

Silicon Valley Chemist

Santa Clara Valley Section

American Chemical Society

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SEPTEMBER 2012 NEWSLETTER TOPICS

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Chair's Message



The school year has come again, and we have just completed the Fall National meeting, which was in Philadelphia this year. The National meetings represent a big part of the ACS activities giving our members a forum to exchange research results and new ideas. The local sections are also an important part of the ACS. The ACS has 187 Local Sections located throughout the country. ACS members are automatically a member of a local section

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October Dinner Meeting Tools of Nanotechnology

Dr. Tobias Beetz, Stanford University

Abstract

The properties of matter are fundamentally different at the nanoscale in ways that are both useful and interesting. During the past years we have seen rapid advances in the way materials are fabricated, studied and controlled at the nanoscale. Developed tools can visualize and manipulate individual atoms and structures about one hundred thousand times finer than the diameter of a human hair. The talk will cover the basic principles of working at the nanoscale as well as showcase some research examples of advancing the applications of nanotechnology in a wide range of fields from the physical sciences to applications in medicine and energy.

Biography

Tobi Beetz is the Associate Director of the Stanford Nano Shared Facilities and has overall responsibility for leading all operational functions for the Nano facilities, including finance, research administration, facilities and property administration, human resources and health and safety. The Stanford Nano Shared Facilities provide the tools, training and support to enable cutting-edge nanoscale science and engineering research for researchers from Stanford University and other academic institutions as well as industry.

Tobi received his Ph.D. in Physics from Stony Brook University in 2004 after transferring from the Universität Würzburg. His thesis research focused on high-resolution x-ray imaging with and without lenses, as well as x-ray radiation damage studies. He spent two years as a Research Associate at the Center for Functional Nanomaterials at Brookhaven National Laboratory where he studied carbon nanotubes and other nanomaterials using advanced electron imaging and diffraction



techniques. Tobi spent two years at Xradia, Inc. where he led a team to develop novel high-resolution x-ray microscopes for the investigation of nanoscale objects. He joined Stanford University in 2008 as the Associate Director of the National Science Foundation-funded Center for Probing the Nanoscale before becoming the

Associate Director of the Stanford Nano Shared Facilities in 2011.

October Dinner Meeting

Date: Thursday, October 18, 2012

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

Speakers: Dr. Tobias Beetz
"Tools of Nanotechnology"
Associate Director, Stanford
Nano Shared Facilities,
Stanford University

Location: Biltmore Hotel & Suites
2151 Laurelwood Boulevard
Santa Clara, CA

Cost: \$26.00, Teriyaki Steak and
Eggplant Parmesan

Reservations: www.scvacs.org
Sally Peters 650-854-4614

Reservations should be made by October 15th 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 and do not cancel by Wednesday, October 17th, you will be invoiced following the dinner meeting.

Chair's Message, continued from front page

based on their address as provided to National. The local sections help chemists stay active and involved in their communities by providing a forum for networking and collaboration and by supporting chemists' efforts to educate their community about chemistry. There are 10 local sections in California. Two of the largest sections are in the Bay Area: the Santa Clara Valley section which encompasses 5 counties extending from the southern border of San Francisco to Monterey, and the California section which includes San Francisco, Berkeley, the East Bay and most of Northern California. There are over 7000 chemists in our two sections.

We are a volunteer organization, funded by dues and other donations, and all activities are developed, and run by fellow chemists. It is mostly fun and incredibly rewarding, especially when young students get excited about science and experiments. As a volunteer organization, we are always looking for new recruits. There are currently openings for:

- Public relations chair
- Membership and Nominations committee
- Program committee
- Chemistry Olympiad
- Award committees (Mosher, Ottenberg, Radding awards)
- Project SEED coordinator

There are also positions available to help with National Chemistry Week, Chemists Celebrate Earth Day, Teach the Teachers, and the other outreach programs the section runs. We are currently accepting nomination petitions for Councilor, Alternate Councilor, and section officer positions.

Some of these opportunities require a few hours work on a monthly basis, while other activities (like the award committees and chemistry Olympiad) are more seasonal. There is something to meet and fulfill every one's individual interests and time availability.

If you would like to get involved and help the Santa Clara Valley section grow and meet the needs of the community and the ACS members, please contact me, or any of the Executive Committee members.

Enjoy the rest of the summer. We have a great series of seminars lined up for the fall. I hope to see you at one of our next events.

Readers of the Silicon Valley Chemist

As the incoming editor of the Silicon Valley Chemist, I would like to recognize the contributions of our former editor, Aaron Novack. Over the past three years, Aaron has gone over and above the requirements of the volunteer editor to ensure deadlines were met and the content was pertinent and engaging to the readers. Although many are sad to see Aaron leave the San Francisco bay area for Los Angeles, we all understand it is in the best interest of his family and professional career. Aaron has left me with high standards to live up to as the new volunteer editor, and I will try my best to make it happen.

