

Silicon Valley Chemist

Santa Clara Valley Section

American Chemical Society

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SEPTEMBER 2015 NEWSLETTER TOPICS

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Connect with Chemists

Meet fellow local chemists for an early morning coffee.

Look for Ean at a table with molecular models.

Thursday, September 17 at 7 a.m.

Coupa Café, 538 Ramona Street, Palo Alto
(a half a block off from University Avenue)

Chair's Message

Ashley Piekarski



The National ACS Meeting in Boston was such a great trip! I hope those of you who had the chance to attend the meeting enjoyed yourselves at the conference.

It was my first time in Boston, and I must say, I am ruined for clam chowder anywhere else!

I attended several technical sessions for Chemical Education and Organic Chemistry which I always find interesting. Having volunteered for the Santa Clara Valley ACS local section, I also attended the ChemLuminary Awards. The ChemLuminary Awards recognize local sections, regional meetings, divisions, and international science chapters who have volunteered their time to host events promoting chemistry and the chemical

October Seminar Dinner Meeting

W. E. Moerner, 2014 Chemistry Nobel Laureate

"The Story of Light and Single Molecules, From Early Spectroscopy in Solids to Super-Resolution Nanoscopy in Cells and Beyond"



Professor W.E. Moerner

*Harry S. Mosher Professor, Department of Chemistry
Biophysics Program and Molecular Imaging Program
Stanford University*

Date: **Tuesday, October 27, 2015**

Time: 6:00 p.m. Social Hour
7:00 p.m. Dinner
8:00 p.m. Presentation

Location: Michael's at Shoreline
2960 N Shoreline Blvd.
Mountain View, CA

Cost : \$30 early registration
Half price for unemployed/retired/students

Free to attend just lecture at 8pm, but please let us know for headcount

Registration will be opened early October on the Santa Clara Valley ACS website

www.scvacs.org

Match-a-Membership – half price membership in the AACT

(American Association of Chemistry Teachers)

An expression of support from your local Santa Clara Valley ACS section

www.scvacs.org/Local_Folder/AACT_Flyer.pdf

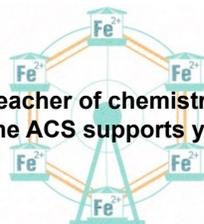
AACT is not just for chemistry teachers – it's for anyone conveying science.

Parents and volunteers, too.

Check out the AACT website and join through

our SCV ACS half-price program. <http://teachchemistry.org>

**Teacher of chemistry?
The ACS supports you.**



Science Coaches

Form a companionship between a teacher and a practicing chemist and earn \$500 for the teacher's classroom. Sign-up is easy.

www.acs.org/content/acs/en/education/outreach/science-coaches.html

sciences in their community. Last year I attended my first ChemLuminary Awards and our local section and the California section won the Outstanding Regional Meeting! This year I would like to congratulate the California section for having won the best overall WCC (Women's Chemist Committee) local section!

It is wonderful to attend these ChemLuminary Awards because I get so many exciting ideas of events and activities we could host ourselves! There is a poster session prior to

the award ceremony where I was able to walk around and ask local section leaders questions about what works for them! The Midland section poster stood out to me. They also have an active WCC chapter, and I was interested to learn all about their activities. After my term as Chair is completed, I would like to start a WCC chapter here in the SCV local section! When I was an undergraduate, I helped start a club on campus called TWIST (Trinity Women in Science and Technology). We

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Chair's Message, continued from front page

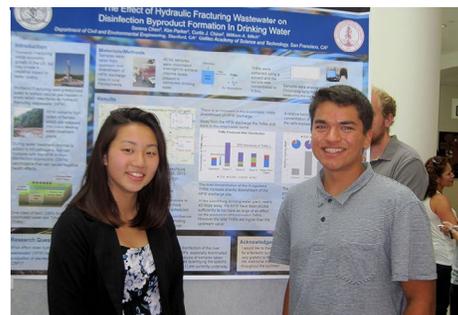
enjoyed hosting panels where professionals would talk about their work-life balance. As a student, I learned so much from the female scientists and doctors we invited to our school. Now that I am an educator and leader of our local section, I would like to continue on the tradition of reaching out and inspiring a new generation of female scientists to not give up on their dreams of having a career in science! If you are interested in helping me start this group, please email me!

Finally, another highlight of the conference for me was attending the ACS Fellows Awards Ceremony. Every year the American Chemical Society recognizes individuals for their outstanding achievements and contributions to science, the profession, and the Society. We are very fortunate to have two of our members receive this prestigious award, Dr. Jane Frommer and Dr. Bonnie Charpentier. I would like to congratulate them both for this well-deserved award!

