

# SEAC *communications*

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## **PRESIDENT'S MESSAGE**

Dear Members of SEAC and any and all interested parties:

I am pleased to present you the fourth SEAC newsletter this year. There are not many official news in it, but the newsletter is full of news from you and about you. And that is indeed what SEAC is about; a community of colleagues and friends. In this spirit, I wish you all a successful and joyful new year. Look forward to our first SEAC newsletter 2014, which will bring you in February all the news about the upcoming Pittcon. And as always, send news items to Phil Buhlmann so that they be shared with the SEAC community.

Happy New Year,  
Adrian Michael

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#### **How Easy it is to Become a SEAC Member**

# CALL FOR (SELF-)NOMINATIONS OF STUDENT EDITORS

From Student Editor Xu U. Zou

Being the first student editor of The Society for Electroanalytical Chemistry Communication has been an interesting and useful experience for me. I create ideas to contribute to the newsletter, attend the annual SEAC meeting at the Pittsburg Conference, and am involved in discussing the development strategy for this community and organization. It is not an additional burden but, quite the opposite, it encourages more involvement with the electroanalytical chemistry field. Last but not least, my membership fee is waived.

The intention of having student editors is to assure that graduate students' points of view and interests are appropriately represented in the newsletter and to have them contribute at least once or twice a year to the SEAC newsletter with a news item, preferably items of special interest to students and postdocs. Please send nominations and self-nominations of graduate students to [Zouxx059@umn.edu](mailto:Zouxx059@umn.edu).

## MEETINGS TO COME

Meetings of interest to our SEAC members abound during the coming year, with symposia being organized by some among us.

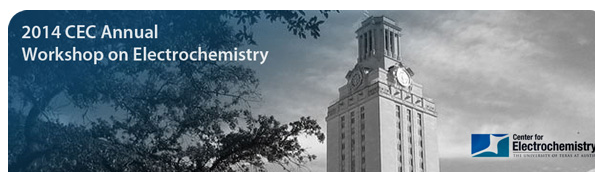
<b>Meeting</b>	<b>When</b>	<b>Where</b>	<b>Link for More Information</b>
Gordon Research Conference: Electrochemistry	2014, Jan. 5–10	Ventura CA, USA	<a href="http://www.grc.org/programs.aspx?year=2014&amp;program=elecchem">http://www.grc.org/programs.aspx?year=2014&amp;program=elecchem</a>
Pittcon 2014	2014, March 2–6	Chicago, IL, USA	<a href="http://www.pittcon.org/">http://www.pittcon.org/</a>
American Chemical Society Spring Meeting	2014, March 16–20	Texas TX, USA	<a href="http://portal.acs.org/">http://portal.acs.org/</a>
14 <sup>th</sup> ISE Topical Meeting	2014, March 28–31	Nanjing, China	<a href="http://www.ise-online.org/annmeet/next_meetings.php">http://www.ise-online.org/annmeet/next_meetings.php</a>
15 <sup>th</sup> ISE Topical Meeting	2014, April 27–30	Niagara Falls, Canada	<a href="http://www.ise-online.org/annmeet/next_meetings.php">http://www.ise-online.org/annmeet/next_meetings.php</a>
Gordon Research Conf.: Electronic Processes in Organic Materials	2014, May 4–9	Lucca, Italy	<a href="http://www.grc.org/programs.aspx?year=2014&amp;program=elecproc">http://www.grc.org/programs.aspx?year=2014&amp;program=elecproc</a>
225 <sup>th</sup> ECS Spring meeting	2014, May. 11–16	Orlando FL, USA	<a href="http://www.electrochem.org/meetings/biannual/fut_mtgs.htm">http://www.electrochem.org/meetings/biannual/fut_mtgs.htm</a>
15 <sup>th</sup> International Conference on Electroanalysis ESEAC	2014, June 11–15	Malmö, Sweden	<a href="http://eseac2014.com">http://eseac2014.com</a>
2014 Matrafured International Conference on Electrochemical Sensors	2014, June 15–20	Near Budapest, Hungary	<a href="http://www.matrafured-conference.bme.hu">http://www.matrafured-conference.bme.hu</a>
Gordon Research Conference: Bioanalytical Sensors	2014, June 22–27	Newport RI, USA	<a href="http://www.grc.org/programs.aspx?year=2014&amp;program=biosens">http://www.grc.org/programs.aspx?year=2014&amp;program=biosens</a>
Gordon Research Conference: Bioelectrochemistry	2014, July 6–11	Biddeford ME, USA	<a href="http://www.grc.org/programs.aspx?year=2014&amp;program=bioelec">http://www.grc.org/programs.aspx?year=2014&amp;program=bioelec</a>
Gordon Research Conference: Electrodeposition	2014, July 27–August 1	Biddeford ME, USA	<a href="http://www.grc.org/programs.aspx?year=2014&amp;program=elecdep">http://www.grc.org/programs.aspx?year=2014&amp;program=elecdep</a>
American Chemical Society Fall Meeting	2014, Aug. 10–14	San Francisco CA, USA	<a href="http://portal.acs.org/">http://portal.acs.org/</a>

