

SILICON VALLEY CHEMIST

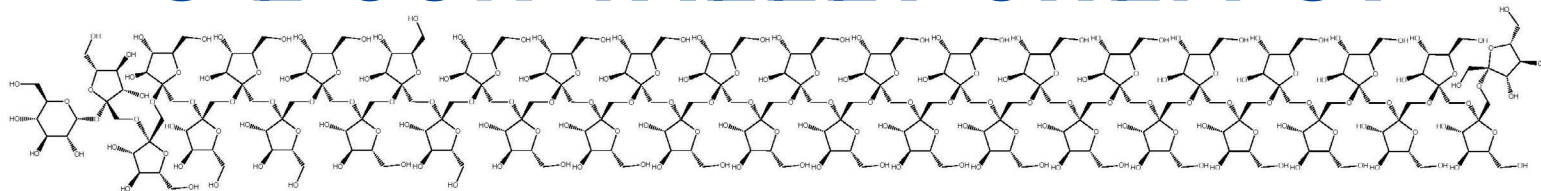


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7th Annual Flavors of Chemistry

Complex Flavor Creation: Eliciting Emotion with Chemicals



The *ACS Sacramento Section* is pleased to announce that the 7th Annual Flavors of Chemistry will be occurring in-person at UC Davis with a live-stream on Saturday, September 25th. The presentation will be from 2:30–4 PM, with a networking social starting at 2 PM. This free event will feature Dr. Sean LaFond talking about flavor creation. You will receive the Zoom link in the confirmation email after you [register](#). This event will follow the UC Davis' COVID-19 safety protocols. As the event gets closer, please check the registration page for updates on any changes. [Download flyer](#)

Tentative Schedule:

2-2:30 pm	Networking and coffee
2:30-3 pm	Welcome
3-4 pm	Presentation: Complex Flavor Creation: Eliciting Emotion with Chemicals

Abstract

The food we eat, the beverages we drink, and the environment we live in are filled with a vast array of volatile chemical compounds. Despite the chemical complexity in the world around us, we are capable of perceiving complex mixtures as single percepts: a strawberry tastes like strawberry; an egg tastes like an egg; a bourbon whiskey tastes like bourbon whiskey. Join me for a discussion about the psychophysical

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ACS Sacramento
Flavors of Chemistry

Saturday, September 25th, 2021
UC Davis Conference Center Ballroom
2-2:30 pm Networking and coffee
2:30-3 pm Welcome
3-4 pm Presentation

**Complex Flavor Creation:
Eliciting Emotion with Chemicals**

Presented by
Dr. Sean LaFond

<p>Director of Flavor Verifolia, Healdsburg, CA</p> 	<p>Scientific Consultant Edible Odyssey, Davis, CA</p> 
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[Free registration here](#)



Chair's Message

Jigisha Shah

As I sit down to write this message, the school year has sprung again! If you are a parent of a kid under the age of twelve like me, you are probably dealing with the stressful dilemma of unvaccinated children returning to in-person learning, a move that many see as crucial to kids' well-being and learning. It's not clear when younger kids will be able to get their shot, prolonging our challenges to protect children from getting sick and to curb the spread of COVID-19. Following initial hopes that



children's vaccines would be available in early fall, experts now believe that the U.S. Food and Drug Administration is not likely to grant that authorization until late November. ([Here's the latest on COVID-19 vaccines](#)). In the meantime, experts say we already have some powerful pathways to

protecting kids from the Delta variant: vaccinating more adults and employing measures at schools like [air cleaning](#), [air circulation](#) and [wearing masks](#). I wish you all a safe, healthy and happy

school year!

And with the fall semester, National Chemistry Week (NCW) is right around the corner—October 17-23! This year's theme is "[Fast or Slow...Chemistry Makes It Go!](#)". The focus is on the exciting and kinetic world of reaction rates, including how temperature, pressure, concentration, the presence of a catalyst, and more affect how fast or slow a reaction happens. Back by special request this year for NCW, we're being welcomed back to the Redwood City Library with a new Pop-Up Chemistry session to celebrate! Whether we meet in person for hands-

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underpinnings of complex flavor perception and how to leverage them to build flavors from their molecular components.

