

THE VORTEX

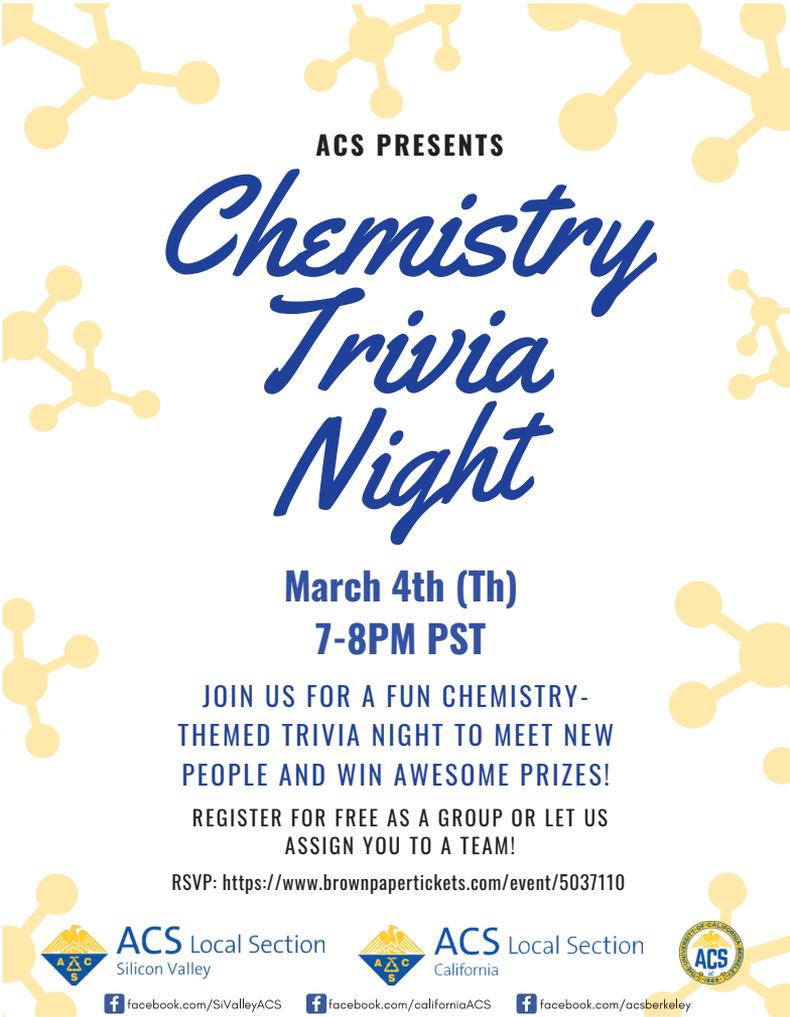
AMERICAN CHEMICAL SOCIETY
VOLUME LXXXIII NUMBER 3

CALIFORNIA SECTION
March 2021



Dr. Charles Gluchowski, 2021 Petersen Award
Recipient. See page four for details

CHEMISTRY TRIVIA NIGHT	PAGE 2
CHAIR'S MESSAGE	PAGE 3
PETERSEN AWARD	PAGE 4
INTERNATIONAL WOMEN'S DAY CELEBRATION	PAGE 5
ALL THAT GLITTERS... (B. MOTZER)	PAGE 6
TUESDAY MARCH 9 CALACS EVENT	PAGE 7
EARTH WEEK & POEM CONTEST	PAGE 8
WCC FEBRUARY MEETING REPORT (N.DAVIS)	PAGE 9
BOOK REVIEW (L. WRAXALL)	PAGE 10
MARCH 19 THE CHEMISTRY OF PLANTS (M. SEQUIN)	PAGE 11



ACS PRESENTS

Chemistry Trivia Night

March 4th (Th)
7-8PM PST

JOIN US FOR A FUN CHEMISTRY-
THEMED TRIVIA NIGHT TO MEET NEW
PEOPLE AND WIN AWESOME PRIZES!

REGISTER FOR FREE AS A GROUP OR LET US
ASSIGN YOU TO A TEAM!

