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# PHYSICAL ELECTROCHEMISTRY DIVISION (PED) NEWSLETTER

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April 2004

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Division Website: [www.electrochem.org/divisions/ped.htm](http://www.electrochem.org/divisions/ped.htm)

## **Division Officers (2003-2005)**

**Chair:** Dr. Viola Birss  
birss @ ucalgary.ca  
**Vice-Chair :** Dr. Gessie Brisard  
Gessie.Brisard @ USherbrooke.ca  
**Secretary-Treasurer:** Dr. Petr Vanýsek  
pvanysek @ niu.edu

### **Members-at-Large:**

Dr. Zoltan Nagy nagy @ anl.gov  
Dr. Michael Mirkin Michael\_Mirkin @ qc.edu  
Dr. Ingrid Fritsch ifritsch @ uark.edu  
Dr. Greg Swain gmswain @ cc.usu.edu  
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### **Advisor to the PED:**

Dr. Jean Lessard (until spring 2005) Jean.Lessard @ Usherbrooke.ca

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## **Recent Activities**

### **Symposia**

During 2003, the division sponsored or co-sponsored 12 symposia at the Spring Meeting in Paris, and 11 symposia in Orlando in the fall. The upcoming meeting will be in May in San Antonio, where the division will be sponsoring and cosponsoring 9 symposia. In October 2004 the division is cosponsoring 14 symposia. The list of these symposia and call for the papers appear later in this newsletter.

## Student Travel Awards

Three students received travel awards for the 2003 spring meeting in Paris.



**Figure 1 Student awards Paris 2003** Left to right: Mario Alpuche Aviles (Mississippi State University), Dr. Johna Leddy (Divisional Chair), Malgorzata Chojak, (University of Warsaw) and Rafal Jurczakowski (University of Warsaw).

3 awards were also given for the Orlando meeting. The awards were funded, in part, by Fuel Cell Technologies, Inc., Albuquerque.

- Wayne L. Gellett; Iowa State University - Dr. Johna Leddy advisor, Self-hydrating Membrane Electrode Assemblies for Fuel Cells, Symposium O1
- Janine Mauzeroll; University of Texas at Austin - Dr. Allen Bard, Symposium AA1. Scanning

Electrochemical Microscopy (SECM) Studies of Transport Processes through Export

- Jean-Philippe Belieres; Arizona State University C. Austen Anell, Symposium O1, Ionic Liquids As Non-corrosive High Temperature Fuel Cell Electrolytes.



**Figure 2 The Chair of the Division, Viola Birss with the Student travel Awardees at the San Antonio meeting; from left Janine Mauzerol, Jean-Philippe Belieres and Wayne L. Gellett.**

**Max Bredig Award**

This award was established in 1984 to "recognize excellence in molten salt chemistry research." It is awarded biannually and is sponsored by ARCO Metals Company and the Aluminum Company of America. The award winner is presented with a scroll and a cheque for \$1500. A lecture is given in the International Molten Salt symposium, sponsored by the PED. The next award will be given in Fall 2004 at the

Hawaii meeting. Watch for the next newsletter for the name of the awardee.

**The 2003 David C. Grahame Award goes to Prof. Andrzej Wieckowski from University of Illinois – Champaign Urbana.**

Andrzej Wieckowski was presented at the Spring meeting in Paris with the 2003 David C. Grahame Award for Physical Electrochemistry. The award committee made this award to Andrzej for his pioneering adaptation of solid state NMR to *in situ* metal solution interfaces. The award was completed by a pleasant afternoon reception. Dr. Wieckowski was the 11<sup>th</sup> recipient of this award. This award was established in 1981 to "*encourage excellence in physical electro-chemistry research.*" It is sponsored by General Electric and the Ford Foundation.



Figure 3 Andrzej Wieckowski is receiving his David C. Grahame award from the Division Chair Johna Leddy at the Divisional luncheon.

## UPCOMING SYMPOSIA

### **San Antonio 9-14 May 2004**

There will be six symposia where the Physical Division is either the organizer or the lead co-organizer and three symposia, on which the Physical Electrochemistry Division participates as a co-organizer.

T1 – Physical electrochemistry general session

T2 – Advances in scanning electrochemical microscopy (SECM) and nanoscale electrochemical systems

T3 – Transport in complex media

U1 – Electrochemistry at electrodes modified with organized monolayer assemblies

U2 – Molecular electronics

V1 – International symposium on electrochemical detection of biomolecules.

K1 – Polymer electrolyte and polymer nanocomposites.

Q1 – Educational needs and approaches for electrochemistry and electrochemical engineering.

X1 – Sensors based on nanotechnology

### **Honolulu 3-8 October 2004**

The Executive committee of the Physical Electrochemistry Division cordially invites you to participate at the spring meeting of the ECS, which will be held October 3-8, 2004 in Honolulu, Hawaii. There will be five symposia where the Physical Division is either the organizer or the lead co-organizer. These are the symposia labeled AD1, AD2, AD3, AE1, AE2 and eight symposia (D1, E1, P1, Q1, Q2, U1, X1, X2) in which the Physical Electrochemistry Division participates as a co-organizer. We hope that you will find one or more these symposia fitting your own research interests and we hope that you will submit your paper to one or more of these symposia.

***The deadline for submission is May 21, 2004.*** Detailed instructions can be found at

<http://www.electrochem.org/meetings/future/206/support/cfp.pdf> including the call for all symposia. For your convenience we are attaching the calls for the Physical Electrochemistry Division related symposia.

## AD1 - PHYSICAL ELECTROCHEMISTRY GENERAL SESSION

### *(Physical Electrochemistry)*

This symposium will address all aspects of physical electrochemistry. Papers related to any topics not covered by other specialized symposia listed at this meeting are welcome. Contributing papers will be programmed according to the titles and contents of the submitted abstracts.

