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# PHYSICAL AND ANALYTICAL ELECTROCHEMISTRY DIVISION (PAED) NEWSLETTER

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May 2009

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Division Website: [www.electrochem.org/ecs/tia/paed/paed.htm](http://www.electrochem.org/ecs/tia/paed/paed.htm)

## Division Officers (2007-2009)

<b>Chair:</b>	Dr. Hugh De Long <a href="mailto:hugh.delong@afosr.af.mil">hugh.delong@afosr.af.mil</a>
<b>Vice-Chair :</b>	Dr. Paul Trulove <a href="mailto:trulove@usna.edu">trulove@usna.edu</a>
<b>Secretary-Treasurer:</b>	Dr. Shelley Minteer <a href="mailto:minteers@slu.edu">minteers@slu.edu</a>
<b>Members-at-Large:</b>	
Dr. Pawel Kulesza	<a href="mailto:pkulesza@chem.uw.edu.pl">pkulesza@chem.uw.edu.pl</a>
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Dr. Sylvie Morin	<a href="mailto:smorin@yorku.ca">smorin@yorku.ca</a>
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## **Recent Activities**

### **Symposia**

The division was a very active sponsor and co-sponsor of symposia during 2008. At the spring 2008 meeting in Phoenix, the division sponsored or co-sponsored 8 symposia and at the fall 2008 meeting in Honolulu, the division sponsored or co-sponsored 12 symposia. The division also provided financial support to many of the symposia it sponsored or co-sponsored in 2008. All in all, a total of \$7500 in PAED funds were used by organizers to assist in the travel of speakers. At the current meeting, the division is sponsoring or co-sponsoring 14 symposia. A list of these symposia appears later in this newsletter. The PAED also has an impressive slate of symposia for the next few meetings, and a list of these also appears later in this newsletter.

Individuals wishing to submit symposia topics for future meetings should contact Shelley Minter, [minter@slu.edu](mailto:minter@slu.edu).

## **Student Travel Awards**

### **San Francisco, May 2009**

Five students received travel awards for the 2009 spring meeting in San Francisco. These five students will be recognized at the Annual Luncheon and Business Meeting on Monday 25<sup>th</sup> of May. The awardees and their University affiliations are:

- Sachin R. Jadhav, Michigan State University, USA
- Tsz Kin Tam, Clarkson University, USA
- Sadagopan Krishnan, University of Connecticut, USA
- Leanne Petry, University of Dayton, USA
- Debby Correia Ledo, Universite du Quebec a Montreal, CANADA

### **Honolulu, October 2008**

Five students received travel awards through PAED at the 2008 fall meeting in Honolulu. These five students will be recognized at the Annual Luncheon and Business Meeting on Monday 25<sup>th</sup> of May. The awardees and their University affiliations are:

- Diana Santiago, University of Puerto Rico, PR
- Manale Maaloof, Case Western Reserve University, USA
- Jennifer Merritt, Vanderbilt University, USA
- Emily Lewis, Northeastern University, USA
- Dan Wang, Ohio University, USA

## The 2009 David C. Grahame Award Winner



**Héctor D. Abruña**, Emile M. Chamot Professor of Chemistry, completed his graduate studies with Royce W. Murray and Thomas J. Meyer at the University of North Carolina at Chapel Hill in 1980 and was a postdoctoral research associate with Allen J. Bard (1980-81) at the University of Texas at Austin. After a brief stay at the University of Puerto Rico, he went to Cornell in 1983. The most significant accomplishment of Dr. Abruña's research has been to take a multidisciplinary approach to the study of electrochemical phenomena by combining elements of various branches of chemistry, physics, and biochemistry. He has incorporated concepts of coordination chemistry and biochemistry into the area of chemically modified electrodes and their analytical application in sensors, for transition metal ions and organic functionalities, biosensors and in electrocatalytic applications. He pioneered the use of x-ray based techniques to the in-situ study of electrochemical interfaces.

