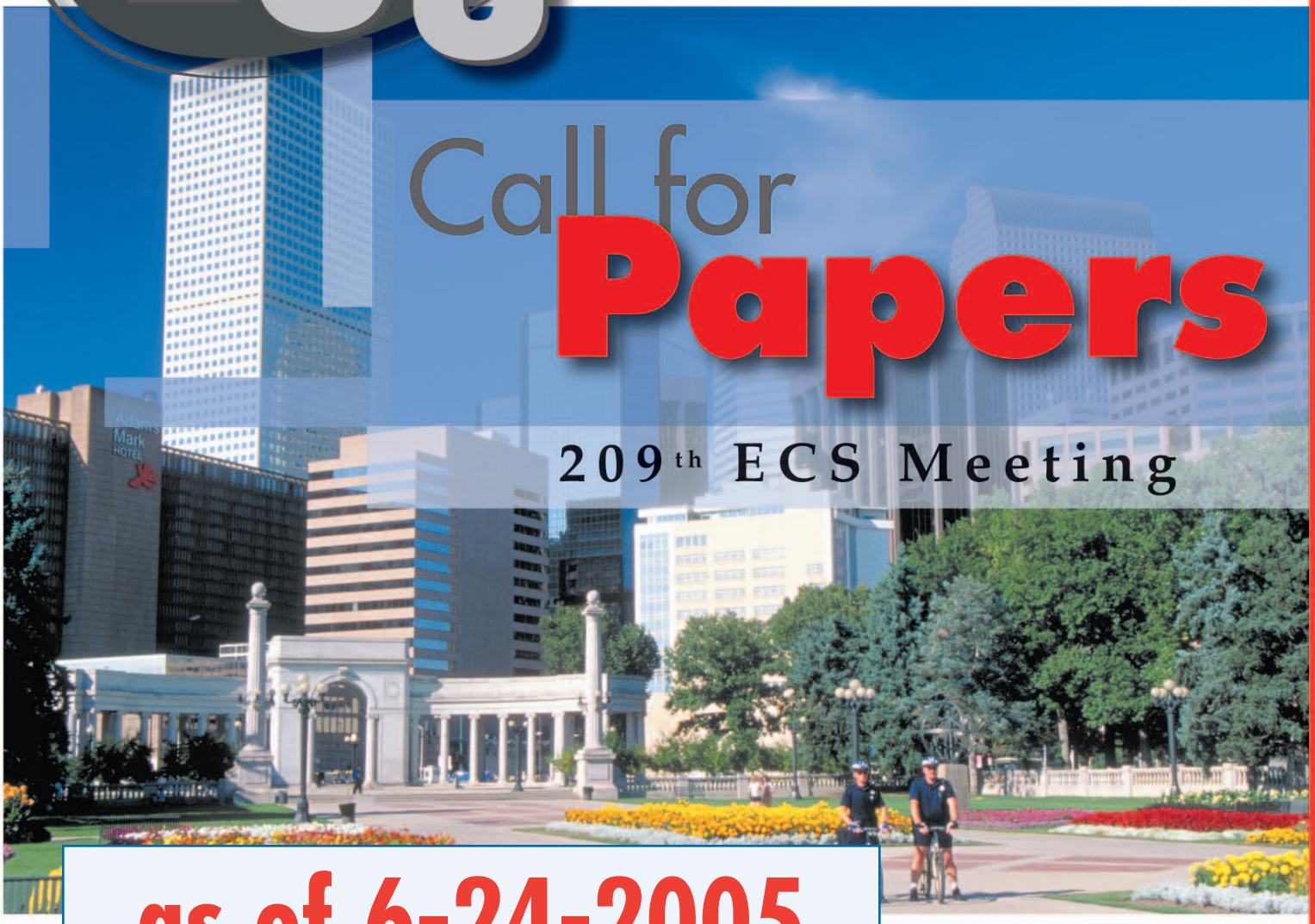
ECS



Call for Papers

209th ECS Meeting

as of 6-24-2005

May 7-12, 2006

Denver, Colorado

Abstract Deadlines

Abstracts are due **NO LATER than January 3, 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 at www.electrochem.org/meetings/future/209/support/cfp.pdf.

Submit one original, meeting abstract electronically via the ECS website (www.electrochem.org). 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 February 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 located at: http://www.electrochem.org/abstracts/templates.htm. 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—Beginning with the fall 2005 meeting in Los Angeles, ALL full papers presented at ECS meetings will be eligible for submission to the new online publication, *ECS Transactions* (ECST). Each meeting will be represented by a "volume" in ECST, and each symposium will be represented by an "issue." To determine acceptance in ECST, all submitted full papers will be reviewed by the organizers of the symposia 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 in July 2005 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 80 of the summer 2005 issue of *Interface* or visit the ECS website).

Second Meeting Announcement

The second meeting announcement will include details on the technical sessions; a meeting registration form; travel, 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 February of 2006.

Hotel Reservations

The 209th Meeting will be held at the Adam's Mark Denver Hotel, located at 1550 Court Place, Denver, Colorado, 80202, USA. The Adam's Mark Denver Hotel reservations telephone number is 303.893.3333, or toll free at 1.800.444.2326. The reservation deadline is April 13, 2006.

Special rates have been reserved at the Adam's Mark Denver Hotel for participants attending this meeting. The special conference rates are as follows: $149 Single, $149 Double, $99 Student.

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 February of 2006 and will also be available on the ECS website (www.electrochem.org). The deadline for advance registration is **April 13, 2006.**

ECS Sponsored Short Courses

The meeting will also include several short courses on Sunday, May 7, 2006 from 9:00 AM to 4:30 PM. Short Course fees are currently $425 for members, $520 for nonmembers, 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. Please check the ECS website for any last-minute details (www.electrochem.org/sc/sc.htm). The current Short Topics are planned as follows: Analytical Electrochemistry, Molecular Electronics, Fullerenes, Finite Element Analysis, and Impedance Spectroscopy.

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 $1,700 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 Karen Chmielewski at ECS for more information. Coffee breaks are scheduled each day in the exhibit hall along with evening poster sessions.

Sponsorship Opportunties

ECS biannual meetings are wonderful chances 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.

The Levels are: Platinum: $5,000+, Gold: $2,500+, Silver: $1,000, and Bronze: less than $1,000.

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

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.

Please note: This Call for Papers is subject to change. Please visit the ECS website for the most current information.

www.electrochem.org

as of 6-24-2005

Denver, Colorado
Symposium Topics

Batteries, Fuel Cells, and Energy Conversion
- Battery and Energy Technology Joint General Session
- Biological Fuel Cells
- Direct Methanol Fuel Cells
- Electrode Materials and Processes for Energy Conversion and Storage
- Energy Systems for the Twenty-First Century: Opportunities for Applications of Solar, Storage, and Conversion Technologies
- Hydrogen Production, Transport, and Storage
- Portable Energy Sources

Biomedical Applications and Organic Electrochemistry
- Electrochemical and Photochemical Science in Biomedical Applications
- Fullerene and Carbon Nanotube-Based Materials in Medicine and Biology
- Manuel M. Baizer Award Symposium on Organic Electrochemistry VII, in Honor of Ikuzo Nishiguchi
- Organic and Biological Electrochemistry General Session

Corrosion, Passivation, and Anodic Films
- Corrosion General Session

Dielectric and Semiconductor Materials, Devices, and Processing
- Dielectrics for Nanosystems: Materials Science, Processing, Reliability, and Manufacturing II
- Environmentally-Conscious Microelectronics Manufacturing
- Plasma Processing XVI
- Silicon Materials Science and Technology X
- Solid-State Joint General Poster Session
- SOTAPOCS XLIV: State-of-the-Art Program on Compound Semiconductors XLIV
- Thermal and Plasma CVD of Nanostructures

Electrochemical/Chemical Deposition and Etching
- Electrochemical Processing in ULSI and MEMS II

Electrochemical Synthesis and Engineering
- Educational Needs and Approaches for Electrochemical Engineering and Electrochemistry
- Electrochemistry in Mineral and Metal Processing VII
- Fundamental Gas Phase and Surface Chemistry of Vapor Phase Materials Processing III
- IE&EE General Session

Fullerenes, Nanotubes, and Carbon Nanostructures
- Carbon Nanotubes and Nanostructures: Applications and Devices
- Carbon Nanotubes and Nanostructures: Fundamental Properties and Processes
- Electron Transfer and Applications of Fullerenes and Nanostructured Materials
- Endofullerenes and Carbon Nanocapsules
- Energetics and Structure
- Fullerene and Carbon Nanotube-Based Materials in Medicine and Biology
- Metallic and Semiconductor Nanoparticles
- Molecular and Supramolecular Chemistry of Fullerenes and Carbon Nanotubes, in Honor of Roger Taylor
- Porphyrins and Supramolecular Assemblies

Nanotechnology, Nanomaterials, and Nanoscience
- Dielectrics for Nanosystems: Materials Science, Processing, Reliability, and Manufacturing II
- Nanotechnology
- Thermal and Plasma CVD of Nanostructures

Physical and Analytical Electrochemistry
- Electroanalytical Chemistry, in Honor of Robert Osteryoung
- Electrochemistry of Novel Materials
- Electron Transfer Reactions at Organic/Metal Interfaces: From Molecular Monolayer Modified Electrodes to Buried Polymer Metal Interfaces
- Impedance in Electrochemistry: From Analytical Applications to Mechanistic Speculations
- Molecular Modeling of Electrochemical Systems
- Physical and Analytical Electrochemistry General Session

Sensors and Displays: Principles, Materials, and Processing
- Biosensor Systems
- New Sensor Materials
- Persistent Phosphor Materials II
- Sensors, Actuators, and Microsystems General Session

General Topics
- General Student Poster Session

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 at: www.electrochem.org/student/travelgrants.htm. 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/209/cfp.pdf. To apply for a travel grant use the application form below.

