CALL FOR PAPERS

201st Meeting of The Electrochemical Society, Inc.

Philadelphia, Pennsylvania • May 12-17, 2002

Philadelphia Marriott

ABSTRACT SUBMISSION

Submit one original, properly formatted, meeting abstract electronically via *www.electrochem.org/ecstasi/* by **January 2, 2002** to ECS headquarters office, with a copy to the appropriate symposium organizer(s). Abstracts are required to be in a two-column, legal size format, and are to be no more than one page in length. Meeting abstracts should explicitly state objectives, new results, and conclusions or significance of the work. Programming for this meeting will occur in **January of 2002,** with some papers scheduled for poster presentation. All Meeting Abstracts will become publicly available on the ECS website on or about February 1, 2002. 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 of papers selected for either oral or poster presentations will be notified in **February of 2002**. Oral presentations must be in English. LCD and overhead projectors will be provided as standard equipment for all oral presentations. Authors are required to provide their own lap top computers for LCD presentations. Poster presentations will be displayed in English, on a board 96 inches (2.45 m) wide by 48 inches (1.22 m) high, corresponding to their abstract number and day of presentation in the final program. Speakers requiring special equipment must make a written request to the ECS Headquarters Office and appropriate arrangements will be worked out at the expense of the author.

MANUSCRIPT PUBLICATION

All Meeting Abstracts will be published in the Meeting Abstracts volume copyrighted by The Electrochemical Society and become the property of ECS upon presentation. Check the individual symposium listing to see if a proceedings volume is being planned. See *www.electrochem.org/guidelines.html* (Section III) for PV manuscript preparation. To be considered for publication in the *Journal of The Electrochemical Society*, a full manuscript must be submitted within six months of the symposium date. The "Instructions to Authors" is available from ECS Headquarters Office, in the *Journal* or *Letters*, or on the ECS website. If publication elsewhere is desired after presentation, written permission from ECS Headquarters Office is required.

HOTEL RESERVATIONS

The 201st Meeting will be held at the Philadelphia Marriott (1201 Market Street, Philadelphia, Pennsylvania 19107, USA). Philadelphia is the site of the Society's first Meeting held in April 1902. The Philadelphia Marriott is located within walking distance of historic sites such as the Liberty Bell and Independence Hall; and close to cultural sites such as the Philadelphia Museum of Art.

MEETING REGISTRATION

All Authors are required to register for the meeting. Hotel and meeting registration materials will be distributed in February 2002, and will be available on the ECS website at *www.electrochem.org/meetings/201/meet.html*. The deadline for registration is **April 12, 2002**.

TECHNICAL EXHIBITION

The 201st Meeting will also include a Technical Exhibition, featuring presentations and displays by over 50 manufacturers of instruments, materials, systems, publications, and software of interest to meeting attendees. Parties interested in exhibiting should contact The Electrochemical Society headquarters office for more information. Coffee breaks are scheduled each day in the exhibition along with evening poster sessions.

CONTACT INFORMATION

If you have any questions or require additional information, contact The Electrochemical Society, Inc., 65 South Main Street, Pennington, New Jersey 08534-2839 USA, phone: 609.737.1902, fax: 609.737.2743, e-mail: ecs@electrochem.org, web: *www.electrochem.org*.

CENTENNIAL CELEBRATION

During the 201st Meeting in Philadelphia, ECS will celebrate its 100th anniversary. There are a number of special events planned, including three plenary talks, a Monday Evening Mixer with enterainment, and the "main event"—a Centennial party on Wednesday. Mark your calendars and plan to attend this exciting meeting.

Abstract Preparation Instructions
http://www2.electrochem.org/ecstasi/

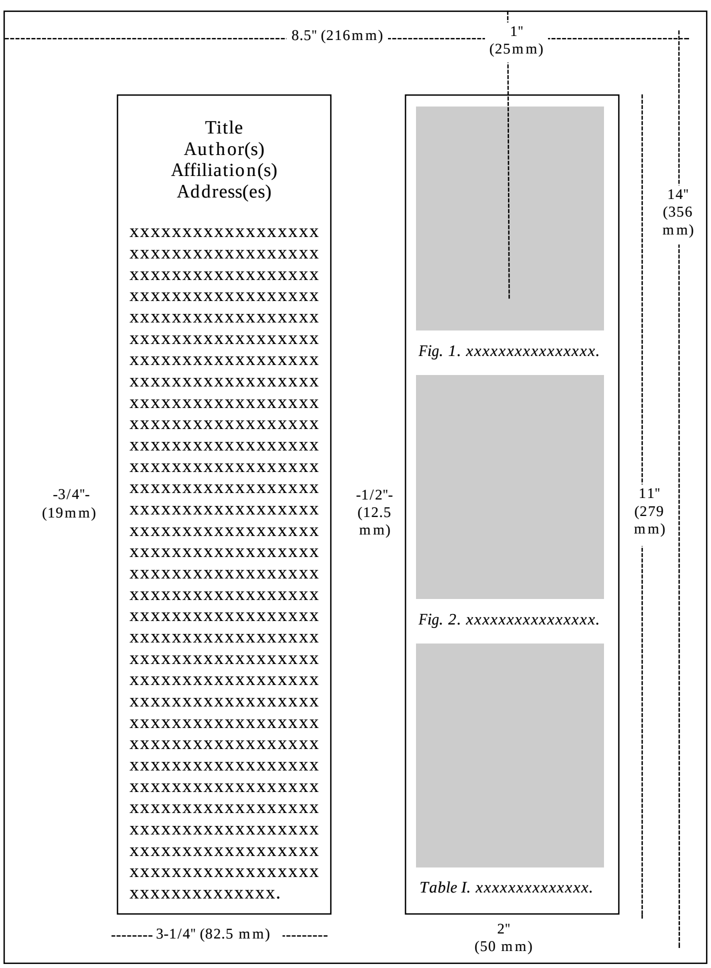
Abstract Format—Abstracts are required to be no more than one page in length consisting of two columns 3.25 x 11 in. (82.5 x 279 mm), approximately 800 words total or 400 words per column. A recommended format is one column of text and references and an additional column of tables, graphs, or figures. 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 T**ool for **A**bstract **S**ubmission via the **I**nternet (ECSTASI). To use the ECSTASI Web interface, go to www.electrochem.org/ecstasi. These instructions, and much more information about the ECS electronic meeting abstracts, are available from the ECS website at www.electrochem.org.

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. Published abstracts are photo-offset from the copy that you prepare. 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—All scheduled papers will be published in the Meeting Abstracts volume, copyrighted by The Electrochemical Society, Inc. The volume is published photo-offset directly from copy submitted by the author. The volume size is 7 X 10 in. (178 x 254 mm); therefore, it is mandatory that the typing be clear and all lettering should be the size of ordinary type or at least 1/16 in. (1.6 mm) high so that it will be legible after reduction.

Sample Abstract Diagram



Note: Diagram Not Drawn to Scale.

ABSTRACT SUBMISSION FORM

Philadelphia, PA, USA
May 12-17, 2002

Abs. No. ____________
(Assigned by the Society)

Submit to: The Electrochemical Society
65 South Main Street, Pennington, NJ 08534-2839 USA
With a copy to the Symposium Organizer(s)—by January 2, 2002

PLEASE TYPE

Symposium Code and Title: ______________________________

Sponsoring Division(s)/Group(s) ______________________________

Title of Paper: ______________________________

Author(s), with complete mailing address(es) - (List presenting author FIRST and include contact author's telephone and fax numbers and e-mail address. Please group authors at the same address when possible).

1 ______________________________ Student ❑ Yes ❑ No

2 ______________________________ Student ❑ Yes ❑ No

3 ______________________________ Student ❑ Yes ❑ No

4 ______________________________ Student ❑ Yes ❑ No

5 ______________________________ Student ❑ Yes ❑ No

Do you plan to present more than one paper at this Meeting?

❑ No ❑ Yes; If so, indicate Symposia ______________________________

All rooms will have LCD and overhead projectors.

Authors are required to bring their own laptops for LCD presentations.

❑ Please indicate other equipment at author's expense and subject to availability.

____

❑ Check here to receive information about membership in The Electrochemical Society, Inc. Information will be sent to author(s) #____________listed above

Deadline for Submission of Abstracts: January 2, 2002

Abstracts received after **January 2, 2002** will be rejected.
All abstracts and oral presentations must be in English and must be **no more than one page** in length.

PHILADELPHIA SYMPOSIA — MAY 12-17, 2002

A1 - GENERAL STUDENT POSTER SESSION

(All Divisions and Groups)

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

Abstracts, suggestions, and inquiries should be sent to the ECS Headquarters Office and to the Session Organizers: **R. K. Ulrich,** 3202 Bell Center, University of Arkansas, Fayetteville, AR 72701 USA, Phone: (501) 575-5645, Fax: (501) 575-7926, E-mail: rku@engr.uark.edu; **J. M. Fenton**, Department of Chemical Engineering, University of Connecticut, U-222, 191 Auditorium Road, Storrs, CT 06269-322 USA, Phone: (860) 486-2490, Fax: (860) 486-2959, E-mail: jmfent@engr.uconn.edu.

A2 - NANOTECHNOLOGY

(All Divisions and Groups)

The number of applications for materials that are prepared on a nanometer scale are 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 latest advancements in the science and technology of nanostructured materials. Papers are solicited in all areas related to materials including metals, semiconductors, 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 11. Biological applications of nanomaterials.

Abstracts, suggestions, and inquiries should be sent to the ECS Headquarters Office and to the Symposium Organizers: **W. A. van Schalkwijk**, Self-CHARGE, Inc., 6742 NE 185th Ave., Suite 230, Redmond, WA 98052 USA, Phone: (425) 881-9199 x116, Fax: (425) 883-1447, E-mail: waltvans@home.com; **P. Kamat,** Radiation Laboratory, University of Notre Dame, Notre Dame, IN 4656 USA, Phone: (219) 631-5411, Fax: (219) 631-8068, E-mail: pkamat@nd.edu; and **S. Seal,** University of Central Florida, Department of Engineering 381, 4000 University Blvd., Orlando, FL 32816-0001 USA, Phone: (407) 823-5277, Fax: (407) 823-0208, E-mail: sseal@pegasus.cc.ucf.edu.

B1 - BATTERY/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 at this meeting. Of particular interest are new materials and processes for batteries and fuel cells. All types of batteries and fuel cells are of interest including aqueous electrolyte systems such as nickel-cadium, zinc-air, lead-acid, and nickel-metal hydride as well as non-aqueous electrolyte batteries and fuel cells. Papers on performance models are also welcome.

Abstracts, suggestions, and inquiries should be sent to the ECS Headquarters Office and to the session organizers: **E. S. Takeuchi,** Wilson Greatbatch Ltd., 10,000 Wehrle Drive, Clarence, NY 14031, USA, Phone: (716) 759-5358, Fax: (716) 759-5480, Email: etakeuchi@greatbatch.com; and **T. F. Fuller**, 300 Chestnut Hill Rd, Glastonbury, CT 06033- 4153, USA, Phone: (860) 727-2440, Fax: (860)727-2319, E-mail: fullert@ifc.utc.com.

C1 - NANOPHASE MATERIALS FOR BATTERIES AND FUEL CELLS

(Battery / Energy Technology / Physical Electrochemistry)

Nanophase materials exhibit greatly altered surface and bulk properties compared to coarse-grain materials. Some of these properties include catalysis, bulk and intergranular diffusion, ionic and electronic conductivity, and mechanical properties. Nanoparticle manipulation to produce desired enhancements in performance of batteries and fuel cells, is an area of active research. This symposium will focus on nanomaterials in the area of electrochemical energy storage and conversion. In the area of batteries and capacitors, topics of interest include lithium alloys, intercalation anodes and cathodes, composite polymer electrolytes, metal hydrides, and ultra /supercapacitor electrodes. Topics of interest in the general area of fuel cells include catalysts for electro-oxidation of hydrogen, reformate, and organic fuels, catalysts for oxygen reduction, supported and unsupported materials, catalysts for fuel processing, porous electrode structures, polymer electrolytes for PEM and solid oxide fuel cells.

Because we anticipate a rather large number of contributions, we expect to have one or more poster sessions for the symposium. Please indicate your preference for poster/oral presentation. The organizers will do their best to accommodate the preference.

Abstracts, suggestions, and inquiries should be sent electronically to the ECS Headquarters Office and to the Symposium Organizers: **S. R. Narayanan,** Jet Propulsion Laboratory, 4800 Oak Grove Drive, MS 277-207, Pasadena, CA 91109, USA, Phone: (818) 354 0013, Fax: (818) 393 6951, E-mail: s.r.narayanan@jpl.nasa.gov; **B. V. Ratnakumar**, Jet Propulsion Laboratory, 4800 Oak Grove Drive, MS 277-207, Pasadena, CA 91109, USA, Phone (818) 354 0110, Fax: (818) 393 6951, E-mail: ratnakumar.v.bugga@jpl.nasa.gov.

D1 - ELECTROCHEMICAL CAPACITOR AND HYBRID POWER SOURCES

(Battery / Energy Technology / Physical Electrochemistry / Capacitor Technology Committee of the Electrochemical Society of Japan / Korea Institute of Energy Research

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

The publication of a Proceedings Volume is planned to be available after the Meeting. Authors accepted for presentation are obligated to supply a camera-ready manuscript at the meeting. Instructions for preparing the manuscript will be sent out by the Symposium Organizers after the notification of acceptance of the papers.

Abstracts, suggestions, and inquiries should be sent to the ECS Headquarters Office and the symposium organizers: **R. J. Brodd**, Broddarp of Nevada, Inc., 6121 Fountain Springs Dr., Henderson NV 89014 USA, Phone: (702) 897-3027, Fax: (702) 897-5812; E-mail: dbrodd@broddarp.com; **D. H. Doughty,** Sandia National Labs., MS-0613, Battery Programs Dept., P.O. Box 5800, Albuquerque, NM 87185-0613 USA, Phone: (505) 845-8105, Fax: (505) 844-6972, E-mail: dhdough@sandia.gov; **K. Naoi**, Department of Applied Chemistry, Tokyo University of Agriculture and Technology, 2-24-16 Naka-cho, Kognanei, Tokyo 184-8588, Japan, Phone: 81-0423-88-7174, Fax: 81-0423-87-8448, E-mail: naoi_lab@cc.tuat.ac.jp; **M Morita**, Department of Applied Chemistry and Chemical Engineering, Yamaguchi University, 2-16-1 Tokiwadi, Ube 755-8611, Japan, Phone: 81-836-85-9211, Fax: 81-836-85-9201, E-mail: morita@po.cc.yamaguchi-u.ac.jp; **C. Nanjundiah**, Maxwell Energy Systems, 9244 Balboa Ave., San Diego, CA 92123 USA, Phone: (858) 503-3363,

Fax: (858) 503-3333, E-mail: nanju@maxwell.com; **J. H. Kim**, Energy Research Center, Korean Institute of Energy Research, Daedeck Science Town, 71-2 Jang-Dong Yoosung-Gu, Taejon 305-343, Korea, Phone: 82-42-860-3117, Fax: 82-42-860-3117, E-mail: kjhy@kier.re.kr; and **G. Nagasubramanian**, Lithium Battery R&D Dept., Sandia National Lab. MS-0613, P.O. Box 5800, Albuquerque, NM, 87185-0613, USA, Phone: (505) 845-1684, Fax: (505) 844-6972, E-mail: gnagasu@sandia.gov.