RSVP: <https://www.brownpapertickets.com/event/5037110>



ACS Local Section
Silicon Valley

 facebook.com/SiValleyACS



ACS Local Section
California

 facebook.com/californiaACS



 facebook.com/acsberkeley

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 Wraxall
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



Spring is nearly here! Although many flowers around Bay Area neighborhoods have been blooming since late January. We have a busy spring for 2021, with many upcoming events. In March, our section will host Professor Candice Bridge and her talk on using analytical chemistry to advance forensic chemistry. We have a chemistry trivia night co-hosted with the Silicon Valley ACS section. We'll celebrate International Women's Day on March 8 with a panel and networking event featuring Lois Frankel (author), Mitra Kashanchi (Chevron VP), and Sandra Robert (Assoc. of Women in Science CEO). We are also featuring a talk by Professor Greti Sequin on Plant Scents and Fragrances through the UC Botanical garden. And last but not least, a presentation by Postdoc Chris Olivares on PFAS remediation. In April, we have many events in the process of being planned to celebrate Earth Day (watch

our calendar) and don't forget the online ACS 2021 National Meeting from April 5 – 16. More on the National Meeting next month. Our full list of upcoming events and registration details can be found at: <https://calacs.org/calendar/?ailec>

We are also excited to announce a collaboration between Cal ACS and the ACS Taiwan International Chapter. Our mission is to create a space for scientists to get to know one another across international boundaries by talking about research, identifying volunteer opportunities, and hosting technical presentations. We're in the early stages of planning events with the Taiwan Chapter, and more information to come soon!

The diversity of our events highlights what ACS, and the California section, does best. We feature scientists from early career stages to late career covering a variety of topics. Events also range from networking, technical presentations, and fun (trivia!). Thanks to all of our volunteers, both new and old, that make this possible. We look forward to seeing you at our upcoming events. If you have ideas for event topics or want to get involved, please reach out to office@calacs.org.



The Walter B. Petersen Award

This award honors the memory of Walter B. Petersen by recognizing a person who has made significant contributions over a period of years to the wellbeing of the California Section. Walter B. Petersen was noted for his many years of outstanding service to the Section. He held numerous section offices and was Chair of the California Section in 1969. He authored a popular column in the VORTEX entitled "Personals by Petersen" that covered news of promotions, awards and general information about Section members.

Thus it is in his honor, with recollection of his high standards of service, that we recognize others who have given significantly to the advancement of the California Section. This award was established in 1982 and is supported by the California Section.

Nominees must be a member, a former member, or an affiliate of the Section.

This year's recipient is Charles Gluchowski. Dr. Gluchowski is currently the Managing Director of Life|Science Innovations LLC (LSI), a consulting firm that works on strategic and tactical drug discovery, drug development, IP and business development projects for life science companies and investors. The primary focus is on both strategic and tactical support for drug substance, drug product and other CMC projects from preclinical through Ph III development. Dr. Gluchowski has over 35 years of drug R&D experience in both established and start-up companies. Dr. Gluchowski has also been involved with the discovery and development of two marketed therapeutics, is a co-inventor on over 75 issued US patents and is a co-author on over 45 peer reviewed articles and book chapters. He has been involved in filing 9 INDs and 2 NDAs.

LinkedIn Profile: <https://www.linkedin>.

Thanks to Jim Postma for the following summary of the range of Charlie's activities in behalf of the Section. Of particular note, Charlie set a precedent for raising funds from the scientific business com-

munity for supporting our outreach and monthly programs.

All are appreciative of Charlie's part in bringing the memorable and unique Section meeting that included a professional presentation of the Djerassi play "Insufficiency," together with a book signing and personal comments from the last memoir by the author, chemist, Professor, and known by many as the Father of the "pill."

Charles Gluchowski, ACS California Section accomplishments

2014 Served as Chair Elect

Organized Section meetings held in the East Bay and San Francisco areas.

Obtained funds from several corporate sponsors to defray costs at several section meetings.

Obtained IPG grant to support Wine/Cheese event with Sacramento, Santa Clara Valley sections.

Obtained Senior Chemists Committee grant to support a lecture by Nobel Laureate Stanley Prusiner in San Francisco.

Developed, in collaboration with Santa Clara Valley section, an ACS event around Dr. Carl Djerassi and his play "Insufficiency". Event was held 10/21/2014 at Z-Space in San Francisco.

2015 Served as Chair

Arranged with Nobel Laureate in Medicine (and CALACS member) Prof. Stanley Prusiner to give a lecture on his work. UCSF, 2/13/2015.

2015 – Collaborated with colleagues at ACS Sacramento and Santa Clara Valley sections to develop Wine, Cheese and Olive Oil event held at UC Davis on 9/12/2015.

Arranged with Las Positas College to host the National Chemistry Olympiad in coordination with the Silicon Valley Section.

