the society for solid-state
and electrochemical science
and technology

QUÉBEC CITY, CANADA
CALL FOR PAPERS

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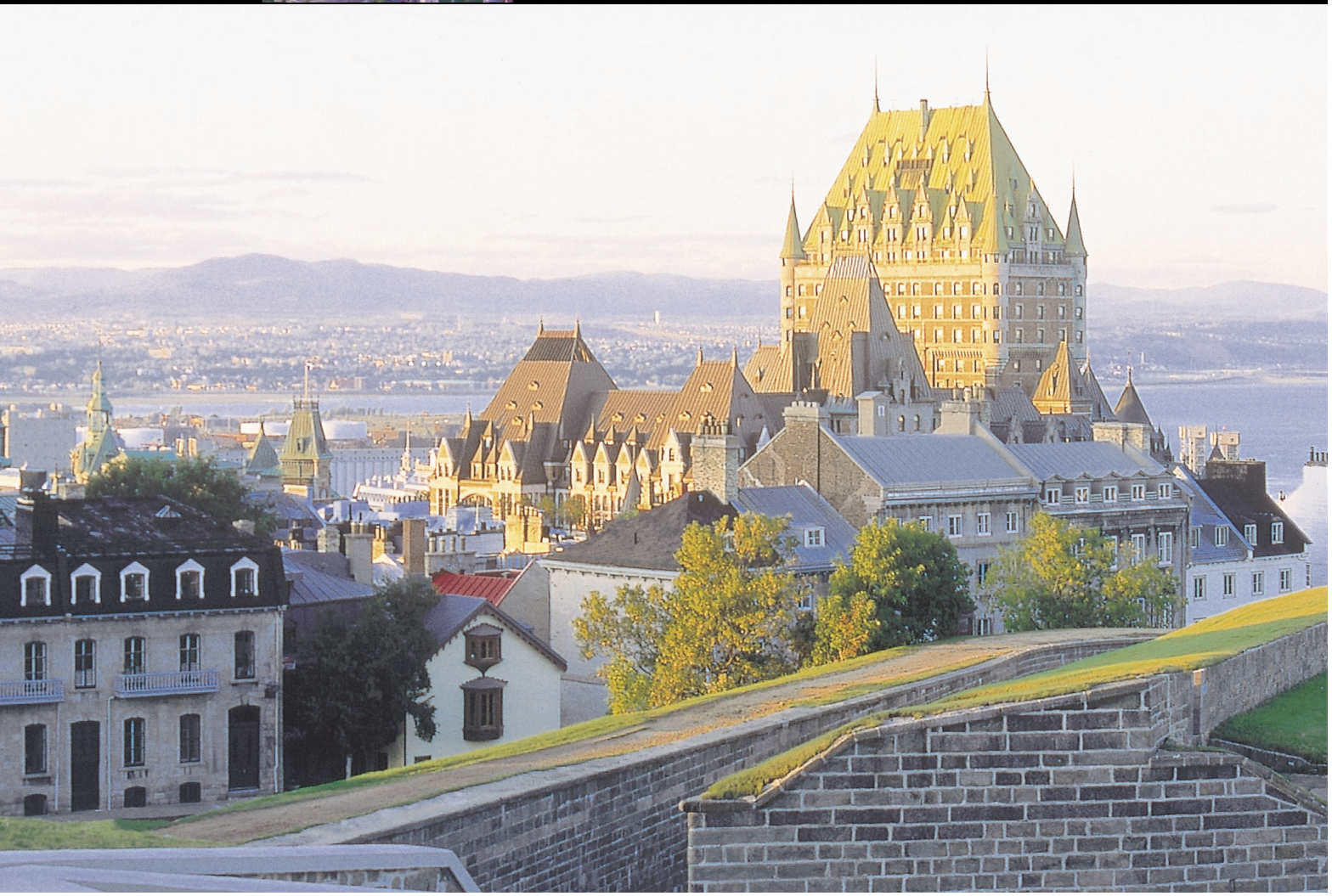

Photo courtesy of L. A. Couturier

The 207th Meeting of The Electrochemical Society
Québec City Convention Centre

May 15-20, 2005

ABSTRACTS ARE DUE JANUARY 3, 2005

Submit one original, meeting abstract electronically via www.electrochem.org by **January 3, 2005** to the ECS headquarters office, with a copy to the appropriate symposium organizer(s). Hard copy abstracts are also accepted, if you prefer, send a paper copy to the headquarters office. Faxed abstracts, late abstracts, and abstracts more than one page long will not be accepted. In February 2005, all presenting authors will receive a letter from the ECS headquarters office notifying them of the date and time of their presentation.

Note: Before submitting, please visit the ECS website for complete details on abstract submission and symposia topics at www.electrochem.org/meetings/future/207/support/cfp.pdf.

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** (see form on page 88 for details). Programming for this meeting will occur in January of 2005, with some papers scheduled for poster presentation. All presenting authors will receive a letter from The Electrochemical Society headquarters office notifying them of the date and time of their presentation. Check the ECS website for further program details.

PAPER PRESENTATION

All authors selected for either oral or poster presentations will be notified in **February of 2005**. Oral presentations must be in English. LCD and overhead projectors will be standard in each meeting room. **Presenting authors will be required to bring their own laptops to the meeting for presentation.** We strongly suggest that presenting authors verify laptop/projector compatibility in the speaker ready room prior to their presentation at the meeting. Only overhead projectors and LCD projectors will be provided. Speakers requiring additional equipment must make written request to the ECS headquarters prior to the meeting and appropriate arrangements will be worked out at the expense of the author. Poster presentations will be displayed in English, on a board approximately 4 feet high X 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. If the symposium you are participating in is publishing a proceedings volume, you will be required to submit a full manuscript. Please check the descriptions for each symposium in this document to find out if your symposium is publishing a proceedings volume, and for manuscript deadlines. 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 from the ECS headquarters office, the journals, or the ECS website. If publication is elsewhere desired after presentation, written permission from ECS is required.

FINANCIAL ASSISTANCE

Financial assistance is very limited and generally governed by the symposium organizers. Individuals may inquire directly to the symposium organizers of the symposium in which they are presenting their paper to see if funding is available. Individuals requiring an official letter of invitation should write to the ECS headquarters office; such letters will not imply any financial responsibility of ECS. Students seeking financial assistance should consider awarded travel grants (see page 74).

SECOND MEETING ANNOUNCEMENT

The second meeting announcement will include complete details on the technical sessions; a meeting registration form; travel, hotel, tour reservation information; and additional meeting information; and it will be e-mailed to all ECS members, authors of papers, and technical session co-chairs in **February 2005**.

HOTEL RESERVATIONS

The 207th Meeting will be held at the Québec City Convention Centre, located in downtown Québec City (900 blvd. Rene-Lévesque Est, Québec G1R 2B5, Canada). The Québec City and Area Tourism and Convention Bureau has been appointed as the housing agency for this meeting to assist you with your hotel reservations. Contact the Central Housing Bureau directly by phone at 418.641.6419, Fax: 418.641.6578, or e-mail: central.housing@quebecregion.com.

Hotel Accommodations — In order to offer a wide range of hotels to suit individual travel budgets, special rates have been reserved at several hotels for participants attending this meeting. All hotel rates are quoted in Canadian Dollars and are as follows:

Quebéc Hilton — $169 CDN Single or Double
Delta Québec — $169 CDN Single or Double
Le Chateau Frontenac — $209 CDN Single or Double

MEETING REGISTRATION

All participants, **including authors and invited speakers**, of the 207th Meeting of The Electrochemical Society are required to pay the appropriate registration fees. Hotel and meeting registration materials will be distributed in **February 2005**, and will also be available on the ECS website (www.electrochem.org). The deadline for advance registration is **April 15, 2005.**

ECS SPONSORED SHORT COURSES

The 207th Meeting will also include several short courses on Sunday, May 15, 2005 from 9:00 AM - 4:30 PM. Short Course fees are currently $385 for members, $470 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 our website for any last-minute details (www.electrochem.org/sc/sc.htm). As of press time, the following Short Course Topics are planned: Nanotechnology; Electrochemical and Controlled Environment Scanning Probe Microscopy; Solid Oxide Fuel Cells; Impedance Spectroscopy; and Molecular Electronics.

TECHNICAL EXHIBIT

The 207th 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 manned by company representatives cost $1,700 and include one free meeting registration. Literature Display tables (unmanned by company representatives, no meeting registration included) will also be available for $750. Parties interested in exhibiting should contact Karen Chmielewski at the ECS headquarters office for more information. Coffee breaks are scheduled each day in the exhibit hall along with evening poster sessions.

SPONSORSHIP OPPORTUNITIES

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, 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 the Society on a first-come, first served basis. For more information, contact Troy Miller at ECS headquarters.

CONTACT INFORMATION

If you have any questions or require additional information, contact The Electrochemical Society, 65 South Main Street, Pennington, New Jersey, 08534-2839, USA, Tel: 609.737.1902, Fax: 609.737.2743, E-mail: ecs@electrochem.org; Web: www.electrochem.org.

Québec City, Canada ECS Symposium Topics

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 an online application form refer to the ECS website at: www.electrochem.org/student/travelgrants.htm. To be eligible for a grant, applicants 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 a complete list of symposia and how to submit a paper, please visit www.electrochem.org/meetings/207/cfp.pdf. To apply for a travel grant use the application form below.

Application Requirements—All applications for the 207th meeting in Québec City, Canada, May 15-20, must be received no later than **January 3, 2005**. 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 Québec City, Canada

The Society's **Corrosion, Dielectric Science and Technology (DS&T), Electrodeposition, Electronics, Energy Technology, High Temperature Materials (HTM), Organic and Biological Electrochemistry (O&BE), Physical Electrochemistry, and Sensor Divisions** offer travel grants to students presenting papers at the Society's next meeting, in Quebec City, Canada, May 15-20, 2005. 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 and an online application form refer to the ECS website at www.electrochem.org/student/travelgrants.htm (*Preference for travel allocation grants will be given to ECS Student Members.*)

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 letter of recommendation from your faculty advisor and a copy of your transcript)

Symposium Title (#): _____

_____

Title of paper to be presented at meeting: _____

_____

Are you an ECS Student Member of the Society? ❑ yes ❑ no

(If not, please additionally submit the Awarded Student Membership application.)

Estimate meeting expenditures: $ _____

Signature: _____ Date: _____

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

❑ **Corrosion**—*Send to:* R. Scott Lillard, MST-6, MS G755, Los Alamos National Laboratory, Los Alamos, NM 87545, USA. E-mail: lillard@lanl.gov

❑ **DS&T**—*Send to:* H. Rathore, Internal Mail Stop AE1, B1640, 2070 Rte. 52, Hopewell Jct., NY, 12533, USA. E-mail: rathore@us.ibm.com

❑ **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.Bonhote@hgst.com

❑ **Electronics**—*Send to:* Y. Kuo, Texas A&M, Chem. Eng. MS 3122, 335-0 Zachry Eng. Center, College Station,TX 77843-3122, USA. E-mail: yuekuo@tamu.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:* D. Peters, Indiana University, Dept. of Chemistry, Bloomington, IN 47405, USA. E-mail: peters@indiana.edu

❑ **Physical Electrochemistry**—*Send to:* P. Vanysek, Northern Illinois University, Dept. of Chemistry and Biochemistry, DeKalb, IL 60115, USA. E-mail: pvanysek@niu.edu

❑ **Sensor**—*Send to:* P. Hesketh, Georgia Tech., Dept. of Mechanical Engineering, 225 North Ave NW, Atlanta, GA 30332-0405, USA. E-mail: peter.hesketh@me.gatech.edu

Applications for Travel Grants for the Québec City, Canada meeting must be received no later than January 3, 2005.

A1 - GENERAL STUDENT POSTER SESSION

(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 coauthors, a maximum award of $750 per winning poster will be divided equally between student coauthors. The awards will be made without regard to gender, citizenship, race, or financial need.

