Newsletter

February 2016

Silicon Valley Chemist

Santa Clara Valley Section — American Chemical Society

Volume 38 No. 2

FEBRUARY 2016 NEWSLETTER TOPICS

Connect with Chemists

Meet fellow local chemists
for an early morning coffee.
Look for Ean at a table with molecular models.

Thursday, February 11th, 2016 at 7 a.m.
Coupa Café, 538 Ramona Street, Palo Alto
(a half a block off from University Avenue)

Chair's Message

Jane Frommer

"Reengineering Chemistry" was the eye-catching title of George Whitesides' talk on the opening day of the ACS National Meeting in Boston last August. With years of experience leading a multidisciplinary research group and multiple spin-offs through interfaces varying from diagnostics to robotics, the Harvard chemistry professor succinctly identified a spectrum of societal issues for chemists to confront. Key to advancing is distilling complexity toward simplicity in defining problems, and using

continued on next page

251st American Chemical Society National Meeting and Exposition

March 13-17, 2016 San Diego, CA

Computers in Chemistry

Plenary Session

Computers in Chemistry Plenary Session

Date: Sunday, March 13, 3:00-6:00 p.m.

Location: San Diego Convention Center Ballroom 20 A-C

Using Self-Assembly to make Functional Materials: Computational Perspectives

Dr. George C. Schatz, Morrison Professor of Chemistry; Professor of Chemical and Biological Engineering, Editor-in-Chief, Journal of Physical Chemistry, Department of Chemistry, Northwestern University

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Proton-coupled electron transfer in catalysis and energy conversion

Dr. Sharon Hammes-Schiffer, Swanlund Professor of Chemistry, Department of Chemistry, University of Illinois at Urbana-Champaign

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Post-Evolutionary Biology: Design of novel protein structures, functions and assemblies

Dr. David Baker, Head of the Institute for Protein Design, Department of Biochemistry, University of Washington

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30 Years of Free Energy Perturbation Theory: From Free Energies of Hydration to Drug Discovery

Dr. William L. Jorgensen, Sterling Professor of Chemistry, Department of Chemistry, Yale University

Kavli Foundation Lecture Series

The Fred Kavli Innovations in Chemistry Lecture

Date: Monday, March 14, 5:15-6:30 P.M.

Location: Ballroom 20 A-C

Quantum Solutions for a Sustainable Energy Future

Dr. Emily Carter, Princeton University

The current energy landscape is unsustainable; the burning of fossil fuels is causing tremendous harm to the planet that threatens the survivability of civilization as we know it. Using quantum mechanical computational methods, we explore the viability of alternative clean energy strategies for conversion of sunlight to electricity and fuels, clean and efficient combustion of biodiesel, and optimization of robust materials for fusion reactor walls.

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The Kavli Foundation Emerging Leader in Chemistry Lecture

Date: Monday, March 14, 4:00-5:10 P.M.

Location: Ballroom 20 A-C

Computing Cures: Enabling Chemical Discovery through the Lens of a Computational Microscope

Dr. Rommie Amaro, University of California, San Diego

Computational chemistry is on the cusp of a new era, in which physics-based models of molecular systems bring new and unexpected insights into drug discovery. With exascale computing power on the horizon, we are rapidly moving towards the exploration of the chemical nature of cells at unprecedented scales.

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Chair's Message,continued from front page

interdisciplinarity to solve them. He mothballs as self-defeating the distinction between basic and applied research, instead highlighting the opportunity for basic discovery in addressing social problems with technological advances. Whitesides skillfully distills complex issues into a "What's Next" classification of societal problems for chemistry to address, presented here, with his permission:

- What is the molecular basis of life, and how did life originate?
- How does the brain think?
- How do dissipative systems work? Oceans and atmosphere, metabolism, flames
- Water, and its unique role in life and society
- Rational drug design
- Information: the cell, public health, megacities, global monitoring
- Healthcare, and cost reduction: "End-of-life" or healthy life?
- The microbiome, nutrition, and other hidden variables in health
- Climate instability, CO_2, the sun, and human activity
- Energy generation, use, storage, and conservation
- Catalysis, especially heterogeneous and biological catalyses
- Computation and simulation of real, large-scale systems
- Impossible materials
- The chemistry of the planets: Are we alone, or is life everywhere?
- Augmenting humans
- Analytical techniques that open new areas of science
- Conflict and national security
- Distributing the benefits of technology across societies: frugal technology
- Humans and machines: robotics
- Death
- Controlling the global population
- Combining human thinking and computer "thinking"
- All the rest: jobs, globalization, international competition, and Big Data

The list ends with # 24 - Combinations with adjacent fields. This final brings to mind biologist Stuart Kauffman's 'The Adjacent Possible' and author Steven Johnson's How We Got To Now, stimulating writing about nonlinear pathways to solutions.