E1 - BATTERY TECHNOLOGY AND FUEL CELL TECHNOLOGY: A RETROSPECTIVE

(Battery / High Temperature Materials / Energy Technology)

The Philadelphia meeting marks the 100th anniversary of The Electrochemical Society. As such, we are interested in constructing a symposium recognizing the achievements in batteries and fuel cells over the past 100 years. Papers that describe aspects of specific technologies and their evolution are solicited. Papers that discuss certain application areas and the development of solutions for those areas are also solicited. Papers that are forward looking in terms of technology, applications, or market areas are also of interest. We are soliciting papers from a broad representation of technologies including aqueous systems, non-aqueous systems, and fuel cells. We intend that the symposium will be a mixture of invited and contributed papers.

Abstracts, suggestions and inquiries should be sent electronically to the ECS Headquarters Office and to the Session Organizers: **G. Blomgren**, Blomgren Consulting Services, 1554 Clarence Avenue, Lakewood, OH 44107 USA, Phone: (216) 221-4478, Fax: (216) 221-04477; E-mail: geblomgren@prodigy.net, **E. S. Takeuchi**, Wilson Greatbatch Ltd, 10,000 Wehrle Drive, Clarence, NY 14031 USA, Phone: (716) 759-5358, E-mail: etakeuchi@greatbatch.com; **A. J. Salkind,** UMDNJ/Robert Wood Johnson, TR #4 Bio. Engineering, 675 Hoes Lane, Piscataway, NJ 08854-5627, USA, Phone (732) 445-6858, E-mail: salkind@rci.rutgers.edu, and **H. R. Kunz**, University of Connecticut, Department of Chemical Engineering, 191 Auditorium Road, U-222, Storrs, CT 06269-3222 USA, Phone (860) 486-5389, Fax: (860) 486-2959, E-mail: russkunz@engr.uconn.edu.

F1 - CORROSION SCIENCE: A RETROSPECTIVE AND CURRENT STATUS, IN HONOR OF ROBERT P. FRANKENTHAL

(Corrosion)

This unique symposium has two goals. First, Robert P. Frankenthal will be honored for his considerable contributions to the field of corrosion science and his service to The Electrochemical Society. In keeping with this and, also, in the spirit of the Society's centennial celebration, the progress made in the corrosion field over the past 60 years will be reviewed.

Bob Frankenthal has been active in corrosion and in ECS for over 40 years during his employment at both the US Steel Corp. and Bell Laboratories. Bob has been a leader, an inspiration, and a friend to many. He has made major contributions in the areas of passivity, localized corrosion, low temperature oxidation, and corrosion of electronic materials and devices. Papers are solicited in these and all other areas of corrosion, including electrochemical techniques, surface analysis, corrosion in special environments, stress corrosion cracking, and micro-corrosion. A social event to honor Bob Frankenthal is planned.

Authors are welcome to contribute papers describing recent accomplishments, but they are especially encouraged to present a paper on current and/or past work that fits well into an historical perspective on the field. Authors wishing to contribute a paper describing new results are encouraged to also provide considerable background on the subject and cast the new results in the light of the prior work of the field. Historical papers can cover a single, or several related, personal accomplishments of the author from the past. For instance, authors may wish to review, with proper referencing, important contributions from their work as well as that of others in a unified theme. Review papers that trace the historical development of concepts, theory, or techniques are also encouraged. The hope is that the combination of reviews from the past and new findings will provide a unique and meaningful overview of the field and its development over the last 60 years.

The publication of a Proceedings Volume is planned to be available after the Meeting. Authors accepted for presentation are obligated to supply a camera-ready manuscript at the meeting. Instructions for preparing the manuscript will be sent out by the Symposium Organizers after the notification of acceptance of the papers.

Abstracts, questions, and inquiries can be sent directly to the ECS Headquarters Office and to the Symposium Organizers: **G. S. Frankel**, Fontana Corrosion Center, The Ohio State University, 477 Watts Hall, 2041 College Rd., Columbus, OH 43210, USA, Phone: (614) 688-4128, Fax (614) 292-9857, E-mail: frankel.10@osu.edu; **J. R. Scully,** University of Virginia, Thornton Hall, Charlottesville, VA 22903 USA, Phone: (804) 982-5786, Fax: (804) 982-5799, E-mail: jrs8d@uva.pcmail.virginia.edu; **H. S. Isaacs,** Brookhaven National Labs, Cornell Ave., Upton, NY 11973 USA, Phone: (631) 344-4516, Fax (631) 344-4071, E-mail: isaacs@bnl.gov; and **J. D. Sinclair**, P.O. Box 224, E. Middlebury, VT 05740 USA, E-mail: jdsinclair@worldnet.att.net.

F2 - CORROSION GENERAL POSTER SESSION

(Corrosion)

Posters concerning all aspects of corrosion and associated phenomena in liquid and gaseous phases not covered by topic areas of other specialized Corrosion Division symposia at this Meeting are welcome. Theoretical analyses, experimental investigations, descriptions of new techniques for the study of corrosion, and analyses of corrosion products and films are of interest. Contributed posters will be programmed in some related order, depending on the titles and contents of the abstracts.

Abstracts, suggestions, and inquiries should be sent to the ECS Headquarters Office and to the Session Organizer: **G. S. Frankel**, The Ohio State University, Department of Materials Science and Engineering, 477 Watts Hall, 2041 College Rd., Columbus, OH 43210 USA, Phone: (614) 688-4128, Fax: (614) 292-9857, E-mail: frankel.10@osu.edu.

G1- SOLID-STATE GENERAL POSTER SESSION

(Dielectric Science and Technology / Electrodeposition)

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

Abstracts, suggestions, and inquiries should be sent electronically to the ECS Headquarters Office and to the Symposium Organizers: **C. L. Claeys**, IMEC, Kapeldreef 75, B-3001 Leuven Belgium, Phone: 32-16-281328, Fax: 32-16-281844, E-mail: claeys@imec.be and **A. Bergendahl,** 7 Westview Drive, Jericho, VT 05465-2092, USA, Phone: (802) 899-3052, Fax: (802) 899-4873, E-mail: a.s.bergendahl@ieee.org.

H1 - PROGRESS OPPORTUNITIES IN DIELECTRIC SCIENCE AND TECHNOLOGY OVER THE LAST 25 YEARS: A RETROSPECTIVE

(Dielectric Science and Technology / Electronics)

In the past quarter century, the science and technology of dielectrics have undergone major advancements. The development of materials and processes for isolation layers, low-k interlevel films, high-k memories, gate insulators, integrated passives, device/circuit packaging, and energy storage have been vital to the geometric growth of microelectronic functionality at every level of the system. This one-half day retrospective will consist of invited papers from past Division chairs and prominent scientists in the field. The purpose will be to provide a perspective on how the technology has changed over the years and how developments in dielectric science and technology have facilitated growth of the electronics industry. Following these talks, future plans for DST will be presented. The session will close with a discussion among the audience and the speakers to refine and guide the directions of DST for the next quarter century.

Suggestions for speakers and inquiries should be sent electronically to the ECS Headquarters Office and to the Symposium Organizers: **D. W. Hess**, School of Chem. Engineering, Georgia Institute of Tech., Atlanta, GA 30332-0100 USA, Phone: (404) 894-5922, Fax: (404) 894-5922, E-mail: dennis.hess@che.gatech.edu; **R. K. Ulrich**, Dept. of Chemical Engineering, 3202 Bell Center, University of Arkansas, Fayetteville AR 72701, USA, Phone: (501) 575-5645, Fax: (501) 575-7926, E-mail: rulrich@uark.edu, and **H. Huff**, SEMATECH, 2706 Montopolis Drive, Austin, TX 78741 USA, Phone: (512) 356-3334, Fax: (512) 356-7640, E-mail: howard.huff@sematech.org.

I1 - FIFTH INTERNATIONAL SYMPOSIUM ON CHEMICAL MECHANICAL POLISHING (CMP)

(Dielectric Science and Technology / Electronics / Electrodeposition)

This symposium will address the fundamentals of chemical mechanical planarization (CMP) and its application in Inter Layer Dielectrics (ILD) polishing, metal polishing, and trench and mesa isolation. This will also address post-CMP cleaning, consumable characterization, polish end point detection, CMP process integration, and manufacturability issues with this emerging technology.

Papers will be solicited in the following areas: 1. Polishing science and technology, 2. Process modeling, 3. Process optimization and control, 4. Consumables characterization, 5. Process integration issues, 6. Surface and electrochemical aspects of CMP and post-CMP cleaning, 7. Defect detection and characterization, 8. Electrical characterization of post-CMP surfaces, and 9. Environmental aspects of CMP.

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 manuscript and a list of key words by January 1, 2002. Instructions for preparing the manuscript will be sent out by the Symposium Organizers after the official notification of acceptance is distributed by the ECS Headquarters Office.

Abstracts, suggestions, and inquiries should be sent to the ECS Headquarters Office and to the Symposium Organizers: **R. L. Opila**, Bell Labs-Lucent Technologies, 1D 352, 600 Mountain Ave., Murray Hill, NJ 07974-0636 USA, Phone: (908) 582-3390, Fax: (908) 582-3957, E-mail: opila@lucent.com; **H.Huff**, SEMATECH, 2706 Montopolis Drive, Austin, TX 78741 USA, Phone: (512) 356-3334, Fax: (512) 356-7640, E-mail: howard.huff@sematech.org; **S. Seal**, Department of Engineering 381, University of Central Florida, 4000 University Blvd., Orlando, FL 32816 USA, Phone: (407) 823-5277, Fax: (407) 823-0208, E-mail: sseal@pegasus.cc.ucf.edu; **C. Simpson**, Motorola, 3501 Ed Blustein Boulevard, K-10, Austin, TX 78721-3501 USA, Phone: (519) 933-3184, Fax: (519) 933-5497, E-mail: ra1557@email.sps.mot.com; **K. B. Sundaram**, Department of Electrical Engineering, University of Central Florida, Orlando, FL 32816 USA, Phone: (407) 823-5326, Fax: (401) 823-5326, E-mail: kbs@ece.engr.ucf.edu, and **I. I. Suni**, Department of Chemical Engineering, Clarkson University, Potsdam, NY 13699-5705, Phone: (512) 356-3334, Fax: (512) 356-7640, E-mail: isuni@clarkson.edu.

J1 - INTERNATIONAL SYMPOSIUM ON PLASMA PROCESSING XIV

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

This symposium is aimed at bringing together the technical community working and interested in plasma processing of thin films to include both etching and deposition. Some suggested topics include: 1. Plasma and process modeling, 2. New plasma diagnostics techniques and process control in manufacturing, 3. New reactor technologies and plasma sources, 4. Processes for patterning thin films including high- and low- k films, metals, silicon, other dielectric films, stripping, high aspect ratio/high selectivity etching, 5. High temperature plasma etching, 6. High density plasma deposition, 7. Plasma surface modification, plasma damage and control, 8. Correlation of device characteristics with plasma processes, and 9. Reactor and wafer contamination.

Publication of a Proceedings Volume is planned to be available after the Meeting. Acceptance of a paper for an oral or poster presentation obligates the author/s to submit a soft or hard copy of a camera-ready manuscript before the meeting. Instructions for preparing the manuscript will be sent out at the time of notifying the presenters of the acceptance of their paper/s.

Abstracts, suggestions, and inquiries should be sent to the ECS Headquarters Office and to the following Symposium Organizers: **G. S. Mathad**, Infineon Technologies, Inc., United Northern Plaza, 1983 Route 52, Suite 1, Hopewell Jct., NY 12533, USA, Phone: (845) 892-9533, Fax: (845) 892-9068, E-mail: swami.mathad@infineon.com; **M. Yang,** Texas Instruments, Inc., 13570 North Central Expwy., Dallas, TX 75243, USA, Phone: (972) 995-8289, Fax: (972) 918-9432, E-mail: myang@ti.com; **R. E. Sah**, Fraunhofer Institute for Applied Solid State Physics, Tullastrasse 72, D-79108 Freiburg, Germany, Phone: 49-761-5159-175, Fax: 49-761-5159-400, E-mail: sah@iaf.fhg.de, and **M. D. Allendorf**, Sandia National Labs, MS 9052, PO Box 969, Livermore, CA 94551-0969, Phone: (925) 294-2895, Fax: (925) 294-2276, E-mail: mdallen@sandia.gov.

K1 - SECOND INTERNATIONAL SYMPOSIUM ON COLD CATHODES

(Dielectric Science and Technology / Electronics / Luminescent and Display Materials)

This symposium is a sequel to the symposium that was organized in October 2000 in Phoenix, AZ, as part of the 198th ECS meeting. This sequel will address recent developments in the area of cold cathodes with emphasis on theory, modeling, experiment and fabrication. Papers will cover fundamental aspects of science and engineering, as well as related technology and applications.

Areas of particular interest include: Characterization of electron emission into vacuum: theory and experiment energy distribution, transport mechanisms, current-voltage characteristics, Nottingham effect, *etc.*; Proposals for electron-emissive materials with low work function; Device fabrication and reliability issues; Thermal effects and emission noise (flicker, shot), Emitters (*e.g.*, Spindt-type field emitters, negative electron affinity and cold cathodes, photocathodes, ferroelectrics, carbon nanotubes, *etc.*); Devices applications (flat panel displays, pressure sensors, vacuum transistors, microwave tube-amplifiers, electron-beam lithography, electron guns, free electron lasers, Hall thrusters, satellite tethers, hight-brightness microwave tube sources, high power applications, *etc.*). Several invited speakers will provide overviews of key topics of interest.

