Eleventh IE&EE Division Outreach Program

The ECS **Industrial Electrochemistry and Electrochemical Engineering (IE&EE) Division** completed its eleventh Outreach Program at the 222nd ECS Meeting in Hawaii. The Ohio University ECS Student Chapter planned and organized the event. The outreach program is designed to bring awareness of electrochemical energy conversion devices to future generations. The program aims to foster the younger generation's interests in the fields of electrochemistry and electrochemical engineering. The outreach program has become a tradition in the IE&EE Division since its start at the 210th ECS Meeting (Cancun, Mexico). The IE&EE Division has successfully organized eleven outreach programs.

IE&EE members **Gerardine Botte** (Division Chair; Ohio University) and **Javit Drake** (Proctor & Gamble, MIT), along with graduate students **Paul Northrop**, **Matt Lawder**, **Bharatkumar Suthar**, **Sumitava De**, and **Venkatasailanathan Ramadesigan** of Washington University in St. Louis, and Ohio University's **Damilola Daramola**, **Vedasri Vedharathinam**, **Dan Wang**, and **Arthur Gildea**, conducted the outreach program.

The event was held at **Kalani High School** in the biology wing. High school students in the tenth grade, along with their science teacher, **Bryan Silver**, participated in the outreach program. The event started with a keynote lecture from Dr. Botte explaining fuel cell and water electrolysis technologies, followed by a briefing on the fuel cell car competition to the students. The students were divided into six teams to participate in the car competition. The ECS organizers helped the students assemble the cars and explained technical details of fuel cell technology to the teams during the competition. Teams calculated the amount of hydrogen, produced by water electrolysis, required to fuel their cars to travel a fixed distance (15 feet). The teams then competed with each other to make their car travel as close as possible to the assigned 15-foot distance.

The IE&EE Outreach Program winning student team (from left to right): **Kairi Tezuka**, **Madisyn Sim**, *and* **Madeleine Haas**.

After the competition, award certificates were presented to the winning team (the team that came closest to the assigned distance). As is customary with this program, the fuel cell model cars were donated to the school to promote similar educational activities in the future. Throughout the event, the student participants demonstrated great enthusiasm and interest in the model fuel cell cars. Each team strived to win the competition, while still having fun coming up with team names and making team logos.

ECS and the IE&EE Division congratulate the winning team members (**Kairi Tezuka, Madisyn Sim,** and **Madeleine Haas**) on their

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Kalani High School student participants and ECS facilitators at the IE&EE Outreach program in Hawaii.

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success, and offer a special thanks to all of the student participants and their science teacher, Mr. Silver. The IE&EE Division would like to thank Ohio University's ECS Student Chapter and all the volunteers for their time and effort to make the event a success. Additional thanks to personnel from the Center for Electrochemical Engineering Research (CEER) at Ohio University (**Shannon Bruce**, **Wei Yan**, **Arthur Gildea**, and Dr. Botte) for helping identify the venue and providing logistics support to the program. We also offer special thanks to **Vijay Ramani** (past IE&EE Division Chair) of the Illinois Institute of Technology for providing financial support to purchase the model fuel cell cars through his National Science Foundation CAREER Award. The IE&EE Division looks forward to continued success in conducting this high impact educational outreach program at future meetings.

This story was contributed by Gerardine G. Botte (IE&EE Division Chair) and members of the Ohio University ECS Student Chapter.

ECS Sponsored Meetings

Highlights from the XXVII SMEQ Meeting/5th Meeting of the ECS Mexican Section

The **XXVII Meeting of the Mexican Electrochemical Society** (SMEQ) and the **5th Meeting of the ECS Mexican Section** was held in Toluca, Mexico, June 11-15, 2012. The meeting was organized by two Mexican institutions, Universidad del Estado de México (UAEM/Mexican State University), and the Centro de Investigación en Química Sustentable (CCIQS/Research Center for Sustainable Chemistry); additional support was provided by the Chemistry Institute of the Universidad Nacional Autónoma de México (UNAM/Mexico Autonomous National University). The local organizing committee included professors and diligent students from the UAEM Faculty of Chemistry and UNAM Chemistry Institute, including **Carlos Barrera-Diaz, Gabriela Roa-Morales**, and **Patricia Balderas-Hernandez** (all of UAEM); and **Bernardo Frontana Uribe** (UNAM).

