

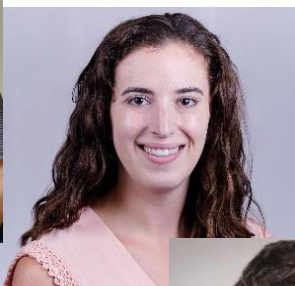
# THE VORTEX

AMERICAN CHEMICAL SOCIETY  
VOLUME LXXXIII NUMBER 2

CALIFORNIA SECTION  
February 2021



Prof. Adam Matzger



Dr. Jillian R. Sanzone



Margaret R. McLean, PhD



Dr. Candice Bridge

## TABLE OF CONTENTS

JOINT CALACS-HURON VALLEY FEB. MEETING	PAGE 2
CHAIR'S MESSAGE	PAGE 3
WCC FEB 13 MEETING	PAGE 4
CALACS FEB. 13 MEETING	PAGE 5
ON BEING PROBED (B. MOTZER)	PAGE 6
CALACS -AWIS JOINT MARCH 2 MEETING	PAGE 8
CHCS 2021 SURVEY	PAGE 9
ON -LINE PROCTOR NEEDED FOR OLYMPIAD (E. NOTTOLI)	PAGE 10

## Metal-Organic Frameworks: From Energy Storage to Drug Delivery

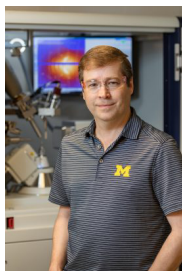
Wednesday – February 3, 2020 – 12:00 to 1:15 PM (PST)  
Online Zoom Event

Are you fascinated by crystals and porous materials? If this sparks your curiosity, please come and join our lunch presentation by Prof. Adam Matzger, of the University of Michigan, an expert on porous materials and crystallization. In this presentation, Prof. Matzger will guide you through a journey of synthetic and functionalization strategies of metal-organic frameworks (MOFs), as well as exploring the recent advances of MOFs in gas adsorption and their potential in drug encapsulation and delivery. The presentation will be followed by a Q&A.

[RSVP here!](#)

Zoom link to be shared with attendees the day of the event.

### Our Distinguished Panelist:



Prof. Adam Matzger, PhD  
University of Michigan  
Charles G. Overberger Collegiate Professor of Chemistry,  
and Macromolecular Science & Engineering

The event is FREE and open to the community. More information at: [calacs.org](http://calacs.org) or email [sonia.lin@alumni.ubc.ca](mailto:sonia.lin@alumni.ubc.ca)

# THE VORTEX

Published monthly except July & August by the California Section, American Chemical Society. Opinions expressed by the editors or contributors to THE VORTEX do not necessarily reflect the official position of the Section. The publisher reserves the right to reject copy submitted. Subscription included in the annual dues payment. Nonmember subscription 25.

## MAGAZINE OF THE CALIFORNIA SECTION, AMERICAN CHEMICAL SOCIETY

### Editor and Advertising Manager

Louis A. Rigali

255 4th St. Ste #101 Oakland 94607

510-268-9933

### OFFICE ADMINISTRATIVE MANAGER

Julie Mason

2950 Merced St. # 225 San Leandro CA 94577

510-351-9922

### PRINTER:

Quantity Postcards

255 4th Street #101 Oakland CA 94607

510-268-9933

Printed in USA on recycled paper

### CONTRIBUTING EDITORS:

Nicki Davis

William Motzer

### EDITORIAL STAFF:

Alicia Taylor

Alex Madonik

Jim Postma

Linda Wrxall

Wally Yokoyama

For advertising and subscription information, call or write the California Section Office, 510 351 9922, office@calacs.org  
California Section Web Site: <http://www.calacs.org>


## Chair's Message



There are a many things the American Chemical Society, and our California section in particular, do well. One in particular I'd like to focus on is bringing members together. This can be accomplished through several means: conferences, zoom events, networking events, ACS Bridge and Project SEED programs, and many others. Our section is already off to a strong start in 2021 with six zoom events planned in January – March. Events cover topics ranging from technical presentations, panel events, and a featured speaker event for the Women in Chemistry Committee. These presentations are an excellent method to serve our members and bring people together.