This is my first volunteer appointment with the Santa Clara Valley ACS, and I am very excited Dr. Bonnie Charpentier thought of me for this important position. Over the past 18 years I have called the bay area my home, and I have received degrees in Chemistry from San José State University and UC Santa Cruz. I have always enjoyed opportunities to volunteer in various capacities, and now that I am beginning my professional career, I see this position as a wonder-



ful means to help the professional and aspiring chemists of our community.

I will uphold the Silicon Valley Chemist as a forum for announcements, recognition, and beneficial information relating to the needs of chemists at all levels. Additionally, some of my goals as editor include an active pursuit of regular contributions from local student chapters of the ACS. Contributions can include information on upcoming/completed events, student profiles, and previews of ongoing research. The involvement of undergraduate and graduate affiliates with the Silicon Valley Chemist will provide a broader picture of what is happening throughout the Santa Clara Valley Section.

There are many other ideas that I would like to pursue as editor, most of which are focused on expanding involvement to a wider variety of members. What would you like to see added to the Silicon Valley Chemist? Feel free to email me with your suggestions at any time.

Nathaniel B. Zuckerman
nathanielzuckerman@gmail.com

Call for Nominations Petitions

By Karl Marhenke, SCVS Secretary

It's nearly time for our annual election, as mandated by our bylaws, to elect or re-elect a Secretary, a Treasurer, and a Chair Elect. Of our Section's 7 Councilors and 7 Alternate Councilors, three of each have terms which expire at the end of 2012. All of these people must be re-elected, or replaced.

Our present Chair Elect has found that her duties as a community college chemistry instructor will prevent her from advancing to the position of Chair, so this year, we also have to elect a Chair as well as a Chair Elect.

All of the present office holders except those in the Chair Elect, Chair, Immediate Past Chair cycle can choose to run for re-election, and doing that has become the norm, very often resulting in a ballot with no contested races (e.g., two names on the ballot, and directions to vote for no more than two).

We ask for your help to change this often (and justifiably) criticized situation: nominate yourself or a friend or colleague for

one of the above positions. All we need is a petition, consisting of a sheet of paper with:

- The name of the office
- The name of the proposed candidate
- The signatures and printed names (so that we can read them and verify their eligibility to sign) of 15 or more Section members.

The proposed candidate may be one of the signers, so if you want to run for one of the open positions, you only need 14 more signatures. Please send petitions to:

Karl Marhenke, Secretary
Santa Clara Valley Section, ACS
1710 Wilshire Drive
Aptos, CA 95003-2836

Petitions must be received by Saturday, September 29, 2012.

Section Affiliates cannot participate in the election in any way. Student Members cannot run for office, but they may sign petitions and they may vote.

continued on next page

The qualifications for running for office are:

1. Be a member of the Santa Clara Valley Section (except as noted above)
2. Agree to serve if elected

Number 2 is the hard one! It's the main reason we have trouble avoiding uncontested election, despite the fact that we have over 3100 members. Please help us!



Reminder

September Dinner Meeting

Reminder

Writing for Success Principles of Effective Writing

Kristin Sainani Ph.D.



Abstract

Writing is critical to success in science, yet scientists often receive little formal training in the principles of effective writing. As a result, scientific writing is often needlessly difficult and boring to read. This talk will teach you how to make your lab report, grant proposal, or manuscript more lively, engaging, and informative. The talk will review general principles of good writing, examples of good and bad writing, and tips for making the writing process itself more fun

and efficient.

Biography

Kristin Sainani has a background in both science and writing. After receiving an MS in statistics and PhD in epidemiology from Stanford University, she studied science writing at the University of California, Santa Cruz. Now a freelance health and science writer, she writes a health column for Allure magazine and a statistics column for the journal Physical Medicine and Rehabilitation. She is also a clinical assistant professor at Stanford University, where she teaches statistics and manuscript writing. Her 2011 and 2012 ACS Webinars on writing are available at: www.youtube.com/watch?v=rh-NHu5yOYc and www.youtube.com/watch?v=OJITpO3aEdM.

