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Top Left: North Bay Discovery Day – provided by Alex Madonik

Top Right: “Chemistry on the Rocks” – provided by Alex Bruefach

Middle: USNCO logo, Acs.org

Bottom Left: Snow on Manzanita Bush – Donald MacLean

If you have material you think is worthy, submit it to Donald.maclean.acs@gmail.com

In the upcoming issues each month will emphasize a selected topic based on that Month’s recognition.



The following are the month’s theme for our events and articles in *The Vortex*:

- a. March: Women’s History Month (March 8)
- b. April: Earth Day Month
- c. May: To Be Determined.
- d. June: Pride Month and Disability (The *Vortex* will combine June and July)

Chair Message - Atefeh Taheri



Dear Readers,

March is here; as you might know, it is Women's History Month. This month is designated to celebrate women's contributions to history, culture, and society. Additionally, March 8 is International Women's Day, a global celebration of women's economic, political, and social achievements. Many countries celebrate the special day with demonstrations, educational initiatives, and customs, such as giving women gifts and flowers.

Interestingly, Women's History Month began as a local celebration in Santa Rosa, California. In 1980, a consortium of women's groups and historians, led by the National Women's History Project, successfully lobbied for national recognition. In February 1980, President Jimmy Carter issued the first Presidential Proclamation declaring the Week of March 8, 1980, National Women's History Week.

This was President Carter's message: "From the first settlers who came to our shores, from the first American Indian families who befriended them, men and women have worked together to build this nation. Too often, the women were unsung, and sometimes their contributions went unnoticed. But the achievements, leadership, courage, strength, and love of the women who built America was as vital as that of the men whose names we know so well."

At the California Section of American Chemical Society, we salute the hard work of brilliant women of our section whose valuable contributions further our mission "to promote chemistry and the chemical profession in the Northern California area." To celebrate this month, in this issue of The Vortex, we are featuring several of our women volunteers and will highlight their vital contributions to our Section in providing programs and services for members, recognizing and assisting educators and students, and hosting public outreach events.

I invite you to read about these outstanding volunteers. I am sure you will be inspired, and perhaps you can consider joining them in their efforts to support our community and members.

References:

1. <https://www.womenshistory.org/womens-history/womens-history-month>
2. <https://www.history.com/topics/holidays/womens-history-month>
3. <https://nationalwomenshistoryalliance.org/womens-history-month/first-presidential-message-1980/>

Upcoming Events

By Julie Mason and Donald MacLean

1. Sat. March 11, North Bay Science Discovery Day -Sonoma County Fairgrounds - Volunteers needed for at the North Bay Science Discovery Day in Santa Rosa on March 11th. Contact Alex Madonik at alexmadonik@sonic.net

Sonoma County Fairgrounds
1350 BENNETT VALLEY ROAD
SANTA ROSA, CA 95404

2. Thurs. March 16th, from 6-8 pm. YCC Networking “Chemistry on the Rocks” at Raleigh’s Pub, Berkeley registration link <https://www.eventbrite.com/e/chemistry-on-the-rocks-happy-hour-tickets-560634271197> . Lead is Alex Bruefach.

3. Tues. March 21st, 5:30 to 7:30 pm, Glorietta Elementary School in Orinda Science Fair. Contact Dan Calef at calef1.1@juno.com

4. Thurs., April 6th, Fuel Your Career with Chevron: An insider’s Look into University Recruiting – Atefeh Taheri will be the lead. Details to follow.

5. Sat. April 22, Earth Day Celebration- John Muir Birthday- John Muir Nat’l Historic Site - Sheila Kanodia will be the lead.

6. Sat. April 22, Chemistry Olympiad – Santa Clara University – See February Vortex for details on high school student participation criteria.

7. Sat. May 6th, 8:30 am – 12:30 pm., Northern California ACS Undergraduate Research Symposium St. Mary’s College. See calacs.org website for details. Encourage your students to submit an abstract by the April 24, 2023 deadline. For more details contact Steven Bachofer at bachofer@stmary-ca.edu. Please include NorCal Undergraduate Symposium on the subject line.



North Bay Science Discovery Day 2023

March 11, 2023 @ 10:00 am – 4:00 pm

Sonoma County Fairgrounds
1350 BENNETT VALLEY ROAD SANTA ROSA CA 95404

RAIN OR SHINE!

Children of all ages are invited to attend this FREE science festival that will spark wonder and curiosity about the natural world, science, technology, engineering, and mathematics.