Abstracts, suggestions, and inquiries should be sent to the ECS headquarters office and to the session organizers: **H. Nishihara**, University of Tokyo, Department of Chemistry, 7-3-1 Hongo, Bunkyo-Ku, Tokyo, 113-0033, Japan, Tel: 81.3.5841.4346, Fax: 81.3.5841.8063, E-mail: nisihara@chem.s.u-tokyo.ac.jp; **G. Botte,** Ohio University, Russ College of Engr & Tech, 183 Stocker Center, Athens, OH 45701-0000, Tel: 740.593.9670, Fax: 740.593.0873, E-mail: botte@bobcat.ent.ohiou.edu; and **V. Subramanian**, Tennessee Technical University, Dept of Chemical Engineering, 307 Prescott Hall PO Box 5013, Cookeville, TN 38505-0000, Tel: 931.372.3494, Fax: 931. 372.6352, E-mail: vsubramanian@tntech.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 and semiconductors for photovoltaic and photoelectrochemical solar energy conversion, and chemical and biological sensors. This symposium will focus on critical issues and the latest advancements in the science and technology of nanostructured materials. Papers are solicited in all areas related to materials including metals, semiconductors, molecular electronics, and organic compounds/polymers.

Areas of interest include: 1. Semiconductor and metal nanoparticles and metal/semiconductor nanocomposites; 2. Size quantization effects in semiconductor nanoparticles; 3. Surface modification and characterization including tunneling and force 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.

Abstracts, suggestions, and inquiries should be sent to the ECS headquarters office and to the symposium organizers: **W. A. van Schalkwijk,** EnergyPlex Corp., 1400 112th Ave. SE Ste 210, Bellvue, WA 98004-6901, USA, Tel: 425.445.2181, Fax: 425.671.0206, E-mail: walter@energyplex.com; **P. Kamat,** Radiation Lab, University of Notre Dame, Notre Dame, IN 46556, USA, Tel: 219.631.5411, Fax: 219.631.5411, E-mail: pkamat@nd.edu; and **W. Schindler,** University of Karlsruhe, Kaiserstrasse 12, DE-7631 Karlsruhe, Germany, Tel: 49.721608.7170, Fax: 49.721608.2786, E-mail: ws@ec-spm.com

B1 - BATTERY AND ENERGY TECHNOLOGY JOINT GENERAL 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.

Abstracts, suggestions, and inquiries should be sent to the ECS headquarters office and to the symposium 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; and **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.

C1 - CORROSION GENERAL SESSION

(Corrosion)

Papers are invited on any topic in the field of corrosion, including passivity, localized corrosion, inhibition, and experimental techniques. Unlike the Corrosion General Sessions at recent meetings, this session will include oral presentations.

Abstracts, suggestions, and inquiries should be sent to the ECS headquarters office and to the session organizer: **P. Schmuki**, University of Erlangen-Nuremberg, Dept. for Mat. Sci., Martensstr. 7, D-91058 Erlangen, Germany, Tel: 49.9131.85.275.75, Fax: 49.9131.85.275.82 , E-mail: schmuki@ww.uni-erlangen.de.

D1 - NANOSCALE ASPECTS IN ELECTROCHEMICAL SURFACE MODIFICATION AND CORROSION

(Corrosion / Electrodeposition / Physical Electrochemistry)

Electrochemical processes and modifications of solid/liquid interfaces on a molecular and nanoscopic level are of key significance not only in device technology or corrosion but also for novel approaches targeting highly functional material surfaces (smart materials). The symposium aims for an integration of the topics within a highly transdiciplinary effort to achieve a maximum scientific and technological impact. Papers dealing with smart and tailored interfaces (vertical surface engineering); lateral surface engineering; or corrosion on the nanoscale will be considered.

Suggestions and inquires should be sent to the ECS headquarters office and to one of the symposium organizers: **P. Schmuki**, University of Erlangen-Nuremberg, Dept. for Mat. Sci., Martensstr. 7, D-91058 Erlangen, Germany, Tel: 49.9131.85.275.75, Fax: 49.9131.85.275.82, E-mail: schmuki@ww.uni-erlangen.de; **L. Peter**, Department of Chemistry, University of Bath, Bath BA2 7AY, UK, Tel: 44.1225.826815, Fax: 44.1225.385802, E-mail: l.m.peter@bath.ac.uk; **W. Jaegermann**, Materials Science, Petersenstrasse 23, Technische Universitaet Darmstadt, D-64287 Darmstadt, Germany, Tel: 49.6151.166304, Fax: 49.6151.166308, E-mail: jaegerw@surface.tu-darmstadt.de; **P. Allongue**, Laboratoire de Physique des Liquides et Electrochimie, CNRS - UPR 15, Université P & M Curie, 4 Place Jussieu, Tour 22, F-75005 Paris, France, Tel: 33.01.4427.4324, Fax: 33.01.4427.4074, E-mail: pa@ccr.jussieu.fr; and **W. Schindler**, University of Karlsruhe, Kaiserstrasse 12, D-76131 Karlsruhe, Germany, Tel: 7216087170, Fax: 7216082786, E-mail: ws@ec-spm.com.

E1 - CHEMICAL, ELECTROCHEMICAL, AND MECHANICAL EFFECTS ON CMP, TRIBOCORROSION, AND BIOTRIBOCORROSION

(Corrosion / Electronics Divisions)

Metallic and ceramic materials are frequently used in sliding contacts operated under immersed conditions. Engineering applications include components subjected to vibrations such as transmission systems in transportation, guiding rings in electrical power plants, pumps in the chemical industry, and microelectronics, especially MEMs devices that operate under non-lubricated conditions. Biomedical examples include knee and hip prostheses, dental implants, and orthodontic tools in contact with saliva. In these applications, the major concern is to reduce friction and to achieve a low wear rate. However, in some applications a controlled material removal rate is desired, such as in chemical mechanical planarization (CMP) extensively used in microelectronics, or in the chemical mechanical polishing of engineering materials like ceramic balls.

The objective of this symposium is to provide an interface for researchers addressing various aspects of chemical, electrochemical, and mechanical effects on electrodes in sliding contact during immersion in electrolytes. It is expected that the interaction of researchers in the areas of CMP, tribocorrosion, and biotribocorrosion will result in enhanced understanding and new points of view. Submissions are encouraged on any topic related to electrodes in sliding contact during immersion in electrolytes, and should not be limited to the examples listed above. Well documented case studies, reports on experimental studies, insights into the synergism and antagonism taking place between chemical, electrochemical, and mechanical interactions are most appreciated. In view of a progressive development of predictive tools, contributions of advanced modeling work are particularly encouraged. It is hoped that this symposium will present actual practical and theoretical information on the complex interactions between materials and their surroundings in totally different disciplines such as chemical, mechanical, and biological engineering, but also in microelectronics, medicine, and biology.

Abstracts, suggestions, and inquiries should be sent electronically to the ECS headquarters office with a copy to the symposium organizers: **J.-P. Celis**, Katholieke Universiteit Leuven, Kasteelpark Arenberg 44, B-3001 Leuven, Belgium, Tel: 32.16.321312, Fax: 32.16.321991, E-mail: Jean-Pierre.Celis@mtm.kuleuven.ac.be; **D. J. Duquette**, Department of Materials Science and Engineering, Rensselaer Polytechnic Institute, Troy, NY 12181-3590, USA, Tel: 518.276.6490, Fax: 518.276.8554, E-mail duqued@rpi.edu; and **A. Philipossian**, Department of Chemical & Environmental Engineering, University of Arizona, P.O. Box 210011, Tucson, AZ 85721-0011, USA Tel: 520.621.6101, Fax: 520.621.6048, E-mail: ara@engr.arizona.edu.

F1 - ELECTROCHEMICAL PROCESSING IN ULSI FABRICATION AND ELECTRODEPOSITION OF AND ON SEMICONDUCTORS VI

(Electrodeposition / Dielectric Science & Technology / Electronics / High Temperature Materials)

Electrochemical processes are playing a decisive role in today's microelectronic industry. It is well known that electrochemical copper deposition is now a widespread process used for interconnect formation. 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 sound 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.

This symposium is intended to be a balanced forum for discussion of both the practical and fundamental aspects of electrochemical processes. Practical aspects of interest include design and modeling of plating and etching equipment; thickness uniformity; patterning techniques; shape evolution and filling of high-aspect ratio cavities; integration of the electrochemical process with other process steps to make devices; device performance; electromigration, failure modes, and device reliability. Consideration is given to the multidisciplinary technological challenges involved in implementing an electrochemical process in semiconductor manufacturing. Fundamental aspects of interest include: the initial stages of nucleation and growth as revealed by *in situ* and *ex situ* means such as SPM, X-ray techniques, and TEM; the influence of surface pretreatment; the action of additive molecules at electrode surfaces; structural and electrical characterization of interfaces (*e.g.*, Schottky diode, ohmic contacts, heterojunctions). Much emphasis will be given to process-structure-property relationships, because process dynamics determine material and interfacial structure, which in turn govern numerous properties and ultimately device characteristics.

Contributions are solicited in the following areas: electroless and electrolytic plating of copper, and copper alloys for chip wiring and packaging; integration aspects of chip metallization based on copper; failure and reliability of copper metallization especially as they relate to deposit properties and methods of deposition; influence of organic additives on shape evolution and deposit properties; electrochemical methodologies for the formation of compound semiconductors, structures, electroless and electrodeposition on semiconductors; processes for electroless and electrochemical deposition, removal, and patterning of lead-containing and lead-free solders for flip-chip interconnection; design and modeling of plating and etching tools; porous silicon formation and characterization; device isolation processing; anisotropic electrochemical processes for high levels of integration; electrochemical aspects of chemical mechanical polishing (CMP) technology including mechanisms, slurry composition and performance, and process characterization and control; novel applications of electrochemical processes in ULSI fabrication; electrochemical deposition of magnetic thin films, multilayers and wires on semiconductor substrates; nanocontact formation and characterization; patterning using scanning-probe microscopy (SPM) for nanoelectronics applications; electrochemical deposition of microelectromechanical

devices including LIGA; and deposition phenomena related to impurities and to wafer cleaning.

Abstracts, suggestions, and inquiries should be sent electronically to the ECS headquarters office and to the symposium organizers: **J. L. Stickney**, Department of Chemistry, University of Georgia, Athens, GA 30602, USA, Tel: 706.542.1967, Fax: 706.542.9453, E-mail: stickney@sunchem.chem.uga.edu; **P. C. Andricacos**, IBM T. J. Watson Research Center, P.O. Box 218, Box 04-204, Yorktown Heights, NY 10598-0218, USA, Tel: 914.945.2683, Fax: 914.945.4520, E-mail: panos@watson.ibm.com; and **A. Kolics**, Blue29, Inc., 615 Palomar Ave., Sunnyvale, CA 94085, USA, Tel: 408.245.4544 ext. 344, Fax: 408.245.4546, E-mail: Artur.Kolics@blue29.com.

G1 - SECOND INTERNATIONAL SYMPOSIUM ON SCIENCE AND TECHNOLOGY OF DIELECTRICS IN EMERGING FIELDS

(Dielectric Science and Technology / Electronics)

This symposium will address the science and technology of dielectric films, ranging from the nanoscale up to the micrometer scale, with emphasis on electrical, optical, mechanical, and magnetic properties. Research fields of interest are related but not necessarily limited to the following topics: 1. Devices for optical communications and computing; 2. Mechanical devices, MEMS/MOEMS; 3. Integrated chemical and biological sensing devices; 4. Memory and storage devices; 5. Devices for biophysics and medical applications; and 6. Integration of various technologies with existing silicon-based scaled devices. Besides fundamental aspects coming along with the particular application, the application-specific requirements and challenges regarding technology, fabrication processes, and reliability will be pointed out and discussed.

Publication of a proceedings volume is planned to be available at the meeting. The abstract submission deadline for this symposium is **November 15, 2004.** All authors accepted for presentation (oral or poster) are obligated to submit a camera-ready manuscript to be published in the proceedings volume. Instructions for preparing the manuscript will be sent out by the symposium organizers after the notification of acceptance of the paper. The deadline for submission of the camera-ready proceedings volume manuscript is **December 15, 2004**. Students presenting papers at the meeting should apply through DS&T / Electronics Divisions of The Electrochemical Society for financial support with a letter of support for a travel grant from the student's advisor.

