

SILICON VALLEY CHEMIST

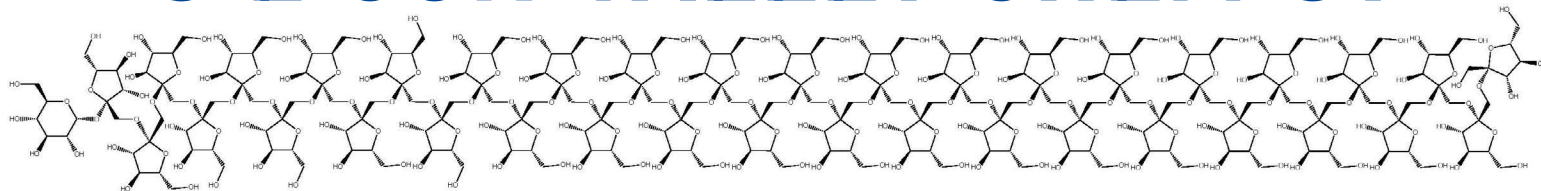
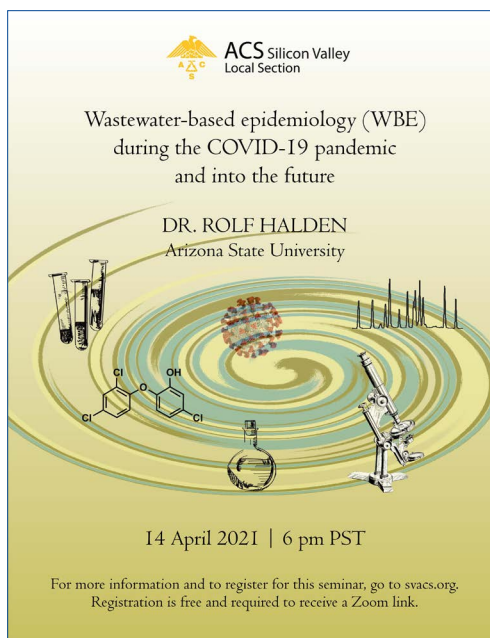


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A Bounty of April Programs



ACS Silicon Valley
Local Section

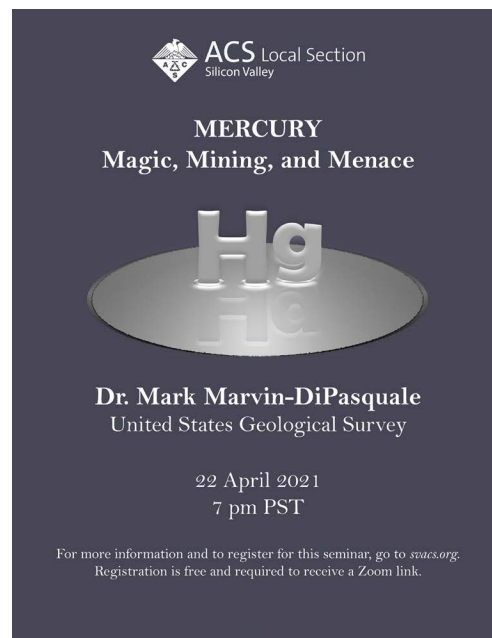
Wastewater-based epidemiology (WBE)
during the COVID-19 pandemic
and into the future

DR. ROLF HALDEN
Arizona State University

14 April 2021 | 6 pm PST

For more information and to register for this seminar, go to svacs.org.
Registration is free and required to receive a Zoom link.

More information on page 2



ACS Local Section
Silicon Valley

MERCURY
Magic, Mining, and Menace

Hg

Dr. Mark Marvin-DiPasquale
United States Geological Survey

22 April 2021
7 pm PST

For more information and to register for this seminar, go to svacs.org.
Registration is free and required to receive a Zoom link.

More information on page 3



Chair's Message

Jigisha Shah

March was a month dedicated to the students in our community! Synopsys Championship is an annual science fair that showcases students in Santa Clara County who will become our future scientists, technology experts, engineers, and mathematicians. This regional competition celebrates achievement by middle and high school students supported by their parents, teachers, communities, and schools. Silicon Valley ACS is proud to sponsor six awards for students demonstrating original chemistry thought and practice through their projects. These students are tremendously talented, confident, and future-focused. They are thinking about everything from pollution and wastewater management, to machine-learning, to new ways to detect and cure diseases. Anyone concerned about the future of chemistry would have their concerns assuaged by watching last year's [showcase of videos](#) of the tremendous work these kids have done in the sciences. New to this year's ACS activity at the Synopsys Championship science fair is our newly minted Dave Parker Memorial Award created to honor the fond memory of our dear friend and colleague, Dave Parker.

In the month of March, we also participated in the [National Chemistry Olympiad](#). Approximately 200 high school students participated in the Olympiad at the local level. Some of these students will be selected to represent us at the National and International levels.