The meeting focused on the uses of "Electrochemistry as a Gateway for Scientific and Technological Innovation," and was attended by more than 300 participants, including members of the SMEQ, professionals from industry, students, and professors. There were more than 274 oral and poster presentations; three Short Courses; industrial sessions; a Sponsor Exhibition; four talks delivered by recently graduated doctoral students in electrochemistry; and six plenary lectures delivered by distinguished professors including **Paul A. Kohl** (GaTech-USA) on behalf of ECS, **R. Daniel Little** (UCSB-USA), **Joan Genesca-Llongueras** (UNAM-Mexico), **Manuel Andres Rodrigo-Rodrigo** (UCM-Spain), **Jose Maria Bisang** (UNL-Argentina), and **Carlos R. Cabrera** (NASA-URC-Puerto Rico). An extensive question and answer session was followed by fruitful discussions in the hallways after each lecture of the invited speakers.

Prior to his plenary lecture, ECS Second Vice-President Paul A. Kohl provided an overview of ECS and announced plans for a second joint international meeting between ECS and SMEQ to be conducted in Cancun, Mexico in 2014. Relevant agreements for the organization of this joint meeting were reached in a pleasant reunion with Paul A. Kohl, previous organizers, and the current representatives of the SMEQ. Among them were Ignacio Gonzalez (UAM-I), Yunny Meas (CIDETEQ), Luis A. Godinez Mora-Tovar (CIDETEQ), Margarita Miranda-Hernández (CIE), Marina E. Rincon (CIE), Jorge G. Ibanez (UIA), and Norberto Casillas (UdeG), President of SMEQ.

As part of the key notes during the meeting and on behalf of the SMEQ, Norberto Casillas presented a certificate of recognition to **Martha Aguilar-Martinez** for her contributions to the development of organic electrochemistry in Mexico. She is a Professor in the Faculty of Chemistry (UNAM), who did pioneering work in conductive polymers in collaboration with Manuel de Jesus Salmon-Salazar, and is currently interested in the development of electrochemical strategies to identify Parkinson's disease at the early stages, for which a patent has been granted. Her former graduate student, Norma Macias-Ruvalcaba, provided a pleasant biographical sketch of Dra Aguilar-Martinez, highlighting notable aspects of her personal life and beautiful family.

ECS Second Vice-President **Paul A. Kohl** *delivered a plenary lecture at the XXVII Congress of the Mexican Electrochemical Society and the 5th Meeting of the Mexican Section of the Electrochemical Society, celebrated in Toluca, Mexico, June 11-15, 2012.*

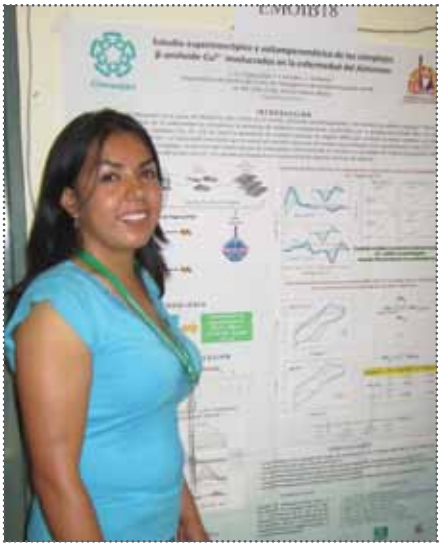
Additional prizes awarded during the meeting were for best poster, and were selected from more than 138 posters in the categories of BSc, MSc, and PhD students. The best PhD poster prize, sponsored by ECS, was awarded to **Lidia G. Trujano-Ortiz**, a PhD candidate in chemistry under the supervision of Felipe de Jesus Gonzalez and Liliana Quintanar, from the Department of Chemistry, Cinvestav-IPN, (Center for Research and Advanced Studies of the National Polytechnic Institute) in Mexico City. Trujano-Ortiz received her undergraduate degree from Universidad Autónoma de Coahuila (Autonomous University of Coahuila). Currently, her doctoral project is focused on investigating the bioinorganic aspects of Alzheimer's disease. Her poster title was "Spectroscopic and Voltammetric Study of the Beta-amyloid-Cu^{2+} Complexes Involved in Alzheimer's Disease." She will participate in an upcoming ECS meeting.

