

Silicon Valley Chemist

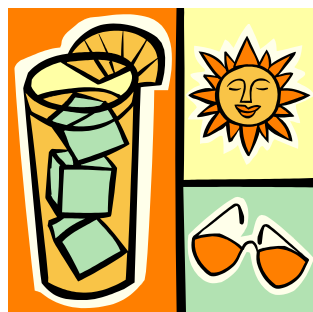
Santa Clara Valley Section

American Chemical Society

Volume 35 No. 9

SEPTEMBER 2013 NEWSLETTER TOPICS

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Chair's Message

Now that the summer's activities are past, we turn our focus to a variety of Santa Clara Valley section events that offer opportunities for all of our members to participate. One of my goals as Chair is to locate some of our dinner meetings close to clusters of membership based on their work address. It's no surprise that some of the larger such clusters are in the South San Francisco area where we will meet on the 19th of this month at the Basque Cultural Center.

In the member survey over 70% of



respondents said that attendance at a dinner meeting depended on the quality of the speaker and relevancy of the topic. In September the topic is "Gene Patenting" while in November we will hear from editors of "Wired" and the "New Scientist." These are opportunities to join a dinner meeting

with all of its social and informational activities without the long drive to a distant location. Come join us.

The member survey completed in the spring made it clear that many of our

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Reminder

September Dinner Meeting Gene Patenting

Jacob S. Sherkow, J. D.

Abstract:

Jacob Sherkow will discuss the Supreme Court's recent gene patenting decision in *Association for Molecular Pathology v. Myriad Genetics, Inc.* Jake will provide an overview of the history behind the relevant legal doctrine--patent eligibility--discuss how the Court's decision fits in that history, and provide some insight into how the decision will affect the pharmaceutical and biotechnology industries.

Biography:

Jacob S. Sherkow is a Fellow at Stanford Law School's Center for Law and the Biosciences (CLB). His current research focuses on the intersection of patent law, biotechnology, and agency regulation, for which he has been interviewed or quoted in a number of national media outlets. He is the author of several works of legal scholarship in law journals at BYU, Iowa,



Michigan, and Yale, as well popular pieces in publications such as the New York and Los Angeles Times. Jake is also the author of several scientific publications. Prior to joining CLB, Jake was a patent litigation associate at Gibson, Dunn & Crutcher in New York, a law clerk at the U.S. District Court for the Eastern District of New York, and an intern at the U.S. District Court for the District of Columbia.

September Dinner Meeting

Date: Thursday, September 19, 2013

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

Presentation: Jacob S. Sherkow, J. D.
Gene Patenting

Location: Basque Cultural Center
599 Railroad Avenue
South San Francisco, CA

www.sfbcc.us/content2.asp?id=13

Cost: \$28.00, Roast NY Strip or Salmon with Champagne Sauce or Vegetarian Pasta

Reservations: www.scvacs.org
or Karl Marhenke 831-688-4959

Reservations should be made by Monday, September 16th, stating your name, address, company/school affiliation, number of people in your party. Watch the web site for more information. If you are unable to honor your reservation and do not cancel by Wednesday, September 18th, you will be invoiced following the dinner meeting.

members seek opportunities to work on community outreach to students, the public and other scientists. The first of these will be in early October with the Western Regional Meeting. The organizing committee has prepared a terrific program with details at www.wrm2013.org.

Mark your calendars for another outreach event in October. The Teacher's Workshop will take place in October during the time of the WRM. Volunteers are always welcome for this event that draws science teachers from many grade levels. Details will emerge at our web site www.scvacs.org. With so many events in October, we will not have a dinner meeting that month.

November 2nd will see the Bay Area Science Event (Discovery Days at AT&T Park). This event has a reputation for drawing thousands of attendees from the general public. Simple and exciting experiments will be ready for you to demonstrate to those thousands of people. Contact Carmen Velez (velezcarmen@smccd.edu) to volunteer for this major outreach event.



2013 Election

By Karl Marhenke, SCV Secretary

Our 2013 election will be happening in October.

In August, the Executive Committee acted as a Committee of the Whole to nominate the necessary candidates, as our Nominations and Elections (N&E) Committee normally does.

We need to elect a Chair Elect, and to elect or re-elect a Secretary, a Treasurer, two Councilors and two Alternate Councilors.

Ashley Piekarsky has volunteered to serve the 3-year cycle of Chair Elect, Chair, and Immediate Past Chair, so the committee nominated her for Chair Elect.

Karl Marhenke and **Ihab Darwish** agreed to serve in 2014 for another year as Secretary and Treasurer, respectively, so the committee nominated them for re-election to those offices.

