LOCAL SECTION NEWS

Canadian Section

The Section's Executive Committee met on October 2, 1997, at the Auberge Grand'Mère in Québec. It was noted that the membership of the section increased from 176 in 1996 to 287 in 1997.

On October 3, the section held a day-long Fall Symposium, organized by Dr. A. Théroêt on "Electrochemistry for the Industry of Tomorrow" at the Laboratoire des Technologies Electrochimiques et Electrotechnologies (LTEE) of Hydro-Québec in Shawinigan. There were over 150 participants. Among the nine presentations were topics such as hydrogen production, industrial electrosynthesis processes, development of lithium polymer batteries, and fuel cells. The Hydro-Québec electric car was exhibited and test-driven by participants. The symposium received financial support from Hydro-Québec, the General Society of Finance of Québec and the Society of Industrial Park of Bécancourt.

Chicago

The Section met on November 12, 1997, at the Engineering Research Facility, University of Illinois at Chicago. Dr. Vitali Parkhutik presented "Porous Semiconductors - What We Know and What Remains a Mystery About Them." Dr. Parkhutik, a Professor at the Technical University of Valencia, works on porous silicon growth and characterization.

The December 9 meeting took place at the Grand Mandarin Restaurant. Professor Richard M. Crooks, from the Department of Chemistry at Texas A&M University spoke on "New Interfacial Materials for Array-Based Chemical Sensors." He examined the use of three novel classes of ultrathin organic films for array-based chemical sensors.

Dr. Changming Li, a senior staff engineer at Motorola, gave a presentation on Biosensors at the January 14 meeting.

Cleveland

The Section met in February, at Millis Science Center at Case Western Reserve University. Professor Katsumi Niki, President of the International Society of Electrochemisty, spoke on "How Can Electrochemistry Contribute to Biological Electron Transfer Research?" He discussed the electrochemical response of redox proteins and their structures at electrode interfaces, electrochemical and NMR studies, as well as spectroelectrochemical studies.

Detroit

The Section met on December 15, 1997, to hear Dr. Christian Julien of the Université Pierre et Marie Curie, Paris, France, present "Advanced Materials for Solid-State Devices." He discussed some general features of thin films and disordered materials, with emphasis on thin film battery applications. Results from his group demonstrated significant improvements in the performance of molybdenum oxide cathodes. Several possible applications suggest biomedical sensors or implants and smart card security.

On January 22, the Section met at the Ukrainian Culture Center to hear Professor Mark Meyerhoff discuss, "Improving the Biocompatibility of Intravascular Chemical Sensors via Nitric Oxide Release." Meyerhoff is a professor in the Department of Chemistry at the University of Michigan. He summarized the background on the progress and challenges in developing implantable chemical sensors while describing a new approach aimed at solving fundamental in vivo response problems.

Metropolitan New York

The Section met at the Stevens Institute of Technology in Hoboken, NJ, on November 19, 1997, to hear Dr. Art Kauffman, Vice-President of H Power Corporation, present "Fuel Cell System Configurations and Applications." Dr. Kaufman commented that the current commercial outlook for fuel cells has been brightening as the result of advances in fuel processing capabilities as well as technology and cost improvements in low temperature fuel cells. Additionally, significant progress is being made in the research and development of high-temperature fuel cells, which tend to have greater fuel tolerance.

National Capitol

The Section's December 9, 1997 dinner meeting began with a welcome from the 1997-8 Chairman, Dr. Stephen Jones.

The speaker for the evening was Dr. Y. H. (Russ) Wong, from Bell Labs-Lucent Technologies, and the Society's Treasurer. Dr. Wong's lecture, "(Shaped) Pulsed Reactive Sputtering of Dielectric Films," discussed current advances in the application of waveform shaping when sputtering dielectric thin films. The talk was enthusiastically received. Dr. Wong concluded his presentation with an overview of the Society from the perspective of a long-time member and national officer.

Dr. Edward McCafferty of Naval Research Laboratories addressed the February 12 joint meeting with NACE at the United States Naval Academy. McCafferty's lecture, "Surface Charge Effects in Corrosion and Adhesion," described a method for determining the surface isoelectric point of oxide-covered metals and considering the effect of the surface isoelectric point on pitting by chloride ions. Recent data on the adhesion of polymers in terms of acid-base effects were also presented.

