi-phase reactant and/or product streams; electrodes employing planar, porous, fluidized-bed and/or other novel approaches; improvements in electrocatalysts to increase product yield or lower electrical power requirements; and innovations in electrolyzer cell design. The papers should emphasize the steps require to proceed from the discovery at the laboratory scale to the final commercial scale up of a practical, integrated industrial electrochemical process. The pathway to commercialization of industrial and environmental electrochemistry may involve a multidisciplinary team effort that many researchers may not fully understand; industrial case histories may be a valuable tool to provide key insights into what is required for success and to help facilitate the implementation of new electrochemical technologies.

Organizers: **D. T. Mah**, DuPont Engineering Research & Technology (DuET), DuPont Company, 1007 Market Street B8400, Wilmington, DE 19898, USA, tel: 302.774.4264, fax: 302.774.2457, e-mail: doctor_electro@msn.com; **Y. Meas**, Centre of Research and Technological Development in Electrochemistry (CIDETEQ), Parque Tecnológico Queretaro, Sanfandila, 76700-Pedro Escobedo, Estado de Queretaro, Mexico, tel: 55.442.2116070, fax: 52.442.2116042, e-mail: yunnymeas@cideteq.mx; **S. W. Lin**, Instituto Tecnológico de Tijuana, 23815 Vista Ramona Road, Ramona, CA 92065, USA, tel/fax: 760.789.3087, e-mail: SL388@aol.com; and **D. Genders**, Electrosynthesis Company, 72 Ward Road, Lancaster, NY 14086-9779, USA, tel: 716.684.0513, fax: 716.684.0511, e-mail: david.genders@electrosynthesis.com.

H-FULLERENES, NANOTUBES, AND CARBON NANOSTRUCTURES

H

Carbon Nanotubes: General Session

Fullerenes, Nanotubes, and Carbon Nanostructures

The purpose of this symposium is to provide a forum for the presentation of original research concerned with all aspects of carbon nanotubes. In particular, this symposium will focus on fundamental properties and applications of carbon nanotube and materials in physics, chemistry, and materials science. Topics may include methods for sample preparation and characterization; mechanical, thermal, optical, and electronic properties; chemical and electrochemical behavior; and theoretical studies. Contributions of novel applications in the areas of electronic devices, sensors, materials development, solar energy harvesting, catalysis, nano-mechanical devices, biomedicine, and environmental remediation are also solicited.

Organizers: **R. B. Weisman**, Department of Chemistry, MS-60, Rice University, 6100 Main Street, Houston, TX 77005, USA, tel: 713.348.3709, fax: 713.348.5155, e-mail: weisman@rice.edu; and **S. Subramoney**, E. I. DuPont de Nemours & Company, DuPont Experimental Station, Wilmington, DE 19880-0228, USA, e-mail: shekhar.subramoney@usa.dupont.com.

H2

Recent Advances in Fullerene Science

Fullerenes, Nanotubes, and Carbon Nanostructures

The purpose of this symposium is to provide a forum for the presentation of original research concerned with all aspects of fullerenes. Papers are invited in the following areas of fullerenes: chemical functionalization, electrochemistry, photochemistry, photoelectrochemistry, energetics and structure, biomedical applications, photovoltaic applications, catalysis, donor-acceptor interactions, sensor studies and applications of fullerenes and related compounds (organofullerenes, electroactive fullerenes, supramolecular fullerenes, organometallic fullerenes, endohedral fullerenes, fullerene films and composites). The mentioned topics may be considered as representative examples and should not be regarded as restrictive.

Organizers: **F. D'Souza**, Department of Chemistry, Wichita State University, 1845 Fairmount, Wichita, KS 67260-0051, USA, tel: 316.978.7380, fax: 316.978.3431, e-mail: Francis.DSouza@wichita.edu; **D. M. Guldi**, Institute for Physical Chemistry, Friedrich-Alexander-Universität Erlangen-Nürnberg, 91058 Erlangen, Germany, tel: 49.9131.8527340, fax: 49.9131.8528307, e-mail: dirk.guldi@chemie.uni-erlangen.de; **S. Fukuzumi**, Department of Material and Life Science, Graduate School of Engineering, Osaka University, 2-1 Yamadaoka, Suita, Osaka, 565-0871, Japan, tel: 81.6.6879.7368, fax: 81.6.6879.7370, e-mail: fukuzumi@chem.eng.osaka-u.ac.jp.

I-PHYSICAL AND ANALYTICAL ELECTROCHEMISTRY

I1

Physical and Analytical Electrochemistry General Session

Physical and Analytical Electrochemistry

Papers concerning any aspect of physical 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.