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. Hector A. Becerril
 Dr. Erik Paul Bierwagen
 Dr. Sean P. Brown
 Dr. Yuqin Cai
 Samantha Carrington
 Dr. Gary W. Cleary
 Dr. Remy Cromer
 Dr. Marcia Ilton Dawson
 Zhimin Du
 Donna Ann Dulo
 Ryan C. Fortenberry
 Gaurav Giri
 Dr. David I. Gittins
 Dr. Wolin Huang
 Loc Huynh
 Dr. Oleksandr Isaienko

Dr. Christina M. Johnston
 Todd Kimmel
 Dr. S S P Rao Kolluri
 Svitlana Kulyk
 Cheryl S. Leung
 Weiyang Li
 Haiqing Lin
 Pu Wen Liu
 Song Yu Liu
 William Joseph McGreevy
 Dr. Laura Nielsen
 Jeannette Marie O'Brien
 Robert V. O'Brien
 Jennifer Petraitis
 Barton Phillips
 Dr. Krishnaswamy Rengan

Dr. Anthony Romero
 Grant Masaaki Shibuya
 Neil H. Squires
 Matthew Stevens
 Dr. Arnold Thackray
 Dr. Burt Thomas
 Chi-Lin Tsai
 Austin Grant Wardrip
 Chris Warner
 Dr. John D. B. E. R. T. Weaver
 Lisa Marie Wesoloski
 Pui Kwan Wong
 Qiaoyin Wu
 Bryan Yeh

September Dinner Meeting

Date: Thursday, September 20, 2012

Time: 6:00 p.m. Social Hour
 6:45 p.m. Dinner
 7:45 p.m. Presentation

Speakers: Dr. Kristin L. Sainani

Location: Cañada College
 Building 9, Room 257
 (Learning Center Math Lab)
 4200 Farm Hill Boulevard
 Redwood City, CA

Parking: Access the SCVACS September dinner meeting website for important information, particularly about parking.

Menu: Make-your-own Fajita Buffet (tortillas, rice, beans, chicken, carnitas, sour cream, guacamole, cheese, churros, fruit salad, Snapple drinks) \$20 for members. \$10 for job seekers. Free for students!

Reservations: www.scvacs.org
 Sally Peters 650-854-4614

Reservations should be made by September 17th stating your name, address, company/school affiliation, number of people in party. Watch the web site for more information, particularly about parking. If you are unable to honor your reservation and do not cancel by Wednesday, September 19th, you will be invoiced following the dinner meeting.

Chemists Convene in Philadelphia

By Sophie Rovner (C&E News)

The City of Brotherly Love lived up to its moniker last week, with Philadelphia Mayor Michael A. Nutter giving a delightfully warm and self-deprecating welcome to attendees at the 244th American Chemical Society national meeting.

Nutter spoke during one of the meeting's highlights—The Kavli Foundation Innovations in Chemistry Lecture by Massachusetts Institute of Technology professor Robert S. Langer. Other popular events included plenary lectures related to the meeting's theme of "Materials for Health and Medicine."

In all, more than 13,000 chemists and other visitors attended the conference, including more than 3,000 students and 1,200 exposition exhibitors. The on-site ACS Career Fair hosted 45 employers and approximately 1,000 job seekers, who perused nearly 150 available positions. The Virtual Career Fair facilitated online interaction among 13 employers and 1,500 job seekers.

Chemists presented more than 8,000 papers covering topics as diverse as a new oil-spill dispersant and a simple assay to identify counterfeit drugs.

At a daylong session on the Innocence Project—an organization dedicated to exonerating wrongly convicted prisoners through analysis or reanalysis of DNA and other physical evidence—speakers described how faulty forensic science can contribute to wrongful

convictions and urged ACS members to help set new standards for forensic science disciplines.

Also at the meeting, the Committee on Chemical Safety and the Division of Chemical Health & Safety endorsed a proposal to peer-review a University of California lab safety training program that is being established in response to the death of a young researcher at UCLA (C&E News, Aug. 13, page 34).

Other activities included the ACS Board of Directors open meeting, which featured a discussion of ethics, and the ACS Council meeting, at which councilors explored ways for ACS to address the global water crisis. ACS President Bassam Z. Shakhshiri, who led the council discussion, noted that more than 1 billion people lack access to safe drinking water. Councilors suggested several possible actions for ACS, including conservation, development of education materials, and coordination with other societies to prevent duplication of efforts.

In other business, the council approved a request to form a Committee on Senior Chemists (C&E News, June 25, page 47). Final approval rests with the ACS Board of Directors.

The council rejected a petition seeking to change society bylaws to limit publication of articles in C&E News by candidates for top ACS offices during the six months before society elections (C&E News, Aug. 6, page 41).

The council also rejected a petition to allow the board of directors to fund specific ACS activities at the society's international chapters, at least in part because councilors believed the board already has this ability. Voting on a proposal to alter allotment of local section funding was deferred until next year.

A proposed realignment of two electoral districts, intended to keep member numbers in compliance with ACS bylaws, proved surprisingly controversial. Among other objections, some councilors noted that previous district realignments hadn't always made sense geographically and that additional realignments will soon be needed. The council eventually approved the proposed realignment but called for further study of redistricting on a nationwide basis.