Another upcoming event in the spirit of bringing people together, is the 2021 Global Women's Breakfast sponsored by the International Union of Pure and Applied Chemistry (IUPAC). Scientists from around the world participate in this event and it is an important opportunity for both men and women scientists to come together and build their networks. The California section is proud to host an evening networking event as part of this day-long celebration of women and diversity in science. We hope you'll join us to meet scientists in the Bay Area and along the west coast. We're excited to collaborate on this event and

bring people together with other ACS local sections, other science organizations, and universities.

Our section has a strong history of bringing its members together to celebrate and advance science. Since the founding of the California section in 1901, our section has been a huge supporter of bringing scientists together from diverse chemistry backgrounds. In 1903, this included scientists with specializations in oil, explosives, sugar, malting and brewing, and wine, just to name a few. Now, our section hosts events that cover not only chemistry, but other science topics such as forensic science, water quality, science policy, "green" chemistry, artificial intelligence, plant fragrances, bioethics, vaccines, and many pharmaceutical topics. Additionally, our section has also served the local community and general public through our science education and outreach work, bringing together neighbors, families, and scientists in the community. As chair of the CalACS, I am proud that our events and outreach serve not only chemists, but all types of scientists and the general public. Our section and our volunteers work hard to share the excitement they have for science and to bring people together to learn about science. I hope this can serve as an inspiration to come together as a community and as a nation, whether the common language is through science, shared hobbies, or working together to solve problems in our communities. I know the Section will continue to strive to bring people together to advance and celebrate science. 

California Section  
American Chemical Society



All are welcome

**Title:**  
Merck Research Laboratories in  
South San Francisco-Discovery  
Chemistry at Merck in the Bay Area

**Date**  
February 13, 2021

**Time**  
10:30 – 11:00 a.m.  
Chatting  
11:00 a.m.  
Talk and Discussion

**Reservation**  
RSVP by February 11, 2021.

For more information visit our website  
at [www.calacs.org](http://www.calacs.org) or email  
[office@calacs.org](mailto:office@calacs.org).

Here is the link for reservations  
<https://www.brownpapertickets.com/event/4854220>

**Cost:**  
Free



Dr. Jillian R. Sanzone

About the Speaker

Dr. Jillian R. Sanzone received her B.A. from New York University in Chemistry. She went on to earn her Ph.D. in 2018 at New York University under the advisement of Professor K. A. Woerpel working on the development of new synthetic reactions involving strained cyclic alkenes. In 2018, she relocated to San Francisco

and started working in the Discovery Chemistry group at Merck Research Laboratories in South San Francisco, CA. Her current work includes inventing new small molecule drugs for the treatment of metabolic diseases and designing novel synthetic methods to enable medicinal chemistry programs at Merck.

Abstract

In this talk, Dr. Sanzone will highlight the new Merck Research Laboratories site in South San Francisco, CA. Merck is a global healthcare company headquartered in New Jersey focusing on oncology, vaccines, infectious diseases, COVID-19 treatments, and cardiometabolic diseases. The Merck discovery hub in South San Francisco was established in 2017 and has grown to over 200 employees in the newly designed 290,000 square foot research and office space. The South San Francisco site focuses on developing treatments for cardiometabolic diseases and oncology. The Discovery Chemistry group enables these goals by leveraging the strong chemistry and scientific expertise at Merck to focus on discovering better molecules faster across modalities and advancing the best molecules into the pipeline to deliver to patients.

**Questions: Contact**  
[eyamaguchi08@gmail.com](mailto:eyamaguchi08@gmail.com)

*CALLING ALL READERS*

Read a book lately? Share  
why you liked it with a brief  
review for *The Vortex*.

*Lou Rigali, Editor*

## **Covid-19 and the Ethics of Scarcity**

**Wednesday – February 17, 2021 – 12:00 to 1:00 PM (Pacific)  
Online Zoom Event**

Markkula Center for Applied Ethics Associate Director McLean lectures on ethics relating to health care, health care justice and equity, and biotechnology. She will discuss the ethics surrounding Covid-19 and resource scarcity, including ventilators and vaccines. The presentation will cover ethical justice related to hospital care and the challenges of the vaccine roll-out. The presentation will be followed by a Q&A.

