SEAC*communications*

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PRESIDENT'S MESSAGE

Dear SEAC Members,

This will be my last message as SEAC president. As every of my recent predecessors, I cannot believe how quickly these two years have passed. I am happy to say though that I am handing this job over to Bo Zhang at a time when SEAC is bustling with energy and new ideas. I would like to thank all the members who have volunteered their time to keep SEAC running. It is particularly fun to see all the young people contributing to SEAC.

Indeed, in this newsletter, you will find a lot of young people mentioned. We not only have four student travel award winners, but also three SEAC poster award winners. The poster awards are a new idea proposed at this year's board meeting and swiftly implemented only days later. Please encourage your students to submit posters to the 2020 Pittcon SEAC poster session, as we will keep this new tradition alive. Congratulations to all award winners, and that of course also includes Joe Wang and Alex Martinson, who were honored in March at Pittcon with the Charles N. Reilley and Royce W. Murray Young Investigator awards, respectively. Look for pictures from Pittcon with all award winners in this newsletter.

Finally let me thank our outgoing board members Erin Gross, Michael Johnson, and Tim Paschkewitz. They have not been only on the board, but have done an excellent job coming up not only with new ideas but also implementing them to the very end. And a great welcome to our new board members Mei Shen, Leslie Sombers, and Alice Suroviec.

Phil Buhlmann
President, 2017-2019

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NEW BOARD MEMBERS

Our new Board members – Mei Shen, Leslie Sombers, and Alice Suroviec – will assume office in July 2019 and serve until June 2024.

Mei Shen is an Assistant Professor at University of Illinois at Urbana-Champaign. Her research aims to push the limit of electroanalytical chemistry in bioanalysis, especially in studying chemical transmission with nanometer spatial resolution. Before her independent career, Mei received her PhD degree from The University of Texas at Austin with Allen J. Bard, and her Postdoctoral work is with Shigeru Amemiya at University of Pittsburgh. Mei graduated *summa cum laude* with a B. S. from Sichuan University, where she also received a M. S. working with Yaoqiang Chen.

Mei's group have developed nano liquid / liquid junction electrodes for the real-time study of chemical transmission at the single synapse and single cell. Her group have pioneered in the study of single cell exocytosis of acetylcholine with nm spatial resolution. Mei and her research team unveiled for the first time the diverse signaling dynamics of cholinergic transmitters, composed of singlets, doublets and multiplets. Mei has a track record of mentoring undergraduate students for research besides working with postdoctoral scholar and graduate students. She has graduated 50+ undergraduates since joined University of Illinois at 2012. Mei also has many years of teaching experience in *The Chemistry of the Environment* and *Quantitative Chemical Analysis* courses. Additionally, Mei values community services and outreach very much. She has co-organized several conference sessions and symposia for Pittcon. Considering her impact on student scholarship / intellectual development, and for her innovative approaches to guiding undergraduate research, Mei received Award for Excellence in Guiding Undergraduate Research from the Office of Provost this April.

Leslie Sombers is an Associate Professor of Chemistry and University Faculty Scholar at North Carolina State University, and a past SEAC board member. She received a B.S. in chemistry from the College of William and Mary, and a Ph.D. in chemistry from Penn State University under the direction of Andy Ewing. She continued her studies as a postdoctoral research associate in Professor Mark Wightman's laboratory at the University of North Carolina at Chapel Hill. Her research program lies at the interface of neuroscience, biomedical engineering, and analytical chemistry. The Sombers lab is particularly focused on the development of new electroanalytical tools for the real-time monitoring of neurochemicals in systems ranging from subcellular domains to discrete brain regions in awake and behaving animals.

Alice Suroviec is a Professor and Chair of the Department of Chemistry and Biochemistry at Berry College. She received her Ph.D. in Chemistry from Virginia Tech in 2005 under the guidance of Dr. Mark R. Anderson. Starting in 2005 she taught courses at Concordia College (MN) and was a research scientist at North Dakota State University in the Department of Coatings and Polymeric Materials until 2007 when she joined the faculty at Berry College. Her research interests are diverse, but her current projects are in the areas of developing enzymatically modified biosensors, organic electrochemistry as well as education in electrochemistry. She is currently an Associate Editor of the Journal of the Electrochemical Society, Chair of the Division of Physical and Analytical Chemistry for the ECS as well as serving on the Education committee of the ECS.