Finally, along with the technical presentations and discussions, there were attractive tourist and cultural events which included a trip to Metepec where attendees enjoyed an artistic performance of Mexican's

From left to right: **Norberto Casillas**, *President of SMEQ;* **Jose Bisang** *(Argentina),* **Carlos Barrrera-Diaz**, *President of the Congress (UAEM);* **Manuel A. Rodrigo-Rodrigo** *(Spain);* **Guadalupe O. Santamaría-González**, *Faculty of Chemistry Chair (UAEM);* **R. Daniel Little** *(USA);* **Paul A. Kohl**, *ECS Second Vice-President, (USA);* **Carlos Cabrera** *(Puerto Rico); and* **Bernardo Frontana-Uribe**, *President of the Congress (UNAM).*

legends with local artists, an unforgettable visit to the vacation resort Valle de Bravo, and a visit to a nearby forest and sliding waterfalls. Metepec is known in Mexico for its outstanding crafts and pottery, where the handcrafters make the so called "Life Trees," a lifetime represented as a tree. The Life Tree was given to all invited speakers as a token of Mexican appreciation.

From left to right: **Bernardo Frontana-Uribe** *(UNAM), President of the Congress;* **Norberto Casillas**, *President of SMEQ;* **Martha Aguilar Martinez** *(UNAM);* **Luis Manriquez-Rocha**, *Secretary of SMEQ;* **Marina E. Rincon**, *Officer of SMEQ; and* **Facundo Almeraya-Calderon**, *Vice-President of SMEQ.*



Lidia G. Trujano Ortiz, *PhD student from the Center of Research and Advanced Studies of the National Polytechnic Institute (CINVESTAV-IPN), in front of her poster, which received the ECS-sponsored Best Poster Award at the Congress of the SMEQ/5th Meeting of the Mexican Section of the Electrochemical Society celebrated in Toluca, Mexico, June 14, 2012.*

ABAF 13 in Czech Republic

Organized in Czech Republic and co-sponsored by ECS, ABAF 13 dealt with the future of modern batteries, predominately those suitable for electric vehicles.

ABAF, the meeting on **Advanced Batteries, Accumulators, and Fuel Cells**, has been (as in previous years) organized by Brno Technical University, Faculty of Electrical Engineering and Communications, in Brno, Czech Republic. The initiators of the series are **Marie Sedlaříková** and **Jiří Vondrák**, both from the Department of Technology. The meeting was held under the auspices of two important departments of the Czech government, the Ministry of Industry and Commerce and the Ministry of Environment. Their main scientific interest is lithium electrochemistry and a long-time dream of Prof. Vondrák has been electric vehicles (EVs) powered by batteries. This area has been reflected in the topics covered by the meeting since the beginning, and therefore has included the development of lithium batteries. One part of the meeting was dedicated to technological aspects of EVs. In this respect, the most important presentation was a video describing Czech manufacting of 60 Ah lithium cells, from deposition of electroactive components up to closing the whole electrode assembly into a plastic housing.

Another important issue presented at the meeting was the safety of large-sized lithium secondary batteries. An explanatory presentation of the problem was accompanied by the description of research at the Department of Technology, the main aim of which was the replacement of standard electroactive materials by other materials offering lower flammability and higher stability, and preserving their efficiently simultaneously. Other important points were aqueous systems and fuel cells. A few EVs were exhibited on the meeting. The most interesting of them was the conversion of a Skoda Superb car to a full EV with a range of 220 km and energy consumption of 35 kWh. The conference participants had a chance to explore the vehicle and take a trial ride around the city.

There were several important participants and/or their groups. Most of them were from institutions which already cooperate or have been preparing new cooperative efforts with the Department of Electrotechnology. Among them were two groups from Poland: one from the Central Laboratory of Accumulators and Batteries (Poznan, Poland) and another from the Institute of Non-ferrous Metals (Gliwice). The Department also cooperates with Bar Ilan University (Tel Aviv, Israel) and the University of Palermo (Italy).

