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225th ECS Meeting Highlights

ORLANDO, FL
May 11-15, 2014
Hilton Orlando Bonnet Creek

This is the second time the ECS meeting convened in Orlando, Florida, the first one was held there in fall 2003. After the long cold winter, the travel to warm Florida was a welcome respite to many of the over 1,700 attendees. In 59 symposia there was a total of 1,672 presentations.

Plenary Session

ECS President Tetsuya Osaka opened the meeting by highlighting one of our most exciting initiatives – Author Choice Open Access for all four of our peer-reviewed journals. Enabling Open Access to scientific research is imperative for ECS because it is our mission to disseminate the best research in our technical fields as widely as possible. We published our first Open Access article in March. As of today, 128 authors have chosen open access and ECS has published 45 papers to the ECS Digital Library.

Several awards were presented at this plenary session to recognize the many years of dedication to science by the awardees.

The ECS Lecture

Monday afternoon set the stage for the presentation *Nanowires: From Nanocomputing to Nano-Bioelectronics*, which was the title of The ECS Lecture given by Charles M. Lieber from the Harvard School of Engineering and Applied Sciences. He highlighted the power of semiconductor nanowires as a platform material for exploring new



ECS President **TETSUYA OSAKA** gave opening remarks at the 225th ECS Meeting.

science and technology. Prof. Lieber emphasized the prospects for blurring the distinction between nanoelectronic circuitry, computation and living systems in the future. He highlighted the power of semiconductor nanowires as a platform material for exploring new science and technology. First, he explained the chemical synthesis of complex modulated nanowires, using the bottom-up approach. Then, he described novel deterministic assembly methods, starting with an initial patterning step, followed by all the subsequent steps registered to this initial pattern. Finally, he described the complementary advances at the frontier between nanoelectronics and biology, including nanowire probes capable of interacting with three-dimensional cell networks.

Award Highlights

Dennis Hess was awarded the Henry B. Linford Award for Distinguished Teaching in subjects of interest to the Society. He has been a professor at Georgia Tech, educating through his formal lectures as well as through research mentorship of a number of future

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CHARLES M. LIEBER delivered *The ECS Lecture*, entitled, “*Nanowires: From Nanocomputing to Nano-Bioelectronics*,” at the plenary session of the 225th ECS Meeting. Prof. Lieber is from the Harvard School of Engineering and Applied Sciences.

(continued from previous page)

experts in electrochemical science and technology. Prof. Hess served ECS as Divisional Editor for the *Journal of The Electrochemical Society*, served as ECS President, and as Editor for *Electrochemical and Solid-State Letters*. Currently, he is Editor of the *ECS Journal of Solid State Science and Technology* and *ECS Solid State Letters*. The Henry B. Linford Award for Distinguished Teaching was established in 1981 for excellence in teaching in subject areas of interest to the Society. In a special session Prof. Hess delivered a lecture, "Low Temperature Plasma Etching of Copper, Silver, and Gold Films."

The Vittorio de Nora Award was presented to Chad Mirkin from Northwestern University. He is the Director of the International Institute for Nanotechnology, and the George B. Rathmann Professor of Chemistry, Chemical and Biological Engineering, Biomedical Engineering, Materials Science and Engineering, and Medicine. Prof. Mirkin has authored over 550 manuscripts and holds over 900 patents worldwide. He has won over 80 national and international awards, and is a Member of the President's Council of Advisors on Science & Technology. The de Nora Award was established in 1971 to recognize distinguished contributions to the field of electrochemical engineering and technology. The award recognizes outstanding contributions to engineering and technology directed toward the utilization of electrochemical phenomena and processes.

Prof. Mirkin spoke at his award lecture about *On-Wire Lithography. An Electrochemical Approach to Controlling Nanoscale Architecture*. On-wire lithography is a template-based electrochemical process, which allows forming one-dimensional nanorods. These nanorods can have programmably synthesized nano- or micro-sized gaps, which can be used for making particularly useful structures. For example, use can be found in studies of surface enhanced Raman spectroscopy, plasmonics and novel molecular electronics or chemical and biological detection devices.