Biography

Sean LaFond is the Director of Flavor for *Verofolia*, located in Healdsburg, CA, as well as a scientific consultant for *Edible Odyssey* in Davis, CA. During the past fifteen years, Dr. LaFond has worked on numerous projects in the food industry and academia. His research interests encompass the creation of complex flavors and the sensory methods to evaluate them. He holds a MS in Food Science from the University of Illinois at Urbana-Champaign where he studied lipid oxidation in frying oils, and a PhD in Food Science from the University of California at Davis where he studied the sensory perception of flavor blending.

Chair's Message, continued from front page

on experiments or provide pick-up kits followed by a zoom session will depend upon the pandemic situation in October. Stay tuned for more details!

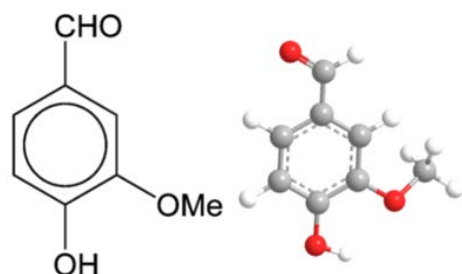
The next SVACS talk will be on Thursday, October 21. Dr Mike Idacavage of Radical Curing will speak over Zoom about photopolymers in coatings, inks, and 3D printing. Check the newsletter or our website for more information.

The election for 2022 SVACS local section officers takes place in November. I would like to thank the nominations committee and congratulate them for a wonderful slate of candidates. I would also like to encourage you to consider submitting one or more petition candidates. See the article in this newsletter for further information on the ballot and petition process.

In ACS National news, starting on January 1, 2022, current and prospective ACS members will be able to choose from several new ACS membership packages that feature different levels of benefits. No matter where you are in your academic or professional life, these new options will provide you with more flexibility to choose the package that best fits you, and with dues that are lower than they are today. There will even be a no-dues option that includes limited benefits. More details are available on the [ACS website](#).

CHEMISTRY Quiz

I'm called "plain", but I'm a little complicated.
What molecule am I?



Answer

UPCOMING EVENTS

- Sep 2 ACS Career Consultant Virtual Office Hours - Special Edition: Industry vs. Academia - What to Expect?**
Dr. Lori Spangler, ACS Career consultant
Sponsored by the American Chemical Society
9am-10am (Pacific Time), Online via Zoom, Free,
[Learn more and Register](#)
- Sep 9 Ladies in Waiting AND Still Waiting for the Nobel Prize**
Professor Mary Virginia Orna, College of New Rochelle
Sponsored by the ACS San Diego Section
6pm-8pm, Online via Zoom, Free, [Learn more and register](#)
- Sep 9 The 31st First Annual Ig Nobel Ceremony**
Presenters include Frances Arnold and Barry Sharpless
Sponsored by Improbable Research
3pm-4pm, Online on YouTube, Free, [Learn more](#)
(no registration required)
- Sep 15 Future of Work – Reimagining the New Workplace: Online Pop-Up Conference ([Learn more](#))**
Sponsored by Stanford Center for Continuing Medical Education
8am-3pm, Online via Zoom, Registration fee \$50, [Buy tickets](#)
- Sep 18 Air Pollution in High Definition: Building Low-Cost Sensor Networks & Community Partnerships**
Dr. Alexis Shusterman and Dr. Chelsea Preble, University of California at Berkeley
Sponsored by the ACS California Section, Women Chemists Committee
10:30am-Noon, Online via Zoom, Free, [Learn more and register](#)
- Sep 22 Improved Energy and Information Collection from Light with Nanomaterials**
Professor Oscar Vazquez-Mena, University of California at San Diego
Sponsored by the ACS San Diego Section
7pm-8pm, Online via Zoom, Free, [Learn more and register](#)
- Sep 25 7th Annual Flavors of Chemistry: Complex Flavor Creation**
Dr. Sean LaFond, Director of Flavor for Verofolia and Consultant for Edible Odyssey
Sponsored by the ACS Sacramento Section
2-4pm (Presentation is from 3-4pm), In-person with Livestream, Free, [Learn more and register](#), [Download flyer](#)
- Sep 28 ACS Virtual Career Day - Inspiring Women in Chemistry: Career Conversations Driven by Pfizer**
Sponsored by the American Chemical Society
8:30am-1:15pm (Pacific Time), Online via Zoom, Free,
[Learn more and register](#)
- Sep 30 Folding Sequence-Defined Peptoid Polymers into Protein Mimetic Nanostructures**
Dr. Ronald Zuckermann, Biological Nanostructures Facility, The Molecular Foundry, Lawrence Berkeley National Laboratory
Sponsored by the Golden Gate Polymer Forum
6:30-7:30pm, Online via Zoom, \$5 donation/free, [Registration required](#) (registration deadline is Sept. 28th at 1pm)