Abstracts, suggestions and inquiries should be sent electronically to the ECS headquarters office and to the symposium organizer: **H. De Long**, AFOSR/NL, 875 N. Randolph St., Suite 325, Rm. 3112, Arlington, VA, 22203-1768, USA, tel: 703.696.7722, fax: 703.696.8449, e-mail: hugh.delong@afosr.af.mil.

I2

Electrochemistry at Liquid-Liquid Interfaces

Physical and Analytical Electrochemistry

This symposium is dedicated to various aspects of electrochemistry at the interface between two immiscible electrolyte solutions (ITIES). Within this broad field, the emphasis will be on fundamental studies of the interfacial structure and dynamics of charge transfer reactions, and on interfacial processes involving nanoparticles and biomolecules (*e.g.*, proteins and DNA).

Topics of special interest include: 1. modeling and experimental studies of the ITIES structure; 2. biomolecules at liquid interfaces; 3. nanoparticles at liquid interfaces; 4. dynamics of electron and ion transfers; 5. analytical applications of the ITIES; and 6. new techniques and novel interfaces (*e.g.*, ionic liquids).

Abstracts should be submitted electronically to the ECS meetings website. Suggestions and inquiries, but not the abstracts, should be sent to the symposium organizers: **P. Vanysek**, Department of Chemistry and Biochemistry, Northern Illinois University, DeKalb, IL 60115, USA; tel.: 815.753.6876, e-mail: pvanysek@niu.edu; **M. Mirkin**, Department of Chemistry and Biochemistry, Queens College - CUNY, Flushing, NY 11367, USA; tel.: 718.997.4111, e-mail: michael_mirkin@qc.edu.

13

Electrochemical Surface Science: Recent Advances in the Study of The Electrode-Electrolyte Interface

Physical and Analytical Electrochemistry

The purpose of the symposium is to provide an international forum to showcase recent advances and to assess new directions in the atomic/molecular-level study of the electrode-electrolyte interface. Although there will be a slight emphasis on fundamental research aimed at the correlation of interfacial structures and reaction mechanisms, technological issues centered on the manipulation (control) of electrode reactions are also of major interest. Presentations on the following (and related) topics are solicited: 1. structure of the electrode-electrolyte interface; 2. chemical and electrochemical adsorption; 3. structurally and chemically modified electrode surfaces; 4. electrodeposition; 5. electrochemical nanotechnology. Papers may be presented in either plenary or poster sessions, and will be eligible for submission to the online publication, *ECS Transactions* (ECST).

Abstracts, suggestions and inquiries should be sent to the ECS headquarters office and to any of the symposium organizers: **M. Soriaga**, Texas A&M University, Department of Chemistry, PO Box 30012, College Station, TX 77842-3012, USA, tel: 979.845.1846, fax: 979.845.3523, e-mail: Soriaga@mail.chem.tamu.edu; **N. Batina**, Universidad Autonoma Metropolitana-Iztapalapa, Laboratorio de Nanotecnología e Ingeniería Molecular, Area de Electroquímica, Departamento de Química, División de Ciencias Básicas e Ingeniería, Av. San Rafael Atlixco No. 186., Col. Vicentina, Delegación Iztapalapa, C.P. 09340 Mexico D.F., Mexico, tel: 52.55.8502.4568, fax: 52.55.5804.4666, e-mail: bani@xanum.uam.mx.

14

Molten Salts 15, in Memory of Robert Osteryoung

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

This symposium is dedicated to the significant and ground breaking accomplishments of Robert A. Osteryoung in the area of molten salts and ionic liquids. This symposium will provide an international and interdisciplinary forum centered on innovative basic and applied research performed in molten salts and ionic liquids. Contributed papers are solicited in all areas of biology, chemistry, electrochemistry, electrochemical engineering, and physics related to molten salt research. We would especially like to encourage former collaborators and students of Robert A. Osteryoung to present their current work in the area.

Topics of interest include: 1. electrochemical power, *e.g.*, batteries, fuel cells, capacitors, and photovoltaics; 2. homogeneous and heterogeneous reactions, *e.g.*, catalysis, inorganic and organic syntheses, oligomerizations, and polymerizations; 3. electrodeposition, *e.g.*, metal electrowinning, the deposition of alloys, semiconductors, intermetallics and layered structures, the structural characterization of electrodeposits, metallizing and surface modification, and characterization of electroactive species; 4. separations, *e.g.*, selective extractions, immobilized molten salt gas membranes, and electrochemical gas separations; 5. molten salt promoted corrosion phenomena; 6. solute and solvent structural investigations; 7. new innovative molten salts and molten salt mixtures, *e.g.*, hydrophobic molten salt

systems and molten salt mixtures, liquid clathrates, low vapor pressure (vacuum resistant) molten salts, air-insensitive molten salts; 8. applications of molten salts to "green" chemical reactions and processes; and 9. applications of molten salts to biological reactions and biocatalysis.