PITTCON 2019 – March 17 ~ 21

Charles N. Reilley and Royce W. Murray Young Investigator Awards Symposium

The highlight of the SEAC activities at Pittcon was the presentation of the 2019 C. N. Reilley Award to **Joseph Wang**, University of California, San Diego, and the Royce W. Murray Award to **Alex Martinson**, Argonne National Laboratory. The symposium in their honor was arranged by Greg Swain, Michigan State University, and was held at 1:30 – 4:55 PM on Monday, March 18, 2019, in the Pennsylvania Convention Center, Philadelphia PA.

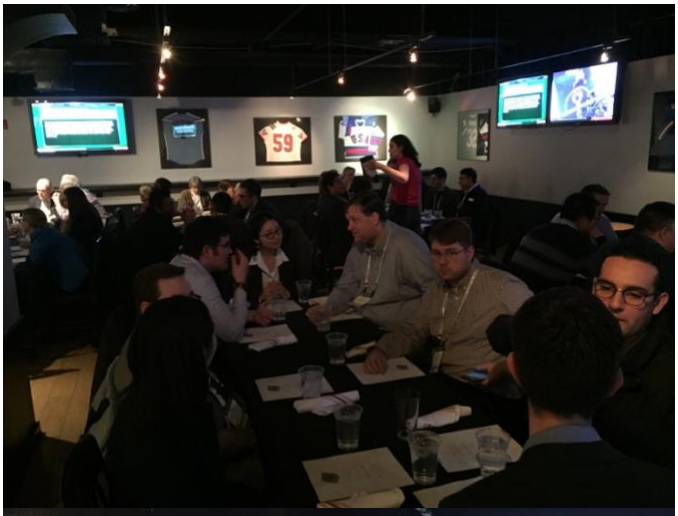
(top row, from left) Peter Kissinger, Mark Meyerhoff
(bottom row, from left) Justin Gooding, Joseph Wang, Alex Martinson and Timothy Paschkewitz

Peter Kissinger, Joseph Wang and Phil Buhlmann

Timothy Paschkewitz and Alex Martinson

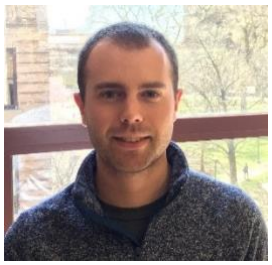
(Special thanks to Bo Zhang)

Photos at SEAC Dinner
(Special Thanks to Bo Zhang)



2019 SEAC Student Travel Award Winners

Winners of the student travel awards are **Mitchell Lancaster**, University of Michigan (advisor: S. Maldonado), **Dhruba Pattadar**, University of Louisville (advisor: F. Zamborini), **Elaine Robbins**, University of Pittsburgh (advisor: A. Michael), and **Md Foysal Zahid Khan**, University of Arkansas (advisor: I. Fritsch). Congratulations to all of them!



Mitchell Lancaster obtained his B.S. in Chemistry from the University of Minnesota before pursuing a Ph.D. in Chemistry under the supervision of Professor Stephen Maldonado at the University of Michigan. His current research interests include electrochemical investigation of charge transfer processes at semiconductor/liquid interfaces and low-temperature semiconductor electrodeposition for energy and electronic applications.

Dhruba Kumar Pattadar is an analytical chemistry graduate student at University of Louisville. He is working under the supervision of Professor Dr. Frank Zamborini. Prior to his admission to University of Louisville, he received his BS and MS from the University of Dhaka, Bangladesh. His research is mainly focused on size stability, composition and atomic arrangement analysis of single metal and bimetallic alloy nanostructures by anodic stripping voltammetry (ASV). His research interests also include CO_2 reduction, hydrogen evolution reaction and oxygen reduction reactions.