<b>Meeting</b>	<b>When</b>	<b>Where</b>	<b>Link for More Information</b>
65 <sup>th</sup> Annual ISE Meeting	2014, August 31–September 5	Lausanne, Switzerland	<a href="http://www.ise-online.org/annmeet/next_meetings.php">http://www.ise-online.org/annmeet/next_meetings.php</a>
226th ECS Fall meeting	2014, October 5–11	Cancun, Mexico	<a href="http://www.electrochem.org/meetings/biannual/fut_mtgs.htm">http://www.electrochem.org/meetings/biannual/fut_mtgs.htm</a>
Pittcon 2015	2015, March 8–14	New Orleans, LA, USA	<a href="http://www.pittcon.org/">http://www.pittcon.org/</a>
66 <sup>th</sup> Annual ISE Meeting	2015, October 4–9	Taipeh, Taiwan	<a href="http://www.ise-online.org/annmeet/next_meetings.php">http://www.ise-online.org/annmeet/next_meetings.php</a>

### 2014 Gordon Research Conference on Bioanalytical Sensors

Sue Lunte is co-chair of the [Gordon Research Conference on Bioanalytical Sensors](#) (Twenty First Century Technologies for Probing Biological Systems) in June of 2014 with Paul Cremer. It features 9 sessions with a total of 29 speakers. June 22-27, 2014 Salve Regina University Newport, RI.

### 2014 CEC Annual Workshop on Electrochemistry The University of Texas at Austin February 8-9, 2014



This workshop, featuring scientists and researchers from top universities, national labs and industry, will discuss cutting-edge electrochemical science and address issues with respect to electrocatalysis, photoelectrochemistry, nanoscale materials science, and other electrochemical systems. Eleven speakers are planned in three sessions of the workshop. A poster session/reception is scheduled for Saturday evening, and any attendee may also present a poster. More information and registration is available at <http://cec.cm.utexas.edu/electrochemistry-workshop-2014>.

Andrew Gewirth, University of Illinois at Urbana-Champaign

Using Spectroscopy, Spectrometry, and Stress to Interrogate Active Electrode Materials

Radoslav Adzic, Brookhaven National Laboratory

Platinum Monolayer Electrocatalysts: Tuning Their Properties by Core-shell Interactions

Daniel Scherson, Case Western Reserve University

Fast Dynamics at Electrochemical Interfaces

Ryan Gilliam, Calera Corporation

Electrochemical Carbon Dioxide Sequestration Coupled with a Useful Catalytic Reaction

Frank Osterloh, University of California at Davis

Inorganic Nanostructures for Photoelectrochemical and Photocatalytic Water Splitting