The 13th ABAF Meeting in the Czech Republic. From left: **Germano Ferrara**, **Arnaldo Visintin**, **Petr Vanýsek**, **Boris Markovsky**, *and* **Jiří Vondrák**.

At the 13th ABAF meeting were (from left): **Martin Voříšek**, *representative for the Ministry of Industry and Trade of Czech Republic;* **Marie Sedlaříková**; *and* **Jiří Vondrák**.

ABAF 13 was a very successful one as the number of participants and their contributions were perhaps the best ones from the whole ABAF meetings series. One of the most important visitors was **Arnaldo Visintin** from INIFTA (University of La Plata, Argentina). Rich mineral resources of lithium were discovered in South America recently, and the Argentinean government prefers to produce and export products with higher added value rather than just raw lithium salts. Therefore, they decided to support the lithium battery program. The University of La Plata has cooperated with the Department

of Electrotechnology for several years and both partners expect that this cooperation will continue and become deeper. The next meeting, ABAF 14, will be held in 2013. All readers of *Interface* are heartily invited to attend. It will likely be held at the end of August or early September 2013, depending on the schedule of other electrochemical meetings and the availability of hotel space.

Last but not least, an ECS Student Chapter was created few years ago by the Faculty of the Department of Technology. Special thanks go to ECS and its important member, Petr Vanýsek, whose help has been accepted thankfully. ■

This story was contributed by Marie Sedlaříková and Jiří Vondrák.

Institutional Member News

Spotlight on Hydro Québec, Dynatronix, Scribner Associates, and Gelest

ECS Institutional Members are valuable partners in helping ECS to advance the Society's purpose. Institutional Members enjoy many valuable benefits including access to the ECS Digital Library through complimentary institutional member representatives, complimentary meeting registrations, organization recognition on the ECS website and a print listing in the *Journal of The Electrochemical Society*, plus discounts on meeting registrations, exhibit booths, sponsorship packages, tutorials, and advertising in *Interface*.

We are pleased to spotlight four new Institutional Members: Hydro Québec, a six-year member at the Benefactor Level; Dynatronix, a new member in 2012 at the Patron Level; Scribner Associates, a 17 year member at the Benefactor Level; and Gelest Inc., a four year member at the Benefactor Level.

Hydro-Québec is Canada's largest electricity producer among the world's largest hydroelectric power producers and a public utility that generates, transmits, and distributes electricity. Its sole shareholder is the Québec government. It primarily exploits renewable generating options, in particular hydropower, and supports the development of wind energy through purchases from independent power producers. Its research institute, IREQ, conducts R&D in energy efficiency, energy storage, and other energy-related fields. Hydro-Québec invests more than $100 million per year in research.

Hydro-Québec's research institute, IREQ, is a global leader in the development of advanced materials for battery manufacturing and creates leading edge processes from its state of the art facilities. IREQ holds more than 100 patent rights and 15 licenses for battery materials used by some of the world's most successful battery manufacturers and materials suppliers. Its areas of expertise include energy storage and is a lead partner with private sector companies in Québec to build EV and HEV charging stations in support of its technology developments. Its material development contributions are helping to develop safe, high-performance lithium ion batteries that can be charged more quickly and a greater number of times. IREQ promotes open innovation and partners with private firms, universities, government agencies and research centers in Québec and abroad. Its partnerships allows IREQ to develop, industrialize and market technologies resulting from those innovation projects.

Dynatronix defines itself by a simple phrase: "Custom. Power. Solutions." These three words are tied directly to the core of the Dynatronix business model and have defined their business strategy for over 40 years. In 1971, Dynatronix was a fledgling company manufacturing DC power supplies for a parylene coating process. A request to develop a custom pulsed DC power supply to electroplate gold onto electronic connectors placed the company on a path that forever changed Dynatronix.

Today, Dynatronix manufactures power supplies with DC, reverse, pulse, and pulse reverse output capabilities. Major manufacturers in a broad range of markets utilize their product, such as those in semiconductors, medical devices, aerospace & defense, automotive, nanotechnology, and metal finishing. Typical applications include electroplating, electroforming, electropolishing, anodizing, electrocoagulation, electrochlorination, hydrogen ion removal, UV curing, spark plasma sintering, and diamond impregnation. For many applications, off-the-shelf power supplies can be used. However, nearly 60% of Dynatronix' business is derived from custom projects built to end-user specifications.