Most recently, his work has focused on novel materials (based on ordered intermetallic phases) as electrocatalysts for fuel cell applications, the use of organosulfur materials as high performance cathodes for lithium ion batteries, and on the synthesis and development of nanometric building blocks for application in molecular electronics. Prof. Abruña is the co-author of over 300 publications, has given over 420 invited lectures world-wide, and is most proud of the 32 students that, to date, have obtained a PhD with him.

Prof. Abruña has been the recipient of numerous awards including (most recently) the ACS Award in Electrochemistry and the C. N. Reilley Award in Electrochemistry for 2007. He was elected member of the American Academy of Arts and Sciences in 2007 and Fellow of the International Society of Electrochemistry in 2008.

# San Francisco SPONSORED SYMPOSIA

## PAED Sponsored or Co-Sponsored Symposia

### **I1—Physical and Analytical Electrochemistry General Session**

(Physical and Analytical Electrochemistry)

Organizer: *P. Trulove*

### **B3—Characterization of Porous Materials 2**

(Industrial Electrochemistry and Electrochemical Engineering / Physical and Analytical Electrochemistry / Energy Technology)

Organizers: *B. Lakshmanan, G. Brisard, and A. Lasia*

### **B5—Hydrogen Production, Transport, and Storage 3**

(High Temperature Materials / Energy Technology / Physical and Analytical Electrochemistry / Industrial Electrochemistry and Electrochemical Engineering)

Organizers: *M. C. Williams, E. D. Wachsman, M. Heben, S. N. Lvov, M. Minivannan, P. H. Maupin, S. Narayanan, and J. W. Weidner*

### **B6—Measurement and Diagnostics for Energy Systems**

(Energy Technology / Sensor / Physical and Analytical Electrochemistry)

Organizers: *S. R. Narayanan, S. Mukerjee, R. Mukundan, P. Strasser*

### **B8—Photoelectrochemical Energy Conversion**

(Energy Technology / Physical and Analytical Electrochemistry)

Organizers: *K. Rajeshwar, J. Hupp, and B. Parkinson*

### **C3—Mechanistic and Synthetic Aspects of Organic Electrochemistry**

(Organic and Biological Electrochemistry / Physical and Analytical Electrochemistry)

Organizers: *D. Peters and G. Cheek*

### **I2—Electrochemical Detection of Pathogens**

(Physical and Analytical Electrochemistry)

Organizers: *C. Kranz and I. Fritsch*

### **I3—Electrochemistry in Medicine and Biomedical Applications**

(Physical and Analytical Electrochemistry / Organic and Biological Electrochemistry / Sensor)

Organizers: *C. Bock, J. Burgess, B. Eggers, C. Holmes, and M. Urquidi-Macdonald*

### **I4—Impedance in Electrochemistry — From Analytical Applications to Mechanistic Speculation 2**

(Physical and Analytical Electrochemistry / Corrosion / Industrial Electrochemistry and Electrochemical Engineering)

Organizers: *P. Vanysek, D. Hansen, and M. Orazem*

### **I5—Nanostructured Materials: Chemistry and High Temperature Applications**

(High Temperature Materials / Physical and Analytical Electrochemistry / Sensor / Corrosion)

Organizers: *T. Armstrong, G. Hunter, and E. Traversa*

### **I6—Novel Electrode Materials**

(Physical and Analytical Electrochemistry / Energy / Industrial Electrochemistry and Electrochemical Engineering)

Organizers: *S. Minteer and B. Lakshmanan*

### **I7—Role of Electrochemistry in Addressing of Climate Change**

(Physical and Analytical Electrochemistry / Energy Technology)

Organizers: *I. Fritsch, S. Narayanan, and K. Zaghib*

### **J2—Thirty-Five Years of Chemical Sensors — Honorary Symposium for Professor Jiri Janata**

(Sensor / Physical and Analytical Electrochemistry)

