

Silicon Valley Chemist

Silicon Valley Section

American Chemical Society

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MAY 2019 NEWSLETTER TOPICS

- SVACS and Golden Gate Polymer Forum 2019 Joint Event
- Connect with Chemists
- Chair's Message
- Chemistry Quiz
- ACS Spring 2019 National Meeting Councilor Report
- Call for Nominations: 2019 Abraham Ottenberg Service Award
- Teacher-Scholar Award Dinner Meeting
- Sidney Harris' Cartoon
- New SVACS Members

Connect with Chemists

An early morning chat with fellow chemists

Thursday, May 16, 2019, at 7-8 am

Coupa Café, 538 Ramona Street, Palo Alto

Contact Ean Warren (ewarren@scvacs.org)

for more information or ask for ACS at Coupa.

SVACS and Golden Gate Polymer Forum 2019 Joint Event

Skin-Inspired Electronics

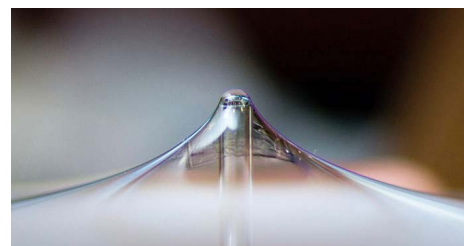
Professor Zhenan Bao of Stanford University



Abstract

Skin is the body's largest organ, and is responsible for the transduction of a vast amount of information. This conformable, stretchable, self-

healable and biodegradable material simultaneously collects signals from external stimuli that translate into information such as pressure, pain, and temperature. The development of electronic materials, inspired by the complexity of this organ is a tremendous, unrealized materials challenge. However, the advent of organic-based electronic materials may offer a potential solution to this longstanding problem. In this talk, I will describe the design of organic electronic materials to mimic skin functions. These new materials and new devices enabled arrange of new applications in medical devices, robotics and wearable electronics.



Images of stretchable organic transistors. Image credit: Amir Foudeh, Jie Xu, Sihong Liu of Bao Group, Stanford University

Biography

Zhenan Bao is a K.K. Lee Professor of Chemical Engineering, and by courtesy, a Professor of Chemistry and a Professor of

continued on next page

Chair's Message

Grace Baysinger



Greetings! I hope that you are having an interesting, productive, and enjoyable year. This month, I would like to highlight upcoming Silicon Valley events, ACS information from the National Meeting, resources to periodic tables, resources focusing on sustainability, and an invitation to become more active in the Silicon Valley Section.

Upcoming SV Events: No events are scheduled for May. On June 27th, there will

be a joint meeting with the Golden Gate Polymer Forum where Zhenan Bao, Stanford Chemical Engineering Professor, will talk about *Skin-Inspired Electronics*. On July 13th, the *Annual SVACS Awards Picnic and 50+ Year Member Recognition* will be catered by

Armadillo Willy's and will include wine and beer tasting.

ACS News: The *ACS Annual Report*

continued on next page

SVACS and Golden Gate Polymer Forum 2019 Joint Event

Date: Thursday, June 27, 2019

Time: 5:00 -9:00 pm

Speaker: Professor Zhenan Bao, Stanford University
Skin-Inspired Electronics

Location: Michael's at Shoreline
2960 N. Shoreline Blvd
Mountain View, CA 94043

www.michaelsatshoreline.com

Registration will be available in late May, 2019.

Material Science and Engineering at Stanford University. Prior to joining Stanford in 2004, she was a Distinguished Member of Technical Staff in Bell Labs and at Lucent Technologies from 1995-2004. She received her Ph.D in Chemistry from the University of Chicago in 1995. She has over 450 refereed publications and over 60 US patents. She pioneered a number of design concepts for organic electronic materials. Her work has enabled flexible electronic circuits and displays. In her recent work, she has developed skin-inspired organic electronic materials, which resulted in unprecedented performance or functions in medical devices, energy storage and environmental applications.

Bao is a member of the National Academy of Engineering and the National Academy of Inventors.

Bao was selected as one of Nature's Ten people who mattered in 2015 as a "Master of Materials" for her work on artificial electronic skin. She was awarded the ACS Award on Applied Polymer Science 2017 and The L'Oréal-UNESCO For Women in Science Award in the Physical Sciences 2017.

Bao is a co-founder and on the Board of Directors for C3 Nano and PyrAmes; both are Silicon Valley venture-funded start-ups.

Chemistry Quiz

Who discovered oxygen in 1774?