Application Requirements—All applications for the 209th meeting in Denver, Colorado, May 7-12, 2006, must be received no later than January 3, 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 ECS Denver, Colorado

The Society's **Corrosion, Electrodeposition, Electronics and Photonics, Energy Technology, High Temperature Materials (HTM), 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 Denver, Colorado, May 7-12, 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:* E. Traversa, Univ. di Roma "Tor Vergata," Via della Ricerca Scientifica, I-00133 Roma, Italy. E-mail: traversa@uniroma2.it

❑ **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, Agilent Technologies, 3500 Deer Creek Rd. #26L-1, Palo Alto, CA 94304-1317, USA. E-mail: ying-lan_chang@agilent.com

Applications for Travel Grants for the Denver, Colorado meeting must be received no later than January 3, 2006.

as of 6-24-2005

Denver Call for Papers • May 7-12, 2006

A1 General Student Poster Sessions

All Divisions

This Poster Session provides a forum for graduate and undergraduate students to present research results of general interest to the Society. 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 the Society. 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 co-authors, a maximum award of $750 per winning poster will be divided equally between student co-authors. The awards will be made without regard to gender, citizenship, race, or financial need.

Organizers: **V. Desai**, University of Central Florida, 2868 University Acres Dr, Orlando, FL 32817-3012, USA, Tel: 407.882.1455, Fax: 407.882.1462, E-mail: vdesai@mail.ucf.edu; **H. Martin**, Case Western Reserve University, Dept. of Chem. Engr., 10900 Euclid Ave., Cleveland, OH 44106-7200, USA, Tel: 216.368.2648, Fax: 216.368.3016, E-mail: hbm@po.cwru.edu; **P. Pintauro**, Case Western Reserve University, Dept. of Chem. Engr., 10900 Euclid Ave., Cleveland, OH 44106-7200, USA, Tel: 216.368.4150, Fax: 216.368.3016, E-mail: pnp3@po.cwru.edu.

A2 Nanotechnology

All Divisions

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, 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 and 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 microscopies; 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.

Organizers: **W. A. van Schalkwijk**, EnergyPlex Corp., 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 **W. Schindler**, University of Karlsruhe, Kaiserstrasse 12, DE-7631 Karlsruhe, Germany, Tel: 49.721608.7170, Fax: 49.721608.2786.

B1 Electrochemical and Photochemical Science in Biomedical Applications

New Technology Subcommittee

Papers are solicited on the recent advances and developments in electrochemically enhanced drug delivery, namely electrotransport in therapeutic and diagnostic applications, photodynamic therapy for medical science, and fullerene/carbon nanotube-based materials in biomedical applications.

Electrotransport refers to the application of an electric current to transport substances across biological membranes. It is an electrically enhanced method of non-invasive transport by applying an electric potential to an electrochemical system containing the drug. Electrotransport increases a drug's molecular mobility, and the methodology can also be used in diagnostics by monitoring the counterflow of ions from the body.

Organizers: **A. Subramony**, Alza Corporation, 1900 Charleston Rd., Mountain View, CA, 94043, USA, Tel: 650.564.2418, Fax: 650.564.2484, E-mail: anand.subramony@alza.com; **L. Wilson**, Rice University, PO Box 1892, Dept. of Chemistry, MS 60, Houston, TX 77251-1892, USA, Tel: 713.348.3268, Fax: 713.348.5155, E-mail: Durango@rice.edu; and **K. Decker**, University of Washington, 40 Lake Bellevue Dr Ste 100, Bellevue, WA 98005-2480, USA.

C1 Battery and Energy Technology Joint Session

Battery / Energy Technology

Papers are solicited on the fundamental and applied aspects of energy conversion, storage, and transmission not covered by other symposia in this meeting. Of particular interest are new materials and processes for batteries, fuel cells, and photovoltaics. All types of batteries, fuel cells, and solar electric technologies are of interest including aqueous (e.g. nickel-cadmium, zinc-air, lead-acid, and nickel-metal hydride) and non-aqueous electrolyte batteries; near-term and long-term fuel cell concepts; as well as solar cell technologies ranging from near-term crystalline silicon; mid-term thin film technologies based on cadmium-telluride and copper-indium-diselenide; and long-term technologies such as dye-sensitized, molecular, quantum structures in polymer, or other innovative solar electric concepts. Papers on combined technologies, such as hybrid battery/battery, battery/fuel cell, battery/other, fuel-cell/other systems as well as solar electric hydrogen production, carbon nanotube hydrogen storage, and hydrogen fuel cell systems are also welcome.

Organizers: **D. Scherson**, Case Western Reserve University, Department of Chemistry, 10900 Euclid Ave, Cleveland, OH 44106-7078 USA, Tel: 216.368.5186, Fax: 216.368.3006, E-mail: dxs16@po.cwru.edu; **J. Prakash**, Illinois Institute of Technology, Chem. & Env. Eng., 10 W 33rd St, Chicago, IL 60616-3730, USA, Tel: 312.567.3639, Fax: 312.567.8874, E-mail: prakash@iit.edu; **Z. Ogumi**, Department of Energy and Hydrocarbon Chemistry, Graduate School of Engineering, Kyoto University, Nishikyo-ku, Kyoto 615-8510, Japan, Tel: 81.75.383.2487, Fax: 81.75.383.2488, E-mail: ogumi@scl.kyoto-u.ac.jp; and **K. Kanamura**, Tokyo Metropolitan University, Dept. of Applied Chemistry, 1-1 Minami-Ohsawa, Hachioji-shi, Tokyo 192-0397, Japan, Tel: 426772827, Fax: 426772827, E-mail: kiyoshi-kanamura@c.metro-u.ac.jp.

D1 Energy Systems for the Twenty-First Century: Opportunties for Applications of Solar, and Conversion Technologies

Battery / Energy Technology / Industrial Electrolysis and Electrochemical Engineering

This symposium focuses on energy systems for the twenty-first century: opportunities for applications of solar, storage, and conversion energy technologies over a wide range of topics. Papers are requested on energy systems that emphasize electrochemical storage and generation, solar energy and other renewable technologies (e.g. solar thermal and electric technologies, geothermal, wind, hydropower, biomass and thermal conversion). Topics of interest include solar energy conversion, photovoltaics, fuel cells, hydrogen energy systems, batteries, and capacitors. Papers on the hydrogen economy, hybrid and electric vehicle technologies and their impact on improving the environment, climate change; green house gases, building sustainability, and energy independence are welcome. Papers are requested on requirements of components and systems for solar energy, conversion, and storage technologies. Emphasis is on the requirements and benefits for all types of solar, conversion, and storage energy systems, as well as the requirements and benefits for individual components within these systems. The papers should report the requirements and critical parameters (e.g. cost, life, weight, volume, and environmental limits). Also, papers on alternative technologies can be submitted. The alternative technologies and their advantages or disadvantages compared to electrochemical and solar technologies should be described. Papers on operational experience with existing and emerging solar, energy conversion, and storage technologies for stationary and automotive applications are welcome.

Organizers: **R. D. McConnell**, NREL, 1617 Cole Blvd. Golden, CO 80401, USA, Tel: 303.384.6419,Fax: 303.384.6481, E-mail: robert_mcconnell@nrel.gov; **T. Q. Duong**, Office of Transportation Technologies, U.S. Department of Energy, 1000 Independence Avenue, SW Washington DC 20585, USA, Tel: 202.586.2210, Fax: 202.586.1600, E-mail: tien.duong@hq.doe.gov; **A. R. Landgrebe**, International Electrochemical Systems and Technology, B-14 Sussex Lane, Millsboro, DE 19966, USA, Tel: 302.945.4306, Fax: 302.945.2219, E-mail: albert@dmv.com; **I. B. Weinstock**, Sentech Inc., 7475 Wisconsin Ave., Bethesda, MD, 20814, USA, Tel: 240.223.5500, Fax: 240.223.5501, E-mail: iweinstock@sentech.org; and **J. Fenton**, Florida Solar Energy Center, University of Central Florida, 1679 Clearlake Rd., Cocoa, FL 32922, USA, Tel: 321.638.1002, Fax: 321.638.1010, E-mail: jfenton@fsec.ucf.edu.

E1 Electrode Materials and Processes for Energy Conversion and Storage

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

This symposium plans to foster interdisciplinary discussions among scientists and engineers on a variety of aspects of power conversion and storage. Topics of interest include: preparation and characterization of lithium-ion insertion and metal hydride electrode materials, electrocatalysts for fuel cells, design and performance of batteries and fuel cells, and theoretical aspects of materials and systems. Emphasis will focus on: 1. fundamental processes, 2. novel processes and materials, and 3. modeling and simulation of electrochemical phenomena and processes.

Organizers; **D. A. Scherson**, Department of Chemistry, Case Western Reserve University, Cleveland, OH 44106-7078, USA, Tel : 216.368.5186, Fax: 216.368.3006, E-mail: dxs16@po.cwru.edu; **V. Srinivasan**, Lawrence Berkeley National Laboratory, One Cyclotron Rd., MS 70R-0108B, Berkeley, CA 94720-8028, USA, Tel: 510.496.2679, Fax: 510.486.4260, E-mail: vsrinivasan@lbl.gov; **S. C. Barton**, Molecular Metrology Inc., 518 Pleasant St., Northampton, MA 01060-3997, USA, Tel: 413.584.5556, Fax: 413.584.5556, E-mail: barton@molmet.com; and **J. Weidner**, University of South Carolina, Dept. of Chemical Engineering, Swearingen Engineering Center, Columbia, SC 29208-0001, USA, Tel: 803.777.3207, Fax: 803.777.8265, E-mail: weidner@engr.sc.edu.

F1 Corrosion General 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.

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.

G1 Solid-State Joint General Poster Session

All Solid-State Divisions

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

Organizers: **C. L. Claeys**, IMEC, Kapeldreef 75, B-3001 Leuven, Belgium, Tel: 32.16.281328, Fax: 32.16.281844 E-mail: cor.claeys@imec.be; **M. J. Deen**, Department of Electrical and Computer Engineering, CRL Room 220, McMaster University, 1280 Main Street West, Hamilton, Ontario, Canada, L8S 4K1, Tel: 905.525.9140, ext. 27137, Fax: 905.523.4407, E-mail: jamal@ece.eng.mcmaster.ca; and **M. Kubota**, National Institute for Materials Science, Agency of Ind. Sci. and Tech., Ministry of Int'l. Trade & Ind., Tsukuba, Ibaraki 3058565, Japan.

