

Silicon Valley Chemist

Silicon Valley Section

American Chemical Society

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JULY 2018 NEWSLETTER TOPICS

- 2018 Shirley B. Radding Award
- Chair's Message
- Connect with Chemists
- 2018 INTEL International Science and Engineering Fair
- Save the Date: Volunteers Needed for Tech Trek July 10 and 19
- Call for Nominations 2018 Western Regional Awards
- Charlie Cox Receives Dean's Award for Teaching
- New Members
- Resources You Can Use
- SVACS Members with Fifty or More Years of Service in 2018
- Volunteer with a K-12 STEM Teacher as a Science Coach
- Call for Nominations 23rd Annual Green Chemistry Challenge Awards
- Chemistry Quiz
- Attention Book Lovers!
- Forgotten Women: the Scientists

Connect with Chemists

An early morning chat with fellow chemists

Thursday, July 19, 2018, at 7 a.m.

Coupa Café, 538 Ramona Street, Palo Alto
 Contact Ean Warren (ewarren@scvacs.org)
 for more information or ask for Ean at Coupa.

2018 Shirley B. Radding Award

Dr. Peter Rusch



The Shirley B. Radding Award was first presented in 1994 to Shirley B. Radding. It is made for the purpose of honoring the outstanding, dedicated and unselfish contributions that she made to the American Chemical Society at all of its levels. The criteria for selection include:

- Member of the American Chemical Society for more than 20 years.
- Demonstrated dedicated and unselfish service to ACS members over a sustained period of time.
- Provided leadership through elected and appointed ACS positions at local, regional and national levels.
- Made significant contributions to industrial applied or academic chemistry.

Based on the criteria mentioned, Peter Rusch has been selected as the 2018 Shirley B. Radding Award Recipient. Peter received his BS and MS degrees in Chemistry from Southern Methodist University. During his graduate studies, he joined the ACS and is now a 50-year member. He received his Ph.D. in Chemistry from The University of Texas at Austin. Following graduation, he embarked on his first postdoc as part of the National

Science Foundation - Centre Nationale de la Recherche Scientifique U.S.-France Postdoctoral Scientific Exchange Fellowship. This began his long-time interest in all things French. After a brief second postdoctoral research and teaching assignment, he was in the period of ultra-few jobs for chemists. He was once among 546 candidates for a single academic position.

Fortunately, he spent much of his time learning how to apply computers to chemistry. After a two-and-a-half year stay at Chemical Abstracts Service in Columbus, Ohio, he began work in a newly formed project at Lockheed Missiles and Space Company in Palo Alto, DIALOG Information Services. Rising to the level of vice-president, he was responsible for the chemical and patent information services. All good things must end and he was an independent consultant in matters of computer-based information and search until his retirement.

He served the ACS as Chair of the Division of Chemical Information, Chair of the Committee on Nomenclature, Terminology and Symbols, and Chair of the

continued on next page

Chair's Message

Melody Esfandiari



First, I want to give our Warriors a shout out. They brought the NBA championship back to the Bay. The Bay Area is very proud of these back-to-back champions. While the basketball season has come to an end, the summer is here. Summer months are busy and exciting as you are traveling and enjoying the weather and the outdoors.

The Silicon Valley section is keeping busy too! We have our annual

continued on next page

2018
**NANOSCIENCE,
 NANOTECHNOLOGY
 & BEYOND**
 Aug. 19-23 | Boston | MA
 AMERICAN CHEMICAL SOCIETY
 National Meeting & Exposition

Radding Award, continued from front page

Santa Clara Valley local section. As an ACS member, he has served on several other committees and as Councilor and Alternate Councilor. He is an ACS Fellow and a recipient of the Ottenberg Award. He is a member of the Society of the Sigma Xi and a Trustee of the Chemical Structure Association Trust. He has been on the Advisory Board, Journal of Chemical Information and Computer Science and a Director, Documentation Abstracts Inc. He has numerous publications and presentations on chemical information.



Chair's Message, continued from front page

summer picnic upon us. If you have not signed up, please mark your calendar and RSVP for our annual picnic on July 14th at Stanford (<https://2018annualsvacpicnic.brownpapertickets.com>). We would love to hang out with you and get to know our members. Besides chatting with the Silicon Valley scientists, you will be able to taste different beer and wine and a catered BBQ (in case you needed an extra incentive to make it out!).