UPCOMING EVENTS

- Apr 5-16 ACS Spring 2021 National Meeting**
Macromolecular Chemistry: The Second Century
Fully virtual event, [Learn more \(Registration is open\)](#)
- Apr 6 Transformations of Trace Contaminants in Nature-Based Treatment Systems**
Rachel Scholes, PhD, Postdoctoral Scholar USDA & UC Berkeley
Sponsored by the ACS California Section
Noon-1pm, Online via Zoom, Free, [Registration required](#)

continued on page 3

continued on next page

Chair's Message, continued from front page

We also kicked off 2021's first session of hands-on at-home science experiments with Pop-Up Chemistry in **collaboration with the Redwood City Library**. In this first session, kids and their families used chemical reactions to inflate balloons. A huge shout out to Elizabeth Migicovsky for preparing the accompanying video and helping us build an enthusiastic audience.

And now on to the month of April! We turn our attention to our watershed with two expert

speakers. We will learn about detecting **SARS-CoV-2 in sewage water** with Prof. Rolf Halden from Arizona State University on 14 April. On 22 April we will learn about the **impact of mercury-mining** in the San Francisco Bay / Delta and its watershed with Dr. Mark Marvin-DiPasquale from the United States Geological Survey (USGS). I look forward to seeing you all at these opportunities to learn about societally important aqueous issues. Click through the two links above to register for

these on-line events.

We will be celebrating our Earth with kids this month by exploring ways to reduce our environmental footprint and learning about how simple choices we make about food we eat, things we use, waste we create and energy we use can have an impact on our Earth through our next **Pop-Up Chemistry event – Reducing Our Carbon Footprint**.

By the way, Earth Day was officially recognized on April 22, 1970, as a way to demonstrate support for a healthy environment, raise awareness about environmental issues, and remind that we all need to contribute to a sustainable planet. As we celebrate the 51st anniversary of Earth Day this year, let us all think about how we can live more sustainably.

And now at the risk of sounding like a huge animated movie fan that our family is, let me share a few lines from a favorite Earth Week song **written by Ester Dean, Aaron Pierce, and Tricky Stewart** from the movie of **Dr. Seuss' The Lorax**

*You can't reap what you don't sow
Plant a seed inside the earth
Just one way to know its worth
Let's celebrate the world's rebirth
We say let it grow!*

April 14, 2021, 6 pm PST

Wastewater-based Epidemiology (WBE) During the COVID-19 Pandemic and into the Future

Dr. Rolf Halden

Online via Zoom, Free, **Registration required**

Abstract:

Wastewater-based epidemiology (WBE) is quickly gaining traction globally as a tool to assess the COVID-19 pandemic and to inform public health decision-making. With the medical practicalities of testing for SARS-CoV-2 on an individual basis being limited for a variety of reasons, WBE constitutes one potential tool that allows for rapid, comprehensive and recurring data collection to inform evidence-based decision-making. Our team modeled and analyzed the feasibility, economy, opportunities and challenges of tracking COVID-19 locally and globally using WBE, taking into account as key variables factors including air temperature, average in-sewer travel time and per-capita water use. An Arizona case study illustrates that effective surveillance and public health response may occur in a two-step process in which WBE helps to identify and enumerate infected cases, whereafter clinical testing then serves to identify infected individuals in WBE-revealed hotspots. Data provided here demonstrate this approach to save money and be broadly applicable worldwide. WBE brings with it an interesting collaborative, as sewer and water districts are forming new partnerships with public health agencies and medical professionals to aid in the management of public health priorities, thereby helping to accelerate the local, regional, national and global recovery from the pandemic.



Rolf Halden, PhD, PE

Bio:

Professor Rolf Halden of Arizona State University (ASU) is Founding Director of the **Biodesign Center for Environmental Health Engineering**, the nonprofit **OneWaterOneHealth**, and the ASU startup company, **AquaVitas LLC**. He has authored over 230 research papers, patents, monographs, and the 2020 **popular science book, Environment**. Dr. Halden has been invited to brief the Environmental Protection Agency (EPA), the Food and Drug Administration (FDA), the National Academies, the Centers for Disease Control and Prevention, and members of U.S. Congress on environmental health and sustainability challenges. As an expert in **wastewater-based epidemiology** for tracking harmful chemicals and infectious disease agents, he has lent his expertise to studying the causative agent of the COVID-19 pandemic, **SARS-CoV-2**.

ACS Silicon Valley
Local Section

Wastewater-based epidemiology (WBE)
during the COVID-19 pandemic
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DR. ROLF HALDEN
Arizona State University

14 April 2021 | 6 pm PST

For more information and to register for this seminar, go to svacs.org.
Registration is free and required to receive a Zoom link.

Click [here](#) to enlarge the image

CAS Common Chemistry Collection Expands

Search by chemical compound name, SMILES, InChI or CAS Registry Number.