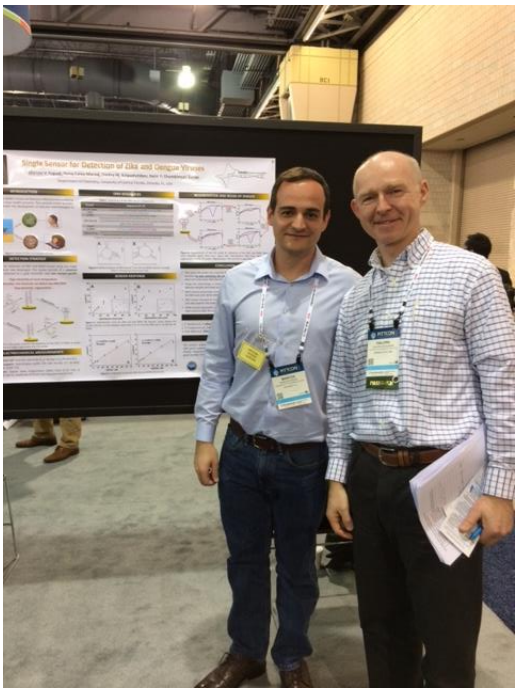
Elaine Robbins is a graduate student studying analytical chemistry at the University of Pittsburgh under the direction of Dr. Adrian Michael. Her research focuses on detecting secondary injury and metabolic crisis in vivo after traumatic brain injury and modeling the kinetics of dopamine responses recorded with fast scan cyclic voltammetry. Prior to this, Elaine graduated with a BS in biochemistry from American University, where she worked on novel biocompatible functionalizations for gold nanoparticles with Dr. Matthew Hartings.

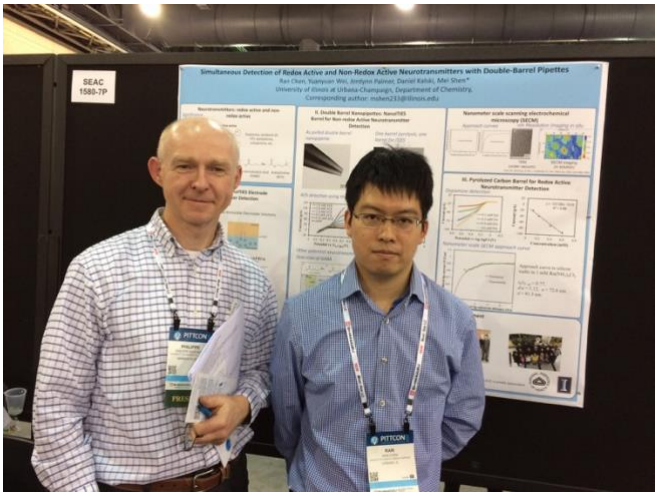
Foysal Z. Khan is a PhD candidate under the supervision of Professor Ingrid Fritsch in Analytical Chemistry division at the University of Arkansas. Before attending University of Arkansas, Foysal acquired his BSc and MSc degree in Applied Chemistry and Chemical Engineering from the University of Dhaka, Bangladesh. His PhD research focuses into developing and optimizing Redox-Magnetohydrodynamics (R-MHD) induced on-chip pumping system for microfluidic applications. Foysal's research interest lies in the area of smart-analytical device building for biomedical applications.

Phil Buhlmann, Elaine Robbins, Mitchell Lancaster, Dhruba Kumar Pattadar and Foysal Z. Khan