2016 Immediate Past Chair: Filed Annual report with National ACS

Arranged with Las Positas College to host the National Chemistry Olympiad in coordination with the Silicon Valley Section.

2017: Coordinated with Sili-

(continued on page 5)

International Women's Day Celebration

(ACS California & AWIS East Bay Joint Virtual Event)

March 8 (5:00 -7:30 PM PST)

This Year's Theme: #ChooseToChallenge

A challenged world is an alert world. Individually, we're all responsible for our own thoughts and actions - all day, every day. We can all choose to challenge and call out gender bias and inequality. We can all choose to seek out and celebrate women's achievements. Collectively, we can all help create an inclusive world. From challenge comes change, so let's all choose to challenge.



Mitra Kashanchi

VP of Manufacturing & Supply at Chevron Chemicals

Join us and hear from our distinguished speakers and enjoy the follow up networking session.

This Event is Free (with donation option) & Open to All!

More Details and Registration [Here!](#)



Dr. Lois P. Frankel

NYT and WSJ Bestselling Author



Sandra W. Robert, CAE

CEO of Association of Women in Science (AWIS)

Schedule:

- 5:00-5:10 Opening Remarks by Sandy Robert
- 5:10-5:40 Dr. Lois. Frankel's talk with Q&A
- 5:40-6:30 Mitra Kashanchi's talk with Q&A
- 6:30-7:30 Networking session

continued from page 4

con Valley section on San Francisco National ACS meeting activities for April 2017 meeting.

Arranged for Prof. Jennifer Doudna (2020 Chemistry Nobel Prize winner) to give a talk on CRISPR at the CALACS section meeting 11/16/2017.

Coordinated with Las Positas College to host the National Chemistry Olympiad in coordination with the Silicon

Valley Section.

2019: Coordinated with Las Positas College to host the National Chemistry Olympiad in coordination with the Silicon Valley Section.

2014-2020: Generally participated in numerous outreach events sponsored by CALACS as well as other initiatives sponsored by the section. These include: Chem Olympiad 2013-2019, Bay Area Science Festival (2014-2019) and others.





All That Glitters... Part I

Bill Motzer

Introduction

Perhaps there was no other material discovery that shaped a city (and subsequent formation of a State) than that of the 1848 discovery of gold in the western foothills of the Sierra Nevada. Some historians suggest that the Civil War (1861-1865) had the greatest impact on American society. This may have been largely true in the east, but the Civil War's impact was somewhat less felt in the far west. Gold's discovery, just slightly more than a decade earlier, impacted the entire nation but more importantly shaped society in San Francisco and California particularly in demographics, transportation, and economics. But there are other aspects and affects, such as environmental contamination, which linger today. Although this series will briefly discuss Gold Rush history, more important is an understanding of the geology and geochemistry of these unique gold deposits and these will be examined in subsequent articles.

Historical Background

Before "The Great American Gold Rush of 1849", "Indigenous Peoples" probably knew about gold but did not consider it as a useful metal (too soft for arrow and spear points), considering it worthless when compared to practical rocks and minerals such as chert, flint, obsidian, salt, and turquoise. Beginning in the late 1700s, the Spanish discovered gold in California in what is known as the Rancho and Mission Period Placer Gold Discoveries. These were "dry placers" first discovered in 1775 in the Potholes District along the Colorado River, in what is now Imperial County. Later discoveries were part of two mission colonies in the southeastern Chocolate Mountains in 1780 and 1781, then in 1828 at San Ysidro (currently San Diego

County), then in 1835 at San Francis Quito Canyon, and finally in 1842 at Placerita Canyon, both now in Los Angeles County. But these discoveries were small, far inland from the sea, and rapidly exhausted.

On the morning of January 24, 1848, James W. Marshall (1810-1885) was examining the tail race of a new water-powered mill he was building for John A. Sutter (1803-1880) to provide lumber for a flour mill to be built at Sutter's Fort in Sacramento. The new lumber mill was located on the South Fork of the American River in what is now Coloma, in El Dorado County about 54 miles northeast of Sacramento. (Koloma" was the original Maidu name for their village close to the site; the name translates as "beautiful vale," Marshall was concerned that the mill race was not deep enough to drive the water wheel which powered the saws. On the day before, he had his workers deepen the race and then open the fore bay gates allowing water to run through the deepened channel to clear out excess excavated sand and gravel. During his examination of the deepened channel he noted several small golden pebbles. He suspected that they were gold nuggets but had never seen gold, so he handed them to his foreman Peter L. Wimmer (1810-1892) who also had never seen native gold. And the camp workers thought that the nugget was fool's gold or pyrite (FeS₂). So Wimmer showed one of the nuggets to his wife Jennie who had panned and collected native placer and nugget gold as a young girl in Georgia. With a simple chemical test, she confirmed that it was indeed gold (see "California's First Analytical Chemist?" November 2011 Vortex).

