

Silicon Valley Chemist

Santa Clara Valley Section

American Chemical Society

Volume 36 No. 10

OCTOBER 2014 NEWSLETTER TOPICS

- October Seminar Meeting: Dr. Carl Djerassi's Play
- Chair's Message
- Connect with Chemists
- New Members for September
- November Seminar Meeting
- Science Experiments for Children on Tap for National Chemistry Week
- The 2014 Nobel Prize in Chemistry
- ACS Career Resources
- NASA's Ames Research Center 75th Anniversary Open House
- ACS Entrepreneur Summit
- Chemistry Quiz
- How To Start A Startup
- National Chemistry Week Celebration 2014

October Seminar Meeting

Dr. Carl Djerassi's Play "Insufficiency"

In collaboration with the California Section, we have a special opportunity to view Carl Djerassi's play, "Insufficiency", at the Z-Space theatre in San Francisco! This exciting event will be held on Tuesday, October 21, from 6 p.m. to 9:30 p.m. From 6-7 p.m. we will have a social hour with some heavy appetizers and soft drinks. A cash bar will be available for alcoholic beverages. The show will start at 7 p.m. and immediately after the show there will be an open discussion with Carl Djerassi about chemistry in the arts. Ticket prices are \$50/person. There is limited space

so it is a first come, first served basis! See our meeting page for further details: http://www.scvacs.org/Local_Folder/din_mtg.html



Chair's Message

Sixty years ago this month, the Santa Clara Valley Section split from the California Section. The local section plans to celebrate this anniversary with various events in the fall.

Our first event this fall will be a trip to see the play "Insufficiency" by Carl Djerassi. Dr. Djerassi, a professor emeritus at Stanford University, has an extensive list of accomplishments including research in the fields of oral contraceptives, antihistamines, and topical steroids. He is a member of numerous academies and has



received 32 honorary doctorates. Since 1997, he has been writing books and plays. Don't miss this rare opportunity to enjoy one of Dr. Djerassi's plays with other chemists.

Another don't miss event will be held at Foothill College on

November 13. As mentioned in the previous issue of The Silicon Valley Chemist, Foothill has a large periodic table on the wall outside its new science building. This science art is about 50 feet long and 15 feet high.

continued on next page

October Seminar Meeting

Date: Tuesday, October 21, 2014

Time: 6:00 p.m. Social Hour, hors d'oeuvres
7:00 p.m. "Insufficiency"
8:00 p.m. Discussion

Location: Z SPACE
450 Florida Street
San Francisco, CA
Only on-street parking is available.

Cost: \$50.00 per person

Reservations: For this event we need to use a procedure similar to the one we use for our summer picnics. Email Ashley Piekarski (ashley@scvacs.org) to let her know who you are and how many people are coming and payment is on the way. This email will establish the order in which the reservations are made in case there is a sellout. Then go to www.scvacs.org/Local_Folder/regform.html to print the registration form and mail your check by Tuesday, October 14.

Connect with Chemists

Meet fellow, local chemists for an early morning coffee. Look for Ean at a table with CH₄ and CO₂ molecular models

Thursday, October 16th at 7 a.m.

La Boulange
151 University Avenue, Palo Alto

Chair's Message, continued from front page

Each element is represented by a square with the element symbol, atomic number, and a picture. As part of our 60-year celebration, we will sponsor two elements. To choose the elements, we created a survey and asked our members and attendees of the ACS National Meeting in San Francisco to vote on which elements to sponsor. With 51 chemists recommending 25 different elements, the clear winners are scandium (Sc) and vanadium (V). The reason most cited for these elements is the obvious similarity to our local section abbreviation (SCV). There were other reasons cited, however, for choosing vanadium. M. Cagen and Saul Jaime-Figueroa suggested vanadium because it was first described by chemist Andres Manuel del Rio in Mexico in 1801. Yan Chen suggested the element because it is important in lithium-vanadium oxide batteries in electric vehi-

cles. Tom Passell suggested vanadium due to its possible involvement in the Oppenheimer-Phillips process. Scandium and vanadium were not the only popular suggestions. Molybdenum, seaborgium, hafnium, livermorium, and manganese also received quite a few votes.

Scandium and vanadium are both transition metals on either side of titanium on the periodic table. Scandium, atomic number 21, is a silvery-white metal that is primarily used to strengthen aluminum alloys. Scandium can be found in MiG-21 and MiG-29 jets, Smith & Wesson revolvers, bicycle frames, and baseball bats. Vanadium, atomic number 23, is silver-gray and is primarily used as an additive to steel to increase its strength. Vanadium pentoxide is used as a catalyst to make sulfuric acid. Both elements' names have roots in Scandinavia:

scandium being more obvious and vanadium being named after the Scandinavian goddess of love and beauty, Vanadis.