2019 SEAC Poster Session Award Winners

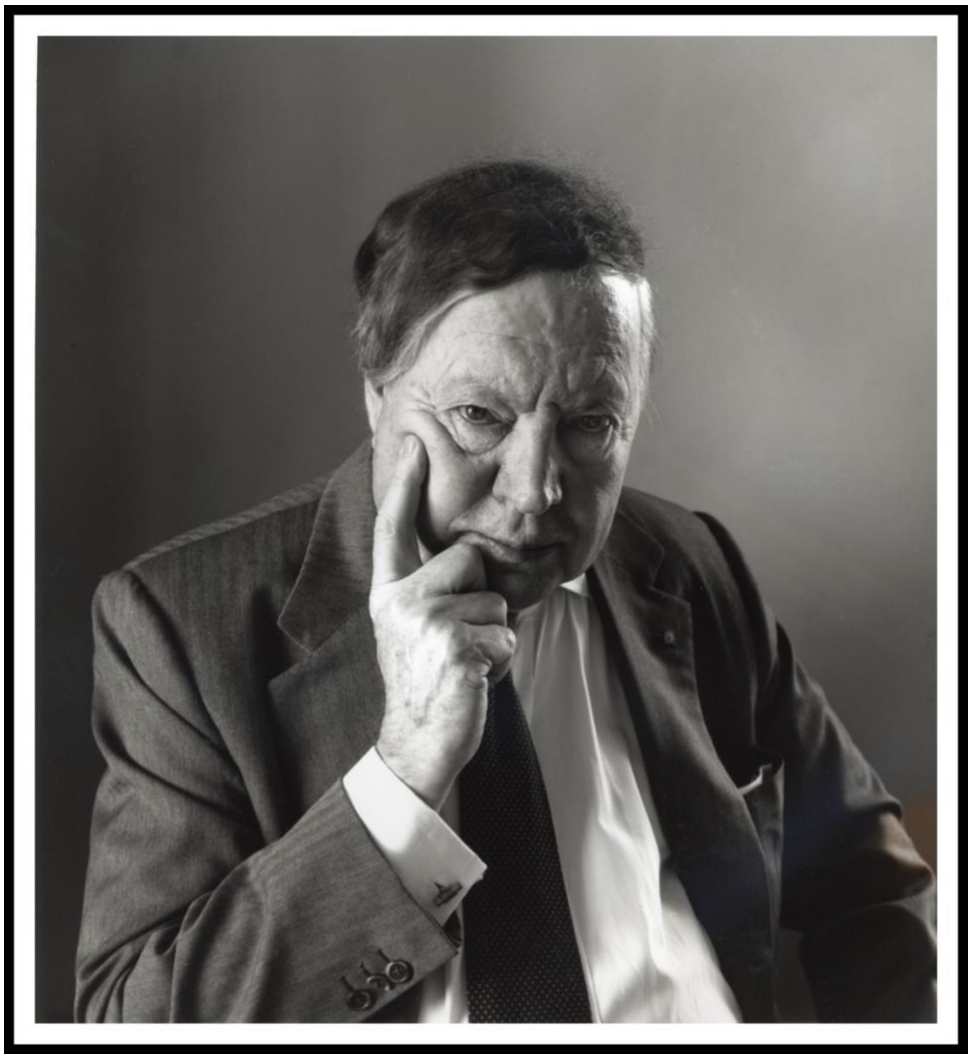
Winners of the SEAC Poster Session awards are **Marcos V. Foguel** (left, with Phil Buhlmann), University of Central Florida (advisor: Karin Chumbimuni-Torres), **Jan Borchers** (top right), Iowa State University (advisor: Robbyn Anand), and **Ran Chen** (bottom right), University of Illinois at Urbana–Champaign (advisor: Mei Shen). Congratulations to all of them! And many thanks to the seven SEAC members who served as poster judges.





OBITUARY OF NOEL HUSH

A Contribution by Alan Bond



Professor Noel Hush was an outstanding chemist at the highest international level, laying the theoretical foundations of our understanding of bond making and bond breaking, with his model of electron transfer covering a wide range of chemistry and biochemistry.

Through the establishment of the Department of Theoretical Chemistry at the University of Sydney in 1971, Professor Hush was instrumental in progressing electrochemistry and other branches of science within Australia by his highly engaging personality and his abundant generosity of spirit.

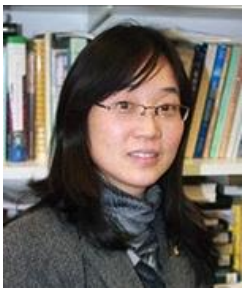
Professor Hush's research career spanned eight decades, and he remained a prolific researcher and prize winner until his very last days.

He passed away on 20 March 2019 at the age of 94.

NEWS FROM MEMBERS

Sam Kounaves, Tufts University, has received the 2019 ACS Kavli Foundation Innovations in Chemistry Award. His talk, presented at the Orlando ACS Meeting in April, was entitled *The Chemistry of Finding Extraterrestrial Life*. The Kavli Foundation Lecture Series, supported by the Kavli Foundation, promotes pioneering discoveries and innovation in some of the world's most pressing challenges.