You can enjoy George Whitesides' thoughts on reinventing chemistry in his article in the March 9, 2015 edition of Angewandte Chemie ***http://onlinelibrary.wiley.com/doi/10.1002/anie.201410884/epdf***

A video of his Kavli lecture at the Boston meeting covered many of the same points: ***https://presentations.acs.org/common/media-player.aspx/Fall2015/MPPG/MPPG4a/N102456***

Chemistry Quiz

This extremely potent toxin with 32 rings and 98 stereocenters, is the largest and most complex natural product that is neither a protein nor a polysaccharide. What is the name of this molecule and where does it come from?

Last Month's Quiz

Bastnäsite deposits in China and the United States constitute the largest percentage of the world's rare-earth economic resources. What three rare earth elements are most abundant in Bastnäsite?

Bastnäsite is a family of three carbonate-fluoride minerals. They contain the rare earth elements cerium (Ce), lanthanum (La) and yttrium (Y). ***https://en.wikipedia.org/wiki/Bastnäsite***

Does the Public Appreciate Chemistry?

Does the public appreciate chemistry?

Atilla Pavlath gave us the benefit of his accrued wisdom on this topic and a call to action on the occasion of his receiving the annual Santa Clara Valley ACS Harry and Carol Mosher Award on January 21, 2016. The award is conferred for the combined accomplishments of outstanding work in chemistry, accomplishments in advancing chemistry as a profession, and service to the ACS. [See accompanying Call for Nominations for the 2016 Mosher Award.]

Dr. Pavlath's long and on-going career in chemistry demonstrates amply all three accomplishments. He lectures far and wide with the message that chemists themselves step up to the challenge of changing the public perception of chemistry.

Following are excerpts from his invigorating presentation.

Why does the media prefer to publish the occasional problems attributed to chemistry rather than the hundreds of benefits it provides? I asked the science editor of a local newspaper this question. His answer was simple: the media operates on the premise of "good news is no news"! He cited a poll taken at the Indy 500 where the majority of spectators stated their primary reason for attending was to see a spectacular crash. This is human nature.

We chemists are just as guilty as the media in the decline of the public image of chemistry. Each of us from the youngest chemist to a famous Nobel Prize winner has the responsibility to talk to the public. We are guilty of not talking about the benefits of chemistry in a language suitable for the wider populace whose knowledge of chemistry is limited. The public is interested in how our discoveries affect their everyday life, not how we achieve them. A detailed description of the Haber-Bosch synthesis leaves them uninterested, yet when they become aware that it provides agriculture with artificial fertilizer resulting in increased food production and decreased cost, they appreciate chemistry without needing to understand the process.

You find dozens of similar examples in energy, transportation, communication, medicine and food in plain language at www.chemistryinyourlife.org. Step outside of your cocoon of scientific meetings and go to non-scientific meetings to tell the audience how chemistry affects them, regardless of whether it is your own or others' work. While chemical pursuits are the norm of your professional life, consider featuring them at social and business organizations, for example, Lions or Rotary lunchtime talks. If nothing else, include chemistry in your conversation with your neighbors. Keep it simple and clear. The younger generation can be reached through Facebook, Twitter and other popular social networks.

Today's young people are tomorrow's public opinion. If they do not take chemistry because they think it is dull, let's make the classes more interesting. To catch their interest, before talking about atoms and molecules, talk about what chemistry has done for them. The goal is not to create a class full of chemists. Whether they become bookkeepers, lawyers, mechanics, politicians or stay home parents, they should grow up to be adults who are not swayed easily by sensationalized headlines.

Will this erradicate misconceptions about the role of chemistry in our lives? Will it eliminate the sensationalized incorrect reporting? No! But we cannot wait for the perfect solution. Such philosophy created many of the problems of our profession.