The answer will appear in next month's newsletter.

Last Month's Chemistry Quiz

This widespread food coloring comes from the seed coat of the achiote tree (*Bixa orellana*). The yellow-to-orange color comes from the carotenoid pigments bixin and norbixin. What is the name of this colorant, and in what foods is it commonly used?

Annatto is commonly used to color cheeses, butter, margarine and many other foods.

for 2018 is available. It includes the Executive Director's Message, Financials (Financial Highlights, Allocation of Dues, and Award Sponsors), and the Board of Directors. Even for people who attended the ACS Spring 2019 Meeting in Orlando, there was so much going on it was impossible to attend more than a small slice of events. During the meeting there were a number of *news releases* and *live press conferences* (on YouTube) that are worth checking out. The *ACS Press Room* includes PressPac resources, new releases, and resources on great global challenges.

Periodic Tables: In celebration of the International Year of the Periodic Table 2019 (IYPT2019), here are a few more periodic table resources for your viewing and learning pleasure. The International Union of Pure and Applied Chemistry has created a *Periodic Table of Younger Chemists* to highlight the diversity of careers, creativity, and dedication of the young chemists leading us into the next century.

ACS' page celebrating IYPT2019 includes educational resources, a gallery of periodic tables, interviews with ACS Editors about their favorite elements, and a chemical elements history timeline. An updated version of the *Periodic Table of Moles* is available from the *ACS Store*. ACS Division of Chemical Health and Safety has developed a "*Periodic Table of the Elements of Safety*" to share with the chemistry community.

The Royal Society of Chemistry (RSC) has *infographics about groups of elements* that were created for classroom use. RSC has also a project with Compound Chemistry to create a *graphic for all 118 elements* in the periodic table. RSC also has an *IYPT promotional pack* that has some ready-made digital items to download and use on different platforms (e.g., websites, social media).

Compound elements has also created a poster on *Essential Elements for Humans*.

Sustainability: Inspired by Bonnie Carpenter's presentation to members of the Silicon Valley and California Sections in April, I thought I would share a few resources about sustainability (thinking globally, acting locally). Bonnie's talk included *UN Sustainability Development Goals* that includes 17 goals for helping the world plan to build a better world for people and our planet by 2030. Adopted by all UN Member states in 2015, the sustainable development goals are designed to promote prosperity while protecting the

environment.

ACS and You: Working Together for a Sustainable Future web page contains collections of resources on sustainability topics to help you better understand and communicate about them. Topics covered include *Sustainable Food, Sustainable Water, Climate Science, and Sustainable Energy*. Aided by the *ACS Committee on Environmental Improvement (CEI)*, ACS has issued public policy statements to *Advance Sustainability and the Environment* that include: *Chemical Risk Assessment and Regulatory Decision Making, Climate, Hydraulic Fracturing, Inherently Safer Technology (IST), Regulation of Laboratory Waste, Sustainability of the Chemistry Enterprise, and Water Treatment and Conservation*. CEI has also created a number of *Fact Sheets: Biomonitoring, Chemical Alternatives Assessment, Designing Safer Alternatives through Green Chemistry and Sustainable Molecular Design, Endocrine Disruption, Exposure Science, Nanotechnology, Risk Assessment and Risk Management, and Understanding Sustainable Chemistry*.

"ACS believes that chemistry's contributions toward global concerns, such as education, environment, and health and safety, should be extensive. In order to make significant progress on these issues, ACS partners with organizations around the globe to leverage our resources and capabilities along with those of our partners." For more details, please see *ACS Global Strategic Alliances*.

To learn more about sustainability as well as many other topics, see the *National Academies Press (Science, Engineering, and Medicine) website* that has nearly 10,000 books that you can download and read for free.

Please contact us: Let us know how we are doing or if you would like to become more involved in the ACS Silicon Valley Section activities. A volunteer organization, we have jobs that are large and small. Please fill out this *contact us* form or send me an email message.

Many thanks for reading this long message and for being a member of ACS!