Free admission | Free parking

Cal ACS will be there with hands-on chemistry, featuring the 2023 Earth Week theme,

“The Curious Chemistry of Amazing Algae”

Look for the Cal ACS canopy, where visitors will discover how algae make oxygen by splitting water using the power of sunlight. They can also try splitting water by electrolysis, using electricity from photovoltaic panels. And they can make their own UV light-detecting bracelet using photochromic beads.

Come explore fun science with 100 other local exhibitors, including schools, companies, research centers, and museums. If you can help out at the Cal ACS booth, [please let me know.](#)

See you there! -Alex Madonik



Free
drinks

ACS Local Section

California

entry (must be 21+)
and light refreshments

California Younger Chemists Committee Presents

‘Chemistry on the Rocks’ Happy Hour

provided

Thursday March 16th, 2023
6-8 pm

Raleigh's Pub (Outdoor Patio)
2438 Telegraph Ave, Berkeley, CA 94704

We welcome chemists, chemistry enthusiasts, and people who use or are interested in using chemistry.



[Sign Up Here](#)

2023 Chemistry Olympiad Participation

By Donald MacLean

The 2023 Chemistry Olympiad National Exam will be held on Saturday April 22, 2023. The California local section test will be held jointly with the Silicon Valley Section at a location in the Silicon Valley coverage area, typically at Santa Clara University. Participation requires a nomination from your local high school and is limited to 1 or 2 participant (s) per school, which is determined by the number of schools that have qualified high school students. Each local section has an upper participant limit based on its membership size; for the California Section the limited is 18 (17?) National Exam participants. The event notice will be sent out to each High School in the California Section. If you want to participate in the Chemistry Olympiad you must go through your high school chemistry program. There may be a local exam to determine who will be the representative from the school. If there are more than 18 nominations, then the results of the local exam will be used to determine the primary and alternate participants.

The 20 top-scoring students from the National Exam will spend two weeks at a Study Camp June 4-17 at the US Air Force Academy to undergo rigorous training. Based on their performance, four students are chosen from the 20 to represent the U.S. at the International Chemistry Olympiad July 16-25 at Swiss Federal Institute of Technology in Zürich, Covid 19 withstanding its taking place.

See for eligibility requirement:

<https://www.acs.org/education/students/highschool/olympiad.html>

The coordinators for the Section are Julie Mason and Eileen Nottoli.

Summer Project SEED Applications

By Donald MacLean

The Application process for Project SEED (originally “Summer Experiences for the Economically Disadvantaged”) will be opening soon. During Covid 19 on site summer internship did not occur; this year, on site experience will resume.

Go to <https://www.acs.org/education/students/highschool/seed.html> for information and application.

The coordinators are Elaine Yamaguchi and Michael Cheng.

International Women's Day – Local Section Member Brief Profiles

By: Atefeh Taheri (Organizer) and Donald MacLean (Compilation and Presentation)

The following are selected ACS California section female contributors that provided information for our International Women's Month Celebration.



Alexandra Bruefach

Current job/position and workplace:

Soon to be Dr. (3 more months!!!)

I am currently a Ph.D. Candidate at UC Berkeley in Materials Science and Engineering. My work focuses on developing open-source computational tools to extract information about material structure from electron microscopy datasets.

Years of ACS membership and volunteering with ACS/Cal ACS:

I joined ACS in 2015 as an officer for my student chapter at Temple University. I moved to California to pursue my Ph.D. in 2018. In 2020, I was awarded the Younger Chemists Leadership Award and travelled to the

Leadership Institute, which is where I got connected with the California Section.

I've been a volunteer for the California Section since 2020, where I developed several virtual outreach and networking events for students. I have been a Councilor for the section since 2021.

What's your passion/interest in working for ACS/Cal ACS? I have really enjoyed being involved and planning outreach/networking events for students. My favorite events are those connecting students with practicing professionals. These interactions are so valuable to students since there is such a vast range of career paths that students rarely get exposed to during their program of study!

Fun fact/hobby: I love to learn to do new things! There are a ton of random hobbies that I have picked up in the last few years. A few examples are roasting coffee, building furniture, and long-distance running!



Sarah Bronner, Ph.D.

Current job/position and workplace: Associate Director of Medicinal Chemistry, Maze Therapeutics

Years of ACS membership and volunteering with ACS/al ACS: 13 years membership with ACS

How long have you been with Cal ACS, and what's been your involvement?: New member-at-large with Cal ACS.

