Newsletter

April 2017

Silicon Valley Chemist

Santa Clara Valley Section — American Chemical Society

Volume 39 No. 4

APRIL 2017 NEWSLETTER TOPICS

Connect with Chemists

An early morning chat with fellow chemists

Thursday, April 13, 2017, at 7 a.m.

Coupa Café

538 Ramona Street, Palo Alto

Look for Ean at a table with an ACS card.

American Chemical Society Event on March 10, 2017

Soil Chemistry Lecture at CSUMB

By **Diana Tamayo and José López**

Hartnell Community College chemistry students

Traveling from King City to Salinas daily, we pass the never ending rows of fields that are a major component of our community. There are many types of crops in every single row, all in great abundance. That's why when the ACS lecture on soil chemistry was announced, we were both spurred to attend and find out more about regionally relevant science. What's more is that we were both eager to find out about chemistry discoveries that are made locally. My friends and classmates and I arrived at the Cal State, Monterey Bay campus right as the sun was setting. We were anxious about our first ACS meeting, for we knew that we would be interacting with students and professionals alike. As we walked into the room, my friends and I were content to see the organizer of the meeting, and Hartnell Chemistry professor, Dr. Slava Bekker. She directed us to the refreshments and introduced us to other student-attendees. Shortly thereafter, we met the guest speaker, Dr. Husein Ajwa. At once, Dr. Ajwa made us feel very welcome and was able to share his humor and warmth during the time that he spent talking to us. He intrigued us by telling us some of his cultural experiences and we were all able to exchange anecdotes before the meeting started.

Attendees of the ACS March meeting at Cal State, Monterey Bay.

Dr. Husein Ajwa talking to students before his presentation.

After a brief introduction by Dr. Bekker, Dr. Ajwa began his lecture by telling a few jokes and putting his audience at ease. Once his seminar titled "Chemical Equilibria In Soil Science and Crop Production" began in earnest, it could not have hit more home. In

continued on next page

Chair's Message

Todd Eberspacher

As you read this you may well be at the 253rd National meeting of the American Chemical Society or at least on your way there. Putting on a meeting of this scale is no small task and as a member of the ExComm I would like to extend our thanks to everyone involved. I would like extend a special thanks to Jigisha Parshva Shah wo has led the SCVACS Section's efforts. Our section along with the Cal Section are Co-Hosts for the meeting in San Francisco. Please stop by the hospitality booth and say hello.

At the Spring National ACS Meeting the Council sets the ballot for the election to be held in the Fall. This year I was excited to hear that Bonnie Charpentier is a nominee for President-Elect. Bonnie has served the ACS both locally and nationally and it is great to see someone I know be put forward for a leadership position AND it is well

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Soil Chemistry, continued from front page

this part of California, we are surrounded by fields, but chemical processes in the soil that allow for such a variety of crops to thrive here are not discussed often in our classes. After going over the fundamentals of chemical equilibrium, Dr. Ajwa proceeded to give an overview of the many vitamins and minerals involved in plant growth and development. The focus of his talk became phosphorus, one of the primary macronutrients critical to crop fertilization. Dr. Ajwa skillfully connected the fundamentals we learned in our chemistry and biology courses to the practical considerations that farmers and agronomists face on a regular basis. For example, phosphate's low solubility means that farmers need to fertilize the soil more in order for the plants to take up any of the phosphorus. On the other hand, it means that more money is spent on crop production. Adjusting the soil's pH by liming it may increase the availability of soluble phosphorus compounds, but other solids, such as calcium compounds, may precipitate instead. The entire presentation showcased the interconnectedness of all science disciplines and how much chemistry and biology are tied into our daily lives.

Faculty, students, and professionals conversing at the Student Center at Cal State, Monterey Bay.

As Dr. Ajwa's talk came to an end and the room emptied out, we realized how gratifying it was to learn about discoveries in our area and especially about the discoveries that affect many local families that both work on the fields and thrive because of the food produced on them.

Dr. Ajwa generously shared his ***presentation*** on the SCVACS website.

Chair's Message, continued from front page

deserved! Please extend your congratulations to Bonnie if you see her at the meeting.