"CAS Common Chemistry is an open community resource for accessing chemical information. Nearly 500,000 chemical substances from CAS REGISTRY cover areas of community interest, including common and frequently regulated chemicals, and those relevant to high school and undergraduate chemistry classes. This chemical information, curated by CAS' expert scientists, is provided in alignment with their mission as a division of the American Chemical Society.

Request access to the CAS Common Chemistry via API (application programming interface) to support workflow integration, chemical research and cheminformatics."

Learn more: **CAS Common Chemistry expands collection of publicly available chemical information** (CAS Press Release, March 17, 2021).

April 22, 2021, 7:00-8:30pm

MERCURY: Magic, Mining and Menace

Dr. Mark Marvin-DiPasquale
Online via Zoom, Free, [Registration required](#)

Abstract:

Due to its unique chemical properties and existing as a silvery liquid at room temperature, mercury (Hg) has fascinated humans since ancient times. It has been mined and used widely throughout history, including during the modern industrial era. It was not until the mid-20th century that the science community began to appreciate a darker side of this alluring element, as a sharp rise in severe neurological disorders, birth defects and premature deaths began to unfold in the mid 1950s in the small fishing village of Minamata Japan. This prolonged mass poisoning event was ultimately linked to the industrial release of Hg into the local bay and the subsequent bioaccumulation of Hg in the local aquatic foodweb that supplied fish to the town. This tragic event, along with a number of other Hg-related mass poisoning events, spurred a period of intense research into the biogeochemical cycling of Hg that continues to this day. This presentation will provide a broad overview of mercury in terms of its chemistry, its history with respect to human use, environmental biogeochemistry, and recent research conducted by the US Geological Survey to better understand how this extremely toxic element cycles through the environment. A particular focus of the presentation will be on the use of Hg during the historic mining period in California and how the legacy of that activity still impacts the San Francisco Bay and Delta and its watershed today.



Bio:

Dr. Marvin-DiPasquale is a lead scientist at the U.S. Geological Survey (USGS) in the Earth System Processes Division, where he leads a research program entitled Biogeochemical Cycling at Regional Scales. He completed a B.S. in Chemistry at SUNY Stony Brook in 1987, and a Ph.D. in 1995 from University of Maryland, Marine and Estuarine Environmental

Science Program, with a focus on the microbial ecology of Chesapeake Bay sediments. He began a career at the USGS (Menlo Park, CA) as a National Research Council post-doc in 1995, and became a project chief in 2004. During much of his tenure at USGS his research focus has been on mercury biogeochemistry in various ecosystems, including: the San Francisco Bay watershed and associated mining areas throughout CA; FL Everglades; Carson River, NV (mercury Superfund site); Great Salt Lake, UT; coastal Louisiana; Patagonia region of Argentina; and multiple USGS study locations throughout the U.S.

ACS Local Section
Silicon Valley

MERCURY
Magic, Mining, and Menace

Hg

Dr. Mark Marvin-DiPasquale
United States Geological Survey

22 April 2021
7 pm PST

For more information and to register for this seminar, go to svacs.org.
Registration is free and required to receive a Zoom link.

Click [here](#) to enlarge the image

UPCOMING EVENTS (continued)

- Apr 7** **ACS Silicon Valley Executive Committee Meeting**
Sponsored by the ACS Silicon Valley Section
7-8:30pm, Online via Zoom, Free, Contact the [Chair](#) to attend
- Apr 13** **Pharmaceutical Industry Career Panel**
Dr. Lauren Chapman, Novartis; Dr. Anna Batt, Genentech;
Ms. Michelle Tran-Dube, Pfizer; and Dr. Andrew Martins,
Gilead Sciences
Sponsored by the ACS California Section
Noon-1pm, Online via Zoom, Free, [Registration required](#)
- Apr 14** **Wastewater-based Epidemiology (WBE) During the COVID-19 Pandemic and into the Future**
Professor Rolf Halden, Arizona State University
Sponsored by the ACS Silicon Valley Section
6-7pm, Online via Zoom, Free, [Registration required](#)
- Apr 20** **Chinese American Chemical Society 2021 Spring Virtual Program ([Learn more](#))**
Skin-Inspired Organic Electronics, Professor Zhenan Bao,
Stanford University
4:30-6pm, Online via Zoom, Free/Donations Welcome,
[Registration required](#)
- Apr 21** **Powered by Plastics: Plastics Into Fuel**
Professor Skip Rochefort, Oregon State University
Sponsored by the Golden Gate Polymer Forum (GGPF)
7:30pm, Online via Zoom, \$5 GGPF Donation/Free,
[Registration required](#)
- Apr 21** **Biosequence Searching in SciFindern**
Sponsored by CAS (Chemical Abstracts Service)
SciFindern is adding biosequence searching of >500 million
protein and nucleic acid sequences [Details and Register](#)
- Apr 22** **MERCURY: Magic, Mining and Menace**
Dr. Marvin-DiPasquale, U.S. Geological Survey (U.S.G.S.)
Sponsored by the ACS Silicon Valley Section
7-8pm, Online via Zoom, Free, [Registration required](#)
- May 20** **Chemical Conundrums in the Movies**
Dr. Mark Griep, University of Nebraska-Lincoln
Sponsored by the 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 the 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 the ACS Silicon Valley Section
7-8pm, Online via Zoom, Free, [Registration required](#)
- Nov 5** **2nd Annual Bay Area Chemistry Symposium ([Learn more](#))**
Sponsored by the ACS California and ACS Silicon Valley Section
Location: Gilead Sciences, 333 Lakeside Drive, Foster City, CA

