

## Division News

### Spotlight on the IE&E Division



The ECS IE&E Division presented the 2009 New Electrochemical Technology (NET) Award to **FUELCELL ENERGY (FCE)** at its Division Luncheon and Business Meeting in San Francisco last May. From left to right are: **MOHAMMAD FAROOQUE**, Senior Vice-President and Distinguished Fellow at FCE; **PINAKIN PATEL**, key DFC cell and stack developer at FCE; **JOHN WEIDNER**, IE&E Chair; and **GERRI BOTTE**, IE&E Vice-Chair.

Other FCE staff who received the award included: **BERNARD S. BAKER** (deceased), who was the research, development, and commercialization pioneer at FCE; **HANSRAJ C. MARU**, the research and development leader in commercially introducing Direct FuelCell (DFC) power plants; **CHAO-YI YUH**, a key developer of the DFC core technology; and **JOEL DOYON**, a key developer of the core DFC components.

## New Division Officers

New officers for the 2009-2011 term have been elected for the following Divisions.

### Electronics & Photonics Division

*Chair*

Yue Kuo, Texas A&M University

*First Vice-Chair*

Ping-Chih (Pablo) Chang, Northrop Grumman

*Second Vice-Chair*

Bernd Kolbesen, J. W. Goethe University

*Secretary*

Andrew Hoff, University of South Florida

*Treasurer*

Fan Ren, University of Florida

*Members-at-Large*

Albert Baca, Sandia National Laboratories

Helmut Baumgart, Old Dominion University

D. Noel Buckley, University of Limerick

George Celler, SOITEC

Cor Claeys, IMEC

Sorin Cristoloveanu, IMEP-INPG-Minatec

Suman Datta, Pennsylvania State University

Stefan De Gendt, IMEC

M. Jamal Deen, McMaster University

Manfred Engelhardt, Qimonda

Brent Gila, University of Florida  
 Ulrich Goesele, Max Planck Institute  
 David Harame, IBM Corp.  
 Takeshi Hattori, Sony retired  
 Dennis Hess, Georgia Tech  
 Howard Huff, SEMATECH retired  
 Hiroshi Iwai, Tokyo Institute of Technology  
 Bernd Kolbesen, J. W. Goethe University  
 Hisham Massoud, Duke University  
 Paul Mertens, IMEC  
 Durgamadhab Misra, New Jersey Institute of Technology  
 Junichi Murota, Tohoku University  
 Colm O'Dwyer, University of Limerick  
 Gerald Oleszek, GMO Enterprises, Inc.  
 Carlton Osburn, North Carolina State University  
 Mark Overberg, Sandia National Laboratories  
 Fred Roozeboom, NXP Research  
 George Rozgonyi, North Carolina State University  
 Jerzy Ruzyllo, Pennsylvania State University  
 Kenji Shiojima, University of Fukui  
 Edward Stokes, University of North Carolina  
 Tadatomo Suga, University of Tokyo  
 Ravi Todi, IBM Corp.  
 Masaharu Watanabe, SEZ Japan Inc.  
 Jennifer Wang, Northrop Grumman  
 Jian Xu, Pennsylvania State University



### Energy Technology Division

*Chair*

S. R. Narayan, JPL-NASA

*Vice-Chair*

Jean St-Pierre, University of South Carolina

*Secretary*

Jeremy Meyers, University of Texas at Austin

*Treasurer*

NOTE: The election of Treasurer will be held during the summer of 2009.