I would like to welcome Heddie Nichols to the ExComm as an Alternate Councilor. I would like to thank both Peter Rusch and Heddie for accepting a nomination to fill this position. Heddie replaces Stephanie Bachmann who has taken over organizing our Teach the Teachers project. TtT will be held in May at Stanford, please contact Stephanie if you would like to participate, additional help is welcome.

Finally, speaking of meetings…I received an inquiry from the Western Region Board stating one of the duties of the Board is to encourage and identify a host section for the next Western Regional Meeting. If anyone is interested in taking this project on please let me know and I will put you in contact with the right people.

Enjoy the national meeting in SF.

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Call for Nominations
2017 Shirley B. Radding Award

First awarded in 1994 to its namesake, the Shirley B. Radding Award annually honors someone who has been a member of the ACS for at least 20 years. Nominees must have demonstrated dedicated, unselfish leadership, service and significant contributions over a sustained period of time to industrial, applied or academic chemistry and to the ACS through elected or appointed positions at local, district and national levels.

Award Criteria

- Member of the American Chemical Society for more than twenty (20) years.
- Demonstrated dedicated and unselfish service to ACS and its members over a sustained period of time.
- Provided leadership through elected and appointed ACS positions at local, district and national levels.
- Made significant contributions to industrial, applied or academic chemistry.

The award consists of an honorarium of $1,000 and a suitably inscribed memento. Nominations must consist of at least one letter of nomination stating how the nominee's work relates to all aspects of the award. It is strongly recommended that seconding letters accompany the nomination.

Nominations are due on or before May 1, 2017, and may be sent electronically to ***Radding-Award@scvacs.org*** or be mailed to:

Radding Award Committee, Santa Clara Valley Section ACS
Post Office Box 395, Palo Alto, CA 94302

The 2017 National Inventors Hall of Fame (NIHF)

Dr. Carolyn Bertozzi

The National Inventors Hall of Fame (NIHF) of the US Patent and Trademark Office (***www.uspto.gov***) honors inventors who have made advances that have changed America and are named on one US patent. The selection is usually made in February and the 2017 induction will occur May 4 in Washington DC. More information is available at ***http://www.invent.org/***.

A more complete article will appear in the May newsletter. Some chemists are named for 2017 - including local Stanford University chemistry professor Dr. Carolyn Bertozzi.

A Nobel Evening with the YCC

written by Alex Klevay

On February 21, 2017, the Younger Chemist Committee reconvened in San Francisco at Bird & Beckett Books & Records. The quaint and intimate venue featured both new and familiar faces who all gathered to hear from Stanford Professor W.E. Moerner, recipient of the 2014 Nobel Prize in Chemistry.

As the father of single-molecule spectroscopy, he developed invaluable techniques which brought the ultimate limit of microscopy to single molecule resolution, far beyond the diffraction limit of light itself. The key to Professor Moerner's Nobel prize winning feat in 1989 lay in his ability to individually excite the single tell-tale fluorescent pentecene molecules in his supercooled crystal samples, causing them to shed light on their surroundings.

With an ever expanding toolkit, Moerner imaged biophysical subjects with clarity like never before by selectively placing remotely-activated fluorescent molecular beacons within cellular components such as plasma membranes and microtubules. A single, tagged kinesin protein motoring along one of these microtubules could be resolved, and by superimposing the signals of select kinesins, the entire network of the cell could be illuminated, and in 3D. In 1997, while working at UCSD, Moerner suggested the possibility of using GFPs as fluorescent markers for time-dependent cell processes in the first room-temperature single-molecule spectroscopy example of controlled photoswitching.

He praised the special atmosphere at the IBM Almaden Research Center where deep industry research set the stage for his prize-winning work.

Replying to a question about about how he celebrated once his wife relayed news of the victory, Moerner said there were lots of parties amongst the labs he'd worked, including his current group at Stanford. Professor Moerner quipped that the next best thing to winning a Nobel prize is being featured on the animated TV show The Simpsons, whose writers predicted his win along with many other soon-to-be-named recipients during a Nobel prize betting pool joke.

In an apt anthropomorphization of Moerner's spectroscopic quest, the back of his medal depicts a genius of science unvieling the visage of the cornucopia-bearing goddess of nature.