2021 Santa Clara Valley Science and Engineering Fair: the Synopsys Championship

by Susan Oldham-Fritts

The 62nd annual Santa Clara Valley Science and Engineering Fair, the Synopsys Championship (www.science-fair.org), was held virtually due to COVID-19 precautions on Thursday, March 11, 2021. As our regional competition, it showcased and celebrated our local 6th-12th graders' extracurricular science projects, made even more challenging this year due to limited or no access to school facilities. It will be these students who become our future scientists, engineers, technologists, and mathematicians. Whether or not they were selected for the SVACS awards, other organizations' special awards, or the Synopsys Championship's category awards or grand prize awards, they are all winners. Kudos to the science fair's Board of Directors for a nearly seamless virtual judging experience.

This year, our five member SVACS special awards judging team addressed two categories of awards: our traditional ACS awards conferred on high school students this year, and the new

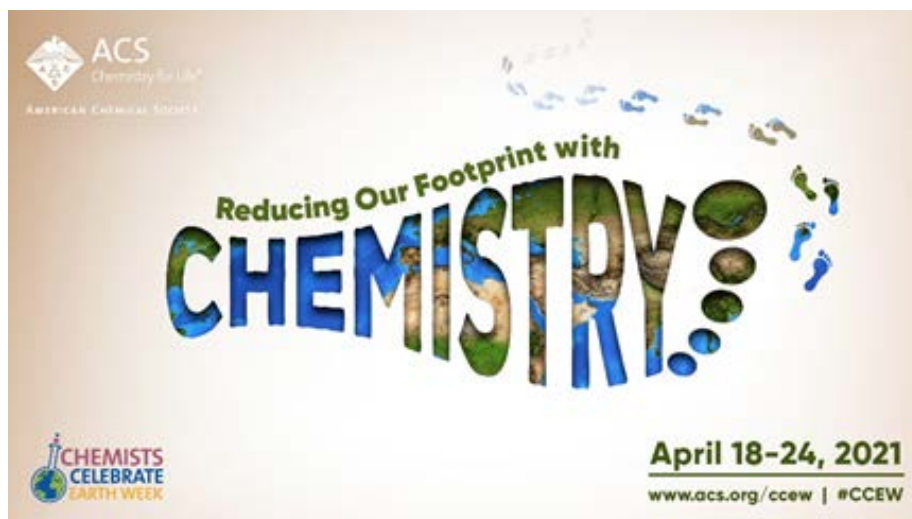
Dave Parker Award for excellence in middle school chemistry. Dr. Howard Peters and Dr. David Shull judged for the Dave Parker Award, and Dr. Natalie McClure, Dr. Owen Gooding, and Susan Oldham-Fritts judged for the high school awards. Of all the incredible 157 chemistry-related projects at the fair, we selected 4 high schoolers and 2 middle schoolers for a combined \$1250 in award money. Check back in the May SVACS newsletter to find out more about these amazing students and their projects.

We also thank the many SVACS members for volunteering their time and expertise as category, grand prize, and other special award judges. Additionally, we extend our thanks to Dr. Aart de Ges, chairman and CEO of Synopsys, and Kate Houston of the Synopsys Outreach Foundation for their continuing and generous support of local science students and their teachers. Science fairs don't happen without these committed students, teachers, judges, organizers and sponsors.

Did you know? The Younger Chemists Committee co-hosts virtual Chemistry Trivia Night

by Madalyn Radlauer

At 7 pm on Thursday, March 4th, more than 40 chemistry enthusiasts from around the Bay Area – and as far as Texas and Louisiana! – gathered on Zoom for a night of chemistry trivia led by ACS @ Berkeley and co-hosted by the California ACS and Silicon Valley ACS Younger Chemists Committees (YCCs). Teams faced four challenging rounds identifying pictures of lab equipment, identifying sounds from the lab, filling in a Name-that-Element crossword, and answering questions on elements, reactions, and chemistry history. After an hour of puzzling away in their breakout rooms with more than a few chemistry puns thrown their way, teams had successfully completed the last round, and everyone returned to the main session for the announcement of the winners. Much to the chagrin of the Berkeley hosts, a Stanford team, the Tree Huggers, had clinched the win with 44 points! A crew from Foothill College was a close second with several teams in contention for 3rd place. It was a vibrant and enjoyable evening - we are looking forward to our next collaboration! Keep an eye out for announcements about our future YCC events via the newsletter and social media. If you're interested in getting more involved with YCC or have an idea for an event, contact the SVACS YCC chair, Madalyn Radlauer (madalyn.radlauer@sjsu.edu).