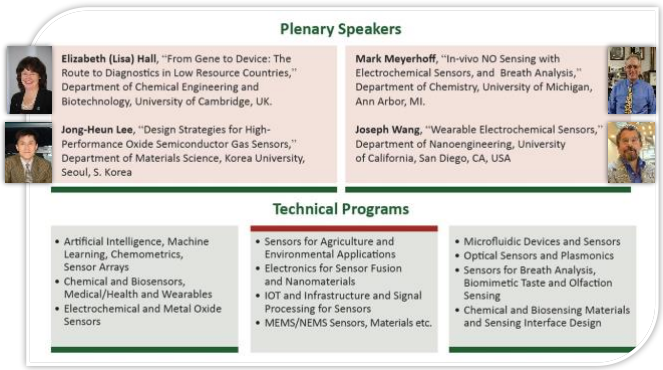
Mei Shen received Award for Excellence in Guiding Undergraduate Research from the Office of Provost this April. https://news.illinois.edu/view/6367/773042



Xiangqun Zeng, Oakland University, has been promoted to the rank of Distinguished Professor.

In addition, she has informed that her 2018 Ph.D. graduate Ke Qu's thesis entitled "Conductive polymers and their application in electrochemistry, bio-sensing and environmental analysis" won the best Ph.D. dissertation award at Oakland University. He is now an assistant professor at Chengdu University of Technology (National First-class Discipline University in China).

Furthermore, as one of the organizers, she encourages SEAC members to submit an abstract for the International Meeting of Chemical sensors (IMCS). IMCS will be held jointly with the ECS meeting in May 2020 in Montreal, Canada.



Ashley Ross, University of Cincinnati, is hosting the Ralph & Helen Oesper Symposium on Friday September 27th, 2019, and the awardee this year is Mark Wightman. The award is given annually to a scientist who has made a significant contribution to their field throughout their career. A day-long symposium is held in Mark's honor. A banquet is held after the symposium, which is co-sponsored by the American Chemical Society Cincinnati Local Section and the Department of Chemistry. The symposium hosts speakers chosen by the awardee. Anyone in the Ohio/Indiana/Kentucky area who is close is welcome to attend.

Ralph & Helen Oesper Award Symposium, Poster Session, and Banquet
September 27, 2019 9:00 am – 9:00 pm
Tangeman University Center
University of Cincinnati

R. Mark Wightman

University of North Carolina at Chapel Hill

Detecting Catecholamines--A Journey from Beaker to the Behaving Brain

R. Mark Wightman is currently Emeritus Kenan Professor in the Department of Chemistry at the University of North Carolina at Chapel Hill. He is also a member of the Neuroscience Center at the University. Professor Wightman has been a pioneer in the development of electrochemical methods to monitor neurotransmitters and other molecules of neurochemical importance. He received his PhD at the University of North Carolina at Chapel Hill in 1974. From 1974-1976 he was a postdoctoral research associate with Professor Ralph Adams at the University of Kansas. In 1976 he joined the Department of Chemistry at Indiana University as an assistant professor. He was promoted to associate professor in 1982 and full professor in 1985. In 1989 he left Indiana and assumed his present position. He has authored more than 400 scientific papers in peer reviewed journals such as *Nature, Journal of Neuroscience, Biological Psychiatry, Analytical Chemistry, and ACS Chemical Neuroscience*. Collectively, these papers have an h-index of 96. He has received several awards including the ACS Award in Analytical Chemistry.

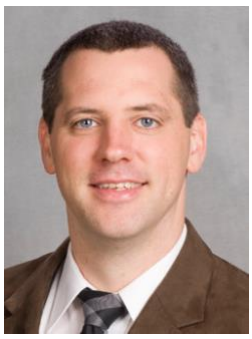
He began his foray into catecholamines in his postdoctoral research with Ralph Adams at the University of Kansas. Ralph had the revolutionary idea that electroanalytical chemistry could be useful for the detection of catecholamines. From this fundamental concept evolved the use of electrochemical detectors with liquid chromatography as well as the use of microelectrodes for *in situ* sensing of catecholamines. The early research with *in vivo* electrochemistry was complicated by interference from a variety of substances including catecholamine metabolites and ascorbate. However, a variety of approaches were taken to improve the specificity of the measurements and to adapt them for measurements on a subsecond time scale. Today these approaches are extremely useful to understand the dynamics of catecholamines during release, uptake and signaling. They can be used to probe single exocytotic events from single cells in culture. They also can be used in the brain of awake animals to watch catecholamine signaling during behavior. This approach has been used to confirm dopamine release in response to cues that predict reward as well as to examine norepinephrine signaling in aversive situations.