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. Manuscript page limit is 12 for contributed papers and 15 for invited papers. We anticipate funding to partially support graduate students presenting a paper at the meeting. Request for partial funding should be submitted to M. Cahay when submitting the abstract.

Abstracts, suggestions, and inquiries should be sent to the ECS Headquarters Office and to the Symposium Organizers: **K. L. Jensen**, Code 6841, ESTD, Naval Research Laboratory, Washington, DC 20357-5347, USA, Phone: (202) 767-3114, Fax: (202) 767-1280, E-mail: kevin.jensen@nrl.navy.mil; **M. M. Cahay**, Dept. of Elec. and Comp. Eng. and Computer Science, 814 Rhodes Hall, U. of Cincinnati, Cincinnati, OH 45221, USA, Phone: (513) 556-4754; Fax: (513) 556-7326, E-mail: mcahay@planck.ececs.uc.edu; **P. D. Mumford**, Air Force Research Laboratory, Sensors Directorate, PAFB, 2241 Avionics Circle Suite 25, Dayton, OH 45433, USA, Phone: (937) 255-4831 (ext: 3482), Fax: (937) 656-4807, E-mail: Philip.Mumford@sn.wpafb.af.mil; **V. T. Binh**, Laboratoire d'Emission Electronique, Departement de Physique des Materiaux, UMR-CNRS, Universite Claude Bernard Lyon 1, 69622, Villeurbanne, France, Phone: 33/4 7244 8070; Fax: 33/4 7244 8245, E-mail: vuthien@dpm.univ-lyon1.fr; **C. Holland,** SRI International, 333 Ravenswood Ave., Menlo Park, CA 94025, USA, Phone: (650) 859-6382, Fax: (650) 859-3090, E-mail: cholland@unix.sri.com; and **J. D. Lee**, Semiconductor Materials and Devices Laboratory, School of Electrical Engineering, Seoul National University San 56-1, Shinlim-dong, Kwanak-gu, Seoul 151-742, Korea, Phone: 82-2-8980-7268, Fax: 82-2-871-7323, E-mail: jdlee@snu.ac.kr.

L1 - ELECTRODEPOSITION: HISTORICAL PERSPECTIVE AND FUTURE DIRECTIONS

(Electrodepostion)

This Symposium is intended to provide a balanced forum for the discussion of practical and fundamental aspects of electrodeposition. It will feature an historical perspective on the art and science of electrodeposition along with a prospectus for both the near and far term future. The historical perspective will include invited talks concerning the history of electro- and electroless deposition. For future directions, we invite talks addressing the latest developments in the field with applications to electronics, biomedical, environmental, and energy conversion areas. Contributed papers are solicited in the following areas: 1. Fundamentals of electrodeposition and electroless deposition of metals and alloys including mechanistic aspects, kinetics, nucleation, growth and morphology. 2. Methods for characterization of deposition of metals including *in situ* spectroscopic, probe microscopic and X-ray techniques. 3. Properties of deposited films including magnetic properties, thermoelectric behavior, electromigration, electronics, and corrosion resistance. 4. Applications of electroless and electrodeposited metals and alloys in the field of interest (*e.g.* copper metallization, lead free solders, magnetic multilayers, biomedical engineering, and energy conversion).

Abstracts, suggestions, and inquiries should be sent to the ECS Headquarters Office and to the Symposium Organizers: **A. A. Gewirth**, Department of Chemistry, University of Illinois, 600 S. Mathews Avenue, Urbana, IL 61801,

USA; Phone (217) 333-8329; Fax (217) 333-2685; E-mail: agewirth@uiuc.edu; **T. P. Moffat**, NIST Bldg. 224-B166, Gaithersburg, MD 20899 USA, Phone (301) 975-2143, Fax (301) 926-7679, E-mail: tmoffat@nist.gov; **S. S. Djokic**, Westaim Biomedical Corporation, Fort Saskatchewan, Alberta, T8L 3W4 Canada; Phone (780) 992-5354; Fax: (780) 992-5425; E-mail: sdjokic@westaimbiomed.com; and **K. Attenborough**, Process Engineer Waferfab, OnStream B. V., Lodewijkstraat 1, 5652 AC Eindhoven, The Netherlands, Phone: 31.40.295.9814, Fax: 31.40.295.9906, E-mail: karen.attenborough@onstream.com.

M1 - ELECTROCHEMICAL PROCESSING IN ULSI FABRICATION AND ELECTRODEPOSITION OF AND ON SEMICONDUCTORS V

(Electrodeposition / Dielectric Science and Technology / Electronics)

Electrochemical processes are receiving much attention in microelectronic applications. The most prominent example at present is the electrochemical deposition of copper for interconnect wiring on silicon wafers. Another technology of high commercial impact is solder deposition for flip-chip interconnects. Many other electrochemical processes and techniques, at various stages of emergence and development, hold promise for the electronics industry and beyond; these include chemical-bath deposition of semiconductors and compounds, formation of heterojunctions and metal-semiconductor contacts, deposition of magnetic multi layers and nanowires, wet etching, chemical-mechanical polishing, electrolytic and electroless deposition of patterned structures, 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; bath-composition control; 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 multi-disciplinary 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 determine 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; 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; processes for 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; electrodeposition of compound semiconductors; 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: **P. C. Andricacos**, IBM T. J. Watson Research Center, P.O. Box 218, Box 04-204, Yorktown Heights, NY 10598-0218 USA, Phone: (914) 945-2683, Fax: (914) 945-4520, E-mail: panos@watson.ibm.com; **P. C. Searson**, Department of Materials Science and Engineering, The Johns Hopkins University, 102 Maryland Hall, Baltimore, MD 21218 USA, Phone: (410) 516-8774, Fax: (410) 516-5293 E-mail: searson@jhu.edu; **C. Simpson**, Motorola, Advanced Products Research and Development Laboratory, 3501 Ed Bluestein Boulevard, MS K-10, Austin, TX 78721 USA, Phone: (512) 933-3184, Fax: (512) 933-6962, E-mail: ra1557@email.sps.mot.com; **P. Allongue**, Laboratoire de Physiques des Liquides et Electrochimie, CNRS-UPR15, Universite Paris 6, 4 place Jussieu, Tow 2225, 75005 Paris, France, Phone: 33-01-44-274147, Fax: 33-01-434-274074, E-mail: pa@ccr.jussieu.fr; **J. L. Stickney**, Department of Chemistry, University of Georgia, Athens, GA 30602 USA, Phone (706) 542-1967, Fax: (706) 542-9453, E-mail: stickney@sunchem.chem.uga.edu; **G. M. Oleszek**, Department of Electrical and Computer Engineering, University of Colorado, P.O. Box 7150, Colorado Springs, CO 80933-7150 USA, Phone: (719) 593-3490, Fax: (719) 548-9404, E-mail: gmoleszek@eas.uccs.edu; and **D. Misra**, Dept of Elec. & Computer Engr., New Jersey Inst of Technology,Newark, NJ 07102 USA, Phone: (973) 596-5739, Fax: (973) 596-5680, E-mail: dmisra@megahertz.njit.edu.

N1 - NINTH INTERNATIONAL SYMPOSIUM ON SILICON MATERIALS SCIENCE AND TECHNOLOGY

(Electronics)

This initial Silicon Symposium of the 21st Century will focus on the explosive expansion of new materials and processes utilized in the fabrication of Integrated Circuits (IC) and the host of associated new challenges. These include, for example, the implementation of the 300 mm era, the drive to equivalent oxide thicknesses in the single-digit nanometer regime through the utilization of alternative gate-dielectric materials, copper metallization, low-K interlevel dielectrics, and the expanded utilization of silicon-on-insulator (SOI) materials. These challenges are but one facet of the evolving role the International Technology Roadmap for Semiconductors (ITRS) is playing in our industry.

The Silicon Symposium will, however, also continue to emphasize the relationship of silicon materials with subsequent IC performance. This includes the preparation, characterization and properties of bulk silicon crystals, wafers and epitaxial silicon films as well as the impact of chemical impurities and structural imperfections introduced during device/IC processing. Particular emphasis will continue to be placed on the interactive effects of starting silicon material properties and the effect of multiple IC processing steps on advanced devices/IC performance and reliability—point/extended defects, gettering, modeling and IC process integration issues—in the System Large-Scale-Integration (System LSI) era. Initial plans call for a selection of papers to be comprehensive reviews of fundamental research as well as of technological importance. The remainder of the papers will be selected from a representative sampling, but not necessarily inclusive, of contributed original research papers not previously published in the areas of: 300 mm, Alternative Materials and IC Process Technologies, Process Modeling, Process Integration, Integrated Metrology & Diagnostics, and Ultimate Silicon & End-of-Roadmap Devices.

More detailed information may be obtained from the Winter 2000 issue of *Interface* (p. 37). Submission of an abstract for review and subsequent acceptance is considered by the Symposium Organizing Committee as an agreement that the work will not be published in another venue by the author. Authors are encouraged to recommend the appropriate session for their submitted abstracts.

A Proceedings Volume is planned to be available at the Meeting. Acceptance of a paper for presentation obligates the author to submit a full manuscript in camera-ready form for inclusion in the Proceedings Volume no later than January 1, 2002. Instructions for preparing the manuscript will be sent out by the Symposium Organizers after the notification of acceptance of the papers. Abstracts are due to The Electrochemical Society Headquarters Office with a copy to one of the Symposium Organizers on or before **January 1, 2002.**

Authors must submit a 500-word abstract in English, double-spaced, indicating title, authors, and affiliation, along with a cover letter. The abstract should include sections on objective, approach, results, and conclusions to assist the reviewers in evaluating the suitability of the paper for oral presentation at the symposium. In no case will this abstract appear in a printed agenda.

Abstracts must be submitted in quintuplicate before **August 1, 2001** to one of the following Symposium Co-Chairmen: **H. R. Huff**, SEMATECH, Inc. 2706 Montopolis Drive, Austin, TX 78741, USA, Phone: (512) 356-3334, Fax: (512) 356-7640, E-mail: howard.huff@sematech.org; **L. Fabry,** Wacker Siltronic AG, P.O. Box 1140, D-84479, Burghausen, Germany, Phone: 49-8677-83-4860, Fax: 49-8677-83-5954, E-mail: Laszlo.Fabry@wacker.com; and **S. Kishino**, Department of Electronics, Faculty of Engineering, Himeji Institute of Technology, 2167 Shosha, Himeji, 671-2201, Japan, Phone: 81-792-66-1661, Fax: 81-792-67-4855, E-mail: kishino@elnics.eng.himeji-tech.ac.jp. Questions and inquiries may be addressed to the Symposium Co-Chairmen. Detailed instructions concerning manuscript preparation and the standard ECS extended abstract requirements will be forwarded in **October 2001** to each author upon acceptance of their abstract for oral presentation.

N2 - STATE-OF-THE-ART PROGRAM ON COMPOUND SEMICONDUCTORS XXXVI

(Electronics)

The SOTAPOCS XXXVI meetings will consist of papers on the most recent advances in compound semiconductors. Practical issues and fundamental studies will be addressed, such as: Novel devices and materials growth; New advances of processing technologies; Characterization of materials and devices; Wide bandgap materials; Wafer-level testing; Device degradation mechanisms; and Monolithic integration. The symposium will consist of both invited and contributed papers.

Publication of a joint Proceedings Volume with the symposium on "Wide Bandgap Semiconductor for Photonic and Electronic Devices and Sensors III" is planned to be available at the Meeting. Acceptance of a paper for presentation obligates the author to submit a full manuscript in camera-ready form for inclusion in the Combined Proceedings Volume no later than **January 25, 2002**. Instructions for preparing the manuscript will be sent out by the Symposium Organizers after the notification of acceptance of the papers.

Abstracts are due to The Electrochemical Society Headquarters Office with a copy to one of the Symposium Organizers on or before January 1, 2002.

Suggestions and inquiries should be sent to the ECS Headquarters Office and Symposium Organizers: **R. F. Kopf**, Lucent Technologies, Bell Laboratories, Room 1C441A, 700 Mountain Ave., Murray Hill, NJ 07974, USA, Phone: (908) 582-5280, Fax: (908) 582-6322, E-mail:: rek@lucent.com; **P. C. Chang**, Agilent Technologies, 3175 Bowers Ave., MS 87D, Santa Clara, CA 95054-3292, USA, E-mail: pablo_chang@agilent.com; **M. Kuzuhara**, Photonic and Wireless Devices Research Labs, NEC Corp. 2-9-1 Seiran, Otsu, Shiga 520-0833 Japan; E-mail: buz@kel.cl.nec.co.jp; and **J-P. Vilcot,** Institut d'Electronique et de Microelectronique du Nord, UMR CNRS 9929, Avenue Poincare, BP 69, F-59652, Villeneuve d'Ascq Cedex, France, E-mail: vilcot@iemn.univ-lille1.fr.

O1 - FIRST INTERNATIONAL SYMPOSIUM ON INTEGRATED OPTOELECTRONICS

(Electronics / Dielectric Science and Technology)

This first international symposium will address issues on integrated optoelectronics. Original contributions are solicited on all topics related to integrated optoelectronics—technology and fabrication, components and systems manufacturing, testing, performance, reliability and other related topics. Contributions that span fundamental as well as applied aspects of integrated optoelectronics are welcome. Examples of topics in integrated optoelectronics of interest are: current, emerging and novel materials and devices; advanced detectors and transmitters; optoelectronic components based on nanocrystalline materials; integration of silicon circuitry and compound semiconductor components—fabrication issues, reliability and performance; micro-opto-electro-mechanical systems (MOEMS); integration issues related to improving the performance of high speed systems; integrated lasers/modulators or multi-wavelength laser arrays; optoelectronic integrated circuit (OEIC) receivers; transceivers systems and integration issues; integration technologies based on quantum well materials, advanced epitaxial growth and device processing technologies; planar lightwave integrated devices and circuits; integrated optoelectronic passive components; and bonding of different materials (*e.g.* GaAs and Si). The symposium will consist of invited as well as contributed papers.