### Organic & Biological Electrochemistry

*Chair*

Albert J. Fry, Wesleyan University

*Vice-Chair*

James D. Burgess, Case Western Reserve University

*Secretary-Treasurer*

Jun-ichi Yoshia, Kyoto University



### Physical & Analytical Electrochemistry

*Chair*

Paul Trulove, U.S. Naval Academy

*Vice-Chair*

Shelley Minter, Saint Louis University

*Secretary*

Robert Mantz, U.S. Air Force Office of Scientific Research

*Treasurer*

Pawel Kulesza, University of Warsaw

*Members-at-Large*

Mark Anderson, University of Colorado, Denver

Stanley Buckenstein, SUNY-Buffalo

Shaowei Chen, University of California at Santa Cruz

David E. Cliffel, Vanderbilt University

Alanah Fitch, Loyola University of Chicago

Andrew C. Hillier, Iowa State University

Petr Vanýsek, Northern Illinois University

## Successful CSTIC Held in Shanghai



Presentation of the 2009 CSTIC STUDENT AND ENGINEER AWARDS, from left to right are: JAY CHEN, SEMI China Advisory Board Member; TEL China President SHANGZHOU JIANG; CLAUDIA SANTINI, award winner; YU XIAOPENG SHELBY, award winner; JERZY RUZYLLO, ECS; YUJIE AI, award winner; JIN HUA LIU, award winner; RONGLING CHEN, SEMI China President; QI LIU, award winner; and DAVID HUANG, CSTIC 2009 Conference Chair.

The 2009 CHINA SEMICONDUCTOR TECHNOLOGY INTERNATIONAL CONFERENCE (CSTIC) was held March 19-20, 2009, with 239 speakers and 550 attendees from around the world. The conference is sponsored by ECS and by SEMI, a global industry association serving the manufacturing supply chains for the microelectronic, display, and photovoltaic industries ([www.semi.org](http://www.semi.org)). Nobel Laureate & IBM Fellow J. Georg Bednorz, Intel Senior Fellow Robert S. Chau, IMEC CEO Gilbert J. Declerck, and Praxair Vice-President and CTO Ray Roberge gave the keynote speeches at conference plenary session. Jerzy Ruzyllo from ECS; Paul Davis, EVP of SEMI; and David Huang, the conference chair gave the opening speeches at the plenary session. More than 20 invited world known experts gave their keynote speeches in each symposium.

The conference has nine symposia covering most of the aspects of semiconductor technology including devices, design, lithography, integration, materials, processes, and manufacturing, as well as emerging semiconductor technologies and silicon material applications. There were speakers from leading fabrication plants, and from equipment and materials companies such as IBM, Intel, IMEC, UMC, Infineon, Micron, SMIC, Applied Materials, TEL, and Praxair. Speakers from leading universities, such as MIT, UC Berkeley, Stanford, Yale, University of Pennsylvania, Tsinghua University, and Peking University, also presented

during the conference and discussed with the attendees. Papers from the conference were recently published in *ECS Transactions* (<http://ecsd1.org/>).

Five students and young engineers won the ECS/SEMI Student & Engineer Award (SESEA) at ISTC/CSTIC 2009. CLAUDIA SANTINI, from IMEC/University of Palermo, won a Best Student Award (First Place) for her paper entitled, "Electrical Characteristics of Horizontally-aligned CNTs." YUJIE AI, from Peking University, won a Best Student Award (Second Place) for "Investigations on the Impact of the Parasitic Bottom Transistor in Gate-All-Around Silicon Nanowire SONOS Memory Cells Fabricated on Bulk Si Substrate." QI LIU, from the Institute of Microelectronics, won a Best Student Award (Third Place) for "Bistable Resistance Switching of Cu/Ti:ZrO<sub>2</sub>/Pt for Nonvolatile Memory Application." YU XIAOPENG SHELBY, from UMC Singapore, won a Best Young Engineer Award (Second Place) for "Nickel Silicide Strip Process Optimization by Using Taguchi Method." JIN HUA LIU, from Semiconductor Manufacturing International Corporation, won a Best Young Engineer Award (Third Place) for "Carbon Co-Implantation Used to Improve NMOS Threshold Voltage Roll-off Characteristics Study in 65 nm Node CMOS Technology."

In spite of the many challenges this year in the semiconductor industry, due in part to the world financial crisis, ISTC/CSTIC 2009 was still a great success

with record high paper submissions and attendance since ISTC started on 2001. The organizers have already begun planning for STIC 2010, which will be held in March in Shanghai. ■



**Ed. Note:** We are pleased to introduce a new column in *Interface*, "Websites of Note." Zoltan Nagy, longtime ECS member, is the guest contributor for this column. Dr. Nagy spends much of his time surfing the Web and editing/maintaining three informational electrochemistry websites (to be featured at a later date).