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Future of Work – Reimagining the New Workplace: Online Pop-up Conference

Sponsored by Stanford Center for Continuing Medical Education

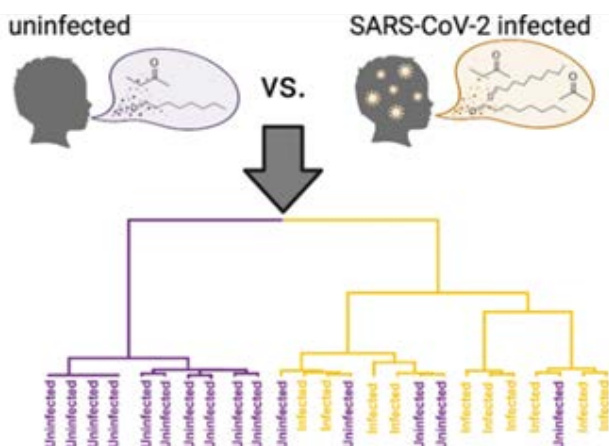
The future of work is a hot topic that touches the lives of people across industries and geographies, from the C-Suite to the entry-level employee. Learning organizations must adapt accordingly to implement hybrid workplace practices and solutions as well as deliver captivating and impactful educational experiences. As trends emerge and guidelines become best practices, everyone is turning to experts and each other for ideas on reimagining the new workplace. Join us for an online pop-up conference on the Future of Work, which aims to tackle some compelling questions around the future of work as it relates to business, education, and events.

September 15, 2021 from 8am-3pm

Registration fee \$50, [Buy tickets](#)

[Visit this website for more information](#)

Toward a COVID-19 breathalyzer for kids



“Adults infected with SARS-CoV-2 exhale different metabolites in their breath than uninfected people, and dogs and diagnostic devices can detect these changes. Now, researchers reporting in *ACS Infectious Diseases* have shown that children infected with SARS-CoV-2 also show breath metabolite changes, but they’re largely different from the ones in adults. Someday, this information could be used to quickly and easily screen children for infection, the researchers say.

Currently, COVID-19 is diagnosed through the detection of specific viral nucleic acids or antigens, but these techniques are slow, relatively expensive, sometimes uncomfortable and prone to false-negative results. Scientists have observed that dogs can detect volatile organic

UPCOMING EVENTS (continued)