Looking ahead, on September 29 the annual *Flavors of Chemistry* will take place at UC Davis. The Flavor of Beer is one of the talks this year. This is another fun 'chemistry'

event that the whole family can enjoy. Last year, they had chocolate and coffee tasting. I'm excited to see their itinerary for 2018. More detail will be provided in our next newsletter.

In the last newsletter, we published the artwork of our poem contest winner. This was an illustrated poem contest for K-12 students, and our local first-place winner advanced to the national contest. I'm so excited to share with you that our winner received second place nationally. Well-done!!

Lastly, I would like to wish everyone happy 4th! This year Independence Day celebration will undoubtedly involve fireworks, which has evolved and become spectacular over the years. As you may guess, exploding fireworks will release heavy metals, perchlorates, and other chemicals that are not good for the environment and can cause health effects. Chemists are on it and a new effort has been initiated to find substitutes to make the fireworks greener. One example is barium; this element produces beautiful green light but can be hazardous. One particular study has found a viable replacement: boron! This element combusts forming boron oxide that releases green light. Hope you have a safe and fun 4th of July and hope to see you at the picnic on July 14th!

2018 INTEL International Science and Engineering Fair

By Howard Peters

The 2018 INTEL International Science and Engineering Fair (ISEF) was held May 13-18 in Pittsburgh, PA, at the David H. Lawrence Convention Center. Over 1800 high school students from 75 countries around the world presented projects. About \$5,000,000 in scholarships, prizes, trips, internships, etc., changed hands that week. As has occurred with earlier annual ISEF events, over 25% of these high school students had filed a patent application on their technology. The overall top students were:

Gordon E. Moore Award - \$75,000

Oliver Nicholls, Barker College, New South Wales, Australia

"Autonomous Window Cleaning Robot for Commercial High Rise Buildings"

Intel Foundation Young Scientist Award - \$50,000

Meghana Bollimpalli, Little Rock Central High School, AR, USA

"Green Synthesis of Phosphorous, Nitrogen Co-Doped Carbon Materials from Renewable Resources for Supercapacitor Applications via Microwave Assisted Technique"

Intel Foundation Young Scientist Award - \$50,000

Dhrubik Parikh, Henry M. Jackson High School, WA, USA

"A Novel Sol-Gel Derived SPEEK/Silicon Dioxide Composite Membrane for the Vanadium Redox Flow Battery"

More information on these INTEL Grand Awards can be found at:

<https://www.societyforscience.org/content/press-room/intel-international-science-and-engineering-fair-2018-grand-award-winners>.

Members of the national American Chemical Society (ACS) were special award judges.

They made the following awards:

First Place \$4,000 — "An Investigation into the Removal of Microplastics from Water Using Ferrofluids," Fionn Miguel Eckardt Ferreira, Schull Community College, Cork, Ireland.

Second \$3,000 — "Benzodiazepine Detection in Alcoholic Beverages," Isabela Dadda dos Reis, Instituto Federal de Educação, RS, Brazil.

Third \$2,000 — "New Approach to the Synthesis of the Functionalized Fluoroalkenes' New Perspective Types of Medicines" Anastasia Andrianova, Moscow, Russian Federation.

Fourth \$1,000 — "Fabricating a Novel Ultrasensitive Flexible Biosensor with Patterned 10 nm Single Antibody Size Periodic Line Channel Created by Directed Molecular Self-Assembly to Achieve Extremely High Accuracy in the Earlier Detection of Cancer," Erika Yang, Livermore, CA, USA.

Eight ACS Honorable Mention awards were made. More information about the INTEL Special Awards is found at <https://student.societyforscience.org/special-awards-organizations?mode=blog&context=4472>.

More information is available at <https://student.societyforscience.org/american-chemical-society-3>.

Save the Date: Volunteers Needed for Tech Trek

It's time to plan for the 2018 Tech Trek event. This is an American Association of University Women (AAUW) sponsored event that we support each year. There are two evening events: Tuesday, July 10 and Thursday, July 19, both nights 6 p.m. - 10 p.m. Each night we will do two labs sessions for 40 girls, which means a total of 80 girls each week. These are rising 8th graders who have been selected by their local AAUW chapters and schools to participate in this week-long STEM camp held at Stanford. The girls do many different STEM-based activities including robotics, math, bay science cruises, biology and, of course, chemistry. There is a day-time chemistry lecture, and the Silicon Valley ACS section provides a hands-on lab experience. The experiment we do is a semi-quantitative titration of the vitamin C content in orange juice, lemonade and Red Bull energy drink. If you would like to volunteer to help, please contact Natalie McClure at nmcclure@drugregulatoryaffairs.com.