## websites of note

by Zoltan Nagy

### All about Electrochemistry

"Elementary electrochemistry in somewhat greater depth than is found in standard textbooks, but at a level still suitable for first-year college and advanced high school courses" describes this site pretty well. A fairly classical treatment, short on modern aspects like kinetics and surface science.

- Stephen Lower, Simon Fraser University
- <http://www.chem1.com/acad/webtext/elchem/>

### Electrochemistry Source Portal

Portal to many thousands of electrochemistry information items. More than 1,000 links to websites of interest. 3,000+ books and proceedings volumes. 5,000+ review chapters. Listing of more than 600 graduate schools, from more than 60 countries. Popular science articles in many magazines. Societies, journals, handbooks, nomenclature, meetings, etc. More than 1,000 simple and brief definitions of words and phrases used often in electrochemistry, crosslinked with an encyclopedia containing more than 30 popular-science style articles, written by leading experts in the field.

- Hosted by the Ernest B. Yeager Center for Electrochemical Sciences at Case Western Reserve University
- <http://electrochem.cwru.edu/portal/>

### Gordon Conferences, 1964-2005

Forty years of Gordon Research Conferences on Electrochemistry, in memory of Robert A. Osteryoung, one of the founders of the conference. All programs are listed, group photos, and photos of chairpersons. Large file, loads slowly, but worth it: a great historical collection.

- Compiled by Debbie Boxall and Steve Feldberg, and conserved by Petr Vanýsek
- <http://www.vanysek.com/electrochem/rao.htm>

### About the Author

**ZOLTAN NAGY** is a semi-retired electrochemist. After 15 years in a variety of electrochemical industrial research, he spent 30 years at Argonne National Laboratory carrying out research on electrode kinetics and surface electrochemistry. Presently he is at the Chemistry Department of the University of North Carolina at Chapel Hill. He welcomes suggestions for entries; send them to [nagy@email.unc.edu](mailto:nagy@email.unc.edu).

## ECS Cosponsored Conferences for 2009

*In addition to the regular ECS biannual meetings, ECS, its Divisions, and Sections cosponsor meetings and symposia of interest to the technical audience ECS serves. The following is a list of the cosponsored meetings for 2009. Please visit the ECS website for a list of all co-sponsored meetings.*

- **60<sup>th</sup> Annual Meeting of the International Society of Electrochemistry**, August 16-21, 2009, Beijing, China, [event09.ise-online.org](http://event09.ise-online.org)
- **International Symposium on Electrochemistry for Energy Conversion and Storage (ISEECS)**, August 22-25, 2009, Wuhan-Three Gorges, China, [www.3gorges2009.cn](http://www.3gorges2009.cn)
- **10<sup>th</sup> International Conference on Advanced Batteries and Accumulators**, August 30-September 3, 2009, Brno, Czech Republic, [www.aba-brno.cz/aba2008/introduction.php](http://www.aba-brno.cz/aba2008/introduction.php)
- **Microelectronic Technology and Devices (SB Micro 2009)**, August 31-September 3, 2009, Natal, Brazil, [www.lasic.ufbr.br/chiponthedunes2009/](http://www.lasic.ufbr.br/chiponthedunes2009/)
- **BATTERIES 2009 - The International Power Supply Conference and Exhibition**, September 30-October 2, 2009, Cannes-Mandelieu, France, [www.batteriesevent.info](http://www.batteriesevent.info)
- **6<sup>th</sup> International Conference on Electromagnetic Processing of Materials (EPM 2009)**, October 19-23, 2009, Dresden, Germany, [www.epm2009.de](http://www.epm2009.de)
- **2009 Fuel Cell Seminar & Exposition**, November 16-20, 2009, Palm Springs, CA, USA, [www.fuelcellseminar.com](http://www.fuelcellseminar.com)