Keynote lectures will be presented by invited speakers. Depending upon the number of papers received, a poster session may be planned. Student participation is highly encouraged, and it is anticipated that some funds will be available for student support.

Publication of an ECS Transactions issue is planned but will take place as an electronic entity where you can contact ECS about getting individual articles without the need for the whole book. **Authors are required to provide an electronic copy of their papers in the correct format and a list of keywords no later than July 7, 2006** All papers will be reviewed for content by a review committee.

Abstracts, suggestions, and inquiries should be sent to the ECS headquarters office and the symposium organizers: **D. Costa**, Nuclear Materials Technology Division, (NMT-15) Mail Stop E-530, Los Alamos National Laboratory, Los Alamos, New Mexico 87545, USA, tel: 505.665.8958, fax: 505.665.4459, e-mail: dcosta@lanl.gov; **H. De Long**, AFOSR/NL, 875 N. Randolph St., Suite 325 Rm. 3112, Arlington, VA, 22203-1768, USA, tel: 703.696.7722, fax: 703.696.8449, e-mail: hugh.delong@afosr.af.mil; **R. Hagiwara**, Department of Fundamental Energy Science, Graduate School of Energy Science, Kyoto University, Sakyo-ku, Kyoto 606-8501 Japan, tel: 81.75.753.5822, fax: 81.75.753.5906, e-mail: hagiwara@energy.kyoto-u.ac.jp; **R. Mantz**, AFRL/MLBT, Bldg. 654, 2941 P Street, Wright-Patterson AFB, OH, 45433-7750, USA, tel: 937.255.2199, fax: 937.255.3893, e-mail: robert.mantz@wpafb.af.mil; **G. Stafford**, National Institute of Standards and Technology, Metallurgy Division, Building 224/B166, Gaithersburg, MD 20899-3956, USA, tel: 301.975.6412, fax: 301.926.7679, e-mail: stafford@tiber.nist.gov; **P. Trulove**, Chemistry Department, U.S. Naval Academy, Annapolis, MD 21502-5026, USA, tel: 410.293.6622, fax: 410.293.2218, e-mail: trulove@usna.edu; and **K. Zaghib**, Institut de Recherche d'Hydro-Québec (IREQ), 1800 Blvd. Lionel Boulet, Varennes, Québec, Canada J3X 1S1, tel: 450.652.8019, fax: 450.652.8424, e-mail: zaghib.karim@ireq.ca.

15

Supramolecular Electrochemistry

Physical and Analytical Electrochemistry / Fullerenes, Nanotubes, and Carbon Nanostructures

Papers are solicited on the fundamental and applied aspects of supramolecular electrochemistry. Presentations dealing with the investigation of non-covalent interactions promoted and/or affected by electron transfer processes, and contributions in which complexation and/or molecular recognition phenomena monitored by electrochemical techniques are of particular interest. Papers dealing with the design and preparation of monolayers or thin films of functionalized cyclodextrins, porphyrins, conducting polymers, fullerenes and carbon nanotubes, calixarenes, organometallic complexes, dendrimers, viologens, quinones, or any other electroactive or photo-electroactive molecules on conducting or semiconductor surfaces, aimed to prepare functional interphases showing an interplay between electron transfer and non-covalent interactions, are welcome. Of special interest in this symposium are contributions of an applied nature in which supramolecular phenomena resulting in innovative devices such as electrodes for solar energy conversion, electrochemical sensors, electrocatalytic materials, or optoelectronic devices are solicited.

Authors of papers accepted in this symposium will be required to submit an electronic camera-ready copy of the full manuscript to ECS Transactions (ECST) by July 7, 2006 to allow time for both full manuscript review and the publication of the ECST issue, to be made available for sale at the meeting. Instructions for preparing the manuscript will be sent out by symposium organizers after

acceptance of the abstract.

Organizers: **A. Kaifer**, University of Miami, Dept. of Chemistry, 1301 Memorial Drive Coral Gables, FL 33146-0431, USA, tel: 305.284.3468, fax: 305.284.4571, e-mail: akaifer@miami.edu; **L. Godínez**, Centro de Investigación y Desarrollo Tecnológico en Electroquímica, Electrochemistry Department, PO Box 064, Pedro Escobedo 76700, Querétaro, Mexico, tel: 52.442.211.6026, fax: 52.442.211.6001, e-mail: lgodinez@cideteq.mx; **F. D'Souza**, Wichita State University, Dept. of Chemistry, Wichita, KS 67260-0051, USA, tel: 316.978.7380, fax: 316.978.3431, e-mail: Francis.DSouza@wichita.edu.