Abstracts, suggestions, and inquiries should be sent electronically to the ECS headquarters office and to the symposium organizers: **G. Brisard**, Universite de Sherbrooke, Department of Chemistry, 2500 Blvd Universite Sherbrooke, PQ Canada, Tel: 819.821.7093, Fax: 819.821.8017, E-mail: gessie.brisard@usherbrooke.ca; and **M. Osawa**, Hokkaido University, Catalysis Research Center, Sapporo 060-0811 Japan, Tel: 81.11.706.2909, Fax: 81.11.706.2909, E-mail: osawam@cat.hokudai.ac.jp.

## AD2 - LIQUID-LIQUID INTERFACES AND PHASE TRANSFER CATALYSIS

### *(Physical Electrochemistry)*

Papers are solicited from researchers working in the areas of electrochemistry, analytical chemistry, separation science, chemical physics, phase transfer catalysis and biomembrane separations. Specific topics include: 1. calculations (including both analytic theories and molecular dynamics simulations) of molecular structure and reactivity at L/L interfaces; 2. spectroscopic characterization of molecular structure and reactivity at L/L interfaces; 3. electrochemical measurements of phase partitioning, ion transfer, redox electron transfer processes and double layer potential profiles at L/L interfaces; 4. electrochemically driven two phase reactions; reactions catalyzed by phase transfer and coupling of charge transfer reactions on the interface; 5. electrochemical interfaces involving room-temperature ionic liquids or molten salts; 6. transport processes and membrane potentials across lipid bilayers and biological structures; 7. separation techniques involving ion or electron transport across L/L interfaces; and 8. novel techniques and methodologies for the characterization and application of L/L interfaces, for example nonlinear spectroscopy, x-ray, neutron diffraction, etc. Direct your inquiries to the symposium organizers; however do not send them the abstracts if you have already submitted them electronically. Organizers: **M. R. Philpott**, National University of Singapore, Department of Materials Science, S1A Level 02 – 10, 10 Kent Ridge Crescent, 11920 Singapore. Tel: 65.874.5192, Fax: 65.776.3604, E-mail: chmmp@nus.edu.sg; **P. Vanysek**, Northern Illinois University, Department of Chemistry and Biochemistry, DeKalb, IL, 60115, USA, Tel: 815.753.6876, Fax: 815.753.4802, E-mail: pvanysek@niu.edu; **T. Kakiuchi**, Department of Energy and Hydrocarbon Chemistry, Graduate

School of Engineering, Kyoto University, Kyoto 615-8510, Japan, Tel: 81.75.383.2489, Fax: 81.75.383.2490, E-mail: [kakiuchi@scl.kyoto-u.ac.jp](mailto:kakiuchi@scl.kyoto-u.ac.jp); and **I. Benjamin**, Department of Chemistry, University of California, 1156 High Street, Santa Cruz, CA 95064, USA, Tel: 831.459.3152, Fax: 831.459.2935, E-mail: [benjamin@chemistry.ucsc.edu](mailto:benjamin@chemistry.ucsc.edu).

### AD3 - SEVENTH INTERNATIONAL SYMPOSIUM ON ELECTRODE PROCESSES

*(Physical Electrochemistry)*

This symposium will cover the fundamental and applied aspects of electrode processes, including such topics as novel electrode processes, mechanisms of multistep reactions, reactive intermediates, monolayer and multilayer surface film growth and characterization, electrode processes in ionic liquids, electrode processes at physically perturbed electrodes or modified electrode, well-ordered systems, various properties of electrodeposits, adsorbates, deposits on single crystal surfaces, nanometer-scale structures, theory, modeling, dynamics and thermodynamics, electrocatalysis and heterogeneous reactions. The symposium will include both invited and contributed papers on all facets of the chemistry, physics, physical chemistry and electrochemistry of electrode processes. Due to the number of papers expected, some may be selected for a poster session. **Publication of a proceedings volume is planned to be available after the meeting.**

Acceptance of an abstract in the symposium obligates the authors to submit their camera-ready papers at the time of the symposium to the organizers.

Symposium organizers: **V. I. Birss**, Dept. of Chemistry, Univ. of Calgary, Calgary, Alberta Canada, T2N 1N4, Tel: 403.220.6432; Fax: 403.289.9488, E-mail: [birss@ucalgary.ca](mailto:birss@ucalgary.ca); **M. Josowicz**, Georgia Institute of Technology, School of Chemistry and Biochemistry, 770 State St., Atlanta, Georgia 30332-0400, USA, Tel: 404.894.4032 or .0589; Fax: 404.894.8146, E-mail: [mira.josowicz@chemistry.gatech.edu](mailto:mira.josowicz@chemistry.gatech.edu); **D. Evans**, Department of Chemistry and Biochemistry, University of Delaware, Newark, DE 19706, USA, Tel: 302.831.6770, Fax: 302.831.3742, E-mail: [dhevens@udel.edu](mailto:dhevens@udel.edu); and **M. Osawa**, Hokkaido University, Catalysis Research Center, Sapporo 0600811, Japan, Tel: 81.11.706.2909, Fax: 81.11.709.4748, E-mail: [osawam@cat.hokudai.ac.jp](mailto:osawam@cat.hokudai.ac.jp).

### AE1 - FOURTEENTH 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

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and ionic liquids. Contributed papers are solicited in all areas of biology, 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, metallizing and surface modification, and characterization of electroactive species; 4. separations, *e.g.*, selective extractions, immobilized molten salt gas membranes, and electrochemical gas separations; 5. molten salt promoted corrosion phenomena; 6. solute and solvent structural investigations; 7. new innovative molten salts and molten salt mixtures, *e.g.*, hydrophobic molten salt systems and molten salt mixtures, liquid clathrates, low vapor pressure (vacuum resistant) molten salts, airinsensitive molten salts; 8. applications of molten salts to “green” chemical reactions and processes; and 9. applications of molten salts to biological reactions and biocatalysis. Keynote lectures will be presented by invited speakers. Depending upon the number of papers received, a poster session may be planned. Student participation is highly encouraged, and it is anticipated that some funds will be available for student support.