H1 Environmentally-Conscious Microelectronics Manufacturing

Dielectric Science and Technology

For the microelectronics industry to continue to deliver smaller, faster, more functional products, it must introduce new materials, processes, and technologies into manufacturing at fairly regular intervals. This affords many opportunities for the integration of environmental performance into commercially-competitive manufacturing. This symposium is seeking contributions that document new developments with significant environmental elements. Such contributions may include remediation and abatement technologies, new processing schemes, new processing equipment, new materials that allow environmentally-friendly processing, new integration schemes or product architectures, or methodologies for evaluating the cost or benefits of environmentally-inspired manufacturing changes. Possible topics include wafer and chamber cleaning, CMP, wastewater treatment, process water generation, process gas abatement, solvent use in photolithography, etching, and energy and water conservation or integration, although contributions covering a much wider range of applications are welcome.

Organizers: **S. Beaudoin**, Purdue University, School of Chemical Engineering, 480 Stadium Mall Drive, W. Lafayette, IN 47907-2100, USA, Tel: 765.494.7944, Fax: 765.494.0805, E-mail: sbeaudoi@purdue.edu; and **T. Wooldridge**, Semiconductor Research Corporation, P.O. Box 12053, Research Triangle Park, NC 27709-2053, USA, Tel: 919.941.9449, Fax: 919.941.9450, E-mail: wooldridge@src.org.

H2 Plasma Processing XVI

Dielectric Science and Technology

This symposium, sixteenth in the series, is aimed at bringing together the technical community engaged in plasma processing in all its aspects and applications, specifically as related to both front-end and back-end VLSI processing in the 100 nm and sub-100 nm nodes. Some suggested topics are: 1. novel plasma processes, 2. new plasma sources and reactor concepts, 3. plasma diagnostics, 4. plasma/reactor process modeling, 5. plasma process damage issues, 6. processes for hard-to-etch films as in MRAM applications, 7. new developments in PE-CVD, and 7. novel plasma processing approaches for MEMS applications.

Acceptance of a paper for presentation obligates the author to submit a full manuscript in camera-ready form 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.

Organizers: **G. S. Mathad**, S/C Technology Consulting, 5 Spurway, Poughkeepsie, NY 12603-5522, USA, Tel: 845.462.6312, E-mail: swami_mathad@hotmail.com; **D. W. Hess**, School of Chemical and Biomolecular Engineering, Georgia Tech., 311 Ferst Drive, Atlanta, GA, 30332, USA, Tel: 404.894.5922, Fax: 404.894.2866, E-mail: dennis.hess@che.gatech.edu; **M. Engelhardt**, Infineon Technologies AG, Otto-Hahn-Ring 6, D-81730 Munich, Germany, Tel: 49.89.234.53321, E-mail: manfred.engelhardt@infineon.com; and **M. Yang**, Shanghai IC R&D Center, Shanghai, China, Tel: 86.21.5031.1613, E-mail: myang@icrd.com.

H3 Thermal and Plasma CVD of Nanostructures

Dielectric Science and Technology

CVD, plasma enhanced CVD, and various related deposition techniques have enjoyed success in microelectronics industry. Based on their success and experience, these techniques have recently found their way into the preparation of nanostructured materials. Some examples include growth of inorganic nanowires such as silicon, germanium, various oxides (zinc, indium and tin ... oxides), and nitrides (GaN). Vapor-liquid-solid (VLS) and related techniques, template assisted techniques (CVD, electrodeposition), and planar deposition are some of the popular approaches in nanowire/nanotube growth for applications into electronics, sensors, and thermoelectrics. Carbon nanotube preparation is now widely done using CVD and PECVD for patterned growth for applications in nanoelectronics, nanodevices, sensors, and field emission. A variety of other nanostructured materials such as nanopowders and nanocrystals are also prepared by these versatile techniques. The topics for this symposium include, but are not limited to, the above mentioned materials and applications. Papers focusing on growth mechanisms, modeling, process diagnostics, materials characterization, and advances in applications are strongly encouraged.

Organizers: **M. Sunkara**, Associate Professor of Chemical Engineering, University of Louisville, Ernst Hall, Room 106, Louisville, KY 40292 (use 40208 for FedEx), Tel: 502.852.1558, Fax: 502.852.6355, Cell: 502.457.4178, E-mail: mahendra@louisville.edu; **S. Seal**, University of Central Florida, 3267 Progress Drive, Orlando, FL 32826, USA, Tel: 407.882.1119, Fax: 407.882.1156, E-mail: sseal@mail.ucf.edu; and **L. Delzeit**, NASA Ames Research Center, MS 239-4, Moffett Field, CA 94035, Tel: 650.604.0236, E-mail: Lance.D.Delzeit@nasa.gov.

I1 Dielectrics for Nanosystems: Materials Science, Processing, Reliability, and Manufacturing II

Dielectric Science and Technology / IEEE Electron Devices Society

Advanced semiconductor products that are true representatives of nanoelectronics have reached below 100 nm. Depending on the application, the nanosystem may consist of one or more of the following types of functional components: electronic, optical, magnetic, mechanical, biological, chemical, energy sources, and various types of sensing devices. As long as one or more of these functional devices is in 1-100 nm dimensions, the resultant system can be defined as nanosystem. Papers are solicited in all areas of dielectric issues in nanosystems. In addition to traditional areas of semiconductor processing and packaging of nanoelectronics, emphasis will be placed on areas where multifunctional device integration (through innovation in design, materials, and processing at the device and system levels) will lead to new applications of nanosystems.

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 January 1, 2006 to allow time for both full manuscript review and the publication of the first-run, case-bound edition of the *ECS Transactions* issue, to be made available for sale at the meeting. Authors must submit a one page abstract (500 word maximum) by **December 1, 2005** via the ECS website. The abstract must also be submitted to one of the symposium organizers, and be accompanied by a cover letter; this 500 word abstract should clearly indicate the purpose of the work, the approach, the manner and the degree to which the work advances the field, and specific results and their significance. By **February 1, 2006**, authors will be required to submit the revised manuscript.

The program committee consists of the following persons: Tayo Akinwande (Massachusetts Institute of Technology), William D. Brown (University of Arkansas), Dennis Hess (Georgia Institute of Technology), Vik J. Kapoor (University of Delaware), Lalita Manchanda (Semiconductor Research Corporation), Krishna Saraswat (Stanford University), Randhir Thakur (Applied Materials), and Sunit Tyagi (Intel).

Organizers: **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; **R. Singh**, Center for Silicon Electronics, Holcombe Department of Electrical and Computer Engineering, Clemson, SC 29634-0915, USA, Tel: 864.656.0919, Fax: 864.656.5910, E-mail: srajend@clemson.edu; **H. Iwai**, Department of Advanced Applied Electronics, 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; **R. R. Tummala**, NSFERC in SOP Technology ,Georgia Institute of Technology, 813 Ferst Drive, NW, Atlanta, GA 30332-0560, USA, Tel: 404.894.9097, Fax: 404.894.3842. E-mail: rao.tummala@ee.gatech.edu; and **S. C. Sun**, Technology Development, Chartered Semiconductor MFG Ltd, 60 Woodlands, Industrial Park D, Street 2, Singapore 738406, Tel: 65.6360.1818, Fax: 65.6360.4917, E-mail: sunsc@charteredsemi.com.

J1 Electrochemical Processing in ULSI and MEMS II

Electrodeposition

This symposium will focus on fundamental and practical aspects of electrochemical processing related to the fabrication of microelectronics and microelectromechanical devices. It is well known that electrochemical copper deposition is now a widespread process used for interconnect fabrication. This technology faces new challenges due to the shrinking interconnect

size that requires thinner seed and barrier layers. Consequently, there is a strong impetus to develop technology for direct electrodeposition on barriers. Another emerging wet process in front-end application is electroless plating of metals and metal alloys, primarily to prevent copper diffusion and improve electromigration resistance, or to form interconnect structures by electroless copper plating. Further technologies of high commercial impact are solder deposition for flip-chip interconnects, and copper electrodeposition for packaging application. Many other electrochemical processes and techniques, at various stages of emergence and development in the electronics and related industries, include the direct electrodeposition of compound semiconductors, chemical-bath deposition, electrochemical formation of heterojunctions, superlattices, nanostructures and metal-semiconductor contacts, deposition of magnetic multilayers and nanowires, wet etching, chemical mechanical polishing, electrolytic and electroless deposition of patterned structures, formation of metal films on semiconductors using self-assembled monolayers, and scanning-probe patterning.

Presentations characterizing currently utilized materials and processes, as well as exploratory modification and novel approaches, are encouraged. Electrodeposition, electroless deposition and removal (CMP, electropolishing, and etching) of high conductivity, low melting (solder), or magnetic metals/alloys and related films of interest to ULSI and MEMS manufacture are encouraged.

Practical aspects of interest include the design/modeling of electroplating and planarization equipment; thickness uniformity and terminal effects; factors influencing the shape evolution and filling of high-aspect-ratio cavities; bath-composition monitoring and control; electroless plating of high conductivity metals and barriers, integration of the electrochemical process with electrochemical and non-electrochemical processes, and electrochemical process related device failure modes and reliability.

Fundamental aspects of interest include: nucleation and growth on dielectrics, on barrier films, thin seed layers, the influence of surface pretreatment on nucleation and adhesion; the action of additive molecules on microscopic current distribution and grain growth, and novel conductors applications and on-barrier deposition techniques. Reports on physical and chemical measurements related to deposit microstructure and morphology using in-situ or ex-situ surface analytical techniques are also encouraged.

Acceptance of a paper for presentation obligates the author to submit a full manuscript in camera-ready form 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.