[RSVP here!](#)

Zoom link to be shared with attendees the day of the event.

### **Our Distinguished Panelist:**



**Margaret R. McLean, PhD**  
Associate Director  
Markkula Center for Applied Ethics  
Santa Clara University

The event is **FREE** and open to the community. More information at: [calacs.org](http://calacs.org) or email [aliciaataylor@gmail.com](mailto:aliciaataylor@gmail.com)

### *Gifts & Donations*

The Sections has many outreach programs to help support science and chemistry in our community. A gift of \$25 to our High School Chemistry Teachers programs helps support the teacher and school with chemistry supplies and equipment. Call or email and find out how your valued contribution can be used. Donations to the California Section are tax deductible.



## On Being Probed

Bill Motzer

If you're expecting a paper of close encounters of the fourth kind, read no further; there are no little green or gray people here. This is about a ritual or periodic procedure that our doctors recommend for those 50 year of age and older: it's called a colonoscopy. This periodic screening is a key preventive for colorectal cancer, one of the leading causes of adult cancer deaths. Therefore, the U.S. Preventive Services Task Force (USPSTF) recommends such screening for adults age 50 to 75; for adults age 76 to 85, the USPSTF recommends asking your doctor if further screening is warranted. With recent colon cancer increases in people in their 40s, the American Cancer Society recommends that healthy men and women begin screening at age 45; therefore, consultation with your health provider is recommended.

The procedure is somewhat straight forward: the gastroenterologist (GE) inserts a long, flexible tube (colonoscope) into the rectum, passing it up and into the large intestine. At the colonoscope's tip, a tiny camera allows the GE to view and take photos of the colon's interior and to collect tissue samples (e.g., polyps, other growths, and possible tumors) via instruments that can snip and extract the tissue for biopsy. However, prior to this, the patient may be sedated because the procedure can have some discomfort (i.e., the large intestine is inflated with CO<sub>2</sub>) and to prevent inadvertent patient movement. The entire procedure generally takes less than one-half hour.

To view unobstructed colon walls the entire bowel must be evacuated, and this procedure is not so straight forward requiring consumptions of osmotic laxatives, one of which is an over-the-counter medication containing the chemical polyethylene glycol 3350 (aka PEG), the major ingredient in powdered MiraLAX®. It's this bowel preparation that colonoscopy patients don't look forward to because it requires considerable restroom trips and depending on the

health providers protocol, this may occur over several days. Because I like knowing what substances I'm ingesting, I decided to review MiraLAX® main ingredient.

PEG (C<sub>2n</sub>H<sub>4n</sub>+2O<sub>n+1</sub>; CAS: 25322-68-3) is a polyether petroleum-derived compound with ubiquitous applications in industrial and commercial manufacturing, food, and medicine. PEG is also known as polyethylene oxide (PEO) or polyoxyethylene (POE), depending on its molecular mass. PEG's structural formula is often expressed as H-(O-CH<sub>2</sub>-CH<sub>2</sub>)<sub>n</sub>-OH. The numbers included in PEG's naming indicates their average molecular mass. For example, a PEG with n = 9 has an average molecular mass of approximately 400 daltons; therefore, it would be labeled as PEG 400. PEG has a relative density of 1.125 and is water soluble.

PEG is the basic ingredient in many products such as skin creams, personal lubricants (often combined with glycerin), and as a toothpaste dispersant because it binds with water allowing for uniform distribution of the xanthan gum within the toothpaste. PEG is also used as an anti-foaming agent in food and drinks [its International Number System (INS) for food additives number is 1521]. Low molecular mass formulations (e.g., PEG 400) have been used in Hewlett-Packard designed ink jet printers as an ink solvent and lubricant for the print heads.

Because PEG 3350 (in MiraLAX® and similar products) is a long-chained polymer, it would not be expected to be absorbed by body tissues or get into the bloodstream; and PEG is considered safe for consumption by the Food and Drug Administration (FDA). As an over-the-counter medication, it does not come with the extensive printed report common to prescription drugs. A small tab is attached to the container that warns about possible allergic reactions; these may include general discomfort or malaise, sleep disorders, abdominal bloating, dehydration, excessive thirst, intense abdominal pain, rectal irritation, and nausea. However, as an inoculant, more adverse reactions may occur.