Abstracts, suggestions, and inquiries should be sent to ECS headquarters office and the symposium organizers: **D. Misra**, Department of Electrical and Computer Engineering, New Jersey Institute of Technology, Newark, NJ 07102, USA, Tel: 973.596.5739, Fax: 973.596.5680, E-mail: dmisra@njit.edu; **K. Wörhoff**, University of Twente, Department of Electrical Engineering, Chair of Materials Science, Lightwave Devices Group, P.O. Box 217, 7500 AE Enschede, The Netherlands, Tel: 31.53.489.3477, Fax: 31.53.489 3343, E-mail: K.Worhoff@el.utwente.nl; **P. Mascher**, Department of Engineering Physics, McMaster University, Hamilton, Ontario, Canada L8S 4L7, Tel 905.525.9140, Ext. 24963, Fax 905.527.8409, E-mail: mascher@mcmail.cis.mcmaster.ca; and **K. Sundaram**, University of Central Florida, School of Electrical Engineering & Computer Science, Orlando, FL 32819-2450, USA, Tel: 407. 823.5326, Fax: 407.823.5835, E-mail: sundaram@mail.ucf.edu.

H1 - EIGHTH INTERNATIONAL SYMPOSIUM ON SILICON NITRIDE AND SILICON DIOXIDE THIN INSULATING FILMS AND OTHER EMERGING DIELECTRICS

(Dielectric Science and Technology / Electronics / High Temperature Materials)

This symposium is a continuation of the highly successful "International Symposium on Silicon Nitride and Silicon Dioxide Thin Insulating Films" which has taken place seven times in the past. The objective is to link material studies and technological applications. The symposium will include both invited and contributed papers.

Specific topics of interest on silicon dioxide, silicon nitride, and other emerging dielectrics include, but are not limited to 1. Growth and processing (thermal CVD, PECVD, sputtering, ion implantation, thermal nitridation, thermal oxidation, etc.); 2. Film characterization (IR spectroscopy, RBS, NRA, SIMS, AES, XPS, AFM, TEM, EPR, NMR, ellipsometry and other analytical techniques); 3. Porosity, mechanical, electrical, chemical, physical, and optical properties; 4. Preparation of ultrathin films and physical studies, ultrathin gate dielectric degradation phenomena, and methods of detection; 5. Plasma and non-plasma process-induced damage during deposition: mechanism, reduction, and recovery, process-induced damage modeling and simulation; 6. Adhesion and substrate-film interactions; 7. Reliability including radiation and hot-carrier effects, wear-out and failure processes in films, and dielectric reliability related to process integration; 8. Mathematical, physical, and computational modeling; 9. Strain relaxed defect formation and oxide and interface defects; 10. Passivation, charge transport and trapping, characteristic of traps, tunneling phenomena, and dielectric breakdown; 11. Multilayer dielectric stacks, nitridation/oxidation methodologies for thin gate dielectrics; 12. Films for semiconductors memories, especially for gigabit generations; 13. Insulating films on compound semiconductors (passivation studies, interfaces, electrical and optical properties of devices); 14. Plasma science and plasma processing technology for thin films; 15. Quality verification, environmental effects, reliability, new applications, and new devices; 16. Novel isolation techniques including PBL, SEG, doped glasses; and 17. Etching of dielectrics.

Publication of a proceedings volume is planned to be available at the meeting. Acceptance of a paper in this symposium (oral or poster) obligates the authors to submit a typed camera-ready copy of the full proceedings volume manuscript together with a list of key words by **January 3, 2005**. Instructions for preparing the manuscript may be obtained from the symposium organizers. These instructions, and other information about ECS electronic meeting abstracts are available also on the ECS website at www.electrochem.org.

Abstracts must be sent electronically to ECS headquarters office and the symposium organizers: **R. E. Sah**, Fraunhofer Institute for Applied Solid State Physics, Tullastrasse 72, D-79108 Freiburg, Germany, Tel: 761.515.9175, Fax: 761.515.9400, E-mail: sah@iaf.fhg.de; **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; **D. Landheer**, National Research Council of Canada, Institute of Microstructural Sciences, Ottawa, Ontario, Canada K1A 0R6, Tel: 613.993.0560, Fax: 613.990.0202, E-mail: dolf.landheer@nrc.ca; **J. Yota**, Skyworks Solutions, Inc., 2427 W. Hillcrest Drive, M/S 889, Newbury Park, CA 91320, USA, Tel: 805.480.4261, Fax: 805.480.4212, E-mail: jiro.yota@att.net; and **Y. Kamakura**, Quantum Devices Lab, Department of Electronics and Information Systems, Osaka University, Japan, Tel: 81.06.6879.7731, E-mail: kamakura@eie.eng.osaka-u.ac.jp. Suggestions and inquiries may be addressed to the symposium organizers.

International Advisors Committee: **W. D. Brown**, Department of Electrical Engineering, University of Arkansas, Fayetteville, AR 72701, USA, Tel: 501.575.6045, Fax: 501.575.7967, E-mail: wdb@engr.uark.edu; **K. B. Sundaram**, School of Electrical Engineering and Computer Science, University of Central Florida, Orlando, FL 32816-2450, USA, Tel: 407. 823.5326, Fax: 407.823.5835, E-mail: sundaram@mail.ucf.edu; **D. Misra**, Department of Electrical and Computing Engineering, New Jersey Institute of Technology, Newark, NJ 07102 USA, Tel: 973.596.5739, Fax: 973.596.5680, E-mail: dmisra@njit.edu; **J. Yugami**, Renesas Technology Corp., 4-1, Mizuhara, Itami, Hyogo 664-0005, Japan, Tel: 81.72.784.7355, Fax: 81.72.780.2675, E-mail: yugami.jiro@renesas.com; **J. F. Zhang**, Liverpool John Moores University, School of Engineering, Byrom Street, Liverpool L3 3AF, UK, Tel: 44.151.231.2363, Fax: 44.151.231.2529, E-mail: j.f.zhang@livjm.ac.uk; and **G. Lucovsky**, Dept. Physics, NC State Univ., Raleigh, NC 27695, E-mail: gerry_lucovsky@ncsu.edu.

I1 - SURFACTANT AND ADDITIVE EFFECTS ON THIN FILM DEPOSITION AND PARTICLE GROWTH

(Electrodeposition / Physical Electrochemistry)

The influence of surfactants on the morphology and structure of materials produced by either physical or chemical means is of central importance to several evolving technologies ranging from nanoparticle synthesis by redox reactions to electroplating thin functional films. This symposium seeks to bring together researchers interested in exploring the synergies between adsorbate effects observed during particle and thin film growth by electrolytic, chemical reduction, CVD, or PVD methods. In the last decade significant capabilities for investigating the potential dependent structure and dynamics of adsorbates on single crystal surface have been established. Likewise, the impact of adsorbed anions, cations and/or molecules on the production of metal and semiconductor films and particles has been widely reported. Taking advantage of this diverse background we will explore several questions of common interest such as: 1. What is the correlation between adsorbate structure and particle shape or facet geometry? 2. What is the extent of rate differentiation accessible by using different surfactants? 3. How much anisotropy can be induced in the electrocrystallization reaction by using different adsorbates? 4. How does potential perturbation affect the adsorbate structure and consequently impact the film growth dynamics? 5. How is particle growth influenced by the choice of reducing agent and surfactant(s), and how does this compare to electrolytic growth at comparable potentials? 7. How is roughness evolution influenced by surfactants? 8. How effectively do surfactants remain segregated at growing interfaces? 9. Why do some surfactants or additives lead to the breakdown of epitaxial growth and become incorporated in the growing solid? 10. How do surfactants influence the deposition of alloys and compounds?

New experimental approaches for studying surfactant and additive effects are also of interest. For example, contributions describing the use of contact printing and related non-traditional patterning methods for fabricating interesting geometries as well as exploring combinatorial measurements are encouraged.

Abstracts, suggestions, and inquires should be sent to the ECS headquarters office and to the symposium organizers: **T. P. Moffat**, NIST, Bldg 224, B166, Gaithersburg, MD 20878, USA, Tel: 314.739.2999, Fax: 314.824.0029, E-mail: thomas.moffat@nist.gov; and **J. A. Switzer**, Dept. of Chemistry, University of Missouri, 103 Materials Research Center, Rolla, MO 65409, USA, Tel: 573.341.4383, Fax: 573.341.2071, E-mail: jswitzer@umr.edu.

J1 - EIGHTH INTERNATIONAL SYMPOSIUM ON SEMICONDUCTOR WAFER BONDING: SCIENCE, TECHNOLOGY, AND APPLICATIONS

(Electronics)

Semiconductor wafer bonding has emerged as an important technology in such diverse areas as silicon micromechanics for sensors and actuators, high quality silicon-on-insulator (SOI) materials for electronic device applications (high performance CMOS platforms, bipolar, BiCMOS, power), three-dimensional (3D) device integration, and compound semiconductor-on-Si heterostructures. This symposium, sponsored by the Electronics Division of the Society, brings together specialists from these and related areas to cover the full range of basic science, process technologies, and applications of semiconductor wafer bonding. Both theoretical and experimental papers are solicited. Papers will be grouped into topical sessions including a selection of invited papers. A poster session will be held as well as the normal oral sessions. Sessions will include the following topics: 1. Physics, chemistry, and elastomechanics of wafer bonding; 2. Characterization of bonding interfaces, bonding techniques, generalized bonding (*e.g.*, GaAs-on-Si, bonding via deposited films); 3. Layer transfer and exfoliation methods; 4. Electronic device applications (bipolar, high voltage and power, CMOS, microwave); 5. Microelectromechanical, photonic, sensor, and other applications.

A proceedings volume is planned to be available at the meeting. Acceptance of a paper for presentation at the meeting obligates the author to submit a full manuscript in camera-ready form for inclusion in the proceedings volume by **January 14, 2005**. Detailed instructions for manuscript preparation are available at www.electrochem.org/guidelines/publications/pv/pvauthors.pdf. Papers published in the proceedings volume may also be submitted to the *Journal*, provided they are submitted no later than six months after the date of the symposium in which they were presented. Abstracts must be submitted electronically to the ECS headquarters office by December 1, 2004 (www.electrochem.org). For their paper to be considered for inclusion in the symposium, authors are also required to submit electronic copies of their abstracts to all symposium organizers no later than December 1, 2004. Abstracts submitted beyond this date will not be accepted (note: the symposium deadline is different than the general meeting deadline). Indicate preference for verbal or poster presentation, underline the expected presenter, and advise if the submission is a student presentation. Authors will receive electronic notification of acceptance or rejection no later than December 15, 2004. Paper or electronic manuscripts must be received by K. D. Hobart or another symposium organizer no later than January 14, 2005.

Questions or inquiries may be directed to any of the symposium organizers: **K. D. Hobart**, Naval Research Laboratory, Washington, DC 20375, USA, Tel: 202.404.8542, Fax: 202.404.1271, E-mail: hobart@nrl.navy.mil; **C. E. Hunt**, Department of Electrical and Computer Engineering, University of California, Davis, CA 95616, USA, Tel: 530.752.1958, Fax: 530.752.8428, E-mail: hunt@ucdavis.edu; **H. Baumgart**, Motorola, APRDL (Advanced Products Research & Development Laboratory) 3501 Ed Bluestein Blvd., Austin, Texas 78721, USA, Tel: 512.257.2925, E-mail: baumgart29ny@yahoo.com; **T. Suga**, The University of Tokyo, School of Engineering, Department of Precision Engineering, Hongo 7-3-1, Bunkyou-ku, Tokyo 113-8656, Japan, Tel: 81.0.3.5452.5180, Fax: 81.0.3.5452.5184, E-mail: suga@pe.u-tokyo.ac.jp; **S. Bengtsson**, Department of Microtechnology and Nanoscience, Chalmers University of Technology, SE-41296 Göteborg, Sweden, Tel: 46.0.31.772.1881, Fax: 46.0.31.772.8498, E-mail: stefan.bengtsson@mc2.chalmers.se.

J2 - 12TH INTERNATIONAL SYMPOSIUM ON SILICON-ON-INSULATOR TECHNOLOGY AND DEVICES

(Electronics)

SOI technology is penetrating the commercial market and has been included in the CMOS roadmap as the most realistic solution for the ultimate stages of microelectronics. The symposium covers recent significant advances in SOI technologies. It will be of interest to materials and device scientists, as well as to process and applications oriented engineers. Theoretical and experimental contributions are solicited. Specific topics will include, but are not limited to 1. Synthesis of advanced SOI wafers, including strained layers on insulator and SOI-like heterostructures formed by bonding, implantation, and epitaxy; 2. Materials evaluation: wafer screening, electrical properties, defect and stress identification, interface quality, properties of ultrathin films and buried oxides, tools for quality control; 3. SOI MOSFETs: characterization, modeling, and simulation of typical mechanisms (floating body, coupling, self-heating, fringing fields, transient, and history effects), parameter extraction, reliability issues (hot carriers, irradiation, ESD, tunneling, etc); 4. High performance CMOS and bipolar devices: low power/voltage and rf circuits, memories, power, and high/low temperature devices, sensors, and MEMS, advanced processing and design; 5. Innovative devices: ultrathin-body FD-SOI MOSFETs, FinFETs, and other multiple-gate devices, quantum and tunneling transistors, etc.