The Committee on Budget and Finance met in Philadelphia to review the society's projected 2012 financial performance. Revenues are expected to reach \$491.6 million by year-end, and net contribution from operations is projected to total \$17.4 million, or \$1.6 million more than had been budgeted.

Tracking Nanoparticle Growth

By Lauren Wolf (C&E News)

A new method enables scientists to follow nanoparticle growth with a "label"—a metallic seed that is distinguishable from the rest of the nanoparticle via electron microscopy.

Using the method, Chad A. Mirkin of Northwestern University and coworkers have mapped how metallic nanoparticles change shape as they grow (Science, DOI: 10.1126/science.1225653). Knowing how nanoparticles evolve into certain shapes could help scientists better control the materials' electronic and catalytic properties, the team says.

"We have done for nanoparticle mechanistic work what the isotopic-labeling folks and fluorescent-labeling folks have done for

synthetic chemistry and biology, respectively," Mirkin says.

Oftentimes, he adds, "nanoparticles are made in a black-box type of operation." A graduate student might be an expert at making a particular particle shape under a certain set of conditions, he explains, but typically little is known about why the shape forms. Such syntheses can be quite useful, Mirkin adds, but it is difficult to adapt nanoparticle recipes to grow other desired shapes without better understanding how they form.

His group's new study addresses this knowledge gap. Starting with gold seed crystals, the Northwestern team grew an assort-

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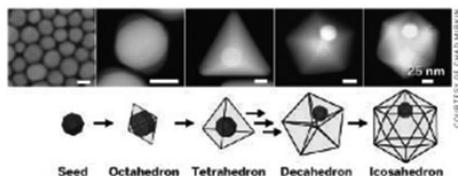
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Tracking, continued from previous page
 of differently shaped nanoparticles—octahedra, tetrahedra, and icosahedra, to name a few—by shining 550-nm light on the seeds in the presence of silver nitrate. The light helps catalyze deposition of silver onto the seeds' surfaces.

Because Au and Ag scatter electrons differently, the researchers could distinguish the two elements by electron microscopy: The seeds were plainly visible inside the final Ag-coated particles, indicating where nanoparticle growth was initiated.

The team then set out to learn how complex nanoparticle shapes evolve from



Electron Microscopy images illustrate how nanoparticles potentially grow and evolve from one shape to another. (All scale bars are 25 nm.)

specifically shaped Au seeds. In one experiment, they grew octahedral nanoparticles from cubic Au seeds. In another, they showed that octahedral seeds led to tetrahedral particles. On the basis of these and other investigations, the team proposed an overall growth pathway for the nanoparticles starting from a single Au seed and ending with an icosahedron—the most complex shape synthesized—via a number of intermediate shapes.

“What is really fascinating about this paper is that the team can image the embedded seed particle once the overall final nanoparticle is made,” says Catherine J. Murphy, a chemist at the University of Illinois, Urbana-Champaign. “Thus, more direct information about how

the seed dictates the final ‘outer’ nanoparticle crystal shape is obtained.”

“The labeling technique,” says Younan Xia, a chemist at Georgia Tech, “could become a very powerful tool for studying the nucleation and growth mechanisms of nanocrystals.”

Mirkin says the team is now trying to generalize its technique by exploring materials other than the Ag-Au system for tracking nanoparticle growth.



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ACCREDITED MEMBER
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More Highlights from the Picnic and Awards Ceremony ACS Members Honored for Their Many Years of Service

Photos courtesy of Karl Marhenke and Lois Durham



Natalie McClure presents 65-year certificate to John Creedon



Jiro Oyama, 60-year member



Lois Durham presents Ottenberg Award to Harry Ungar



Dick McEwen, 50-year member



John W. Baum, 50-year member



Dennis Sandoz, 50-year member



Howard Peters, 50-year member

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SANTA CLARA VALLEY SECTION

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Newsletter

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ChemPloyment Abstracts

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FUTURE MEETINGS

- Aug 19-23** Fall National ACS Meeting
Philadelphia, PA
- Sep 19** Dr. Alexander Kamb
V.P. Research Amgen
www.biosf.org/programs.htm
- Sep 20** Dr. Kristin Sainani, Stanford University
Writing for Success: Principles of Effective Writing
Cañada College, Redwood City, CA
- Oct 3** San Jose BioCenter Open House Tour
<http://sjbcopenhous.eventbrite.com>
- Oct 18** Dr. Tobias Beetz, Stanford University
Tools of Nanotechnology
Biltmore Hotel & Suites
Santa Clara, CA
- Oct 21-27** National Chemistry Week
- Nov 15** Tzipor Ulman, Founder and Executive Director of Science is Elementary
Community College Teaching Award
Biltmore Hotel & Suites
Santa Clara, CA