Focused on providing their customers with a quality product, Dynatronix utilizes many tools in the design and testing of their products. SolidWorks® Design tools, thermal modeling, static FEA analysis, circuit simulation, and in-house custom software and firmware development all aid in development efforts. In addition, all power supplies are built to rigorous ISO 9001 regulated standards, with 100% quality assurance testing. This includes output performance and frequency response evaluation and HALT/HASS/HASA testing. Process support, on-site training, and calibration services after delivery ensure end-users are fully equipped to utilize their power supplies correctly.

Custom and one-of-a-kind projects have always driven new product development. Requests for a broader operating range led to a Dynatronix patented feature called Extended Range (XR). This gave the end user an accurate operating range of 0.1—100% of the maximum power supply rating versus the industry typical range of 10-100%. This development quickly led to installations of XR power supplies in the majority of semiconductor wafer fabrication applications, including the copper damascene process. In 2008, Dynatronix opened a new R&D facility. This new facility helped the company land a 2010 Department of Defense grant to develop a 200Kw pulse power supply for an electroplated chromium replacement process. If history is any indication, lessons from the grant project will eventually lead to further technological advancements in DC pulse power applications.

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ECS Future Meetings

Fall 2013
224th Meeting
Oct. 27-Nov. 1, San Francisco, CA
Hilton San Francisco

Spring 2014
225th Meeting
May 11-16, Orlando, FL
Hilton Bonnet Creek

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Gelest, Inc., headquartered in Morrisville, PA, USA, was founded in 1991 to serve the advanced technology applications markets and is recognized worldwide as an innovator, manufacturer and supplier of organo-silicon and metal-organic materials for research and development support through commercial production.

Since its inception, Gelest, Inc. is committed to being a leader in the materials science marketplace, serving advanced technology markets through a customer-driven approach. The executive team, as well as senior management and technical staff include individuals with extensive hands-on experience and academic credentials in the fields of silanes, silicones, and metal-organics. Joint developments between customers and staff have led to an increased product offering from several hundred materials to the current listing of several thousand materials.

The company has focused its research and development efforts toward expanding the offering of Group 4A and 4B analogs and provides focused technical development and application support for: semiconductors, optical materials, pharmaceutical synthesis, diagnostics and separation science, specialty polymeric materials, surface-treated micro-particles, and cosmetic materials.

Gelest is poised for growth with its ISO 9001:2008 certified 22-acre complex in Morrisville, PA comprised of a corporate center, R&D and technical service, multiple chemical manufacturing buildings, micro-particle manufacturing, warehousing, packaging, and shipping. Additionally, Gelest operates warehouses in Frankfurt, Germany.

Their clients who are focused on advances in microelectronics, optoelectronics, displays, and renewable energy have come to value Gelest's commitment to technical innovation. The core manufacturing technology of Gelest is an extensive range of specialty precursors derived from Si, Ge, Sb, Sn, B, Al, Ga, In, Tl, Ti, Zr, Hf, W, Ta, Cd, Se, Te, Cu, and rare earths such as Ce, La, and Pr, with the capability to handle flammable, corrosive, and air sensitive materials that meet the stringent requirements of the electronics industry. Gelest, Inc. offers the most comprehensive selection of silane, silicone, and metal-organic materials in the world.

Scribner Associates is known internationally for its advanced fuel cell and flow battery testing equipment as well as popular electrochemical software tools such as ZPlot®/ZView®, CorrWare®/CView and MultiStat®.

One of the keys to Scribner's success over the years is the ability to identify needs of researchers within the electrochemistry community and to then define and develop solutions that not only answer the existing needs, but also anticipate future requirements. Scribner leverages long-standing client relationships and many close ties within the community to help identify and quantify new opportunities. In this manner, Scribner has recently entered the battery testing market with their latest product, the Model 580 8-Channel Battery Test System. This product breaks new ground in cost per channel, channel density and diagnostic capability.