Organizers: **H. (Lili) Deligianni**, IBM T. J. Watson Research Center, P.O. Box 218, Yorktown Heights, NY 10598-0218, USA, E-mail: lili@us.ibm.com; **T. P. Moffat**, NIST, Bldg 224, B166, Gaithersburg, MD, 20899, USA, E-mail: thomas.moffat@nist.gov; and **J. L. Stickney**, Department of Chemistry, University of Georgia, Athens, GA 30602-0002, USA, E-mail: stickney@chem.uga.edu.

K1 State-of-the-Art Program on Compound Semiconductors XLIV

Electronics and Photonics

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

Acceptance of a paper in this symposium (oral or poster) obligates the author to submit an electronic camera-ready copy of the full manuscript to *ECS Transactions* by January 25, 2006 to allow time for both full manuscript review and the publication of the first-run, case-bound edition of the *ECS Transactions* 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: **V. Gambin**, Northrop Grumman Space Technologies, One Space Park, R6/2134A, Redondo Beach, CA 90278, USA, Tel: 310.812.6251, Fax: 310.812.4378, E-mail: vincent.gambin@ngc.com; **L. J. Chou**, Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan 30013, Tel: 03.5715131.3806, E-mail: ljchou@mx.nthu.edu.tw; **J. M. Millunchick**, Department of Materials Science and Engineering, University of Michigan, Ann Arbor, MI 48109, USA, Tel: 734.647.8980, Fax: 734.763.4788, E-mail: joannamm@umich.edu; and **D. N. Buckley**, Department of Physics, Materials and Surface Science Institute, University of Limerick, Limerick, Ireland, Tel: 353.61.202902, Fax: 353.61.202423, E-mail: noel.buckley@ul.ie.

K2 Silicon Materials Science and Technology X

Electronics and Photonics

This tenth Silicon Symposium will focus on the explosive expansion of new materials and processes utilized in the fabrication of Integrated Circuits (IC) and the host of associated new challenges. These include, for example, the implementation of the 300 mm era, the drive to equivalent oxide thicknesses in the single-digit nanometer regime through the utilization of alternative gate-dielectric materials (perhaps including variously configured metal electrodes), strained silicon through process-induced methodologies as well as built in the starting wafer, copper metallization, low-K interlevel dielectrics, the expanded utilization of silicon-on-insulator (SOI) materials including dual silicon orientations, end-of-roadmap non-classical CMOS technologies, and beyond CMOS emerging research devices. These challenges are but one facet of the evolving role the International Technology Roadmap for Semiconductors (ITRS) is playing in our industry.

The Silicon Symposium will, however, also continue to emphasize the relationship of silicon materials with subsequent IC performance. This includes the preparation, characterization, and properties of bulk silicon crystals, wafers, and epitaxial silicon films, as well as the impact of chemical impurities and structural imperfections introduced during device /IC processing. Particular emphasis will continue to be placed on the interactive effects of starting silicon material properties and the effect of multiple IC processing steps on advanced devices /IC performance and reliability — point/extended defects, gettering, modeling, and IC process integration issues — in the System Large-Scale-Integration (System LSI) era.

Initial plans call for a selection of papers to be comprehensive reviews of fundamental research as well as of technological importance. The remainder of the papers will be selected from a representative sampling, but not necessarily inclusive, of contributed original research papers not previously published in the areas of: 300 mm, materials & IC process technologies, non-classical materials & IC process technologies, process development and modeling, materials and process integration, and integrated metrology and diagnostics.

More detailed information may be obtained from the winter 2004 issue of *Interface* (p. 55). Authors must submit a 500-word informal abstract in English, double-spaced, indicating title, authors, and affiliation, along with a cover letter. 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. In no case

will this abstract appear in a printed agenda. Submission of an abstract for review and subsequent acceptance is considered by the symposium organizing committee as an agreement that the work will not be published in another venue by the author. Authors are encouraged to recommend the appropriate session for their submitted abstracts.

Acceptance of a paper for presentation obligates the author to submit a full manuscript in camera-ready form no later than January 1, 2006. All accepted papers will be published in the new online publication, *ECS Transactions*; a hardcover collection of the papers will also be produced, in time for sale AT the meeting. Instructions for preparing the manuscript will be sent out by the symposium organizers to each author upon acceptance of their abstract for oral presentation. Formal abstracts are due to the ECS headquarters office with a copy to one of the symposium organizers on or before **January 1, 2006**.

Informal abstracts must be submitted in quintuplicate before **August 1, 2005** to one of the following symposium co-chairs: **H. R. Huff**, SEMATECH, Inc. 2706 Montopolis Drive, Austin, TX 78741, USA, Tel: 512.356.3334, Fax: 512.356.7640, E-mail: howard.huff@sematech.org; **H. Iwai**, Tokyo Institute of Technology, Rm #1015, G2, 4259 Nagatsuta, Midori-ku, Yokohama, Japan, Tel: 81.45.924.5471, Fax: 81.45.924.5584, E-mail: iwai@ae.titech.ac.jp; and **H. Richter**, ihp-Microelectronics, 1m, Technologie Park 25, 15236 Frankurt, Germany, Tel: 49.335.5625.128, Fax: 49.335.5625.327, E-mail: richter@ihp-microelectronics.com. Questions and inquiries may be addressed to the symposium co-chairs.

L1 Portable Energy Sources

Energy Technology

With the widespread use of portable electronics, such as laptops, cellular phones, PDAs, MP3 players, light-weight and large-capacity energy sources to a large extent determine the mobility of portable electronics. Portable energy sources may appear in the forms of batteries, fuel cells, capacitors, and solar cells. This symposium intends to bring together researchers in a wide range of topics related to portable energy sources and discuss recent progress in both basic science and engineering and portable energy sources.

Specific topics of interest include, but are not limited to: 1. high-capacity and light-weight batteries; 2. solar cells on flexible substrates; 3. high-efficiency light-weight fuel cells; and 4. supercapacitors. Papers addressing materials, synthesis, performance, and systems of portable energy sources are welcome.

Organizers: **M. Tao**, The University of Texas at Arlington, Department of Electrical Engineering, Arlington, TX 76019, USA, Tel: 817.272.5001, Fax: 817.272.7458, E-mail: mtao@uta.edu; **K. Zaghib**, Tel: 450.652.8019, Fax: 450.652.8424, E-mail: zaghib.karim@ireq.ca; and **C. Wei**, GE Global Research, Tel: 518.387.5918 or 86.13918187822, E-mail: weic@crd.ge.com.

M1 Biological Fuel Cells

Energy Technology / Organic and Biological Electrochemistry / Physical and Analytical Electrochemistry

Biological species make unique contributions to electrochemical power systems as catalysts, fuel sources, and transport agents. Papers are solicited on fundamental and applied aspects of fuel cell technology that have inherent biological facets. Of interest are fundamental studies focusing on heterogeneous electron transfer coupled with oxidation or reduction of biomolecules, including direct or mediated electron transfer between electrodes and either biomolecules or microbes; enzymatic catalysis at electrode-supported membranes; electrode modification chemistries for immobilization or stabilization of electrochemically addressable catalytic moieties; and engineered electrode systems for facilitated transport of ionic species, fuels, and wastes. Papers addressing practical issues of electrode reaction rate, operating potential, and electrode stability are welcome, as is work toward developing mechanistic and system-level models that elucidate aspects of biological fuel cells. Strategies aimed at utilization of biological materials in fuel cells for electronics, implanted medical devices, or other novel applications, are appropriate for this symposium. The goal is to bring together a multidisciplinary representation of research in this broad area to further establish the existing state-of-the-art, and the challenges that remain for practical implementation of these technologies.

Organizers: **S. Calabrese Barton**, Department of Chemical Engineering, Columbia University, 801 Mudd, 500 West 120th Street, New York, NY 10027, USA, Tel: 212.854.4655, Fax: 212.854.3054, E-mail: scb@cheme.columbia.edu; **J. D. Burgess**, Department of Chemistry, Case Western Reserve University, 10900 Euclid Avenue, Cleveland, OH 44106-7078, USA, Tel: 216.368.4490, Fax: 216.368.3006, E-mail: jdb@po.cwru.edu; **K. Kano**, Division of Applied Life Sciences, Graduate School of Agriculture, Kyoto University, Kyoto, 606-8502, Japan, Tel: 81.75.753.6392; Fax: 81.75.753.6456, E-mail: kkano@kais.kyoto-u.ac.jp; **P. Atanassov**, Chemical and Nuclear Engineering Department, University of New Mexico, Albuquerque, NM 87131, USA, Tel: 505.277.26.40, Fax: 505.277.5433, E-mail: plamen@unm.edu; **H. C. De Long**, Air Force Office of Science Research, Waldorf, MD 20603-5702, USA Tel: 703.696.7722, Fax: 703.696.8449, E-mail: hugh.delong@afosr.af.mil; **I. Taniguchi**, Dean, Faculty of Engineering, Kumamoto University, Japan, Tel: 81.96.342.3655, E-mail: taniguch@gpo.kumamoto-u.ac.jp; and **S. Minteer**, Saint Louis University, Chemistry Department, 221 North Grand Blvd, Monsonto Hall, Room 103, St. Louis, MO 63103, USA, Tel: 314.977.3624, Fax: 314.977.2521, E-mail: minteers@slu.edu.

N1-N9 Fullerenes, Nanotubes, and Carbon Nanostructures

Fullerenes, Nanotubes, and Carbon Nanostructures

Papers are invited for this symposium in the areas listed below. Authors should clearly state the appropriate symposium number, 1 through 10, when submitting the abstract. The organizers of each symposium will determine the suitability of the papers for inclusion in the oral or poster presentation of the program.

Organizers: **F. D'Souza**, Department of Chemistry, Wichita State University, 1845 Fairmount, Wichita, KS 67260-0051, USA, Tel: 316. 78.7380, Fax: 316.978.3431, E-mail: Francis.DSouza@wichita.edu; and **D. M. Guldi**, Institute for Physical Chemistry, Friedrich-Alexander-Universität Erlangen-Nurnberg, 91058 Erlangen, Germany, Tel: 49.9131.8527340, Fax: 49.9131.8528307, E-mail: dirk.guldi@chemie.uni-erlangen.de.