**Publication of a proceedings volume is planned to be available after the meeting.** Authors are required to provide a cameraready copy of their papers in the correct format and a list of keywords at or before the meeting. All papers will be reviewed for content. Symposium organizers: **D. Costa**, Nuclear Materials Technology Division, (NMT-15) Mail Stop E-530, Los Alamos National Laboratory, Los Alamos, New Mexico 87545, USA, Tel: 505.665.8958, Fax: 505.665.4459, E-mail: [dcosta@lanl.gov](mailto:dcosta@lanl.gov); **H. C. De Long**, AFOSR/NL, 4015 Wilson Blvd, Rm. 713, Arlington, VA, 22203-1954, USA, Tel: 703.696.7722, Fax: 703.696.8449, E-mail: [hugh.delong@afosr.af.mil](mailto:hugh.delong@afosr.af.mil); **R. Hagiwara**, Department of Fundamental Energy Science, Graduate School of Energy Science, Kyoto University, Sakyo-ku, Kyoto 606-8501 Japan, Tel: 81.75.753.5822, Fax: 81.75.753.5906, E-mail: [hagiwara@energy.kyoto-u.ac.jp](mailto:hagiwara@energy.kyoto-u.ac.jp); **R. A. Mantz**, AFRL/MLBT, Bldg. 654, 2941 P Street, Wright-Patterson AFB, OH, 45433-7750, USA, Tel: 937.255.2199, Fax: 937.255.3893, E-mail: [robert.mantz@wpafb.af.mil](mailto:robert.mantz@wpafb.af.mil); **G. R. Stafford**, National Institute of Standards and Technology, Metallurgy Division, Building 224/B166, Gaithersburg, MD 20899-3956, USA, Tel: 301.975.6412, Fax: 301.926.7679, Email: [stafford@tiber.nist.gov](mailto:stafford@tiber.nist.gov); and **P. C. Trulove**, AFOSR/NL, 4015 Wilson Blvd, Rm. 713, Arlington, VA, 22203-1954, USA, Tel: 703.696.7787, Fax: 703.696.8449 E-mail: [paul.trulove@afosr.af.mil](mailto:paul.trulove@afosr.af.mil).

## AE2 - ELECTROPHORESIS AND MICROFLUIDICS

*(Physical Electrochemistry / Sensor)*

Papers are solicited from researchers working in the areas of microfluidics, electrophoretic separation and field driven macroscopic transport in electrolytes both experimental and theoretical. Specific topics include: 1. electroosmotic flow in microchannels, 2. sample injection and manipulation accomplished using microfluidics, 3. electrophoretic mobility, 4. isotachopheresis, 5. electrophoresis based high-throughput screening, 6. electrokinetic devices for chemical and biochemical analysis, including gene and protein assays, 7. micromachined microfluidic devices for electrophoretic separation. 8. on-chip magnetohydrodynamics, electrohydrodynamics and dielectrophoresis, 9. electrochemical and other detection schemes in microfluidics, and 10. fluidic flow coupling electrochemistry or electric fields with other types of fields. Abstracts, suggestions, and inquiries should be sent to the ECS headquarters office. Direct your inquiries to the listed symposium organizers; however do not send them the abstracts if you have already submitted them electronically. Organizers: **P. Vanysek**, Northern Illinois University, Department of Chemistry and Biochemistry, DeKalb, IL, 60115, USA, Tel: 815.753.6876, Fax: 815.753.4802, E-mail: [pvanysek@niu.edu](mailto:pvanysek@niu.edu); **I. Fritsch**, Department of Chemistry and Biochemistry, University of Arkansas, Fayetteville, AR 72701, USA, Tel: 479.575.6499, Fax: 479.575.4049, E-mail: [ifritsch@uark.edu](mailto:ifritsch@uark.edu); **A. J. Ricco**, Consultant, BioMEMS, Microfluidics, Bio/Chemical Sensors, E-mail: [ajricco@attbi.com](mailto:ajricco@attbi.com); **J. R. Stetter**, Illinois Institute of Technology, BCPS Department, 3101 S Dearborn Avenue, Chicago, IL, 60616, USA, Tel: 312.567.3443; Fax: 312.567.3494; E-mail: [stetter@iit.edu](mailto:stetter@iit.edu); **Y. Baba**, The University of Tokushima, Dept. of Medicinal Chemistry, Faculty of Pharmaceutical Sciences, Shomachi, Tokushima 770-8505, Japan, Tel: 81.88.633.7285, Fax: 81.88.633.9507, E-mail: [ymttbaba@ph.tokushima-u.ac.jp](mailto:ymttbaba@ph.tokushima-u.ac.jp); and **T. Kitamori**, The University of Tokyo, Dept. of Applied Chemistry, School of Engineering, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8656, Japan, Tel: 81.5841.7231, Fax: 81.3.5841.6039, E-mail: [hisho@icl.t.u-tokyo.ac.jp](mailto:hisho@icl.t.u-tokyo.ac.jp).

## D1 - INTERCALATION COMPOUNDS FOR BATTERY MATERIALS

*(Battery / Energy Technology / Physical Electrochemistry)*

This symposium will provide an international forum to discuss recent progress that has been made in the development of intercalation compounds for battery applications. The symposium will focus on both basic and applied research findings that have led to improved materials and to the understanding of the fundamental processes that determine and control

electrochemical performance.