A Pegylated lipid nanoparticle (in addition to

*(continued on page 7)*

*Continued from Page 6*

other lipid nanoparticles) is used as an excipient (i.e., an inactive substance serving as the vehicle or medium for a drug or other active substance) to encapsulate the Messenger Ribonucleic Acid (mRNA) used in the currently available SAR-CCoV-2 (COVID-19) Moderna and Pfizer-BioNTech vaccines. For this proprietary lipid technology, the mRNA is encapsulated in the lipid bubble, coated with a stabilizing PEG molecule. [The actual n number is probably proprietary. See Andy Brunning's: "How are RNA Vaccines Made?" in Chemical & Engineering News (C&EN) January 4, 2021 issue (v.99, n. 1, p.31; <https://cen.digitalmagazine.acs.org/2021/01/03/periodic-graphics-how-are-rna-vaccines-made-2/content.html>].

In a small percentage of the population, PEG and other polysorbates may cause severe allergic reactions. In December 2020, some concern arose that PEG could trigger allergic reactions to mRNA vaccine recipients; therefore, UK and Canadian regulators issued an advisory, noting that: two "individuals in the U.K... were treated and have recovered" from anaphylactic shock, a severe life-threatening allergic reaction.

In their Morbidity and Mortality Weekly Report (MMWR), the CDC reported that during the period from December 21, 2020 to January 10, 2021 the Vaccine Adverse Event Reporting System (VAERS) detected 10 anaphylaxis cases after administration of 4,041,396 first doses of the Moderna COVID-19 vaccine. This is about 2.5 cases per million administered doses. In nine cases, anaphylaxis onset occurred within 15 minutes of vaccination but there were no reported anaphylaxis-related deaths. (see: [https://www.cdc.gov/mmwr/volumes/70/wr/mm7004e1.htm?s\\_cid=mm7004e1\\_w](https://www.cdc.gov/mmwr/volumes/70/wr/mm7004e1.htm?s_cid=mm7004e1_w), and [https://www.cdc.gov/mmwr/volumes/70/wr/mm7004e1.htm?s\\_cid=mm7004e1\\_w#T2\\_down](https://www.cdc.gov/mmwr/volumes/70/wr/mm7004e1.htm?s_cid=mm7004e1_w#T2_down)

The good news is that, according to my GE, another periodic colonoscopy does not have to be done for at least five years and by that time a pill may be available. And finally there are newer vaccines being developed not based on mRNA (see: C&EN "What's Next After mRNA Vaccines?"; <https://cen.digitalmagazine.acs.org/2021/01/07/whats-next-after-mrna-vaccines-2/content.html>).



**Robertson Microlit Laboratories**

*Where speed and accuracy are elemental*

Elemental CHN, S, X, Analysis (same day service)

Metals by ICP-OES, ICP-MS, A/A

FTIR, UV/VIS Spectroscopy

Ion Chromatography

GC-MS

Polarimetry

DSC, TGA, melting point

KF Aquametry, Titrimetry

1705 U.S. Highway 46 • Suite 1D • Ledgewood, NJ 07852 • 973.966.6668 • F 973.966.0136

[www.robertson-microlit.com](http://www.robertson-microlit.com) • email: [results@robertson-microlit.com](mailto:results@robertson-microlit.com)

**Rapid Results • Quality • Accuracy • Competitive Pricing**

# Lubricants and Glitter: Revolutionizing Sexual Assault Investigation

**March 2<sup>nd</sup>, 2021**

(new date after Nov event was postponed)

**5:00 – 6:00 PM (PDT)**

**A co-sponsored online event between ACS California Section and AWIS East Bay**

The event will include a presentation followed by a Q&A session.