Grace Baysinger
ACS Fellow

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<https://profiles.stanford.edu/grace-baysinger>



Councilor Report

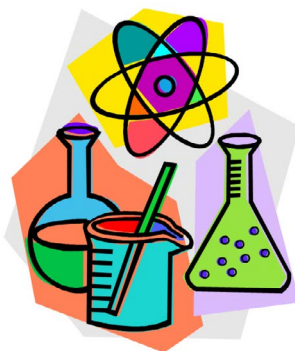
by George Lechner

This was an interesting meeting for me as I joined the Council Committee on Constitution and Bylaws (C&B) as an Associate Member since terming out of the Committee on Chemical Safety. C&B met on Sunday, March 31, to review and digest the status of happenings since last Fall's meeting. One item of interest was a discussion of the approval of our own section's bylaws in 2018. During the approval process, we had veered away from the wording in the "ACS Model Bylaws" regarding Executive Committee membership sections in Bylaw V and vacancies that happen from time to time. We took the position last year that the bylaw descriptions of the Officers, Executive Committee, Councilors and Alternate Councilors should be placed in Bylaw V first, followed by vacancies in any of ExComm member categories, not in separate sections for Officers and Councilors as stated in the Model Bylaws. Our view prevailed as you can see in the current section bylaws and was also accepted by C&B last Sunday. We'll see how it all turns out in the next issuance of the Model Bylaws in Bulletin 5. The most significant discussion was about a petition up for Council action at the Council meeting on April 3. This petition was to amend the ACS Constitution and ACS Bylaws and add a third governance section for Standing Rules. The amendment involves relocating various sections in the Constitution into the Bylaws and

shifting various Bylaws sections into Standing Rules. This was no easy task and took a couple of years to accomplish. The Council voted and approved the amendment, which will become effective when the ACS membership and the Board of Directors vote on and approve the measure.

The Council also approved several other items as described below:

- Two candidates for President-Elect, 2020, were selected: H. N. Cheng and Carol A. Duane.
- The Committee on Nominations and Elections selected four candidates for two positions as Directors at Large for election in the Fall: Harmon B. Abrahamson, G. Bryan Balazs, D. Richard Cobb, and Dorothy Phillips.
- The 2020 Member dues was set at \$175.
- Two committees were approved to continue: Committee on Senior Chemists and



Committee on Nomenclature, Terminology & Symbols.

- A recommendation to establish the ACS Pakistan International Chemical Sciences Chapter.

Council and Meeting Highlights:

- The divisors for allocation of Councilor seats among Local Sections and Divisions will be sent out prior to May 1.
- In 2018, ACS generated a net from operations of \$41.1 million, which was \$13.3 million higher than 2017. Total revenues were \$571.6 million, increasing 6.4% - or \$34.2 million - over 2017. Expenses ended the year at \$530.5 million, which was \$20.8 million or 4.1% higher than the prior year. These results were attributable to strong performance from the Society's Information Service units (CAS and ACS Publications) and a continued emphasis on expense management across the ACS.
- ACS membership at the end of 2018 was 151,012, up 0.001% from 2018.
- Orlando Meeting Attendance as of Tuesday, April 2:

- Attendees	7,887
- Students	6,019
- Exhibitors	869
- Expo only	404
- Guests	426
- Total	15,605
- President Bonnie Charpentier conducted a Special Discussion on the ACS Relevance to Current and Future Members: Challenges and Opportunities. Councilors provided many recommendations and suggestions including increased support for local sections and industry members, helping student members transition into their professional careers, and implementing a monthly payment tool for ACS dues.

Call for Nominations 2019 Abraham Ottenberg Service Award

The Ottenberg Award is presented annually to a member of our local section for outstanding service to the section. Previous recipients are not eligible to receive it again.

Nominations should include the nominee's biography, description of the service(s) for which the member is nominated, and a discussion or evaluation of the service to be recognized by the award. Nominations are not retained for subsequent years but re-nominations are accepted for consideration.

Please send your nomination before **June 15, 2019** by fax (650) 961-8120, by e-mail to PFRusch@aol.com, or by postal mail to:

Chair, Ottenberg Award Selection Committee
Silicon Valley Section
American Chemical Society
P.O. Box 395
Palo Alto, CA 94302-0395



George Lechner presented a desk-sized, novel Periodic Table to Bonnie Charpentier, ACS President.

Teacher-Scholar Award Dinner Meeting

On February 28th, we met at Foothill College to honor Kathleen (Kathy) Armstrong, the 2018 winner of the ACS Silicon Valley's Teacher-Scholar Award for Community College Chemistry Faculty that includes a \$500 check and a plaque. Rosa Liu Nguyen, *Chemistry Department Chair*, accepted a plaque and check on behalf of the



Presenting award to Chemistry Department Chair Rosa Liu Nguyen

School. Ram Subramaniam, the Dean for the Physical Sciences, Engineering, and Mathematics Division also attended and was instrumental in helping plan this event.