What's your passion/interest in working for ACS/Cal ACS?: Interested in educational outreach. Have been involved with elementary school science experiments, coaching middle school science competitions, and career panel and seminars at universities.

Fun fact/hobby: Hobbies are yoga and my three cats.

Fanny Frausto, Ph.D.

Current job/position and workplace: The Clorox Company as a formulation chemist.



[Editor Note] Fanny provided a link for her profile. The article does not follow the profile format.

See [Industry Matters Newsletter](#) September 30, 2021 for details.

[Meet a Designer of Cleaning Product Formulations with High Ambitions | Early Career Chemist | ACS Industry Matters - American Chemical Society](#)



Sushila (Sheila) Kanodia, Ph.D.

Current job/position and workplace:

Forensic Chemist, Department of Homeland Security.

Years of ACS membership and volunteering with ACS/Cal ACS:

>45 years member and volunteering with ACS Committee on Community Activities (CCA), The Committee on Ethics, Award committee, one year associate on Committee on International Activities, active in the ACS Women Chemists of Color, and The Committee on Minority Affairs, Kid Zones outreach during national meetings.

How long have you been with Cal ACS, and what's been your involvement?

~24 years, Cal ACS chair-elect, chair, Women's Chemists Committee co-chair, minority/diversity committee chair, Earth Day coordinator, Councilor, offering summer lab sessions to underprivileged elementary school students for several years in collaboration with NOBCCHE (National Organization for the Professional Advancement of Black Chemists and Chemical Engineers), mentoring high school students, started science café tradition by securing the grant from ACS, family science nights and other local outreach activities.

What's your passion/interest in working for ACS/Cal ACS?

Improving the public perception, understanding and appreciation of chemistry, chemical sciences and the profession; the role chemistry plays in improving lives through its transforming power, educating and empowering underprivileged persons, gender and racial equity, instilling ethics at professional and human level.

Fun fact/hobby: Climbing trees, roller coaster rides, first plane ride to USA and first night away from family.

Gardening, listening to podcasts, philately, numismatics, nutritional cooking-eating



Dr. Vanessa M. Marx, Ph.D.

Current job/position and workplace: Principal Scientist II, Medicinal Chemistry, Novartis Institutes for Biomedical Research

Years of ACS membership and volunteering with ACS/Cal ACS: ACS member since 2009, Cal ACS volunteer since 2022. Cal ACS councilor 2023 – present
Division of Organic Chemistry Executive Committee (member at large) 2023 – present

What's your passion/interest in working for ACS/Cal ACS? Particularly interested in scientific outreach and mentoring / empowering younger scientists (particularly women and students from socio-economically disadvantaged backgrounds). To this end, passionate about creating opportunities to recognize and reward the current generation of students, as well as sharing my perspective and experience, to help enable them to make the most informed decisions regarding their future careers.

Fun fact / hobby: rock climbing, hiking, back-packing.



Mina Mozafari, Ph.D.

Current job/position and workplace: Postdoc researcher at UCI (University of California, Irvine)

Years of ACS membership and volunteering with ACS/Cal ACS: About 10 years of ACS membership

Joined Cal ACS during the pandemic (2020) as a volunteer once I took part in a zoom event and knew about this section when I was in Canada.

What's your passion/interest in working for ACS/Cal ACS? I enjoyed volunteering for Cal ACS and arranging events such as talks, career panels and workshops.

Fun fact/hobby: My hobbies are walking in nature, hiking, swimming, taking part as well as arranging arts and cultural events.



Eileen Nottoli, J.D., Ph.D.

Current job/position and workplace:
Environmental attorney, retired

Years of ACS membership and volunteering with ACS/Cal ACS:
Member of ACS since 1970

Twice Chair of the California Section

What's your passion/interest in working for ACS/Cal ACS? Head of the Chemistry Olympiad and High School Outstanding Teacher Award Committees

Fun fact/hobby: I'm a quilter and I foster dogs from Guide Dogs for the Blind



Margareta(Greti) Séquin, Ph.D.

Current job/position and workplace:
Professor Emerita, Dept. of Biochemistry and Chemistry, San Francisco State University

Years of ACS membership: >50 yrs.
How long have you been with Cal ACS?:
about 25 yrs.