Organizers: *J. Li, R. Brown, C. Bruckner-Lea, D. Hatchet, M. Josowicz, and P. Vanysek*

### **J3—Sensor Applications: Food Safety, Agricultural, and Environmental Sensors**

(Sensor / Organic and Biological Electrochemistry / Physical and Analytical Electrochemistry)

Organizers: *A. Simonian, Z. Aguilar, W. Buttner, G. Hunter, and I. Taniguchi*

# UPCOMING SYMPOSIA

Vienna  
October 4-9, 2009

The Executive committee of the Physical and Analytical Electrochemistry Division cordially invites you to participate at the fall 2009 Meeting, which will be held October 4 – October 9 in Vienna. There will be 8 symposia where the Physical Division is either the organizer or a co-organizer.

## PAED Sponsored and Co-Sponsored Symposia

### **B2** Alkaline Electrochemistry in Fuel Cells

(Energy Technology / Physical and Analytical Electrochemistry / Battery)

Alkaline electrochemical power sources have the possibility to offer significantly improved performance over those using acid electrolytes, such as the proton exchange membrane fuel cell (PEMFC). For example, in favorable circumstances the alkaline fuel cell (AFC) may allow a much higher performance than the PEMFC due to its faster cathode reaction and lower Tafel slope. Moreover, non-precious metal catalysts have sufficient activity to be used in AFCs, decreasing system cost. This symposium covers all aspects of alkaline electrochemical power sources (alkaline fuel cells, direct borohydride fuel cells, alkaline membrane direct methanol fuel cells, alkaline batteries, and alkaline supercapacitors). Topics of interest include, but are not limited to: (1.) electrocatalysts and fundamental aspects of redox processes; (2.) alkaline electrolytes (liquid alkaline electrolytes, anion conducting membranes, and cation conducting membranes); (3.) advanced electrode materials and structures; (4.) cell and system design, including reactant supply, product elimination, means of cooling, and materials; (5.) electrochemical performance and cell characterization; (6.) modeling and simulation of electrochemical phenomena and processes; and (7.) applications including the use of fuels containing carbon-carbon bonds.

**An issue of *ECS Transactions* is planned to be published “AFTER” the meeting. All authors accepted for presentation are obligated to submit their full text manuscript for the issue no later than November 6, 2009. All manuscripts will be submitted online, and must be in either MS Word or PDF format.**

Abstracts should be submitted electronically to the ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **D. Chu**, U.S. Army Research Laboratory/SEDD, e-mail: [deryn.chu@us.army.mil](mailto:deryn.chu@us.army.mil); **R. Mantz**, U.S. Army Research Office, e-mail: [robert.a.mantz@us.army.mil](mailto:robert.a.mantz@us.army.mil); and **C. Wang**, University of Maryland, e-mail: [cswant@umd.edu](mailto:cswant@umd.edu).

### **B8** Proton Exchange Membrane Fuel Cells 9 (PEMFC 9)

(Energy Technology / Physical and Analytical Electrochemistry / Battery / Industrial Electrochemistry and Electrochemical Engineering)

This international symposium is devoted to all aspects of research, development, and engineering of proton exchange membrane (PEM) fuel cells and stacks, as well as low-temperature direct-fuel cells. The intention is to bring together the international community working on the subject and to enable effective interactions between research and engineering communities. The symposium is coordinated by means of four different sections as outlined below. Abstracts for oral and poster contributions must be submitted to the symposium via the ECS website.

**Section A:** Fuel Cell Systems, Cell Stack, and Component Hardware

T. Fuller, C. Hartnig, and V. Ramani

Presentations that discuss: 1. new cell and stack structures, including new types of bipolar plates and flow fields; 2. novel gas diffusion medium substrates and micro-porous layer designs; 3. modeling and diagnostic methods to characterize mass- and heat-transport related phenomena (*e.g.*, water flooding); 4. in-situ measurement or visualization of reactants and products, and 5. design and specifics of complete power systems in the context of transportation and stationary power generation applications as well as for micro-fuel cell systems.