- Oct 5 ACS Converge: Conversations on Real-World Applications of Science**
Sponsored by the American Chemical Society
8am-11am (Pacific Time), Online via Zoom, Free, [Learn more and register](#)
- Oct 17 CHAS Workshop: Empowering Academic Researchers to Strengthen Safety Culture**
Sponsored by the ACS Chemical Health and Safety Division
11am-3pm (Pacific Time), Online via Zoom, \$25, [Learn more and register](#)
- Oct 21 Photopolymers used in coatings, inks, and 3D printing materials**
Mike Idacavage, Ph.D., Radical Curing
[Sponsored by the ACS Silicon Valley Section](#)
Save the date!
- Oct 20-23 Rocky Mountain Regional Meeting (RMRM)**
Sponsored by the ACS Southern Arizona Section
Live, in-person event with virtual attendance and presentation options, [Learn more and register](#)
- Oct 26-27 Adhesion Science: Principles and Practice (3-Day Live Virtual Short Course and 29)**
Professor Timothy Long, Arizona State University; Professor David A. Dillard, Virginia Tech; Professor Mike Bortner, Virginia Tech; Dr. Giles Dillingham, BTG Labs
Sponsored by the Golden Gate Polymer Forum
Early registration \$400 (ending July 16 at 5pm Pacific Time), Regular registration \$500 (until October 4 at 5pm Pacific time).
[Learn more and register](#)
- Nov 5 2nd Annual Bay Area Chemistry Symposium**
[Sponsored by the ACS California and ACS Silicon Valley Sections](#)
Online only, [Learn more and apply to register](#)
- Dec 7**
Charles Rand, Ph.D., Manager of Materials Science, Checkerspot
Title: To be announced
[Sponsored by the ACS Silicon Valley Section](#)
Save the date!

compounds (VOCs) in human biological samples and distinguish certain diseases, including COVID-19. Researchers have also developed a sensor array to detect COVID-19-related VOCs in the exhaled breath of adults. Audrey Odom John and colleagues wondered if children infected with SARS-CoV-2 would also show changes in breath metabolites. If so, a breathalyzer-type device might someday quickly and comfortably screen large numbers of children in settings such as schools.”

[Read the full text of the press release](#) (published August 4, 2021)

Read the article: Amalia Z. Berna, Elikplim H. Akaho, Rebecca M. Harris, Morgan Congdon, Emilie Korn, Samuel Neher, Mirna M’Farrej, Julianne Burns, and Audrey R. Odom John. 2021. Reproducible Breath Metabolite Changes in Children with SARS-CoV-2 Infection. *ACS Infectious Diseases*, Article ASAP.

DOI: [10.1021/acsinfecdis.1c00248](https://doi.org/10.1021/acsinfecdis.1c00248) (ACS Author Choice article – open access)

Learn more: [Chemistry in Coronavirus Research: A Free to Read Collection from the American Chemical Society](#)

Teacher-Scholar Award

Call for Nominations of Community College Faculty Members Deadline is November 1, 2021

You probably know a community college science educator whose work is deserving of recognition. Celebrate them by submitting a nomination for this Silicon Valley ACS Award.

The **Teacher-Scholar Award** is given to community college science faculty member who has made an outstanding contribution to their chemistry students and communities.

This award is the first of its kind and was established in 2008 by our Silicon Valley ACS local section in recognition of the important role that community colleges play in science education. Over half of STEM graduates from UCs and CSUs started at a California community college!

The recipient of the Teacher-Scholar Award is recognized in a public ceremony and receives

an ACS plaque and two \$500 checks - one for the awardee and one for the awardee's science department.

Eligibility criteria: Any faculty member from the 13 community colleges in the Silicon Valley ACS local section's territory of San Mateo, Santa Clara, Santa Cruz, San Benito and Monterey Counties. ACS membership is not a prerequisite.

Selection criteria

Nominees must exemplify two or more of the following:

- Excellent teaching in lab and classroom
- Extensive mentoring and encouragement of students toward academic success
- Collaborations with local high schools or four-year colleges and universities, leading to more

- student transfers and matriculation
- Supervision of undergraduate research
- Published articles and books related to chemistry education
- Participation in projects promoting innovative teaching methods and undergraduate research
- Development and dissemination of teaching innovations
- Exceptional contributions to the operation of the college's chemistry department
- Public outreach
- Contributions to the local community, for example through the K-12 system or local agencies
- Substantial service to the American Chemical Society and its affiliated groups

Nominating is easy! Please contact Kathleen Armstrong at armstrongkathy@fhda.edu to receive a nomination form.