*To learn more about what an ECS cosponsorship could do for your conference, including information on publishing preceding volumes for co-sponsored meetings, or to request an ECS cosponsorship of your technical event, please contact [ecs@electrochem.org](mailto:ecs@electrochem.org).*

Louie Scribner



We are pleased to spotlight **SCRIBNER ASSOCIATES, INCORPORATED**, a 14 year corporate member at the Sponsoring Level. Scribner Associates is known internationally for its fuel cell test equipment and other specialized analytical instrumentation, in addition to software for DC and AC electrochemistry. Prior to founding the business, President Louie Scribner was a research engineer and founding member of The University of Virginia's Center for Electrochemical Science and Engineering in Charlottesville, Virginia. In 1981, he formed the company in his home workshop to address the growing need for instrumentation within the electrochemical sciences. Early instrument designs included coulometers, single and multi-channel potentiostats, and the development of automatic current interrupt technique and instrumentation. In 1988, Scribner Associates and Derek Johnson introduced PC based software for both electrochemical impedance spectroscopy (EIS) and conventional electrochemical measurements, starting with ZPlot® and CorrWare®.

In 1997, the company relocated to the scenic town of Southern Pines, just one hour south of Raleigh, North

Carolina. Scribner Associates occupies 8,000 sq. ft. of multi-purpose office, manufacturing, engineering, and laboratory space, and employs 15 full time scientists, engineers, and support staff.

Scribner Associates offers testing systems, electronic test loads, and other hardware for polymer electrolyte membrane fuel cells (PEMFC), direct methanol fuel cells (DMFC), solid oxide fuel cells (SOFC), and other types. The company has more than 800 fuel cell test loads and fuel cell test stations operating in countries throughout the world. Scribner Associates pioneered the current interrupt (iR) measurement technique for use in electronic loads. Current interrupt measurements provide the ohmic resistance of the fuel cell, a key performance driver.

Scribner Associates continues to support fuel cell commercialization and growth of the fuel cell industry. The company is developing advanced instruments and protocols for high-throughput membrane resistance measurement to support high volume fuel cell membrane manufacturing quality control/quality assurance (QC/QA) programs and lot acceptance. Other specialized membrane characterization tools geared toward membrane R&D are also being developed.

Scribner Associates also engineers and manufactures custom testing equipment and software suited to the specific needs of their clients. The suite

of programs CorrWare®, CorrView™ for traditional electrochemical measurements, and ZPlot®, ZView™ for EIS measurements and data analysis are considered the most popular software packages among leading electrochemical researchers.

In addition, Scribner Associates conducts NASA, U.S. Department of Energy and Department of Defense sponsored research on a range of electrochemical and advanced measurement technologies. For one part of this research, Scribner Associates is developing an ultra-high measurement channel density impedance array analyzer for the Mars Oxidant Instrument (MOI). The MOI, being developed by NASA's Jet Propulsion Laboratory (JPL), will allow planetary scientists to study the amount, type, and life cycle of oxidants in the Martian atmosphere and soil to help determine whether life existed on Mars. The instrument is a component of the science payload for the European Space Agency's Exo-Mars Rover mission scheduled for launch in 2016. Scribner Associates' expertise in electrode array analysis stems from internal R&D of their Multichannel Microelectrode Analyzer (MMA) products. First developed in 2000, the MMA products are intended for use in sensor and materials development, and other array-based electrochemical applications. ■

## Corporate Member Spotlight Scribner Associates

### Students: Save the Date!

Students attending the 216<sup>th</sup> ECS Meeting in Vienna are invited to the **Student Mixer** to be held on **Sunday, October 4, 2009** from **1730-1930**. Meet your peers and distinguished members of ECS. Invitation with details to follow later in the summer!

## Congressional Visits Days on Capitol Hill

by Petr Vanýsek



**PETR VANÝSEK** (left) ECS Trustee to FMS, and **BILL FOSTER**, U.S. Representative from Illinois, during the 2009 Congressional Visits Day.