**Section B:** Durability

H. Uchida, H. Gasteiger, and S. Cleghorn

Presentations that discuss: (1.) fundamental degradation mechanisms of fuel-cell materials (*e.g.*, materials corrosion, decomposition, and contamination); (2.) the durability of complex fuel-cell components (*e.g.*, voltage degradation mechanisms); (3.) the impact of transient operating conditions on fuel cell durability/reliability; and (4.) the reliability of fuel cell systems for power generation (*e.g.*, maintenance, and reliability of ancillary components).

**Section C:** New Materials and Electrode Processes

P. Strasser, D. Jones, P. Shirvanian, and T. Zawodzinski

Presentations that discuss: (1.) electrocatalysis of fuel cell reactions, particularly at the catalyst/ionomer interface and methods to increase anode and cathode performance; (2.) computational approaches and experiments with idealized model surfaces used toward the design of novel catalysts and/or catalyst supports; (3.) ionomeric membrane thermodynamics and transport characteristics; (4.) new ionomeric membrane development, especially for high temperature, and (5.) *in situ* materials diagnostics

#### **Section D: Direct Fuel Cells**

C. Lamy, T. Jarvi, P. Zelenay, and P. Bele

Presentations that discuss: (1.) mechanisms of fuel-cell reactions occurring by direct oxidation fuels other than hydrogen, including alcohols, hydrogen carriers, such as borohydrides, ammonia, and ethers; (2.) new materials addressing specific challenges for direct fuel cells, e.g., crossover and oxidation catalysts; (3.) general operational aspects of direct fuel cells; and (4.) development of new membranes with lower rates of crossover, such as anionic ionomers. In order to encourage active participation of new and talented researchers in the field, we anticipate awarding **Travel Grants** of at least \$500 in support of outstanding abstract submissions made by **graduate students** and **postdoctoral fellows** to the symposium. Awards will be made based on originality of the work and importance to the field. If you would like to apply for the travel grant, please submit your abstract, your resume, and your publication list to the organizers listed for your section. To be eligible for a student travel award, you must submit a manuscript for the transactions. Again submission of a manuscript is required. A **Short Course** on fundamental catalysis and how it can be applied to low-temperature fuel cell diagnostics and kinetic studies will be held the Sunday of the meeting. Papers will be accepted for oral presentation only.

**A hard-cover issue of ECS Transactions is planned to be available "AT" the meeting. All authors accepted for presentation are obligated to submit their full text manuscript for the issue no later than May 29, 2009. All manuscripts will be submitted online, and must be in either MS Word or PDF format.**

Abstracts should be submitted electronically to the ECS headquarters, and questions and inquiries should be sent to the symposium organizers:

Section A: **T. Fuller**, Georgia Institute of Technology, email: tom.fuller@gtri.gatech.edu; **C. Hartnig**, Zentrum fuer Sonnenenergie-und Wasserstoff-Forschung, e-mail: christoph.hartnig@zsw-bw.de; and **V. Ramani**, Illinois Institute of Technology, e-mail: [ramani@iit.edu](mailto:ramani@iit.edu).

Section B: **H. Uchida**, University of Yamanashi, e-mail: h-uchida@yamanashi.ac.jp; **H. A. Gasteiger**, Acta, e-mail: hubert.gasteiger@gmail.com; and **S. Cleghorn**, W. L. Gore & Associates, e-mail: [scleghorn@wlgore.com](mailto:scleghorn@wlgore.com).

Section C: **P. Strasser**, University of Houston, e-mail: PStrasser@uh.edu; **T. Zawodzinski**, CWRU, e-mail: taz5@po.cwru.edu; **D. Jones**, Universite Montpellier, email: ; and **P. Shirvanian**, Ford Motor Co., e-mail: ashirvan@ford.com.