A major (but not exclusive) theme of the symposium will be intercalation anodes and cathodes for batteries based on lithium or hydrogen transport. Specific topics of interest include: 1. synthesis and characterization; 2. materials processing and engineering; 3. structure and reaction mechanisms; 4. electrochemical properties and cell performance; 5. structural stability as a function of state-of-charge and cycling; 6. fundamental aspects of redox processes and charge transfer; 7. physical characterization of intercalation compounds, including NMR, electronic, magnetic, spectroscopic, and other methods; and 8. theoretical modeling of intercalation compounds and electrochemical processes. Papers will be presented in both oral and poster sessions. No proceedings volume is planned. Symposium organizers: **M. S. Whittingham**, Chemistry and Materials, SUNY at Binghamton, Binghamton, NY, 13902-6000, USA, E-mail: stanwhit@binghamton.edu; **R. Kanno**, Department of Electronic Chemistry, Tokyo Institute of Technology, 4259 Nagatsuta, Midoriku, Yokohama 226-8502, Japan, E-mail: [kanno@echem.titech.ac.jp](mailto:kanno@echem.titech.ac.jp); **G. Sandi**, Argonne National Laboratory, Chemistry Division, 9700 South Cass Avenue, Argonne, IL 60439, USA, Tel: 630.252.1903, Fax: 630.252.9288, E-mail: [gsandi@anl.gov](mailto:gsandi@anl.gov); and **J. Prakash**, Illinois Institute of Technology, Chemical & Environmental Engineering, 10 W 33rd Street, Chicago, IL 60616-3730, USA, Tel: 312.567.3639, Fax: 312.567.8874, E-mail: [prakash@iit.edu](mailto:prakash@iit.edu).

#### E1 - ELECTROCHEMICAL CAPACITOR AND HYBRID POWER SOURCES

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

Electrochemical capacitors based in part or in whole on the electrical double layer at electrode interfaces have found application in a variety of energy storage applications. Papers for the symposium are solicited that cover all fundamental and practical aspects of ultracapacitors, supercapacitors and similar electrochemical energy conversion devices, including: 1. double layer and/or pseudocapacitance of carbons, conducting polymers, and advanced inorganic materials; 2. syntheses and characterization of high surface area materials for electrochemical capacitors; 3. electrolytic capacitors using dielectric oxides or ceramics; 4. development and optimization of practical ultra-and super-capacitor components, including current collectors, electrodes, electrolytes, separators and packaging; 5. performance of new device designs and constructions using symmetric and asymmetric electrode constructions; 6. mathematical models for performance characterization; 7. 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. Symposium organizers: **R. J. Brodd**, Broddarp of Nevada, Inc. 6121 Fountain Springs Dr., Henderson NV 89014, USA, Tel: 702.897.3027, Fax: 702.897.5812, E-mail: [dbrodd@broddarp.com](mailto:dbrodd@broddarp.com); **D. H. Doughty**, Sandia National Labs., MS- 0613, Battery R&D Dept., P.O. Box 5800, Albuquerque, NM 87185-0613, USA, Tel: 505.845.8105, Fax: 505.844.6972, E-mail: [dhdough@sandia.gov](mailto: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, Tel: 81.0423.88.7174, Fax: 81.0423.87.8448, E-mail: [naoi\\_lab@cc.tuat.ac.jp](mailto: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, Tel: 81.836.85.9211, Fax: 81.836.85.9201, E-mail: [morita@yamaguchiu.ac.jp](mailto:morita@yamaguchiu.ac.jp); **C. Nanjundiah**, Maxwell Energy Systems, 9244 Balboa Ave., San Diego, CA 92123, USA, Tel: 858.503.3363, Fax: 858.503.3333, E-mail: [nanju@maxwell.com](mailto:nanju@maxwell.com); **J. H. Kim**, Energy Conversion and Storage Research Center, Korean Institute of Energy Research, Daeduck Science Town, 71-2 Jang-Dong Yousung-Gu, Taejon 305-343, Korea, Tel: 82.42.860.3117, Fax: 82.42.864.1801, E-mail: [kjhy@kier.re.kr](mailto:kjhy@kier.re.kr); **G. Nagasubramanian**, Lithium Battery R&D Dept., Sandia National Lab. MS-0613, P.O. Box 5800, Albuquerque, NM 87111-0613, Tel: 505.845.1684, Fax: 505.844.6972, E-mail: [gnagasu@sandia.gov](mailto:gnagasu@sandia.gov); and **S. G Park**, Chungbuk National University, 48 Gaeshin-dong Heungduk-gu, Cheongju Chungbuk 361-763, Korea, Tel: 82.43.261.2492, Fax: 82.43.273.822, E-mail: [sgpark@chungbuk.ac.kr](mailto:sgpark@chungbuk.ac.kr).

P1 - ADVANCES IN ENERGY CONVERSION AND STORAGE  
(*Energy Technology / Battery / Physical Electrochemistry*)

This symposium plans to foster interdisciplinary discussions among scientists and engineers on a variety of aspects of power conversion and storage, with emphasis on 1. fundamental electrochemistry of power conversion and storage processes, 2. novel process and materials for energy conversion and storage, and 3. modeling and simulation of electrochemical phenomena and processes. Symposium organizers: **M. A. Ryan**, Jet Propulsion Lab, 4800 Oak Grove Dr # 198-235, Pasadena, CA 91109-8001, USA, Tel: 818.354.8028, Fax: 818.393.4272, E-mail: [mryan@jpl.nasa.gov](mailto:mryan@jpl.nasa.gov); **E. S. Takeuchi**, Wilson Greatbatch, Ltd, 10000 Wehrle Dr, Clarence, NY

14031-2086, USA, Tel: 716.759.5358, Fax: 716.759.5480, Email: etakeuchi@greatbatch.com; and **D. Scherson**, Case Western Reserve University, 10900 Euclid Ave, Cleveland, OH 44106-7078, USA, Tel: 216.368.5186, Fax: 216.368.3006, E-mail: dxs16@po.cwru.edu.