Each session will be introduced by keynote speakers. Abstracts must be submitted electronically to the ECS headquarters office, with a copy to the symposium chair, by December 1, 2004. Abstracts submitted beyond this date will not be accepted (note: the ymposium deadline is different than the general meeting deadline). Authors will receive electronic notification of acceptance or rejection no later than December 15, 2004.

A proceedings volume is planned to be available at the meeting. Acceptance of a paper in this symposium obligates the authors to submit a typed camera-ready copy of the full manuscript by **January 14, 2005**.

Detailed information is available on the website (www.electrochem.org) and at the symposium chair's office: **G. K. Celler**, Soitec/USA, 38 Old Oak Drive, Summit, NJ 07901, USA, Tel: 908.665.8457, Fax: 978.336.0564, E-mail: george.celler@soitec.com; symposium co-organizers: **S. Cristoloveanu**, IMEP, ENSERG, BP 257, 38016 Grenoble Cedex 1, France, Tel: 33.476.85.6040, Fax: 33.476.85.6070, E-mail: sorin@enserg.fr; **J. G. Fossum**, Electrical and Computer Eng. Dept., University of Florida, 541 New Engineering Building, P.O. Box 116130, Gainesville, FL 32611-6130, USA, Tel: 352.392.4921, Fax: 352.392.8381, E-mail: fossum@tec.ufl.edu; **F. Gamiz**, Electronics Dept., University of Granada, 18071 Granada, Spain, Tel: 34.958.246.145, Fax: 34.958.243.230, E-mail: fgamiz@ugr.es; **K. Izumi**, Research Institute for Advanced Science and Technology, Osaka Prefecture University, 1-2, Gakuen-Cho, Sakai 599-8570, Japan, Tel: 81.722.54.9827, Fax: 81.722.54.9935, E-mail: izumi@riast.osakafu-u.ac.jp; and **Y-W. Kim**, Samsung, 24 Nongseo-Ri, Kiheung-Eup, Yongin-City, Kyunggi-Do, Korea, Tel: 82.02.760.6590, Fax: 82.02.760.5886, E-mail: youngwug.kim@samsung.com.

J3 - STATE-OF-THE-ART PROGRAM ON COMPOUND SEMICONDUCTORS XLII

(Electronics)

The SOTAPOCS XLII 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.

A joint proceedings volume with the M1 Symposium on Processes at the Compound-Semiconductor/ Solution Interface is planned to be available at the meeting. A typed camera-ready copy of the full proceedings volume manuscript and a list of key words is required by **January 21, 2005**. Instructions for preparing the manuscript will be sent out by symposium organizers after acceptance of the abstracts. Acceptance of a paper for presentation obligates the author to submit a full manuscript in camera-ready form for inclusion in the proceedings volume. The symposium will consist of both invited and contributed papers. Abstracts are due to ECS headquarters on or before January 3, 2005.

Abstracts, suggestions, and inquiries should be sent to the symposium organizers or the ECS headquarters office. Symposium organizers: **P. C. Chang**, Northrop Grumman Space Technologies, One Space Park, D1/1050, Redondo Beach, CA 90278, USA, Tel: 310.812.9067, Fax: 310.813.0418, E-mail: pablo.chang@ngc.com; **K. Shiojima**, NTT Photonics Laboratories, 3-1, Morinosato Wakamiya, Atsugi-shi, Kanagawa 243-0198, Japan, Tel: 81.46.240.2787, Fax: 81.46.240.4773, E-mail: shiojima@aecl.ntt.co.jp; **R. E. Kopf**, Lucent Technologies, Bell Laboratories, Room 1C441A, 700 Mountain Ave., Murray Hill, NJ 07974, USA, Tel: 908.582.5280, Fax: 908.582.6322, E-mail: rek@lucent.com; and **X. Chen**, Texas Center of Superconductivity and Advanced Materials, University of Houston, 4800 Calhoun Rd., SR1-425B, Houston, TX, 77204, USA, Tel: 713.743.3621, E-mail xchen7@uh.edu.

K1 - ADVANCED GATE STACK, SOURCE/DRAIN, AND CHANNEL ENGINEERING FOR Si-BASED CMOS: NEW MATERIALS, PROCESSES, AND EQUIPMENT

(Electronics / Dielectric Science and Technology / High Temperature Materials)

This symposium will cover the latest developments in short-time processing technologies with emphasis on mainstream CMOS integration, in particular on gate stack, source/drain, and channel engineering. Short-time processing technologies of interest include conventional RTP technologies such as RTA, RTO, and RTCVD; UV or laser-assisted processes for annealing, doping, etc.; and advanced thin-film deposition techniques such as atomic layer deposition (ALD), MOCVD, and UHV-CVD, remote plasma and sputtering, MBE, etc.

Researchers and technologists are encouraged to submit their abstracts on applications in the areas of formation and/or deposition of ultrathin gate dielectrics (including novel higher dielectric constant materials) and their gate electrodes (including metal gates); advanced doping and annealing technologies to form ultrashallow junctions; formation of low-resistivity contacts to such junctions; advanced channel engineering approaches including strained Si and Si-Ge and Ge channels, ultrathin SOI technologies. Finally, new developments in short-time processing and inspection equipment to improve throughput, uniformity, *in situ* monitoring, non-intrusive wafer inspection, process control, and modeling are of special interest to this symposium.

Publication of a proceedings volume is planned to be available at the meeting. The deadline for abstract submission is **January 3, 2005**. All authors accepted for presentation are obligated to submit a camera-ready proceedings volume manuscript, which will be produced prior to the meeting. As such, the hard deadline for full manuscript submission is January 24, 2005. Instructions for preparing the manuscript will be sent out by the symposium organizers after official notification of acceptance.

The abstracts should be sent to the ECS headquarters office electronically. Suggestions and inquiries about the symposium can be sent to the symposium organizers: **E. P. Gusev**, IBM T.J. Watson Research Center, P.O. Box 218, Yorktown Heights, NY 10598, USA, Tel: 914.945.1168, Fax: 914.945.2141, E-mail: gusev@us.ibm.com; **L. J. Chen**, National Tsing Hua University, Dept. of Materials Science and Engineering 101, Sec. 2, Kuang-Fu Road, Hsinchu, Taiwan 300, Republic of China, Tel: 886-3-5731166, Fax: 886-3-5718328, E-mail: ljchen@mse.nthu.edu.tw; **D.-L. Kwong**, University of Texas at Austin, MER 2.60A, Mail code R9950, Austin, TX 78712-1100, USA, Tel: 512.471.5922, Fax: 512.471.4345, E-mail: dlkwong@mail.utexas.edu; **P. J. Timans**, Mattson Technology Inc., 47131 Bayside Parkway, Fremont, CA 94538, USA, Tel: 510.492.5992, Fax: 510.492.5911, E-mail: Paul.Timans@mattson.com; **F. Roozeboom**, Philips Research Labs (WAG-p), Prof. Holstlaan 4, 5656 AA Eindhoven, The Netherlands, Tel: 31-40-2742767, Fax: 31-40-2743352, E-mail: Fred.Roozeboom@philips.com; **M. C. Öztürk**, North Carolina State University, Dept. of Electrical and Computer Engineering, Centennial Campus, 1010 Main Campus Drive, EGRC Building, Rm 339, Campus Box 7920, Raleigh, NC 27695-7920, USA, Tel: 919.481.4057, Fax: 919.515.5055, E-mail: mco@eos.ncsu.edu; and **H. Iwai**, Frontier Collaborative Research Center, Tokyo Institute of Technology, 226-8502 4259, Nagatsuta-cho, Midori-ku, Yokohama-shi, Japan, Tel: 81.45.924.547, Fax: 81.45.924.5584, E-mail: iwai@ae.titech.ac.jp.

L1 - SYMPOSIUM ON ULSI PROCESS INTEGRATION IV

(Electronics / IEEE Electron Devices Society)

The fourth symposium on ULSI process integration will provide a forum for reviewing and discussing all aspects of process integration. Contributed papers are solicited in the following areas: 1. Full process integration: Trends in nanoscaled technologies 90 nm node and beyond on DRAM, SRAM, flash high density, logic/microprocessors, process development on SiGe, low voltage/low power, rf, mixed analog/digital, highvoltage, SiC; 2. Integration of unit processes: CMP chemistries and techniques integration, low-k process integration: Metal gates; 3. Front-end-of-line integration (FEOL): Gate dielectrics (ultrathin, high-k) and dual gates, stacks (barriers) electrode/dielectrics for memory capacitors and transistor gates source, drain, and channel, transistor integration, transistor and novel isolation integration, sub-45 nm transistor process/device, integration issues; 4. Back-end-of-line integration (BEOL): Multilevel integrated structures, copper interconnect and barrier, materials, metal fill technologies and structure integrations; and 5. Novel structures: Novel memory elements, emerging devices, novel materials, vertical integration.

Publication of a proceedings volume is planned to be available at the meeting. All authors accepted for presentation are obligated to submit a camera-ready proceedings volume manuscript, which will be produced prior to the meeting. The deadline for full manuscript submission is **December 1, 2004**. Instructions for preparing the manuscript will be sent out by the symposium organizers after official notification of acceptance. Send an e-file version of a two-page abstract consisting of 500 words and figures to the regional organizer no later than September 15, 2004. Detailed instructions for the preparation of the ECS abstract and of the full-length manuscript will be sent to the lead author of the accepted papers. The full manuscripts will be required by December 1, 2004. Suggestions and inquiries should be sent to the symposium organizers.

For North-South America West: **F. Gonzalez**, Micron Technology, 8000 E. Federal Way, Boise, ID 83707-0006, USA, Tel: 208.368.3784, Fax: 208.368.2548, E-mail: fgonzalez@micron.com; for Europe and Africa: **C. Claeys**, IMEC, Kapeldreef 75, B-3001, Leuven, Belgium, Tel: 32.16.281.328, Fax: 32.16.281.844, E-mail: claeys@imec.be; for North-South America East: **J. O. Borland**, J.O.B. Technologies, 5 Farrington Lane, S. Hamilton, MA 01982, USA, Tel: 978.808.6271, Fax: 978.468.1187, E-mail: JohnOBorland@aol.com; for Asia and Oceania: **S. Zaima**, Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-8603, Japan, Tel: 81.52.789.2762, Fax: 81.52.789.5592, E-mail: zaima@alice.xtal.nagoya-u.ac.jp; for Canada: **D. A. Buchanan**, Electrical & Computer Engineering, University of Manitoba, Room 504, 15 Gillson Street, Winnipeg, Manitoba, Canada R3T 5V6, Tel: 204.474.9085, Fax: 204.261.4639, E-mail: dabuchan@ee.umanitoba.ca.

M1 - PROCESSES AT THE COMPOUND-SEMICONDUCTOR/SOLUTION INTERFACE

(Electronics / Physical Electrochemistry)

This symposium will address the most recent developments in processes at the compound-semiconductor/solution interface including etching, oxidation, passivation, film growth, electrochemical and photoelectrochemical processes, electroluminescence, photoluminescence, and other related topics. It will include both invited and contributed papers on both fundamental and applied topics. The following areas are of particular interest: 1. Chemical, electrochemical, and photoelectrochemical etching; 2. Surface film growth and passivation; porous semiconductor formation and photonic crystal structures; 4. Electroanalytical measurements on compound semiconductors including both bulk and epitaxial II-VI, III-V, IV-IV, and organic materials in aqueous and nonaqueous electrolytes; 5. Electronic and optical processes at the compound-semiconductor/solution interface; 6. Electroluminescence at the compound-semiconductor/solution interface; 7. Photoluminescence spectroscopy including *in situ* potential-dependent measurements; 8. Electrochemical impedance spectroscopy and investigations of flatband potential; 9. Combined electrochemical and surface analytical measurements such as XPS; 10. Microscopic and surface analytical measurements on chemically and electrochemically modified semiconductor surfaces; 11. Chemical, electrochemical, and photoelectrochemical techniques of device processing including etching, passivation, oxide growth, and metallization; 12. Electrochemical techniques of semiconductor characterization.