Raising Interest in Science and Engineering

The ACS RISE Summer Internship Program - Raising Interest in Science and Engineering - is an opportunity for high school students to perform summer research. The program is sponsored by the ACS Office of Science Outreach. Typically awarded to high school juniors, the internship of seven weeks takes place on the Stanford campus under the direction of a Stanford professor and mentor. The ACS Santa Clara Valley Local Section has long supported local high school students for this summer research program at Stanford through the section's involvement in ACS Project SEED, <http://www.acs.org/content/acs/en/education/students/highschool/seed.html>.

Students Serena Chen of Galileo High School in San Francisco and James Delgado of Sequoia High School in Redwood City were our 2015 participants in ACS RISE in Stanford labs. We look forward to great science in the future of these talented students.



Philae Probe Sniffs Out Comet's Chemistry

By Sarah Everts

Last November, the world watched with bated breath as the European Space Agency's Rosetta mission landed a probe for the first time on the surface of a comet. Now a series of seven papers in the journal *Science* provide new data and analyses from that mission to the 2.7-mile-long, dumbbell-shaped comet 67P/Churyumov-Gerasimenko, often abbreviated as 67P.

Among the results of imaging, radar, and other experiments, two papers reveal the molecular makeup of 67P, including the observation of four organic molecules not previously observed on a comet and the presence of a radiation-induced polymer (*Science* 2015, DOI: 10.1126/science.aab0673 and 10.1126/science.aab0689).

The washing machine-sized Philae probe had a rough landing. On its first touchdown, the systems required to tether the probe to the comet's icy, solid core failed. So instead, Philae bounced several times, colliding with the rim of a crater before coming to its final landing spot more than a kilometer away, says mission scientist Jens Biele at the German Aerospace Center in Cologne, Germany.

Because of these landing glitches, several of the mission's scientific operations failed, including a plan to drill into the comet's interior and send the samples to two mass spectrometers on the lander, Ptolemy and COSAC.

Luckily, however, both mass spectrometers have an emergency "sniff" mode, says Fred Goesmann, who leads the COSAC experiment. This permits the analysis of mol-

ecules that have passively percolated into the apparatus through venting pipes.

Using this sniff mode, COSAC detected 16 organic compounds, including four that have never before been observed on a comet: methyl isocyanate, acetone, propanal, and acetamide. The findings reinforce the view that comets boast a rich inventory of organic molecules, comments Steve Charnley, a molecular astrophysicist at NASA who wasn't involved in the work. It also furthers the origin-of-life theory that comets striking Earth during the prebiotic era may have supplied organic molecules that helped life evolve on our planet, he says.

Data acquired using the second mass spectrometer, Ptolemy, revealed that the comet contains organic polymers, most likely from the radiation-induced polymerization of formaldehyde, says Ian P. Wright, who leads the Ptolemy experiment. Ptolemy also detected a significant amount of carbon dioxide, a molecule that was not observed using COSAC.

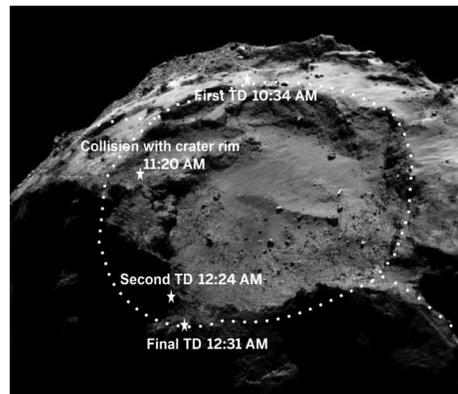
This and other inconsistencies in what the two spectrometers measured—for example, COSAC found a high abundance of nitrogen-containing compounds, while Ptolemy detected none—likely "says something about the heterogeneity of the comet," Wright says. Or the inconsistencies could have to do with the 180° difference in relative orientations of the mass spectrometers, Goesmann says. COSAC, which faced the comet surface, might have measured comet dust billowing up, while Ptolemy, which faced outward,

might have measured elements of the haze around the comet's surface.

In the meantime, Wright says the Philae mission team is busy trying to solve communication problems with the probe—the radio signal is fickle—so that they can upload new command sequences that would permit the probe to learn more about 67P.

"The results already in hand are an incredible achievement, especially considering the landing challenges and the fact that these analyses come from only about two minutes of data acquisition," comments Michael Mumma, the director of the Goddard Center for Astrobiology, at NASA. "This work shows the very tip of the cornucopia of rewards that will ensue if they can get the damn thing working again."

A version of this article first appeared in the August 3, 2015 issue of C&EN magazine



"When *Philae* first touched down at 10:34 AM EST on Nov. 11, it bounced. It then collided with a crater, bounced a second time, and finally came to a rest almost two hours later and more than a kilometer away". Credit: ESA/ROSETTA/NAVCAM/SONC/DLR"

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 July

Arjun Aditham
Sajani Achalanka Basnayake
Jason Solon Chen
Dr. Shuo Chen
Christopher D. Claeboe
Dmitry Danylov
Dr. Sandra J. Degen
Tovah Eichenbaum
Justin Henry Faris
Ming Gong
Christina Gonzalez
Dr. Kurt L. Haller
Dr. Gemma Louise Holliday

Katlyn Kelli Meier
Rene S. Mercado
Praneeth reddy Nimmala
Michel Nuevo
Jessica Ann Pfeilsticker
Dr. Debbie Tahmassebi
Dr. Pierre Tomasini
Zhengping Wang
Dr. Molly Warnke
Rudy Wojtecki
Jie Xu
Hong Yang

Volunteering Opportunity Available!