Scribner Associates continues to offer a broad range of fuel cell and flow battery testing systems, electronic test loads and other hardware for PEM, DMFC and SOFC applications. The company has provided more than 1,000 electronic loads and fuel cell test stations for customers around the world. They also develop custom testing equipment suited to the specific needs of their clients.

Scribner Associates has also successfully conducted NASA, DOE, and U.S. Navy sponsored research, where they leverage their experience in electronics and mechanical and software engineering to develop cutting edge solutions in support of national space exploration, energy, and defense programs.

On Capitol Hill

by Petr Vanýsek

Constituent visits on Capitol Hill are part of legislative process. Those most effective are organized visits emphasizing certain issues that the Senators and members of Congress should consider. Such visits have become a regular program called Congressional Visit Days. Because these visits are planned ahead and announced, congressional staff have opportunity to free up their schedules and focus more closely on the message. Also, the large number of visitors, coming with similar theme, increases the impact of the message. ECS participated this year in the two-day event organized by Science-Engineering-Technology Group, an information network comprising professional, scientific, and engineering societies; higher education associations; institutions of higher learning; companies; and trade associations. ECS was involved in this event through its affiliation with the Federation of Materials Societies, and **Petr Vanýsek**, the current FMS President.

The first day of the program started on April 24, 2012 with briefings by a budget panel, Kei Koizumi, Assistant Director, Federal Research and Development, White House Office of Science and Technology Policy; and Matthew Hourihan, Project Director, AAAS R&D Budget and Policy Program. The presentations were followed by a Congressional Perspectives Panel with Dan Byers, Dahlia Sokolov, and Nate Engle. The auditorium of the AAAS downtown Washington was filled to capacity.

The day concluded with an exhibit highlighting STEM in education and with an award ceremony in which the George E. Brown Jr. SET Leadership Award was given to Senator Mark Udall, (D-CO) and Representative Randy Hultgren (R-IL). Vanýsek was on had to present the award, as an Illinois resident, to Hultgren.

The following day started with a congressional breakfast and visits at the offices of the state representatives. These visits are arranged according to the state residence and therefore Vanýsek's visit was scheduled with staff from the offices of Senators Durbin and Kirk, and Representatives Hultgren and Manzulo.

In the 2011 report from Visit in Washington (*Interface*, Summer 2011, p. 13) Vanýsek wrote "With the next CVD happening in March or April 2012, it might be good idea to look for some travel grants and plan to send graduate students to Washington. Those who participated at CVD in the past loved the experience and often come again. And when the up-and-coming scientists (and voters for years to come) are heard, we all can benefit." True to his statement, Vanýsek obtained this year, through the office of the Vice President for Research and Graduate Studies at Northern Illinois University, funding for three students to interact with the offices of their representatives. The students enjoyed the opportunity to interact with the offices on Capitol Hill; and it being a short month before the finals, they enjoyed this also as pleasant distraction.

Rep. **Randy Hultgren** *(left) receiving the George E. Brown Jr. SET Leadership Award from* **Petr Vanýsek** *(right).*

Northern Illinois University Students visiting with award recipient Representative Randy Hultgren (R-IL). From left: **Mischelle Nelson**, **Randy Hultgren**, **Lauren Grabstanowicz**, *and* **Megan Murtaugh**.

New Division Executive Committees

New Division Executive Committees for the 2012-2014 term have been elected for the following Divisions.

Battery Division

Chair
Bor Yann Liaw, University of Hawaii at Manoa
Vice-Chair
Robert Kostecki, Lawrence Berkeley National Laboratory
Secretary
Christopher Johnson, Argonne National Laboratory
Treasurer
Marca Doeff, Lawrence Berkeley National Laboratory
Members-at-Large
Khalil Amine, Argonne National Laboratory
Kristina Edstrom, Uppsala University
Richard Jow, Argonne National Laboratory
Brett Lucht, University of Rhode Island

Corrosion Division

Chair
Shinji Fujimoto, Osaka University
Vice-Chair
Rudy Buchheit, Ohio State University
Secretary/Treasurer
Barbara A Shaw, Pennsylvania State University
Members-at-Large
Nick Birbilis, Monash University
Masayuki Itagaki, Tokyo University of Science
Neil McMurray, University of Wales, Swansea
Nancy Missert, Sandia National Laboratories
Mary Ryan, Imperial College London
Sannakaisa Virtanen, University of Erlangen-Nuremberg