Mentoring the Transition from Community College to 4-Year College

Our Silicon Valley American Chemical Society local section piloted a peer-mentoring program in Spring 2021 to support community college students considering transfer to 4-year institutions, Paving the Path. The program objective was to help STEM students from underrepresented groups transition from community colleges into bachelors-level degree programs. Five prospective transfer students were paired one-on-one with five students who have already made the transition to a 4-year college. In addition to one-on-one mentoring, the program provided group forums on a range of relevant topics: navigating the application process, financial aid, academic advising, resume-building, personal and career development, and professional networking.

One particularly effective forum was a career panel of four local chemistry professionals who initiated their own educations in California community colleges, co-hosted by the SVACS Younger Chemists Committee (YCC). They related their professional journeys and answered questions in moderated discussion. Breakout rooms then provided a setting for informal conversation and opportunity to network.

Additional perks for the mentees was modest

funding to defray application fees. Full ACS membership was provided to all the participants. In exchange for the abundance of resources provided to both mentors and mentees, accountability in performing assignments and follow-up was expected from all participants. As a pilot program,

Paving the Path continuously solicited student feedback to improve the effectiveness of future mentoring programs for students in chemistry-related disciplines.

Paving the Path's pilot year included community college students from Hartnell College, Foothill College, Evergreen College, and City College of SF. Mentors participated from San Jose State University, UC Santa Cruz, and UC Irvine.

The long term SVACS goal is to **build a system of support and resources** for transfer students with chemistry-related interests in community colleges in our region. Plans are being made to repeat the program with the incoming class of students.

Interested in participating in the program as a mentor, mentee, or forum-presenter? Contact us! ptp@svacs.org

How Chemistry Makes Carbon Dioxide Removal Possible Reactions - Uncover the Chemistry in Everyday Life



"Over the last couple hundred years, the amount of carbon dioxide in our atmosphere has skyrocketed. If we don't remove at least some of it, there will be even more heat waves, wildfires, hurricanes and other climate disasters, scientists predict. In this week's episode, we break down how people are using chemistry to make that happen."

View the video and see related links: [How Chemistry Makes Carbon Dioxide Removal Possible](#). Reactions Science Video, Published July 07, 2021 (7:39 minutes).

Elections for 2022 Silicon Valley ACS Leadership

A message from the Nominations Committee

This fall, you have the opportunity to elect members of our section to the 2022 Silicon Valley ACS Executive Committee in our annual election! The official online ballot will be sent out in October by email to all eligible section members. We would like to take this opportunity to present this year's candidates and to remind all of you that if you are interested in joining the leadership team, you can still petition to be on the ballot if you submit by September 30, 2021 (instructions below).

We have seven open positions this year including Chair-Elect, Treasurer, Councilors, and Alternate Councilors. Descriptions of these positions are available on [our website](#). On behalf of the current Silicon Valley Section Executive Committee, the Nominations Committee is pleased to present the following group of candidates. Please feel free to reach out to any of the current Executive Committee members if you have questions about the election process (our contact information can, as always, be found on the last page of the monthly newsletter).

Our slate of candidates

Chair-Elect (3-year commitment, will be Chair in 2023 and Immediate Past Chair in 2024)

Natalie McClure

Treasurer (2-year term)

Ihab Darwish

Councilor (3 open positions; the three candidates

with the most votes will fill 3-year position)

Linda Brunauer

Ihab Darwish

Jane Frommer

Sally Peters

Alternate Councilor (2 open positions: the two candidates with the most votes will fill 3-year positions)

Megan Brophy

Anais Nguyen

How to petition to be on the ballot

This is a call for nominations of petition candidates. Properly completed petitions received by the due date of September 30, 2021 at 5 p.m. local time will appear on the ballot. Petitions can be sent to the attention of our section Secretary, Prasad Raut (prsdraut@gmail.com).