A Proceedings Volume is planned to be available at the Meeting. Acceptance of a paper in this symposium obligates the author(s) to submit a typed camera ready copy of the full proceedings volume manuscript and a list of key words to the organizer by no later than January 1, 2002. The detailed instructions for its preparation 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: **M. J. Deen,** Department of Electrical and Computer Engineering, CRL Room 226, McMaster University, 1280 Main Street West, Hamilton, Ontario, Canada L8S 4K1; Phone: (905) 525-9140, ext. 27137; Fax: (905) 523-4407; E-mail: jamal@mcmaster.ca; **J. Ruzyllo**, Penn State University, 214 Electrical Engineering East, University Park, PA 16802, USA; Phone (814) 865-5193, Fax: (814) 865-7065; E-mail: ruzyllo@psu.eduE-mail: jxr6@psu.edu, and **D. Misra**, Department of Electrcal and Computer Engineering, New Jersey Institute of Technology, Newark, NJ 07102, USA, Phone: (973) 596-5739, Fax: (973) 596-5680, E-mail:dmisra@njit.edu.

P1 - FIFTH INTERNATIONAL SYMPOSIUM ON ENVIRONMENTAL ISSUES WITH MATERIALS AND PROCESSES FOR THE ELECTRONIC AND SEMICONDUCTORS INDUSTRIES

(Electronics Division / Dielectric Science and Technology Division / Electrodeposition)

As semiconductor technology advances, new materials, tools, and processes are being introduced at an unprecedented rate. It is critical to identify and address the environmental, health, and safety (EHS) issues associated with these new processes as early on in development as possible. Furthermore, recent increases in environmental awareness, such as climate change and resource conservation, will have a significant effect on the process technologies used for electronics and semiconductor manufacturing. This symposium will focus on the EHS issues prevalent in these industries and the solutions developed to address these issues. Potential topics include waste treatment, recycle and reclaim, emissions abatement, and alternative chemistries and processes. Some suggested process areas of focus are as follows: metallization, advanced CVD of low-k and high-k dielectric materials, CMP, wet and dry etch chemistries, wafer cleaning, etch chemistries, photolithography, circuit board manufacturing, plating and soldering processes, and encapsulation processes.

Publication of a Proceedings Volume is planned to be available after the Meeting. Acceptance of a paper in this symposium obligates the author(s) to submit a copy of the full manuscript at the meeting. Instructions for preparing the manuscript will be sent out by the Symposium Organizers after official notification of acceptance is distributed by the ECS Headquarters.

Abstracts, suggestions, and inquiries should be sent electronically to the ECS Headquarters Office and to the Symposium Organizers: **L. Mendicino**, Motorola, M/D K10, 3501 Ed Bluestein Blvd., Austin, TX, 78721, USA, Phone: (512) 933-3938, Fax: (512) 933-6962, E-mail: laura.mendicino@motorola.com; and **L. Simpson**, Applied Materials, Inc., 9050 Capital of TX Hwy, Suite 320, Austin, TX 78759, USA, Phone: (512) 272-7606, Fax: (512) 272-7600, E-mail: logan_simpson@amat.com.

Q1 - RAPID THERMAL AND OTHER SHORT-TIME PROCESSING TECHNOLOGIES III

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

This symposium will cover the latest developments in Rapid Thermal Processing and other short-time processing technologies with emphasis on CMOS gate stack, source/drain and channel engineering. As such in addition to conventional RTP technologies such as RTA, RTO, and RTCVD, and related equipment and modelling issues, we welcome applications of techniques such as UV or laser-assisted processing in annealing, doping, etc., and advanced thin-film deposition techniques such as atomic layer CVD and UHV-CVD, remote plasma and sputtering, MBE, etc., for the synthesis of ultra-thin films.

Researchers and technologists are encouraged to submit their abstracts on applications in the areas of: formation and/or deposition of ultra-thin gate dielectrics (including novel higher dielectric constant materials) and their gate electrodes; doping technologies to form ultra-shallow junctions; formation of low-resistivity contacts to such junctions; advanced channel engineering approaches including Si-Ge channels and ultrathin SOI technologies; and equipment issues. Papers outside mainstream CMOS engineering (or integration), such as III-V compound semiconductors, power devices, flat panel displays, compound, glass reflow, and non-semiconductor thin films are also welcome, provided they represent breakthroughs in applications of advanced front-end processing. Finally, new developments in RTP and other short-time processing equipment to improve throughput, uniformity, *in-situ* monitoring, process control, and modelling are of special interest to this symposium.

Publication of a Proceedings Volume is planned to be available after the Meeting. Acceptance of a paper in this symposium obligates the authors to submit a typed camera-ready copy of the full manuscript at the Meeting.

Abstracts, suggestions, and inquiries should be sent before January 2, 2002 to the ECS Headquarters Office and to the Symposium Organizers: **P. J. Timans,** Mattson Thermal Products, 4425 Fortran Drive, San Jose, CA 95134-2300, USA, Phone: (408) 935-2235, Fax (408) 935-2775, E-mail: Paul.Timans@mattson.com; **E. Gusev**, IBM T. J. Watson Research Center, P.O. Box 218, Yorktown Heights, NY 10598, USA, Phone (914) 945-1168, Fax (914) 945-3623, E-mail: gusev@us.ibm.com; **A. Toriumi,** Dept. Materials Science, School of Engineering, The University of Tokyo, 7-3-1, Hongo, Tokyo 113-8656, Japan, Phone: 81-3-5841-7120, Fax: 081-3-5841-7158, E-mail: toriumi@material.t.u-tokyo.ac.jp;**F. Roozeboom**, Philips Research Labs (WA 14), Prof. Holstlaan 4, 5656 AA Eindhoven, The Netherlands, Phone: 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, Phone: (919) 515-5245, Fax (919) 515-5055, E-mail: mco@eos.ncsu.edu; and **D.-L. Kwong**, University of Texas at Austin, MER 2.60A, Mailcode R9950, Austin, TX 78712-1100, USA, Phone: (512) 471-5922, Fax (512) 471-4345, E-mail: dlkwong@mail.utexas.edu.

R1 - WIDE BANDGAP SEMICONDUCTORS FOR PHOTONIC AND ELECTRONIC DEVICES AND SENSORS III

(Electronics / Sensor)

Numerous applications are appearing for wide bandgap semiconductors, including blue/UV light emitters, high temperature/high power electronics, passivation layers for other semiconductors, and various types of sensors. The purpose of this symposium is to bring together the crystal growth, device processing, circuit design and applications communities to discuss basic science and technology issues related to utilization of III-nitride based semiconductors. Papers are solicited in the following areas: 1. Substrates and bulk growth; 2. Epitaxial growth, especially for highly-doped layers; 3. High growth-rate methods; 4. Wet and dry etching techniques; 5. Ion implantation and diffusion; 6. Contact technology; 7. Fundamental optical, physical, and electrical properties; 8. Materials and device characterization; 9. Harsh environment sensors, chemical and gas sensors, and other novel applications for wide gap materials; and 10. Reliability issues. The program will consist of both invited and contributed papers.

Publication of a joint Proceedings Volume with the symposium on State-of-the-Art Program on Compound Semiconductors XXXVI 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 25, 2002.** Instructions for preparing the manuscript will be sent out by the Symposium Organizers after acceptance of abstracts.

Abstracts, suggestions and inquiries should be sent to the symposium organizers: **F. Ren**, Department of Chemical Engineering, University of Florida, Gainesville, FL 32611, USA, Phone: (352) 392-4727, Fax: (352) 392-3235, E-mail: ren@che.ufl.edu; **E. B. Stokes**, GE Corporate R&D, PO Box 8, KW-C332, Schenectady, NY 12301 USA, Phone: (518) 387-7529, Fax: (518) 387-5997, E-mail: ebstokes@crd.ge.com; **S. J. Pearton**, Department of Material Science and Engineering, University of Florida, Gainesville, FL 32611 USA, Phone: (352) 846-1086, Fax: (352) 846-1182, E-mail: spear@mail.mse.ufl.edu; **J. Han**, Department of Electrical Engineering, Yale University, New Haven, CT 06520 USA, Phone: (203) 432-7567, Fax: (203) 432-7767, E-mail: jung.han@yale.edu; **A. G. Baca**, Sandia National Labs., Albuquerque, NM 87185 USA, Phone: (505) 844-7127, Fax: (505) 844-3211, E-mail: agbaca@sandia.gov; **H. M. Ng**, Bell Labs, Lucent Technologies, Murray Hill, NJ 07974 USA, Phone: (908) 582-2072, Fax: (908) 582-2043, E-mail: hmng@lucent.com; **J. I. Chyi**, Department of Electrical Engineering, National Central University, Chung-Li, Taiwan, 32054, Phone: 886-3-425-8241, Fax: 886-3-425-5830, E-mail: chyi@mbox.ee.ncu.edu.tw; and **T. D. Moustakas**, Department of ECE Photonics, Boston University, Phone: (617) 353-5431, Fax: (617) 353-9844, E-mail: tdm@bu.edu.

S1 - BIOMASS AND ALTERNATIVE FUELS FOR ENERGY TECHNOLOGY

(Energy Technology)

Biomass electricity is the second renewable energy form used in the United States (hydroelectric energy is first). It started with the deregulation government activities of the Public Utility Regulatory Act (PURPA) of 1978, which allowed independent power producers and non-utility generators to sell electricity for purchase by the grid at the avoided cost for additional capacity by utilities, committed to 10-year contracts. About 10 GW of electricity capacity are installed and this source of energy represents 1% of the country's installed capacity and 2% of delivered kWh. Of those, 8 GW use residues from agriculture, forest products operations such as manufacturing of wood products, and from pulp and paper energy and chemicals recovery. Nearly 1.5 GW are from municipal solid waste and 0.5 GW come from the use of landfill gas. Installed plants are usually < 50 MW and usually employ direct combustion at about 20-30% efficiency. The industry that resulted provided energy but also environmental services to the surrounding communities by using the residues that would otherwise have been sent to a landfill. Technology advances like gasification can generate gases rich in hydrogen and carbon monoxide (synthesis gas). Coupling gasification with higher efficiency prime movers such as advanced turbines or fuel cells promise significantly increased efficiency power cycles. Use of the landfill gases directly in fuel cells has also been tested and the impact of impurities in these gases partially assessed. Biomass also provides renewable alternative fuels for the transportation sector. Ethanol derived from corn starch reached 1.5 billion gallons in 1999. This ethanol is made primarily at corn wet and dry milling operations for processing commodity grains into a variety of products. The amount of ethanol represents 0.4% of the liquid fuels and is provided as an ethanol-gasoline blend in 3% of gasoline supplies. Biodiesel reached 6 million gallons in 1998, a small fraction of the 35 billion gallons of diesel consumed. Biomass-derived liquid fuels such as ethanol and methanol, which can be derived from biomass gasification to a synthesis gas, can also be used in fuel cells for power generation. Alternatively, they can be used in direct combustion systems or in hybrid systems.This symposium will address biomass and alternative fuels for energy technologies with emphasis on biomass-derived fuels for advanced power generation technologies. Requirements of gasification and of other biomass-derived fuels for coupling with fuel cells and turbines will be examined as well as the systems integration aspects that may help increase the efficiency and applicability of biomass in power generation applications.

Abstracts, suggestions, and inquiries should be sent electronically to the ECS Headquarters Office and to the Symposium Organizers: **H. Chum**, National Renewable Energy Laboratory, Chemistry for Bioenergy Systems, 1617 Cole Blvd., Golden, CO 80401 USA, Phone: (303) 275-2949, Fax: (303) 275-2905, E-mail: Helena_Chum@nrel.gov; **D. K. Johnson**, National Renewable Energy Laboratory, Chemistry for Bioenergy Systems, 1617 Cole Blvd., Golden, CO 80401 USA, Phone: (303) 384-6263, Fax: (303) 384-6363, E-mail: David_Johnson@nrel.gov; and **M. Ratcliff**, National Renewable Energy Laboratory, Chemistry for Bioenergy Systems, 1617 Cole Blvd., Golden, CO 80401 USA, Phone: (303) 384-6129, Fax: (303) 384-6363, E-mail: Matt_Ratcliff@nrel.gov.

S2 - HYDROGEN STORAGE MATERIALS AND HYDROGEN GENERATORS

(Energy Technology Division)

This Symposium is aimed to serve as a forum for a discussion on the science and technology of hydrogen storage materials and hydrogen generators, and their applications in batteries, fuel cells, electrochromics, and sensors. The major focus of the Symposium will be on hydrogen storage alloys, carbonaceous materials, and complex chemical hydrides. This symposium also invites papers on the science and technology of hydrogen generators, reformers and hydrogen purifiers. Specific areas to be covered include: 1. Fundamentals of hydrogen storage alloys and their electrochemical properties; 2. New concepts and designs of carbon-based hydrogen storage materials including nanotubes, fullerenes derivatives, and organic hydrides; 3. Synthesis, characterization, and thermal properties of complex organic and inorganic chemical hydrides; 4. Application of hydrogen storage materials in batteries, fuel cells, electrochromics, and sensors; 5. Novel concepts in characterization of hydrogen storage materials; 6. Hydrogen generators and reformers; 7. Catalyst development for reformers; and 8. Science and technology of hydrogen purification systems.

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 to the Symposium Chairman by April 6, 2002. Instructions for preparing the manuscript can be found at www.electrochem.org/guidelines/PVAInst.html.

Abstracts, suggestions, and inquiries should be sent electronically to the ECS Headquarter Office and to the Symposium Chairman: **G. A. Nazri**, General Motors Research and Development Center, MC: 480-102-RCEL, 30500 Mound Road, Warren, Michigan 48090-9055 USA, Phone: (810) 986-0737, Fax: (810) 986-2244, E-mail g.nazri@gm.com.

T1 - ADVANCED MATERIALS FOR ENERGY CONVERSION AND STORAGE

(Energy Technology / Battery / Physical Electrochemistry)

Advanced Materials play an important role in many electrochemical systems, including batteries, fuel cells, electrolytic cells, electrowinning, electroorganic syntheses, and gas evolving systems. The purpose of this symposium is to provide a comprehensive treatment of this subject, with an added emphasis on applied aspects of electrodes for primary and secondary batteries and fuel cells. Presentations on the physical and electrochemical characterization of electrodes and mathematical modeling and experimental analogs of advanced materials are also appropriate for this symposium.

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 proceedings volume manuscript and 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 Boul. Lionel Boulet Varennes (Quebec) Canada, J3X 1S1, Phone: (450) 652-8019, Fax: (450) 652-8424, E-mail: karimz@ireq.ca; and **M. Doyle**, DuPont Microcircuit Materials 14 TWAlexander Drive Research Triangle Park, NC 27709-3999, USA, Phone: (919) 248-5216, Fax: (919) 248-5208, E-mail: marc.doyle@usa.dupont.com.