Sensor Division

Chair
Michael Carter, KWJ Engineering, Inc.
Vice-Chair
Bryan Chin, Auburn University
Secretary
Nianqiang (Nick) Wu, West Virginia University
Treasurer
Ajit Khosla, Simon Fraser University
Members-at-Large
Sheikh Akbar, Ohio State University
Cynthia Bruckner-Lea, Pacific Northwest Labs
Ying-Lan Chang, Glo-USA
Jay Grate, Pacific Northwest National Laboratory
Peter Hesketh, Georgia Institute of Technology
A. Robert Hillman, University of Leicester
Gary Hunter, NASA Glenn Research Center
Tatsumi Ishihara, Kyushu University
Sangmin Jeon, Postech
Mira Josowicz, Georgia Institute of Technology
Girish Kale, University of Leeds
Christine Kranz, University of Ulm
Pawel Kulesza, University of Warsaw
Jing Li, NASA Ames Research Center
Chung-Chiun Liu, Case Western Reserve University
Vadim Lvovich, Electrochemical Sciences Consulting
Norio Miura, University of Kyushu
Rangachary Mukundan, Los Alamos National Laboratory
Larry Nagahara, National Cancer Institute
Antonio Ricco, Stanford University
Mike Sailor, University of California, San Diego
Praveen Kumar Sekhar, Washington State University
Yasuhiro Shimizu, Nagasaki University
Aleksandr Simonian, Auburn University
Joseph Stetter, KWJ Engineering, Inc.
Thomas Thundat, Oak Ridge National Laboratory
Raluca Van Staden, NIRECM
Petr Vanýsek, Northern Illinois University
Liju Yang, North Carolina Central University

websites of note

by Zoltan Nagy

Welcome Redcat

A new electrochemistry community networking site is now online. Discover what the community is talking about by connecting to your community globally. Share ideas and develop new research streams with your peers—talk to them, learn from them, help mentor them. Build your profile and add work experience, add articles you've recently written, affiliations, your photo, add any special events or meetings you will be attending in the coming months as a speaker, organizer, or registrant, and much more. Join a discussion group on a favorite topic of your interest, or if you cannot find one, start it yourself and make yourself the moderator if you wish. Make Redcat your one-stop connection to people, breaking research and news, and important events. The newest feature of Redcat is a Jobs and Resumes listing page. Redcat also has a powerful and versatile research feature that you can use on any topic of your interest; you can also collect your searches and results and save them in Redcat for later reference and use. Created by ECS, Redcat is free to join.

- http://redcatresearch.org/

ECS Website

The Society itself has a site filled with a large amount of information available to members and nonmembers alike. This has been available for a long time, so it is the granddaddy of Redcat. You can find detailed information on past, present, and future meetings to help you plan ahead. The Divisional and Committee structure of the Society and all the Sectional activities are included. You can use the bookstore to purchase (members at discount) monograph volumes of the Society and all issues of *ECS Transactions*. There is a Membership Directory to find a long lost colleague. Awards, Short Courses and Professional Development Workshops, and a special student section: Student Chapters, travel grants and discounts, etc. You can read the full content of the most recent and all older *Interface* issues, and you can find information on the history of the Society. All available at the ECS site.

- http://www.electrochem.org/

ECS Digital Library

One of the richest sources is the Digital Library. ECS's legacy content of nearly 100,000 papers and abstracts, All present and past (to 1902) publications of the Society will eventually be available, in fully searchable form. The four ECS journals, *Interface*, *ECS Transactions*, and recent *ECS Meeting Abstracts* are fully available now. This includes the continuation of the *Journal of The Electrochemical Society*, and the three new publications that were started recently (*ECS Journal of Solid State Science and Technology*, *ECS Electrochemistry Letters*, and *ECS Solid State Letters*). Full text research articles are available for members and subscribers, while the table of contents and abstracts of the research articles and the full content of the *Interface* and *ECS Meeting Abstracts* is available free to all. This content is immediately and widely disseminated to more than 1,000 academic, research, and corporate libraries worldwide. The ECS journals are the only top journals in electrochemistry still published by a nonprofit, scholarly society.