This event included award presentations, a talk by Kathy, and a poster session whose authors were Chemistry students in a class taught by Kathy. Food was catered by Pacific Dining. About 65 people attended this event and over half were Foothill College students.

Grace Baysinger, ACS Silicon Valley Section Chair, when making the award presentations, read the comments shown below.



Award presentation by SVACS Chair Grace Baysinger

Comments from Ram Subramaniam, Dean of Physical Science, Math, and Engineering, when nominating Kathy for the Teacher Scholar Award:

"Kathy is first and foremost an excellent instructor. She has great passion for Organic Chemistry and communicating that passion to her students has always been her primary goal. She definitely goes above and beyond

her regular classroom responsibilities by - conducting workshops for her students, constantly revamping the course curriculum, developing a rigorous and robust laboratory program that provides students rich hands-on experience with sophisticated instruments, maintaining high standards, being a mentor to the other chemists in the department, and numerous other ways.

Kathy also works closely with the students in our program. She serves as the faculty advisor to one of the most active student clubs on campus. She and her students regularly plan and organize various activities to enrich local communities through service leadership projects at area elementary and middle schools.

In my opinion, a true teacher-scholar must not only demonstrate a commitment to good teaching practices and scholarship, but must also actively display a continued passion for their field. Kathy continues to regularly enroll in classes in related fields and also constantly searches for and incorporates new pedagogical approaches in her classes."

Comments from Melody Esfandiari, Past Chair of the ACS Silicon Valley Section, and Chemistry faculty member at Foothill College and San Jose State University.

"I have known Kathy for over 5 years now. Every time I pass by her office, I tell myself "this is fire code violation." It's amazing how she always has so many students in her office. Her dedication and her ability to connect with them is impressive.

I have also had her students work with

Dr. Kathleen Armstrong
Professor of Chemistry
Foothill College

Teacher-Scholar Award
Silicon Valley Local Section
American Chemical Society

**In recognition of her dedication
and helping students
and her exceptional contributions
to Chemistry at Foothill College**

2018



Kathleen (Kathy) Armstrong giving talk

me at research labs at SJSU. They love Kathy and it's amazing how she has incorporated current instrumentations into her course work. Her students get hands-on experience with instruments that are only taught by theory at most schools.

She has helped so many students over the years with some of the hardest undergraduate courses and she shows no sign of slowing down."

After receiving her award, Kathy gave a talk whose title was "Why does it have to be so hard? Evaluating the value of a course in Organic Chemistry." She noted that the number of facts presented in Organic Chemistry is too large so instead of memorizing content, students need to apply analytic reasoning. Developing analytical reasoning requires explicit application of critical thinking. Kathy noted that careful attention to assessment at Foothill College has proven valuable in developing this important learning outcome. Kathy shared several examples of the types of questions she poses to students. She also had surveyed students who had graduated, asking them about their career pathway and the extent to which skills developed in their Organic Chemistry course influenced their success.

The student poster session that contained over 20 posters was really great. Students were very engaged, explaining topics covered in their posters to attendees. Everyone enjoyed learning about the topics they covered and the opportunity to interact one-on-one with the students.

Many thanks to Sally Peters, George Lechner, and Peter Rusch for their help with checking in attendees, setting up AV

continued on next page

Teacher-Scholar, continued from previous page

equipment, and insuring that the event ran smoothly. Many thanks to Natalie McClure for taking pictures at this event.



George Lechner by Periodic Table



Natalie McClure by Periodic Table

Also noteworthy and worth a fieldtrip to Foothill College is a large Periodic Table of the Elements that was mounted on the outside wall of a building. The Silicon Valley Section donated funds to help create this Periodic Table. In summary, it was a special event that everyone really enjoyed.

About the *ACS Silicon Valley Teacher Scholar Award*

The American Chemical Society (ACS) gives awards at local, regional and national levels, for excellent teaching at the high school, college and university levels. Established in 2008, this award is the first in the nation to recognize the contributions of community college chemistry teachers to science education.