The discovery's news reached San Francisco and was published in March 1848 in both of San Francisco's weekly one-page newspapers: "The Californian" and "The California Star." But these early reports were not widely believed.

On July 4, 1848, placer gold was again discovered by Major Pearson Reading (1816-1868) in the Trinity River drainage and in the autumn by General John Bidwell (1819-1900) in the Feather River drainage.

(continued on page 7)

Microbe-pollutant interactions between fluorinated fire-fighting foams and bioremediation of hydrocarbons and chlorinated solvents

Tuesday – March 9, 2021 – 5:00 to 6:30 PM (Pacific)
Online Zoom Event

Microbes are fantastic chemists that can alter the fate of contaminants, but co-occurring contaminants can inhibit or stimulate microbial processes. In this talk we will look at case studies with per- and poly-fluorinated alkyl substances (PFAS), highly fluorinated and sometimes called forever chemicals, and how hydrocarbon bioremediation impacts the fate of PFAS. Likewise, we will look at how PFAS impacts trichloroethylene biotransformation.

Christopher Olivares is currently a postdoctoral scholar at UC Berkeley, with an assistant professor position beginning at UC Irvine in the spring 2021 quarter. Dr. Olivares uses an interdisciplinary approach to solving water issues. He works on toxicity, fate, and biotransformation of organic pollutants in natural and engineered environments, with the goal of protecting communities and ecosystems. **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:



Christopher Olivares, PhD
Postdoctoral Scholar
UC Berkeley

The event is FREE and open to the community. More information at: calacs.org or email aliciaataylor@gmail.com

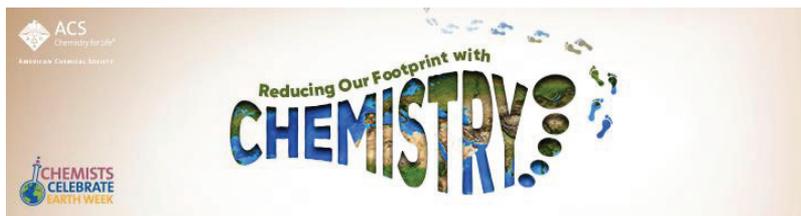
continued from page 4

These discoveries resulted in 4,000 prospectors descending on the region by the end of 1848, escalating to about 100,000 by 1852, a population level remaining relatively constant throughout the 1850s.

By August 1848, the discovery news had reached the east coast and on December 5th, President James K. Polk (1795-1849), 11th U.S. President from 1845-1849, announced it in Congress, subsequently setting off the Great California Gold Rush with thousands of additional itinerant miners descending on the rich surface and near surface placer deposits of the western Si-

erra Nevada. These "Forty-Niners" also followed the placers back to their quartz vein origins or to "The Mother Lode" where underground mining began in 1849 at the Mariposa mine in Mariposa County. The discovery announcement eventually resulted in one of the largest historical human migrations with at least 300,000 and perhaps 500,000 people world-wide eventually descending on California with the desire to reap instant wealth. It is these deposits that have a distinctive and unique geology and geochemistry that I will explore in subsequent articles.





The California Section will celebrate Earth Week virtually this year, on Saturday, April 24th, 2021, from 11 AM to 3 PM.

The Zoom link will be sent to registered participants shortly before the event.

More about Chemists Celebrate Earth Week [HERE](#) -- you can download instructions for safe, fun hands-on science activities.

This is a break from many years of celebration at John Muir Historical site at Martinez. An in-person event is impossible this year, but we will meet again at the grounds of this national treasure for future celebrations of John Muir's birthday and Earth Day.

Our virtual event on April 24th will be a fun-filled learning event. Several hands-on-demonstrations, short lectures and explanation of activities will keep it exciting, engaging and informative. One of these activities will involve plant (flower, leaves, barks etc.) smells, guessing the smells, and building models of molecules behind these smells. The event theme is: "Reducing Our Footprint with Chemistry"

For updates and registration visit our section's website, Facebook page and LINKEDIN site

www.calacs.org, <https://www.facebook.com/californiaACS/>

<https://www.linkedin.com/in/california-section-american-chemical-society-74b1a91a1/>

As always, we will be conducting illustrated poem contest based on the this year's theme:

**2021 CCEW Illustrated Poem Contest
Reducing Our Footprint with Chemistry**

The California Section of the American Chemical Society (ACS) is hosting an illustrated poem contest for students in Kindergarten through 12th grade. Entries must be sponsored by a local school or community group for verification purposes.

