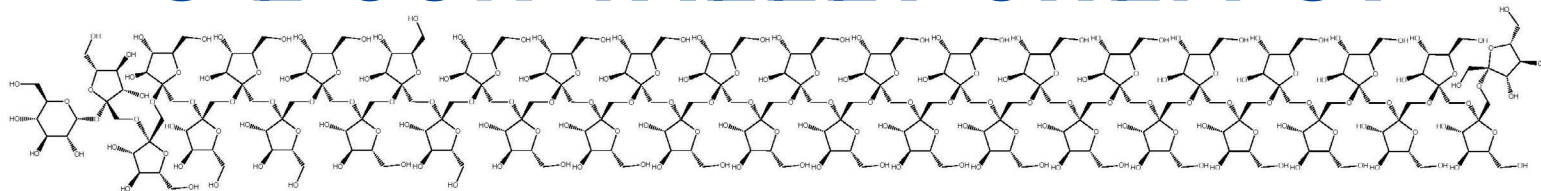
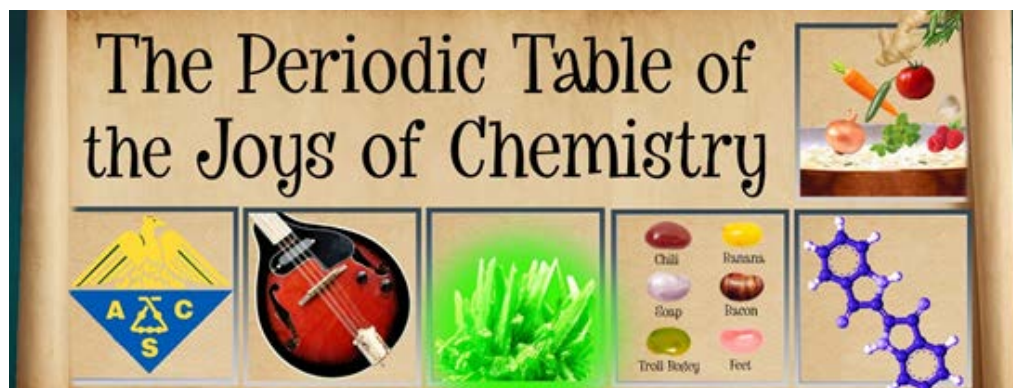


# SILICON VALLEY CHEMIST



## TABLE OF CONTENTS

The Joys of Chemistry	1
Chair's Message	1
Upcoming Events	1
Beyond the Elements	3
Tackling Imposter Syndrome	4
Celebrating Black History Month	4
2021 Radding Award Nominations	5
2021 Ottenberg Award Nominations	5
Chemistry Quiz	5
Local Science Fairs	6
SVACS New Members	6
YCC Trivia Night	6
ACS Public Policy Priorities	6
ACS Webinars	7
Worth Knowing About	7
Virtual Networking Session	8
Free Online Chemical Safety Course	8
Valentine's Day Resources for Science Lovers	8



With all the *distressing* news swarming about the coronavirus, we could use some *destrressing*. Let us wear our hearts on our sleeves, our masks on our faces, continue with social distancing and stay up-to-date with aspects of science that interest us and our non-scientist friends and families!

Over the next few months, we will feature talks on chemistry that involve sensory experiences.

### Polymer Chemistry and Lutherie: The Materials of Fretted Instrument

18 February | 7 pm PST | Dr. Steven Pollack

#### Registration



Lutherie: The Materials of Fretted Instruments",

We kick-off this sensory ride with Dr. Steven Pollack who doubles as a science fellow at Carbon, Inc. and a luthier for Yellow Rose Lutherie of Redwood City. In his talk titled, "Polymer Chemistry and

he discusses the polymers in the guitar that can influence the quality of the instrument's sound, both positively and negatively. Damping or enhancing specific frequencies via resonance gives the acoustic guitar its "voice." Please join us for this melodious talk on 18 February 2021 at 7:00 pm PST.

### Why Commercial Tomatoes Have No Taste; The Biochemistry and Genetics of Flavor Preferences

18 March | 7 pm PST | Dr. Harry Klee

#### Registration

*continued on next page*

## Chair's Message

Jigisha Shah



Have you noticed how many kinds of periodic tables have sprung up these days? There is a periodic table format for practically everything! All you have to do is search for the term "Periodic table of <insert term of your choice>" in your search engine and I bet you find a periodic table. I found a periodic table of *books* (by Nick Thomas), *signal flags* (by Joe Lomax), *desserts* (by Andrew Plotkin) and my favorite so far, the periodic table of *Disney characters* (by Kit Chapman). What I find particularly interesting is how much of an icon the table is! Chemists and non-chemists relate to the idea of periodicity and organization whenever they visualize the periodic table. I am going to take this opportunity to introduce one more such periodic table – the periodic table of Harry Potter Bertie Bott's Every Flavor Beans created by Dr. Eefei Chen, a project scientist

