

Silicon Valley Chemist

Santa Clara Valley Section

American Chemical Society

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JUNE 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, June 18 at 7 a.m.

and Thursday, July 23 at 7 a.m.

La Boulange

151 University Avenue, Palo Alto



Chair's Message

The Section's summer event is termed a "picnic" but it is quite a bit more. First, it is an opportunity to recognize and honor our long-time ACS members. For their entire careers, our members have been at the forefront of scientific discovery, working in labs, classrooms, and offices around the Bay Area and beyond. Their work has contributed to putting humans on the moon, the



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Joint GGPF-ACS Seminar: Materials for Enabling Nanomanufacturing

Dr. Alshakim Nelson



Abstract

Nanomanufacturing in the semiconductor industry is driven by our ability to rapidly process and manipulate materials into their required forms. This seminar will highlight some of our work to develop materials for the semiconductor field and beyond. First, core-shell ferrimagnetic nanoparticles (FMNPs) developed for self-assembled magnetic storage media will be presented. While FMNPs are susceptible to magnetically induced aggregation, nanoparticles coated with a diblock copolymer are stable in solution and can easily be processed as thin films. As a result, these core-shell particles are suitable for investigating self-assembly processes for creating prototype magnetic media. Next, a simple and facile strategy for

high-throughput directed self-assembly of nanoparticles on lithographically defined substrates via spin-coating will be presented. The two-dimensional arrangements of nanoparticles were formed deterministically in just 30 seconds by the strategic placement of topographical features

on a substrate. Finally, the integration of dynamic covalent chemistry into nanoimprint lithography will be discussed.

Biography

Dr. Nelson completed his undergraduate studies in chemistry at Pomona College in 1999. He received his Ph.D. in organic chemistry from the University of California at Los Angeles in 2004, where he studied carbohydrate-containing polymers and

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ACS Annual Wine Tasting, Family Picnic and Awards Ceremony

Date: Saturday, July 11, 2015

4:00 p.m. Wine Tasting

5:30 p.m. Dinner

7:00 p.m. Awards

Deadline for Reservations:

Wednesday, July 8, 2015

Location: Stanford University
Mudd Chemistry Building
(<https://goo.gl/maps/gTsaM>)

Registration Online at: http://www.scvacs.org/Local_Folder/din_mtg.html

Adults: \$20.00

Children under age 12: \$5.00

Student: \$10.00

June Seminar Meeting

**A joint meeting with
the Golden Gate Polymer Forum**

Date: Monday, June 22, 2015

Time: 6:00 p.m. Social Hour

7:00 p.m. Dinner

8:00 p.m. Presentation

Speaker: Dr. Alshakim Nelson
Materials for Enabling
Nanomanufacturing

Location: Michael's Restaurant
at Shoreline Park
Mountain View, CA

For more information and reservations,
go to: <http://ggpf.org/events?ee=214>

macrocycles with Professor J. Fraser Stoddart. He was then an NIH postdoctoral fellow at the California Institute of Technology working for Professor Robert Grubbs on olefin metathesis catalysts for the formation of supramolecular ensembles. Dr. Nelson joined IBM Almaden Research Center as a Research Staff Member in 2005, where he focused on synthesizing building blocks that enable large area nanomanufacturing via self-assembly. His research interests also include silicon-based polymers for lithographic applications, magnetic nanoparticles, directed self-assembly of nanoparticles, and hydrogen bonding block copolymers. Dr. Nelson has over 40 publications and 11 issued patents, and in 2011 he was designated as an IBM Master Inventor. In 2012, he became manager of the Nanomaterials Group, which includes the Synthetic Development Lab.

Dr. Alshakim Nelson will join the chemistry department of the University of Washington in the 2015-16 academic year. His research will focus on the synthesis, characterization, and patterning of polymeric and supramolecular materials for the bio-interface.