George Lechner and **Herb Silber** agreed to serve as Councilors for another three years; they were nominated for re-election.

Mark Kent agreed to serve another 3-year term as Alternate Councilor, but

Harry Ungar said he would not be a candidate for another term. **Carmen Velez** volunteered to run for Alternate Councilor. So the committee nominated Mark and Carmen for the two Alternate Councilor positions.

Over the years, it has proven to be exceedingly difficult to identify possible candidates for our positions, and to persuade them to agree to run. Our Chair, Peter Rusch, received 12 turn-downs for the office of Chair Elect before we finally found Ashley. So we feel extremely grateful for the fact that we have a candidate for each slot.

Besides nomination by the Nominations and Elections committee, there is another viable way to get on the ballot, and that is via a petition. It takes only 15 signatures to do it. It can even be yourself and 14 others. In some cases, you may have more than enough ACS members right at your workplace. The qualifications for office are simple:

First, you must be a member of the Santa Clara Valley Section, and

Second, you must agree to serve if elected. This is the tough one! (Just ask Peter Rusch.)

Send a sheet of paper with the name of your candidate and the office for which he or she will run, 15 or more signatures, plus the names of the signers legibly printed so that we can verify eligibility to sign. Send it to Karl Marhenke, Secretary, Santa Clara Valley Section, 1710 Wilshire Dr., Aptos, CA, 95003-2836.

And now we ask that you do us a favor. If you neither volunteered to run for a position when asked, or sent in a petition, please don't complain about the uncontested races on our ballot!

What about write-in votes? Well, they're permitted, but actually, they're nearly useless. We usually get ballots from about 10% of our electorate, which consists of nearly 3000 members. So a typical margin of "victory" is 300-0. We've never seen more than about 3 write-in votes for any position. A winning candidate for Chair Elect got onto the ballot once via petition, and all our other candidates got onto the ballot by being nominated by the N&E Committee. So go figure!

A final note: according to our bylaws, Affiliate Members may not participate in the election in any way; Student Members may vote and sign petitions, but they may not run for office.

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 dinner 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 dinner 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 List for August

Dr. Robert D. Allen	Dr. Roy K. Hom	Bruce Ephlin Ratcliff
Sarah E. Anderson	Tim Kane	Dr. Zhongxu Ren
Dr. Roberto A. Bogomolni	Vinit Gopal Kathardekar	Dr. Govindarao Sathyamoorthi
Cyril Bucher	Joseph A. Kaufman	Jessica Nichole Spradlin
Spencer Andrew Clark	Dr. Sarp Kaya	Dr. Steven T. Staben
Aleksandra Kirillovna Denisin	Dr. Anne R. Kopf-Sill	Dr. Oliver Stauch
Joseph B. Edson	Leonard Shing Leung Lee	Patrick Still
Leila Esmaeili	Chi-Wei Lo	Dr. Jerome Douglas Swalen
Brian T. Firliet	Dr. Jie Lu	Chandru Thambidurai
Dr. Ana Z. Gonzalez	Brent Murphy	Dr. Jun Yan
Amber Guillen	Thomas Bert Ottoboni	
Aditya Hindupur	Dr. Fang Qian	

2013 Western Regional Meeting

“The Many Elements of Chemistry” is the theme of the 44th Western Regional Meeting of the ACS (WRM2013) October 3-6 at the Santa Clara Hyatt Regency in Santa Clara, CA. The theme was chosen to highlight the diversity of chemistry and its involvement in all aspects of science and life. The meeting is co-hosted by the California and Santa Clara Valley Sections.

Santa Clara is at the south end of San Francisco Bay, convenient to San Jose, San Francisco, Oakland and the entire San Francisco Bay metropolitan area. The Bay Area is home to Silicon Valley and the heart of the biotech industry, in addition to many entrepreneurial small chemistry-based industries engaged in nanotech, solar energy, biofuels, wines, foods and others. The Bay Area is also the home of outstanding universities, leading dynamic corporations in pharmaceuticals, oil and gas production and refining, the computer hardware and software industry and home care products, and several outstanding government labs.

For evolving details of the program visit www.wrm2013.org.

TECHNICAL PROGRAM: A highly diverse program has been organized to reflect the theme of the meeting. Two special symposia, several workshops and beer chemistry and food chemistry social events anchor the substantial technical program. The many invited speakers address the highest levels of chemistry. On Thursday will be a symposium honoring Priestly Medalist Dr. Darleane Hoffman of the Lawrence Livermore National Labs and the University of California for her groundbreaking research in nuclear chemistry. On Friday will be a symposium honoring Cope Scholar Dr. Sarah Reisman of the California Institute of Technology titled “Advances in Total Synthesis.”