*continued on next page*

## UPCOMING EVENTS

Feb 3

### Metal-Organic Frameworks: From Energy Storage to Drug Delivery ([View flyer](#))

Professor Adam Matzger, University of Michigan  
Sponsored by the California and Huron Valley Sections of ACS  
Noon-1:15pm, Online via Zoom, Free, [Registration required](#)

Feb 3

### Executive Committee Meeting of ACS Silicon Valley Section

7:00-8:30pm, Online via Zoom, Free, Contact the [Chair](#) to attend

Feb 4

### SARS-CoV-2 Neutralizing Antibodies for the Treatment of COVID-19 ([Learn more](#))

Ajay Nirula, MD, PhD, Vice President- Immunology, Eli Lilly  
Sponsored by ACS San Diego Section  
7-8pm, Online via Zoom, Free, [Registration required](#)

*continued on page 3*

*The Joys of Chemistry, continued from front page*



Professor Harry Klee of the University of Florida will address the oft heard query in the vegetable section of the supermarket, “Why don’t commercial tomatoes have any taste?” in his talk on the biochemistry and genetics of flavor preferences. Dr. Klee strives to understand the chemical and genetic make-up of “flavor” in fruits and vegetables. His talk will describe how he and his group identify the genes that control syntheses of the flavor volatiles. He’ll then explain how they use this knowledge to produce a better-tasting tomato, thus trying to push the flavor calendar back decades to recapture the characteristics that were present in tomatoes in the first half of the 20th century.

◆ ◆ ◆  
**Chemical Conundrums in the Movies**

20 May | 6 pm PST | Dr. Mark Griep

**Registration**

Mark Griep is a professor of chemistry at the University of Nebraska-Lincoln who has devoted his teaching career to finding ways to engage people in learning more chemistry. Inspired by “Clambake,” an Elvis Presley movie that featured a fast-drying, super-hard varnish called GOOP,



Griep began offering “Chemistry in the Movies” presentations to middle school and high school students in 2002. These presentations include “Behind the Scenes of Bubbling Apparatus in the Movies” and “Everything I Know about Chemistry, I Learned at the Movies.”

Join us as he talks about “Chemical Conundrums in the Movies”. It’s about solving the most difficult chemical puzzles that he found in movies.

◆ ◆ ◆  
**A Muggle’s Guide to Harry Potter’s Chemistry**

17 June | 6 pm PST | Dr. Rebecca Lai

**Registration**



In 2011, University of Nebraska-Lincoln chemistry professor Rebecca Lai was contemplating how to attract more students to the sciences. She had just reread the entire Harry Potter series and it occurred to her: What if she designed a course around the books’ potions

and spells? Thus was born the honors class -- A Muggle’s Guide to Harry Potter’s Chemistry. This presentation will cover various elements in our world that are also in Harry Potter’s world, including gold (Au), silver (Ag), mercury (Hg), aluminum (Al), and silicon (Si). The focus will be on the use of these elements in the wizarding world when compared to our world.

◆ ◆ ◆  
**How One Company is Making Blue Jeans ‘Green’**

19 August | 7 pm PST | Dr. Tammy Hsu

**Registration**



How can engineered bacteria make indigo synthesis and dyeing blue jeans more ecofriendly? Dr. Tammy Hsu, the Chief Scientific Officer and co-founder of Huue, discusses making sustainable indigo blue for the denim

industry so that your favorite piece of clothing can be planet-friendly. The indigo blue currently used to dye jeans, giving them their iconic look, is highly polluting to the environment and made with toxic ingredients. Biosynthetic indigo has five times less toxicity potential and is as effective and easy for jeans makers to implement. Huue is working to make biosynthetic indigo the new gold standard for environmentally friendly indigo dye, and they want to revolutionize the color industry with microbially-produced dyes and pigments. Join us as Dr. Hsu tells us about sustainable textile dyeing and entrepreneurship.

*Chair’s Message, continued from front page*

at UC Santa Cruz who volunteers her talents as a graphic designer generously to scientific endeavors and to our section. See a preview of that periodic table in the Joys of Chemistry banner on page one. You’ll see it in full in our June newsletter featuring Prof. Lai’s June 17 talk about chemistry in Harry Potter’s world.

Efeif created the graphic for us to promote a series of talks entitled ‘Joys of Chemistry’, on topics that weave together artistic, cultural, and culinary themes and their underlying chemistry. Coming up are: Dr. Steven Pollack to talk about the influence of types of wood and polymers on the sound quality of guitars, Dr. Harry Klee to discuss why commercial tomatoes have no taste in his talk about the biochemistry and genetics of flavor preferences, Dr. Mark Griep to talk about chemical conundrums in movies, Rebecca Lai to talk about elements in the Harry Potter series, and Dr. Tammy Hsu to talk about making sustainable indigo blue for the denim industry. I am incredibly excited

about these talks!

On 11 March 2021, we will host Professor Jennifer Heemstra, a supramolecular chemist and a Twitter sensation. She will speak about combating impostor syndrome. Professor Heemstra enjoys a huge following on Twitter and is a regular columnist in C&E News where she discusses mentoring, mental health and wellness, and leadership.