#### Q1 - APPLICATIONS OF NANOMATERIALS IN HIGH PERFORMANCE BATTERIES AND FUEL CELLS

*(Energy Technology / Fullerenes, Nanotubes, and Carbon Nanostructures / Physical Electrochemistry)*

Nanoparticle manipulation to produce desired enhancements in the 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. Nanophase materials offer an exciting opportunity to improve the performance of fuel cells. These materials offer enriched surface and properties that differ from bulk materials. Topics of interest in the general area of fuel cells include designing novel electrode materials, portable fuel cells, 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, carbon nanostructures and nanotubes, 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. Symposium organizers: **T. Abe**, Department of Energy and Hydrocarbon Chemistry, Graduate School of Engineering, Kyoto University, Nishikyo-ku, Kyoto, 615-8510, Japan, Tel: 81.75.383.2483, Fax: 81.75.383.2488, E-mail: abe@elech.kuic.kyoto-u.ac.jp; and **J. Prakash**, Illinois Institute of Technology, Chem & Env Eng, 10 W 33rd St, Chicago, IL 60616-3730, USA, Tel: 312.567.3639, Fax: 312.567.8874, E-mail: prakash@iit.edu.

#### Q2 - FUNDAMENTAL SCIENCE AND TECHNOLOGY OF PHOTOFUNCTIONAL INTERFACES

*(Energy Technology / Fullerenes, Nanotubes, and Carbon Nanostructures / Physical Electrochemistry)*

The applications of photofunctional interfaces have recently been rapidly expanding. Examples include solar water splitting, dye-sensitized solar cells, photocatalysis for maintaining clean environments and decomposing waste materials, and various optoelectronic and photonic devices as well as advances in conventional silver halide photography. The preparation and characterization of photofunctional interfaces are of prime importance for the advancement of these applications. This symposium will focus on critical issues and the latest advancements in the science and technology of

photofunctional interfaces. Papers are solicited in all areas related to electrochemistry, photochemistry, supramolecule/polymer chemistry, photophysics, surface, and interface sciences: 1. solar water splitting; 2. photovoltaic and photoelectrochemical solar cells, including dyesensitized solar cells; 3. photocatalysis – materials, mechanisms, and environmental applications; 4. artificial photosynthesis; 5. photofunctional molecular assemblies and supramolecules, including fullerenes and nanotubes; 6. surface modification for photofunctional interfaces; 7. design and preparation of nanostructures of photofunctional materials, including nanocomposites and membranes, 8. photoinduced charge separation and interfacial charge transfer; 9. mechanisms and dynamics of interfacial photoreactions; 10. characterization of nanostructured materials; 11. advanced experimental techniques for studying photofunctional materials, including surface probe microscopy and ultrafast and non-linear laser spectroscopies; and 12. devices employing photofunctional interfaces. Symposium organizers: **Y. Nakato**, Department of Chemistry, Graduate School of Engineering Science, Osaka University, Toyonaka, Osaka 560-8531, Japan, Tel: 81.6.6850-6235, Fax: 81.6.6850.6236, E-mail: nakato@chem.es.osaka-u.ac.jp; **H. Inoue**, Department of Applied Chemistry, Graduate Course of Engineering, Tokyo Metropolitan University, Hachiohji, Tokyo 192-0397, Japan; Tel: 81.426.77.2840, Fax: 81.426.77.2838, E-mail: inoue-haruo@c.metro-u.ac.jp; **B. A. Parkinson**, Department of Chemistry, Colorado State University, Fort Collins, Colorado 80523, USA, Tel: 970.491.0504, Fax: 970.491.1801, E-mail: Bruce.Parkinson@Colostate.edu; **M. T. Spitler**, ChemMotif, Inc., 60 Thoreau St., #211, Concord, MA 01742-2456, USA, Tel: 781.376.9911, Fax: 781.376.1487, E-mail: spitlem@tiac.net; **J. Prakash**, Illinois Institute of Technology, Chem & Env Eng, 10 W 33rd St, Chicago, IL 60616-3730, USA, Tel: 312.567.3639, Fax: 312.567.8874, E-mail: prakash@iit.edu. **P. V. Kamat**, Radiation Laboratory, University of Notre Dame, Notre Dame, IN 46530-0579, USA, Tel: 574.631.5411, Fax: 574.631.8068, E-mail: pkamat@nd.edu; and **G. Rumbles**, Center for Basic Science, National Renewable Energy Laboratory, Golden, CO 80401-3393, USA, Tel: 303.384.6502, Fax: 303.384.6655, E-mail: garry\_rumbles@nrel.gov.

#### U1 - NINTH INTERNATIONAL SYMPOSIUM ON DIAMOND MATERIALS

*(High Temperature Materials / Dielectric Science and Technology / Physical Electrochemistry / Electrodeposition / Industrial Electrolysis and Electrochemical Engineering)*

The objective of this symposium is to provide an international forum for the presentation and discussion of recent developments in the science,