Section D: **T. Jarvi**, UTC Power, e-mail: Tom.Jarvi@UTCPower.com; **P. Zelenay**, Los Alamos National Laboratory, e-mail: zelenay@lanl.gov; **C. Lamy**, Universite de Poitiers, email: [claude.lamy@univ-poitiers.fr](mailto:claude.lamy@univ-poitiers.fr); and **P. Bele**, University of Munich, e-mail: [pbele@ph.tum.de](mailto:pbele@ph.tum.de).

## **B9 Semiconductor Electrolyte Interface and Photoelectrochemistry**

### **(Energy Technology / Physical and Analytical Electrochemistry)**

This symposium will address all fundamental and applied aspects of inorganic and organic semiconductor-electrolyte interfaces (SEIs). Topics of interest include but are not limited to the following: (1.) Charge transfer across SEIs in the dark and under irradiation; (2.) Role of traps and surface states in mediating charge transfer; (3.) Chemical modification and passivation of SEIs; (4.) Semiconductor nanoparticle-electrolyte interfaces; (5.) Semiconductor nanotubes, nanorods and other configurations; (6.) Mild and energy-efficient methods for preparing semiconductor films, nanoparticles, and other morphologies listed above; (7.) Novel methods for characterizing SEIs; (8.) Use of SEIs for photoassisted hydrogen generation; (9.) Dye-sensitized solar cells; (10.) Use of SEIs for storing solar energy; (11.) Use of SEIs in third generation solar cells; and (12.) Photocatalysis and environmental remediation aspects coupled with energy conversion or storage (e.g., hybrid dye destruction and hydrogen generation schemes).

**An issue of ECS Transactions is planned to be published "AFTER" the meeting. All authors accepted for presentation are encouraged to submit their full text manuscript for the issue no later than November 6, 2009. All manuscripts will be submitted online, and must be in either MS Word or PDF format.**

Abstracts should be submitted electronically to the ECS headquarters, and questions and inquiries should be sent

to the symposium organizers: **K. Rajeshwar**, University of Texas at Arlington, e-mail: [rajeshwar@uta.edu](mailto:rajeshwar@uta.edu); **A. Ryan**,

Jet Propulsion Laboratory, e-mail: [mryan@jpl.nasa.gov](mailto:mryan@jpl.nasa.gov); and **T. Zawodzinski**, Case Western Reserve University, e-mail: [taz5@po.cwru.edu](mailto:taz5@po.cwru.edu).

## **C2 New Biomimetic Materials for Electrochemical Sensing**

### **(Organic and Biological Electrochemistry / Sensor/ Physical and Analytical Electrochemistry)**

The specificity of most chem/bio-sensors relies on a molecular recognition interface combined with an appropriate molecular linker and transduction element such as e.g. electrodes, MEMS devices, optical waveguides or mass sensitive platforms. Biological recognition elements deployed in sensing are frequently limited in robustness, availability, long-term stability and involve high costs if isolation and purification steps are required. Consequently, synthetic and semi-synthetic receptors (including truncated recombinant analogues) mimicking biological recognition promise significant advantages compared to their natural counterparts. In recent years biomimetic recognition schemes including aptamers, synthetic oligonucleotides, peptides, molecularly imprinted polymers and sol gels as well as first attempts at designing synthetic proteins and enzymes are gaining broad interest. This symposium will focus on recent advances in biomimetic recognition schemes and sensor architectures designed at the molecular level for chemical and biological sensors. Besides the development and synthesis of biomimetic recognition elements, the symposium will also focus on sensor characterization and performance in real-world applications including but not limited to food analysis, environmental monitoring, and clinical test beds. Areas of special interest include; (1.) aptamers; (2.) synthetic oligonucleotides; (3.) peptides; (4.) molecularly imprinted polymers; (5.) sol gels; (6.) apoenzymes; (7.) novel sensor concepts; (8.) sensor systems and arrays for on-line monitoring; and (9.) advanced micro-and nanosystems.