Requirements for petition candidates include:

- the name of the proposed candidate
- the proposed position
- 15 supporting SVACS member names, signatures, and ACS membership numbers
- submission by email of the completed petition (as a PDF) by September 30, 2021 at 5 p.m. local time to the SVACS Secretary.

All candidates must be members of the Section and must be willing to serve. According to ACS Bylaws, affiliate members may not participate in the election. Student members may vote and sign petitions, but they may not run for office.

The 2021 Ig Nobel Prize Ceremony & Webcast



Ig Nobel

"The 31st First Annual Ig Nobel Prize ceremony will happen on Thursday, September 9, 2021, beginning at 3 pm (Pacific Time). Because of the Covid-19 pandemic, the ceremony will again be entirely online. There will be a special livestream in Japanese (on the Nico Nico network). There might also be a special livestream in Spanish (that's not definite yet, but we are hopeful.)

Ten new Ig Nobel Prize winners will be introduced. Each has done something that makes people LAUGH, then THINK.

The prizes will be handed out by this gaggle of Nobel laureates:

- Rich Roberts (physiology or medicine, 1993)
- Frances Arnold (chemistry, 2018)
- Marty Chalfie (chemistry, 2008)
- Eric Maskin (economics, 2007)
- Barry Sharpless (chemistry, 2001)
- Robert Lefkowitz (chemistry, 2012)
- Carl Weiman (physics, 2001)
- Eric Cornell (physics, 2001)
- Jerome Friedman (physics, 1990)

The theme of this year's ceremony is ENGINEERING. A new mini-opera, called "A Bridge Between People", amplifies that theme.

The ceremony will also include the 24/7 Lectures, in which the lecturers explain their topic first in 24 SECONDS, then in seven WORDS.

This year's lecturers and their topics:

- Gwinyai Masukume: Drinking Coffee
- Françoise Brochard: Soft Matter
- Chaouki Abdallah: Feedback Control
- Patricia Yang: Excretion Dynamics

Iman Farahbakhsh: Baby-Washing Technology"
For details, see the ceremony web page: <https://www.improbable.com/ig/2021-ceremony/>



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 companion will be our guests. The seminar meetings are held at several 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. The local section is a volunteer organization. Attend an event, volunteer to help, and get to know your local fellow chemists. Welcome!

NEW ACS MEMBERS

Nadia Berndt
Marie-Gabrielle Braun
Matthew Brown
Nathaniel Brown
Jingwei Cai
Kristy Chun
Daniella Duran
Tim Erdmann
Marion Joseph Gattuso
Cheryl A. Grice
Sarah Highducheck
Yue Huang

Sophie Marwies James
Elena Koltun
Shy Lavasani
Arlie Lehmkuhler
Mojgan Lotfali Kazemi
Wenchao Lu
Eugene P. Marsh
Martin McLaughlin
Heather Murphy
Ajit Narang
Zihao Ou
Joseph Perryman

Fiona Rosko
Christina Rotsides
Zhe Rui
Lucero Sandoval
Kasturi Sarang
Devon Schatz
Jacqueline Shea
Swarna Shikha
Min Jeong Suh
Hua Yang
Peng Yue
Ziyang Zhang

ACS Meetings & Expos Press Center

Media Briefings for the ACS Fall 2021 National Meeting

The American Chemical Society posted media briefings for selected presentations given at ACS Fall 2021 National Meeting.



Video: *Titan-in-a-glass experiments hint at mineral makeup of Saturn moon*

[Press release](#)



Video: *How migraines protect against diabetes*

[Press release](#)



Video: *Detecting an unprecedented range of potentially harmful airborne compounds*

[Press release](#)



Video: *'Nanojars' capture dissolved carbon dioxide, toxic ions from water*

[Press release](#)



Video: *Evolutionary 'time travel' reveals enzyme's origins, possible future designs*

[Press release](#)



Video: *Protecting gardens and crops from insects using the 'smell of fear'*

[Press release](#)



Video: *Compounds that give coffee its distinctive 'mouthfeel'*

[Press release](#)