The Younger Chemists Committees from CalACS and SVACS have joined forces to create an online trivia contest, anticipated for 4 March 2021. Stay tuned.

We are diligently working on bringing back our successful program of ‘Pop-Up Chemistry’ in collaboration with the Redwood City Library. Susan Fritts will also be creating a similar experience for the kids at the Edward Boss Prado Foundation. During 2021, we will prepare and distribute bags containing the required hands-on materials and instructions for experiments to be carried out

at home, targeted for middle school students. We will follow the distribution with interactive Zoom sessions staffed by SVACS volunteers to accompany these experiments. Last year, we were thrilled with the positive feedback from the students that participated – see the write-up and photos in the article *Making a Difference - SVACS Brings Science to Life through Outreach in 2020* written by Alternate Councilor Sogol Teschler in our **December 2020 newsletter**. We hope to replicate in 2021 the success of this wonderful Pop-Up Chemistry program in other locations willing to partner with us. Your suggestions are welcomed. Even amidst the changes the COVID-19 pandemic has wrought, we continue doing what we do best: supporting, promoting, and deploying chemistry and creativity. Looking at the bright side - video conferencing platforms have broadened the spectrum of speakers from all over the US! Join us virtually until we can once again meet safely in person.



## Beyond the Elements (NOVA, 3-Part Series)

“Just about every solid, liquid, or gas in the world as we know it begins with reactions between individual atoms and molecules. Host David Pogue dives into the transformative world of chemical reactions, from the complex formula

that produces cement to the single reaction that’s allowed farmers to feed a global population by the billions—a reaction that when reversed, unleashes the powerful chemistry of high explosives.” On your local PBS television station from 6:00-6:30pm

Pacific Time. [Learn more](#)

- Beyond the Elements: Reactions (Feb. 3)
- Beyond the Elements: Indestructible (Feb. 10)
- Beyond the Elements: Life (Feb. 17)



## UPCOMING EVENTS (continued)

- Feb 9** **Virtual Networking Event** ([Learn more](#))  
Sponsored by the Silicon Valley and California Sections of ACS, NOBCChE, CACS, and ebAWIS  
5-6pm, Online, Free, [Registration required](#)
- Feb 13** **Merck Research Laboratories in South San Francisco-Discovery Chemistry at Merck in the Bay Area** ([Learn more](#))  
Dr. Jillian R. Sanzone, Merck Research Laboratories  
Sponsored by the Women’s Chemists Committee, ACS Calif. Section  
10:30am-Noon, Online via Zoom, Free, [Registration required](#)
- Feb 17** **Covid-19 and the Ethics Of Scarcity** ([Learn more](#))  
Sponsored by ACS California Section  
Noon-1pm, Online via Zoom, Free, [Registration required](#)
- Feb 17** **Rapid Thermal Annealing of Polymers as a New Venue to Functionalize and Template Hard Materials**  
Prof. Reika Katsumata, University of Massachusetts Amherst  
Sponsored by the Golden Gate Polymer Forum (GGPF)  
6-7pm, Online via Zoom, \$5 GGPF Donation/Free, [Registration required](#)
- Feb 18** **Polymer Chemistry and Lutherie: The Materials of Fretted Instrument**  
Dr. Steven Pollack, Carbon, Inc.  
Sponsored by ACS Silicon Valley Section  
7-8pm, online via Zoom, Free, [Registration required](#)
- Feb 23** **ACS COMP Together, UCSF (Three 15 Minute Talks followed by 5 Minutes Q&A)**
  - Docking a bespoke ultra-large tetrahydropyridine library for selective 5-HT2AR ligands - Anat Levit Kaplan (UCSF)
  - Massively multi-task Profile-QSAR for collaboration among competitors: sharing single-task models without sharing structures or data - Eric Martin (Novartis)
  - Tips and tricks for deep learning in structure-based drug design - Jon Sorenson (Atomwise)Sponsored by the ACS Computers in Chemistry Division – SF Bay Area  
6-7pm, Online via Zoom, Free, [Registration required](#), [Meeting URL](#)
- Mar 2** **Lubricants and Glitter: Revolutionizing Sexual Assault Investigation** ([Learn more](#))  
Dr. Candice Bridge, University of Central Florida and National Center for Forensic Science
- Mar 4** **Chemistry Trivia Night**  
Sponsored by the Younger Chemists Committees of the Silicon Valley and California Sections of ACS  
7-8pm, Online, [RSVP](#)
- Mar 11** **Tackling Imposter Syndrome - You belong: finding confidence in the face of self-doubt and impostor syndrome**  
Prof. Jen Heemstra, Emory University  
Sponsored by the ACS Silicon Valley Section  
4-5pm, Online via Zoom, Free, [Registration required](#)
- Mar 18** **Why Commercial Tomatoes Have No Taste; The Biochemistry and Genetics of Flavor Preferences**  
Dr. Harry Klee, University of Florida  
Sponsored by ACS Silicon Valley Section  
7-8pm, Online via Zoom, Free, [Registration required](#)
- Mar 29-31** **Polymeric Materials for Additive Manufacturing (3-Day Live Virtual Short Course)**  
Prof. T. Long, Arizona State University; Prof. C. Williams and Prof. M. Bortner, Virginia Tech  
Sponsored by the Golden Gate Polymer Forum (GGPF)  
Online via Zoom, [Learn more](#)
- Apr 5-16** **ACS Spring 2021 National Meeting**  
Macromolecular Chemistry: The Second Century  
Fully virtual event, [Learn more \(Registration is open\)](#)
- May 20** **Chemical Conundrums in the Movies**  
Dr. Mark Griep, University of Nebraska-Lincoln  
Sponsored by ACS Silicon Valley Section  
6-7pm, Online via Zoom, Free, [Registration required](#)
- Jun 17** **A Muggle’s Guide to Harry Potter’s Chemistry**  
Dr. Rebecca Lai, University of Nebraska-Lincoln  
Sponsored by ACS Silicon Valley Section  
6-7pm, Online via Zoom, Free, [Registration required](#)
- Aug 19** **How One Company is Making Blue Jeans ‘Green’**  
Dr. Tammy Hsu, Chief Scientific Officer and co-founder of Huee  
Sponsored by ACS Silicon Valley Section  
7-8pm, Online via Zoom, Free, [Registration required](#)
- Sponsored by ACS California Section and Association of Women in Science – East Bay California  
5-6pm, Online via Zoom, Free, [Registration required](#)