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Abstracts should be submitted electronically to the ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **C. Kranz**, University of Ulm, email: [Christine.kranz@uni-ulm.de](mailto:Christine.kranz@uni-ulm.de); **M. Bayachou**, Cleveland State University, e-mail: [m.bayachou@csuohio.edu](mailto:m.bayachou@csuohio.edu); and **H.**

**De Long**, Air Force Office of Scientific Research, e-mail: [hugh.delong@afosr.af.mil](mailto:hugh.delong@afosr.af.mil).

## **C3 Synthetic and Mechanistic Organic Electron Transfer Reactions**

### **(Organic and Biological Electrochemistry / Physical and Analytical Electrochemistry)**

Papers are invited in all areas of investigations involving synthetic and mechanistic organic electrochemistry. Topic areas include organic, organometallic, and bio-organic electrochemistry, and industrial and educational applications are also welcome.

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Abstracts should be submitted electronically to the ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **T. Fuchigami**, Tokyo Institute of Technology, e-mail: [fuchi@echem.titech.ac.jp](mailto:fuchi@echem.titech.ac.jp); **G. Cheek**, US Naval Academy, e-mail: [cheek@usna.edu](mailto:cheek@usna.edu); **D. Evans**, University of Arizona, e-mail: [dhevans@email.arizona.edu](mailto:dhevans@email.arizona.edu); and **F. Maran**, University of Padova, e-mail: [flavio.maran@unipd.it](mailto:flavio.maran@unipd.it).

## **1 Physical, Electroanalytical and Bioanalytical Electrochemistry**

### **(Physical and Analytical Electrochemistry)**

This symposium invites papers in the areas of physical, electroanalytical, and bioanalytical electrochemistry. Topics covered include kinetics of electron and ion transfer reactions, interfacial phenomena at solid/liquid and liquid/liquid interfaces, modified electrodes, fabrication and characterization of nanostructured electrode surfaces, adsorption and self-assembly, novel spectroscopic and surface imaging techniques. Among other important topics we would like to address certain aspects of electrochemistry of biomolecules and biomacromolecules, hybridization, damage and denaturation of DNA, interactions of drugs with biomolecules, fundamental and applied aspects of electrochemical biosensors, biocells and bioelectrocatalysis, micro and nanoelectrodes, as well as new ideas in electroanalysis.

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Abstracts should be submitted electronically to the ECS headquarters, and questions and inquiries should be sent to the symposium organizer: **P. Kulesza**, University of Warsaw, e-mail: [pkulesza@chem.uw.edu.pl](mailto:pkulesza@chem.uw.edu.pl); **M. Fojta**, Czech Academy of Sciences, [fojta@ibp.cz](mailto:fojta@ibp.cz); **A. Kuhn**, University of Bordeaux, [Kuhn@enscpb.fr](mailto:Kuhn@enscpb.fr); **S. Minteer**, Saint Louis University, [mintees@slu.edu](mailto:mintees@slu.edu); and **Z. Stojek**, University of Warsaw, [stojek@chem.uw.edu.pl](mailto:stojek@chem.uw.edu.pl).

## **2 Electrochemistry: Symposium on Interfacial Electrochemistry in Honor of Brian E. Conway**

### **(Physical and Analytical Electrochemistry / Energy Technology / Battery / Corrosion / Electrodeposition)**

On July 9, 2005, the electrochemical community lost one of its most renowned scientists, Prof. Brian E. Conway. This Symposium is being organized to honor his many contributions to the field. For nearly 60 years, Dr. Conway sought to extend the frontiers of electrochemistry with contributions in numerous areas of physical and analytical electrochemistry. He played a key role in the understanding of the importance of interfacial phenomena and the electrical double layer in electrode kinetics. His contributions paved the way for new concepts and methodologies in the areas of electrocatalysis, pseudocapacitance and supercapacitors, ionic hydration and double-layer effects, industrial Electrolysis, etc. He was a complete electrochemist, making contributions to both the ionic and electrodes research areas, and drawing on his deep knowledge in both camps. In this symposium, the central theme will be "Interfacial Phenomena in Electrode Kinetics and Electrocatalysis."