technology, and application of diamond and related materials. Areas of interest include, high temperature materials and processing; advanced carbonbased dielectrics and passivation layers; nucleation and growth of homoepitaxial or heteroepitaxial films; active and passive electronic components; electronic properties; nanocrystalline diamond; properties and applications of t-aC, hydrogenated amorphous carbon, DLC, and carbon-nitrogen films; micropatterned growth, advanced materials for field emission; advanced materials for microelectromechanical systems; biocompatibility; optical properties; and chemical modification of diamond surfaces. Papers are also sought in the emerging field of diamond electrodes for electrochemical technologies. Interest areas include: electrosynthesis; water disinfection and decontamination using diamond anodes and cathodes; diamond electrodes for chemical sensing and electroanalytical measurements; and fundamental electrochemical characterization of diamond electrodes. Oral and poster presentations, both fundamental and applied in scope, are desired. Publication of a proceedings volume is planned and will be available after the meeting. Acceptance of a paper in this symposium (both oral or poster) obligates the author(s) to submit a typed, camera-ready copy of the full manuscript and a list of key words to the symposium organizers at the time of the meeting. Instructions for manuscript preparation can be found at the Society website, and will be provided to the author(s) by the symposium organizers after the official notification of acceptance is distributed by the ECS headquarters office. Abstracts should be submitted electronically to ECS and to the symposium organizers: **G. M. Swain**, Department of Chemistry, Michigan State University, East Lansing, MI 48823-1322, USA, Tel: 517.355.9715, Ext.229, Fax: 517.353.1993, E-mail: swain@cem.msu.edu; **T. Ando**, NIMS, 1-1 Namiki Tsukuba, Ibaraki 305-0044, Japan, Tel: 81.29.851.3354, Ext. 2530, Fax: 81.29.851.4005, Email: c-diamond@md.newweb.ne.jp; **W. D. Brown**, Bell Engineering Center, University of Arkansas, Fayetteville, AR 72701, USA, Tel: 501.575.6045, Fax: 501.575.7967, E-mail: wdb@enr.uark.edu; **W. P. Kang**, Department of Electrical Engineering and Computer Science, Vanderbilt University, Box 1611 Station B, Nashville, TN 37235, USA, Tel: 615.322.0952, Fax: 615.343.6614, E-mail: wkang@vuse.vanderbilt.edu; **J. S. Foord**, Physical and Theoretical Chemistry Laboratory, University of Oxford, Oxford OX1 3QZ, UK, E-mail: john.foord@chem.ox.ac.uk; and **H. B. Martin**, Department of Chemical Engineering, Case Western Reserve University, Cleveland, OH 44106, USA, Tel: 216.368.4133, Fax: 216.368.3016, E-mail: hbm@po.cwru.edu.

X1 - COMPUTATIONAL CHEMISTRY AND ELECTROCHEMISTRY  
(*Industrial Electrolysis and Electrochemical Engineering / Physical Electrochemistry / Battery*)

This symposium will focus on the development and applications of first-principles computational chemistry and physics methods (ab initio, quantum, and classical molecular dynamics, quantum and classical Monte Carlo, dynamic Monte Carlo) to the understanding and design of electrochemical power sources. We welcome papers including, but not limited to, the following topics: catalysis, electrocatalysis, ionic and electronic transport, electrode and electrolyte materials, dissolution, nucleation, electrodeposition, and corrosion. Abstracts, suggestions, and inquiries should be sent electronically to the ECS headquarters and to the symposium organizers: **P. B. Balbuena**, Department of Chemical Engineering, University of South Carolina, Columbia, SC 29208, USA, Tel: 803.777.8022; Fax: 803.777.8265; E-mail: balbuena@engr.sc.edu ; **J. M. Seminario**, Department of Electrical Engineering, University of South Carolina, Columbia, SC 29208, USA, Tel: 803.777.9567; Fax: 803.777.8045, E-mail: jsemina@engr.sc.edu; and **T. Osaka**, Department of Applied Chemistry, School of Science and Divisional Member Engineering, Waseda University, 3-4-1 Okubo, Shinjuku-ku, Tokyo 169-8555, Japan, Tel: 81.3.5286.3202, Fax: 81.3.3205.2074, E-mail: osakatet@mn.waseda.ac.jp.

X2 - MEMBRANES AND SEPARATORS FOR FUEL CELLS & BATTERIES

(*Industrial Electrolysis and Electrochemical Engineering / Physical Electrochemistry / Battery*)

Advances in fuel cells and batteries continue to be enabled by advances in the performance and reduction in the cost of critical materials. Membranes and separators play a very important role in fuel cells and batteries. Future development in proton exchange membranes is essential for the commercialization of PEM type fuel cells. Continued advancement in separator technology has helped in achieving higher capacity lithium-ion cells which needs to be continued in future.

The purpose of the symposium is to provide a forum for the presentation and discussion of recent progress in the development of membranes and separators for fuel cells and batteries. The symposium will focus on both basic and applied research findings that have led to improved materials and findings that guide materials development. Membranes and separators for all types of batteries and fuel cells are of interest including aqueous (nickel-cadmium, nickel-zinc, zinc-air, lead-acid, and nickel-metal hydride), nonaqueous electrolyte batteries (e.g. lithium, lithium-ion, and lithium polymer batteries), and fuel cells (e.g. PEM, DMFC, alkaline, PAFC, SOFC,



and MCFC). Electrolytes/separators for electrochemical capacitors and modeling papers for prediction of material properties and guiding materials development are also of interest. The symposium will include both invited and contributed papers.

**Publication of a proceedings volume is planned to be available after the meeting.** Acceptance of a paper in this symposium (oral or poster) obligate(s) the author(s) to submit a typed cameraready copy of the full proceedings volume manuscript and a list of key words to the symposium organizers at the meeting. Manuscript preparation instructions may be obtained from ECS website. All authors must strictly meet the ECS deadlines. Contributions will be reviewed by the organizers to the extent possible. Abstracts, suggestions, and inquiries should be sent to the ECS headquarters office and to the symposium organizers: **P. Arora**, Celgard Inc., 13800 South Lakes Dr., Charlotte, NC 28273, USA, Tel: 704.587.8478, E-mail: pankajarora@celgard.com; **S. Creager**, Department of Chemistry, Clemson University, Clemson, SC 29634, USA, Tel: 864.656.4995, E-mail: screage@clemson.edu; and **N. Kamiya**, Yokohama National University, Department of Energy and Safety Engineering, Yokohama, 240-8501, Japan, Tel: 81.45.339.4020, E-mail: nkamiya@ynu.ac.jp.

### **Recommendation for the Divisional Bylaws changes.**

The Executive Committee met at the Orlando Meeting to consider changes in present bylaws. The Committee approved the changes and the document is now presented to the membership for consideration. The acceptance of the changes will come for a vote at the annual luncheon in San Antonio. The following is the text highlighting the changes, as it was previously distributed to the members via e-mail. The additions underlined and deletions crossed out.