We will celebrate our 60-year anniversary with an event at Foothill College on November 13 when we have talks about the history and chemistry of the periodic table, scandium, and vanadium. In addition, we will invite college students to create posters related to elements for presentation. We will also incorporate the elements into our National Chemistry Week and Bay Area Science Festival activities.

Connect with Chemists for October will be on Thursday, October 16, at 7 a.m. at La Bouchange (151 University Avenue, Palo Alto). Look for me there – I'll have molecular models of methane and carbon dioxide in front of me.



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 September

Motohiro Arifuku	Mr. Wei Gao	Michael Garrett Johnson
Diego Avelloneda	Jeff Glasgow	Dr. Robert J. Kaiser
Dr. Liz Beans	Harjot Singh Grewal	Dr. Kimberly R. Kam
Eda Canales	Dr. David Allen Hahn	Aaron Kempema
Victor Cuyugan Changcoco	Christopher Hale	Schehrbano Khan
Mr. Ethan Crace	Kenichi Hamada	Cyrus Khojasteh
Francis Delos Reyes	Guojun Han	Dr. Taeseung Kim
Nia Deot	Duncan C. Harter	Dr. Uwe Klein
Dr. Robert Stuart Dordick	Kenneth Scott Hettie	Jessica Lee Klockow
Dr. Ron O. Dror	Cheng Hu	Dr. David Henry Krevor
Diane Eilerts	Claire L. Jackson	Dr. Klaus P. Kunze
Dr. Jonathan Fan	Alexander Joh	Michelle LeMesurier
Miguel J. Fernandez	David Beltran Johnson	
Dr. Dan L. Freeman	Destinee Johnson	

November Seminar Meeting

Date: Thursday, November 13, 2014

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

SCVACS's 60-year birthday. As part of our celebration, we will sponsor two elements, Scandium and Vanadium on the periodic table.

Location: Foothill College
Physical Science and
Engineering Center
(PSEC 4212)
12345 El Monte Road
Los Altos Hills, CA

Cost: \$26.00

Reservations: www.scvacs.org
or Dr. Ashley Piekarski
ashley@scvacs.org

Reservations should be made by Monday November 10th stating your name, address, company/school affiliation, number of people in party. Watch the web site for more information. If you are unable to honor your reservation please cancel by Wednesday, November 12th.

Science Experiments for Children on Tap for National Chemistry Week

By Abby Kennedy

Hands-on science experiments for children are among the many activities planned for area residents during this year's celebration of National Chemistry Week, October 18-25. This year's theme is "The Sweet Side of Chemistry –Candy." The annual event is an outreach program hosted by the Santa Clara Valley section of the American Chemical Society.

This year's celebration will kick off on Saturday, October 18th, 10 a.m. to 1 p.m. at the Dr. Martin Luther King Jr. Library in San Jose (150 East San

Fernando St.) with a day of hands-on science activities for elementary-school children and their parents. Area chemists will 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 candy. More information about this fun and free public event is available at www.scvacs.org.



The 2014 Nobel Prize in Chemistry

The 2014 Nobel Prize in Chemistry was awarded to William E. Moerner of Stanford University, Eric Betzig of the Howard Hughes Medical Institute in Virginia, and Stefan W. Hell of the Max Planck Institute for Biophysical Chemistry in Germany. The award honors the three chemists "for the development of super-resolved fluorescence microscopy," which allows the molecular processes to be viewed in real time.

Since the invention of the microscope, scientists have sought to see the inner workings of cells. Optical microscopy provided details at a cellular level, but a closer look would require a technological advance. In 1873, the microscopist Ernst Abbe stipulated a physical limit for the maximum resolution of a traditional optical microscope: it could never be better than 0.2 micrometers. This level of detail proved inadequate for addressing important biological questions on the molecular scale.

In solving this problem, the laureates have succeeded with two different approaches. The method of stimulated emission depletion (STED) microscopy, was developed by Stefan Hell in 2000. Two laser beams are utilized; one stimulates fluorescent molecules, another cancels out all fluorescence except for that in a nanometre-sized volume. Scanning over the sample,

nonometer for nanometer, yields an image with a resolution better than Abbe's stipulated limit. Eric Betzig and William Moerner, working separately, laid the foundation for the second method, single-molecule microscopy. The method relies upon the ability to turn the fluorescence of individual molecules on and off. Scientists image the same area multiple times, letting just a few interspersed molecules glow each time. Superimposing these images yields a dense super-image resolved at the nanolevel. In 2006 Eric Betzig utilized this method for the first time.