SPECIAL THANKS TO NEW LIFETIME MEMBERS (June 2016 ~ June 2019)!

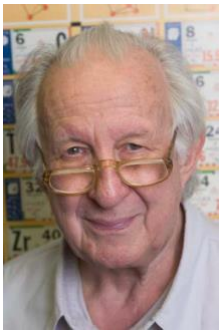
Special thanks go to Silvana Andreescu (Professor, Department of Chemistry & Biomolecular Science, Clarkson University), Daniel Andreescu (Teaching Assistant Professor, Department of Chemistry & Biomolecular Science, Clarkson University), Luke Haverhals (Research Professor, Department of Chemsitry & biochemistry, Bradley University), Karl Sienerth (Professor and Chair, Department of Chemistry, Elon University), Petr Zuman (Professor Emeritus, Department of Chemistry & Biomolecular Science, Clarkson University), Barry Miller (Professor Emeritus, Department of Chemistry, Case Western Reserve University), Mohtashim Shamsi (Assistant Professor, Department of Chemistry & Biochemistry, Southern Illinois University at Carbondale), Bizuneh Workie (Associate Professor, Department of Chemistry, Delaware State University), Jeffrey Dick (Assistant Professor, Department of Chemistry, University of North Carolina, Chapel Hill), Lanqun Mao (Professor, Institute of Chemistry, Chinese Academy of Sciences) and Tim Paschkewitz (Pine Research Instrumentation), who all have contributed with installments towards lifetime membership!

Silvana Andreescu

Daniel Andreescu


Luke Haverhals

Karl Sienerth


Petr Zuman

Barry Miller

Mohtashim Shamsi

Bizuneh Workie

Jeffrey Dick

Lanqun Mao

Tim Paschkewitz

MEETINGS TO COME

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

Meeting	***When***	***Where***	***Link for More Information***
52nd Heyrovsky Discussion on "Electrochemistry of Organic Compounds and Biopolymers"	2019, June 16–20	Liblice, Czech Republic	http://www.jh-inst.cas.cz/~hdisc/2019/
Matrafured 2019: International Conference on Electrochemical Sensors	2019, June 16–21	Visegrad, Hungary	http://www.matrafured-conference.bme.hu
Electrochemical Conference on Energy and the Environment: Bioelectrochemistry and Energy Storage (ECEE 2019)	2019, July 21–26	Glasgow, Scotland	https://www.electrochem.org/ecee2019?utm_source=Informz&utm_medium=Email&utm_campaign=ECS+Website
70th ISE Annual Meeting: Electrochemistry: Linking Resources to Sustainable Development	2019, Aug 4–9	Durban, South Africa	http://annual70.ise-online.org/index.php
258th ACS National Meeting	2019, Aug. 25–29	San Diego, CA	https://www.acs.org/content/acs/en/meetings/national-meeting.html
Giornate dell'Elettrochimica Italiana-GEI2019	2019, Sept 8–12	Padova, Italy	www.chimica.unipd.it/gei2019/
10th International Workshop on SECM and Related Techniques 2019	2019, Sept 29–Oct 3	Paris-Fontainebleau, France	http://www.secm-workshop.org/
236th ECS Meeting	2019, Oct. 13–17	Atlanta, GA	http://www.electrochem.org/upcoming-meetings/
International Conference on Electrified Interfaces "ICEI 2019"	2019, Nov 3–8	Valdivia, Chile	www.deq.cl/icei2019
The 65th Annual Meeting of the Polarographic Society of Japan; joint meeting with the National Taiwan University	2019, Nov. 6–8	Taipei, Taiwan	http://www.polaro.jp/
Pittcon 2020	2020, March 1–5	Chicago, IL	https://pittcon.org/
26th ISE Topical Meeting: Metal Deposition for Semiconductor and Green Energy	2020, March 29–April 1	Tainan, Taiwan	https://www.ise-online.org/ise-conferences/next_ISE-meetings.php
237th ECS Meeting with the 18th International Meeting on Chemical Sensors (IMCS 2020)	2020, May 10–15	Montreal, Canada	https://www.electrochem.org/upcoming-meetings/