DENNIS HESS (left) received the Henry B. Linford Award for Distinguished Teaching from ECS President TETSUYA OSAKA (right).

5k Energy Run-For-Fun

The meeting on Monday morning started with some fresh physical activity. For the first time at an ECS Meeting, attendees had the chance to take part in a 5k run. Fifty people accepted the challenge. The top finisher, Matthew Lawder, graduate student

from Washington University in St. Louis, had an incredible time of 14:12. In second and third place were Jeff Fagan and Brian Doyle. Proceeds from the race registration fee will benefit the ECS Publications Endowment.



Runners at the start of the 5k race held on the grounds of the meeting hotel.



CHAD MIRKIN (left) received the Vittorio de Nora Award from ECS President **TETSUYA OSAKA** (right).



KRISHNAN RAJESHWAR ("Raj") (left) was recognized by ECS President **TETSUYA OSAKA** for his exceptional leadership in pioneering the ECS magazine *Interface* as editor from 1999 to 2013.

Panel of Professionals

A new feature at this meeting was the Panel of Professionals. This event was scheduled for Monday evening, at six o'clock. An engaged crowd of students and early-career professionals listened to the guest speakers from different research sectors, giving advice, answering questions, and discussing the unique challenges and opportunities of pursuing a career in their chosen fields. The panel was moderated

by Kevin Rhodes of Ford Motors. The panelists included Hariklia Deligianni of IBM, Amy Marschlok of Stony Brook University, SUNY, and Gabriel Veith of Oak Ridge National Laboratory. This was an inaugural event and as part of the professional development series it is intended to become permanent feature of the ECS meetings.

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AMY MARSCHLOK (standing) of Stony Brook University, SUNY, spoke at the Panel of Professionals, a new feature of the ECS meetings.

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Career Development Workshops

Registered participants had the opportunity to get advice on landing their first or a new job from former IBM executive and founder of his own company, John R. Susko. Dr. Susko also gave one-on-one resume review sessions on Monday through Wednesday, where he stressed the importance of impeccable written presentation.

Student Posters and Poster Contest

The student poster session was held as part of the Tuesday general poster session and technical exhibit. The student poster session attracted 84 entrants. The winning students were recognized Wednesday evening in the exhibit hall. ECS President, Tetsuya Osaka and Kalpathy B. Sundaram, professor at the University of Central Florida, handed out the awards. The winners were:

First Place, Electrochemical Science & Technology – “Regeneration of Enzymatic Layer on Layer-by-Layer Assembled Biosensor Interfaces,” Yuanyuan Zhang, Auburn University.

Second Place, Electrochemical Science & Technology – “Detection of H_2O_2 Using Redox Active Nanoparticles Immobilized on Highly Ordered Polymer Nanopillars,” Swetha Barkam, University of Central Florida.

First Place, Solid State Science & Technology – “Room Temperature Hydrogen Detection with the Use of Engineered Nanostructured Tin oxide Array,” Rameech McCormack, University of Central Florida.

Second Place, Solid State Science & Technology – “Multifunctional CNT-Polymer Composites for Ultra-Tough Structural Supercapacitors and Desalination Devices,” James Benson, Georgia Institute of Technology.

Honorable Mention – “Growth and Transfer of Nanowires with High Density and Aspect-Ratio Onto Flexible Substrates,” Cheng Xu, University of Florida at Gainesville.

Judging these posters would not have been possible without a large cadre of judges. These were recruited ahead of the meeting from the ranks of all thirteen divisions. The judges scored the posters during an hour, reserved to them prior the official opening of the session. ■

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The Student Poster Session award winners received their awards and congratulations from organizers **KALPATHY SUNDARAM** (far left) and **OANA LEONTE** (second from right), and ECS President **TETSUYA OSAKA**. From left to right the award winners are **JAMES BENSON**, **RAMEECH MCCORMACK**, **SWETHA BARKAM**, and **CHENG XU**.