Today, nanoscopy is used throughout the world to interrogate biological systems on the nanoscale. The three laureates employ their techniques to study biology at the smallest scales. Dr. Hell studies how brain synapses work, Dr. Moerner looks at proteins related to Huntington's disease and Dr. Betzig tracks cell division inside embryos. "Biology has turned into chemistry," said Sven Lidin, chairman of the Nobel Committee for Chemistry and a professor of inorganic chemistry at Lund University. "Chemistry has turned into biology."

Professor William E. Moerner

is a native of the greater bay area, born in Pleasanton, but raised in Texas. After completing triple undergraduate degrees in Physics, Electrical Engineering, and Mathematics at Washington University in St. Louis, he completed his doctoral work at Cornell University. From 1981 through 1995, he worked at the IBM Almaden Research Center before taking up academic appointments at ETH Zurich, UCSD, Harvard, and finally Stanford. His work has been recognized with numerous awards including the Wolfe Prize in Chemistry, the Irving Langmuir Award, and the Peter Debye Award in Physical Chemistry.

Congratulations to all the laureates and their colleagues.



Formation of ice due to high humidity and low temperatures. Observed February 26, 2005, in Akureyri, Iceland. -- Evar Arnþórð Bjarmason

ACS Career Resources

The ACS Career Navigator provides valuable resources for job seekers at all levels. The webpage (<http://www.acs.org/content/acs/en/careers.html>) provides links to articles, tools and training resources.

For those just starting careers in chemistry, the sections on Career Pathways, and College to Career provide overviews of the different opportunities available. There is also a program to help find an internship.

Additional tools are available to assist chemists of all levels with job searches. Information on resume writing, interviewing strategies, negotiation career fairs, and personal career consulting are available. Gain information on salaries and trends in chemistry and related fields with market intelligence services and Salaries and Surveys. Or, further your career with the professional development courses offered through ACS. There are in-person short courses at ACS meetings, online short courses scheduled throughout the year, and now on-demand short courses that can be taken anytime. The new Sci-Mind™ platform offers learning opportunities tailored to the specific needs of industrial chemists (<http://www.acs.org/content/acs/en/careers/continuing/sci-mind.html>).

Chemistry Quiz

The existence of this element was confirmed in 1936 by Carlo Perrier and Emilio Segrè examining discarded radioactive parts from Ernest Lawrence's cyclotron. It is the lightest element with no stable isotopes.



What is the only letter of the alphabet that does not appear in the periodic table?

– The letter J does not appear in the periodic table. The letter Q appears in temporary element names such as ununquadium

NASA's Ames Research Center 75th Anniversary Open House

NASA Ames is opening its doors for the Silicon Valley community on the 18th October 2014 from 9 a.m. to 5 p.m. Take a two-mile walking tour through the center and visit with Ames engineers and scientists in booths set up in front of their facilities. After the walking tour, you can visit the plaza to learn about NASA missions. Food, drinks and NASA gift shop merchandise will be on sale.

This is a family-friendly event, and children's educational activities will be offered. <http://www.nasa.gov/ames/openhouse2014/>

Tickets are currently sold-out. However, two complimentary tickets are available for each of the first three people who send in the correct answers to the chemistry quiz published in this issue to editor Partha Bera at partha.pb@gmail.com

ACS Entrepreneurial Summit 2014

Gain insights on the latest trends and challenges facing chemical entrepreneurs

October 13-14, 2014 Washington, DC

The banner features three icons: a yellow diamond with a flask, a blue diamond with a Wi-Fi symbol, and a green diamond with a bar chart and people.

For more information on the ACS Entrepreneurial Resources Center visit:
<http://www.acs.org/content/acs/en/careers/career-services/resourcecenter.html>

How To Start A Startup

Date: Thursday, October 16, 2014

Time: 4:00 p.m.

Location: UCSF Mission Bay Campus
Byers Hall, Room 212
1600 4th Street
San Francisco, CA

This course is taught by Y Combinator (YC), the top accelerator in the US, and its guests who constitute the leading lights of Silicon Valley entrepreneurship. YC's course is being distributed by video to a select number of universities including UCSF. YC has been called the best program for creating top-end entrepreneurs that has ever existed. We are making the next two sessions available of this exclusive class taught by Paul Graham, YC Founder; Peter Thiel, Founder, Founders Fund and Sam Altman, President, YC. Topics include how to select an idea,

getting started, talking to users and business strategy. Participants can attend one or both sessions. We will view the videos together and discuss them in class.