One global change is replacement of the chairman with the word chair and all the associated language associated with it. Other changes redistribute somewhat the duties of the officers, mainly spelling out the duty of the vice-chair to be in charge of the symposia, a duty that has been performed in such manner for years. In the financial matters the language about signing checks, etc. has been removed, as it is no longer applicable; the Headquarters manage all our accounts. In the same spirit, the ability to allocate funds was modified, including the level that a treasurer can allocate. This keeps with inflation and reflects practicality, when decisions need to be made between the semiannual meetings.

**BYLAWS OF THE  
PHYSICAL ELECTROCHEMISTRY DIVISION  
OF THE ELECTROCHEMICAL SOCIETY, INC.**

**ARTICLE I.**

**Name**

Section 1. This organization shall be known as The Physical Electrochemistry Division (hereinafter referred to as the Division) of The Electrochemical Society, Inc. (hereinafter referred to as the Society).

**ARTICLE II.**

**Purpose**

Section 1. It shall be the purpose of the Division ~~is~~ to stimulate research, education, and publication in the general field of fundamental electrochemistry; to cooperate with other divisions of the Society in the extension of scientific knowledge in the field of electrochemistry; and to advance the purpose of the Society.

Section 2. The Division shall accept the responsibility of fostering new areas of electrochemistry which might expand to form separate divisions.

**ARTICLE III.**

**Membership and Dues**

Section 1. The membership of the Division shall be those members of The Electrochemical Society in good standing who register with the Secretary of the Society their desire to be members of the Division.

Section 2. The annual dues, if any, shall be recommended by the Executive Committee of the Division and submitted to the Divisional membership for approval. Similarly, any change in dues shall be submitted to the Division membership for their approval at an annual business meeting or by a mail ballot. A majority of those voting shall constitute approval.

Section 3. The fiscal year of the Division shall be from June 1 to May 31, inclusive.

**ARTICLE IV.**

**Officers and Executive Committee**

Section 1. The officers of the Division shall be a Chair~~man~~, a Vice-Chair~~man~~, and a Secretary-Treasurer. Where the Society bylaws and other Society documents refer to the duties of a Chairman or a Vice-Chairman, the divisional Chair or the Vice-Chair will assume these duties.

Section 2. The governing body of the Division shall be the Executive Committee, consisting of the three officers and at least four members-at-large. These officers shall perform the duties prescribed by the Constitution and Bylaws of the Society, by these Bylaws, and by the parliamentary authority adopted by the Division.

Section 3. The term of office shall be two years. Officers and members-at-large shall be eligible for re-election with the exception that the Chair~~man~~ may not serve two successive terms.

Section 4. In the event that the office of the Chair~~man~~ becomes vacant during his term of office, the Vice-Chair~~man~~ shall take the position.succeed him. The Chair~~man~~ shall fill any other vacancies by appointment with the approval of the Executive Committee.

Section 5. The elected Vice-Chair~~man~~ shall be considered eligible and designated by the Chair~~man~~ or, in the absence of such designation, by vote of the Executive Committee, to serve as the alternate for the Chair~~man~~ in attending meetings of the Board of Directors of the Society from which the Chair~~man~~ is absent and in exercising at such meetings the rights, powers, and privileges of the absent Chair~~man~~. Written notice of this designation shall be provided to the Secretary of the Society prior to the meeting of the Board.

## ARTICLE V

### Nominations and Elections

Section 1. The Chair~~man~~ of the Division shall appoint, at the annual meeting of the Division previous to the meeting at which the officers of the Division are elected, a Nominating Committee of three members of the Division, to make nominations for officers and members-at-large of the Executive Committee under the rules listed below, and shall notify the Secretary of the Society of these appointments.

Section 2. ~~Each~~The nominees shall be notified in advance of ~~their~~ duties of the office by the Nominating Committee and give in writing ~~their~~his assurance of willingness to serve. The nominations shall be approved by the Executive Committee.

Section 3. The report of the Nominating Committee shall be submitted to the Chair~~man~~ and the Chair~~man~~ shall notify the Secretary of the Division of the nominees at least four months before the election. The Division membership shall be notified of the nomination of candidates for positions of officers and members-at-large by publication in a Society or Division publication that is distributed to all Division members prior to the election. Additional nominations for office may be made by petition signed by five (5)

members of the Division. The petition(s) must be in the hands of the Chair~~man~~ of the Nominating Committee at least ten (10) days before the election, with the written assurance of the nominee's willingness to serve. Nominations in the form of a petition signed by five or more members may be made from the floor at the time of the annual meeting at which officers are elected, provided the willingness of the nominees to serve is expressed in writing prior to the election.

Section 4. If the Chair~~man~~ should fail to appoint the Nominating Committee as provided in Section 1, the Executive Committee of the Division or the Board of Directors of the Society may instruct the Vice-Chair~~man~~, or another member of the Executive Committee to do so.

Section 5. The officers and the members-at-large shall be elected by a majority vote of those present at the business meeting of the Division to be held every second year at the time of a Society convention. Those elected shall take office immediately after adjournment of the Society Meeting.

#### **ARTICLE VI.**

##### **Duties of the Officers**

Section 1. The Chair~~man~~ shall have the following duties:

(a) To preside at meetings of the Division and of its Executive Committee and to perform such other duties as are required by these Bylaws or by action of the Executive Committee or as may be appropriate to ~~his~~this office.

(b) To represent the Division on the Board of Directors of the Society as provided in the Bylaws of the Society.

~~(c) Immediately after election of a new President of the Society, to nominate two members of the Division one of whom shall be appointed by the President to represent the Division on the Membership Committee. [This goes to the vice-chair]~~

~~(d)~~ Within one month of taking office, the Division Chair~~man~~ shall appoint a Division Advisory Board member for The Electrochemical Society INTERFACE for a term of two years. The Division Advisor shall assume responsibility immediately following acceptance of the position. The Division Advisor shall be eligible for reappointment.