Meeting	*When*	*Where*	*Link for More Information*
27th ISE Topical Meeting: Electroanalytical Chemistry and Bioelectroanalysis	2020, May 18–20	Snowbird, UT	http://www.ise-online.org/ise-conferences/next_ISE-meetings.php
71st ISE Annual Meeting: Electrochemistry towards Excellence	2020, Aug 30–Sept 4	Belgrade, Serbia	http://www.ise-online.org/ise-conferences/next_ISE-meetings.php
PRiME 2020	2020, Oct 4–9	Honolulu, HI	https://www.electrochem.org/upcoming-meetings/
Pittcon 2021	2021, March 7-11	New Orleans, LA	https://pittcon.org/
239th ECS Meeting	2021, May 30–June 3	Chicago, IL	https://www.electrochem.org/upcoming-meetings/
72nd ISE Annual Meeting	2021, Aug 29–Sept 3	Jeju Island, South Korea	https://www.ise-online.org/ise-conferences/next_ISE-meetings.php
240th ECS Meeting	2021, Oct 10–15	Orlando, FL	https://www.electrochem.org/upcoming-meetings/
Pittcon 2022	2022, March 6-10	Atlanta, GA	https://pittcon.org/

JOB OPENING

Senior Research Scientist @ Funded Startup in the SF Bay Area
http://electroanalytical.org/employment.html

We are looking for a Senior Research Scientist specializing in electrochemical sensor research and development to lead our sensor R&D team, to research, build, prototype and develop (from prototyping to commercialization) sensors for analysis of biologically derived VOCs.

Description

We are developing a commercial VOC breath meter for a very large potential market in consumer and clinical testing. We have a functioning prototype, based on a proven electrochemical sensor, sampling mechanism and signal processing algorithms. We believe that there is room for improvement in the existing catalytic system and in the signal processing algorithm. We also believe that other catalytic systems may offer advantages over the currently employed system. We need someone with an advanced Analytical Chemistry Degree (M.S. or Ph.D.) with a strong technical background in electrochemistry, analytical methods, modification of polymers, and sensor/electrode fabrication. If you are a scientist with the knowledge and experience to help us take this technology to the next level, we'd love to talk to you.

Must haves

Expertise in:

- Electroanalytical Chemistry
- Amperometric and voltammetry techniques for sensor diagnostic applications
- Building and validating electrochemical sensors as long-term and reliable sensor solutions for integration into various medical devices
- Development, application, and realization of electrochemical measurements for biologically derived molecules
- Fabrication of electrochemical sensors for prototyping and commercial application
- Analytical chemistry and electrochemistry tools and techniques

- DOEs and signal processing

Also:
- Excellent quantitative skills and working knowledge of simple and complex statistics
- Flexibility to work in a rapidly developing environment
- Excellent oral and written communication skills

Nice to haves
- Experience with polymer synthesis
- Knowledge of polymer constructs, and electrochemical systems
- Experience with microscopy techniques: SEM and TEM
- Experience with spectroscopy techniques: FTIR, UV-Vis etc.
- Experience in analysis of VOC via GC-MS or equivalent
- Experience working with diagnostic device development from early stage R&D through transfer to manufacturing, clinical trial, device regulatory approval, and commercial launch

What you'll be doing
- Develop sensors from pre-development through product release.
- Catalyst synthesis, electrode fabrication, electrochemical measurements, results analyses and documentation.
- Collaborate with engineers to integrate electrochemical sensors into devices.
- Work with the hardware team to prototype in-house built sensor prototypes.
- Provide technical expertise to develop and execute hypothesis-driven experiments in an effort to convert bench-based scientific discoveries into commercial and reliable analytical products.
- Identify, troubleshoot, and provide solutions to issues in the development, evaluation, optimization, and validation of sensors.
- Design key experiments, develop pass and fail criteria, selection of appropriate form factors, assess reliability, selectivity, and sensitivity.
- Transfer sensor designs from R&D to Manufacturing.

We are a funded startup in the SF Bay Area offering a competitive salary + benefits with equity participation. An SF Bay Area location is preferable but not necessary.

Please submit your resume and cover letter to jobs@metre.ai.

SPECIAL THANKS TO OUR SPONSORS!

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PITTCON CONFERENCE & EXPO

SPECIAL THANKS FOR A GENEROUS CONTRIBUTION!

Adrian Michael ($100, January 2019)

Thank you, Adrian!

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 but the first year is free! 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, fill out the downloadable membership form, and pay either by check or on-line.