Chemists Celebrate Earth Week

Chemists around the world will be "Reducing Our Footprint with Chemistry" this Earth Day through the annual *Chemists Celebrate Earth Week (CCEW)* campaign from April 18-24.

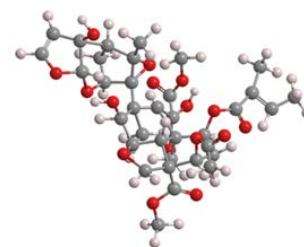
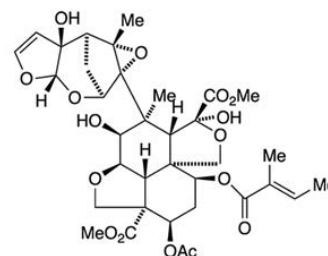
We will be celebrating our Earth with kids this month by exploring ways to reduce our environmental footprint and learning about how simple choices we make about food we eat, things we use, waste we create and energy we use can have an impact on our Earth through our next *Pop-Up Chemistry event – Reducing Our Carbon Footprint*.

Learn more about reducing your environmental footprint – view [educational resources](#) for students and [general interest resources](#) for college students and adults from the CCEW website.

On Earth Day, April 22nd at 11am-Noon PT, there will be an ACS Webinar on "The Hidden Impact: Taking a Life Cycle View." [Register for free](#)

CHEMISTRY Quiz

I can help with dental care or fight off insects. What molecule am I?



Answer

You Can Teach Old Dogs New Tricks

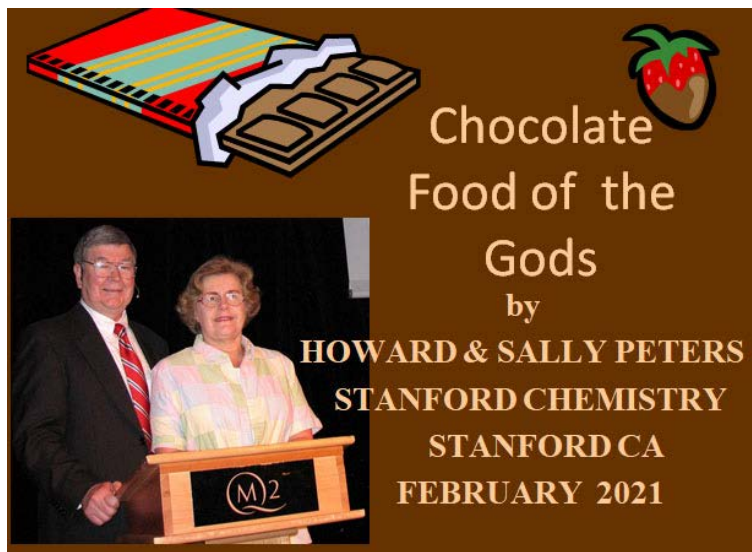
By Howard & Sally Peters

Many of us remember our last delightful in-person presentation in February 2020 by Dick Zare of Stanford on "Kitchen Chemistry." We were then asked to present our fun talk to his Stanford Class on Chocolate Food of the Gods. The COVID-19 pandemic intervened. Stanford shut down and our lecture spot was cancelled.

Fast forward one year and so much has changed. We learned and became old hands at ZOOM. Our first ZOOM presentation on Chocolate was with the Heritage Garden Club of Old Greenwich Connecticut. The presentation went well. Dick Zare then asked if we might present the fun chocolate talk to his class by ZOOM. We presented it on February 23rd and it was enjoyed by all. We are now available to do our chocolate talk anywhere, any time by ZOOM. So you can teach old dogs new tricks.

For more information, search **Howard Sally Peters Chocolate Chemist** on Google.

The photo is from our fun presentation on Cunard's Queen Mary II in March 2008. And now we know that eating chocolate often for 14 years - will turn your hair white...



2021 Shirley B. Radding Award

Nominations 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
- Dedicated and unselfish service to ACS members over a sustained period of time
- Leadership through elected and appointed ACS positions at local, regional and national levels
- 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

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	

2021 Abraham Ottenberg Service Award

Nominations 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 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.

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. Re-nominations are accepted for consideration as previous nominations are not retained for subsequent years. Previous recipients are not eligible.