Each year it will honor an outstanding faculty member from one of the 13 community colleges in our local area which includes five counties around San José, California. The award currently consists of a plaque and a check for \$500 for the winner, with another plaque plus a \$500 check donated to the winner's school

Sidney Harris Cartoon



"Polymers are fundamental to every part of our society, and they have all kinds of amazing properties. This cartoon depicts a merger of chemicals being discussed by two businessmen (at least they look like businessmen since there are vests and ties; no lab coats) to create a polymer. The timing for this cartoon couldn't be more appropriate given the recent merger of Dow and DuPont, two of

the oldest and largest polymer companies in the world. Hopefully, in business as well as in chemistry, the whole will be greater than the sum of its parts. Polymers are a great example of this — given all they have done for the world." — Robert Langer, MIT

Welcome to the Silicon 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 friend will be our guests. The seminar meetings are held at a number of local venues. If you are unable to attend in the evening, perhaps you would join us for an outreach event, like judging a science fair, proctoring the Chemistry Olympiad or participating in 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 SVACS Members

Roberto Battiston
Sarah Jane Blair
Michael Butterfield
Ian Carter-O'Connell
Dr. Shuang Chen
Jong Suk Choi
Justin Clubb
Dr. Haixia Dai
Jennifer Dionne
Serra Elliott
Wendy Fan
Evan Feinberg
Sergio Rocha Fernandez
Ryan J. Flannery
Dianne Whittier Foote
Christopher Henry

Patrik Kjell Johansson
Kalli Kappel
Dr. Michael Kappler
Bryan Kelleher
Cameron Donald Kellough
Cheryl Lenz
Hyeongtaek Lim
Qi Liu
Alandra M. Lopez
Sushant Malhotra
Bridget Mancillas
John Mancini
Vincent Hisashi Martinetto
Dr. Timothy C. Mauldin
Paul McIntyre
Chris Moon

Vyvyann Nguyen
Akash Patel
Disha Patel
Naomi Ray
Dr. Damoder Reddy
Dr. Albi Romero
Anish Raj Roy
Laura Schaefer
Matt Schutz
Ted George Theodore
Shanwen Wang
Tongtong Wang
Dr. Nathan Wright
Dr. Xiao Zhang



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



To receive an email when our newsletter
is published on our web site, sign up at:

<http://svacs.org>

SILICON VALLEY SECTION

2019 Section Officers

Chair	Grace Baysinger	650-725-1039	graceb@stanford.edu
Chair-Elect	Matt Greaney	510-410-0195	greaney19@gmail.com
Past Chair	Melody Esfandiari	408-924-4973	melody.esfandiari@sjsu.edu
Secretary	Jigisha Shah	315-289-5115	jssheth@syr.edu
Treasurer	Ihab Darwish	650-624-1389	darwishis@yahoo.com

Councilors

2017-2019	George Lechner	408-226-7262	glechner@aol.com
2017-2019	Matt Greaney	510-410-0195	greaney19@gmail.com
2018-2020	Ean Warren	650-714-5133	ewarren@scvacs.org
2018-2020	Natalie McClure	650-906-7831	nmclure@drugregulatoryaffairs.com
2019-2021	Linda Brunauer	408-554-6947	lbrunauer@scu.edu
2019-2021	Jane Frommer	408-927-2225	jane@collabra.net
2019-2021	Sally Peters	650-447-3027	sallybrownpeters@gmail.com

Alternate Councilors

2017-2019	Elizabeth Migicovsky	408-924-5012	elizabeth.migicovsky@sjsu.edu
2018-2020	Madalyn Radlauer	408-924-5482	madalyn.radlauer@sjsu.edu
2019-2019	Dave Parker	408-605-2116	drdrparker@gmail.com
2019-2019	Todd Eberspacher	650-723-2505	eberspacher@stanford.edu
2019-2021	Laura Yeager	626-826-3145	laura.yeager123@gmail.com
2019-2021	Sogol Teschler	408-896-2367	sgyahyazadeh@gmail.com
2019-2021	John Goeltz	831-582-4661	jgoeltz@csuumb.edu

Newsletter

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Assoc. Editor	Partha P. Bera	650-604-2028	partha.pb@gmail.com

ChemPloyment Abstracts

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

- May 23** Why Animals Eat Plastic
Dr. Matt Savoca
Pacific Grove Museum of Natural History
<https://www.pgmuseum.org/>
- Jun 27** SVACS and Golden Gate Polymer Forum
2019 Joint Meeting
Professor Zhenan Bao
Stanford University
Skin Inspired Electronics
Michael's at Shoreline
Mountain View, CA
www.ggpf.org
- Jul 13** Annual SVACS Wine Tasting and
Awards Picnic
Stanford Chemistry Dept.
Stanford, CA
- Sep 7** Save the date
Joint event with the Sacramento and
California local ACS sections
Flavors of Chemistry: almonds and wine
UC Davis
- Click on links for more information or
see this newsletter at <http://svacs.org>