Abstracts should be submitted via the ECS website and to the organizers of the corresponding symposium listed below.

N1 Electron Transfer and Applications of Fullerenes and Nanostructured Materials

(see main heading)

Papers are invited in the following areas of fullerenes and carbon nanotubes: electrochemistry, photochemistry, electron transfer chemistry, photoelectrochemistry, photovoltaic applications, catalysis, sensor studies, and applications of fullerenes and related compounds (carbon nanotubes, organofullerenes, electroactive fullerenes, supramolecular fullerenes, organometallic fullerenes, endohedral fullerenes, fullerene films and composites).

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; **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; **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; and **O. Ito**, Institute of Multidisciplinary Research for Advanced Materials, Katahira, Sendai, 980-8577 Japan, Tel: 81.22.217.5608, Fax: 81.22.217.5608, E-mail: ito@tagen.tohoku.ac.jp.

N2 Molecular and Supramolecular Chemistry of Fullerenes and Carbon Nanotubes, in Honor of Roger Taylor

(see main heading)

The purpose of this symposium is to provide a forum for the presentation of original research concerned with all aspects of chemical functionalization of fullerenes and carbon nanotubes. This rapidly growing area includes nucleophilic and radical additions, cycloadditions, hydrogenations, transition metal complex formation, oxidations and reactions with electrophiles. Also included are contributions on multiple additions to fullerenes, ring opening reactions, synthesis of heterofullerenes as well as studies toward the total synthesis of fullerenes. The mentioned topics may be considered as representative examples and should not be regarded as restrictive.

Organizers: **N. Martin**, Department of Organic Chemistry, Faculty of Chemistry, Complutense University E-28040 Madrid, Spain, Tel: 34.91.394.4227, Fax: 34.91.394.4103, E-mail: nazmar@quim.ucm.es; and **J. F. Nierengarten**, Laboratoire de Chimie des Fullerenes et des Systèmes Conjugues, ECPM, 25 rue Becquerel, F-67087 Strasbourg, France, Tel: 33.390.24.26 45, Fax: 33.390.24.27.06, E-mail: jfnierengarten@chimie.u-strasbg.fr.

N3 Carbon Nanotubes and Nanostructures: Fundamental Properties and Processes

(see main heading)

This is one of two related symposia on carbon nanotubes and related materials. This symposium will be focused on fundamental properties and processes 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.

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, PO Box 80228, Wilmington, DE 19880-0228, USA, E-mail: shekhar.subramoney@usa.dupont.com.

N4 Carbon Nanotubes and Nanostructures: Applications and Devices

(see main heading)
co-organized with Sensor

This is the second of two related symposia on carbon nanotubes and related materials. The theme of this symposium is applications of carbon nanomaterials. Topics may include novel applications in the areas of electronic devices, sensors, materials development, solar energy harvesting, catalysis, nanomechanical devices, biomedicine, and environmental remediation.

Organizers: **S. V. Rotkin**, Physics Department, Lehigh University, 16 Memorial Drive East, Bethlehem, PA 18015, USA, Tel: 1.610.758.3930, Fax: 1.610.758.5730, E-mail: rotkin@lehigh.edu; **Y. Gogotsi**, Drexel University, Department of Materials Science and Engineering, 3141 Chestnut St., Philadelphia, PA 19104, USA, Tel: 215.895.6446, Fax: 215.895.6760,E-mail: gogotsi@drexel.edu; **J. Li**, Center for Nanotechnology, NASA Ames Research Center MS 229-1, Moffett Field, CA 94035, USA, E-mail: jingli@mail.arc.nasa.gov; and **J. R. Stetter**, BCPS Department, Life Sciences Building, Room 182, 3101 South Dearborn St. Chicago, IL 60616, USA, Tel: 312.567.3443, Fax: 312.567.3494; E-mail: stetter@iit.edu.

N5 Endofullerenes and Carbon Nanocapsules

(see main heading)

Original papers are solicited on all aspects of endofullerenes such as endohedral metallofullerenes and endohedral rare-gas and other types of fullerenes. Papers on carbon nanocapsules and metal encapsulates are also welcome. The topics of this symposium include synthesis, characterization, and properties of different types of endofullerenes and carbon nanocapsules.

Organizers: **H. Shinohara**, Nagoya University, Department of Chemistry, Nagoya 464.8602, Japan, Tel: 81.52.789.2482, Fax: 81.52.789.2962, E-mail: noris@cc.nagoya-u.ac.jp; **T. Akasaka**, University of Tsukuba, Center for Tsukuba Advanced Research Alliance and Department of Chemistry, Tsukuba, Ibaraki 305-8577, Japan, Tel: 81.298.53.6409, Fax: 81.298.53.6409, E-mail: akasaka@tara.tsukuba.ac.jp; and **A. L. Balch**, Department of Chemistry, University of California, One Shields Avenue, Davis, CA 95616, USA, Tel: 530.752.0941, Fax: 530.752.8995, E-mail: albalch@ucdavis.edu.

N6 Energetics and Structure

(see main heading)

Original research papers that address both theoretical and experimental aspects of fullerenes and carbon nanoclusters are being solicited for this symposium. The topics include quantum chemistry, topology, statistical mechanics, molecular dynamics, thermodynamics, kinetics, thermal properties, solubility, mechanism, ionization, collisions, electronic properties, and catalysis.

Organizers: **Z. Slanina**, Institute of Chemistry, Academia Sinica, Taipei 11529, Taiwan, ROC; Tel: 81.532.44.6880, Fax: 81.532.48.5588, E-mail: slanina@cochem2.tutkie.tut.ac.jp; and **O. V. Boltalina**, Department of Chemistry, Colorado State University, Fort Collins, CO, 80525, USA, E-mail: ovbolt@lamar.colostate.edu.

N7 Fullerenes and Carbon Nanotube Based Materials in Medicine and Biology

(see main heading)
co-organized with Organic and Biological Electrochemistry

Original papers are solicited on all aspects of pharmaceutical, biological, biotechnology, and medical applications of fullerenes, Metallofullerenes, and nanotubes.

Organizers: **L. Wilson**, Department of Chemistry, MS-60, Rice University, 6100 Main Street, Houston, TX 77005, USA, Tel: 713.348.3268, Fax: 713.348.5155 E-mail: durango@ruf.rice.edu; **T. Da Ros**, Dipartimento di Scienze Farmaceutiche, Universita di Trieste, Piazzale Europa, 1, 34127 Trieste, Italy, E-mail: daros@univ.trieste.it; **A. Subramony**, ALZA Corporation Bio Medical Engineering 1900, Charleston Road, Mountain View, CA 94043, USA, Tel: 650.564.2418, Fax: 650.564.2484, E-mail: ASubramo@alzus.jnj.com; and **J. Rusling**, University of Connecticut, Dept. of Chemistry, U-60, Storrs, CT 06269, USA, Tel: 860.486.4909, Fax: 860.486.2981, E-mail: James.Rusling@uconn.edu.

N8 Metallic and Semiconductor Nanoparticles

(see main heading)

co-organized with Physical and Analytical Electrochemistry

Metal and semiconductor nanoparticles play an important role in fuel cells, solar energy conversion, catalysis, and hydrogen production. The recent advances in the area of nanostructured materials have led to new understanding of the catalytic properties of these nanomaterials and composites. Papers are invited in the following areas: synthesis and characterization of metal nanoparticles, bimetallic particles, and semiconductor-metal composites, size and shape, dependent catalytic properties, hydrogen evolution reactions, photocatalysis, and electron transfer processes that are relevant to energy conversion.

Organizers: **P. V. Kamat**, Notre Dame Radiation Laboratory, Notre Dame, IN 46556-0579, USA, Tel: 574.631.5411, Fax: 574.631.8068, E-mail: pkamat@nd.edu; **K. Vinodgopal**, Department of Chemistry, Indiana University Northwest, 3400 Broadway, Gary, IN 46408, USA, Tel 219.980.6688, Fax: 219.980.6673, E-mail: kvinod@iun.edu; **H. W. Hillhouse**, School of Chemical Engineering, 480 Stadium Mall Drive Purdue University, West Lafayette, IN 47907-2100, USA, Tel: 765.496.6056, Fax: 765.494.0805, E-mail: hugh@ecn.purdue.edu; and **H. Gasteiger**, General Motors, Global Alternative Propulsion Center, 10 Carriage St., Honeoye Falls, NY 14472, USA, Tel: 585.624.6725, E-mail: hubert.gasteiger@gm.com.

N9 Porphyrins and Supramolecular Assemblies

(see main heading)

The purpose of this symposium is to highlight recent advances in porphyrin chemistry. Through this symposium, we intend to cover a wide range of topics in order to generate discussion between interdisciplinary participants and favor the exchange of new ideas. We are thus soliciting high-quality contributions in areas ranging from the synthesis of challenging porphyrinic devices to the characterization of electrochemical and physico-chemical behavior of new porphyrinic materials.

Papers are encouraged in the following topics: 1. new challenging multi-porphyrinic devices, 2. electronic properties of porphyrinic arrays, 3. photoinduced processes in molecular and supramolecular porphyrinic assemblies, and 4. novel porphyrin modified electrodes.

Organizers: **N. Solladie**, Groupe de Synthèse de Systèmes Porphyriniques, Laboratoire d'Electrochimie et de Chimie-Physique du Corps Solide, Université Louis Pasteur, Strasbourg, France, Tel: 33.3.90.24.14.36, Fax: 33.3.90.24.14.31, E-mail: nsolladie@chimie.u-strasbg.fr; and **K. M. Kadish**, University of Houston, Houston, Texas 77204-5641, USA, Tel: 713.743.2740, Fax: 713.743.2745, E-mail : kkadish@uh.edu.