U1 - TUTORIALS IN ENERGY CONVERSION

(Energy Technology / Industrial Electrolysis and Electrochemical Engineering)

In this symposium tutorial papers will be presented on the fundamental concepts and principles underlying the design and operation of energy conversion devices. These devices will include those for thermoelectric, photovoltaic (both solid-state and liquid junction-based), and photoelectrolytic energy conversion and storage, as well as advanced batteries and fuel cells. Advances in related materials science and technology will also be addressed in this symposium, as will topics related to modeling/simulation and reactor design.

The symposium will consist of mainly invited papers, although contributed papers will also be considered.

Abstracts, suggestions, and inquiries should be sent to the symposium organizers: **K. Rajeshwar**, Department of Chemistry and Biochemistry, The University of Texas at Arlington, Arlington, TX 76019-0065 USA, Phone: (817) 272-3810, Fax: (817) 272-3808, E-mail: rajeshwar@uta.edu; and **J. M. Fenton**, The University of Connecticut, Department of Chemical Engineering, Storrs, CT 06268-3139, USA, Phone: (203) 486-2490, Fax: (203) 486-0318, E-mail: jmfenton@uconn.edu.

V1-V9 FULLERENES, NANOTUBES, AND CARBON NANOCLUSTERS

(Fullerenes)

Papers are invited for this symposium in the areas listed below. Authors should clearly state the appropriate symposium number, V1 through V9, 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.

Publication of a Proceedings Volume is planned to be availabe 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 proceedings volume manuscript and 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. The Proceedings Volumes will include sections as the topics listed below. Specific details about the format for contributed papers for the Proceedings Volume can be obtained from the Session Organizers of each symposium.

Questions and information may be obtained from: **P. V. Kamat**, Notre Dame Radiation Laboratory, Notre Dame, IN 46556-0579 USA, Phone: (219) 631-5411, Fax: (219) 631-8068, E-mail: pkamat@nd.edu and **F. D'Souza**, Department of Chemistry, Wichita State University, 1845 Fairmount, Wichita, KS 67260-0051, USA, Phone: (316) 978-7380, Fax: (316) 978-3431, E-mail: Francis.DSouza@wichita.edu.

Abstracts, suggestions, and inquiries should be sent electronically to the ECS Headquarters Office and to the Organizers of the corresponding symposium listed below:

V1 - Fullerenes at the Boundary of Education
(See main heading)

This symposium will focus on methods to enhance undergraduate chemical education by exploiting the novelty and appeal of fullerenes. The main focus will be curricular innovations that bring fullerenes into lab or lecture courses taught to chemistry students.

Papers are welcome describing existing or planned courses that involve any of the following topics: preparation, purification, spectroscopy, derivatization, characterization, or computer modeling of fullerenes. Such activities may be offered as separate modules or instead be integrated into conventional lab or lecture courses in organic, analytical, instrumental, or physical chemistry. Participants will report on their experiences and share new ideas with other educators and fullerene researchers.

Organizer: **R. B. Weisman**, Department of Chemistry MS-60, Rice University, 6100 Main Street, Houston, TX 77005 USA, Phone: (713) 348-3709, Fax: (713) 348-5155, E-mail: weisman@rice.edu.

V2 - Redox Processes
(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, Phone: (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, Phone: 81-6-6879-7368, Fax: 81-6-6879-7370, E-mail: fukuzumi@chem.eng.osaka-u.ac.jp.

V3 - 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 Phone: (219) 631-7441, Fax: (219) 631-8068, E-mail: guldi@hertz.rad.nd.edu; **O. Ito,** Institute of Multidisciplinary Research for Advanced Materials, Building of Chemical Reaction Science, Tohoku University, Katahira, Sendai, 980-8577 Japan, Phone: (81) 22-217-5608, Fax: (81) 22-217-5608, E-mail: ito@tagen.tohoku.ac.jp, and **K. P. Dinse**, Physical Chemistry III, Tu Darmstadt, Petefrenstrasse 20, D-64287 Darmstadt, Germany, Phone: 49-6151-162607, Fax: 49-6151-164347, E-mail: dinse@pc07.pc.chemie.tu-darmstadt.de.

V4 - 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 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, Phone: 34-91-394-4227, Fax: 34-91-394-4103, E-mail: nazmar@eucmax.sim.ucm.es; and **J. F. Nierengarten**, IPCMS - GMO - CNRS, 23 rue du Loess, 67037 Strasbourg, France, E-mail: niereng@ipcms.u-strasbg.fr.

V5 - Nanotubes, Nanoscale Materials and Devices
(See main heading)

The symposium (cosponsored by the New Technology Subcommittee) will addresses the research on fullerene nanotubes, nanoclusters, and related materials as building blocks for novel nanoscale devices. Topics include new techniques for fabrication and study of nanoscale materials, morphology, characterization, chemistry and physics of nanoscale materials.

Organizers: **S. Subramoney**, E.I. DuPont de Nemours & Company, DuPont Experimental Station, Building 228, Room 114, Wilmington, DE 19880-0228 USA, Phone: (302) 695-2992, Fax: (302) 695-1351, E-mail: subrams@esvax.dnet.dupont.com; **S. V. Rotkin**, Beckman Institute for Advanced Science and Technology, Room 3217, MC-251, 405 N. Mathews, Urbana, IL 61801, USA, Phone: (217) 244-8362, Fax: (217) 244-4333, E-mail: rotkin@uiuc.edu; and **W. A. van Schalkwijk**, SelfCHARGE, Inc., 6742 NE 185th Ave., suite 230, Redmond, WA 98052 USA, Phone: (425) 881-9199 x116, Fax: (425) 883-1447, E-mail: waltvans@home.com.

V6 - Energetics and Structures
(See main heading)

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

Organizers: **E. Osawa**, Knowledge-Based Information Engineering, Toyohashi, University of Technology, Tempaku-cho, Toyohashi 441, Japan, Phone: 81-532-44-6881, Fax: 81-532-48-5588, E-mail: osawa@cochem.tutkie.tut.ac.jp; **Z. Slanina**, Knowledge-Based Information Engineering, Toyohashi University of Technology, Tempaku-cho, Toyohashi 441, Japan, Phone: 81- 532-44-6880, Fax: 81-532-48-5588, E-mail: slanina@cochem2.tutkie.tut.ac.jp; **O. V. Boltalina,** Chemistry Department, Moscow State University, 119899, Moscow, Russia, Phone: 95-939-53-73, Fax: 95-939-12-40, E-mail: ovb@capital.ru; and **G. Gigli**, Departmento de Chimica, Universita di Roma "La Sapienza", 00185 Roma, Italy, Phone: 39-6-49913373, Fax: 39-6-49913951, E-mail: gigli@caspur.it.

V7 - 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, Phone: 81-52-789-2482, Fax: 81-52-789-2962, E-mail: nori@chem2.chem.nagoya-u.ac.jp; and **T. Akasaka**, Graduate School of Science and Technology, Niigata University, Niigata 950-2181, Japan, Phone: 81-25-262-7390, Fax: 81-25-262-7390, E-mail: akasaka@gs.niigata-u.ac.jp.

V8 - Solid-State Physics
(See main heading)

The symposium focuses on the topic of solid-state physics, structure and properties of fullerene compounds. The topics include chemical reactivity, superconductivity, surface studies, thin films, diffraction studies, thermal and electronic properties.

Organizers: **Y. Iwasa**, JAIST, Tatsunokuchi, Ishikawa 923-1292, Japan, Phone: 81-761-51-1531, Fax: 81-761-51-1149, E-mail: iwasa@jaist.ac.jp; **P. Rudolf**, Laboratoire Interdisciplinaire de Spectroscopie Electronique, Facultes Universitaires Notre-Dame de la Paix, Rue de Bruxelles 61, B-5000 NAMUR Belgium, Phone: 32-0-81-72-52-37, Faz: 32-0-81-72-45-95, E-mail: petra.rudolf@fundp.ac.be; and **O. Gunnarsson**, Max-Planck Institut, Postfach 800 665, Stuttgart D-70506, Germany, Phone: 49-711-6891669, Fax: 49-711-6891010, E-mail: gunnar@and.mpi-stuttgart.mpg.de.

V9 - Fullerene Based Materials for Medicine
(See main heading)

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

Organizer: **L. Wilson**, Department of Chemistry, MS-60, Rice University, 6100 Main Street, Houston, TX 77005 USA, Phone: (713) 348-3268, Fax: (713) 348-5155 E-mail: durango@ruf.rice.edu.

W1- NANOSTRUCTURED OPTOELECTRONIC AND PHOTOCHEMICAL MATERIALS

(Fullerenes / Energy Technology / New Technology Subcommittee)

This symposium will focus on critical issues and latest advancements in the science and technology of nanostructured materials, including particles, composites and thin films, and focusing in particular upon their photochemical, optoelectronic, and photoelectrochemical properties. Keynote lectures will be given by Professors Louis Brus, Michael Grätzel and Kenichi Honda. Papers are particularly solicited in the following areas: 1. Controlled fabrication of nanostructured materials; 2. Optical properties of nanostructured materials; 3. Materials and surface characterisation; 4. Interfacial charge separation and recombination dynamics; 5. Charge transport in nanostructured materials; 6. Dye-sensitisation of semiconductor thin films; 7. Photoelectrochemistry of nanostructured films; 8. Nanostructured organic and organoceramic blends; and 9. Applications related to optoelectronic devices, solar energy conversion and storage and photocatalysis. Particular emphasis will be placed on poster sessions in this symposium, in order to encourage discussion and allow young researchers to present their results. Papers for poster presentation, which may be submitted in addition to papers for oral presentation, are therefore particularly encouraged.

Abstracts, suggestions, and inquiries should be sent electronically to the ECS Headquarters Office and to the Symposium Organizers: **J. R. Durrant**, Department of Chemistry, Imperial College, London SW7 2AY, U.K.Phone: 44 20 7594 5321, Fax: 44 20 7594 0960, E-mail: j.durrant@ic.ac.uk , **G. Meyer**, Department of Chemistry, John Hopkins University, Baltimore, MD 21218 USA, Phone: (410) 516-7319, Fax: (410) 516-8420, E-mail: meyer@jhuvms.hcf.jhu.edu; **S. Yanagida**, Department of Material and Life Science, Graduate School of Engineering, Osaka University, Suita, Osaka 565-0871 Japan, Phone: 81-6-6879-7924, Fax: 81-6-6879-7875, E-mail: yanagida@chem.eng.osaka-u.ac.jp; and **W. A. van Schalkwijk**, SelfCHARGE, Inc., 6742 NE 185th Ave., suite 230, Redmond, WA 98052 USA, Phone: (425) 881-9199 x116, Fax: (425) 883-1447, E-mail: waltvans@home.com.

X1 - HIGH TEMPERATURE MATERIALS SYMPOSIUM IN HONOR OF THE 65TH BIRTHDAY OF PROFESSOR WAYNE L. WORRELL

(High Temperature Materials)

Professor Wayne L. Worrell of the University of Pennsylvania is well known for his contributions to many high temperature materials and systems over the last four decades. He has also served The Electrochemical Society well in numerous capacities including being its President during 1992-93. On October 25, 2002, Professor Worrell will reach his 65th birthday. To celebrate this occasion, a Symposium is being planned at which selected topics in high temperature materials and systems will be presented and discussed. Papers covering the main research topics Professor Worrell has been involved in during his extensive teaching and research career are invited from his current and former students, post-docs, and other close associates.

A commemorative Proceedings Volume is planned and will be available at the time of the Symposium in Philadelphia. Authors will be required to submit a camera-ready manuscript by December 1, 2001. Instructions for preparing the manuscript will be sent out by the Symposium Organizer after receipt of an abstract.

Abstracts, suggestions, and inquiries should be sent electronically as early as possible to the ECS Headquarters and to the Symposium Organizer: **S. C. Singhal**, Pacific Northwest National Laboratory, 902 Battelle Boulevard, P.O. Box 999, Richland, WA 99352, USA, Phone: (509) 375-6738, Fax: (509) 375-6604, E-mail: singhal@pnl.gov.

Y1 - INDUSTRIAL ELECTROLYSIS AND ELECTROCHEMICAL ENGINEERING GENERAL SESSION

(Industrial Electrolysis and Electrochemical Engineering Division)

Papers are solicited in areas of industrial 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; and electrocatalysts. Presentations on industrially significant areas, such as 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 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 Session Organizers: **G. Pillay**, Inland Northwest Research Alliance, 1776 Science Center Drive, Idaho Falls, ID 83402 USA, Phone: (208) 282-7902, Fax: (208) 282-7949, E-mail: gpillay@inra.org and **E. E. Kalu,** Department of Chemical Engineering, FAMU- FSU College of Engineering, 2525 Pottsdamer Street, Tallahassee, FL 32310 USA, Phone: (850) 410-6327, Fax: (850) 410-6150, E-mail: ekalu@wombat.eng.fsu.edu.

Z1 - DESIGN AND MATHEMATICAL MODELING OF ELECTROCHEMICAL SYSTEMS

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

The symposium will focus on the development of mathematical models and their application to the design of electrochemical systems. The systems may include applications to processes, *e.g.*, energy technology and batteries, electrochemical reactors, and solid-state devices and/or to elucidation of physical phenomena, *e.g.*, corrosion and other electrochemical reactions. Papers are encouraged in the following areas: 1. The history of mathematical models for

electrochemical systems; 2. Mathematical models of batteries, fuel cell systems, or industrial electrolytic process, and corrosion processes; 3. Techniques or applications for the determination of parameters for the simulation of electrochemical systems; 4. New or refined computational methods for the description of electrochemical systems; 5. Computational chemistry techniques and results; 6. Application of commercially available software to simulation of electrochemical system. Other papers, which relate to the symposium title but are not specifically mentioned above, are welcomed.

Publication of a Proceeding Volume is planned to be available after the Meeting. Acceptance of a paper for presentation obligates the author to provide a camera-ready manuscript for inclusion in this volume. The organizers should receive camera-ready manuscripts of contributed and invited papers by April 1, 2002. Suggested editorial changes to the authors will be returned by April 25, 2002. Revised manuscripts should be submitted to the organizers at the symposium.

