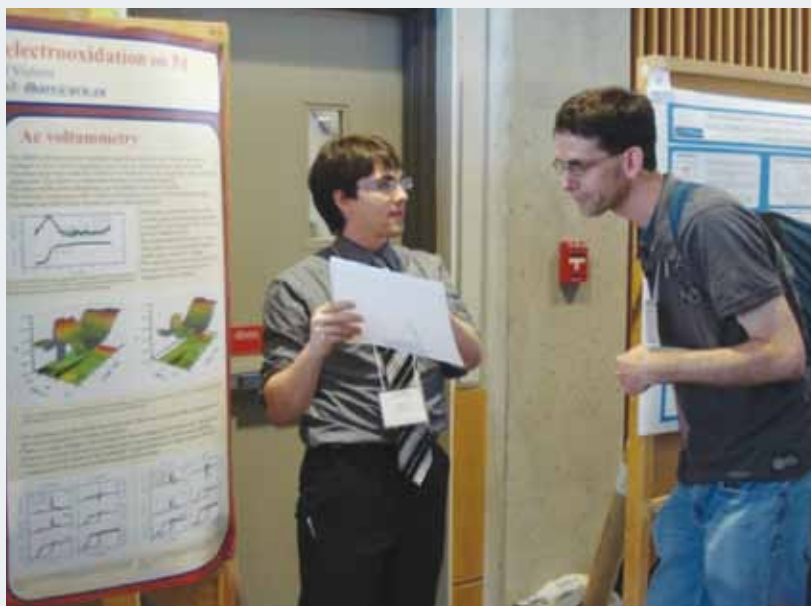


Canadian Section



The Student Poster Session at the Canadian Section's Spring Symposium: **Rob Sacci** (left) and **Ian Burgess**. Photo by Gabi Hager.

The 2010 Spring Symposium of the Canadian Section was organized by **Hogan Yu** (Simon Fraser University), **Alexandre Brolo** (University of Victoria), and **Dan Bizzotto** (University of British Columbia). The symposium was held at the Burnaby Campus of Simon Fraser University on April 24, 2010. The topic of this symposium was "Applied Electrochemistry: From Biosensing to Energy Storage," and registered 63 participants (including academic researchers, graduate students, and industry members).

The symposium was comprised of morning and afternoon sessions, a poster session, and a wine and cheese reception. Eight invited speakers and three selected students presented lectures throughout the morning and afternoon. Tours of 4D LABS, a new state-of-the-art institute on advanced materials and nanoscale devices at Simon Fraser University, also took place throughout the day. The poster session was followed by a wine and cheese reception where the following were awarded prizes. For the best oral presentation, **Brian**

Adams (Lakehead University); First Place, Poster Award went to **Cassie Ho** (Simon Fraser University), the Second Place in the Poster Awards went to **Milton Wang** (University of Victoria); Poster Session Honorable Mentions went to **Kailesh Jena** (University of Victoria) and **Nam Thang Pham** (INRS-EMT); and student travel awards went to **Qing Ni** (University of Toronto), **Fariba Safizadeh** (Laval University), and **Scott Smith** (Laurentian University).



Brian Adams (right) received an award for the best oral presentation from **Byron Gates** at the Canadian Section's Spring Symposium. Photo by Gabi Hager.



At the Canadian Section's Spring Symposium in April, **Thang Pham** (right) received a poster award from **Karen Kavanagh**. Photo by Gabi Hager.

San Francisco Section



The San Francisco Section's February seminar on Li/air batteries was presented by **WINFRIED WILCKE** of IBM.

On October 15, 2009 the San Francisco Section held its first event of the academic year, a tour of battery startup Imara Corporation. **Neil McGuire** (VP, Business Development) and **Dania Ghantous** (VP, Technology and Battery Development) gave an overview of Imara's high-power Li-ion technology, which incorporates conventional materials with optimized morphologies to improve both power and energy density. Then they led the group on a tour of Imara's facilities, from electrode tape casting to cell formation and testing. The event drew a crowd of more than 30, including many first-time participants. Unfortunately, Imara closed its operation in December.

In January, the Section sponsored a talk by **Robert Huggins** of Stanford University on the role of water in lithium batteries, entitled "Water in Lithium Batteries—Friend or Foe." The talk focused on discussing the advantages of aqueous electrolytes compared to traditional organic ones in improving the safety performance of batteries by limiting oxygen evolution, as well as the advantage of oxygen-containing systems with a low potential and therefore a low equilibrium oxygen pressure. Professor Huggins also reviewed results from research conducted at Stanford University that showed the role of salts in extending the stability of aqueous electrolytes used in lithium batteries. The conclusion on water's role? Friend.

More than 50 people from all over California attended the February seminar entitled "Rechargeable Lithium-Air Batteries" at Exponent Consulting in Menlo Park. **Winfried**



OANA LEONTE (left), Organizer, presenting **ANA LONDERGAN**, ALD course instructor, with a Certificate of Appreciation from the Section.

Wilcke of IBM gave an overview of the Battery 500 coalition's current state, goals, and theoretical modeling approach. The Battery 500 coalition is currently made up of IBM, several national labs, and a few companies focusing on developing lithium/air batteries that provide a vehicle driving range of 500 miles and a lifetime vehicle cost similar to that of a car with an internal combustion engine. The coalition aims at reducing global dependency on oil for transportation

through the commercialization of lithium/air batteries, with a specific goal of building a demonstration vehicle within approximately five years that could travel from San Francisco to Washington, DC, with only a single recharge. Challenges in developing such batteries require approaches beyond traditional electrochemical methods and are enabled by the use of supercomputers for atomistic modeling of batteries and nano-engineered air cathodes to achieve the required



Participants in the Section's ALD Short Course (from left to right): **ROBERT B. HERRING**, **MITCH AGAMOHAMADI**, **ANA LONDERGAN** (instructor), and **SAEED SEDEHI**.

power densities and rechargeability. Dr. Wilcke gave an overview of the project and discussed the current state of the art in lithium/air batteries, along with an overview of the theoretical modeling approach and envisioned nanostructures.