Video: *Possible new antivirals against COVID-19, herpes*

[Press release](#)



Video: *Confirming the pedigree of uranium cubes from Nazi Germany's failed nuclear program*

[Press release](#)



Video: *'Flushing' out drug use trends early in the COVID-19 pandemic*

[Press release](#)



Video: *Making nylon 6-6 'greener,' and without zinc*

[Press release](#)



Video: *Sniffing out which plant-based burgers smell the most like real beef*

[Press release](#)



Video: *Sugars from human milk, plants could help treat, prevent infections in newborns*

[Press release](#)



Degradable coatings for compostable paper food packaging block grease and oil (no video available)

[Press release](#)

Register for free on the [ACS Webinars](#) page



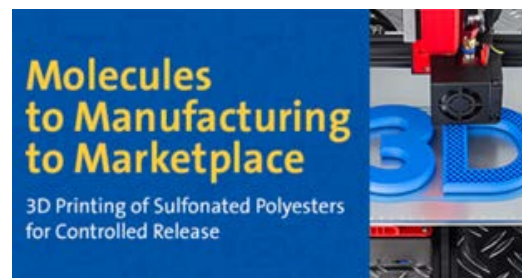
Date: Wednesday, September 8, 2021 @ 2-3pm ET
Speaker: Bill Carroll, Carroll Applied Science
Moderator: Tom Halleran, American Chemical Society



Date: Thursday, September 9, 2021 @ 11am-12pm ET
Speakers: H.N. Cheng, 2021 ACS President / Frank Roschangar, Boehringer-Ingelheim and ACS Pharmaceutical Roundtable / Klaus Kümmerer, Leuphana University
Moderator: Mary Kirchhoff, ACS Scientific Advancement



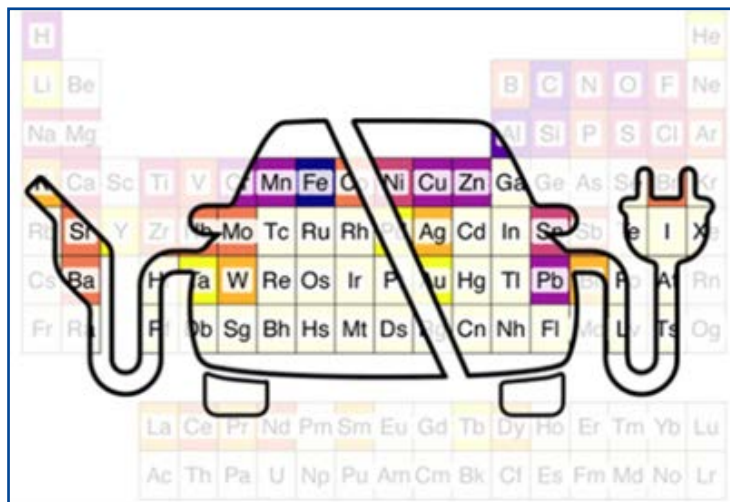
Date: Wednesday, September 22, 2021 @ 2-3pm ET
Speakers: Patricia Redden, Saint Peter's University / Joey Ramp, Empower Ability Consulting, LLC / Ashley Neybert, Independence Science
Moderator: Partha Basu, Indiana University-Purdue University Indianapolis



Date: Wednesday, September 22, 2021 @ 2-3pm ET
Speakers: Patricia Redden, Saint Peter's University / Joey Ramp, Empower Ability Consulting, LLC / Ashley Neybert, Independence Science
Moderator: Partha Basu, Indiana University-Purdue University Indianapolis

How Many Chemical Elements Does It Take to Build a Car?

Detailed inventory shows that electric vehicles are more vulnerable to material supply challenges than gas guzzlers



A pinch of arsenic, a dash of krypton, a soupçon of tantalum, and a whole load of copper—these are just some of the 76 chemical elements that go into making modern automobiles, according to an exhaustive analysis of the materials found in a range of cars (Environ. Sci. Technol. 2021. DOI: [10.1021/acs.est.1c00970](https://doi.org/10.1021/acs.est.1c00970)).