Technical sessions are scheduled in many areas of chemistry. Examples are:

- Analytical Chemistry of Semiconductors
- Best Practices of HPLC in Pharmaceutical Analysis
- Mass Spec: Quantitative and Qualitative Applications and Novel Techniques
- Bioprocessing in Biochemical Technology
- Chemistry and the Law: The America Invents Act
- Chemistry and the Law: Alternative Careers
- Lab Safety Changes Informed by the Revised Lab Standard and GHS
- Computational Chemistry

- Environmental Chemistry of Hydraulic Fracturing (Fracking)
- Ethnobotany as Inspiration for Drug Discovery
- The Many Flavors of Food Chemistry
- Petroleum and Bio-fuel Analysis
- Small-Molecule Activation and Redox Catalysis with Metal Complexes and Surfaces
- Recent Advances in Medicinal Chemistry
- Functional Carbon-based Nanomaterials
- New Technologies in Natural Product Discovery
- Organic Chemistry Approaches to Natural Product Development
- Recent Advances in NMR Applications and Technology
- Recent Advances in Organic Chemistry
- Solid State Properties in Drug Development
- Physical Chemistry for a Sustainable Future
- The Role of Silicon in Polymer Chemistry and Materials Science
- Polymers at the Interface with Biology
- Innovation in Process Chemistry
- Renewables in Biomass-based Commodity Chemicals from Biofuel Platforms
- Renewables: Chemicals and Polymers
- Solar Chemistry of Low-cost Materials for Photovoltaics
- Nanomaterials for Solar Energy

Special sessions are being presented in several areas. A two day symposium is planned to address **entrepreneurship** in chemistry where invited speaker sessions will address “Business Considerations for Science Entrepreneurs”, “Models and Roles for Incubators”, “Sources of Funding for Entrepreneurs”, and “True Stories of Entrepreneurs”. The California Section Women Chemists Committee will present “Women Chemists at Various Stages of Their Careers.” The Education program will include a session on “The Two-year College: A Legitimate Pathway for Underrepresented Minorities Pursuing STEM Careers.”

A broad range of poster sessions is planned to showcase original research in the topics outlined above, including undergraduate and graduate research. The poster sessions will be integrated into the exhibition space to encourage broad interactions.

WORKSHOPS: Several technical and career evolution workshops are available during the meeting. On Thursday will be a Chemical Safety workshop on “Laboratory Waste Management 2013.” Also on Thursday, The ACS Center for Leadership

Development will offer two half-day courses titled “Strategic Planning” and “Communicating Across Boundaries.” Sign up for the Leadership Development courses at: leaders@acs.org.

On Friday, in collaboration with the Pharmaceutical and BioScience Society (CACO-PBSS), will be a workshop titled “Advanced Approaches for Small Molecule Polymorph and Salt Selection: Screening, Preparation and Characterization.” Also on Friday will be the Chemical Safety workshop on “How to be a More Effective Chemical Hygiene Officer (CA Version).” The NRCC - CHO Certification exam will be offered on Saturday.

Also on Friday, the ACS Office of Career Management and Development Workshop on “Finding Your Pathway” will be given twice for both students and mid-career professionals. Resume reviews by an ACS Career Consultant will also be available.

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STUDENT PROGRAMMING: A full two-day program is planned for undergraduate chemistry students. This will include networking sessions sponsored by ACS Corporation Associates, a poster session for undergraduate students with a graduate school reception, a program designed for students interested in studying abroad sponsored by the International Affairs Committee and a Skills for Success networking session developed with the Two Year College Advisory Board.

SPECIAL EVENTS: Several social events are planned for the meeting. Event tickets may be purchased through registration, or as available on site. All events are at the hotel.

On Thursday, the ACS Office of Public Affairs will moderate a discussion on STEM education and National and California State legislative support.

On Thursday evening, there will be a reception after the sessions with Dr. Charles Bamforth of the University of California – Davis who will present a talk entitled “Pilsner, Porter, Polysaccharides and pH: The Classy Chemistry of Beer”. Several local microbreweries will be invited to provide a beer tasting at this reception.

On Friday, District VI Director Dr. Bonnie Charpentier and other members of the ACS Board of Directors will host a free luncheon and ACS Strategy Café to provide an opportunity for dialogue among the membership.

On Friday evening, the Western Region Awards dinner will feature an after dinner talk by Priestly Medalist Dr. Richard (Dick) Zare of Stanford University on “Why Shaken, Not Stirred.”