Contest Deadline: May 2, 2021 at 11:59 PM Eastern
Local Prizes: Gift card of a science store of your choice

Contest rules are shown on the website www.calacs.org or contact Sheila Kanodia, her email is sushila.kanodia@gmail.com

WCC Meeting Report: Merck Research Laboratories Discovery Chemistry At Merck In The Bay Area

Nicki Davis

On Saturday, February 13, 2021, Dr. Jillian R. Sanzone of Merck Research Laboratories (MRL) in South San Francisco described the discovery chemistry activities at the site as well as the company's efforts to connect with academic researchers and support young scientists.

Dr. Sanzone began by providing examples of her company's mission to translate breakthrough biomedical research into new therapies and vaccines and provide "Medicine for the people." Merck began research programs for both vaccines and therapeutics for COVID-19 on January 27, 2020, just six days after the first coronavirus case was confirmed in the USA. And for over thirty years, Merck has improved health in the developing world by donating Mectizan®, a treatment for river blindness, to over 30 different countries.

After obtaining her PhD, Dr. Sanzone joined Merck because she wanted to apply her chemistry background to practical problems. She is now a Senior Scientist in the Discovery Chemistry Group at Merck in South San Francisco. Merck established this lab in 2017 to create a next-generation MRL facility for drug discovery. The facility was designed to have the collaborative atmosphere of a startup, but with the financial backing of a big company. Lab layouts were carefully designed to encourage collaboration. Merck also encourages collaboration with the academic community with an emphasis on publishing.

Merck invests heavily in drug discovery and basic research because the timeline from the start of a program to a marketable drug can be ten years or more. Moreover, not all programs produce a marketable drug. For example, the company discontinued its COVID-19 vaccine program early in 2021 to concentrate on therapeutics, because other vaccines had proved more effective. The company currently maintains a research pipeline of 150 discovery and early development programs.

The role of the Discovery Chemistry Group at Merck is to shorten the timeline for drug development by finding the best chemical starting points for new drugs as soon as possible. The discovery process begins by finding a target molecule, such as a protein that is involved in a disease process. Techniques like high-throughput screening and fragment-based drug design can be used to screen small organic molecules against the target structure to find structures that bind to it (hits). Merck also uses techniques like mRNA Display to screen larger molecules like peptides, antibodies, and other biologics, including chemical entities as large as a virus particle.

The Discovery Chemistry Group analyzes the hits from screening to create structural hypotheses of possible drugs. Next, they make small quantities of each drug candidate, and send them to another group for biological testing. They use the test results to further refine the hypothesis, in multiple cycles of design/make/test. Multiple cycles are needed to optimize molecular design because of the large number of parameters that need to be optimized. For example, a compound with high efficacy might also have low bioavailability and/or high toxicity. The objective of discovery chemistry is to advance the best molecules into the pipeline by balancing one property against another.

Other chemists at Merck also contribute to finding suitable drug candidates for the pipeline. For example, computational chemists help the Discovery Group streamline their drug hypotheses using techniques such as virtual screening, HTS assay analysis, structure-based drug design, ligand-based drug design, predictive model generation, and mode of action (MOA) determination.

Process chemists optimize the synthesis of compounds to make the larger amounts required at later stages of drug development in a cost-effective and environmentally friendly manner. Analytical chemists at

continued on page 10

continued from page 9)

Merck solve problems such as impurity identification and stability testing at all stages of drug development.

Dr. Sanzone concluded her talk with a description of Merck's efforts to stay connected with the academic community and develop scientific talent: Merck Fellowship in Disruptive Chemistry:

Any Merck researcher can participate in a one-year full time laboratory based assignment, collaborating with an academic researcher in a prominent academic laboratory.

Merck encourages its researchers to publish their findings. Merck Research Lab postdoctoral program: The objective is to produce high-profile publications in projects that are related to Merck's development work, but are pre-competitive and non-proprietary. Appointments range from one to three years. For more information, see <https://www.merck.com/research/fel->

[lowhome.html](https://www.merck.com/research/fel-lowhome.html)

Summer internships and co-ops for undergraduate and graduate students: This program begins in May 2021 and offers paid positions of three to six months with travel support. For listings, search "intern" and CO-OP" at www.merck.com/careers and apply online.