Shakespeare wrote 400 years ago ***"Our doubts are traitors, and make us lose the good we oft might win by fearing to attempt"*** and then suggested the necessary action: ***"Our remedies oft in ourselves do lie, which we ascribe to heaven."***

Call for Nominations

Harry and Carol Mosher Award

The Mosher award was established in 1980 by the Santa Clara Valley ACS Section to:

- recognize and encourage outstanding work in chemistry
- advance chemistry as a profession
- recognize service to ACS

The award is named for the late Dr. Harry S. Mosher of Stanford University and Carol W. Mosher of the Stanford Research Institute International, husband and wife, charter members and long-time supporters of the SCVACS section.

The first scientists to receive this award were Drs. Harry and Carol Mosher themselves, in recognition of the inspiration of their example. The award committee noted that the Moshers, including a brother, Dr. William A. Mosher, former University of Delaware Chemistry Department chair, were outstanding examples of chemists with the qualities to be recognized and honored by this award.

Recipients of the Mosher Award since 1980 are listed on the SCV ACS website ***http://scvacs.org/?page_id=44#Mosher***

You are invited to nominate a deserving scientist for the 2016 Mosher Award.

Any ACS member in the United States is eligible to be nominated. Nominations, including attachments (e.g., reprints) should be sent by e-mail to mosher_award@scvacs.org

The nomination should address the three criteria of outstanding work in chemistry, accomplishments in advancing chemistry as a profession, and service to the ACS.

At least one seconding letter should be submitted (but no more than three).

Hard copy information, if necessary, may be sent to:

Chair, Mosher Award Committee
Santa Clara Valley Section
American Chemical Society
Post Office Box 395, Palo Alto, CA 94302-0395

The deadline for submission of nominations is the last day in May of each year.

Local Science Fairs in 2016

by Susan Oldham-Fritts

While chocolate and flowers are high on many people's Valentine's Day list, how about a gift that keeps on giving? While the cost is minimal - a day of your time judging at your local science fair - the return is great, encouraging middle and high school students' interest in STEM: science, technology, engineering, and mathematics. Sign up as either a **category awards judge** for one of the following science fairs, or join our **SCV-ACS sponsored special award judging team** at the Synopsys Championship. The Synopsys Championship science fair is the local qualifier for the International Science and Engineering Fair, ISEF. Please contact Susan Oldham-Fritts, sofritts@garlic.com, by February 29 to be on the ACS special award judging team on March 17th.

So, no matter which fair includes your home town, **please volunteer now!**

San Mateo County Science, Math and Technology Fair (February 29, 2016)
Hiller Aviation Museum
www.stemfair.net www.usc.edu/CSSF/Fairs/400.html

Monterey County Science and Engineering Fair (March 5, 2016)
California State University, Monterey Bay – University Center, Building 29
www.montereycountysciencefair.info

Santa Cruz Science Fair (March 12, 2016)
Santa Cruz County Fairgrounds
http://www.science.santacruz.k12.ca.us

San Francisco Bay Area Science Fair (March 16, 2016)
San Francisco County Fair Building - Golden Gate Park
http://sfbasf.org http://www.usc.edu/CSSF/Fairs/300.html

Synopsys Championship (March 17, 2016)
San Jose Convention Center, San Jose
www.outreach-foundation.org/judges.html

2015 Mosher Award Presentation

January 21, 2016

Howard Peters and 2015 Mosher Awardee Attila Pavlath

Left to right: Charles Gluchowski, Eileen Nottoli, Attila Pavlath, and Jane Frommer.

April 20, 2016 Wednesday 6PM

Michael's at Shoreline, Mountain View

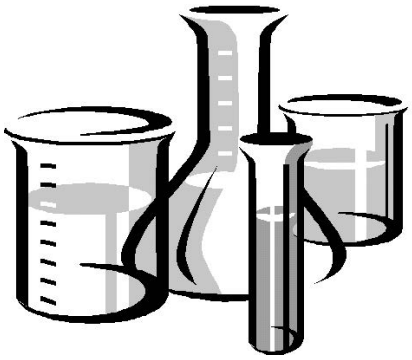
"Water Scarcity in California and Abroad"