On Saturday, Oct 5, there will be a luncheon hosted by the California Section Women Chemists Committee featuring ACS President Dr. Marinda Wu.

On Saturday evening, there will be a reception featuring Shirley Corriher and Dr. Sara Risch who will explore “Food Mysteries”.

PUBLIC OUTREACH: There will be a special poster session on the Chemistry of the Elements for middle and high school students on Saturday. Students are encouraged to present posters on the chemistry and societal impact of the chemical elements important in the formation and life of the Western Region.

Also on Saturday will be a “Teach the Teachers” workshop for middle school teachers focused on the NCW theme of energy.

The meeting will conclude with a fun public outreach event of hands-on chemistry activities on Sunday at the Great America amusement park adjacent to the hotel venue.

EXHIBITS AND SPONSORSHIPS: The vendor exhibition will take place Thursday through Saturday in the Ballroom of the hotel and is co-located with the poster sessions and the break refreshments. To reserve space in the exhibit please visit the website.

Sponsorship of the meeting generally, specific sessions, refreshment breaks, special events and handouts is available by contacting the Co-Chairs at chair@wrm2013.org and through the website.

LODGING: The Santa Clara Hyatt Regency has reserved a special room block for the meeting at \$139 per

night including wifi service. Please refer to the website for the link to making reservations with the hotel, or contact the hotel directly and request the meeting rate. The ACS negotiated room reservation rate closes on September 12. Free parking is available at the hotel.

The hotel is easily accessed from I-880 and US101, which converge in the south bay area. Both easily connect to the site on Great America Parkway. There is ample free parking at the hotel in the adjacent convention center.

The hotel is readily accessible from the San Jose, San Francisco and Oakland airports. The hotel can be accessed from the San Jose area via light rail.

REGISTRATION: Meeting registration is available at www.wrm2013.org for members and non-members, and includes levels for students, unemployed and retired members. Early registration closes September 12 as does the housing block at the hotel. After September 30 registration is on-site. On-site registration at the hotel will be available Thursday, October 3, through Saturday, October 5, from 8AM to 5PM.



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For Blood Substitutes, Bigger May Be Better

By Katharine Sanderson, C&E News Online

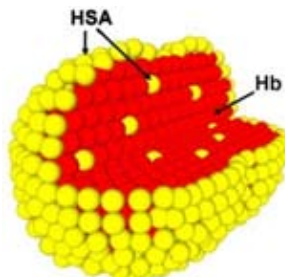


Figure 1 Oxygen Carrier: A new blood substitute consists of 700-nm-long particles of bovine hemoglobin (red, Hb) surrounded by human serum albumin (yellow, HSA). Credit: ACS Nano

Doctors have dreamed of artificial blood substitutes for cases in which accident victims or wounded soldiers need blood transfusions and donor blood supplies are thin. But many proposed substitutes have failed because they restrict blood flow by causing vessels to narrow. Now researchers report a new oxygen carrier built from animal hemoglobin that could get around this constriction problem (ACS Nano 2013, DOI: 10.1021/nl402073n).

Mimicking blood isn't easy, as failed

experiments on artificial blood in the late 1990s and 2000s disastrously showed. Scientists have based their substitutes on hemoglobin, the protein in blood that delivers oxygen to the body's tissues by binding and releasing the gas. Unfortunately, the protein is toxic when not contained inside a red blood cell. So researchers started to encase hemoglobin inside biocompatible particles. Previous studies have shown that these particles cause vasoconstriction, a narrowing of blood vessels.

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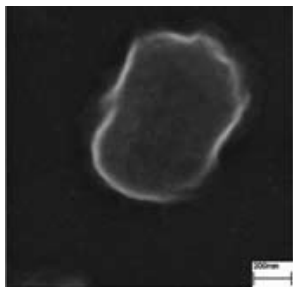


Figure 2 Big Blood: This blood-mimic particle is large enough to prevent dangerous nitric oxide scavenging, a problem for synthetic blood analogs. Credit: ACS Nano

One possible explanation for the side effect is that the particles are so small that they can sneak through gaps between endothelial cells in blood vessels. Once inside these gaps, the hemoglobin starts to bind nitric oxide (NO), a gas produced by endothelial cells to dilate blood vessels. Without NO, the vessels don't relax properly, and blood can't flow.

A team led by Hans Bäumler and Yu Xiong, at the Charité Medical University in Berlin, tried to overcome this problem with a strategy used by others: make particles that are between 100 nm and 1 μm in diameter. The upper size limit is to prevent the parti-

cles themselves from blocking circulation or being engulfed by immune cells.