A joint proceedings volume with the SOTAPOCS XLII Symposium (J3) is planned to be available at the meeting. Acceptance of a paper for presentation at the meeting obligates the author to submit a full manuscript in camera-ready form for inclusion in the proceedings volume. Instructions for preparing the manuscript will be sent out by the symposium organizers after acceptance of abstracts. Abstracts are due to the ECS headquarters office with a copy to one of the symposium organizers on or before January 3, 2005. A typed camera-ready copy of the full proceedings volume manuscript and a list of key words is required on or before **January 30, 2005**.

Abstracts, suggestions, and inquiries should be sent to the symposium organizers or the ECS headquarters office. Symposium organizers are **D. Noel 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; **A. Etcheberry**, IREM Institut Lavoisier, 45 Avenue des Etats Unis, 78035 Versailles Cedex, France, Tel. 33.1.39.25.43.84, Fax: 33.1.39.25.43.81, E-mail: etcheber@chimie.uvsq.fr; and **B. Marsan**, University of Québec in Montreal (UQAM), Dept Chimie, C P 8888, Succ Centre-Ville, Montreal, QC H3C-3P8, Canada, Tel: 514.987.3000 ext. 7980, Fax: 514.987.4054, E-mail: marsan.benoit@uqam.ca.

N1 - GENERATION OF HYDROGEN FROM RENEWABLE SOURCES

(Energy Technology / Battery / Industrial Electrolysis and Electrochemical Engineering)

In the long term, a hydrogen economy will only be as clean as the energy and feedstock material used for its production. Thus this symposium will address recent advances in methods for producing hydrogen from water or high hydrogen-content hydrocarbon feedstock material using energy from renewable sources such as sun, wind, geothermal, ocean, and biomass. Methods coupling solar energy conversion and hydrogen generation, specifically electrolysis, photolysis, and thermolysis, are of particular relevance to this symposium. Papers on attendant materials issues such as long-term thermal or electrochemical stability, sensitization of semiconductor electrodes, new semiconductors, novel electrolyzers, regenerative fuel cell/electrolyzer sytems, etc. would also be welcome as are contributions on artificial photosynthesis. Economic analyses and hybrid approaches to hydrogen production are topics that fit well into the framework of this forum. It is planned to have one or two keynote talks to kick off this symposium.

Please address all enquiries to one of the organizers listed below: **K. Rajeshwar**, Department of Chemistry and Biochemistry, The University of Texas at Arlington, Arlington, TX 76019-0065, USA, Tel: 817.272.3810, Fax: 817. 272.3808, E-mail: Rajeshwar@uta.edu; **R. McConnell**, National Center for Photovoltaics, National Renewable Energy Laboratory, Golden, CO 80401, USA, Tel: 303.384.6419, Fax: 303.384.6481, E-mail robert_mcconnell@nrel.gov; **J. M. Fenton**, University of Connecticut, Dept. of Chemical Engineering, 191 Auditorium Rd., Unit 3222, Storrs, CT 06269-3222, USA, Tel: 860.486.2490, Fax: 860.486.2959, E-mail: jmfent@engr.uconn.edu; and **G. Pillay**, 151 N. Ridge Ave. Ste. 140, Idaho Falls, ID 83402-4000, USA, Tel: 208.524.4800, Fax: 208.524.4994, E-mail: gpillay@inra.org.

01 - FUEL CELLS FROM MATERIALS TO SYSTEMS

(Energy Technology / Battery / Physical Electrochemistry)

The applications for fuel cells that are currently under study cover a wide range from large molten carbonate power plants for electrical power generation to small proton exchange membrane cells in laptop computers. These systems are changing as fuel cells evolve toward commercialization. As the system changes, the conditions of cell operation and the optimum materials for fuel cell use can also change. For example, small residential proton exchange membrane fuel cells may be operated at higher temperatures than previously considered to provide more useful waste heat. Proton exchange membrane fuel cells that directly use methanol as the fuel for military applications have significantly different systems and materials from those that use hydrogen in a personal vehicle. Differences exist between solid oxide fuel cells being evaluated for large electrical power generation and for smaller auxiliary power units for use in vehicles. Papers that describe various fuel cell systems and the effect of the system design on the material requirements are solicited. The submission of research results using these new materials is encouraged.

Abstracts, suggestions, and inquiries should be sent electronically to the ECS headquarters office and to the session organizers: **H. R. Kunz**, The University of Connecticut, Department of Chemical Engineering, 191 Auditorium Road U-3222, Storrs, CT 06029-3222, USA, Tel: 860.486.5389, Fax: 860486.2959, E-mail: russkunz@engr.uconn.edu; **G. Blomgren**, Blomgren Consulting Services, 1554 Clarence Ave., Lakewood, OH 44107, USA, Tel: 216.221.4478, Fax: 216.221.4477, E-mail: geblomgren@prodigy.net, and **H. Gasteiger**, General Motors, Global Alternative Propulsion Center, 10 Carriage Street, Honeoye Falls, NY 14472, USA, Tel: 716.624.6725, Fax: 716.624.6725, E-mail: hubert.gasteiger@gm.com.

P1-P10 FULLERENES, CARBON NANOTUBES, AND CARBON NANOSTRUCTURES

(Fullerenes, Carbon Nanotubes, and Carbon Nanostructures Division)

(See individual headings below for each sub-symposium)

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

Questions and information may be obtained from 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**, Radiation Laboratory, University of Notre Dame, Notre Dame, IN 46556, USA, Tel: 574.631.7441, Fax: 574.631.8068, E-mail: guldi@hertz.rad.nd.edu. Abstracts, suggestions, and inquiries should be sent electronically to the ECS headquarters office and to the organizers of the corresponding symposium listed below.

P1 - RESEARCH OVERVIEWS

(See main heading)

This symposium will present invited tutorial overviews of selected current research topics related to fullerenes, nanotubes, and carbon nanostructures.

Organizers: **K. M. Kadish**, Department of Chemistry, University of Houston, Houston, Texas 77204-5641, USA, Tel: 713.743.2740, Fax: 713.743.2745, E-mail: kkadish@uh.edu.; **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; and **R. Taylor**, The Chemistry Laboratory, CEPS School, Sussex University, Brighton BN19QJ, UK, Tel: 1273.678602, Fax: 1273.677196, E-mail: r.taylor@sussex.ac.uk.

P2 - ELECTRON TRANSFER AND ITS APPLICATIONS

(See main heading)

Papers are invited in the following areas of fullerenes and carbon nanotubes: Electrochemistry, ESR, electron transfer chemistry, spectroelectrochemistry, photoelectrochemistry, 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; and **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.

P3 - PHOTOINDUCED PROCESSES

(See main heading)

The focus of this symposium is to discuss the photochemical and photophysical aspects of fullerenes, functionalized fullerenes, and photoactive donor-acceptor type assemblies. Topics of this symposium range from excited transformations to light energy harvesting aspects of fullerene based materials. Organizers: **D. M. Guldi**, Radiation Laboratory, University of Notre Dame, Notre Dame, IN 46556, USA Tel: 574.631.7441, Fax: 574.631.8068, E-mail: guldi@hertz.rad.nd.edu; and **O. Ito**, Institute of Multidisciplinary Research for Advanced Materials, Building of Chemical Reaction Science, Tohoku University, Katahira, Sendai 980-8577, Japan, Tel: 81.22.217.5608, Fax: 81.22.217.5608, E-mail: ito@tagen.tohoku.ac.jp.

P4 - MOLECULAR AND SUPRAMOLECULAR CHEMISTRY OF FULLERENES

(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 the fullerenes. 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**, IPCMS - GMO - CNRS, 23 rue du Loess, 67037 Strasbourg, France, Tel: 390242645, Fax: 390242706, E-mail: niereng@ipcms.u-strasbg.fr.

P5 - 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; **S. V. Rotkin**, Beckman Institute for Advanced Science and Technology, 405 N. Mathews, Urbana, IL 61801, USA, Tel: 217.244.8362, Fax:

217.244.4333, E-mail: rotkin@uiuc.edu; and **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.

P6 - 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, environmental remediation, etc.

Organizers: **S. Subramoney**, E. I. DuPont de Nemours & Company, DuPont Experimental Station, Wilmington, DE 19880-0228, USA or 425 Stella Drive, Hockessin, DE 19707, USA, Tel: 302.695.2992, Fax: 302.695.1351, E-mail: shekhar.subramoney@usa.dupont.com; **Jing Li**, Center for Nanotechnology, NASA Ames Research Center, MS 229-1, Moffett Field, CA 94035, USA, Tel: 403.204.6321, Fax: 403.204.6102, E-mail: jingli@mail.arc.nasa.gov; and **J. R. Stetter**, Illinois Institute of Technology, 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.

P7 - 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.

P8 - ENERGETICS AND STRUCTURE AND SOLID-STATE PHYSICS

(See main heading)

Original research papers that address both theoretical and experimental aspects of fullerenes and carbon nanoclusters, solid-state physics, structure, and properties 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. Additional topics also include chemical reactivity, superconductivity, surface studies, thin films, diffraction studies, thermal and electronic properties. Organizers: **Y. Iwasa**, Tohoku University, Institute for Materials Research, Aoba Ku, 2-1-1 Katahira, Sendai, Miyagi 9808577, Japan, E-mail: iwasa@imr.tohoku.ac.jp; **P. Rudolf**, Materials Science Centre, University of Groningen, Nijenborgh 4, 9747 AG Groningen, the Netherlands, Tel: 31.50.363.4736, E-mail: P.Rudolf@phys.rug.nl; and **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.

P9 - FULLERENE AND CARBON NANOTUBE BASED MATERIALS IN MEDICINE AND BIOLOGY

(See main heading)

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; and **T. Da Ros**, Dipartimento di Scienze Farmaceutiche, Universita di Trieste, Piazzale Europa, 1, 34127 Trieste, Italy, E-mail: daros@univ.trieste.it.

P10 - 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 to generate discussions 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 physicochemical behavior of new porphyrinic materials.

Submission of 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; 4. Novel porphyrin modified electrodes. Abstracts, suggestions, and inquiries should be sent electronically to the ECS headquarters office and to the symposium organizers: **N. Solladié**, 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; **K. M. Kadish**, University of Houston, Houston, Texas 77204-5641, USA, Tel: 713.743.2740, Fax: 713.743.2745, E-mail: kkadish@uh.edu.; and **D. M. Guldi**, Radiation Laboratory, University of Notre Dame, Notre Dame, IN 46556, USA, Tel: 574.631.7441, Fax: 574.631.8068, E-mail: guldi@hertz.rad.nd.edu.

P11 - QUANTUM DOTS, RODS, AND WIRES

(Fullerenes, Carbon Nanotubes, and Carbon Nanostructures)

This symposium will focus on recent developments in the nanoscience and nanotechnology of mesoscopic materials. As synthetic procedures for controlling the size, shape, and morphology of matter at the nanometer scale evolve, so too do potential applications, which exploit their unique optical and electrical properties. Critical issues of interest include 1. Synthetic methodologies for low dimensional materials such as quantum dots, nanorods, and nanowires; 2. Fundamental optical and/or electrical studies of these materials; and 3. Application of these materials in solar energy conversion, biological labeling, lighting, electronics, or sensing.

Abstracts, suggestions, and inquiries should be sent to the ECS headquarters office and to any of the symposium organizers: **M. K. Kuno**, University of Notre Dame, Dept. of Chemistry and Biochemistry, 251 Nieuwland Science Hall, Notre Dame, IN 46556, USA,Tel: 574.631.0494, Fax: 574.631.8068, E-mail: mkuno@nd.edu; **F. V. Mikulec**, InnovaLight, Inc., 12024 Vista Parke Dr., Austin, TX 78726, USA, Tel 512.331.6417, Fax: 512.331.6474, E-mail: fmikulec@innovalight.com; **P. Kambhampati**, McGill University, Department of Chemistry, 801 Sherbrooke St. W, Montreal, Québec H3A 2K6, Canada, Tel: 514.398.7228, Fax: 514.398.3797, E-mail: pat.kambhampati@mcgill.ca; and **P. V. Kamat**, Notre Dame Radiation Laboratory, University of Notre Dame, Notre Dame, IN 46556, USA, Tel: 574.631.5411, Fax: 574.631.8068, E-mail: pkmat@nd.edu.