01 Fundamental Gas-Phase and Surface Chemistry of Vapor-Phase Materials Processing III

High Temperature Materials / Electronics and Photonics

This symposium will address the state-of-the-art in vapor-phase synthesis and processing of materials, with emphasis on gas-phase and surface chemistry and its effects on growth/etching rates and material morphology and properties. Materials of interest include semiconductors (elemental and compound); oxides; carbon in all forms; metals and ceramics, processed in the form of thin films; bulk materials; and nanoparticles.

Processes of interest include (but are not limited to): chemical vapor deposition (thermal, rapid thermal, plasma-assisted, photon-assisted, ion-assisted, particle-assisted), vapor-phase etching, molecular- and chemical-beam epitaxy, and aerosol synthesis. In particular, papers are sought in the following areas: kinetics of gas-phase and surface reactions underlying the vapor-phase processing of materials, including fundamental measurements of kinetic constants, as well as in-situ probing during film growth/etching and particle synthesis; surface and interfacial chemistry during heteroepitaxy and selective epitaxy; new precursors and growth/etching chemistries; quantum-chemistry calculations for predicting thermochemistry, mechanisms, and rate parameters in the gas phase and on surfaces; in-situ monitoring and control of materials composition, morphology, stress, electrical, and optical properties; fundamentals and in situ monitoring of gas-to-particle conversion; particle formation issues during CVD; models describing the kinetics and transport phenomena that occur during vapor-phase materials processing, with special emphasis on hierarchical models leading from the molecular to the mesoscopic level (properties) and from the mesoscopic to the macroscopic level (processes).

The symposium will consist of both invited and contributed oral presentations as well as a poster session. Authors are strongly encouraged to submit their paper to the new online publication, *ECS Transactions* (see page 78 of this Call). The conference organizers will serve as editors for papers from this symposium, and all papers will be peer-reviewed, largely by other symposium participants.

Organizers: **M. T. Swihart**, Chemical and Biological Engineering, The University at Buffalo (SUNY), USA, Tel: 716.645.2911 Ext. 2205, Fax: 716.645.3822, E-mail: swihart@eng.buffalo.edu; **D. W. Carroll**, Polymers & Coatings, Chemical Vapor Deposition Team, Los Alamos National Laboratory, USA, Tel: 505.667.2145, Fax: 505.667.8109, E-mail: dcarroll@lanl.gov; **D. G. Goodwin**, Mechanical Engineering and Applied Physics, California Institute of Technology, USA, Tel: 626.395.4249, Fax: 626.568.2719, E-mail: dgoodwin@caltech.edu; **R. Schmid**, Lehrstuhl für Anorganische Chemie II, Ruhr-Universität Bochum, Germany, Tel.: 49.234.32 24166, Fax: 49.234.32.14174, E-mail: rochus.schmid@rub.de; **M. Sugiyama**, Electronic Engineering, The University of Tokyo, Japan, Tel: 81.3.5841.2336, Fax: 81.3.5841.1183, E-mail: sugiyama@ee.t.u-tokyo.ac.jp; and **C. Wolden**, Chemical Engineering, Colorado School of Mines, USA, Tel: 303.273.3544, Fax: 303.273.3730, E-mail: cwolden@mines.edu.

P1 Hydrogen Production, Transport, and Storage

High Temperature Materials / Physical and Analytical Electrochemistry / Energy Technology

Hydrogen is the most abundant chemical-energy resource in the world, but unlike oil and natural gas it is an "energy carrier" not an "energy source." There are no H_2 "wells" available in the world. Further, we do not have a hydrogen infrastructure. The longest pipeline in the world is only 950 miles long. The largest plant operating today produces only 250 million standard cubic feet per day of H_2. Therefore, the hydrogen infrastructure will have to be created and production will have to be increased an order of magnitude to meet DOE's 2015-18 projections.

The objective of this symposium is to bring together researchers working on developing the required hydrogen infrastructure. Papers are solicited in all areas of hydrogen production, transportation, and storage. Specific topics include the conversion of fossil fuels (FutureGen) and biomass to hydrogen, electrolysis, and thermo-chemical routes to hydrogen production; electrocatalysis, proton/hydrogen transport materials and processes; and hydrogen storage technology from adsorption media to metal hydrides.

Organizers: **E. D. Wachsman**, Department of Materials Science and Engineering, University of Florida, Gainesville, FL 32611-6400, USA, Tel: 352.846.2991, Fax: 352.392.7219, E-mail: ewach@mse.ufl.edu; **M. C. Williams**, National Energy Technology Lab, U.S. Department of Energy, Morgantown, WV 26507-0880, USA, Tel: 304.285.4747, Fax: 304.285.4216, E-mail: mark.williams@netl.doe.gov; **P. H. Maupin**, Office of Science, U.S. Department of Energy, Washington, D.C.

20585-1290, USA, Tel: 301.903.4355, Fax: 301.903.4110, E-Mail: Paul.Maupin@science.doe.gov; **S. Narayanan**, Jet Propulsion Laboratory, 4800 Oak Drive #277-212, Pasadena, CA 91109-8001, Tel: 818.354.0013, Fax: 818.393.6951, E-mail: s.r.narayanan@jpl.nasa.gov; and **A. Manivannan**, West Virginia University, PO Box 6315, Dept. of Physics, Hodges Hall, Morgantown, WV 26506-6315, USA, Tel: 304.293.3422, Fax: 304.293.5732, E-mail: amanivan@wvu.edu.

Q1 Industrial Electrolysis and Electrochemical Engineering General Session

Industrial Electrolysis and Electrochemical Engineering

Papers are solicited in areas of industrial electrolysis and electrochemical engineering that are not covered by other symposia at this meeting. Of particular interest are papers concerning: design, operation, testing, and/or modeling of industrial electrochemical systems; electrochemical waste treatment technologies; methods for electrosynthesis; electrode and membrane technologies; electrolytic recovery of process materials; new electrode materials; new electrochemical cell designs; and electrocatalysis. Presentations on industrially significant areas, such as chlor-alkali and fluorine production; manufacture of aluminum and other metals; the use of electrochemical methods in pulp and paper bleaching; and generation of environmentally-friendly bleaching chemicals and other active oxidants are also encouraged. Papers may contain both theoretical and experimental work, and papers dealing with either area will be considered. Contributed papers will be programmed in some related order, depending on the titles and content of the abstracts.

Organizers: **W. An**, FMC Corporation, Box 845, Buffalo, NY14240, USA, Tel: 716.879.0450, Fax: 716.879.0459, E-mail: weidong_an@fmc.com; and **G. Pillay**, South Dakota School of Mines and Technology, 501 E. St. Joseph St., Rapid City, SD 57701, Tel: 605.394.2493, Fax: 605.394.5360, E-mail: gautam.pillay@sdsmt.edu.

Q2 Educational Needs and Approaches for Electrochemistry and Electrochemical Engineering

Industrial Electrolysis and Electrochemical Engineering

This symposium focuses on the educational aspects of electrochemistry and electrochemical engineering. Topics including development of lecture courses, laboratory courses, classroom demonstrations, curriculum, and web-based instructional modules are welcomed. Educational approaches could range from quantum to molecular-level aspects to more traditional discussions of thermodynamics, kinetics, and transport phenomena. Discussions could extend to how these phenomena influence the design and operation of electrochemical systems. Systems can include, but are not limited to, batteries and fuel cells, energy, electrodeposition, corrosion, sensors, and organic and biological electrochemistry.

Organizers: **G. Botte**, Department of Chemical Engineering, Ohio University, Russ College of Engineering and Technology, 183 Stocker Center, Athens, OH 45701, USA, Tel: 740.593.9670, Fax: 740.593.0873, E-mail: botte@bobcat.ent.ohiou.edu; **V. Subramanian**, Department of Chemical Engineering, Tennessee Tech University, Cookeville, TN 38501, USA, Tel: 931.372.3494, Fax: 931.372.6352, E-mail: vsubramanian@tntech.edu; **V. Ramani**, Department of Chemical and Environmental Engineering, Illinois Institute of Technology, Chicago, IL 60616, USA, Tel: 312.567.3064, Fax: 312.567.8874, E-mail: ramani@iit.edu; and **D. Mah**, DuPont Corporation, 2609 Majestic Drive, Wilmington, DE 19810-2430, USA, Tel: 302.774.4264, Fax: 302.999.2935, E-mail: doctor_electro@msn.com.

Q3 Electrochemistry in Mineral and Metal Processing VII

Industrial Electrolysis and Electrochemical Engineering

Papers are solicited on electrochemical aspects of concentrating and extracting base, precious and light metals from their ores, and associated energy and environmental considerations. Both fundamental and applied work will be covered with emphasis placed on recent progress in 1. mineral flotation, 2. hydrometallurgy, 3. electrowinning and refining, 4. environmental technologies associated with mineral and metal processing, 5. electrochemical methods for secondary metal production, and 6. recovery of metals from wastes.

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 February 1, 2006 to allow time for both full manuscript review and the publication of the first-run, case-bound edition of the *ECS Transactions* 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: **R. Woods**, School of Science, Griffith University, Nathan, Queensland 4111, Australia, Tel: 613.9836.4530, E-mail: re_woods@bigpond.net.au; **F. M. Doyle**, University of California, Dept. of Materials Science and Engineering, 210 Hearst Mining Building #1760, Berkeley, CA 94720-1760, USA, Tel: 510.642.3803, E-mail: fmdoyle@berkeley.edu; and **G. H. Kelsall**, Department of Chemical Engineering, Imperial College London, London SW7 2AZ, UK, E-mail: g.kelsall@imperial.ac.uk.

R1 Persistent Phosphor Materials II

Luminescence and Display Materials

This symposium is a sequel to the inaugural symposium held in spring of 2005, dedicated to the subject of persistent phosphor materials and their physical and optical properties. That symposium was deemed to be a success and was decided to reconvene another session with the view of establishing a continuing series on this topic. With this call, we are soliciting papers dealing with any relevant property of materials that evince persistent luminescence or phosphorescence (afterglow). Of particular relevance would be papers addressed to the synthesis of new materials, which show these properties, and on ways via which persistence may be prolonged or altered in old or new materials. The symposium will focus, as well, on the physical mechanisms that lead to phosphorescence, trying to resolve some of the controversies existing in current models. Papers on applications of this genre of phosphor and display materials are welcomed. A number of overview invited talks by principals in the evolution of the persistent phosphor field are being planned.