Sexual assaults includes situations in which the assailant is known or unknown. While DNA is the go-to forensic evidence in sexual assault cases, the reality is that the use of condoms in sexual assault is increasing in an effort to minimize the type of DNA left at the crime scene, specifically sperm/semen. Therefore, in the absence of DNA, it is necessary to identify other type of forensic evidence (such as lubricants and cosmetic residues) that could be used in these types of cases to link the three points in the criminal triangle, e.g. victim, suspect and crime scene. This talk will discuss current efforts that we are conducting to understand the evidentiary value of lubricant and cosmetic evidence and appropriate analytical methods to analyze and characterize unknown samples collected in a sexual assault or physical assault cases.



Dr. Candice Bridge is an Associate Professor in the Department of Chemistry and the National Center for Forensic Science. She received her Ph.D. in Analytical Chemistry from the University of Central Florida. Dr. Bridge was a postdoctoral associate at the Center for Research and Education of Optics and Lasers at UCF before joining the Department of Chemistry faculty at Howard University. She then worked at the U.S. Army's Defense Forensic Science Center as a Forensic Scientist and then a Research Scientist before joining UCF. Her current research focuses on the analysis of trace evidence forensic materials to understand the uniqueness of chemical features. Using a variety of mass spectrometry techniques, they look to develop analytical methods that can increase the validity and evidentiary value of forensic evidence, which is determined using chemometric statistical techniques.

[RSVP here!](#)

Zoom link to be shared with attendees the day of the event.

**The event is FREE and open to all.**

More information at: [calacs.org](http://calacs.org) or email [taheri@ucdavis.edu](mailto:taheri@ucdavis.edu) or [ebawis.help@gmail.com](mailto:ebawis.help@gmail.com)



# *THE 2021 California HealthCare Foundation (CHCF) Policy Survey*

January 28, 2021

Controlling Spread of COVID-19 Is Californians' Top Policy Priority;  
71% Say They Will Get the Vaccine

Nearly one in four Californians (23%) say they know someone who has died of COVID-19

Nearly 9 in 10 (86%) say it is important for the governor and lawmakers to work on making sure there are enough doctors, nurses, and other health care providers

52% of Californians have skipped or delayed care in the last 12 months primarily due to COVID-19 or cost; many say the delays have made their health condition worse

Californians say controlling the spread of COVID-19 and making health care more affordable are the two most important priorities facing the state in 2021 — tied with improving public education and ahead of addressing homelessness, promoting jobs, and taking on a range of other issues, according to a newly released statewide survey conducted by the California Health Care Foundation and NORC at the University of Chicago. More Californians — 63% — say addressing the COVID-19 crisis is “extremely important” than any other priority in the three years CHCF has conducted this annual survey. Half (50%) prioritize making health care more affordable.

The 2021 CHCF California Health Policy Survey, conducted between November 19, 2020, and January 12, 2021, among a representative sample of 1,541 adults age 18 or older, also captured Californians' views on getting vaccinated, accessing health care, equity issues in the health system, and the rising cost of care.

The survey found 23% of Californians say they know someone who has died of COVID-19, with larger numbers among Black

(32%), Latinx (27%), and Asian Californians (26%), compared to 17% of White residents.

Nearly three in four of those surveyed (71%) say they “definitely” or “probably” will be vaccinated once the COVID-19 vaccine becomes available to them. A total of 13% say they will “probably not” be vaccinated, and 16% say they will “definitely not” get the vaccine. (The survey began fielding in mid-November, before the US Food and Drug Administration issued Emergency Use Authorizations for both the Pfizer and Moderna vaccines.)

In addition to asking about broad policy priorities and vaccine attitudes, the survey also asked about specific health care policy priorities. Californians put addressing COVID-19 at the top of this list too, with 59% saying that ensuring state and county public health departments have the resources they need to control the spread of COVID-19 is “extremely important.” Nearly half (49%) say making sure there are enough doctors, nurses, and other health care providers is “extremely important.” A total of 45% say making sure people with mental health problems can get the treatment they need is “extremely important.”

As was the case at the beginning of the pandemic, just over half of Californians (52%) report that they or a family member skipped or postponed health care in the last 12 months — mostly due to issues related to COVID-19. Half of Californians (51%) also say they took at least one action to delay or skip care because of cost in the last 12 months. Of those who cut back on care due to cost, 41% say the steps they took because of cost made their health condition worse.