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 May

Dr. Murtaza F. Alibhai	Dr. Eric J. Espinosa	Qunxiang Ong
Chris Bergstrom	Samuel Fleischman	Rachel Parke-Houben
Andy Blasband	Dr. Tarra E. Fuchs-Knotts	B Polata
Dustin Bringley	Crystal Y. Gonzalez	Maricela Prado
Kyle Houston Broach	Brian Kauffman	John Ramphal
Dr. Sean P. Brown	Dr. Daniel Koch	Joerg Rockenberger
Michael Bruner	Dr. Ralph Erik Kornbrekke	Brett Rosen
Mengyang Cai	Christopher Kwoka	Dr. Vijay Singh
Malika D. Carter	Julia Lee	Mr. James Snyder Jr.
Mark S. Chen	Dr. Lee Lior-Hoffmann	Tiffany Suekama
Matthew Curtis	Christopher E. Melton	Lloyd Tran
Dr. Javier De Vicente	Tatiana Y. Morante-Catacora	Cam-Van T. Vo

Bay Area ACS Small Business Event



"How to Create a Safety Culture While Growing Your Business" was the theme of the first in a series of local gatherings sponsored by the ACS

for chemistry-related enterprises.

On April 14, 2015, our ACS section hosted the launch of this new national ACS program aimed at supporting small chemistry-related businesses. Robust attendance by bay area professionals from large companies, small businesses, and academia demonstrated that topics of safety, environmental regulation, and compliance are of interest to all workplaces that involve chemistry.

Evans Analytical Group (EAG) generously provided the setting in their centrally located Sunnyvale facility.

The April safety-themed program was broadcast live from ACS headquarters in

Washington to local sections throughout the country. Each participating local setting was set up for real-time transmission of the slides and live dialogue with the speakers. The speakers - specialists Ken Fivizzani, Neal Langerman, and Brian Morin - followed their presentations by fielding questions sent from around the country. A recording of the presentation and Q&A is on the ACS website:

<http://www.acs.org/content/acs/en/events/program-in-a-box/pib-on-demand/safety-culture.html>

Our feedback survey indicated that attendees found great value in the live Q&A when information narrowed in on attendees' concerns.

A highly appreciated aspect of the event was the local networking that followed the video and audio portion of the program. Attendees lingered in conversation for hours following the presentation, nourished by refreshments provided by the SCVACS.

The presentation was organized by ACS National's Industry Member Program. This series of themed events is offered at no cost to attendees as a public service of the ACS in support of chemistry-related business culture. Membership in the ACS is not required for participation.

"Keeping Current with Environmental Regulations" is the theme of the next offering in this national ACS outreach program. It takes place on November 10, 2015, again hosted locally by the Santa Clara Valley Section in centrally located Evans Analytical Group's Sunnyvale facilities.

Registration details will appear in the SCVACS October 2015 newsletter and on the SCVACS.org website.



ACS
Chemistry for Life®

Chair's Message, continued from front page

integrated circuit in the PC, genetic cloning for medical advances, and so much more.

They work in clean rooms, wet rooms, and dark rooms; on the Bay's mudflats, on planes, and aboard ships; in lecture halls and hallways; in offices and boardrooms. We invite our 50-, 60-, 65-, and 70-year members to the summer picnic to honor these pioneers of their fields. The picnic gives them an opportunity to tell us about their accomplishments in their chemistry careers and for us to hear their stories. The event makes for an interesting afternoon of personal successes and historical perspectives.

Another event occurring at the picnic is the wine tasting. This year's wine is from Hatcher Winery (www.hatcherwinery.com/). Located in Murphys, California, Hatcher has been making wine for 12 years. Hatcher sells several different varieties of white and red wine. We expect to have at least two varieties, one red, one white, at the picnic. Our picnic is an opportunity to learn about, discuss, and experience new wines.

Finally, the picnic provides us the opportunity to meet new people and see old friends. A number of years ago, I met a woman who volunteered to help me with field work in Lake Tahoe. I couldn't have done my research there without her assistance. I personally enjoy talking to the attendees about their research

SCVACS Supports Teacher AACT Memberships

The American Chemical Society has launched a new organization for K-12 educators: The American Association of Chemistry Teachers (AACT).



Despite its name, it is not just for chemistry teachers. It is suitable for all K-12 teachers who present science in their classrooms. In fact, those not strongly schooled in chemistry will benefit from AACT membership with its varied science instructional and activity materials. Take a look at the wide audience the AACT strives to reach on its home page: teachchemistry.org.