J-SENSORS AND DISPLAYS: PRINCIPLES, MATERIALS, AND PROCESSING

J1

Biomedical and Clinical Sensors

Sensor

Recent progress in biomedical sensing technologies is geared toward the development of novel sensor concepts and new applications ranging from disposable devices to online monitoring systems. The development of biomedical sensors suitable for clinical settings usually involves advanced microfabrication and signal processing techniques providing access to inexpensive, accurate, and reliable sensor technology. Important physiological parameters such as nitric oxide, oxygen, pH, carbon dioxide, glucose, etc., have to be rapidly and reliably determined in complex physiological matrices such as blood, plasma, urine, and other bodily fluids. Besides the importance of determining physiological parameters, the development of novel sensor is relevant to the determination of clinically important polymeric drugs and for anesthetic agents. Furthermore, cancer research is among the most promising albeit complex fields for advanced sensor technology.

This symposium intends to hold joint sessions with E6-Bioelectronics, Biointerfaces, and Biomedical Applications.

This symposium will focus on recent advances in sensor development and application in biomedical and clinical environments, including research focusing on novel biocompatible materials, implantable devices, signal transduction, and molecular recognition mechanisms.

Areas of special interest include: 1. enzyme, antibody, and DNA based sensors; 2. synthetic receptors and biomimetic recognition schemes; 3. new sensor concepts for clinically relevant analytes; 4. sensor systems for online monitoring in clinical settings; 5. advanced micro- and nanosystems for in-vivo and neurophysiological measurements; 6. potentiometric sensors in biomedical applications; and 7. ion-selective electrodes in clinical settings.

Abstracts should be directly submitted to ECS. Inquiries and suggestions should be sent to the symposium organizers: **C. Kranz**, Georgia Institute of Technology, School of Chemistry and Biochemistry, Office L2120, 311 Ferst Drive, Atlanta, GA 030332-0400, USA, tel: 404.385.1794, fax: 404.385.6447, e-mail: Christine.kranz@chemistry.gatech.edu; and **Y.-L. Chang**, Nanomix, Inc., 5980 Horton Street, Suite 600, Emeryville, CA 94608, USA, tel: 510.428.5300 ext. 5332, fax: 510.658.0425, e-mail: ychang@nano.com.

J2

Chemical Sensors 7: Chemical and Biological Sensors and Analytical Systems

Sensor

This symposium will provide a forum for the discussion of the latest developments in chemical and biological sensor research and development, including molecular recognition surfaces, transduction methods, and integrated sensor systems.

Topics of interest include: 1. development of new selective species recognition surfaces and materials; 2. molecular recognition materials and approaches to minimize non-specific binding; 3. semi-selective species recognition materials and sensor arrays; 4. novel methods for signal processing, signal amplification, and detection; 5. detection systems for multiple analytes in complex samples; 6. the development and analysis of sensor arrays for the simultaneous detection of multiple analytes; and 7. complete analytical systems and approaches for chemical and biological applications, including sample preparation/processing. All transduction methods are of interest for this symposium (e.g., electrochemical, optical, gravimetric, and thermal.).

Acceptance of a paper in this symposium (oral or poster) obligates the author to submit an electronic camera-ready copy of the full manuscript to ECS Transactions (ECST). Final revised manuscript will be due July 7 and may be submitted electronically via the ECS website May 26 (for abstract submission), June 12 (for manuscript submission), and July 7 (for revised manuscript submission) are strict deadlines, which will allow time for both full manuscript review and the publication of the ECST issue to be made available for sale at the meeting. Instructions for preparing the manuscript will be sent out by symposium organizers after acceptance of the abstract.

The symposium organizers are: **G. Hunter**, NASA Glenn Research Center, 21000 Brookpark Rd. MS 77-1, Cleveland, OH 44135, USA, tel: 216.433.6459, fax: 216.433.8643, e-mail: Gary.W.Hunter@nasa.gov; **R. Mukundan**, Los Alamos National Lab, Mailstop D429, Los Alamos, NM 87545, USA, tel: 505.665.8523, fax: 505.665.4292, e-mail: mukundan@lanl.gov; and **S. Bhansali**, University of South Florida, Tampa, FL, 33620, USA, tel: 813.974.3593; fax: 813.974.5250; e-mail: bhansali@eng.usf.edu.