The team made these hemoglobin-based oxygen carriers (HBOCs) through a simple novel procedure, Bäumler, says. First they coprecipitated bovine hemoglobin out of cow's blood with manganese carbonate. The porous manganese carbonate allowed the proteins to assemble into large particles. They then added human serum albumin, a blood plasma protein, to coat the particles and prevent them from clumping together. By adding a small amount of glutaraldehyde, the researchers cross-linked the hemoglobin units, so that they could dissolve away the manganese carbonate and keep the proteins stuck together. The resulting particles were all about 700 nm in diameter.

The team tested their HBOCs by flowing the particles through isolated mouse kidney arterioles. They observed that the blood vessels didn't constrict significantly. Conversely, hemoglobin alone made the vessels narrow down to just 6.3% of their original diameter.

Through a spectroscopic technique, the researchers also measured the particles' affinity

for oxygen and found that they had significantly higher affinity than free hemoglobin in solution. High affinity for oxygen solves another problem with blood substitutes. Previous carriers released their oxygen cargo too readily, causing dangerous free radicals to form, Bäumler says. "We need carriers that release oxygen only in the regions that need oxygen." So HBOCs need to have a high affinity for oxygen, holding the gas in place until it reaches a part of the body that needs oxygen.

Although the team's particles are a promising example of a new HBOC, many tests are needed before they can be ready for clinical trials in humans, says Leif Bülow, a hemoglobin expert from Lund University in Sweden. The researchers should look at a range of questions, including whether hemoglobin can be released from the particles, how the particles are degraded in the body, and whether the process can be scaled up in a cost-effective way.

Bäumler says his group is about to start studies in live animals and hopes to collect enough data to proceed to clinical trials in people.

CHEMPLOYMENT ABSTRACTS SEPTEMBER 2013

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

CHEMPLOYMENT ABSTRACT 3984

Position Title: Assistant Professor in Physical Chemistry

Job Description: Establish an externally funded and productive undergraduate research program in experimental physical chemistry, contribute to departmental research and teaching objectives, and demonstrate the ability to teach physical chemistry and general chemistry effectively. Specific responsibilities are posted at www.scu.edu/hr/careers/faculty.cfm

QUALIFICATIONS DESIRED:

Education: A Ph.D. and postdoctoral experience in physical chemistry or a closely allied field are required.

Experience: College teaching experience is highly desirable, and experience in teaching a diverse student population is preferred.

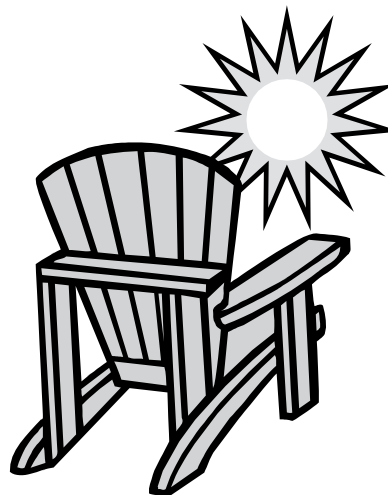
LOCATION, SALARY, EMPLOYER:

Job Location: Santa Clara, California

Salary: Competitive, depending on experience

Employer: Santa Clara University, located in Silicon Valley, is a highly ranked Jesuit Catholic institution with an ACS-approved undergraduate program and a housing program. It is an EO/AA employer committed to excellence through diversity, and welcomes applications from women, persons of color, and members of historically under-represented groups.

Application Instructions: For complete instructions and list of required application materials, please visit <http://www.scu.edu/hr/careers/faculty.cfm>. All materials should be sent in electronic form (Word and/or PDF format) to ChemApp@scu.edu. Completed applications must be received by October 11, 2013.





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

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:
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SANTA CLARA VALLEY SECTION

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Secretary	Karl Marhenke	831-688-4959	karlmar@armory.com
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ChemPloyment Abstracts

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

- Sep 8-12** 246th ACS National Meeting and Exposition
Indianapolis, IN
- Sep 19** September Dinner Meeting:
Gene Patenting
Jacob S. Sherkow, J.D.
Basque Cultural Center
South San Francisco, CA
- Oct 3-6** Western Regional Meeting
Santa Clara, CA
www.wrm2013.org
- Oct 5** Teach the Teachers Workshop
Mission College
Santa Clara, CA
- Oct 6** Great America Outreach
- Oct 20-26** National Chemistry Week
- Nov 14** "From Research to the News" from
Nadia Drake (Wired) and
Peter Aldhous (New Scientist)
Basque Cultural Center
South San Francisco, CA