Q1 - NINTH INTERNATIONAL SYMPOSIUM ON SOLID OXIDE FUEL CELLS (SOFC IX)

(High Temperature Materials / Battery / Energy Technology / SOFC Society of Japan)

This ninth symposium (SOFC IX) will provide an international forum for the presentation and discussion of the latest developments on solid oxide fuel cells (SOFCs) and related topics. Papers are solicited on all aspects of SOFCs. Following is a partial list of topics to be addressed: 1. Materials for cell components (*e.g.*, electrolyte, electrodes, and interconnection); 2. Fabrication methods for cell components, complete cells, and stacks; 3. Cell designs, electrochemical performance, and modeling; 4. Stack designs and their performance; 5. Utilization of different fuels with or without reformation; 6. Stationary power generation, transportation, and military applications; and 7. Prototype SOFC systems, field test experience, cost, and commercialization plans.

SOFC IX will be dedicated to Professor Masayuki Dokiya and Professor Brian Steele who passed away during 2003. Both men had a profound influence on SOFC technology.

Papers presented at the symposium will be published in a proceedings volume planned to be available at the meeting. Acceptance of a paper for presentation obligates the author(s) to submit a full manuscript in camera-ready form. The full manuscripts should be submitted to one of the symposium chairs by **January 3, 2005**, at the same time as the abstract.

To facilitate planning of the symposium and to receive detailed instructions for preparing the abstract and the manuscript, please submit (preferably by e-mail) a title of your proposed paper, and corresponding author's contact information (telephone and fax numbers and e-mail address) by October 1, 2004 to one of the symposium chairs: **S. C. Singhal**, Pacific Northwest National Laboratory, 902 Battelle Boulevard, P. O. Box 999, Richland, WA 99352, USA, Tel: 509.375.6738, Fax: 509.375.4300, E-mail: singhal@pnl.gov; or **J. Mizusaki**, Tohoku University, 2-1-1 Katahira, Aoba-ku, Sendai 980-8577, Japan, Tel: 81.22.217.5340, Fax: 81.22.217.5343, E-mail: mizusaki@tagen.tohoku.ac.jp.

R1 - 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.

Abstracts, suggestions, and inquiries should be sent electronically to the ECS headquarters office and to the symposium organizers: **W. An**, FMC Corporation, Box 845, Buffalo, NY 14240, USA, Tel: 716.879.0450, Fax: 716.879.0459, E-mail: weidong_an@fmc.com; and **G. Pillay**, Inland Northwest Research Alliance, 151 N. Ridge, Suite 140, Idaho Falls, ID 83402, USA, Tel: 208.524.4800, Fax: 208.524.4994, E-mail: gpillay@inra.org.

S1 - ELECTROCHEMICAL SURFACE TREATMENTS

(Industrial Electrolysis and Electrochemical Engineering / Electrodeposition)

Papers are requested on any aspect of the treatment of surfaces by electrochemical means. This may include for corrosion protection, decoration, or any other enhancement of surface properties. Examples of topics of interest include the electrodeposition of metallic, inorganic, or polymeric protective coatings and anodization for protection or decoration. Papers on electroless deposition and electropolishing are also sought. Further, the electrochemical recycle of etchants fits the broad scope of the symposium.

The deadline for abstracts is January 3, 2005. Suggestions and inquiries should be directed to the symposium organizers: **A. C. West**, Columbia University, Dept. of Chem. Eng., 801 Mudd, Mail Code 4721, 500 W. 120th St., New York, NY 10027, USA, Tel: 212.854.4452, Fax: 212.854.3054, E-mail: acw17@columbia.edu; and **P. C. Foller**, PPG Industries, Inc., Chemicals Technical Center, 440 College Park Drive, Monroeville, PA 15146, USA, Tel: 724.325.5181, Fax: 724.325.5105, E-mail: foller@ppg.com.

T1 - MODELING OF ELECTROCHEMICAL SYSTEMS

(Industrial Electrolysis and Engineering Engineering / Physical Electrochemistry)

This symposium will focus on the development of mathematical models of electrochemical systems, experimental validation of these models, parameter estimation, and the use of these models in the design and control of electrochemical systems. Systems include, but are not limited to, batteries, fuel cells, electrochemical reactors, sensors, corrosion, electroplating, and electroanalytical techniques. Models are sought over a range of length scales, from molecular level simulations of isolated phenomenon to system-level simulations that incorporate complex interactions.

Publication of a proceedings volume is planned to be available after the meeting. All authors accepted for presentation are obligated to submit camera-ready manuscripts for the proceedings volume at the meeting.

Abstracts, suggestions, and inquiries should be sent electronically to the ECS headquarters office and to the symposium organizers: **J. Weidner**, Department of Chemical Engineering, University of South Carolina, Columbia, SC 29208, USA, Tel: 803.777.3207, Fax: 803.777.8265, E-mail: weidner@engr.sc.edu; **M. Orazem**, University of Florida, Dept. of Chem. Eng., P.O. Box 116005, Gainesville, FL 32611-6005, USA, Tel: 352.392.6207. Fax: 352.392.9513, E-mail: meo@che.ufl.edu; **G. Botte**; Russ College of Engr. & Tech., Ohio University, Athens, OH 45701, USA, Tel: 740.593.9670, Fax: 740.593.0873, E-mail: botte@bobcat.ent.ohiou.edu; and **M. Mathias**, GM Global R&D, Global Alternative Propulsion Center, 10 Carriage Street, Honeoye Falls, NY 14472, USA, Tel: 585.624.6648, Fax: 716.624.6680, E-mail: mark.mathias@gm.com.

U1 - PERSISTENT PHOSPHORS

(Luminescence and Display Materials)

Papers are solicited on the fundamental and applied aspects of phosphor materials which exhibit a long lasting phosphorescence (tens of hours) following photo or other forms of excitations. This symposium will consist of overviews of the nature and properties of long persistent phosphors and our understanding of the mechanisms responsible for the phosphorescence. We wish to solicit presentations detailing new materials and mechanisms which allow flexibility in the duration of the luminescent decay as well as color cover-

age in the luminescent output. We wish to begin promoting the application of this genre of phosphors to a new type of signing and display termed passive optical display. We welcome contributions describing all types of applications for these unusual materials.

Abstracts, suggestions, and inquiries should be sent to the ECS headquarters office and to the symposium organizers: **W. M. Yen**, Department of Physics, University of Georgia, Athens, GA 30602-2451, USA, Tel: 706-542-2491, Fax: 706-542-2492, E-mail: wyen@physast.uga.edu; **J. Capobianco**, Concordia University, Department of Chemistry & Biochemistry, 7141 Sherbrooke St. W., Montreal, QC, Canada H4B 1R6, Tel: 514.848.2424 Ext. 3350, Fax: 514.848.2868, E-mail: capo@vax2.concordia.ca; **F. Vetrone**, Concordia University, Lanthanide Research Group, Laser Spectroscopy Laboratory, Department of Chemistry and Biochemistry, 7141 Sherbrooke St. W., Montreal, QC, Canada H4B 1R6, Tel: 514.848.2424 Ext. 4260, Fax: 514.848.2868, E-mail: f_vetro@alcor.concordia.ca; and **H. Yamamoto**, Department of Electrical Engineeering, Tokyo University of Technology, 1401-1, Katakura, Hachioji, Tokyo 192-0982, Japan, Tel: 81-426-37-2547, Fax: 81-426-37-2547, E-mail: yamamoto@cc.teu.ac.jp.

V1 - NANOSTRUCTURED MATERIALS FOR ENERGY STORAGE AND CONVERSION

(New Technology Subcommittee/ Fullerenes/ DS&T/ Electrodeposition/ Energy Technology / Battery / Physical Electrochemistry)

Nanostructured materials exhibit greatly altered interface, bulk, and surface properties. Compare to micrometer materials. These properties include electrochemical catalysis, nanopainting, bulk and intergranular diffusion, electronic and ionic conductivity, nanostructured materials manipulation to produce desirable enhancement in performance of fuel cell, batteries, energy storage, and active research.

This symposium will focus on nanostructured materials in the area of electrochemical, energy, storage, and conversion. In the area of batteries and supercapacitors, intercalation anode and cathode, nanocomposite polymers, metal hydrides. Topics of interest in the general area of fuel cells including catalyst of electro-oxidation of hydrogen, reformat and organics fuels, catalysts for oxygen reduction, supported and unsupported materials, polymer electrolyte for PEM, and solid oxide fuel cells.

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

Abstracts, suggestions, and inquiries should be sent electronically to the ECS headquarters office and to the symposium organizers: **K. Zaghib**, Institut de Recherche d'Hydro-Québec (IREQ), 1800 Blvd. Lionel Boulet, Varennes, Québec, Canada J3X 1S1, Tel: 450.652.8019, Fax: 450.652.8424, E-mail: zaghib.karim@ireq.ca; **C. Julien**, Laboratoire des Milieux Désordonnés et Hétérogènes, Université Pierre et Marie Curie, 4 place Jussieu, 8675252 Paris cedex 05, France, Tel: 33.1.44.27.45.61, Fax: 33.1.44 27.45.12, E-mail: cjul@cœcr.jussieu.fr; **P. McGinn**, Chemical and Biomolecular Engineering, University of Notre Dame, Notre Dame, IN 46556, USA, Tel: 574.631.6151, Fax: 574.631.8366, E-mail: mcginn.1@nd.edu; **W. West**, Jet Propulsion Laboratory, 4800 Oak Grove Drive, Pasadena, CA 91006, USA, Tel: 818.354.0053, Fax: 818.393.6951, E-mail: William.C.West@jpl.nasa.gov; and **J. P. Dodelet**, INRS-Énergie, Matériaux et Télécommunications, 1650, blvd. Lionel Boulet, Varennes, Québec, Canada J3X 1S2, Tel: 450.929.8142, Fax: 450.929.8198, E-mail: dodelet@inrs-emt.uquebec.ca.

W1 - GENERAL SESSION

(Organic and Biological Electrochemistry)

Papers concerning any aspect of organic and biological 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 meeting abstracts.

Abstracts, suggestions, and inquiries should be sent electronically to the ECS headquarters office and to the symposium organizer: **I. Taniguchi**, Department of Applied Chemistry, Kumamoto University, 2-39-1, Kurokami, Kumamoto 860, Japan, Tel and Fax: +81-96-342-3655, E-mail: taniguch@gpo.kumamoto-u.ac.jp.

W2 - ELECTRON TRANSFER THROUGH ORGANIC AND BIOLOGICAL BRIDGES II

(Organic and Biological Electrochemistry)

Understanding the mechanism by which electrons are transferred through bonds and space is of broad fundamental and applied interest. In recent years, by carrying out specific theoretical and experimental work on both natural and synthetic systems, a considerable amount of relevant information has been gathered on the role played by organic and biological bridges in mediating electron transfer processes between donor/acceptor couples. In keeping with this spirit, the aim of the symposium is to focus on the most recent advances in the area. Papers are solicited particularly on the following topics: 1. Electron transfer across bridges separating electrodes and soluble or anchored species; 2. Effect of distance, orientation, nature of the bridge, and environment on the electron transfer rate in donor-bridge-acceptor systems; 3. Intramolecular dissociative and nondissociative electron transfers; and 4. Two-electron transfer processes accompanied and favored by significant structural changes.

Abstracts, suggestions, and inquires should be sent electronically to the ECS headquarters office and to the symposium organizers: **D. H. Evans**, Department of Chemistry, University of Arizona, Tucson, AZ 85721, USA, Tel: 520.621.6354, Fax: 520.621.8407, E-mail: dhevans@email.arizona.edu; and **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.

W3 - PROSPECTIVE TRENDS IN SYNTHETIC AND MECHANISTIC ORGANIC ELECTROCHEMISTRY

(Organic and Biological Electrochemistry)

Papers are solicited on all aspects of organic electrochemistry, including electrosynthesis, organometallic electrochemistry, the role of metals in organic electrode reactions, mechanistic investigations, modified electrodes, unusual media, asymmetric electrosynthesis, indirect electrode processes, and related areas.