Dr. Peter Gleick

Pacific Institute for Studies in Development, Environment, and Security

Check SCVACS.org for registration details

Santa Clara Valley American Chemical Society



Welcome to the Santa Clara Valley Section of ACS

Each month, the section receives a spreadsheet from national ACS with the names of members new to our section. The members are either new to ACS, have transferred in from other areas, or are the newest members -- students. To welcome you to the section and get to know you, the Executive Committee offers new members a free dinner! To encourage you to attend a monthly section seminar meeting, we would like you to be our guest. When you register, make certain to mention that you are a new member and you and a spouse (or friend) will be our guests. The seminar meetings are often the 3rd Thursday of the month at a local spot, somewhat convenient to the entire section. If you are unable to attend in the evening, perhaps you would join us for an outreach event, like judging a science fair, participating in the Chemistry Olympiad, or a National Chemistry Week event in October. Then, there is our annual wine tasting and awards picnic in July. The local section is a volunteer organization. Please attend an event, volunteer to help, and get to know your local fellow chemists. Welcome!

New Members for December

Dr. Eric Appel
Jacqueline Carozza
Georgette Castanedo
Dr. John Clifford Chabala
Dr. Serena Chang
Brent Cooley
Peter Cremin
Daniel A. Daley
Gnanamani Elumalai
Dr. Marzena Z. Fitzpatrick
Dr. Stephen P. Gill
Dr. Eric S. Handberg
Dr. Tony F. Heinz
Tess Elizabeth Hernandez
Dr. Sarah B. Hiza
William R. Hollingsworth IV
Dr. Laura T. Iraci
Jessica Victoria Lally
Alanna Kathleen Muldoon
Dr. Steven Kenneth Pollack
Leila Ranis
Sandhya Sriram
Natalie Tom
Sir. Christopher Loren Vaughn
Katherine Leigh Walker
Elizabeth Webster
Brian Wong
Dr. Genhua (Frank) Zheng

CHEMPLOYMENT ABSTRACTS FEBRUARY 2016

CHEMPLOYMENT ABSTRACT 3991

Position Title: Chemistry & Physics Assistant Professor Mansfield University of Pennsylvania.

Job Description: Teach forensic chemistry courses, laboratory, and other courses as assigned by the department chairperson. Participate in program and course assessment with the possibility of leadership opportunities. The successful applicant is expected to effectively advise a diverse student population and undertake a regular research program or other discipline-related scholarly activity involving students as appropriate. Continuing scholarly growth and service to the department, university and community is required for tenure and promotion. Maintain office hours on at least three different days per week.

QUALIFICATIONS DESIRED:

Education: Ph.D.

Experience: Ph.D. in chemistry from a regionally accredited (or foreign equivalent) university with emphasis on forensics; two years experience teaching college-level Chemistry courses; and completion of a successful interview, which may include a teaching demonstration of relevant knowledge and skills.

LOCATION, SALARY, EMPLOYER:

Job Location: Chemistry & Physics Dept., Mansfield University, Mansfield, PA

Salary: Assistant Professor rank. Salary is competitive and dependent on qualifications and experience. Excellent faculty benefits: http://hr.mansfield.edu/benefits.htm

Employer Description: Mansfield University of Pennsylvania

Application Instructions: Apply Here: http://jobs.mansfield.edu/postings/815 contact: Mr. Reynolchris Hinon, Jobtarget, Thames Street, 2nd Floor, Groton, CT 09340, Tel: (860) 440-0635, Email: r.hinon@jobtarget.com

SANTA CLARA VALLEY SECTION
AMERICAN CHEMICAL SOCIETY
P.O. Box 395, Palo Alto, CA 94302

http://www.scvacs.org

To receive an email when our newsletter is published on our web site, sign up at:
http://www.scvacs.org/newsletter/

SANTA CLARA VALLEY SECTION

2016 Section Officers

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FUTURE EVENTS

Feb 22-26 National Engineers Week
at the Hiller Aviation Museum
Open to grades 3-8
San Carlos, CA
www.hiller.org/engineers_week_2016.shtml

Feb 25 Dr. Susan Altenbach, USDA
Wheat Allergies
California Section of the ACS
http://calacs.org/

Feb 27 Science Saturday: Worms, Slugs and Bugs
Pacific Grove Museum of Natural History
www.pgmuseum.org/museum-events/2016/2/27/j562wsgaarhzrz6hbzjeehp1zauqul

Mar 17 Santa Clara County Synopsys Championship Science Fair
San Jose Convention Center
Judges needed!
See page 4 of this newsletter

Mar 26 SCV-ACS March Event
Silicon Valley Advanced Water Purification Center - a tour for chemists
San Jose, CA
Registration required
http://scvacs.org