Call for Nominations 2018 Western Regional Awards

The 2018 Western Regional Meeting (WRM) is pleased to host the following ACS Regional Awards, which will be presented at the closing banquet on the evening of Saturday, October 27th at the California Institute of Technology in Pasadena, CA.

E. Ann Nalley Regional Award for Volunteer Service to the American Chemical Society

This award is to recognize the volunteer

efforts of ACS members in the region who have served the ACS, contributing significantly to the goals and objectives of the Society at the national, regional, or local level through their activities. Applications should be submitted to the Western Region Awards Chair: Lee Latimer (email: lhlattimer@mindspring.com) by August 1, 2018.

For more information, please visit the

[Western Regional Meeting website](#) or [ACS website](#).

Regional Award for Excellence in High School Teaching

This award recognizes, encourages, and aims to stimulate outstanding teachers of high school chemistry. Nominees should be actively engaged in the teaching of chemistry or a chemical science (grades 9-12) on at least a half-time basis. The award is sponsored by the Division of Chemical Education (DivCHED). Applications should be submitted to DivCHED's representative to the Western Region: Jerry Sarquis (email: sarquijl@miamioh.edu). The deadline for submission is September 10, 2018.

For more information, please visit [ACS website](#). Additional information and the award guidelines packet can be accessed at [DivCHED website](#).

Stanley C. Israel Regional Award for Advancing Diversity in the Chemical Sciences

This award, sponsored by the ACS Committee on Minority Affairs, is presented to individuals or organizations that have advanced diversity in the chemical sciences and significantly stimulated or fostered activities that promote inclusiveness within the region. Applications should be submitted to the Committee on Minority Affairs: online by the August 1, 2018 deadline.

For more information, please visit [ACS website](#).

Note: All award winners receive a recognition plaque or certificate, registration for the meeting and banquet, and reasonable travel costs for attending the 2018 WRM. Those awards sponsored by ACS division or committees also include a cash prize. Additional information may be found on the 2018 WRM site (www.acswrm.org) or at the websites listed above.

Charlie Cox Receives Dean's Award for Teaching



Congratulations to Charlie Cox, a lecturer in the Stanford Department of Chemistry, who was recently awarded a 2018 Dean's Award for Achievements in Teaching. This award recognizes faculty and lecturers whose record of the past year shows particular accomplishments in teaching, defined broadly to include the classroom, laboratory, advising, programs leadership, etc.

Charlie will be recognized at a celebratory lunch with all of the Dean's Award winners for his dedication and commitment to outstanding teaching.

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

Dr. Yassir Younis Adam
Dr. Scott Baggett
Brittany Barrett
Dr. Katherine M. Block
Apparao Bokka
Nicolas Candia
Kai Chen
Ying Chen
Andrei Chtchemelinine
Dr. Anthony J. Crisci
Anthony Dinkel

Dr. Robert James Feeney
Dr. Marzena Barbara Fitzpatrick
Dr. James N. Foster
Michael Gottschalk
Stephanie Goubert-Renaudin
Jacob Green
Kevin Gu
Bryce Hickam
Rebecca Johnson
Dr. Thijs Kaper
Julia Lanoha

Natasha Morgan-Witts
Joshua Louis Patyten
David Pilsk
Lourdes Rueda
Dr. Michael Schwieterman
Dr. Armen Shamirian
Brian Ta
Jenny Wang
Karen Lisa Wright
Dr. Yajun Zheng



Resources You Can Use

Compound Interest

<http://www.compoundchem.com/infographics/>

"Compound Interest is a site that aims to take a closer look at the chemical compounds we come across on a day-to-day basis, explaining them with easy-to-understand graphics. The site is run single-handedly by Andy Brunning, who is a chemistry educator based in Cambridge, UK, and creates the graphics for the site in his spare time." (publisher's description) You can search this site using keywords (e.g., *fireworks*).