Abstracts and suggestions should be sent to both Symposium Organizers: **J. W. Van Zee,** Dept. of Chemical Engineering, University of South Carolina, SC 29208, USA, Phone: (803) 777-2285; Fax: (803) 777-8265; E-mail: vanzee@engr.sc.edu; **M. E. Orazem**, Dept of Chemical Engineering, University of Florida, PO Box 116005, Gainesville, FL 32611-6005, USA, Phone: (352) 392-6207; Fax: (352) 392-9513, E-mail: meo@electro.che.ufl.edu; **T. Fuller**, 300 Chestnut Hill Road, Glastonbury, CT 06033-4153 USA, Phone: (860) 727-2440, E-mail: fullert@ifc.utc.com; and **C. M. Doyle**, Dupont Technologies, 14 TW Alexander Dr., Research Triangle Park, NC 27709-3999, USA, Phone: (919) 248-5216, Fax: (919) 248-5715, E-mail: marc.doyle@usa.dupont.com.

AA1 - SYSTEMS AND INTEGRATION OF ELECTROCHEMICAL TECHNOLOGY

(Industrial Electrolysis and Electrochemical Engineering/ Energy Technology)

Papers are solicited in the development of electromechanical systems and electrochemical devices, and the methods to integrate their components into complex systems for industrial, defense, and electric/hybrid vehicular applications. Of particular interest are papers concerning: large-scale industrial electrochemical process systems; integration of fuel cell system components (*e.g.*, fuel processors, reformers, etc.); rechargeable batteries, electrochemical capacitors, and other energy systems components; and semiconductor and integrated circuit manufacturing and processing. Contributed papers will be programmed in some related order, depending on the titles and content of the abstracts. Invited Papers on certain topics covered in this session will also be solicited by the Session Organizers.

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 proceedings volume manuscript and list of key words at the Meeting. Instructions for preparing the manuscript will be sent out by the Session 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 Session Organizers: **G. Pillay**, Inland Northwest Research Alliance, 1776 Science Center Drive, Idaho Falls, ID 83402 USA, Phone: (208) 282-7902, Fax: (208) 282-7949, E-mail: gpillay@inra.org and **J. Prakash**, Illinois Institute of Technology,Department of Chemical and Environmental Engineering, 3300 South Federal Street, Chicago, IL 60616-3793, USA, Phone: (312) 567-3639, Fax: (312) 567-8874, E-mail: prakash@iit.edu.

AB1 - ROLE OF ELECTROCHEMISTRY IN BIOMEDICAL APPLICATIONS

(Industrial Electrolysis and Electrochemical Engineering / Organic and Biological Electrochemistry / Battery / New Technology Subcommittee)

The symposium solicits papers covering the role of electrochemistry in biomedical technology and the field of medicine. The symposium plans interdisciplinary discussions among scientists and engineers on the wide scope of electrochemistry in the field of neurochemistry, electrotherapy, cardiology and biomaterials. Specific areas of interest include (but are not limited to): 1. Cardiac stimulation (power sources in pacemaker and defibrillator technology), 2. Neuro-stimulation, 3. Power source in drug delivery applications, 4. Electrochemical cancer therapy, 5. Biochemical sensors, 6. Analytical chemistry in medical research, and 7. Nerve signal transmission/transduction.

Abstracts, suggestions, and inquiries should be sent electronically to the ECS headquarters Office and to the Symposium Organizers: **M. Jain**, Medtronic Energy and Components Center, 6700 Shingle Creek Parkway, MS G207, Brooklyn Center, MN 55430 USA, Phone: (763) 514-1159; Fax: (763) 514-1284; E-mail: mukul.jain@medtronic.com; **W. A. van Schalkwijk**, Selfcharge Inc., 6742 NE 185th Avenue, Suite 230, Redmond, WA 98052 USA, Phone: (425) 881-9199 x116, Fax: (425) 883-1447, E-mail: waltvans@aol.com, and **R. A. Leising**, Wilson Greatbatch Ltd, 10000 Wehrle Dr., Clarence, NY 14031-2090, USA, Phone: (716) 759-5362.

AC1 - ELEVENTH INTERNATIONAL SYMPOSIUM ON THE PHYSICS AND CHEMISTRY OF LUMINESCENT MATERIALS

(Luminescence and Display Materials)

This symposium will focus on various aspects of luminescence, in both organic and inorganic solids, and will address current and emerging technical and scientific issues in luminescence. Presentations at this meeting will cover photo-luminescent materials for lamp and laser applications, cathodo-luminescent materials, X-ray phosphors, scintillators, electro-luminescent materials, and phosphors for plasma panel displays and other optical devices. Presentations on chemical aspects of luminescence will include synthesis of conventional and novel luminescent materials, including nanophases and optimization of luminescence properties, such as brightness, color, response time, excitation spectra, etc. via modification of particulate and surface characteristics; and exploring new materials by combinatorial chemistry. Presentations involving physics of luminescence will cover measurements and modeling of luminescent properties; identification of luminescent and loss centers; non-radiative processes; energy transfer; and concentration effects; complex luminescence processes such as core valence luminescence, cooperative phenomena, multi-photon transitions, luminescence from confined systems, etc.; nonlinear optical processes; and ultra-fast transitions. Papers on luminescence from novel materials such as ceramics, glass, and nano-particles are encouraged.

Publication of a joint Proceedings Volume with the "Inorganic and Organic Luminescence Materials for Light Emitting Diodes" Symposium 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 the Symposium Organizers: **A. Srivastava**, General Electric Corporation Research and Development, 1 Research Circle, KWB 316, Niskayuna, NY 12309 USA, Phone: (518) 387-7535, Fax: (518) 387 5299, E-mail: srivastava@crd.ge.com; **K. C. Mishra,** Osram Sylvania Inc., 71 Cherry Hill Drive, Beverly, MA 01915 USA, Phone: (978) 750-1515, Fax: (978) 750-1799, E-mail: kailash.mishra@sylvania.com; **C. Ronda**, Philips Research Laboratories, Weisshausstrasse 2, D-52066 Aachen, Germany, Phone: 49-241/6003-397, Fax: 49-241/6003-483, E-mail: ronda@pfa.research.philips.com; **M. Raukas**, Osram Sylvania, Central Research, 71 Cherry Hill Drive, Beverly, MA 02109 USA, Phone: (978) 750-1506, Fax: (978) 750-1799, E-mail: madis.raukas @sylvania.com; **A. Setlur**, GE-CRD, 1 Research Circle, Niskayuna, NY 12309 USA, Phone: (518) 387-6305, Fax: (518) 387-5299, E-mail: setlur@crd.ge.com; and **A. Meyerink**, Department of Condensed Matter, Debye Institute, University of Utrecht, P.O. Box 80. 000, 3508 TA Utrecht, The Netherlands, Phone: 31-30-253-2202, Fax: 31-30-253-2403, E-mail: setlur@crd.ge.com.

AC2 - INORGANIC AND ORGANIC LUMINESCENT MATERIALS FOR LIGHT EMITTING DIODES

(Luminescence Display Materials)

The emergence of blue and UV emitting LEDs and of multicolored OLEDs creates the possibility of generating white light from a completely solid-state light source. Materials science of relevance to these fields are challenging and diverse. Research covers a very wide field including LED chip materials, luminescent conversion materials, hole and electron carriers for OLEDs, and packaging materials for optimum light extraction with minimal degradation. Methods of producing white light are of particular impact to the lighting industry due to the tremendous energy savings and design possibilities. Topics for which papers are solicited include material physics and chemistry for LED and OLED materials, luminescent materials, and other materials and methods for producing white light based on all solid-state technology. Engineering approaches to generating white light from LEDs or OLEDs are also of interest. Abstracts should be sent electronically to the ECS Headquarters Office.

In view of the importance and the rapid development in this field, publication of a joint Proceedings Volume with the 11th International

Symposium on the Physics and Chemistry of Luminescent Materials is planned to be available after the Meeting. With acceptance of a paper in this symposium (oral or poster) the organizers strongly suggest the authors submit a typed camera-ready copy of the full manuscript and a list of key words to the Symposium Organizers at the Meeting. Manuscript preparation instructions will be sent out by the Symposium Organizers after official notification of acceptance is distributed by the ECS Headquarters Office.

Suggestions and inquiries should be sent to the Symposium Organizers: **D. Doxsee,** GELcore LLC, 6180 Halle Drive, Valley View, OH 44125 USA; Phone: (216) 606-6557; Fax: (216) 606 6556; E-mail: dan.doxsee@gelcore.com; **A. Ellens**, OSRAM GmbH Munchen, Hellabrunnerstrasse 1 D-81536 Munich, Germany; Phone: 49-89-62-13-33-57, Fax: 49-89-62-13-34-63; E-mail: aellens@osram.de; and **T. Juestel**, Philips Research Laboratories, Weisshausstrasse 2, D-52066 Aachen, Germany; Phone: 49-241-6003-375, Fax: 49-241-6003-483, E-mail: thomas.juestel@philips.com.

AD1 - INTERNATIONAL SYMPOSIUM ON ADVANCED LUMINESCENT MATERIAL AND QUANTUM CONFINEMENT

(Luminescence and Display Materials / Dielectric Science and Technology / Electronics)

This symposium will address recent developments in the area of nanoscale semiconductor, metallic, and organic structures. Emphasis will be placed on quantum effects and single electron storage in small scale silicon and III-V compound structures and devices. It will also cover fundamental issues in luminescence physics and chemistry of new classes of phosphor and porous materials including both atomic and molecular structures. Papers are solicited that cover fundamental aspects of science and engineering of quantum confinement in nanostructures, as well as related technology and applications. Areas of particular interest include: atomic and molecular clusters and other nanostructures; novel fabrication techniques for nanostructures; chemistry of nanostructures; electron transport in nanostructures; cooperative phenomena in nanoclusters; optical properties (wells, wires, and dots); carbon nanotubes and molecular wires; organic, phosphor, and porous materials; spectroscopy of luminescent materials (photo-, cathodo-, electro-, and radio-luminescence, and coherent luminescence); new device concepts; quantum well infrared photodetectors; quantum computing; quantum architectures and circuits; and spintronics.

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 camera ready abstract and a camera ready copy of the full proceedings volume manuscript and list of key words by January 1, 2002.

Abstracts, questions, and inquiries can be sent electronically to the ECS Headquarters Office and to the Symposium Organizers: **J. P. Leburton**, Beckman Institute, 405 N. Mathews Avenue, University of Illinois Urbana, Illinois, IL 61801, USA , Phone: (217) 333-6813; Fax: (219) 244-4333; E-mail: leburton@ceg.uiuc.edu; **M. Cahay**, Dept. of Electrical and Computer Engineering and Computer Science, 832 Rhodes Hall, University of Cincinnati, Cincinnati, Ohio 45221, USA, Phone: (513) 556-4754; Fax: (513) 556-7326; E-mail: mcahay@planck.ece.uc.edu; **D. J. Lockwood,** National Research Council, Ottawa K1A 0R6, Canada, Phone: (613) 993-9614; Fax: (613) 993-6486; E-mail: david.lockwood@nrc.ca; **S. Bandyopadhyay**, Department of Electrical Engineering, University of Nebraska, Lincoln, Nebraska 68588-0511, USA, Phone: (402) 472-0294; Fax: (402) 472-4732; E-mail: bandy@engrs.unl.edu; **N. Koshida,** Faculty of Technology, Tokyo University of Agriculture and Technology Koganei, Tokyo 184, Japan, Phone: 81-423-887128; Fax: 81-423-855395; E-mail koshida@cc.tuat.ac.jp; **M. Zacharias,** Max- Planck- Institute of Microstructure Physics, Weinberg 2, 06120 Halle, Germany, Phone: 49 345 5582 729, Fax: 49 345 5582 557, E-mail: zacharias@mpi-halle.de; and **S. S. Li,** Dept. of Electrical and Computer Engineering, University of Florida, Gainesville, Florida 32611, USA, Phone: (352) 392-4937, Fax: (352) 392-8381, E-mail: shengli@eng.ufl.edu.

AE1 -FIFTH INTERNATIONAL MANUEL M. BAIZER AWARD SYMPOSIUM ON ORGANIC ELECTROCHEMISTRY

(Organic and Biological Electrochemistry)

This symposium will be in honor of Jean-Michel Saveant, the winner of the Fifth International Manuel M. Baizer Award. In keeping with the spirit of the Award, which is for "outstanding scientific achievements in the electrochemistry of organics," this symposium will be a showcase of organic and bioorganic electrochemical reactions and deal with all aspects of electroorganic synthesis and mechanistic studies in organic, organometallic, and bioorganic electrochemistry.

Publication of a Proceedings Volume is planned after the Meeting. Acceptance of a paper in this symposium obligates the authors to submit a typed camera ready copy of the full manuscript and a list of key words 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 inquires should be sent electronically to the ECS Headquarters Office and to the Symposium Organizers: **K. Chiba**, Department of Applied Biological Science, Tokyo University of Agriculture and Technology, 3-5-8 Saiwai-cho, Fuchu, Tokyo 183-8509, Japan, Phone: 81-42-367-5700, Fax: 81-42-360-8830, E-mail: chiba@cc.tuat.ac.jp; **F. Maran**, Department of Physical Chemistry, University of Padova, Via Loredan 2, 35131 Padova, Italy, Phone: 39 (049) 827-5147, Fax: 39 (049) 827-5135, E-mail: f.maran@chfi.unipd.it; and **M. S. Workentin**, Dept of Chemistry, University of Western Ontario, Canada N6A 5B7, Phone: (519) 661-2111 Ext: 86319, Fax: (519) 661-3022, E-mail: mworkent@julian.uwo.ca.

AE2 - MECHANISTIC ASPECTS OF BIOLOGICAL ELECTRON TRANSFER

(Organic and Biological Electrochemistry Division)

Electron Transfer (ET) reactions are key steps in a diverse array of biological transformations ranging from photosynthesis to aerobic respiration. The unique simplicity of ET reactions has fostered the development of highly successful theoretical models that describe rates in terms of a small number of experimentally accessible parameters. A vital synergy between theory and experiment provides the foundation for efforts to explain how biological ET reactions can proceed rapidly over quite long distances, at low driving forces, with remarkable selectivities. This symposium will focus on important current issues in biological ET. Both electrochemical and non-electrochemical approaches for investigating these reactions are of interest. Contributions are solicited in the following areas: ET in proteins and protein-protein complexes; ET of proteins at electrode interfaces; conformational control in biological ET reactions; the role of ET reactions in enzyme function and electrocatalysis; ET in nucleic acids; and theory of biological ET reactions. We would like this symposium to bring together bioelectrochemists, biophysicists, bioinorganic chemists, biochemists, and other researchers working on not only fundamentals of ET but also applications in biological sciences.