J3

Microfabricated and Nanofabricated Systems MEMS/NEMS 7

Sensor / Dielectric Science and Technology / Electronics and Photonics

This symposium continues the series of symposia that focus on all aspects of MEMS/NEMS technology including micro/nano-machining, 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.

Publication of papers in ECS Transactions is planned to be available at the meeting. All authors accepted for presentation (oral or poster) are obligated to submit a camera-ready ECS Transactions manuscript. Instructions for preparing the manuscript will be sent out by the symposium organizers after the notification of acceptance of the paper. **The deadline for submission of the camera-ready manuscript for is June 12, 2006 to allow adequate time for review. Authors will be notified of revision in June and must submit their final manuscript by July 7.**

Submit one original, one page, properly formatted meeting abstract either electronically or on paper to ECS headquarters office by May 26, 2006. A notification of acceptance of the abstract will be sent via email within a week of this deadline. It is imperative that you indicate your e-mail address when submitting your abstract. Final revised manuscript will be due

July 7 and may be submitted electronically via the ECS website. **May 26 (for abstract submission), June 12 (for manuscript submission), and July 7 (for revised manuscript submission) are strict deadlines.** Suggestions and inquiries should be sent electronically to the symposium organizers. The manuscript must be submitted via the ECS website. The *ECS Transactions* issue will be available for purchase at the conference.

Organizers: **P. J. Hesketh**, Georgia Institute of Technology, George W. Woodruff School of Mechanical Engineering, Atlanta, GA 30332, USA, tel: 404.385.1358, fax: 404.894.8496, e-mail: phesketh@me.gatech.edu; **J. L. Davidson**, Vanderbilt University, 5617 Stevenson Science Center, Nashville, TN 37232, USA, tel: 615.343.7886, fax: 615.343.6614, e-mail: jim.davidson@vanderbilt.edu; **J. Li**, Center for Nanotechnology, NASA Ames Research Center, MS 229-1, Moffett Field, CA 94035, USA, tel: 650-604-4352, fax: 650-604-5244, e-mail: jingli@mail.arc.nasa.gov; **C. Roper**, University of California Berkeley, Department of Chemical Engineering, 201 Gilman Hall, Berkeley, CA 94720, USA, tel: 510-643-3489, fax: 510-642-4778, e-mail: roper@berkeley.edu; and **S. Shoji**, Waseda University, Dept. of Electrical Engineering and Bioscience, 3-4-1 Ohkubo, Shinjuku, 169-8555 Tokyo, Japan, tel: 81.3.5286.3384, fax: 81.3.3204.5765, e-mail: shojis@waseda.jp.

J4

Physics and Chemistry of Luminescent Materials 15

Luminescence and Display Materials

This symposium will focus on various aspects of luminescence, in both organic and inorganic solids, and will address current and emerging technical and scientific issues in luminescence. Presentations at this meeting will cover photoluminescent

materials for lamp and laser applications, cathodoluminescent materials, electroluminescent materials, persistent phosphors, and phosphors for plasma display panels (vacuum ultraviolet excited phosphors), and other optical devices. Presentations on chemical aspects of luminescence will include the design and synthesis of conventional and novel luminescent materials, including nanophases and optimization of luminescence properties, such as brightness, color, response time, excitation spectra, etc. via modification of particulate and surface characteristics; and exploring new materials by combinatorial chemistry. Presentations involving physics of luminescence will cover measurements and modeling of luminescent properties; identification of luminescent and loss centers; non-radiative processes; energy transfer; and concentration effects; complex luminescence processes such as core valence luminescence, cooperative phenomena, nonlinear optical processes; and ultra-fast transitions. Papers on multiphoton transitions, luminescence from confined systems, etc., luminescence from novel materials such as ceramics, glass, and nano-particles are encouraged.

Abstracts should be sent electronically to the ECS headquarters office. Suggestions, and inquiries should be sent to the symposium organizers: **A. M. Srivastava**, GE GRC, KWB 316, 1 Research Circle, Niskayuna, NY 12309, USA, tel: 518.387.7535, fax: 518.387.5529, e-mail: srivastava@crd.ge.com; **K. Mishra**, Osram Sylvania, 71 Cherry Hill Dr., Beverly, MA 01915-1068, USA, tel: 978.750.1575, fax: 978.750.1799, e-mail: kailash.mishra@sylvania.com; **A. Meijerink**, Debye Institute, Condensed Matter and Interfaces, Utrecht University, PO Box 80 000, 3508 TA, Utrecht, The Netherlands, tel: 31.30.2532202, fax: 31.30.2532403, e-mail: a.meijerink@phys.uu.nl.