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, 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

Worth Knowing About: International Chemical Identifiers (InChI)

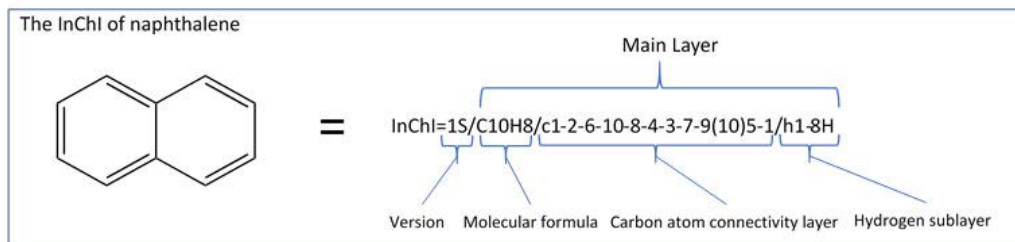
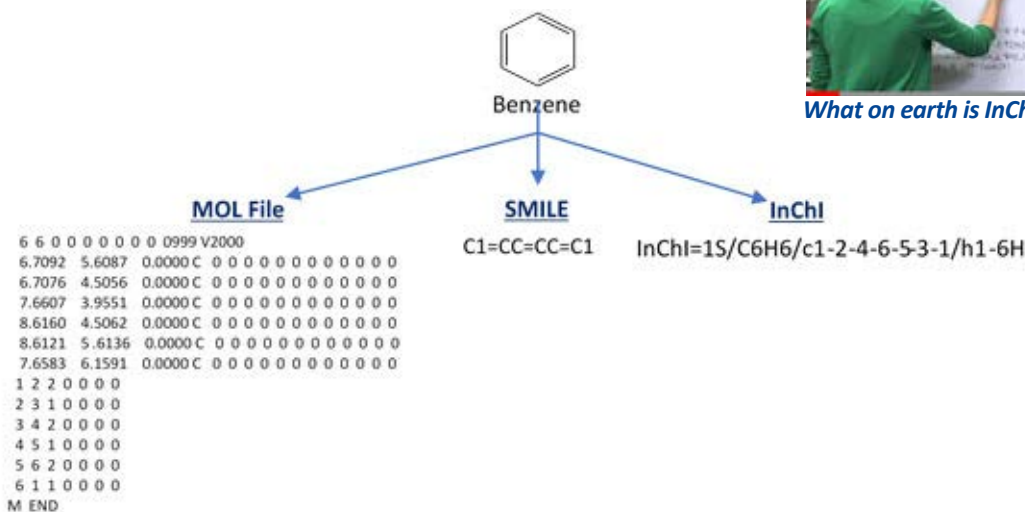
By Stephen Boyer, PhD



Describing chemical structures is not easy. Democritus (c.470 BC - c.370 BC) put forth the theory of atomism which postulates that everything in the universe, from objects to human souls, is the result of the interactions and rearrangements of atoms in the void. We have been living with a shifting understanding of molecules ever since.

What does this have to do with InChIs? **Some background:** they are International Chemical Identifiers, adopted by the International Union of Pure and Applied Chemistry (IUPAC), developed initially by the National Institute of Standards and Technology (NIST), and now widely used to identify and locate molecules in large datasets, including publications and patents.

Their presence in the field of chemical & bio informatics is growing rapidly. An InChI is meant to be a molecule's unique, machine-readable identifier. As such they are useful for compound registration systems. Unlike a Chemical Abstracts Service (CAS) registry number, InChIs are open-source, machine-readable descriptors of a chemical structure that contain additional information about the molecule. Until 20 years ago, machine-readable chemical structures were generally defined as MOL files or SMILES strings. InChIs have evolved since then as a way of defining molecules, analogous to serving as a molecule's domain name, i.e., as a Uniform Resource Locator (URL). Like domain names, the string of characters in an InChI conveys "layers" of information about, for example, stereochemistry and charge.



The system of using InChIs as molecular identifiers is supported by most molecular editors, enabling user-drawn molecules to be converted to their InChIs for use in searching. Modern molecular databases that contain millions of InChIs include such data sources as:

Database	InChIs/InChIKeys
CAS / SciFinder	>180 Million
EBI UniChem	>157 Million
NIH / NCI / CADD	>133 Million
NIH / PubChem	>109 Million
RSC / ChemSpider	>71 Million
Google Patents	>59 Million
Elsevier / Reaxys	>31 Million

Because complex molecules can yield long InChIs, the InChI gets processed by a hash algorithm and reduced to a fixed string of characters called an InChIKey. InChIKeys are becoming the open-source standards for unique identifiers of chemical structures. Other developments built on the infrastructure of InChIs are RInChIs - identifiers for chemical reactions - and MInChIs - identifiers for chemical mixtures. The list of variants is growing as difficult issues are being confronted, such as representing tautomers, organometallics, polymers, alloys, and biologics.