Abstracts, suggestions, and inquiries should be sent electronically to the ECS headquarters office and to the symposium organizers: **S. Kashimura**, Department of Metallurgy, Faculty of Science and Engineering, Kinki University, 3-4-1, Kowakae, Higashi-Osaka, Osaka 577, Japan, Tel: 81.463.94.5241; Fax: 81.463.91.3357; E-mail: r8kashi@cced.kindai.ac.jp; and **A. K. Yudin**, Lash Miller Chemical Laboratories, University of Toronto, 80 St. George Street, Toronto, Ontario, Canada M5S 3H6, Tel and Fax: 416.946.5042, E-mail: ayudin@chem.utoronto.ca.

X1 - BIOMOLECULAR SENSORS AND ARRAYS

(Organic and Biological Electrochemistry / Sensor)

Biosensor research and development is moving from single analyte detectors, such as the commercial electrochemical-enzyme sensors for glucose in blood, toward devices designed to detect many analytes at once. These multiplexed devices can be based on arrays of detection units, *e.g.*, electrodes. They have applications in emerging areas such as genomics, proteomics, metabolomics, drug discovery and toxicity, and environmental analysis. This symposium seeks invited and contributed papers in new approaches to biosensors and biosensor arrays. We aim for as broad a range of biosensor topics as possible, but possible topics include biomolecular recognition assemblies, fundamental studies of biosensing approaches, relevant aspects of micro- and nanoelectronics, array design and fabrication, new materials for arrays, and biomedical and biomolecular applications.

Please send comments or suggestions to one the organizers listed below, and submit abstracts through the ECS website, www.electrochem.org. **J. F. Rusling**, University of Connecticut, Department of Chemistry, U-60, 55 N. Eagleville Rd., Storrs, CT 06269-3060, USA, Tel: 860.486.4909, Fax: 860.486.2981, E-mail: James.Rusling@ Uconn.edu; and **C. Bruckner-Lea**, Pacific Northwest National Laboratory, P.O. Box 999, Mailstop K4-12, Richland, WA 99352, USA, Tel: 509.375.4460, Fax: 509.372.6544, E-mail: cindy.Bruckner-Lea@pnl.gov.

Y1 - PHYSICAL ELECTROCHEMISTRY GENERAL SESSION

(Physical Electrochemistry)

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

Abstracts, suggestions, and inquiries should be sent electronically to the ECS headquarters office and to the session organizer: **G. Brisard**, Department of Chemistry, University of Sherbrooke, 2500 Blvd., Universite, Sherbrooke, QC, Canada, Tel: 819.821.7093, Fax: 819.821.8017, E-mail: Gessie.Brisard@USherbrooke.ca.

Y2 - DIAGNOSTIC METHODS FOR MONITORING FUEL CELL PROCESSES

(Physical Electrochemistry)

As part of a broad effort to improve fuel cell performance, it is of increasing importance to devise means of obtaining reliable information regarding key electrochemical processes that limit the performance of fuel cells. Examples of critical processes include kinetics of redox reactions or mass transport of reagents in electrodes, membranes, or gas diffusion media. These limiting processes are often specific to application type or conditions used in operating the fuel cells. This symposium will focus on strategies employed to obtain information regarding these processes and findings obtained from such studies.

For this symposium, the following topics are of interest, as stand-alone approaches or in combination: 1. *In situ* studies of fuel cell reactions; 2. *Ex situ* probes of fundamental processes; 3. *Ex situ* studies designed to mimic the fuel cell environment; 4. Modeling of electrochemical processes; and 5. Development of methods targeting durability issues in fuel cells, such as accelerated life tests. Both method development and deployment are of interest.

Publication of a proceedings volume is planned to be available after the meeting. All authors accepted for presentation are obligated to submit camera-ready manuscripts for the proceedings volume at the meeting.

Abstracts, suggestions, and inquiries should be sent to ECS headquarters office and to the symposium organizers: **T. Zawodzinski**, Dept. of Chemical Engineering, Case Western Reserve University, 10900 Euclid Ave., Cleveland, OH 44120, USA, Tel: 216.368.5547, Fax: 216.368.3016, E-mail: taz5@cwru.edu; **P. Zelenay**, MST-11, MS D429, Los Alamos National Laboratory, Los Alamos, NM 87545, USA, Tel: 505. 667.0197, Fax: 505.667.4292, E-mail: zelenay@lanl.gov; **J. Weidner**, Dept. of Chemical Engineering, University of South Carolina, Columbia, SC 29208, USA, Tel: 803.777.3207, Fax: 803.777.8265, E-mail: weidner@engr.sc.edu; and **M. Murthy**, Gore Fuel Cell Technologies, 5 Falkirk Ct, Newark, DE 19702-2060, USA, Tel: 302.737.4258, Fax: 410.506.7633, E-mail: mmurthy@wlgore.com.

Y3 - ELECTROCATALYSIS

(Physical Electrochemistry)

The symposium will provide an interdisciplinary forum for the discussion of new results, concepts, and methodologies in the field of electrocatalysis. Major breakthroughs in recent years have arisen partly due to the application of high-level theoretical tools and computational methods aimed at increasing the understanding of surface reactions involved in electrocatalysis, and the development of new *in situ* techniques with atomic-level specificity. The primary objective of these approaches is to provide insight into the synthesis of new catalytic materials, as well as to enhance the significance of electrocatalysis in applications such as fuel cell science and technology. The continuous development of new experimental tools for the investigations of surface processes at fuel cell catalysts, for example, and on model surfaces, is assisting in the rapid growth of the field. Progress in theory and experiment is intimately connected to surface science and heterogeneous catalysis, where the demand for theory is likewise overwhelming.

The following specific topics will be highlighted in this symposium: 1. PEM electrocatalysis, ligand, electronic, and ensemble effects, bifunctional mechanisms, structure and composition of reaction site on bimetallic and ternary electrocatalysts (also: islands, defects, and surface clusters, etc.); 2. Theoretical description: accuracy and predictability; 3. Surface diffusion; 4. Intermediates: stable vs. transient; 5. Single crystal electrodes (adsorbates and deposits); 6. Electrocatalysis at oxide electrodes; 7. Electrocatalysts for hydrogen reactions; 8. Nanotechnology and/or the application of nanoparticles; 9. New trends in the applications of vibrational methods, methods from UHV surface science, and synchrotron X-ray methods in studies of electrochemical interfaces; 10. Other non-electrochemical techniques for the study of interfacial structure; and 11. Electrical double layer measurements and modeling *in situ* and in UHV.

Publication of a proceedings volume is planned after the meeting. Acceptance of a paper obligates the authors to submit a typed camera-ready copy of the full manuscript to the organizers at the meeting.

The invitation is open and the program will be constructed from abstracts submitted to the ECS headquarters office. Suggestions and inquiries should be sent to ECS headquarters office or to any one of the symposium organizers: **R. Adzic**, Brookhaven National Laboratory, Materials Science Department, Upton, NY 11973-5000, USA, Tel: 631.344.4522, Fax: 631.344.5815, E-mail: adzic@bnl.gov; **V. Birss**, University of Calgary, Department of Chemistry, 2500 University Dr. N.W., Calgary, AB T2N-1N4, Canada, Tel: 403.220.6432, Fax: 403.289.9488, E-mail: birss@ucalgary.ca.; **G. Brisard**, Department of Chemistry, Universite de Sherbrooke, 2500 Blvd. Universite, Sherbrooke, P.Q, Canada J1K-2R1, Tel: 819.821.7093; Fax: 819.821.8017, E-mail: Gessie.Brisard@USherbrooke.ca; and **A. Wieckowski**, Department Of Chemistry, RAL 58B, Box 56-5, University of Illinois, 600 S. Mathews Avenue, Urbana, IL 61801-3602, USA, Tel: 217.333.7943, Fax: 212.244.8068, E-mail: andrzej@scs.uiuc.edu.

Z1 - SYMPOSIUM ON BIOPHYSICAL ELECTROCHEMISTRY IN HONOR OF KATSUMI NIKI

(Physical Electrochemistry / Organic and Biological Electrochemistry)

This symposium is aimed at bringing together electrochemists, biologists, biophysicists, and scientists involved in biomedical research using an electrochemical and, more generally, a physical approach to problems of biological relevance. Our goal is to overcome the traditional barriers between these different disciplines and the development of biophysical electrochemistry.

Submission of papers is encouraged in the following topics: 1. Charge transport across biomembranes and membrane models: ion pumps, channel-forming peptides and proteins; 2. Membranes on solid supports: scientific and nanotechnological applications; 3. Electroporation: fundamentals and applications; 4. Membrane structure and assembly; 5. Photochemistry of biological systems; and 6. Development of biosensors.

Organizers: **J. Lipkowski**, Chemistry & Biochemistry Dept., University of Guelph, Guelph, Ontario, Canada N1G 2W1, Tel: 519.824.4120 ext 58543, Fax: 519.766.1699, E-mail: lipkowski@chembio.uoguelph.ca; **D. Bizzotto**, Dept of Chemistry, University of British Columbia, 2036 Main Mall, Vancouver, BC, Canada V6T 1Z1, office: AMPEL 318, Tel: 604.822.6816, lab: AMPEL 342, Tel: 604.822.1306, Fax: 604.822.2847, E-mail: bizzotto@chem.ubc.ca; **R. Guidelli**, Dipartimento di Chimica, Universita di Firenze, Polo Scientifico, Via della Lastruccia 3, 50019 Sesto Fiorentino, Firenze, Italy, Tel: +39.055.4573097, Fax: +39.055.4573098, E-mail guidelli@unifi.it; and **I. Taniguchi**, Department of Applied Chemistry, Kumamoto University, 2-39-1, Kurokami, Kumamoto 860, Japan, Tel and Fax: +81-96-342-3655; E-mail: taniguch@gpo.kumamoto-u.ac.jp.

AA1 - NANOSTRUCTURED AND FUNCTIONALIZED CONDUCTING POLYMER FILMS AND RELATED MATERIALS

(Physical Electrochemistry / Sensor / Corrosion)

Conducting polymers play key roles in many areas of science and technology such as energy storage (batteries and supercapacitors), electronic devices, electrocatalysis, electrochromic displays and nonlinear optics, electroluminescent materials, corrosion protection, protective films against static electricity or electromagnetic waves, and analytical sensors. Their properties which include an ease to produce them as films of a desirable thickness by electropolymerization, possibility to generate hybrid (composite) systems and nanostructures, as well as good adhesion to various surfaces, including metals, make them extremely useful in the preparation of functionalized modified electrodes.

This symposium will address recent advances in the science and technology of electroactive films fabricated from nano- and microscale materials such as conducting polymers and related systems that include hybrid (composite) materials and redox conducting inorganic analogues (*e.g.*, polyoxometallates, cyanometallates, sol-gel processed materials, clays). Topics of interest will include all aspects of science and technology of these materials, in particular: 1. Fabrication of new conducting polymers and related materials: experimental and theoretical studies of their fundamental properties; 2. Characterization of film formation by *ex situ* (in vacuum), electrochemical, spectroscopic, and microscopic techniques; 3. Mechanisms and dynamics of charge propagation; 4. Studies of novel interfaces and films; 5. Development and characterization of ultrathin and nanostructured films; 6. Novel polymer/inorganic matrices for electrocatalysis (sensors, biofuel and fuel cells); 7. Application to chemical sensing (*e.g.*, electrochemical, chemiresistive, or piezoelectric detection); 8. Mechanistic and applied aspects of corrosion protection with conducting polymer based and composite systems; 9. Applications in nonlinear optics, electrochromism, electroluminescence.

Abstracts, suggestions, and inquires should be sent electronically to the ECS headquarters office, with a copy to the symposium organizers: **P. J. Kulesza**, Department of Chemistry, University of Warsaw, Pasteura 1, PL-02-093 Warsaw, Poland; Tel: 48.22.8220211 ext. 289, Fax: 48.22.8225996, E-mail: pkulesza@chem.uw.edu.pl; **M. A. Vorotyntsev**, LSEO-UMR 5188 CNRS, University of Bourgogne, 6 boulevard Gabriel, F-21000 Dijon, France; Tel/Fax: 33.3.8039.6064, E-mail: Mikhail.Vorotyntsev@u-bourgogne.fr; **J. A. Cox**, Department of Chemistry and Biochemistry, Miami University, Oxford, OH 45056, USA, Tel: 513.529.2493, Fax: 513.529.5715, E-mail: coxja@muohio.edu; **J. Li**, Eloret Corp., NASA Ames Research Center, MS 229-1, Moffett Field, CA 94035, USA, Tel: 650.604.4352, Fax: 650.604.0987, E-mail: jingli@mail.arc.nasa.gov; and **P. Schmuki**, University of Erlangen, Matl Sci LKO, Nurember, Martensstrasse 7, D-91058 Erlangen, Germany, Tel: 91318527575, Fax: 91318527582, E-mail: schmuki@ww.uni-erlangen.de.