Organizer: **W. M. Yen**, Department of Physics, University of Georgia, Athens, GA 30602-2451, USA, Tel: 706.542.2491, E-mail: wyen@physast.uga.edu.

S1 Organic and Biological Electrochemistry General Session

Organic and Biological Electrochemistry

Papers concerning any aspect of organic and biological electrochemistry not covered by 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 meeting abstracts.

Organizer: **A. J. Fry**, Department of Chemistry, Wesleyan University, Middletown, CT 06459, USA, Tel: 860.685.2622, Fax: 860.685.2211, E-mail: afry@wesleyan.edu.

S2 Manuel M. Baizer Award Symposium on Organic Electrochemistry VII, in Honor of Ikuzo Nishiguchi

Organic and Biological Electrochemistry

This symposium will be in honor of Ikuzo Nishiguchi, the winner of the Seventh International Manuel M. Baizer Award. In keeping with the spirit of the award, which is for "outstanding scientific achievements in the electrochemistry of organics," this symposium will be a showcase of organic and bio-organic electrochemical reactions and deal with all aspects of electro-organic synthesis and mechanistic studies in organic, organo-metallic, and bio-organic electrochemistry.

Organizers: **F. Maran**, Department of Chemical Sciences, University of Padova, Via Marzolo 1, 35131 Padova, Italy, Tel: 39.049.827.5147, Fax: 39.049.827-5135, E-mail: f.maran@chfi.unipd.it; **Y. Matsumura**, Department of Pharmaceutical Sciences, Graduate School of Biomedical Sciences, Nagasaki University, 1-14 Bunkyo-machi, Nagasaki 852-8521, Japan, Tel: 81.95.819.2429, Fax: 81.95.819.2476, E-mail: matumura@net.nagasaki-ua.c.jp; **H. Tanaka**, Department of Applied Chemistry, Faculty of Engineering, Okayama University, Tsushima-Naka 3-1-1, Okayama 700-8530, Japan, Tel.: 81.86.251.8072, Fax: 81.86.251.8079, E-mail: tanaka95@cc.okayama-u.ac.jp; and **M. S. Workentin**, Department of Chemistry, University of Western Ontario, London, Ontario, Canada N6A 5B7, Tel: 519.661.2111, ext. 86319, Fax: 519.661.3022, E-mail: mworkent@uwo.ca.

T1 Physical and Analytical Electrochemistry General Session

Physical and Analytical Electrochemistry

Papers concerning any aspect of physical and analytical 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.

Organizer: **H. De Long**, U.S. Air Force, Air Force Office of Scientific Research , 3027 Lundt Court, Waldorf, MD 20603-5702, USA, Tel: 703.696.7722, Fax: 703.696.8449, E-mail: hugh.delong@afosr.af.mil.

T2 Electroanalytical Chemistry, in Honor of Robert Osteryoung

Physical and Analytical Electrochemistry

This symposium is being organized to honor the memory of Professor Robert A. Osteryoung. Professor Osteryoung's passing in 2004 was a tremendous loss to the field of physical electrochemistry. For over half a century, Prof. Osteryoung. sought to extend the frontiers of electrochemistry with contributions spanning the gamut from technique development to instrument design and automation. Prof. Osteryoung played a key role in the development of chronocoulometry and his groundbreaking innovations transformed pulse voltammetry from a collection of quaint techniques into a sophisticated suite of powerful electroanalytical methods routinely capable of tackling complex chemical problems. Throughout his life, Prof. Osteryoung also championed the use of computers to automate, control, and analyze electrochemical experiments. All interested friends and colleagues are invited to submit abstracts in topics to which Prof. Osteryoung contributed.

Organizers: **R. Mantz**, AFRL/MLBT, 2941 Hobson Way, Bldg 654 Room 136, Wright-Patterson AFB, OH 45433-7750, USA, Tel: 937.255.2199, E-mail: robert.mantz@wpafb.af.mil; **P. Trulove**, Chemistry Department, U.S. Naval Academy, 572M Holloway Rd, Stop 9B, Annapolis MD 21402-5026, USA, Tel: 410.293.6622, E-mail: trulove@usna.edu; **P. Pickup**, Department of Chemistry, Memorial University of Newfoundland, St. John's, NF, A1B 3X7, Canada, Tel: 709.737.8657, E-mail: pickup@mun.ca; and **M. Ciszkowska**, Department of Chemistry, Brooklyn College , CUNY, 2900 Bedford Ave., 351 New Ingersoll Hall, Brooklyn, NY 11210-2889, USA, Tel: 718.951.5456, E-mail: MalgCisz@brooklyn.cuny.edu.

U1 Electrochemistry of Novel Materials

Physical and Analytical Electrochemistry / Energy Technology

This symposium will cover a wide range of studies on the electrochemical properties, preparation, characterization, responses, and applications of novel materials. Examples of the types of materials consistent with the vision of this symposium are: dendrimers and polymers, films (thick, thin, and self-assembled monolayers), materials of direct interest in analytical and electronic devices (ceramic, silicon, polymer, and glass), nanoparticle and nanostructured materials, electrocatalysts (metallic, non-metallic, or modified materials), magnets, ion and proton conductors, and glasses and amorphous media. Papers dealing with new materials, materials already known but prepared by new processes, and materials already known but used in non-traditional areas of electrochemistry will be accepted.

Organizers: **C. Bock**, National Research Council-Canada, M-12 Montreal Rd., Ottawa, ON, Canada K1A-OR6, Tel: 613.990.2252, Fax: 613.941.2529 E-mail:Christina.Bock@nrc-cnrc.gc.ca; **I. Fritsch**, University of Arkansas, Dept of Chemistry and Biochemistry, Fayetteville, AR, 72701-1201, USA, Tel: 479.575.6499, Fax: 479.575.4049, E-mail: ifritsch@uark.edu; **B. Marsan**, University of Quebec, Dept. Chimie, CP 8888, Succ Centre-Ville, Montreal, QC, Canada H3C-3P8, Tel: 514.987.3000, Fax: 514.987.4054, E-mail: marsan.benoit@uqam.ca; and **M. Mench**, Pennsylvania State University, 327 Reber Bldg., University Park, PA 16802-1414, USA, E-mail: mmench@psu.edu.

V1 Direct Methanol Fuel Cells

Physical and Analytical Electrochemistry / Battery / Energy Technology

The symposium will focus on the direct methanol fuel cell (DMFC) science and technology, from the modeling through materials development and characterization to fuel cell stacks and systems. In addition to papers on DMFC science and technology, submission of contributions to address various aspects of low-temperature direct fuel cells using other fuels than methanol or hydrogen (e.g., higher alcohols and ethers) is also strongly encouraged.

Specific topics of this symposium will include, among others: 1. progress in electrocatalysis of methanol oxidation and oxygen reduction; 2. Nafion®-based and non-Nafion®-alternative membranes for improved DMFC performance; 3. design and optimization of membrane-electrode assemblies for higher energy conversion efficiency and/or power; 4. catalyst, membranes, fuel cell, and fuel cell system modeling; 5. development of novel tools for the cell performance diagnostics; 6. performance durability and mitigation of performance losses; and 7. design and demonstration of DMFC stacks, subsystems, and complete power systems in various power ranges.

Organizers: **P. Zelenay**, Los Alamos National Laboratory, MST-11, MS D429, Los Alamos, NM 87545, USA, Tel: 505.667.0197, Fax: 505.665.4292, E-mail: zelenay@lanl.gov; **S. Gottesfeld**, Mechanical Technology Inc., Albany, NY 12205, USA, Tel: 518.533.2204, Fax: 518.533.2223, E-mail: sgottesfeld@mechtech.com; **C.-Y. Wang**, The Pennsylvania State University, 338A Reber Bldg, University Park, PA 16802, USA, Tel: 814.863.4762, Fax: 814.863.4848, E-mail: cxw31@psu.edu; **A. Wieckowski**, University of Illinois Urbana-Champaign, Department of Chemistry, Box 56-5, Urbana, IL 61801, USA,

Tel: 217.333.7943, Fax: 217.244.8068, E-mail: andrzej@scs.uiuc.edu; **T. Fuller**, Georgia Tech, GTRI/ATAS, 7220 Richardson Rd., Smyrna, GA 30080, USA, Tel: 770.528.7075, Fax: 770.528.7028, E-mail: tom.fuller@gtri.gatech.edu; and **D. Scherson**, Case Western Reserve University, Dept. of Chemistry, 10900 Euclid Ave., Cleveland, OH 44106-7078, USA, Tel: 216.368.5186, Fax: 216.368.3006, E-mail: dxs16@po.cwru.edu.

W1 Impedance in Electrochemistry: From Analytical Applications to Mechanistic Speculations

Physical and Analytical Electrochemistry / Corrosion / Industrial Electrolysis and Electrochemical Engineering

The purpose of this symposium is to bring together leading experts with different experimental and theoretical skills working in areas of electrochemical impedance and in other areas, where impedance is used as a tool. Impedance spectroscopy-based measurements represent a rich multidisciplinary area of science that has been applied to important areas of research, such as: 1. analytical applications, 2. determination of fundamental values of ion transport and electrode kinetics, 3. studies of reaction mechanisms, 4. corrosion studies and corrosion control; 5. monitoring of properties of electronic and ionic polymers and coatings; 6. measurements in energy storage, batteries, and fuel cell related systems; 7. measurements of semiconductors, solid electrolytes, and electronic conductors; and 8. studies of biological, biocellular, and biomedical materials.

The aim is to show the power of electrochemical impedance spectroscopy for analytical applications, both quantitative and qualitative, as well as its usefulness for the needs of physical electrochemistry, where the data analysis will seek fundamental interpretation. Both contributions with well understood interpretation and papers with tentative postulates of impedance data relationship to physical parameters will be considered.