Abstracts, suggestions, and inquiries should be sent to the ECS Headquarters Office and to the Symposium Organizers: **Michael G. Hill**, Department of Chemistry, Occidental College, Los Angeles, CA 90041, USA, Phone: (323) 259-2766; Fax: (323) 341-4912; E-mail: mgh@oxy.edu; **F. Armstrong**, Inorganic Chemistry Laboratory, South Parks Road, Oxford, OX1 3QR England, Phone: 44-1865-287182/272647; Fax: 44-1865-287182/272690; E-mail: fraser.armstrong@chemistry.oxford.ac.uk; **G. L. McLendon,** Chemistry Department, Princeton University, Princeton, NJ 08544, USA, Phone: (609) 258-6808; Fax: (609) 258-6746; E-mail: glm@princeton.edu; **K. Niki,** The Beckman Institute, Mail Code 139-74, California Institute of Technology, Pasadena, CA 91125, USA, and Department of Chemistry, Occidental College, Los Angeles, CA 90041, USA, Phone: (323) 259-2765; Fax: (323) 341-4912; E-mail: nikik@oxy.edu.

AE3 - ORGANIC AND BIOLOGICAL ELECTROCHEMISTRY 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 to the ECS Headquarters Office and to the Session organizer: **D. G. Peters**, Department of Chemistry, Indiana University, Bloomington, IN 47405, USA, Phone: (812) 855-9671, Fax: (812) 855-8300, E-mail: peters@indiana.edu.

AF1 - INORGANIC TEMPLATES AS DESIGN ELEMENTS IN NANOCOMPOSITES AT ELECTRODE SURFACES

(Physical Electrochemistry)

This symposium will focus on the use of inorganic materials to template electrode surfaces. The inorganic materials may be used to create layered domains, to create mesoporous surfaces of controlled diameter, to control charge and/or charge distribution at electrode surfaces. Some typical examples (but not limited to these) are clays, organoclays, zeolites, sol gels, layered double hydroxides, and novel biological/inorganic matrices. Electrode arrays

that reduce to nanometer scales are also considered. Materials falling into this category are semiconductor and metal depositions within the nanometer scale. The common theme is the use of large repeating structural elements to control access. Articles to be accepted include those detailing methods for obtaining said structures and those relating to performance, theory, and application of these materials.

Abstracts, comments, and inquiries can be sent to ECS Headquarters and to the organizers: **M. M. Collinson**, Kansas State University, Department of Chemistry, Manhattan, KS 66506-3701 USA, Phone: (785) 532-1468, Fax: (785) 532-6666, E-mail: mmc@ksu.edu; and **A. Fitch,** Loyola University Chicago, Department of Chemistry, 6525 N. Sheridan Rd., Chicago, IL 60626 USA, Phone: (773) 508-3119, Fax: (773) 508-3086, E-mail: afitch@luc.edu

AF2 - PROGRESS IN METHODS USED TO SOLVE ELECTROCHEMICAL PROBLEMS: PART 1 - HISTORICAL PERSPECTIVES

(Physical Electrochemistry)

Several companion Symposia at this meeting focus on methods used to solve electrochemical problems. This Symposium, Part 1, provides an historical overview of the developments in electrochemical methodology that have led to modern electrochemical and instrumental methods. Several talks are planned, and as all talks are invited, no submitted papers will be accepted in the Historical Perspectives Symposium. Papers relating to recent developments using methods should be submitted to one of the appropriate companion symposia, Progress in Methods Used to Solve Electrochemical Problems, Parts 2 to 5.

All questions and comments about Historical Perspectives should be addressed to **V. Birss**, Department of Chemistry, University of Calgary, Calgary, AB, Canada T2N 1N4, Phone: (403) 220-6432, Fax: (403) 289-9488, E-mail: birss@acs.ucalgary.ca; **J. Leddy,** University of Iowa, Department of Chemistry, Iowa City, IA 52242, USA, Phone: (319) 335-1720, Fax: (319) 335-1270, E-mail: johna-leddy@uiowa.edu; and **A. Wieckowski,** Department of Chemistry -RAL 58B, Box 56-5, University of Illinois, 600 S Mathews Ave, Urbana, IL 61801-3602, USA, Phone: (217) 333-7943, Fax: (217) 244-8068, E-mail: andrzej@scs.uiuc.edu.

AF3 - PROGRESS IN METHODS USED TO SOLVE ELECTROCHEMICAL PROBLEMS: PART 2 - NEW DEVELOPMENTS IN ELECTROCHEMICAL METHODS

(Physical Electrochemistry)

Through the years, the development of new electrochemical methods has figured prominently in the application of electrochemistry in a host of studies. Examples include, but are not limited to, kinetic studies (such as electron transfer, nucleation and growth, coupling between electron transfer and homogeneous chemical kinetics, transport processes and chemical reactions in thin films, etc.), ultratrace analysis (even to the level of single molecules), and materials preparation and characterization. This symposium will focus on both the development and application of newelectrochemical methods in such settings.

Abstracts, suggestions, and inquiries should be sent to the ECS Headquarters Office and to the Symposium Organizer: **D. A. Buttry,** Department of Chemistry, University of Wyoming, Laramie, WY 82071-3838 USA, Phone: (307) 766-6677, Fax: (307) 766-2807, E-mail: buttry@uwyo.edu.

AF4 - PROGRESS IN METHODS USED TO SOLVE ELECTROCHEMICAL PROBLEMS: PART 3: NEW DEVELOPMENTS IN OPTICAL METHODS

(Physical Electrochemistry)

This symposium will feature presentations on new experimental and theoretical developments in the use of optical methods to discern electrochemical processes. These include examples such as near field spectroscopy to probe nanostructures, internal and external reflectance to define interfacial structures and electron transfers, and fast laser spectroscopy to elucidate electrochemically-based processes.

Abstracts, inquiries, and suggestions can be sent to ECS Headquarters and to the Symposium Organizers: **T. Kuwana**, Department of Chemistry, University of Kansas, Lawrence, KS 66045 USA, Phone: (785) 864-3015, E-mail: tkuwana@ukans.edu; **W. Heineman**, Department of Chemistry, University of Cincinnati, Cincinnati, OH 45221 USA, Phone: (513) 556-9210, Fax: (513) 556-9239, E-mail: William.Heineman@uc.edu; and **N. R. Armstrong**, Department of Chemistry, University of Arizona, Tuscon, AR 85382 USA, Phone: (520) 621-8242, E-mail: NRA@u.arizona.edu.

AF5 - PROGRESS IN METHODS USED TO SOLVE ELECTROCHEMICAL PROBLEMS: PART 4: NEW DEVELOPMENTS IN UHV AND SYNCHROTRON X-RAY METHODS

(Physical Electrochemistry)

This symposium will provide an interdisciplinary forum to discuss new applications of UHV surface science methods and synchrotron X-ray methods in studies of electrochemical interfaces. Submission of papers on radiochemical methods of electrode surface characterization are also encouraged. Topics of interest include applications of X-ray photoelectron spectroscopy (XPS), Auger electron spectroscopy (AES), electron diffraction and energy loss methods (*e.g.*, LEED, HREELS), ion scattering and related UHV methods, and the synchrotron-based techniques such as surface X-ray diffraction, X-ray standing waves, X-ray reflectivity, X-ray absorption fine structure (XAFS), far-IR spectroscopy (and radiolabels). Of particular interest are illustrations of the use of these methods to the study of well-ordered systems, *e.g.* adsorbates and deposits on single crystal surfaces, nanostructures, nanoparticles, intermetallics, self-organizing systems, islands, defects, and surface clusters. Also included is electrical double layer modeling in UHV. Papers that cover theoretical aspects of the interfacial electrochemical systems and the application of the various spectroscopies are also solicited.

The invitation is open; the program will be constructed from abstracts submitted to the ECS Headquarters. Suggestions and inquiries should be sent to one of the Symposium organizers: **J. McBreen**, Energy Sciences & Technology Department, Building 555, P.O. Box 5000, Brookhaven National Laboratory, Upton, NY 11973-5000 USA, Phone: (631) 344-4513, Fax: (631) 344-5815, E-mail: jmcbreen@bnl.gov; and **A. Wieckowski,** Department of Chemistry, Box 56-5, University of Illinois, 600 S. Mathews, Urbana, IL 61801 USA, Phone: (217) 333-7943, Fax: (217) 244-8068, E-mail: andrzej@scs.uiuc.edu.

AF6 - PROGRESS IN METHODS USED TO SOLVE ELECTROCHEMICAL PROBLEMS: PART 5 - NEW DEVELOPMENTS IN IN-SITU SURFACE IMAGING METHODS

(Physical Electrochemistry)

Solving electrochemical problems demands the development and application of a wide variety of analytical methodologies. As part of the Centennial meeting of the Society, this symposium serves as an interdisciplinary forum for highlighting recent advances in the use of *in-situ* imaging concepts for solving electrochemical and related interfacial problems. Areas of particular interest include, but are not limited to: 1. electrochemical, impedance microscopies; 2. scanning tunneling and force microscopies; 3. spectroelectrochemical microscopies; and 4. surface plasmon resonance and near field optical microscopies. Presentations related to the experimental and theoretical aspects of these topics are requested as are those detailing applications to challenging electrochemical problems.

Abstracts, suggestions, and inquiries should be sent electronically to the ECS Headquarters Office and to the Symposium Organizers: **M. D. Porter**, Iowa State University, Department of Chemistry, Ames, IA 50011 USA, Phone: (515) 294-6433, Fax: (515) 294-3254, E-mail: mporter@porter1.ameslab.gov; and **N. J. Tao**, Department of Electrical Engineering, Arizona State University, Tempe, AZ 85287-5706 USA, Phone: (480) 965-3424, Fax: (480) 965-3837, E-mail: taon@fiu.edu.

AF7 - PHYSICAL ELECTROCHEMISTRY GENERAL SESSION

(Physical Electrochemistry)

Papers concerning any aspect of physical electrochemistry not covered by topic areas of others specialize 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 Session Organizer: **V. Birss,** Department of Chemistry, University of Calgary, Calgary, AB, Canada T2N 1N4, Phone: (403) 220-6432, Fax: (403) 289-9488, E-mail: birss@acs.ucalgary.ca.

AG1 - THIRTEENTH INTERNATIONAL SYMPOSIUM ON MOLTEN SALTS

(Physical Electrochemistry / High Temperature Materials / Electrodeposition)

This symposium will provide an international and interdisciplinary forum centered on innovative basic and applied research performed in molten salts and ionic liquids. Contributed papers are solicited in all areas of chemistry, electrochemistry, electrochemical engineering, and physics related to molten salt research. Topics of interest include: 1. Electrochemical Power, *e.g.*, batteries, fuel cells, capacitors, and photovoltaics; 2. Homogeneous and Heterogeneous reactions, *e.g.*, catalysis, inorganic and organic syntheses, oligomerizations, and polymerizations; 3. Electrodeposition, e.g., metal electrowinning, the deposition of alloys, semiconductors, intermetallics and layered structures, the structural characterization of electrodeposits, metalliding and surface modification, and characterization of electroactive species; 4. Separations, *e.g.*, selective extractions, immobilized molten salt gas membranes, and electrochemical gas separations; 5. Molten salt promoted corrosion phenomena; 6. Solute and solvent structural investigations; and 7. New innovative molten salts and molten salt mixtures, *e.g.*, hydrophobic molten salt systems and molten salt mixtures, liquid clathrates, low vapor pressure (vacuum resistant) molten salts, air-insensitive molten salts. 8. Applications of molten salts to "green" chemical reactions and processes. Keynote lectures will be presented by invited speakers. Depending upon the number of papers received, a poster session may be planned. Student participation is highly encouraged, and it is anticipated that some funds will be available for student support.

Publication of a Proceedings Volume is planned to be available after the Meeting. Authors are required to provide a camera-ready copy of their papers in the correct format and a list of keywords at the Meeting. All papers will be reviewed for content.

Abstracts, suggestions, and inquiries should be sent to the ECS Headquarters Office and the Symposium Organizers: **H. C. De Long**, Department of Chemistry, United States Naval Academy, Annapolis, MD 21402 USA, Phone: (410) 293-6610, Fax: (410) 293-2218, E-mail: delong@nadn.navy.mil; **R. W. Bradshaw**, Sandia National Laboratories, P.O. Box 969, Livermore, CA 94551-0969 USA, Phone: (925) 294-3229, Fax: (925) 294-3410, E-mail: rwbrads@sandia.gov; **M. Matsunaga,** Kyushu Institute of Technology, 1-1, Sensui-cho, Tobata, Kitakyushu 804, Japan, Phone: 81-93-884-3335, Fax: 81-93-884-3300, E-mail: moriom@che.kyutech.ac.jp; **G. R. Stafford**, National Institute of Standards and Technology, Metallurgy Division, Building 224/B166, Gaithersburg, MD 20899-3956 USA, Phone: (301) 975-6412, Fax: (301) 926-7679, E-mail: stafford@tiber.nist.gov; and **P. C. Trulove,** AFOSR/NL, 801 North Randolph St., Rm. 732, Arlington, VA, 22203-1977 USA, Phone: (703) 696-7787, Fax: (703) 696-8449 E-mail: paul.trulove@afosr.af.mil.

AH1 - REDUCTIVE ELECTROCATALYSIS

(Physical Electrochemistry / Organic and Biological Electrochemistry)

Papers are solicited in the area of electrocatalytic processes involving the reduction of both inorganic and organic materials. Attention will be focused on mechanistic studies of these reactions, including both experimental and theoretical aspects and in situ Species of special interest include dioxygen, nitrogen oxides and sulfur oxides.

Abstracts, suggestions, and inquiries should be sent electronically to ECS Headquarters Office and to the Symposium Organizers: **A. Wieckowski,** Department of Chemistry, Box 56-5, University of Illinois, 600 S. Mathews, Urbana, IL USA61801, Phone: (217) 333-7943; Fax:: (217) 244-8068, E-mail: andrzej@scs.uiuc.edu; and **D. A. Scherson,** Department of Chemistry, Clapp Hall, Room 204, Case Western Reserve University, Cleveland, OH 44106-7078 USA, Phone: (216) 368 5186, Fax: (216) 368 3006, E-mail: dxs16@po.cwru.edu.