Research awards for women chemists: In conjunction with the Women's Chemist Committee (WCC) of the ACS, Merck provides stipends for individuals in the 3rd and 4th year of graduate school to present their research at the Fall ACS national meeting. For more information, see <https://acswwc.org/awards/merck-research-award/>

2021 Merck Research Award for Underrepresented Chemists of Color: This program is for 3rd and 4th year graduate students or postdocs doing chemistry research US -based institution. For more information or to apply, email chemistsof-color@merck.com



VORTEX BOOK REVIEW

It was the best of books and the worst of books that I have read recently . . . The best? "Angels and Demons" by Dan Brown of The Da Vinci Code fame. And the worst? J.K. Rowling's new book for adults called "The Casual Vacancy".

"Angels and Demons" is not new but it ranks up with the greats, Clancy and Cussler. Based in Rome at the Vatican and the CERN facility in Switzerland, it is thriller writing at its best, a compelling blend of history, science and page-turning suspense. Interestingly, the New York Times' review said that not since the advent of Harry Potter has an author so flagrantly delighted in leading readers on a breathless chase and coaxing them through hoops. I second that.

Which brings us to the worst book – The Casual Vacancy by J.K. Rowling – an expose of the more than seedy underbelly of modern English village life. Described as a scorching satire by one reviewer and a stunning, brilliant, outrageously gripping and entertaining evocation of British society today by another, I found it difficult to follow all the characters, none of which were likable, and too many f-words to make for enjoyable reading. And it is over 600 pages long. In my experience, if nothing clicks by page 100, there is not much hope. This book has not got started by page 300 and I'm not sure I will finish it. Too bad, as I loved those Harry Potter books . . .

Linda Wraxall

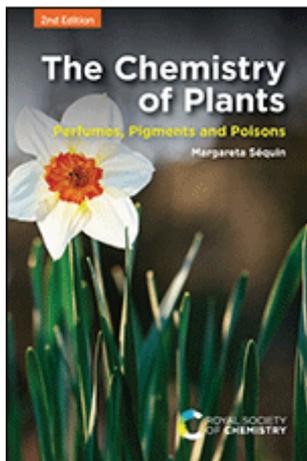
ZOOM Program:

From Plant Scents to Perfumes with Margareta Séquin

Lecture | March 19 | 11 a.m.-12 p.m. | [UC Botanical Garden](#)

Sponsor: [Botanical Garden](#)

Plant scents from flowers, fruits, leaves, or tree barks are composed of complex mixtures of volatile organic compounds. People have used these fragrant mixtures since ancient times to produce lotions, oils and perfumes. While contemporary perfumes and other scented products consist, to a large extent, of synthetic materials, the inspiration for their components came mostly from natural compounds. In this presentation, we'll look at the compositions of some familiar plant scents, including their functions, and at typical structures of some of the compounds that compose them. From plant scents, we'll continue on to fragrances and products that people today use in their daily lives, such as shampoos, soaps, or expensive perfumes.



Registration required: \$10 Adult / \$5 UCBG Member

Registration info: [Register online](#) or by calling 510-664-7606

Event Contact: gardenprograms@berkeley.edu, 510-664-7606

Access Coordinator: Mary Mrowka,

gardenprograms@berkeley.edu, 510-664-7606

Dr. Séquin's new book

The Chemistry of Plants (RSC Publishing) Margareta Séquin, "The Chemistry of Plants. Perfumes, Pigments, and Poisons", 2nd. ed., Royal Soc. of Chemistry

Why are some plants so important to humans? The chemistry of the plants has a lot to do with it! The plant world offers a fascinating way to explore basic chemistry concepts. The spectacular variety of colors, fragrances and other characteristics of plants are driven by the seemingly subtle differences in the structure and properties of organic compounds.

Non-Profit Organization
U.S. POSTAGE

TIME VALUE

CALIFORNIA SECTION
AMERICAN CHEMICAL SOCIETY

PLEASE DO NOT DELAY - DATED NOTICE INSIDE



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 Aquometry, Titrimetry

1705 U.S. Highway 46 • Suite 1D • Ledgewood, NJ 07852 • 973.966.6668 • F 973.966.0136
www.robertson-microlit.com • email: results@robertson-microlit.com

Rapid Results • Quality • Accuracy • Competitive Pricing