New England

The Section held a dinner meeting on November 11, 1997, at the Best Western Hotel of Waltham, MA. Professor Huk Y. Cheh of the Chemical Engineering Department of Columbia University presented his group's work on "The Application of Pulsed Electrolysis to Electrodeposition Processes" involving integrated circuits and printed circuit (IC) boards. Also investigated were electrodeposition of multilayer structures in place of vapor deposition of consecutive layers in ICs.

At the December 9, 1997 dinner meeting, Jacquelin Krim, Professor of Physics at Northeastern University, Boston, was the featured speaker. Dr. Krim discussed her group's work on the origin of frictional forces, called nanotribology. Use of quartz crystal microbalance has permitted the measurement of frictional forces of sliding friction of monolayer atoms and bilayer atoms over the faces of single crystals. These measurements have elucidated the origin and nature of atomic level forces which make up friction.

Dr. David R. Walt, Robinson Professor of Chemistry at Tufts University, spoke on "Optical Sensor Arrays and Microarrays" at the January 21 meeting. He discussed how fiber optic sensors are prepared by attaching a chemically sensitive indicator layer to the distal end of optical fiber. These sensors can be used for a wide variety of applications, including clinical and environmental monitoring, as well as chemical and bioprocess control.

At the February 10 meeting, Dr. Catherine Marsh of Yardney Technical Products, Stonington, CT, presented "Ultra Low Temperature Lithium Thionyl Chloride Battery for the Mars Microprobe." The 1998 Mars Surveyor Lander Mission will have two Mars Microprobes powered with a four cell Li-$SOCl_2$ battery with a second redundant battery in parallel. Dr. Marsh covered the selection and optimization of the electrolyte and reviewed the features of the parallel plate design. She then presented test data on acceleration, thermal cycling, discharge, reversal, short circuit tests and cell performance during simulation of the Microprobe mission.

Philadelphia

The section held a dinner meeting on November 19, 1997, at the Allentown Comfort Suites in Radnor, PA. Dr. J. Murray Carderock from the Division of the Naval Surface Warfare Center spoke on, "Global Warming, PFCs and the Semiconductor Industry." The presentation gave a brief overview of the problem of minimizing or eliminating perfluorinated compounds (PFCs) used by the semiconductor industry. The status of a variety of solutions under development was outlined. Special emphasis was placed on process optimization, where the conditions of the plasma processes are adjusted to minimize or eliminate the release of PFCs to the environment.

Dr. Y. H. (Russ) Wong, of Bell Labs-Lucent Technologies, the Society Treasurer, was the featured speaker at the February 12 dinner meeting. Dr. Wong addressed the most recent developments in the pulsed DC reactive sputtering of dielectric films which find application in RF capacitors and DRAM. Afterwards Dr. Wong led a discussion of the Philadelphia section members' perspective of the Society.

San Francisco ES&T

The Section held a dinner meeting on November 19, 1997. Dr. Michael F. Toney of the IBM Almaden Research Center, San Jose, CA, discussed "X-ray Scattering Studies of Metal-Electrolyte Interfaces: Applications to the Passive Oxide Film Formed on Fe(001) and Fe(110)." A consensus has never been reached as to whether passive oxide film on iron is amorphous or crystalline. Dr. Toney's research has found new structural information which impacts the interpretation of the semiconducting properties of these films and aids in understanding their susceptibility to dissolution.

San Francisco SSS&T

The Section met on November 19, 1997, at the National Semiconductor Federal Credit Union to hear Dr. Ted Kamins present, "Self-Assembled, Self-Ordered Nanostructures: A Path to Twenty-First Century Electronics?" Dr. Kamins is a Department Scientist at Hewlett-Packard Laboratories in Palo Alto, CA. He discussed forming, ordering, and aligning small germanium islands on silicon. With device feature sizes decreasing, IC fabrication becomes more complex and expensive. One way around this is by using self-assembled, self-ordered nanostructures made from conventional semiconductors to form very small features without correspondingly advanced lithography.