The Section sponsored a highly successful course on **Atomic Layer Deposition** (ALD), instructed by **Ana Londergan** of Qualcomm, with participants from all over California. ALD can enable the precise deposition of ultra-thin, highly conformal coatings over complex 3D topography, with controlled composition and properties. Consequently, ALD has become a technology of choice for a large variety of applications for and beyond the semiconductor industry, as proven from the countless applications emerging. The first part of the course introduced the fundamentals of ALD processing, from theoretical and empirical perspectives. Precursor and delivery systems development for ALD and productivity enhancement of ALD equipment and

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The Electrochemical Society

65 South Main Street, Building D
Pennington, New Jersey 08534-2839 USA
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processes were addressed. In the second part of the course, ALD applications and opportunities for various areas were discussed. Dr. Londergan provided an excellent course that was very informative and in a very pleasant atmosphere.

On May 6, the Section held its annual Student Night and presented the Daniel Cubicciotti Award to **Venkat Viswanathan**. He gave an award talk entitled, "Generalized Monte-Carlo Based Framework for Simulating Catalytic and Electrocatalytic Systems for Energy Applications." Mr. Viswanathan is pursuing his PhD in electrocatalysis under the guidance of Heinz Pitsch and Thomas Jaramillo, and has collaborated with Jens Norskov and Jan Rossmeisl. **Que Anh Nguyen**, who received an Honorable Mention, gave a talk entitled, "The Initiation of Organized Nanopore/Nanotube Arrays in Electrochemically Grown Titanium Oxide." Ms. Nguyen came to UC Berkeley in 2006, where she has been working with Tom Devine. **Yuan Yang**, who also received an Honorable Mention, gave a talk entitled, "Nanostructured Materials for Li-Ion Batteries." Mr. Yang is currently a third year PhD student in Yi Cui's group in the Department of Materials Science and Engineering at Stanford University.



The San Francisco Section awarded the Daniel Cubicciotti Award at Student Night on May 6. The winners were (from left to right): **QUE ANH NGUYEN** (Honorable Mention), **VENKAT VISWANATHAN** (award winner), and **YUAN YANG** (Honorable Mention).

The Daniel Cubicciotti Student Award was established in 1994 to honor the memory of Dr. Cubicciotti, for his dedication and expertise in the application of electrochemical principles

to the understanding and control of materials deterioration in nuclear power plants. It is given annually by the Section to assist a deserving student in Northern California to pursue a career in the physical sciences or engineering.

Twin Cities Section

The Twin Cities Section hosted a one-day short course on "Electrochemical Methods and Applications" in January. The short course was intended to provide scientists, engineers, and technologists with a practical introduction to the foundations of electrochemistry, electrochemical methods, data interpretation and applications. The instructor, **Bill Eggers**, President of Bio-Logic USA LLC, covered a variety of electrochemistry topics during the day. While the morning sessions covered fundamentals of electrochemistry, and provided practical guidance on using a potentiostat and making electrochemical measurements, the afternoon sessions were focused on corrosion techniques, use of electrochemical methods in energy applications, pulse plating, and scanning probe techniques. The short course was attended by 35 registrants, including 4 students from North Dakota State University. A majority of the attendees were professionals in the industry, and provided much positive feedback to the organizers and the Section officers on the usefulness of the short course on electrochemical



BILL EGGERS provided instruction during a one-day short course on "Electrochemical Methods and Applications" hosted by the Twin Cities Section.

methods, and the valuable instruction and suggestions that Mr. Eggers was able to provide both during the sessions and breaks.

The Section hosted its annual, one-day symposium in April. The title of this year's symposium was, "Solid State and Electrochemical Science in the Twin Cities." The symposium consisted of technical talks from researchers and technical experts in the geographical area that the Twin Cities section covers. ECS President **Paul Natishan** was the guest speaker, and gave a technical talk on "Carbon Induced Passivity of Stainless Steels Treated

Under Paraequilibrium Conditions," in addition to a talk on the activities of Society entitled, "A Look at the Present with Our Vision for the Future." The symposium featured a broad selection of topics in electrochemistry and solid state science. The invited speakers included **Mark Obrovac**, 3M ("New Anode Materials for Commercial Li-Ion Cells"), **Kevin Kulngtvedt**, Rushford Nanoelectrochemistry Company ("Overview of Rushford Nanoelectrochemistry and Rushford Hypersonic"), **Kevin Eberman**, Medtronic Inc. ("Material and Design Options for Avoiding Lithium Plating

During Charging"), **Alan Shi**, Medtronic Inc. ("Corrosion Assessment of Metallic Materials for Unique Medical Device Application"), and **Christy Haynes**, University of Minnesota ("Electroanalytical Eavesdropping on Cellular Communications"). There were 52 participants at the symposium including the speakers, symposium organizers, and the Section officers. At the end of the technical sessions, the symposium featured a mixer event to allow networking and provide an opportunity for the participants to interact with the speakers.



ECS President **PAUL NATISHAN** gave a talk to the Twin Cities Section in April.



Following the April meeting of the **TWIN CITIES SECTION**, lunch was provided an opportunity for the symposium attendees to network and interact with the speakers.

Looking for Section News

We welcome the opportunity to share with our membership, the scientific advances and activity news from your Section. Please forward information on educational programs (already held or upcoming), the names of award winners, and results of your elections to ecs@electrochem.org so we may include in future issues of *Interface*.