Organizers: **P. Vanýsek**, Department of Chemistry and Biochemistry, Northern Illinois University, DeKalb, IL 60115, USA, Tel: 815.753.6876, Fax: 815.753.4802, E-mail: pvanysek@niu.edu; **D. Hansen**, University of Dayton Research Institute, Materials Engineering Division, 300 College Park, Dayton, OH 45469-0130, Tel: 937.229.4380, Fax: 937.229.4686, E-mail: douglas.hansen@udri.udayton.edu; **M. Orazem**, University of Florida, PO Box 116005, Dept. of Chemical Engineering, Gainesville, FL 32611-6005, USA, Tel: 352.392.6207, Fax: 352.392.9513, E-mail: meo@che.ufl.edu; and **A. Lasia**, University of Sherbrooke, Dept. of Chemistry, Sherbrooke, QC, J1K 2R1, Canada, Tel: 819.821.7097, Fax: 819.821.8017, E-mail: a.lasia@usherbrooke.ca.

X1 Electron Transfer Reactions at Organic/Metal Interfaces: From Molecular Monolayer Modified Electrodes to Buried Polymer Metal Interfaces

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

Electron transfer reactions (ETR) at interfaces between metals and organic materials play an important role in many applications: in the study of bioelectrochemical processes by mimicking the involved ETR at suitably modified electrodes, in organic based photovoltaic cells, or in polyelectrolyte based fuel cells, and especially oxygen reduction at the buried interface may lead to the unwanted electrochemically driven delamination of polymer coatings from metals or the degradation of encapsulated microelectronic devices.

This symposium is intended to bring together researchers from all these different areas and to stimulate an exchange of ideas. The aim is to find strategies on how to describe ETR processes as a function of well definable interface parameters. For instance, development of novel coating systems is hampered by the necessary long-term testing of their delamination performance, because for reliable computer simulation of the electrochemically driven interface degradation, too little is known yet about the kinetics of oxygen reduction at the buried interface. Questions of direct relevance are how the electric field at the polymer/metal interface can be described, how it is affected by incorporation of ions, and how ETR is influenced by the molecular structure at the interface. Electrochemists studying ETR at molecular monolayer modified electrodes have a more direct access to these questions, as the molecular structure of their interfaces is well known and tunable.

Areas of interest include: 1. fundamental studies on electrochemical reactions at polymer/metal interfaces: Kelvin probe, impedance spectroscopy, differential pulse voltammetry; 2. characterization of polymer/metal interfaces; 3. ETR at hydrogel, polyelectrolyte, or oil covered electrodes; 4. ETR at molecular monolayer (SAM, LB) modified electrodes; and 5. theoretical approaches to the correlation of ETR with interface parameters are especially welcome.

Organizers: **M. Rohwerder**, Max-Planck-Institute for Iron Research, Max-Planck-Str.1, D-40237 Düsseldorf, Germany, Tel.: 49.211.6792.442, Fax: 49.211.6792.218, E-mail: rohwerder@mpie.de; **E. J. Calvo**, Molecular Electrochemistry, Departamento de Química Inorganica, Analítica y Química Fisica, Universidad de Buenos Aires, Pabellon 2, Ciudad Universitaria AR-1428 Buenos Aires, Argentina, Tel. 54.11.4576-3378/80, ext. 120, Fax: 54.11.4576-3341, E-mail: calvo@qi.fcen.uba.ar; **G. Frankel**, Ohio State University, 477 Watts Hall, 2041 N. College Rd., Columbus, OH 43210-1124, USA, Tel: 614.292.9857, Fax: 614.292.9857, E-mail: frankel.10@osu.edu; and **P. Kamat**, University of Notre Dame, Radiation Laboratory, Notre Dame, IN 46556-0579, USA, Tel: 574.631.5411, Fax: 574.631.8068, E-mail: pkamat@nd.edu.

Y1 Molecular Modeling of Electrochemical Systems

Physical and Analytical Electrochemistry / Organic and Biological Electrochemistry / Industrial Electrolysis and Electrochemical Engineering

Papers are solicited from all areas of molecular level modeling of electrochemical systems. Specific methods and topics include but are not limited to: 1. ab initio (QM, AIMD) modeling of electrocatalysts, electrolytes, surfaces, double layers, etc; and 2. classical (MM, MD, MC) modeling of electrochemical processes and material structures. Systems of interest include: batteries, fuel cells, etc.; and applications include: electrosynthesis, sensing, magnetic and nanostructured materials, etc.

Organizers: **S. Paddison**, E-mail: paddiss@email.uah.edu; S. Minteer, E-mail: minteers@slu.edu; **A. Fry**, E-mail: afry@wesleyan.edu; and **P. Balbuena**, E-mail: balbuena@tamu.edu.

Z1 Sensors, Actuators, and Microsystems General Session

Sensor

This symposium will address all aspects of sensor, actuator, and microsystems research and development. The inclusion of sensors and actuators into a range of application environments has been significantly increasing in order to provide improved system capabilities such as increased performance, decreased environmental impact, or higher efficiency. Sensors and actuators are often integrated into "smart" microsystems: microfabricated sensors and/or actuators combined with electronics, which enable, for example, signal conditioning and data processing. The need for multifunctional, smart technologies, which depend on sensors, actuators, and electronics is expected to increase in the coming years as further demands and expectations are placed on systems and devices. This general session welcomes papers on all aspects of sensors, actuators, and microsystems not covered in other sessions.

This symposium intends to bring together a range of inter-

disciplinary topics and covers all materials aspects of sensors, actuators, and microsystems. Primary emphasis will be placed upon applied aspects of the materials, synthesis, evaluation, and development strategies of novel materials/device configurations for sensing and actuating functions as well as integrated microsystems. High temperature as well as low temperature applications will be discussed. Papers are solicited in, but not limited to, the following areas: 1.physics and chemistry of sensor and actuator materials, fabrication and characterization of novel compositions, and novel routes for the synthesis of materials with grain (pore) size control and distributions; 2. novel sensor and actuator concepts, design, modeling, and verification; 3. sensing systems that include sampling systems and actuators like sensor arrays, electronic noses, and tongues; 4. physical, chemical, and biological sensors and actuators, such as gas, humidity, ion, or molecular sensors, their system integration and actuating functions; 6. optical, RF, and wireless sensors and actuators, such as fiber optic sensors, microwave sensors, optical, and wireless integrations; 7. emerging technologies and applications; and 8. novel techniques to expand and insure sensor stability and reliability.

Organizers: **G. Hunter**, NASA Glenn Research Center, 21000 Brookpark Rd., Mailstop 77-1, Cleveland, OH 44235, USA, Tel: 216.433.6459, Fax: 216.433.8643; E-mail: ghunter@grc.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, 4202 East Fowler Av ENB118,Tampa FL 33620, USA, Tel 813.974.3593, Fax 813.974.5250, E-mail: bhansali@eng.usf.edu.

Z2 Biosensor Systems

Sensor

The goal of this symposium is to bring together scientists developing biosensor systems for the detection and monitoring of multiple target analytes in complex samples. Biosensor systems is defined here as sensors utilizing biological tissues, cells, or biomolecules (e.g. antibodies, enzymes, or nucleic acids) for specific recognition, within the assay system involving (but not limited to) electrochemical detection. Areas of interest include both the biosensor development, novel methods for sample preparation, and data analysis to enable the trace detection of multiple analytes using biosensor systems. Analytes and samples of interest include but are not limited to chemical and biological threat agents in the environment, environmental contaminants, industrial process samples, and clinical samples. Another area of interest is the development of sensor systems for monitoring the metabolic activity of individual cells or cell cultures for application in the areas of drug discovery, toxicity screening, medical diagnostics, bio-warfare agent detection, and basic research.

Organizers: **A. Simonian**, Auburn University, Detection and Food Safety Center, 275 Wilmore, Auburn AL 36849-5341, USA, Tel: 334.844.4485, E-mail: als@eng.auburn.edu ; **C. Bruckner-Lea**, Pacific Northwest National Laboratory, P.O. Box 999, Mailstop K5-25, Richland, WA 99352, USA, Tel: 509.375.4460, Fax: 509.372.4583, E-mail: Cindy.Bruckner-Lea@pnl.gov; and **Z. Aguilar**, Vegrandis, LLC., 535 W. Research Center Blvd., Fayetteville, AR 72701, USA, Tel: 479.575.3289, Fax: 479.575.4620, E-mail: zoraida.aguilar@Vegrandis.com.

AA1 New Sensor Materials

Sensor / Fullerenes, Nanotubes, and Carbon Nanostructures / Dielectric Science and Technology / Physical and Analytical Electrochemistry

New sensor materials represent the starting point for advances in chemical sensor systems. The purpose of the symposium is to provide a forum for the presentation and discussion of recent progress in the development of advanced materials that target unique needs for high performance sensors. The symposium will focus on both basic and applied research that has led to improved materials for sensing. The symposium will include both invited and contributed papers.

Specific topics of interest include, but are not limited to: 1. molecular materials with ultra-high specificity and sensitivity, fast response, and ease of fabrication; 2. nanomaterials and nanostructures synthesis, characterization, manipulation, and assembly in the scope of their physiochemical properties; 3. nanoparticle and biomacromolecule assemblies using electrostatic interaction; 4. mesoscale organization of metal nanocrystals focused on the dependence of structure and stability; 5. electrochemically tuning of sensing properties in conjugated polymers and carbon nanotubes; and 6. modeling and simulation of sensors and sensor arrays.

Organizers: **J. Li**, E-mail: jingli@mail.arc.nasa.gov, **M. Josowicz**, E-mail: mira.josowicz@chemistry.gatech.edu; **D. Hatchett**, E-mail: dahatchet@ccmail.nevada.edu; **M. J. Deen**, E-mail: jamal@mcmaster.ca; **S. Akbar**, E-mail: Akbar.1@osu.edu; and **F. D'Souza**, E-mail: Francis.DSouza@Wichita.edu.