March 11, 2021 4-5pm

## Tackling Imposter Syndrome

Professor Jen Heemstra, Emory University  
Online via Zoom, Free, [Registration required](#)

### Abstract:

"I don't deserve to be here, and everybody knows it." This is the constant messaging of impostor syndrome – whether you're starting a new position, winning an award, or being asked to speak at a conference. While few of us talk about it, most of us experience it at some point in our careers. And, the struggles brought on by COVID-19 have only made this worse. However, with the right tools, we can fight back against impostor syndrome and help our friends and colleagues to do the same. This talk will explore the mechanisms by which thoughts of impostor syndrome can form, and how we can work to dismantle them.



### Bio:

Jen Heemstra received her B.S. in Chemistry from the University of California, Irvine, in 2000. At Irvine, she performed undergraduate research with Prof. James Nowick investigating the folding of synthetic beta-sheet mimics, which instilled in her a love of supramolecular chemistry. Jen then moved to the University of Illinois, Urbana-Champaign, where she completed her Ph.D. with Prof. Jeffrey Moore in 2005 studying the reactivity of pyridine-functionalized phenylene ethynylene cavitands. After a brief stint in industry as a medicinal chemist, she moved to Harvard University to pursue postdoctoral research with Prof. David Liu exploring mechanisms for templated nucleic acid synthesis. In 2010, Jen began her independent career in the Department of Chemistry at the University of Utah and was promoted to Associate Professor with tenure in 2016. In 2017, Jen and her research group moved to the Department of Chemistry at Emory University. Research in the Heemstra lab is focused on harnessing the molecular recognition and self-assembly properties of nucleic acids for applications in biosensing and bioimaging.

Outside of work, Jen enjoys spending time with her husband and two sons, as well as rock

ACS Local Section  
Silicon Valley

## Tackling IMPOSTERSYNDROME

You belong: finding Confidence in the face of self-doubt & impostor syndrome

I don't deserve to be here & everyone knows it.

Turn negative thoughts into positive actions

Emory University  
Department of Chemistry

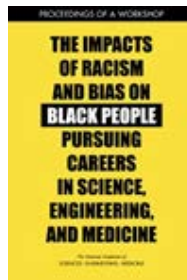
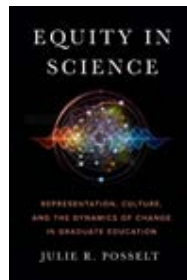
### Professor Jen Heemstra

11 March 2021  
4 pm PST

[Register here](#)

climbing, cycling, and running. Jen has gained a cult following for her mentoring style on Twitter. Learn more about her in her C&EN column and send her your questions at [cenm.ag/office.hours](mailto:cenm.ag@office.hours).

## Celebrating February's Black History Month: A Brief List of Resources



### Recent books:

- [Centering race in the STEM education of African American K-12 learners](#); Peter Lang, 2019.
- [Diversifying STEM: Multidisciplinary Perspectives on Race and Gender](#); Rutgers University Press, 2019.
- [Equity in Science: Representation, Culture, and the Dynamics of Change in Graduate Education](#); Stanford University Press, 2020.
- [The Impacts of Racism and Bias on Black People Pursuing Careers in Science, Engineering, and Medicine: Proceedings of a Workshop](#); National Academies Press, 2020.
- [Making Black Scientists](#); Harvard University Press, 2019.
- [National Diversity Equity Workshops in Chemical Sciences \(2011-2017\)](#); ACS Symposium Series, 1277; American Chemical Society, 2018.