The benefits of AACT Membership include:

- Chemistry Solutions – an online resource for and by chemistry teachers
- AACT resource library, lesson plans, labs
- ChemMatters subscription
- Common Core and Next Generation Science Standards activities and teachers' guides

Our Santa Clara Valley section of the American Chemical Society would like to reach out and support our area's teachers by subsidizing their membership fees in this new organization.

The SCVACS will pay half of the \$50 membership fee (\$25) for the first 100 Santa Clara Valley area teachers who apply.

To join the AACT: join.teachchemistry.org

To apply for SCVACS 50% reimbursement: www.scvacs.org/Local_Folder/AACT.html

and lives in the Bay Area.

The "picnic" will be on Saturday, July 11. I hope you can join us. I'd love to talk to you!

Just to see who's reading my messages,

I'll buy the first person to contact me a coffee or tea at this month's Connect with Chemists. (See the side bar for dates and locations.) I look forward to meeting you!

David Wang, Chemistry Olympiad Finalist

David Wang, a senior at Monta Vista High School will be attending the study camp at the Air Force Academy in early June. For the second time, David scored within the top 20 students in the country on the ACS national Olympiad exams. He is really looking forward to seeing the friends he made last June!

David's senior year has been full of fun and exciting events. In April, he performed at Carnegie Hall with the Monta Vista choir! Not many Olympiad finalists can say that! Tensync, his cappella group, performed throughout the year at community events. Music practices had to fit in between cross country and track meets!

Chemistry is not his only science love. Last fall he organized a Science Olympiad club at school. After some very intense work (David is not a stranger to intense science work!) the team placed 4th in the NorCal state finals!

Chemistry is still his first love! His garage lab has been used extensively this year. Currently, he is working on an efficient synthesis of pretty dark blue copper(II) aspirinate (which we made at camp last year). Other cool experiments he has done include coating a volumetric flask with elemental silver with Tollen's reagent, synthesizing the elusive copper(I) oxide using Benedict's reagent, pipette column chromatography of spinach extract, and the isolation of starch-triiodide complex. (I have not asked his mother what she thinks of this!)

The other exciting event in David's life, besides being an Olympiad finalist, is his decision to attend MIT next year. And, yes, he is going to major in chemistry!

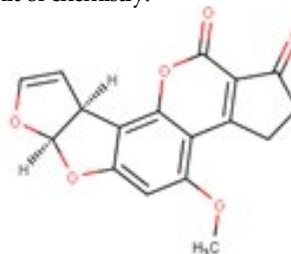
David – Good luck at the study camp and your goal to traveling to Baku, Azerbaijan, in July.

Also, good luck at MIT in the Fall!



Chemistry Quiz

Who came up with the name "atom" as a fundamental, indestructible, indivisible unit of chemistry?



Last Month's Question:

This molecule is arguably the most potent carcinogen known, and is up to twice as carcinogenic as an equitoxic dose of X-rays. It is a natural product produced by *Aspergillus flavus* and *Aspergillus parasiticus* sometimes found on moldy peanuts. What is the name of this molecule?

-- Aflatoxin B1



SANTA CLARA VALLEY SECTION
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FUTURE MEETINGS

- Jun 11** June LASER Event
Stanford University
www.scaruffi.com/leonardo/jun2015.html
- Jun 13** 5th annual, Green Kids Conference
Microsoft Silicon Valley Campus
www.greenkidsconference.org
- Jun 21-24** ACS Northwest Regional Meeting (NORM)
Pocatello, Idaho
- Jun 22** ACS Joint Meeting with the Golden Gate
Polymer Forum
Dr. Alshakim Nelson
Materials for Enabling Nanomanufacturing
Michael's Restaurant at Shoreline Park
Mountain View, CA
- Jul 11** ACS Annual Wine Tasting, Family Picnic,
and Awards Ceremony
Stanford Chemistry Department
- Aug 16-20** 250th ACS National Meeting and Exposition
Boston, MA
- Nov 10** ACS Local Networking Event
Keeping Current with Environmental
Regulations
ACS Industry Member Program