William Chueh, Stanford University

Thermally-enhanced Photoelectrochemistry for Solar Fuel Generation

Allen Bard, The University of Texas at Austin

The Electrochemical Characterization of Nanoparticles

Michael Mirkin, Queens College, CUNY

Random and Non-random Aspects of Nanoelectrochemistry

Christophe Demaille, CNRS, Université Paris Diderot, Sorbonne Paris Cité

Probing Individual Redox PEGylated Nano-objects by Electrochemical Atomic Force Microscopy (AFM-SECM)

Richard Van Duyne, Northwestern University

The Integration of Tip-enhanced Raman Spectroscopy with Scanning Electrochemical Microscopy

Nongjian "NJ" Tao, Arizona State University

Plasmonic-based Electrochemical Imaging and Detection

## STAGNOVATION

*A contribution by Peter T. Kissinger, Purdue University*

As we approach the yearend holidays, 2013 has clearly been a very disappointing year for support of life science innovation. Many of us in early stage companies are camped in the valley of funding death. Capital has continued to flow most enthusiastically to markets unfettered by regulatory frictions and those not yet impacted by “affordable” reforms exemplified by taxes on medical device revenues and the price controls that do not support the cost of providing a service. The country has been without experienced leadership for five years. We continue to be in a spiritual recession in life sciences as pharmaceutical firms reduce headcounts by tens of thousands with hospital systems now joining in with like numbers. It’s ironic that providing health care benefits for these employees becomes one reason to have fewer of them. Academic life science research spending has been sequestered; cutting thousands of NIH grants a little and many hundreds by 100%, given that they could not be funded at all. This reality threatens to delay promising peer-reviewed research and perhaps redirect the careers of very capable life scientists to other fields. They are unlikely to come back. Will we get to sensible budget reconciliation in early 2014? I’ve not met anyone who is optimistic.

I’ve invented a new word, stagnovation, a portmanteau of stagnation and innovation, suggesting a period where innovation is frozen by an uncertain future that disincentivizes success, reducing trying. In talking to potential life science investors these days, the primary concerns are expressed in questions such as these: “Reimbursement?” “What are the chances with the FDA?” “How will this reduce cost?” “How long will it take to get to positive cash flow?” These no doubt are appropriate questions and we must answer them. But given alternatives with more certainty, capital becomes impatient and runs away leaving the suffering patients waiting.

The stress on academic grants and funding startups has no doubt engendered some thinking. As I like to say, nothing sharpens the mind more than a lack of money and dulls it more than too much. Pharma now has a renewed interest in academic research and vice versa. Post WWII, Vannevar Bush, director of the U.S. Office of Scientific Research and Development (OSRD) during the war, provided his report on *Science – The Endless Frontier*. This defined his 1945 recommendations on sustaining the research enterprise that so successfully and quickly advanced technology during the war, from radar to penicillin. Bush espoused an approach that was not supported by his own experience, but was nevertheless widely accepted. His approach was linear, suggesting that applications came downstream from ‘basic research’ that was driven by curiosity and nothing more. This appealed to academics, wanting to insure their purity and separation from commerce. A half century later, in 1997, *Pasteur’s Quadrant* by Donald E. Stokes was published. Stokes took issue with Bush’s simplistic linear notions as having rationalized poor public policy. He noted that research can be *simultaneously* motivated by fundamental understanding (basic) and considerations of use (applied). Stokes replaced the Bush time line with Cartesian coordinates having the understanding motive on the y-axis vs. the application motive on the x-axis. He provides a number of compelling examples and uses Pasteur as the metaphor for the combinatorial motivation (upper right quadrant), Bohr for a pure research motive (upper left quadrant) and Edison to represent research motivated by application only (lower right quadrant). This way of thinking fits the renewed engagement of pharma and the academy and the still developing notions of translational research at NIH. For those interested in these thoughts, searching the internet for ‘Vannevar Bush’ and ‘Pasteur’s Quadrangle’ will bring rich rewards.