### Celebrating Black Scientists:

- [1,000 Inspiring Black Scientists in America](#) (Cell Mentor, December 28, 2020)
- [An addendum to 1,000 inspiring Black scientists in America](#) (Cell Mentor, January 26, 2021)
- [Apple celebrates Black History Month](#) (Apple launches new editorial collections, Apple Maps Guides, the Apple Watch Black Unity Collection,

Today at Apple sessions, and more); Press Release from Apple, January 26, 2021.

- [PBS Black Culture Connection](#); Public Broadcasting Service.

### Organizations:

- [Association for the Study of African American Life and History](#) (The Founders of Black History Month)
- [Black Women in Science and Engineering](#)
- [National Organization for the Professional Advancement of Black Chemists and Chemical Engineers](#)
- [Science History Institute](#)
- [Smithsonian Institution's National Museum of African American History and Culture](#)

### Statistics:

- [Diversity Data Report 2020: Diversity Landscape in the Chemical Sciences](#). Royal Society of Chemistry.
- [U.S. Census Bureau. National African American \(Black\) History Month: February 2021](#) (Press Release, January 7, 2021)
- [Women, Minorities, and Persons with Disabilities in Science and Engineering](#). National Center for Science and Engineering Statistics (CCSES), National Foundation, 2019.

## 2021 Abraham Ottenberg Service Award Call for Nominations: Silicon Valley Section

Deadline: May 30, 2021

The Abraham Ottenberg Service Award was established in 1973 by the Silicon Valley Section to recognize members who have rendered outstanding service to the Section. It is named after Abraham Ottenberg, a former member who devoted much of himself to service to the Section. The award currently consists of an engraved plaque and a check for \$250. The award recipient is selected from candidates nominated by members of the Section. Nominees must be members or affiliates of the Silicon Valley Section.

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

Nominating letters should include a brief biography of the candidate and a description or evaluation of the service(s) to be recognized by the award. Seconding nominations are not required but will be accepted. Please send your nomination to:

Peter Rusch, Chair, Ottenberg Award Selection Committee  
Silicon Valley Section, American Chemical Society  
P.O. Box 395, Palo Alto, CA 94302-0395  
E-mail: [PFrusch@aol.com](mailto:PFrusch@aol.com), Fax: 650-961-8120

Past recipients:

1974 Shirley B. Radding	1975 Oliver S. Senn
1976 Floyd M. Hobbs	1977 Frank R. Mayo
1978 Harry S. Mosher	1979 Lois J. Durham
1980 Richard W. Gaver	1982 Alan C. Ling
1983 Ludwig A. Mayer and John F. Riley	1984 Howard M. Peters
1986 June G. Jones and Robert L. Montoya	1987 Malcolm Dole
1991 Donald E. Green	1992 Hubert E. Dubb
1993 Karl Marhenke	1994 Stephen N. Senzer
1995 Carol W. Mosher	1998 Bonnie Charpentier
1999 Linda Brunauer	2000 Herb Silber
2001 Sally Peters	2002 Jamil Talhouk
2003 Ean Warren	2004 Maureen Scharberg
2005 Hong Gao	2006 George Lechner
2007 David Parker	2008 Bruce Raby
2009 Peter Rusch	2010 Stephanie Gehling
2011 Abby Kennedy	2012 Harry Ungar
2013 Natalie McClure	2015 Todd Eberspacher
2016 Susan Oldham-Fritts	2017 Ihab Darwish
2018 Joseph A. Castellano	2020 Jane Frommer

## 2021 Shirley B. Radding Award Call for Nominations: Silicon Valley Section

Deadline: May 1, 2021

This award was established in 1994 by our Section of ACS to recognize demonstrated, dedicated, unselfish leadership, service and significant contributions, over a sustained period of time, to industrial, academic, or applied chemistry and to the American Chemical Society at local, regional and national levels. The award is named for Shirley B. Radding, who was a charter member and long-time supporter of this Section. It currently consists of an engraved plaque and a check for \$1000.

Award recipients selected on the following criteria:

- 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 & national levels
- Made significant contributions to industrial, academic, or applied chemistry

Please submit nomination dossier with CV and two letters of recommendation by May 1, 2021.

Heddie Nichols, Chair, Radding Award Committee  
Silicon Valley Section, American Chemical Society  
P.O. Box 395, Palo Alto, CA 94302-0395  
Email: [hnichols105@gmail.com](mailto:hnichols105@gmail.com)

Past recipients:

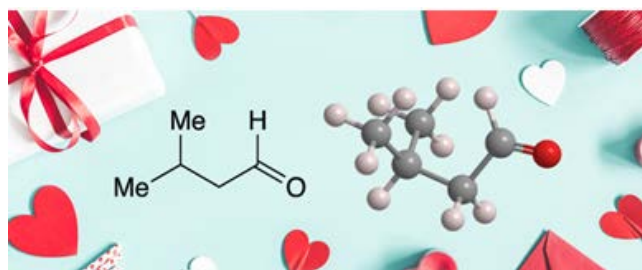
1994 Shirley B. Radding	1995 Agnes Ann Green
1996 John C. "Jack" Riley	1997 Howard M. Peters
1998 Alan C. Nixon	1999 Valerie J. Kuck