Every day when Congress is in session, thousands of people converge on Washington, DC, to represent themselves, their companies, interest groups, communities, causes, and beliefs. These people will aim to meet with members of Congress, and usually get to talk with the expert staff at the individual offices. When the visits are more organized and groups representing a single cause arrive on the same day, the impact is more effective. Such group efforts are known as the **CONGRESSIONAL VISITS DAYS**. The Federation of Materials Societies (FMS), of which ECS is a member, organizes such CVDs annually and it mobilizes scientists and engineers to address the importance of adequately funding research and development in the sciences and engineering. Each spring scientists, engineers, and students from universities arrive in Washington, DC to discuss these issues with their representatives in Congress.

This year the FMS delegation visited Washington March 31-April 1. The delegation had 49 members with additional participation from 39 undergraduate and graduate students from several universities: University of San Diego, Drexel University, Iowa State University, Johns Hopkins University, Missouri University of Science and Technology, Ohio State University, Rutgers University, Virginia Tech, University of Maryland, University of Washington, and Washington State University.

During the orientation meeting Kei Koizumi from the White House Office of Science and Technology gave an overview on the federal budget in general and on allotments for science and research. Two other speakers, Tobin Smith (Association of American Universities) and Paul Ducette (Batelle) gave their perspectives on forces within Congress that lead to funding of science and technology. FMS Executive Director Betsy Houston distributed schedules for visits with offices of senators and representatives and reviewed the packets and “leave-behind” materials, which are documents

summarizing the position of FMS on importance of maintained funding for science.

This writer went with the delegation to represent ECS. He visited with his representative from Illinois, Bill Foster. Foster recently initiated two “Dear Colleagues Letters,” which are documents sent to be read and signed by other members of Congress. R. M. Jones, wrote in the *AIP Bulletin of Science Policy News* (No. 47, April 5, 2005), “Members of Congress receive many ‘Dear Colleagues Letters’ requesting their signature on letters expressing support for a program. The probability that a letter will be signed by a Member greatly increases if constituents inform their senator or representative of the letter and request that the Member sign it. Members who have previously signed a similar letter are more likely to do so again.” One of the letters was a document requesting sustained investment in the National Science Foundation in FY2010. The other science-related letter urged the appropriators to designate funds in FY10 for the professional development of teachers of science and math.

Within a month of this visit (on April 27, 2009), President Obama gave a speech before the National Academies of Science—“The Necessity of Science”—reflecting the goals communicated by the FMS delegations on Capitol Hill. In the speech he affirmed his commitment to double funding for science and STEM (science, technology, engineering, and mathematics) education. President Obama said, “At such a difficult moment, there are those who say we cannot afford to invest in science, that support for research is somehow a luxury at moments defined by necessities. I fundamentally disagree. Science is more essential for our prosperity, our security, our health, our environment, and our quality of life than it has ever been before.”

The Federation of Materials Societies (FMS) is an umbrella organization of eleven professional societies. ECS is one of its charter members. FMS represent the professional societies, universities, and National Research Council organizations that are involved with materials science, engineering, and technology. FMS constituent societies have more than 700,000 individual members. The purpose of FMS is to aid the materials community in acquiring knowledge from the policy community and exchanging information with them. An important goal of FMS is to help the materials community to arrive at consensus materials policy and to assist it in informing policy makers of materials concerns. ■

### About the Author

**PETR VANÝSEK** completed a four-year term as Secretary of ECS in 2008. He is a former Chair of the Council of Sections, former Chair of the Sensor Division, and former Secretary/Treasurer of the Physical and Analytical Electrochemistry Division. He serves on the Financial Advisory Committee and is the ECS Trustee at FMS. He may be reached at pvanýsek@niu.edu.

“At such a difficult moment, there are those who say we cannot afford to invest in science, that support for research is somehow a luxury at moments defined by necessities. I fundamentally disagree. Science is more essential for our prosperity, our security, our health, our environment, and our quality of life than it has ever been before.”

— President Barack Obama