~~(e) The names submitted by the Chairman of the Division in part (c) above shall be selected with the cooperation and approval of the Executive Committee so as to insure adequate representation for the Division in this important position. [Goes to the vice-chair duty and is rephrased]~~

~~(f) The Chairman shall appoint an auditing committee consisting of three members of the Division who shall audit the Secretary-Treasurer's financial records at the end of his term of office. The report of the auditing committee shall be in writing and a copy shall be filed promptly with the Secretary of the Society preferably together with the financial statement of the Division. [Paragraph (f) is deleted as there is no longer requirement by the secretary-treasurer to file financial records since they are maintained in custodial account.]~~

~~(dg) To appoint three members of the Nominating Committee.~~

~~**(e) Inform the Secretary-Treasurer of any financial commitments made.**~~

Section 2. The Vice-Chairman ~~shall assist in the duties of the Chair and assume the duties of the Chair when the Chair is absent,~~ shall assist the Chairman in his duties and assume the duties of the Chairman in his absence. **The Vice-Chair shall have the following duties:**

**(a) Immediately after election of a new President of the Society, to nominate two members of the Division one of whom shall be appointed by the President to represent the Division on the Membership Committee. The names submitted shall be selected with the cooperation and approval of the Executive Committee so as to insure adequate representation for the Division in this important position**

**(b) To engage in symposium planning activities and to aid the Secretary-Treasurer in keeping records of past, present, planned and tentative symposia.**

**(c) To inform the Secretary-Treasurer of any financial commitments made.**

Section 3. The Secretary-Treasurer shall have the following duties:

(a) To keep an accurate record of all proceedings of the Division and its Executive Committee and to keep a list of the members of the Division.

(b) To collect any dues that may be assessed by the Division **and be proactive in raising income of the Division.**

(c) To have custody of the records and funds of the Division and to keep a record of all **receipts, expenditures and financial**

~~obligations and commitments, receipts and expenditures.~~  
Expenditures of funds by the Secretary-Treasurer shall be with the approval of the Executive Committee of the Division. ~~The signatures of two officers of the Division shall be required on all checks in excess of \$100 issued by the Division. Division funds in excess of \$500 shall be maintained in a custodian account by the Treasurer of the Society.~~ Division funds shall be maintained in a custodian account by the Treasurer of the Society. The officers of the Division must approve any single expenditure over \$500.

(d) To present a report, including a current financial statement to the members of the Division at the annual business meeting. ~~Within one month after the end of the fiscal year the Secretary-Treasurer shall file a copy of this report with the Board of Directors of the Society by sending it to the Secretary of the Society. [The above procedure is not necessary since the financial statements are maintained and audited by the Society and the Board of Directors is receiving the statements directly from the headquarters.]~~

(e) In the event of death, disability, or other inabilities of both the Chair~~man~~ and Vice-Chair~~man~~ to perform their duties, the Secretary-Treasurer shall perform same, and shall assume the title of Acting Chair~~man~~.

## ARTICLE VII.

### Duties of the Executive Committee

Section 1. The Executive Committee shall be the governing body of the Division and shall determine its policies.

Section 2. The Executive Committee may propose to the Division amendments or revisions of these Bylaws.

Section 3. The Executive Committee shall bring before the Board of Directors of the Society such recommendations on matters concerning the Society as may be proper for Board action.

Section 4. The Executive Committee shall have general supervision of the affairs of the Division between its business meetings, shall be responsible for the planning, organization, and execution of the technical programs and publications sponsored by the Division, shall make recommendations to the Division and, through the Chair~~man~~ of the Division, to the Board of Directors of the Society, and shall perform such other duties as are specified in these Bylaws. The Executive Committee shall be subject to the orders of the Division, and none of its acts shall conflict with action taken by the Division or by the Society.

Section 5. The Executive Committee shall have jurisdiction over any special publication which this Division may sponsor, subject

to such approvals as may be required by the Constitution and Bylaws of the Society.

#### **ARTICLE VIII.**

##### **Meetings**

Section 1. The annual business meeting of the Division shall be held at the Spring Meeting of the Society.

Section 2. A special meeting of the Division shall be called by the Chairman on the written request of ten members of the Division.

Section 3. A Technical Session shall be held annually during one of the General Meetings of the Society.

Section 4. A meeting of the Executive Committee shall be held prior to each regular annual business meeting and at such other times as may be required.

#### **ARTICLE IX.**

##### **Amendments**

Section 1. Amendments to these Bylaws may be proposed in either of two ways: by majority vote of the Executive Committee or by written request of ten members of the Division.

Section 2. To be adopted, proposed amendments shall be approved by a two-thirds vote at a meeting of the Division, a quorum being present. If the Executive Committee deems it preferable, a proposed amendment may be submitted to all members of the Division by mail, the favorable vote of two-thirds of those replying within one month being required for adoption. Notice of proposed amendments shall be published in a Society or Division publication that is distributed to all Division members prior to the vote.

Section 3. All changes in these Bylaws are subject to final acceptance and approval by the Board of Directors of the Society.

#### **ARTICLE X.**

##### **Quorum**

Section 1. Twelve members of the Division, present in person, shall constitute a quorum for the transaction of all business at a business meeting of the Division.

Section 2. Three members of the Executive Committee, present in person, shall constitute a quorum for the transaction of all business at a meeting of the Executive Committee.

#### **ARTICLE XI.**

##### **Dissolution**

If the Physical Electrochemistry Division of the Society can no longer function advantageously as a unit of the Society, it may request the Board of Directors for permission to dissolve. If such permission is

granted, all funds which have been accumulated by the Physical Electrochemistry Division, including money in banking or other accounts and investments of all types, shall be transferred to The Electrochemical Society, Inc. If the Physical Electrochemistry Division has underwritten any continuing awards for which invested funds provide an adequate income, the Society shall undertake to continue such awards at the discretion of the Board of Directors.

Approved by the Board of Directors            May 12, 1983  
Revisions approved by the Board of Directors    May 20, 1993  
Revisions approved by the Board of Directors May 13, 2004

(END)