- http://www.ecsdl.org/

Electrochemistry and Neuroscience

Provides a brief history of electrochemistry, with special emphasis on its connection to neuroscience. Subsequently, it treats modern electrochemistry and its relation with neurology, with a somewhat critical and new approach, something that may be subject to considerable discussion, approval, or rejection. But maybe this is what makes it worth reading.

- G. C. O'Kelly (San Luis Laboratories)
- http://htpprints.yorku.ca/archive/00000144/00/UNEVEN5x.pdf

Exploring the Potential of Electrodialysis

A general treatment of electrodialysis with some suggested laboratory experiments. Electrodialysis is an electrochemical membrane separation technique for ionic solutions. It can be used in the separation and concentration of salts, acids, and bases from aqueous solutions, the separation of monovalent ions from multivalent ions, and the separation of ionic compounds from uncharged molecules. Industrial applications encompass several industries and include the production of potable water from brackish water, removal of metals from wastewater, demineralization of whey, deacidification of fruit juices, and the removal of organic acids from fermentation broth. Included are experimental investigations of the practical engineering aspects of electrodialysis: operating parameters such as concentrate concentration, applied voltage, the number of membrane pairs, flow rate, feed concentration, and temperature.

- S. Farrell, R. P. Hesketh, and C. S. Slater (Rowan U.)
- http://www.che.utexas.edu/nams/farrell.pdf

Ceramic Films Using Cathodic Electrodeposition

Electrodeposition is evolving as an important method in ceramic processing. Two processes for forming ceramic films by cathodic electrodeposition are electrophoretic deposition, in which suspensions of ceramic particles are used, and electrolytic deposition, which is based on the use of metal salts solutions. Electrolytic deposition enables the formation of thin ceramic films and nanostructured powders; electrophoretic deposition is an important tool in preparing thick ceramic films and body shaping.

- I. Zhitomirsky (McMaster U.)
- http://www.tms.org/pubs/journals/JOM/0001/Zhitomirsky/Zhitomirsky-0001.html

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 nagyz@email.unc.edu.

PEFC Student Awards

Four students received awards for best papers presented at the PEFC Symposium in Hawaii. From left to right are: **Naoto Todoroki**, *First Place, for his paper, "Electrochemical Stability for Pt-Enriched Ni/Pt(111) Topmost Surface Prepared by Molecular Beam Epitaxy";* **Takuya Tsukatsune**, *Second Place, for his paper, "Oxygen Reduction Reaction Activity and Durability of Electrocatalysts Supported on SnO_2";* **Rie Teranishi**, *First Place, for her paper, "Analysis of Mechanism of Oxygen Reduction Reaction on Non-Noble Metals in Alkaline Solution by Scanning Electrochemical Microscopy"; and* **Melissa Vandiver**, *Second Place, for her paper, "Synthesis and Characterization of Perfluoro Quaternary Ammonium Ion Exchange Membranes for Fuel Cell Applications". Also pictured (far right) is* **Thomas Schmidt**, *one of the organizers of the symposium.*

ECS Co-sponsored Conferences for 2012/2013

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 2012 and 2013. Please visit the ECS website for a list of all co-sponsored meetings.

- **Fuel Cell Seminar & Exposition,** November 5-8, 2012, Uncasville, Connecticut, USA
- **12th Topical Meeting of the International Society of Electrochemistry**, March 17-21, 2013, Bochum, Germany
- **China Semiconductor Technology International Conference 2013 (CSTIC 2013)**, March 19-21, 2013, Shanghai, China
- **13th Topical Meeting of the International Society of Electrochemistry**, April, 7-10, 2013, Pretoria, South Africa
- **64th Annual Meeting of the International Society of Electrochemistry**, September 8-13, 2013, Santiago de Querétaro, Mexico

To learn more about what an ECS co-sponsorship could do for your conference, including information on publishing proceeding volumes for co-sponsored meetings, or to request an ECS co-sponsorship of your technical event, please contact ecs@electrochem.org.

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