Distillations

<https://www.sciencehistory.org/distillations>

"Published by the Science History Institute, Distillations exists where science and the humanities overlap. If you are curious about science in society, or about how things came to be, whether it is artificial turf or health fads, you have come to the right place. Distillations contains a magazine, a podcast, videos, and a blog." (publisher's description)

Household Products Database

https://householdproducts.nlm.nih.gov/Personal_Care.htm

"The National Library of Medicine Household Products Database (HPD) provides access to manufacturer developed Safety Data Sheets which describe the chemical properties of each product, physical data, health effects, first aid, reactivity, storage, handling, disposal, personal protection, and spill/leak procedures. Now you can visually explore the number and types of products in HPD. Hover over data bubbles to see the number of products in each type, click on the bubbles (or the links to their right) to view, or double click on the bubbles/links to search HPD." (publisher's description)

Learn Chemistry

<http://www.rsc.org/learn-chemistry>

"Produced by the Royal Society of Chemistry, Learn Chemistry is an educational resource and provides support to teachers. Activities on this site support educators of Primary, Secondary and Higher Education students. They offer resources in various formats including downloadable documents, videos, audio content, interactives and simulations, and ebooks." (publisher's description)

The National Academies Press

<https://www.nap.edu/>

"The National Academies of Sciences, Engineering, and Medicine are private, nonprofit institutions that provide expert advice on some of the most pressing challenges facing the nation and the world. Their work helps shape sound policies, inform public opinion, and advance the pursuit of science, engineering, and medicine. They offer more than 8,500 titles in PDF format. Almost all of these PDFs can be downloaded for free by the chapter or the entire book." (publisher's description)

Volunteer with a K-12 STEM Teacher as a Science Coach

You can *volunteer in a K-12 science classroom* near you during the 2018-2019 school year with AACT/ACS Science Coaches! By working with a teacher, you can help enhance the science skills of students across the United States. *Coaches* present demos and experiments, plan and write lesson plans with their teachers, organize stockrooms, and much more! *Teachers* who participate receive either a \$500 donation from ACS or a \$550 gift certificate from *Flinn Scientific*.

Chemistry professionals at all stages in their careers (graduate students, retirees,

current professionals, former teachers, etc.) or in any chemistry-related field are encouraged to apply! *Applications* will close September 1. Participants must live and work in the United States. Current K-12 teachers cannot be a coach. Teacher-coach pairs may not share finances. You can apply with a teacher you already have in mind, or we will try to match you with a teacher in your area. *Teachers* must be K-5 teachers of science, 6-8 teachers of physical science, or 9-12 teachers of chemistry. Please feel free to email us sciencecoaches@acs.org with any questions.

SVACS Members with Fifty or More Years of Service in 2018

The following ACS Silicon Valley Members are receiving certificates of recognition issued on behalf of the ACS Board of Directors in grateful appreciation for fifty or more years of service to the American Chemical Society.

Fifty Years of Service

Dr. Daniel Howard Buttlare
Dr. Bruce Owen Cozzini
Dr. Masood Ghassemi
Mr. James Alden Greene
Dr. Ronald C. Herman
Dr. Benedict Y.K. Ho
Dr. Robert Charles Kowerski
Dr. Shy Fuh Lee
Dr. Matthew McCargo
Dr. Thomas J. Pacansky
Dr. Gary Bennet Quistad
Mr. Algis Jonas Rudinskas
Professor Edward I. Solomon
Dr. David Robert Taylor

Sixty Years of Service

Dr. Andreas Acrivos
Dr. Lionel J. Bailin
Dr. John I. Brauman
Dr. Manfred Eberhardt
Dr. Yasushi Nakagawa
Mr. Akio Nishino
Mr. Michael Rothenberg
Mr. David W. Russell
Dr. Leon S. Yengoyan

Seventy Years of Service

Mr. William B. Burton
Ms. Mary Harriette Huff
Mr. Edgar S. Oerman

Seventy-four Years of Service

Dr. Robert Eugene Stutz

Seventy-five Years of Service

Dr. Charles E. Brockway
Dr. John E. De Vries
Mr. F. W. Hannsngen

Seventy-six Years of Service

Dr. T. H. Geballe

Seventy-seven Years of Service

Mr. Harrie Maxwell Quackenbos

Eighty-one Years of Service

Dr. Edwin M. Kinderman



Call for Nominations 23rd Annual Green Chemistry Challenge Awards



The ACS Green Chemistry Institute® (GCI) has issued the call for nominations for the 2018 Green Chemistry Challenge Awards. This presti-

gious national award honors companies and institutions that have developed a new process or product using green chemistry approaches that helps protect public health and the environment. Nominations for innovations in six categories are due by July 2.