Workshop for Teachers

The annual Teach the Teachers Workshop sponsored by Santa Clara Valley ACS with generous support from Gilead Sciences, Inc. will be held on Saturday, May 20, 2017, at Stanford University. The theme for the workshop will follow the 2016 National Chemistry Week theme, Solving Mysteries through Chemistry. The workshop is designed for elementary and middle school educators, and will feature several chemistry related activities. Resources including a curriculum binder and all the materials needed to recreate the activities in the classroom will be provided free of charge to each educator that participates. If you are a 4th through 8th grade educator, and would like to attend, please register at: ***http://teachtheteachers2017.bpt.me***. Registration is limited. Please register early and no later than May 6, 2017.

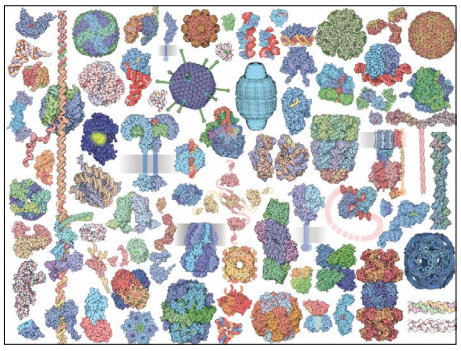
Volunteers are needed for this event. The opportunities and times are varied – come early (8:00 a.m.) and help set up; help with registration (9:00 a.m.); help with lunch set and/or takedown (12:30-2:00 p.m.); or help with the take down (3:00-4:00 p.m.). If you have some time and would like to volunteer for this fun and worthwhile program, please contact Stephanie Bachmann at ***s_gehling@hotmail.com***.

About Molecule of the Month

The RCSB PDB Molecule of the Month by David S. Goodsell (RCSB PDB-Rutgers and The Scripps Research Institute) presents short accounts on selected molecules from the Protein Data Bank. Each installment includes an introduction to the structure and function of the molecule, a discussion of the relevance of the molecule to human health and welfare, and suggestions for how visitors might view these structures and access further details.

This feature provides an easy introduction to the RCSB PDB for all types of users, but especially for teachers and students. It is used in many classrooms to introduce structures to students, and is an integral part of the protein modeling event at the Science Olympiad. It is not intended to be a comprehensive index to entries in the PDB archive, nor necessarily represent the historical record. The structures used to illustrate each installment are chosen at the discretion of the authors. Goodsell described the creation of these articles and images in an interview with the RCSB PDB Newsletter.

https://pdb101.rcsb.org/motm/motm-about



Chemistry Quiz

Gemstones of the mineral corundum (Al_2O_3) are commonly called by what two names depending on the color?

Last Month's Chemistry Quiz

How many doctoral degrees in Chemistry are awarded each year in the US?

According to the National Science Foundation's Survey of Earned Doctorates, there were 2,675 doctoral degrees awarded in Chemistry in 2015. That's about 4.9% of all doctoral degrees for 2015 as tracked by the NSF.

SANTA CLARA VALLEY SECTION
AMERICAN CHEMICAL SOCIETY
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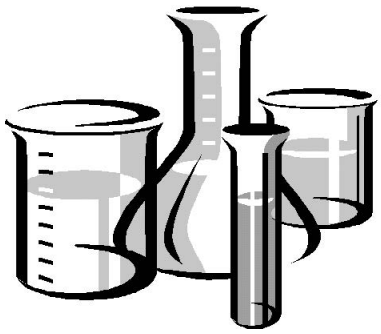

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Newsletter

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FUTURE EVENTS

Apr 2-6 *ACS National Meeting and Exposition*
San Francisco, CA

Apr 13 *Connected Health Innovation*
Dr. Joseph C. Kvedar
PARC Forum

Apr 22 Bay Area Science Festival
March for Science Santa Cruz
March for Science San Jose
March for Science San Francisco

May 6 ACS 29th Annual Northern California Undergraduate Research Symposium
San Jose State University Student Union
http://www.sjsu.edu/chemistry/Events/

Jul 8 SCVACS Annual Family Picnic, Wine Tasting and Award Ceremony
Stanford University Chemistry Department

Click on links for more information or see this newsletter at *http://scvacs.org/?page_id=99*