“COVID-19 has definitively shaped the views of Californians over the last year, and addressing the pandemic has become Californians' top policy priority by far. Still, ongoing issues like the high cost of

*continued on page 10*

continued from page 9)

health care, the number of health care providers, and access to mental health care remain top of mind for many,” says Kristof Stremikis, director of Market Analysis and Insight at the California Health Care Foundation. “Health equity is also a concern. Significant numbers of Californians say it is harder for Black and Latinx people to get the care they need compared to White people. A strong majority of people who see racial and ethnic inequities in health care believe that that federal and state governments have the biggest responsibility to help solve the problem.”

Other key findings from the survey include:

Equity remains a top concern. Just over half of Californians (51%) say it is “harder” or “much harder” for Black people to get the health care they need when they are sick compared to White people. A similar number (49%) report that it is “harder” or “much harder” for Latinx people.

Cost of care is a lingering issue. The high cost of care was the cause of

51% of Californians delaying, skipping, or cutting back on care in the last 12 months — with 41% of those who cut back on care saying it made their health condition worse. Six in 10 Californians are “very” or “somewhat” worried about unexpected medical bills (62%) and out-of-pocket costs (60%). Some 54% of Californians are worried about affording treatment for COVID-19, with one-third of Latinx (34%), Black (33%), and Asian Californians (29%) saying they are “very worried” about affording treatment, compared to 17% of White Californians.

Expanding coverage continues to be popular. Some 64% of Californians favor increasing financial assistance to make coverage more affordable for those purchasing insurance through Affordable Care Act marketplaces like Covered California. Also, 64% favor creating a national “public option” — a government-administered health plan that would compete with private health plans and give people the option to enroll in it if they prefer. Six in 10 (60%) favor lowering the age people are able to enroll in Medicare from 65 to 60. Less than half of Californians (43%) favor a single-payer system. One in four (25%) strongly oppose such a policy.



### *On-Line Proctors Needed for Chemistry Olympiad,*

The California Section is continuing its long standing participation in the 2021 Chemistry Olympiad. This year, the local exam will be conducted by an online exam hosted by ACS on Saturday, March 27. This year, 243 students from 16 schools have asked to participate. Our Section is required to provide online proctors who can connect via Zoom to watch students who will be taking the exam online and will connect to via Zoom with a separate device. Proctors and students will be asked to join via Zoom at 11:30 so that we can put each proctor into separate breakout rooms. The exam will begin at about noon and end about 2 pm.

Proctors are to observe that the students do not leave the room where they will take the test or communicate with anyone during the test. Students are allowed a copy of the periodic table, a list of constants and scratch paper. Students should be in view throughout the test and the proctor should note any unusual behavior but not call attention to the student during the exam.

Please let our office ([office@calacs.org](mailto:office@calacs.org)) know if you can proctor students for this worthwhile competition among high school chemistry students.

Thank you, Eileen Nottoli, Olympiad Coordinator

# BUSINESS DIRECTORY

*The Vortex* is the official publication of the California Section of the American Chemical Society. It serves over 3000 chemists and scientists in related disciplines in Northern California, except for Santa Clara and Sacramento Areas. The Vortex accepts advertising for products and services that are of benefit to its members. Select a size from full page to an eighth page, single or multiple issues. Call or write for further information: 510 679 4894 or LR101898@aol.com

## INDEX OF ADVERTISERS

Robertson Microlit

Page 7

## FREE RECRUITING WEB SITE LISTING

*The Vortex* readership is greater San Francisco's largest source for chemical and biochemical personnel. *The Vortex* reaches more than 3,500 readers each month.

You can benefit from this large audience by using *The Vortex* for recruiting chemists and biochemists:

- Companies for lab, management and sales personnel
- University & College teaching positions
- Hospitals for technical and research personnel

Our ACS publications are said to provide more **qualified resumes** than newspaper ads because of the highly targeted technical audience.

CALIFORNIA SECTION  
AMERICAN CHEMICAL SOCIETY

TIME VALUE

Non-Profit Organization  
U.S. POSTAGE

PLEASE DO NOT DELAY - DATED NOTICE INSIDE