AB1 - COMBINATORIAL ELECTROCHEMISTRY OF SENSING MATERIALS AND METHODOLOGY

(Physical Electrochemistry / Sensor / Organic and Biological Electrochemistry)

This symposium will address all aspects of electrochemical protocols, cleaning, deposition, high throughput analysis, conditioning of electrodes, development of new selective sensing materials, materials analysis and fabrication as well as data processing in combinatorial electrochemistry.

Abstracts, suggestions, and inquiries should be sent electronically to the ECS headquarters office and to the symposium organizers: **Y. Lin**, Pacific Northwest National Laboratory, Richland, WA 99352, USA, Tel: 509.376.0529, Fax: 509.376.5106, E-mail: yuehe.lin@pnl.gov; **A. K. Yudin**, Lash Miller Chemical Laboratories, University of Toronto, 80 St. George Street, Toronto, Ontario, Canada M5S 3H6, Tel. and Fax: 416.946.5042, E-mail: ayudin@chem.utoronto.ca; **W. Schuhmann**, woschu@anachem.ruhr-uni-bochum.de; and **G. Smotkin**, Nuvant Systems Inc., PO Box 22853, San Juan, PR 00931-2853, Tel: 312.567.3453, Fax: 312.567.8874, E-mail: esmotkin@goliath.cnnet.clu.edu.

AC1 - 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 increasing significantly 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 interdisciplinary 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 tem-

perature as well as low temperature applications will be discussed. Papers are solicited, but not limited, in the following areas: 1. Physics and chemistry of sensor and actuator materials, fabrication and characterization of novel compositions; 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 and chemical sensors and actuators, such as gas, humidity, ion, or molecular sensors, their system integration and actuating functions; 5. Acoustic wave based sensors and actuators, such as piezoelectric and ferroelectric sensors and actuators, their system integration and reliability issues; 6. Optical, rf, and wireless sensors and actuators, such as fiberoptic sensors, microwave sensors, optical and wireless integrations; and 7. Emerging technologies and applications; and 8. Novel techniques to expand and insure sensor stability and reliability.

Abstracts, suggestions, and inquiries should be sent to the ECS headquarters office and to the symposium 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: Gary.W.Hunter@nasa.gov; **J. R. Stetter**, Illinois Institute of Technology, BCPS Department,3101 S. Dearborn Avenue, Chicago, IL 60616, USA, Tel: 312.567.3443, Fax: 312.567.3494, E-mail: stetter@iit.edu; and **S. Bhansali**, University of South Florida, Tampa, FL, 33620, USA, Tel: 813.974.3593; Fax: 813.974.5250; E-mail: bhansali@eng.usf.edu.

AD1 - ENVIRONMENTAL, FUEL CELL, AND ADVANCED AUTOMOTIVE SENSORS

(Sensor / Energy Technology)

Sensors and sensor systems are being used increasingly in various energy conversion devices to increase efficiency and mitigate pollution. Heightened concerns regarding the availability of fossil fuels are leading to more stringent regulations on the efficiency of existing energy conversion devices. Moreover, there is significant investment in the development of highly efficient commercial energy conversion systems using fuel cells. Simultaneously, there is increased public awareness of the environmental effects of various pollutants emitted by these energy conversion systems. Improvements to currently available sensor technology are critical in improving the efficiency of and monitoring the emissions from these systems.

This symposium will provide a forum for the discussion of the latest advancements in chemical sensor research and development. The primary focus will be on sensor and sensor systems used in environmental, fuel cell, and automotive emissions monitoring applications. Researchers from industries, universities, and national laboratories that work in the field of chemical sensors are invited to participate. Papers on all sensing mechanisms (*e.g.*, electrochemical, resistive/semiconductive, acoustic, optical, gravimetric, and thermal) that address novel materials, synthesis, device configuration, evaluation techniques, and system design are welcome. Papers are solicited, but not limited, to the following topics of interest: 1. Sensors for the monitoring of pollutants like nitrogen oxides, sulfur oxides, carbon dioxide, hydrocarbons, and halogens in the atmosphere; 2. Sensors for fuel cell systems including hydrogen, carbon-monoxide, sulfur, humidity, and methanol sensors; 3. Sensors for automotive emission systems including oxygen, nitrogen oxide, hydrocarbon, and carbon monoxide sensors; 4. Novel processing methods used in the manufacture of electrochemical, resistive/semiconductive, optical, thermal, and acoustic-based sensors for these applications; and 5. The development and analysis of sensor arrays for the simultaneous detection of multiple analytes.

Preferably, abstracts should be submitted electronically via the ECS website to the ECS headquarters office. Copies of the electronically submitted abstracts do not need to be mailed to the organizers. Copies of abstracts submitted on paper, suggestions, and inquiries should be sent to the ECS headquarters office and to the symposium organizers: **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; **S. A. Akbar**, The Ohio State University, Department of Materials Science and Engineering, 177 Watts Hall, Columbus, OH 43210, USA, Tel: 614.292.6725, Fax: 614.688.4949, e-mail: akbar.1@osu.edu; **F. DiMeo**, ATMI, 7 Commerce Drive, Danbury, CT 06810, USA, Tel: 203.794.1100 Ext. 4279, Fax: 203.830.2123, E-mail: fdimeo@atmi.com; and **M. A. Ryan**, Jet Propulsion Laboratories, 4800 Oak Grove Dr. #198-235, Pasadena, CA 91109, USA, Tel: 818.354.8028, Fax: 818.393.4272, E-mail: mryan@jpl.nasa.gov.

AE1 - IMPEDANCE BASED SENSORS

(Sensor / Physical Electrochemistry / Corrosion)

The purpose of this symposium is to bring together leading experts with different experimental and theoretical skills working in areas of electrochemical impedance-based sensors and analytical systems. Impedance spectroscopy-based on-line *in situ* measurements represent a rich multidiscipline area of science that has been applied to important areas of research, such as 1. Corrosion studies and corrosion control; 2. Monitoring of properties of electronic and ionic conducting polymers and coatings; 3. Measurements in energy storage, batteries, and fuel cells-related systems; 4. Biological, biocellular, and biomedical sensors; 5. Measurements in semiconductors, solid electrolytes, and electronic conductors; and 6. Studies of electrochemical kinetics, reactions, and processes and their control.

The aim is to show the power of electrochemical impedance spectroscopy for understanding electrochemical systems: characterizing homogeneous and heterogeneous materials by their charge transport and dielectric properties, recognizing effects and signatures of surface layers, studying space charge regions at the interfaces or in the bulk solution, determining kinetics of electrochemical and chemical reactions. The symposium also welcomes papers dedicated to fundamental research in electrochemical impedance devices and recent advances in impedance instrumentation, data collection, and processing.

Abstracts should be submitted electronically to the ECS meetings website. Suggestions and inquiries should be sent to the symposium organizers: **V. Lvovich**, Lubrizol Corp., Research & Development, 29400 Lakeland Blvd., B151, Wickliffe, OH 44092, USA, Tel: 440.347.2123, Fax: 440.347.4482; E-mail: vlv@lubrizol.com; **P. Vanysek**, 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; and **D. Hansen**, Princeton Applied Research, 801 S. Illinois Ave., Oak Ridge, TN 37830-9101, USA, Tel: 865.483.2141, Fax: 865.425.1334, E-mail: doug.hansen@pari-online.com.

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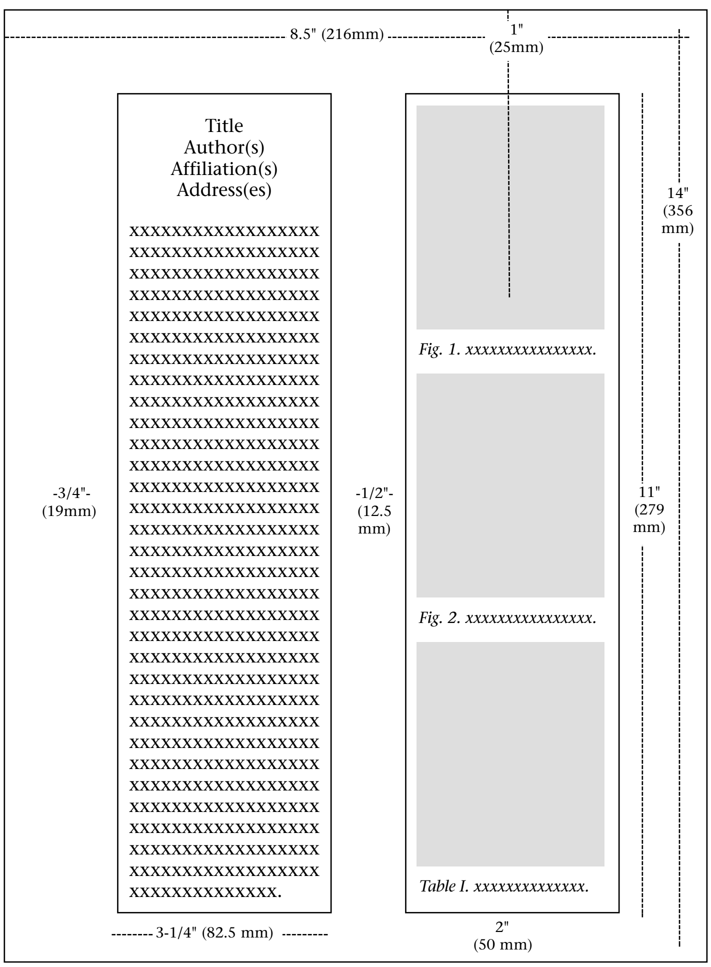
Abstract Format—Abstracts are required to be no more than one page in length consisting of two columns 3.25 x 11 in. (82.5 x 279 mm), approximately 800 words total or 400 words per column. A recommended format is one column of text and references and an additional column of tables, graphs, or figures. The title should be capitalized and in bold face. You may use any white bond paper 8.5 x 14 in. (216 x 356 mm). For international standards, white bond A3 paper (297 x 420 mm) may also be used, but the right side should be trimmed so that the total trimmed width is 216 mm and trim the length so that the total trimmed length is 356 mm. Type the body of the abstract **single-spaced** using black ink. The preferred font for laser printers is 10-point Times Roman. Type author(s), affiliations(s), and address(es) at the top as shown below. Failure to follow these guidelines will result in the rejection of the paper. Abstracts may be submitted either electronically or on paper.

Preparing Abstracts Electronically—All authors are encouraged to submit their meeting abstracts electronically. For those authors with Web access, you may read information about preparing your meeting abstract electronically at www.electrochem.org/abstracts.html. Processing of the electronic submissions is accomplished by the **ECS Online System** (EOL). To use the EOL web interface, go to www.electrochem.org and click on abstract submission. These instructions, and much more information about the ECS electronic meeting abstracts, are available from the ECS website. Please **do not password protect your document to read only format**; we **must** be able to add a header that contains the final abstract number and meeting information.

Preparing Abstracts on Paper—Camera-ready typing mats may be obtained from the ECS headquarters office. Follow the instructions carefully. If you are using a laser printer that cannot accommodate legal size paper, make each column 3.25 x 11 in. (82.5 x 279 mm) and securely paste the column onto the camera-ready typing mats or a legal size sheet within the proper margins. We will **not** retype your abstract and it will appear the way you prepare it. Abstracts will NOT be accepted via fax or ordinary e-mail.

Publication—Abstracts of all scheduled papers will be published on the ECS website on or after July 1, 2005. Online meeting abstracts will be available free to the public until approximately 6 weeks after the close of the meeting. All abstracts of scheduled papers will also be published on a CD-ROM, which will be distributed to meeting attendees. Abstracts on the ECS website and the CD-ROM are copyrighted by The Electrochemical Society.

Sample Abstract Diagram



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2 ____________________ **Student ❑ Yes ❑ No**

3 ____________________ **Student ❑ Yes ❑ No**

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5 ____________________ **Student ❑ Yes ❑ No**

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