AI1 - CHEMICALLY MODIFIED ELECTRODES

(Physical Electrochemistry / Organic and Biological Electrochemistry / Sensor)

The deliberate chemical modification of electrode surfaces by the adsorption or covalent attachment of monolayers or multilayers has been studied and practised for more than twenty years. Over that time the methods available for surface modification of electrodes and techniques available to characterize modified electrodes on the molecular scale have become significantly more sophisticated. This symposium will focus on all aspects of chemically modified electrodes from their fabrication, through their characterization, to their applications. Papers dealing with all aspects of monolayer and multilayer modified electrodes are welcome. Areas of interest include: 1. Techniques for the fabrication of modified electrodes; 2. Immobilization of biological molecules at electrode surfaces; 3. Characterization of modified electrodes using *in situ* and *ex situ* techniques; 4. Modelling and experimental studies of the kinetics of reactions and mass transport at modified electrodes, including fundamental studies of electron transfer; and 5. Applications of modified electrodes in electrosynthesis, sensors, biological electrochemistry and other areas.

Abstracts, suggestions, and inquiries should be sent electronically to the ECS Headquarters Office and to the Symposium Organizers: **P. N. Bartlett,** Department of Chemistry, University of Southampton, Southampton, SO17 1BJ, UK, Phone: 44-23-8059-2373, Fax: 44-23-8059-3781, E-mail: p.n.bartlett@soton.ac.uk; **I. Taniguchi**, Department of Applied Chemistry & Biochemistry, Kumamoto University,2-39-1, Kurokami, Kumamoto 860-8555, Japan, Phone: 81-96-342-3655,Fax: 81-96-342-3655, E-mail: taniguch@gpo.kumamoto-u.ac.jp; **R. B. Lennox**, Dept. of Chemistry, 801 Sherbrooke St. West, McGill University, Montreal, QC, H3A 2K6, Canada, Phone: 1-514-398-3638, Fax: 1-514-398-3797, E-mail: bruce_lennox@maclan.mcgill.ca; and **B. Marsan**, Department of Chemistry, Universite de Quebec, CP 8888, Succ. Centreville, Montreal, QC, H3C 3P8, Canada, Phone: (514) 987-3000 x7980, Fax: (514) 987-4054, E-mail: marson.benoit@uqam.ca.

AJ1 - MICROANALYTICAL DEVICES AND INSTRUMENTATION

(Physical Electrochemistry / Organic and Biological Electrochemistry/ Sensor / Energy Technology)

Microelectromechanical systems (MEMS) and lab-on-a-chip (LOAC) or micro-total-analysis-system technologies (mTAS) have become of great importance in recent years. This prominence has come about due to their ability to: 1. determine the properties and quantities of a variety of materials, such as biologicals (nucleic acids, proteins, whole cells), small molecules (gas- and liquid-state), polymers, and nanoparticles/clusters; 2. obtain information on environmental effects (stress, strain, heat) on systems; 3. make measurements in small and/or hostile environments with microscopic or macroscopic quantities of material; and 4. deliver microscopic quantities of materials to various locations and at various times (microfluidics). Due to their broad-based application in many fields, development of these miniaturized analysis systems requires a breadth of knowledge spanning the engineering and basic science arenas.

Papers are solicited on the fabrication and use of miniaturized analytical devices/instruments in the chemical, biological, and medical sciences, and the general area of engineering. In addition, the topic of miniaturized energy sources for use with microanalysis systems is of interest.

Abstracts, suggestions, and inquiries should be sent electronically to the ECS Headquarters Office and to the Symposium Organizers: **R. L. McCarley,** Louisiana State University, 232 Choppin Hall, Baton Rouge, LA 70803 USA, Phone: (225) 578-3361, Fax: (225) 578-3458, E-mail: tunnel@lsu.edu., and **M. A. Ryan**, Jet Propulsion Lab, 4800 Oak Grove Drive #303-308, Pasadena, CA 91109-8001, USA, Phone: (818) 354-8028, Fax: (818) 393-4272, E-mail: mryan@jpl.nasa.gov.

AK1 - MICROFABRICATED SYSTEMS AND MEMS VI

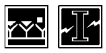
(Sensor / Dielectric Science and Technology / Electronics)

This symposium continues the series of Symposia that focus on all aspects of MEMS technology including micromachining, fabrication processes, packaging, and the application of these structures and processes to the miniaturization of chemical sensors, physical sensors, biosensors, miniature chemical analysis systems, and others. Particular emphasis should be placed on processes and potential application of these devices. The following is a partial list of topics to be solicited: 1. Fabrication and processing for two- and three-dimensional structures; 2. New materials and methods of processing at the microscale dimensions; 3. Sensors based on micromachining methods; 4. Use of microstructures applicable to environmental and biological studies; 5. Multilevel thin-film structures and microstructural characterization; 6. Chemical, electrical and physical testing and reliability of micromechanical structures; and 7. Smart microfabricated sensors. and 8. MEMS switches.

Publication of a Proceedings Volume is planned to be available at the Meeting. All authors accepted for presentation (oral or poster) are obligated to submit a camera-ready Proceedings Volume manuscript. Instructions for preparing the manuscript will be sent out by the Symposium Organizers after the notification of acceptance of the paper. The deadline for submission of the camera-ready manuscript for Proceeding Volume is also January 1, 2002 to have adequate time for review.

Abstracts, suggestions, and inquiries should be sent electronically to the ECS Headquarters Office and to the Symposium Organizers: **P. J. Hesketh,** Georgia Institute of Technology, George W. Woodruff School of Mechanical Engineering, Atlanta, GA 30332-0405 USA, Phone: (404) 385-1358, Fax: (404) 894-8496, E-mail: phesketh@sununo.me.gatech.edu; **S. S. Ang,** University of Arkansas, Department of Electrical Engineering, 3217 Bell Engineering Center, Fayetteville, AR 72701 USA, Phone: (501) 575-7683, Fax: (501) 575-7967, E-mail: ssa@engr.uark.edu; **J. L. Davidson**, Vanderbilt University, 5617 Stevenson Science Center, Nashville, TN 37232 USA, Phone: (615) 343-7886, Fax: (615) 343-6614, E-mail: jld@vuse.vanderbilt.edu; **H. G. Hughes**, Motorola, 2100 E. Elliot Rd., Tempe, AZ, 85284, USA, Phone: (480) 413-4089, Fax: (480) 413-4511, E-mail: henry.g.hughes@motorola.com; and **D. Misra,** Department of Electrical and Computer Engineering, New Jersey Institute of Technology, University Heights, Newark, NJ 07102 USA, Phone: (973) 596-5739, Fax: (973) 596-5680, E-mail: dmisra@njit.edu.

AL1 - SENSING IN INDUSTRIAL AND EXTREME APPLICATIONS



(Sensor / Industrial Electrolysis and Electrochemical Engineering)

Many industrial environments call for sensing chemical and physical properties in environments that are either unique or extreme in some way. These sensing requirement pose special problems for the sensor technology, sensor development, and surrounding sensor application. This symposium is intended to discuss the challenges facing sensors and the various approaches for sensing in industrial applications. Included are discussion of sensors that can detect the harsh environment or another parameter in the harsh environment. These situations can include extreme temperatures (high and low, 77K to 1300K), pressures (up to 20 kpsi), chemical exposure (corrosives, or low pH, solvents, hydrocarbons), mechanical strain, vibration, or abrasive contact or EM environments. These extreme environments occur in many industries and applications including automotive, petrochemical (downhole or in pipelines), exhaust stacks, effluent streams, plating baths, cryogenic operations, aircraft, or DOE/DoD waste tanks/sites.

We would like this symposium to bring together those in different industries so that cross-disciplinary ideas are encouraged. One solution may fit with minor modification to another. Therefore, all types of sensors, all types of sensor technologies and materials, and all types of modifications for the application are welcomed. Sensors can include solid-state electrochemical devices, heated metal oxide sensors, semiconductor devices like SiC and GA, piezoelectric/acoustic sensors, especially new high temperature materials, optical fiber sensors, ionization and ion mobility sensors, thermal sensors, and magnetic devices. Unusual applications of the detectors for analytical chemistry are also welcomed. It is hoped that the intended application will range across many industries including food, industrial, automotive, utilities, petrochemical, electroplating, fuel cells, and many others. Issues will include the range of sensor needs from design to performance to packaging.

Abstracts, inquiries, and suggestions can be sent to ECS Headquarters and to the Symposium Organizers: **R. W. Cernosek**, Sandia National Labs, MS 1425, PO Box 5800, Albuquerque, NM 87185 USA, Phone: (505) 845-8818, Fax: (505) 844-1198, E-mail: rwcerno@sandia.gov; **J. Stetter,** Illinois Institute of Technology, BCPS Department, 3101 S. Dearborn Avenue, Chicago, IL 60616 USA, Phone: (312) 567-3443, Fax: (312) 567-3494, E-mail: stetter@charlie.cns.iit.edu; and **J. Weidner,** Department of Chemical Engr., Swearingen Engineering Center, University of South Carolina, Columbia, SC 29208 USA, Phone: (803) 777-8265, Fax: (803) 777-8265, E-mail: weidner@engr.sc.edu.

THE ELECTROCHEMICAL SOCIETY CENTENNIAL CELEBRATION

Philadelphia, Pennsylvania, USA
May 12-17, 2002 • Preliminary Schedule

May 12-17 — The technical sessions, arranged by the Society's thirteen Divisions and Groups, will run Monday through Friday of this week and will feature many symposia dealing with both state-of-the-art science and technology and historical aspects of the field.

Sunday, May 12 — Registration opens and all attendees are invited to the informal Sunday Evening Get-Together, where complimentary refreshments will be served.

Monday, May 13 — A plenary talk, on the history of electrochemistry and The Electrochemical Society, will be given by Arnold Thackray, President of the Chemical Heritage Foundation.

In the evening, the traditional Monday Evening Mixer will mark the opening of the Society's Centennial celebration. There will be some special guest appearances and entertainment. The Technical Exhibit will open this evening, along with the judging of the student posters. All meeting registrants are invited to attend and complimentary refreshments will be served.

Tuesday, May 14 — A plenary talk, on future directions of solid-state science and technology, will be given by Carver Mead, of the California Institute of Technology.

Wednesday, May 15 — A plenary talk, on future directions in electrochemical science and technology, will be given by Janet Osteryoung, former Director for the Division of Chemistry at the National Science Foundation.

In the evening, the main event — a very special Centennial party and dinner — will take place at the historic Crystal Tea Room, in the Wanamaker Building, a block from the meeting hotel.

Stay tuned for more information!
www.electrochem.org

Interface Article Guidelines

The mission of *Interface* is (1) to provide a forum for the lively exchange of ideas and news among The Electrochemical Society (ECS) members and the international scientific community at large, (2) to stimulate awareness of ECS as a leader on the technology frontiers through presentation of broad-based technical features and highlights from the field, and (3) to communicate ECS news, information, and activities to its members and the scientific community.

In each issue, one of the Society's Divisions or Groups is highlighted by presenting the state of the technology of that Division's or Group's field, as well as feature articles on that subject area. These contributions should be coordinated through the appropriate Division or Group. Other timely articles of general interest to Society members also may be contributed. Articles submitted to *Interface* should be written for a diversified scientific audience, with a broad introduction and wide scope so that newcomers to that particular field can understand the issues, and with enough depth that experts in the field will find the article interesting.

Using the following guidelines will improve and tailor articles for *Interface*: Article titles should be short and eye-catching. An abstract is not necessary. Color is available for figures, photographs, and tables and should be used where possible. Distinguished, high-quality figures or photos are welcome and will be considered for use on the Cover. Articles should be no more than 3,000 words in length, with up to five figures and/or tables. The authors should provide a short statement showing their respective affiliations and positions. (Please refer to articles in past issues of *Interface* for an example). Authors must submit typewritten, double-spaced manuscripts with original figures to the Editor. Articles may also be submitted electronically to the Editor at: **raj@utarlg.uta.edu**. Upon acceptance of the manuscript for publication, authors will be requested to submit the final version of their article on a 3.5 inch diskette (if possible). In general, the Instructions to Authors in the *Journal of The Electrochemical Society* should be followed for manuscript preparation. There are no charges for publication, nor payments for accepted articles or photographs. To be considered for a specific issue of *Interface*, articles must be submitted to the Editor by the following deadlines:

Article Submission Deadlines

Spring	December 1
Summer	March 1
Fall	May 1
Winter	August 15

Philadelphia

IMPORTANT DEADLINES

• MEETING ABSTRACTS •
January 2, 2002

• HOTEL RESERVATIONS •
April 12, 2002

• MEETING REGISTRATION •
April 12, 2002

2001 ECS/ISE Joint International Meeting
San Francisco, CA, USA
Advance Registration

Complete ALL sections of the Advance Registration Form located on the following page. Make check or money order payable to The Electrochemical Society, Inc. Payments must be made in U.S. funds drawn on a U.S. Bank. AMEX, MASTERCARD or VISA are accepted.

Completed Registration Forms along with payment must be received by **August 3, 2001**, to qualify for the advance rates. All refunds are subject to a 10% processing fee. Please submit cancellations in writing to the Society Headquarters Office at the address listed in the General Information Section below. Written requests for refunds will be honored if received at Society Headquarters before **August 10, 2001**.

Attendees prepaying by credit card may send their Advance Registration Forms to the Society Headquarters Office by FAX: 609.737.2743. If you send your Advance Registration Form by FAX, please do not send another copy by mail, as this may result in duplicate charges.

All Advance Registrations will be confirmed by mail.

Registration Fees

1) Short-Courses—Admittance to Short Courses ONLY, not applicable to any other Meeting activities.
2) One-Day Registration—Admittance to Technical Sessions and Meeting activities on specified day ONLY.
3) Complimentary Registration—ECS Emeritus & Honorary Members ONLY.
4) Technical Registrations—Individuals (Members & Nonmembers) interested in attending the Technical Sessions, including Authors of Papers, Invited Speakers, and Technical Session Chairmen.
5) Students—Full-time undergraduate or graduate students (Members & Nonmembers) registered for a degree in science or engineering. All students must send verification of student eligibility along with registration.
6) Nontechnical Registrants—Admittance to daily continental breakfast and other Meeting activities, except for the Technical Sessions.

Meeting Abstracts

For those individuals who wish to obtain additional copies of the Meeting Abstracts or for those individuals who are not planning on attending the Meeting and still wish to purchase the Meeting Abstracts, the Meeting Abstracts are available for $70.00 for Members and $84.00 for Nonmembers. Use the Additional line in Section D of the Advance Registration Form to order. Please add the following amounts for additional postage: First Class mailing within the U.S. is $8.00, Air Mail postage to Canada is $14.00, and Air Mail postage to all other countries is $24.00.

General Information

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