Machine-learning and AI **drive the growth** of these computer-compatible molecular representation schemes in all sectors of government, academia, and industry. The scope of this growth is reflected in the agenda of a **3-day NIH-hosted Virtual InChI Workshop** last month that included topics such as using InChIs for compound and reaction registration systems and using InChIs as a data exploration and discovery tool.

Learn more:



What on earth is InChI?



The birth of the InChI



The Googleable InChIKey



InChI and the Islands

SHORT FILMS ABOUT CHEMISTRY

Chemistry Shorts

This film series shows the vital role the chemical sciences play in the biggest issues facing the world. Each film is accompanied by a lesson plan to integrate the science behind these innovations into the classroom. Films currently available on the [Chemistry Shorts](#) website:

- **Direct Air Capture & The Future of Climate Change** with Christopher Jones, Georgia Institute of Technology
- **Rewriting Life** with David Liu, Harvard University
- **Under the Skin** with Zhenan Bao, Stanford University

Chemistry Shorts is also on [YouTube](#) and [Twitter](#). Chemistry Shorts is sponsored by The Camille & Henry Dreyfus Foundation, supported by the Research Corporation for Science Advancement, and is endorsed by the American Chemical Society, American Association of Chemistry Teachers, and the American Institute of Chemical Engineers.

Food Fraud: Combating Adulteration in Olive and Avocado Oils

ACS Webinar April 7, 2021, 11AM Pacific



Why are we still dealing with food adulteration in the 21st century? Avocado oil has been experiencing high consumer demand due to its health benefits. However, despite labels claiming “pure avocado oil,” UC Davis researchers recently reported at least 82% of test samples were either prematurely stale or mixed with other oils.

- Register for Free! -

Join Dr. Selina Wang of UC Davis to discover the chemistry of the cooking oils in your cupboard. During this free interactive broadcast, she will discuss her over-a-decade experience studying olive oil purity and quality and how these practices can be applied to food adulteration challenges now facing the avocado oil industry.

This ACS Webinar is moderated by Britt Erickson of C&EN and is co-produced with Chemical & Engineering News.

What You Will Learn

- What is food adulteration and how do chemists help protect consumers?
- The chemistry of high value oil such as olive oil and avocado oil
- Successes in the olive oil industry’s response to adulteration and the current challenges in the avocado oil industry

Webinar Details

- Wednesday, April 7, 2021 @ 11am Pacific Time
- Free to attend for ACS members or with the creation of an ACS ID
- Slides will be available to download on the day of the broadcast



Register for the 25th ACS Green Chemistry & Engineering Conference

Organized by the ACS Green Chemistry Institute and the GC&E Conference Advisory Committee, this virtual conference will feature more than 38 sessions covering a variety of timely topics, daily keynote speakers, poster sessions, dedicated networking time, happy hours, and opportunities to engage with speakers, sponsors, and attendees. The GC&E Conference will take place on a virtual platform from June 14-18, 2021. On-demand access will be available for registrants after the live meeting is over.

Visit the [conference website](#) for the latest information and [online registration](#).

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

Kevin Bruemmer
Melisa Carpio
Bruce Cheung
Michael Clay
Dan Congreve
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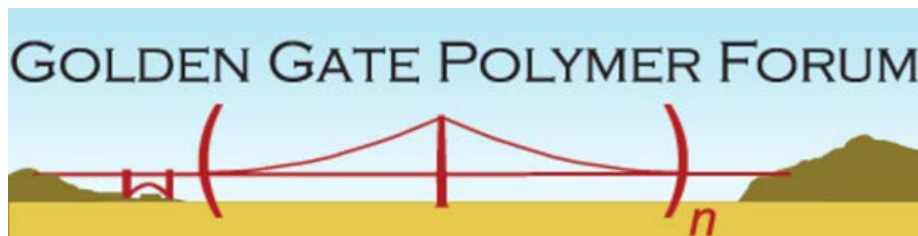
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Powered by Plastics: Plastics Into Fuel

Professor Skip Rochefort, Oregon State University
Chemical, Biological, & Environmental Engineering (CBEE) & Polymer and Catalysis labs

Wednesday, 21 April 21

7:30 PM Pacific (Zoom meeting room will open earlier)

[Registration Required on the GGPF Webpage](#)

Abstract:

Pyrolysis of plastics to return them to their small molecule building blocks to use as fuel is called Plastics to Fuel (PTF). In contrast to companies worldwide that are commercializing pyrolysis and PTF technologies, the approach of our group at Oregon State University (OSU) is to produce small scale, simple pyrolysis reactors with optimized operating conditions to generate diesel fuel for community use. We target an audience of island communities with ocean plastic wastes, underserved communities, and any community that has a plastic waste issue. The reactor design and operating conditions will be open-sourced, and initial consulting on construction and operation will be supplied by OSU.