2000 Halley A. Merrell	2001 Norman A. LeBel
2002 Paul H. L. Walter	2003 Jean'ne M. Shreeve
2004 Maureen Chan	2005 Glenn Fuller
2006 Janan Hayes	2007 Merle Eiss
2008 Dorothy Phillips	2009 Bryan Balazs
2010 Herb Silber	2011 Carol A. Duane
2012 Bonnie A. Charpentier	2013 Mamie W. Moy
2014 Lee H. Latimer	2015 Connie Murphy
2016 Sally Peters	2017 Gary D. Christian
2018 Peter Rusch	2019 Mary Virginia Orna
2020 Thomas R. Beattie	

CHEMISTRY

Quiz

This week I might be a way to your heart.



What molecule am I?

Answer



# Local Science Fairs in 2021

## Judges Needed

by Susan Oldham-Fritts

While chocolates and flowers are high on many people's Valentine list, how about a gift that keeps on giving? The cost is minimal – just a day of your time judging at the local science fair – and the return is great. Your supportive judging will encourage middle and high school students to participate in the world of STEM – science, technology, engineering, and math. With all of the following fairs being virtual due to the pandemic, it's now easier than ever to support our budding scientists with just one day of your time. All of these science fairs need category awards judges, especially in the areas of botany, biology, chemistry, microbiology, and behavioral science. The majority of fairs serve as qualifiers for the International Science and Engineering Fair, ISEF.

Please contact me at [svsefmgr@gmail.com](mailto:svsefmgr@gmail.com) to join our SVACS special chemistry award team of dedicated chemists at the Synopsys Championship on March 11.

To judge other fairs, click through the links below to science fair websites where you'll find contact information.

No matter which fair(s) you choose, please volunteer now!

- **Synopsys Science & Technology Championship:** March 11
- **Golden Gate STEM Fair:** March 8-11
- **Santa Cruz County Science and Engineering Fair:** March 1-13
- **San Mateo County STEM Fair:** March 15
- **Monterey County Science & Engineering Fair:** March 8-20



ACS PRESENTS  
*Chemistry Trivia Night*  
March 4th (Th)  
7-8PM PST  
JOIN US FOR A FUN CHEMISTRY-  
THEMED TRIVIA NIGHT TO MEET NEW  
PEOPLE AND WIN AWESOME PRIZES!  
REGISTER FOR FREE AS A GROUP OR LET US  
ASSIGN YOU TO A TEAM!  
RSVP: <https://www.brownpapertickets.com/event/5037110>

ACS Local Section Silicon Valley  
ACS Local Section California

[facebook.com/SiValleyACS](https://facebook.com/SiValleyACS) [facebook.com/californiaACS](https://facebook.com/californiaACS) [facebook.com/acsberkeley](https://facebook.com/acsberkeley)

## 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 at a monthly section seminar meeting, once we return to meeting in person! When you register for the event, 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. We hope you will also 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. Plan to be at our annual beer & wine tasting and awards picnic each July on the Stanford campus. The local section is a volunteer organization. Attend an event, volunteer to help, and get to know your local fellow chemists. Welcome!

Please note: in-person events have been suspended during the pandemic but we are meeting virtually. The offer for a free dinner meeting stands for new members once we start getting together in person again.

## NEW ACS MEMBERS

Diane Carrera  
Philip Dirlam  
Ruth Dorel  
Tamas Gorbe  
Jyotsna Iyer

Barbara A. Jones  
Jon Leonard  
Hannah Jane Lusk  
David Mackanic

Kali Aleyse Miller  
Junjun Shan  
Jessica Renae Vargas  
Puzhou Wang

# Worth Knowing About Clinical Trials

By Stephen Boyer, PhD

- Weekdays -

ACS Webinars

Broadcasts every weekday  
at 11am Pacific Time

Join the [ACS Webinars Mailing List](#)



- February 4 -

**The State of Science:  
On the Global Perception of Science  
and the Need for STEM Advocacy**

[Learn more and register](#)

Jayshree Seth, 3M

ACS Webinars, Co-produced with ACS External  
Affairs & Communications

11am-Noon, Online via Zoom, Free



- February 10 -

**Creating an Inclusive and Resilient Future  
in Chemistry Education**

[Learn more and register](#)

Anthony DePass

Long Island University  
and Understanding Interventions

Michelle Claville

Hampton University  
and NSF Undergraduate Programs

Lourdes Echegoyen

The University of Texas at El Paso

ACS Webinar, Co-produced with:  
ACS Publications and ACS Education

11am-Noon, Online via Zoom, Free



- February 11 -

**The Power of Hydrogen:  
From First Element to Green Energy Catalyst**

[Learn more and register](#)

Vijay Kapur (retired)