Source: Mark Peplow. How Many Chemical Elements Does It Take to Build a Car? InChemistry, August 17, 2021.

<https://inchemistry.acs.org/atomic-news/elements-to-build-a-car.html>

National Institutes of Health (NIH) Workshop on Reaction Informatics Report Published in ChemRxiv

Citation: Warr W. National Institutes of Health (NIH) Workshop on Reaction Informatics. ChemRxiv. Cambridge: Cambridge Open Engage; 2021. This content is a preprint and has not been peer-reviewed. DOI: <https://doi.org/10.33774/chemrxiv-2021-x5sj7>

Abstract: “The virtual workshop took place on May 18-20, 2021. It was a follow-up from the December 2020 NIH Workshop on Ultra Large Chemistry Databases. A major theme emerging from the December 2020 workshop was the fact that all the databases of a billion or more structures are virtual. For each virtual molecule the question then arises of whether, or how, it can be synthesized. The organizers therefore assembled speakers to give presentations about how reaction-related data are represented, captured, managed in databases, analyzed, used for drug design, applied in robotics, and exchanged locally as well as globally. This report summarizes talks from 27 practitioners in the reaction informatics field. The aim is to represent as accurately as possible the information that was delivered by the speakers; the report does not seek to be evaluative. The themes, in the order used for this report, were reaction representations, file formats, and standards; sources of reaction data; AI and machine learning applications of reaction-related data in de novo drug design, synthetic accessibility, synthesis planning, reaction prediction etc.; and automation and progression toward autonomous synthesis.”

THE MATERIALS SCIENCE OF ATHLETICS TRACKS



ACS Local Section
Silicon Valley

P.O. Box 395, Palo Alto, CA 94302

Contact us: <https://www.siliconvalleyacs.org/about/contact/>

Website: <https://www.siliconvalleyacs.org/>

Sign up: [Newsletter](#)



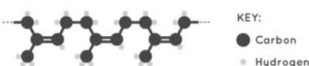
[facebook.com/SiValleyACS](https://www.facebook.com/SiValleyACS)



[@SiValleyACS](https://twitter.com/SiValleyACS)

THE 2020 OLYMPICS ATHLETICS TRACK

The Tokyo 2020 Olympics use a specially designed track surface made from rubber. Rubber is an elastomeric polymer: it returns to its original shape when it is deformed.

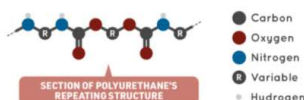


SECTION OF NATURAL RUBBER'S REPEATING STRUCTURE



OTHER TYPES OF TRACK

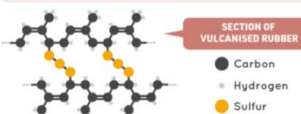
Other types of running track bind rubber particles with a polyurethane polymer over an asphalt base. Polyurethane track surfaces are commonly used for school and community tracks.



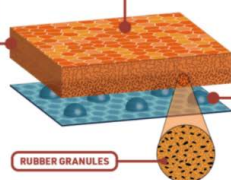
SECTION OF POLYURETHANE'S REPEATING STRUCTURE

VULCANISED RUBBER LAYERS

Vulcanisation (treatment of rubber with sulfur) increases rubber's rigidity by forming cross-links between sections of the polymer chains. Semi-vulcanised rubber granules form molecular bonds with the vulcanised rubber matrix, improving elasticity and shock absorption.



SECTION OF VULCANISED RUBBER



EMBOSSED SURFACE

The texture of the track surface improves slip resistance and traction. The approach, known as non-directional tessellation, helps water drain from the surface and enhances grip.

EMBEDDED AIR CELLS

The bottom layers are shaped into elongated honeycombs, which deform in three directions to help with shock absorption. Air cells embedded in the honeycombs absorb impact when compressed and help athletes bounce off the surface.

RUBBER GRANULES



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