Peter Thiel, Founder, Paypal and Palantir, and Partner Founders Fund; Alex Schultz, VP Growth, Facebook. Business Strategy and Monopoly Theory, Growth.

Tickets on sale at: <http://qb3.org/calendar/how-start-startup>

**Happy
Halloween**



Santa Clara Valley ACS cordially invites you to...

National Chemistry Week Celebration 2014

Saturday, October 18

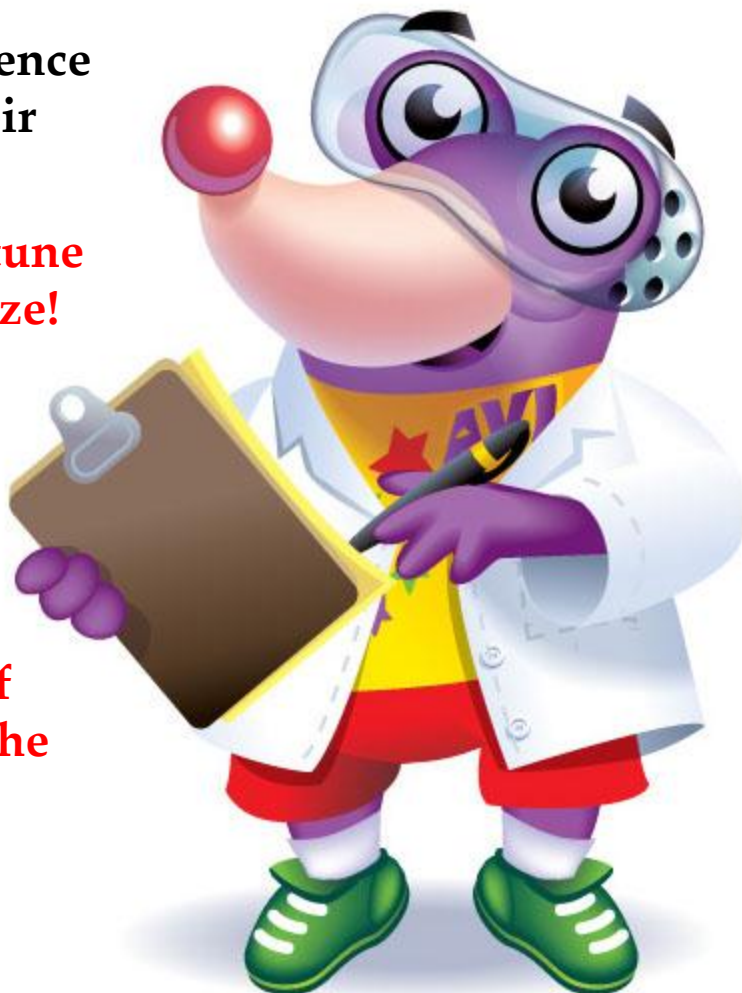
10 a.m. to 1 p.m.

Dr. MLK Jr. Library

150 E. San Fernando St., San Jose

A FREE, interactive experience for kids of all ages and their families featuring:

- **Chemistry Wheel of Fortune** where everyone wins a prize!
- **A slime lab!**
- **Hands-on chemistry** activities for kids, about the chemistry of candy
- **Pick up your free copy of "Celebrating Chemistry"** the ACS publication for elementary kids.



For more info:

Abby (209-640-2005) or go to www.scvacs.org



SANTA CLARA VALLEY SECTION
AMERICAN CHEMICAL SOCIETY
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Visit our web site at:



<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/>

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Director:	Liang Cao	liang.cao@aol.com
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FUTURE MEETINGS

- Oct 11** Teach the Teachers Workshop
Juanita Ryan and RAFT
Mission College, Santa Clara, CA
- Oct 16** Connect with Chemists
La Boulange, Palo Alto
- Oct 18** National Chemistry Week
Celebration 2014
Dr. MLK Jr. Library
San Jose, CA
- Oct 21** Production of Karl Djerassi's Play
"Insufficiency"
Joint event with the CA section
Z Space Below Theater
San Francisco, CA
Tickets must be prepaid
www.scvacs.org
- Nov 1** Bay Area Science Festival
AT&T Park, San Francisco, CA
Contact Dr. Natalie McClure if you
want to help.
nmclure@drugregulatoryaffairs.com
www.bayareascience.org/festival/discovery-days-at-att-park
- Nov 5** Free First Wednesday
Bay Area Science Museum
www.baykidsmuseum.org