There has been some good news with the stock market this year and more life science firms have been able to get public. There also has been considerable buzz about the potential of crowdsourcing and other means to encourage private investment (aka risk taking) in young firms. Unfortunately, what often sounds very promising is typically encumbered by regulations on who can invest and how they can prove themselves worthy of the honor. On the contrary, there are no such restrictions on who can purchase lottery tickets, putting assets at risk to support government. We need to work harder on ways to attract small amounts of capital to medical innovation without so much of it flowing to the legal profession. This then is yet another regulatory friction on innovation.

Doris Kearns Goodwin has released a well-referenced and enthusiastically reviewed book on Theodore

Roosevelt, one of my several heroes (*The Bully Pulpit: Theodore Roosevelt, William Howard Taft, and the Golden Age of Journalism*, Simon & Schuster. 910 pp). This one is on my holiday list. Teddy got it right with his enthusiasms! Government was needed to tone down unfettered capitalism with the Food and Drug Act (1906). Teddy also reined in the monopoly power of industrialists and bankers, while expanding our national parks. Today he'd neither be pleased nor surprised that the regulations his team got started have evolved to cripple decision making, focusing on risk more than opportunity. You can be sure he'd bring a few R's and D's over to the White House for a little talk and banging of heads. Then we'd get some results to support R/D, pointing out to the "American people" that total Federal medical research expenditures are just a bit over 1% of the budget. That would be a bully good day.

## NEWS FROM MEMBERS

Our treasurer **Petr Vanysek** has been selected a co-editor for *ECS Interface*. He reports that he will be in charge of "news," whatever that entails. While certainly people can congratulate him, he emphasizes that, more importantly, if you have electrochemistry or materials science news, you could send it to him to publish in *ECS Interface*. The other co-editor is Vijay Ramani and he will be responsible for the science articles.



**From Harry Finklea, West Virginia University:** I was saddened to learn of the death of **Joseph Gordon** in the recent SEAC Newsletter. The fact that I learned of his demise in the Newsletter and not through direct contact is perhaps a sad reflection of how focused I, and perhaps everyone, have become on the details of their immediate surroundings (students, courses, our own projects).

I was Joe's first PhD student at Caltech. When I arrived at Caltech, I was open-minded about the research area. Based on my undergraduate research experience at Duke, I had a vague interest in inorganic chemistry. Electrochemistry was not on my mind since that experiment had never worked in the instrumental analysis lab. I talked with Harry Gray, and he suggested I look around since his group was already very large. Joe was a new assistant professor. In our first meeting, he described various inorganic research projects, and then showed me a short paper in *Chemical Communications*. The author claimed that a bright light focused on a dropping mercury electrode poised at the foot of the reduction wave of nickel ion exhibited photocurrents. This phenomenon was attributed to excitation of the nickel hexa-aquo complex, thereby making it reducible at the less negative potential. This idea intrigued me, so Joe and I started a project on electrochemistry of the excited state. Naturally, we sought advice from Fred Anson, who provided me with all of the electrochemical training. That one meeting set the course for my entire scientific career in electrochemistry (semiconductor electrodes, self-assembled monolayers on electrodes, and now solid oxide fuel cells). By the way, the paper was wrong. One cannot see electrochemistry of photo-excited nickel ions at a mercury electrode.

Joe was a delight both as an advisor and as a colleague. His humor was always evident along with his laugh. Small in stature, he radiated a big personality. It was amusing to see him and Fred Anson (about 6 foot 7 inches) ambling down the Olive Walk at Caltech, but it was always interesting to hear them discuss science and electrochemistry. I will miss him.