Contributions are invited in the following research areas: (1.) Anodic Oxide Film Formation on Noble Metals, and their implications for reaction kinetics and mechanisms; (2.) Adsorption of Neutral and Ionic Solution Species on Electrode Surfaces, and their Role in Electrocatalysis (including Electrodesorption Valency and Pseudocapacitive Effects); (3.) Electrochemical Supercapacitors and Batteries; (4.) Organic Electrocatalysis, including Fuel Cell Systems; (5.) Industrial Electrolysis – DSA and other Oxide Anodes; (6.) Use of AC Impedance Spectroscopy in Interfacial Electrochemistry; (7.) Electrocatalytic Properties of Electrodeposited Metals and Alloys; and (8.) Open Questions in Interfacial Electrochemistry, Especially Related to the Research of B. E. Conway.

**An issue of *ECS Transactions* is planned to be published "AFTER" the meeting. All authors accepted for presentation are obligated to submit their full text manuscript for the issue no later than November 6, 2009. All manuscripts will be submitted online, and must be in either MS Word or PDF format.**

Abstracts should be submitted electronically to the ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **B. MacDougall**, National Research Council of Canada, e-mail: [barry.macdougall@nrcnrc.gc.ca](mailto:barry.macdougall@nrcnrc.gc.ca); **C. Bock**, National Research Council of Canada, e-mail: [Christina.bock@nrc-cnrc.gc.ca](mailto:Christina.bock@nrc-cnrc.gc.ca); **E. Gileadi**, Tel-Aviv University, [gileadi@post.tau.ac.il](mailto:gileadi@post.tau.ac.il); **S. Gottesfeld**, CellEra, email: [shimshon@cellera.biz](mailto:shimshon@cellera.biz); **D. Harrington**, University of Victoria, e-mail: [dharr@uvic.ca](mailto:dharr@uvic.ca); **J. Leddy**, University of Iowa, e-mail: [johna-leddy@uiowa.edu](mailto:johna-leddy@uiowa.edu); **W. Lorenz**, University of Karlsruhe, e-mail: [wolfgang.lorenz@ihe.uka.de](mailto:wolfgang.lorenz@ihe.uka.de); **B. Scrosati**, Univ. of Roma "La Sapienza," e-mail: [bruno.scrosati@uniroma1.it](mailto:bruno.scrosati@uniroma1.it); **S. Trasatti**, Univ. Milan, e-mail: [sergio.trasatti@unimi.it](mailto:sergio.trasatti@unimi.it), and **S. Morin**, York University, e-mail: [smorin@yorku.ca](mailto:smorin@yorku.ca).

## **3 Physical and Analytical Electrochemistry in Ionic Liquids**

### **(Physical and Analytical Electrochemistry)**

This symposium will provide an international and interdisciplinary forum for researchers to present their latest research on topics involving physical and/or analytical electrochemistry in ionic liquids. Papers on both basic and applied research are encouraged. The topics will include, but are not limited to: (1.) Electron transfer processes in ionic liquids. (2.) Electrode kinetics in ionic liquids. (3.) The electrode/ionic liquid interface. (4.) Electrochemical characterization of ionic liquids (e.g. conductivity, ion transport, electrochemical windows). (5.) Experimental aspects of electrochemistry in ionic liquids. (6.) The electrochemistry of solutes in ionic liquids. (7.) Electroanalytical determinations in ionic liquids. (8.) Electrodeposition in ionic liquids (e.g. nucleation, deposition of alloys, characterization of electroactive species, and surface characterization). (9.) Electrochemical aspects of biological materials and systems in ionic liquids.

An issue of *ECS Transactions* is planned to be published "AFTER" the meeting. All authors accepted for presentation are encouraged to submit their full text manuscript for the issue no later than November 6, 2009. All manuscripts will be submitted online, and must be in either MS Word or PDF format.