A joint meeting of San Francisco SSS&T and ES&T Subsections took place on January 27 at the National Semicon-

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ductor University. Dr. Y. H. (Russ) Wong of Bell Labs-Lucent Technologies, and the Society's Treasurer, presented, "Pulsed DC Sputtering of Dielectric Films." He discussed how pulsed DC sputtering is used in the deposition of dielectric films as well as its applications to capacitors. Following were his perspectives on the Society.

Southern Wisconsin

The Section met on December 10, 1997 at UW Space Place to hear Dr. James M. Lattice speak on "Forty Years of Space Astronomy at the University of Wisconsin - Madison." Dr. Lattice has been the Director of the University of Wisconsin Space Place since 1991. When Washburn Observatory was founded in 1875, UW became a research center for astronomy. This talk discussed the history and development of the Orbiting Astronomical Observatory, the Hubble Space Telescope and the Space Shuttle program.

On January 28, the Section met at Weissgerber's Gasthaus for a dinner meeting/technical session. Dr. David Anderson, HSX Project Director of the University of Wisconsin - Madison, presented "Fusion Energy Research at the University of Wisconsin - Madison." The talk provided an overview of the fusion process and confinement concepts with a focus on activities at the UW - Madison.

A Call For Papers for The Graduate Student Symposium of 1998 is announced. Sponsored by the Southern Wisconsin and Chicago Sections of the Electrochemical Society, this symposium is designed to survey the advances made in the related fields of electrochemistry and electrochemical engineering. It will be held April 24 in Madison, Wisconsin. For more information, contact: Dr. Deyang Qu, Rayovac Corporation, 601 Rayovac Drive, Madison, WI 53711; phone: (608) 275-4745; fax: (608) 275-4992; e-mail: qu@rayovac.com.

South Texas

The Ninth Meeting of the Section was held on February 7 at the Winedale Historical Center. The meeting began with opening remarks by Liliana Minevski. Dr. Norman Hackerman, of Rice University, presented "Corrosion: Is it Science or Art?" Sunder Ramachandran and Vladimir Jovancicevic, of Baker Performance Chemicals, spoke on "Molecular Modeling of the Inhibitors of Mild Steel CO_2 Corrosion by Imidazolines." After lunch, David J. Kotwica and Liliana Minevski, of BetzDearborn, presented "Causes and Prevention of Corrosion in Carbon Steel Natural Gas Coolers." Tiehua Pial and Stan Kell, of Arbin Instruments, discussed "Multi Channel Potentiostat/Galvanostat Using Measurements for Multiply Electrodes."

Twin Cities

The Section met on November 12, 1997, to hear Dr. Michael M. Thackeray of Argonne National Laboratory, present "Manganese Oxide Electrodes for Lithium Batteries." A background to manganese oxide structures was given. Dr. Thackeray highlighted recent advances made in the design of new or modified electrode materials that offer voltages between 3V and 5V vs. metallic lithium.

Professor Barry Miller, of Case Western Reserve, and currently the Society President, addressed the January 27 meeting with "Electrochemistry of Carbon: Diamonds and Fullerenes." He discussed how, in recent years, diamonds and fullerenes have joined graphitic carbon to open new electrochemical opportunities for carbon. Boron-doped and ion implanted diamond films are seeing application as new electrode materials. This electrochemistry was discussed. The fullerenes have rich solution redox chemistry and, as thin films, have properties from semiconductors sensitive to visible self-assembled monolayers that are redox mediators.

On March 3, the Section met to hear Dr. J. W. Halley present, "Polymer Electrolytes for Battery Applications: Can Microscopic Modeling Help?" Dr. Halley is a Professor in the Physics Department at the University of Minnesota. Commercial batteries often contain gel electrolytes and graphite anodes containing lithium. Plasticizers used in gel electrolytes are not compatible with lithium anodes. Dr. Halley is developing new polyethylene based electrolytes with improved conductivity at lower temperatures. A collaborative program of simulation and neutron scattering to model the amorphous polymer and better understand and improve the conductive mechanism will be described. ■