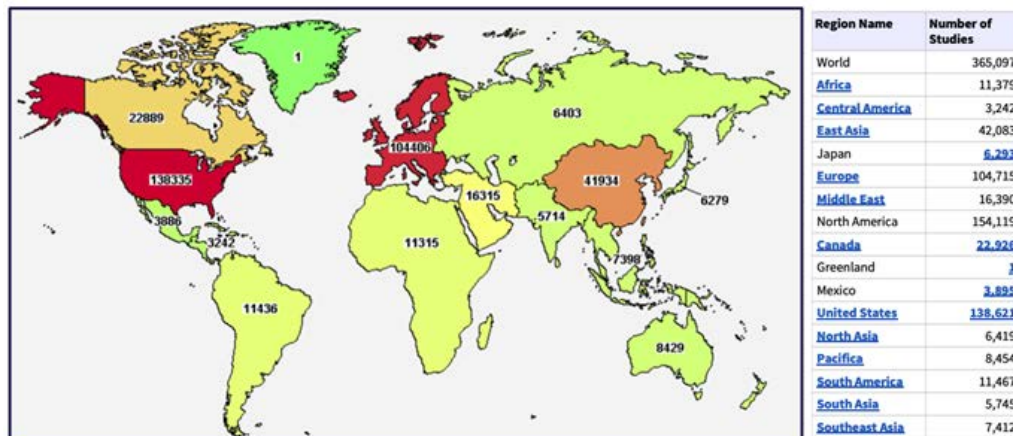
International Solar Electric Technology

ACS Webinars

10-11am, Online via Zoom, Free



Clinical trials are important, and they are worth knowing about. According to the National Library of Medicine (NLM) there have been approximately 400,000 clinical trials carried out worldwide as of January 2021. The distribution and a list of the studies is accessible through this [interactive map on their website](#):



Be sure to click through the active links in the accompanying table to see a breakdown of continents by country and the US by state, and then the wealth of information on clicking through each entity.

The 138,335 clinical trials listed for the US are classified in many categories, including 79,010 as *completed*, 22,070 as *recruiting*, 9,551 as *active*, 3,962 as *withdrawn*, and 12,301 as *terminated*.

The distribution of representative institutions is summarized in the table:

Clinical Trials in the US	Industry	NIH	Universities/Individuals/ Organizations	Other Gov't Agencies
Phase 0	28	47	75	5
Phase 1	880	388	374	20
Phase 2	1,389	690	536	44
Phase 3	811	198	111	15
Phase 4	101	38	126	18

[ClinicalTrials.gov](#) is maintained by the U.S. National Library of Medicine as a database of privately and publicly funded clinical studies conducted around the world. Other clinical trial data sources include The [Clinical Trials Transformation Initiative \(CTTI\)](#), [EU Clinical Trials Register](#) (of the European Union Drug Regulating Authorities Clinical Trials Database), and the [International Clinical Trials Registry Platform \(WHO\)](#).

It should be noted that not all clinical trials involve drugs. Many involve medical devices, therapies, or other studies. Of the clinical trials that involve drugs, many involve combinations of multiple drugs, and often the same drug (active ingredient) is used in multiple studies (e.g., aspirin, caffeine).

On the ClinicalTrials.gov site, clinical trial information is searched by numerous criteria such as conditions (disease), location of studies, and sponsors. Search results can be downloaded as pdf or comma-separated files for further data analysis.

The [Advanced Search option](#) is generally the most useful interface, illustrated on the next page.

Check out the Resources drop-down menu on ClinicalTrials.gov for a wealth of additional information.

Despite its generous offerings, the site suffers a significant shortcoming for those with a more serious interest in medicinal chemistry. While this site offers some drug names (many in the form of company research codes), none of the search results provides information about molecular structures. The molecular structures of drug candidates are fundamental to

*continued on next page*

Status	NCT Number
Conditions	Other IDs
Interventions	Title Acronym
Study Type	Study Start
Phase	Primary Completion
Sponsor/Collaborators	Study Completion
Funder Type	First Posted
Study Design	Last Update Posted
Outcome Measures	Results First Posted
Number Enrolled	Locations
Sex	Study Documents
Age	

### Advance Search Options

**Status**

Recruitment:

- Not yet recruiting
- Recruiting
- Enrolling by invitation
- Active, not recruiting
- Suspended
- Terminated
- Completed
- Withdrawn
- Unknown status†

Expanded Access:

- Available
- No longer available
- Temporarily not available
- Approved for marketing

**Study Phase**

- Early Phase 1
- Phase 1
- Phase 2
- Phase 3
- Phase 4
- Not Applicable

**Funder Type**

- NIH
- Other U.S. Federal agency
- Industry
- All others (Individuals, universities, organizations)

**Eligibility Criteria**

Age:  years on

Age Group:

- Child (birth-17)
- Adult (18-64)
- Older Adult (65+)

Sex:

- All
- Female
- Male

Accepts Healthy Volunteers

**Study Type**

- All
- Interventional (Clinical Trial)
- Observational
- Patient Registries
- Expanded Access