Speaker Bio:

Prof. Rochefort has degrees in Chemical Engineering from the University of Massachusetts (BS), Northwestern University (MS), and UC San Diego (PhD). He was an NSF Postdoctoral Fellow at Ecole de Physique et Chimie (ECP) in Paris.

His research interests in polymer physics, rheology, and processing are manifested in his OSU Polymer Research Laboratory where he has been on the faculty in the School of Chemical, Biological, and Environmental Engineering since 1993.

Vision 2030 Resources

NSB NATIONAL SCIENCE BOARD



“The National Science Board (NSB) Vision 2030 Task Force was established and charged to coordinate the development of a Vision that will help guide the Board and the National Science Foundation (NSF) through 2030. The goal of the Vision was also to increase support for and impact of investments in fundamental science and engineering research (S&E) and a STEM-educated workforce. In fulfilling this charge, the Task Force was expected to plan activities to gather input and perspective from the rest of the Board, NSF leadership and staff, and relevant stakeholders within and outside the government. We invite you to explore resources related to the NSB’s Vision 2030 plan and to send feedback and ideas to NSBVision@nsf.gov.”

[Learn more](#)

Dog vs. machine: Who is a better bomb detector?



[Watch the video](#)

“What’s better at finding a hidden bomb — a dog or an electronic chemical detector? In this episode, the Reactions team travels to the U.S. Naval Research Laboratory to find out.

Reactions is a video series produced by the American Chemical Society and PBS Digital Studios. Subscribe to Reactions at <http://bit.ly/ACSReactions> and follow us on Twitter [@ACSReactions](https://twitter.com/ACSReactions).”

Source: [ACS Press Release, March 22, 2021](#).



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Date: Wednesday, April 7, 2021 @ 11am-Noon PT
Speaker: Selina Wang, University of California, Davis
Moderator: Britt Erickson, Chemical & Engineering News
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Date: Thursday, April 15, 2021 @ 11am-Noon PT
Speaker: Jordan Harshman, Auburn University and Anne Kondo, Indiana University Pennsylvania
Moderator: Marian Gindy, Merck
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Date: Thursday, April 8, 2021 @ 10-11am PT
Speaker: Robert Fry, Robert Fry Economics LLC
Moderator: Keith Wing, Keith Wing Consulting
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Date: Wednesday, April 21, 2021 @ 11am-Noon PT
Speakers: Patricia Simpson, Game Changing Etiquette and the University of Illinois at Urbana-Champaign
Moderator: Matt Grandbois, DuPont Electronics & Industrial
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Date: Wednesday, April 14, 2021 @ 11am-12:30pm PT
Speakers: Timothy Long, Arizona State University and Amy Peterson, The University of Massachusetts Lowell
Moderator: Bryan Vogt, Penn State University
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Date: Wednesday, April 28, 2021 @ 11am-12:30pm PT
Speakers: Bruce Garrett, U.S. Department of Energy / Christina Payne, National Science Foundation / Kathryn Beers, National Institute of Standards and Technology
Moderator: Angela Wilson, 2021 ACS President Elect
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THE CHEMISTRY OF BIODEGRADABLE PLASTICS

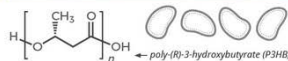
COMMON BIOPOLYMERS & SOURCES

POLYLACTIC ACID (PLA)



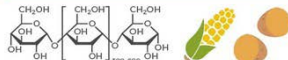
Obtained from fermented plant starch from corn, cassava, sugar cane or sugar beet.

POLYHYDROXYALKANOATES (PHAs)



Extracted from bacteria, which produce it via the fermentation of sugar or lipids.

THERMOPLASTIC STARCHES (TPS)



Starches from plant materials are heated with water, then mixed with plasticisers or other polymers.

EVERYDAY USES OF BIOPOLYMERS



Biodegradable coffee cups are paper cups with a PLA lining to make the paper waterproof.



PLA has the second largest production volume of any biopolymer (behind TPS). It is also used in plastic films, bottles, and food containers.



PLA and TPS both find use in the manufacture of plastic cutlery that's biodegradable.



TPS is also used in food waste bags and some magazine wrappers. PHAs have fewer uses, but have medical uses such as in surgical sutures.

ADVANTAGES AND DISADVANTAGES

GLOBAL PLASTIC PRODUCTION



Use of bioplastics is increasing, but they still account for less than 1% of the global plastics market (as of 2018).

CONDITIONS FOR BIODEGRADING



Compostable plastics need specific conditions to break down - and take much longer to do so completely if they go to landfill instead of being recycled. However, they still break down faster than conventional plastics.



Biodegradable plastics are more expensive than plastics derived from fossil fuels on weight basis, and require land to grow raw materials. However, the greenhouse gas emissions associated with their production are lower.

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