Abstracts should be submitted electronically to the ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **P. C. Trulove**, U.S. Naval Academy, e-mail: [trulove@usna.edu](mailto:trulove@usna.edu); **H. C. De Long**, Air Force Office of Scientific Research, e-mail: [hugh.delong@afosr.af.mil](mailto:hugh.delong@afosr.af.mil); and **R. A. Mantz**, Army Research Office, e-mail: [Robert.a.mantz@us.army.mil](mailto:Robert.a.mantz@us.army.mil).

## **J2 Impedance Techniques: Diagnostics and Sensing Applications**

(Sensor / Physical and Analytical Electrochemistry/ Corrosion / Industrial Electrochemistry and Electrochemical Engineering)

The purpose of this symposium is to bring together leading experts with a variety of different experimental and theoretical skills working in area of electrochemical impedance technology. Electrochemical impedance can be employed for materials analysis and condition monitoring. In addition to determination of chemical states, it can be also used to monitor electrical parameters such mechanical variables as motion, pressure, acceleration, and fluid level. Impedance spectroscopy-based measurements represent a rich multi-discipline area of science that has been applied to a large number of important areas of research, such as: Corrosion studies and corrosion control; Monitoring of properties of electronic and ionic conducting polymers and coatings; Measurements in energy storage, batteries, and fuel cells-related systems; Mechanical measurements; Biological, biocellular, and biomedical sensors and drug delivery systems; Measurements in semiconductors, solid electrolytes, and electronic conductors; Studies of electrochemical kinetics, reactions and processes and their control. The aim is to show the power of electrochemical impedance spectroscopy for understanding electrochemical systems: characterizing homogeneous and heterogeneous materials by their charge transport and dielectric properties, recognizing effects and signatures of surface layers, studying space charge regions at the interfaces or in the bulk solution, determining kinetics of electrochemical and chemical reactions. The symposium also welcomes papers dedicated to fundamental research in electrochemical impedance devices and recent advances in the impedance instrumentation, data collection and processing, and process monitoring where it relates to electrochemistry.

An issue of *ECS Transactions* is planned to be published "AFTER" the meeting. All authors accepted for presentation are encouraged to submit their full text manuscript for the issue no later than November 6, 2009. All manuscripts will be submitted online, and must be in either MS Word or PDF format.

Abstracts should be submitted electronically to the ECS headquarters, and questions and inquiries should be sent to the symposium organizers: **V. Lvovich**, Lubrizol Corp., e-mail: [vlvovich@ameritech.net](mailto:vlvovich@ameritech.net); **D. C. Hansen**, University of Dayton Research Institute, e-mail: [douglas.hansen@udri.udayton.edu](mailto:douglas.hansen@udri.udayton.edu); **M. E. Orazem**, University of Florida, e-mail: [meo@che.ufl.edu](mailto:meo@che.ufl.edu); **B. Tribollet**, Université P. et M. Curie, e-mail: [bernard.tribollet@upmc.fr](mailto:bernard.tribollet@upmc.fr); and **P. Vanysek**, Northern Illinois University, e-mail: [pvanyssek@niu.edu](mailto:pvanyssek@niu.edu).

### **Future Meeting Dates**

Fall 2009	Oct 4 – 9	Vienna Austria
Spring 2010	April 25-30	Vancouver Canada
Fall 2010	October 10-15	Las Vegas NV
Spring 2011	May 1-5	Montreal, Canada
Fall 2011	Oct 9-14	Boston MA

### **Members-at-Large for 2009-2011**

Petr Vanysek, Northern Illinois University  
Stanley Buckenstein, SUNY-Buffalo  
Alanah Fitch, Loyola University of Chicago  
Mark Anderson, University of Colorado - Denver  
Andrew Hillier, Iowa State University  
Pawel Kulesza, University of Warsaw  
David Cliffel, Vanderbilt University  
Shaowei Chen, University of California – Santa Cruz