**Study Results**

- All
- With Results
- Without Results

**Study Documents**

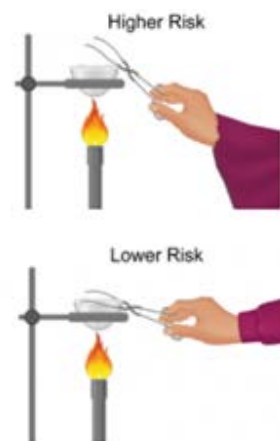
- Study Protocols
- Statistical Analysis Plans (SAPs)
- Informed Consent Forms (ICFs)

understanding their mode of action. They are critical for machine-learning and for medical progress in general. A step in this direction is associating the molecular content of clinical trials with existing molecular structure identifiers and databases. For example, linking machine-readable renditions of chemical structures (*SMILES*, *InChIkeys*) with the *National Clinical Trial (NCT) Identifier numbers* and with resources such as PubChem compound identifiers (CID). Fortunately, the NIH is working on providing just such a capability on their ftp site. Stay tuned!

ClinicalTrials.gov certainly provides sounder information than the numerous medical commercials that are so abundant on today's TV screens. My reaction to those commercials is to invite the pharma and ad agencies to educate the public with a picture of the drug's molecular structure, luring the ads one step closer to conveying the importance of chemistry.

## Free Online Chemical Safety Course from ACS

A new on-line chemical safety course has just gone live at the ACS Learning Center entitled "Foundations of Chemical Safety and Risk Management for Chemistry Students." The intended audience is students who have completed at least two semesters of General Chemistry with lab and one semester of Organic Chemistry with lab. The course is being offered at no charge to the community. Links to the course, usage notes about the course and a list of the topics covered can be found at <http://dchas.org/2021/01/28/free-on-line-chemical-safety-course-from-ac/>



## Valentine's Day Resources for Science Lovers

To help you celebrate February 14th, check out this *brief guide* of science resources related to Valentine's Day. It includes online cards, streaming videos, books, and Compound Interest infographics.



*The Science of Love (Queen Parody) (from A Capella Science)*

A Capella Science brings to you another great parody of a rock-n-roll classic. The Science of Love (Queen Parody) offers a fun scientific spin on love.



## Virtual Networking Session



Tuesday February 9th 5pm - 6pm PST Online Zoom Event

Join CalACS and our global partners for a speed networking event with students and professionals within the chemical sciences as part of the IUPAC's GWB "Empowering Diversity in Science" event. Our partners include professional societies and student groups.



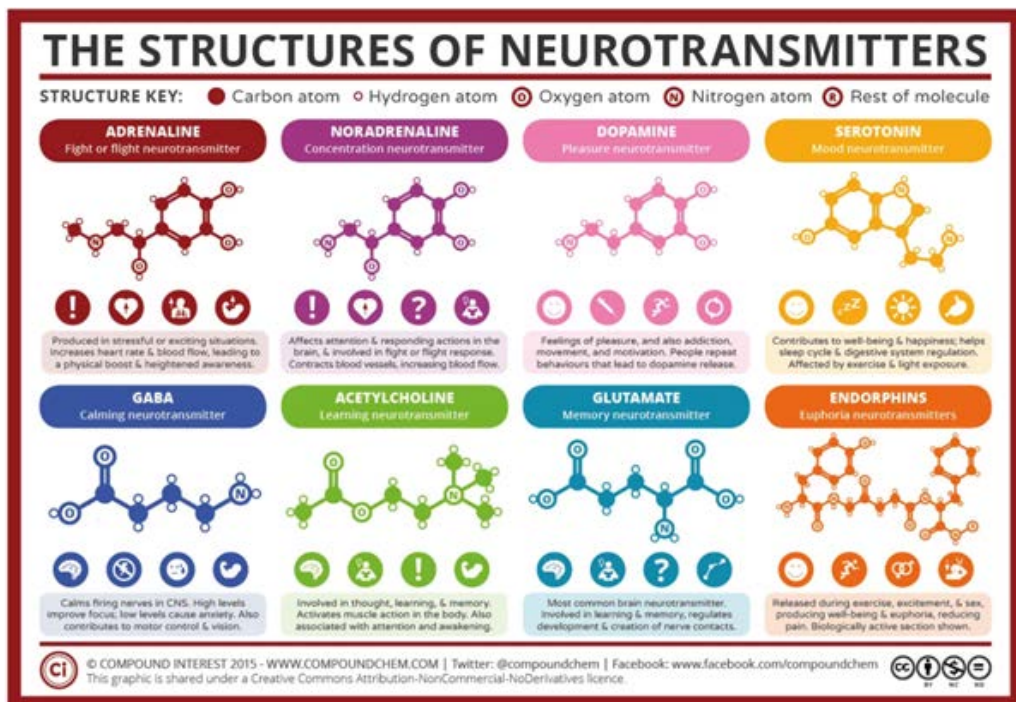
All are welcomed!

Register here: <https://bit.ly/3nLwbC0>

Online Zoom link will be sent to registered participants. This event is free and open to the public. More information at [linktr.ee/calacsGWB](http://linktr.ee/calacsGWB) or email [marindawu@gmail.com](mailto:marindawu@gmail.com)







Click [here](#) to enlarge image.

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