Hands-on science experiments for children are among the activities planned for area residents during this year's celebration of National Chemistry Week, October 18-24. This year's theme is "Chemistry Colors our World."

Back by popular demand, this year's celebration will kick-off on Saturday, October 10th, 10 a.m. to 1 p.m. at the Dr. Martin Luther King Jr. Library in San Jose (150 East San Fernando Street) with a day of hands-on science activities for elementary-school children and their parents. ACS members and student members can volunteer to supervise and explain the importance of each activity. The Chemistry Wheel of Fortune will be spinning for all children to win a prize. Children will make colorful slime in the slime lab, experiment with boo bubbles and explore the fascinating and varied chemistry of food colors and fireworks, rainbows, natural dyes and pigments, and more. To volunteer, contact NCW Coordinator, Abby Kennedy, akenne-dycali2007@yahoo.com or 209-640-2005.

CHEMPLOYMENT ABSTRACTS SEPTEMBER 2015

For a complete list of current abstracts, please visit: www.scvacs.org/Local_Folder/abstract.htm

CHEMPLOYMENT ABSTRACT 3990

Position Title: Medicinal and Synthetic Chemists

Job Description: Nanosyn has multiple openings for organic chemists with a Ph.D. degree in synthetic organic chemistry. The successful candidate must have the ability to work on multiple projects and adapt rapidly to new projects. Applicant will work on organic synthesis and drug discovery projects ranging from the initial stages through clinical candidate nomination.

QUALIFICATIONS DESIRED:

Education: Ph.D. in Organic Chemistry

Experience: The successful candidate must be familiar with techniques in synthetic organic chemistry, including but not limited to standard reaction techniques, synthetic route design, and data interpretation from various analytical techniques. One or more years of industrial experience is required.

LOCATION, SALARY, EMPLOYER:

Job Location: Santa Clara, CA

Salary: Competitive salary

Employer Description: Nanosyn is a drug discovery services company with a proven record of identifying and advancing hits to clinical candidates. Nanosyn specializes in medicinal, synthetic, analytical, and process chemistry and biological screening and profiling of compounds.

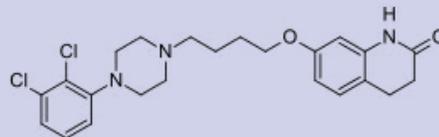
Application Instructions: For further details and to apply, please visit the careers section at <http://www.nanosyn.com/>

Chemistry Quiz

Tyrian purple dye was a highly prized pigment in antiquity. The great expense of producing it resulted in purple-dyed garments being symbols of wealth or royalty. What was the source of the primary pigment: 6,6'-dibromoindigo?

Last Month's Question:

This drug had \$7.2 billion in sales in 2014. What is its name and what does it treat?



-- Abilify (Aripiprazole) is an atypical antipsychotic primarily used in the treatment of schizophrenia, bipolar disorder, and as an add-on treatment for major depressive disorder, and irritability associated with autism.



SANTA CLARA VALLEY SECTION
AMERICAN CHEMICAL SOCIETY
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<http://www.scvacs.org>

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is published on our web site, sign up at:
<http://www.scvacs.org/newsletter/>

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ChemPloyment Abstracts

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FUTURE EVENTS

- Oct 10** National Chemistry Week
Hands-on activity open to all children
King Library, San Jose, CA
<http://curiodyssey.org/activities/family-events/community-days>
- Oct 18-24** National Chemistry Week
www.acs.org/content/acs/en/education/outreach/ncw.html
- Oct 27** SCVACS monthly Seminar Dinner Meeting
Speaker: Professor W.E. Moerner, Nobel Laureate in Chemistry
The Story of Light and Single Molecules, from Early Spectroscopy in Solids, to Super-Resolution Nanoscopy in Cells and Beyond
Michael's At Shoreline, Mountain View, CA
- Oct 29-31** 2015 SACNAS National Conference
Washington, DC
<http://sacnas.org/events/national-conf>
- Nov 10** SCVACS monthly Seminar Meeting
Establishing and Protecting Your Intellectual Property
- Nov 14** Hayward Fault Walking Tour
<http://msnucleus.org/haywardfault/hayward.html>
- Jan 21** SCVACS monthly Seminar Dinner Meeting
Mosher Award, Dr. Attila Pavlath awardee
Basque Cultural Center, South San Francisco