The U.S. Environmental Protection Agency (EPA) supports the continuation of the awards in 2018, under the sponsorship of the ACS GCI. As in past years, an independent scientific panel convened by the ACS GCI will make recommendations for winners. The awardees will be honored at a ceremony in Washington, DC, in October 2018.

For details about the award categories and other nomination information, visit the [Green Chemistry Challenge Awards](#) home page.

Chemistry Quiz

Which of the 5 Platonic Hydrocarbons can be synthesized and observed experimentally?

The answer will appear in next month's newsletter.

Last Month's Chemistry Quiz

What is the idealized chemical formula of the pigment Prussian blue?

$\text{Fe}_7(\text{CN})_{18}$

Attention Book Lovers!

The next meeting of the Silicon Valley ACS Science Book group will be held on 21st July in the Stanford Chemistry Gazebo. We will meet for a discussion of the book *The Alchemy of Air* by Thomas Hager. This is a compelling story about Fritz Haber and Carl Bosch, and the story of the Haber-Bosch process used to manufacture synthetic nitrogen fertilizers by converting atmospheric nitrogen into something that plants can use. It started out as a search to renew the productivity of our impoverished soil. From this desire to save the world from starvation came the development of explosives that threatened to annihilate it at the same time. Everyone is welcome to join our discussions.



Forgotten Women: the Scientists


By Zing Tsjeng

ISBN 978-1788400428

The Scientists celebrates 48 unsung scientific heroines whose hugely important, yet broadly unacknowledged or incorrectly attributed, discoveries have transformed our understanding of the scientific world. From Mary Anning, the amateur paleontologist whose fossil findings changed scientific thinking about prehistoric life and the Earth's history to Emmy Noether dubbed "The Mighty Mathematician You've Never Heard Of" and whose theorem is still critical to modern physics - these are the stories of some truly remarkable women. Chapters including Earth and Universe; Biology and Natural Sciences; Medicine and Psychology; Physics and Chemistry; Mathematics and Technology and Inventions profile the female scientists who have defied the odds, and the opposition, to change the world around us.

TODAY IN CHEMISTRY HISTORY


25TH JULY - ROSALIND FRANKLIN'S BIRTHDAY



ROSALIND FRANKLIN

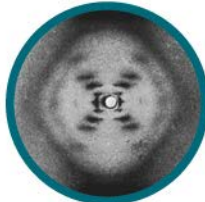
BORN
25 July 1920

DIED
16 April 1958




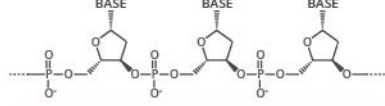
Rosalind Franklin was a chemist and X-ray crystallographer whose work was instrumental in the discovery of the structure of DNA. She missed out on a Nobel Prize for her work as they are not awarded posthumously.

PHOTOGRAPH 51 AND THE STRUCTURE OF DNA

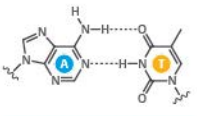


Photograph 51 is an X-ray diffraction image of DNA taken during Franklin's research. It was crucial in developing a model of DNA and confirming its double helical structure.

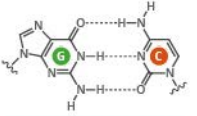




DNA is a polymer made up from monomers called nucleotides. A sugar phosphate backbone (above) forms the two strands, which are held together by hydrogen bonds between the bases found on these strands (below).




ADENINE (A) & THYMINE (T)



GUANINE (G) & CYTOSINE (C)

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SILICON VALLEY SECTION
AMERICAN CHEMICAL SOCIETY
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is published on our web site, sign up at:
http://scvacs.org/?page_id=99

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FUTURE EVENTS

- Jul 14** ACS Silicon Valley Section Annual Picnic,
Wine and Beer-Tasting, and Awards
Ceremony
Stanford Chemistry Department
<https://2018annualsvacspicnic.brownpapertickets.com>
- Jul 21** ACS Silicon Valley Science Book Group
The Alchemy of Air by Thomas Hager
Stanford Chemistry Gazebo
- Aug 19-23** Fall National ACS Meeting
Nanoscience, Nanotechnology and Beyond
Boston, MA
<https://www.acs.org/content/acs/en.html>
- Sep 29** Save the Date: Joint Meeting with
Sacramento and California local sections
Flavors of Chemistry
Dr. Charles Bamforth
UC Davis
Davis, CA

Click on links for more information or
see this newsletter at http://scvacs.org/?page_id=99