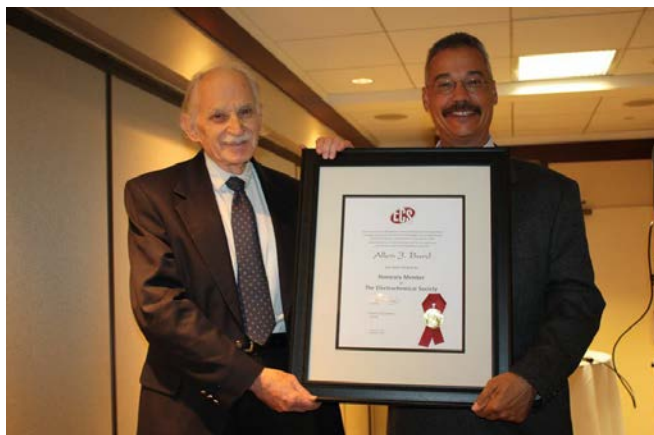
**Honorary ECS (Electrochemical Society) Membership**, one of the highest ECS honors, was awarded to **Allen J. Bard** and **John B. Goodenough** this November at the The University of Texas Etter-Harbin Alumni Center. For a detailed report and an extensive photo gallery, check out [http://www.electrochem.org/bard\\_goodenough/](http://www.electrochem.org/bard_goodenough/)



Roque Calvo, ECS Executive Director; Fernando Garzon, Past President; Johna Leddy, Former Secretary; Dr. Allen Bard; Dr. John Goodenough; Larry Faulkner, Past President; Fred Strieter, Past President; Krishnan Rajeshwar, 3<sup>rd</sup> Vice President



Dr. Larry Faulkner, ECS Past President, Honorary Member, and former President of the University of Texas at Austin speaks at the luncheon



**Sam Kounaves**, Professor of Chemistry at Tufts University, has been elected a Fellow of the American Association for the Advancement of Science (2013). The recognition was for “distinguished contributions to the fields of analytical chemistry and planetary science, particularly for studies of martian geochemistry and its potential for supporting life.” He has made pioneering contributions in the use of electroanalytical techniques for in-situ analysis in remote extreme environments, notably for chemical analysis of the soils on Mars. This year’s AAAS fellows were formally announced in the journal *Science* on Nov. 29. He will be honored along with other new fellows during the 2014 AAAS annual meeting in Chicago on Feb. 15th.



**Peter Kissinger** is the recipient of the 2013-2014 Outstanding Commercialization Award for Purdue University Faculty. The Outstanding Commercialization Award is given to a Purdue tenure-track faculty member in recognition of outstanding contributions to and success with commercialization of Purdue research discoveries. Kissinger is the founder of Bioanalytical Systems Inc., which he led from 1974-2007. He was a founder of the first Purdue new business incubator, INventure, in the late 1980s. In 2005 he became chairman and interim CEO of Prosolia, which markets new mass spectrometry innovations for life science applications. He has worked with four startup companies and has assisted with the founding of more than 12. See this [link](#) for a discussion of the award. See also his contribution *Stagnovation* in this issue.



**Glen O'Neil**, after completing his PhD with Sam Kounaves at Tufts University in the area of carbon nanomaterial-based sensors with applications to microfluidic total analysis, has taken a post-doctoral position in the Electrochemistry and Interfaces Group with Julie Macpherson at Warwick University (UK), where he will be working on in-situ EC-XRF and the electrochemistry of single crystal boron doped diamond.



**2013 Class of ECS Fellows:** Established in 1989, the designation of Fellow of The Electrochemical Society is awarded for individual contributions and leadership in the achievement of science and technology in the area of electrochemistry and solid state sciences and current active participation in affairs of ECS. The 2013 class ECS fellows include **Hector Abruna, Jiri Janata, Johna Leddy, and Shelley Minter.**



**Dr. Bhavik A. Patel** (University of Brighton) has won the GlaxoSmithKline Emerging Scientist Award 2013, which is presented annually to scientists from around the world who have demonstrated significant practical application of knowledge within the pharmaceutical sciences over the last five years. The winner is chosen by senior staff from GSK and the work is judged by its scientific quality and the actual or future impact in biomedicine.



## HOW EASY IT IS TO BECOME A SEAC MEMBER

Any individual with an interest in electroanalytical chemistry is invited to join SEAC. Regular one-year membership dues are \$30. Student dues are \$10. Dues are payable on January 1 of each year. A lifetime membership option is available for \$300, payable either as a lump sum or in three annual, nonrefundable installments of \$100.

To become a new member of SEAC, go to <http://electroanalytical.org/membership.html> and fill out the downloadable membership form.