Scenes from the Orlando Meeting



A special reception to thank all those who contributed to the successful dissemination of ECS content in ECS publications and at ECS meetings took place on Monday evening. ECS President Osaka welcomed all the participants and gave a brief speech, stressing the value and importance of the volunteer work in the Society. Here President TETSUYA OSAKA reflects on the presentation he is about to give to the assembled guests. (Photo taken by Petr Vanýsek.)

In addition to the Division Student Awards presented in Orlando, the following students and young professionals received either a registration waiver or travel support to attend the Orlando meeting; or received a divisional or symposium sponsored at-meeting poster award: Giulia Acconcia, Victor Agubra, Stephen Ambrozik, Belete Asefa Aragaw, Chirranjeevi Balaji Gopal, Mariam Barawi, Federico Bertasi, Nasir Uddin Bhuyian, Sean Bishop, Giacomo Bosco, Gerald Brady, Eric Bukovsky, Venkata Sesha Praveen Bulusu, Theodore Burye, Nelly Cantillo, Karlee Castro, Zeng Cheng, Yoonsung Chung, Tyler Clikeman, Matthew Conway, Tridip Das, Kryssia Pamela Diaz Orellana, Hepeng Ding, Holly Dole, Thomas Dursch, Brian Fane, Xin Fang, Yi Fang, Ileana Feliciano, Robert Francke, Mourad Frites, Selvarani Ganesan, Sergio Garcia, Bharat Gattu, Bahar Moradi Ghadi, Sharon Goh, Matteo Grattieri, Tianyi Guo, HyukSu Han, Rachel Hjelm, Lena Hooper-Burkhardt, Ya-Hsi Hwang, Muhymin Islam, Rishabh Jain, Adriel Jebaraj, David Urnes Johnson, Vibha Kalra, Rahul Kamath, Joseph Kaule, Hadi Khani, Il-Hwan Kim, Soo Kim, Sung-Yup Kim, Rui Kong, Roman Korobko, John Krause, Matthew Lawder, V. N. Du Le, J Li, Meng Li, Wei Li, Zhiyun Li, Chi-Chou Lin, Xi Liu, Dario Marrocchelli, Benjamin McNealy, Oinam Meitei, Joseph Mulvey, Ruben Nelson, Edgard Ngaboyamahina, Naoki Nitta, Dariusz Palubiak, Jie Pan, Abhilash Paneri, Ryan Phillips, James Radich, Mayandi Ramanathan, Long San, Narendran Sekar, Mingwei Shang, Akshaya Shanmugam, Pranav Sharma, , Matthew Shea, Patrick Staley, Swathi Sunkara, Hadi Tavassol, Anthony Tsikouras, Peeter Valk, Maxwell Wallace, Sylwia Walus, Ethan Wappes, Jia Xu, Qing Yang, Seung Yoo, Guihua Yu, Congling Zhang, Yuanyuan Zhang, Haisheng Zheng, Xiaoqing Zheng and Jie Zhou.

All thirteen divisions contributed towards the sponsorship as did the organizers of the A3 and M2 symposia.



A special thank-you goes to all of the meeting sponsors and 26 exhibitors, who showcased the tools and equipment so critical to scientific research.

Scenes from the Orlando Meeting



On Wednesday afternoon the members assembled for a luncheon and the Annual Society Business Meeting. The President, Secretary and Treasurer gave their reports to the membership. ECS President **OSAKA** introduced the newly elected officers, 3rd Vice-President-elect **JOHNA LEDDY**, ECS President-elect **PAUL KOHL** and Treasurer-elect **E. JENNINGS TAYLOR**. (Photo taken by Petr Vanýšek.)



And of course, we are always thankful to the ECS staff for all the work they do for us at the meeting, but also in between the meetings at the Society Headquarters in Pennington, NJ. Here, they are enjoying a bit of down time at the Presidential Reception. From left to right they are **CHRISTIE KNEF**, **ROB GERTH**, **ANNA OLSEN**, ECS President **TETSUYA OSAKA**, **KAREN CHMIELEWSKI**, and **KEITH SCHLESINGER**.

Orlando Meeting Student Mixer



All registered students were invited to attend this welcoming event and more than 200 of them attended the mixer Monday night, thanks to the generous support of Gelest.