What's been your involvement?:
Women Chemists Committee, public outreach events; Cal ACS Chair in 2018

What's your passion/interest in working for ACS/Cal ACS?:
Making chemistry more understandable and accessible for the general public (in my case through the chemistry of plants)

Fun fact/hobby: I love playing the piano!



Atefeh Taheri, Ph.D.

Title: 2023 CalACS chair

Current job/position and workplace: Maintenance and reliability team lead at Chevron

Years of ACS membership and volunteering with ACS/Cal ACS: 10 years ACS member, Cal ACS volunteer for four years

How long have you been with Cal ACS, and what's been your involvement?: For the last six years, I have been involved in various ways; I have been a regular member, an alternate councilor, and 2022 chair-elect. I'm also a minority committee co-lead. I'm also on the AWIS (Association for Women in Science) East Bay leadership team and am the liaison between AWIS and ACS.

What's your passion/interest in working for ACS/Cal ACS?: Impacting the professional community especially the careers of women and minorities in positive ways and providing equal opportunity and access to science and education for everyone.

Fun fact/hobby: I have two furry sons, I enjoy skiing, I'm a good painter.



Alicia Taylor, Ph.D.

Titles: CalACS Past Chair (2021) and current member-at-large

Current job/position and workplace: Staff Toxicologist, State of California Department of Toxic Substances Control

Years of ACS membership and volunteering with ACS/Cal ACS: Ten years member in ACS, about 7 years as an active volunteer at Puget Sound ACS and Cal ACS

How long have you been with Cal ACS, and what's been your involvement?: Since 2018, I've been a volunteer, the chair and I am currently a member-at-large in Cal ACS. I have organized a lot of in-person and zoom events. I've also helped organize a mentoring program for local high school students.

What's your passion/interest in working for ACS/Cal ACS?: I'm not a chemist by training, but a toxicologist. ACS is great at welcoming all scientists and the local section Cal ACS, has been very supportive of all types of ideas and events. It's rewarding to bring STEM opportunities (not just chemistry) to the general public, students, and to other scientists.

Fun fact/hobby: I grow a lot of orchids.



Elaine S. Yamaguchi, Ph.D.

Current job/position and workplace: Retired from Chevron

Years of ACS membership and volunteering with ACS/Cal ACS: about 45

How long have you been with Cal ACS, and what's been your involvement?: ACS/Cal ACS: Project SEED for over 40 years

Fun fact/hobby: Cooking/baking and serving as an Associate Editor of Tribology Transactions

Recommended Location: Snow Country

By Donald MacLean

This month's recommendation is snow country, which could be your back yard. The last time I remember Bay Area snow at sea level was in 1976. This year we have multiple snow days at locations that are close to home. However, this year, snow, sleet, and hail, has a new word companion, graupel. I experience this while driving in Fresno where the stuff bounced off the pavement like hail but looked like snow on the windscreen.

Graupel are soft small pellets formed when supercooled water droplets freeze onto a snow crystal. This word is getting a lot of attention.

Around the Bay Area snow means going to the mountains. During the trip you might experience the following: ice, freezing rain, snow, sleet, slush, rain, hail, and of course, graupel. Chains and warm clothing seem to be the focus for the news when going to the Sierras.

Each of the cold weather phenomena described below are pretty in their own right. Having lived in snow country, the worse thing by far is freezing rain. Freezing rain coats everything and is dangerous. Freezing rain is transparent so "black ice" is hard to see. It causes power outages,

tree branches to break, and car wrecks. My first experience with freezing rain made getting into my car challenging. I turned on the car only to have to deal with windshield fluid freezing up on the windscreen. The more I sprayed the worse the situation became. The action of the wiping made viewing out the windscreen impossible. The defroster only made slush which I could wipe off but turned to white ice on the edges. Later I bought methanol and a scrapper with a brush to deal with freezing rain and snow that melts then freezes. Buy a good scrapper with bristles. California forbids methanol in windshield fluid for environmental reasons, that is why these days there is a +32F notice on the bottle label. In the winter months near the mountains you can buy methanol containing



Left: Image fluid with the +32 F.
Right: Image of the material you need that goes below 0 F.

windscreen fluid. I recommend doing this on the way up the mountain, not when you need it. Fill the windscreen reservoir beforehand and flush out the lines with the methanol-containing material.

Ice is something that will inevitably happen as everything melts and freezes. One of the things about road ice is the use of salt and sand. Salt lowers water's freezing point, but does not eliminate ice if the temperature is below the depressed freezing point. The type of salt and the amount used will dictate the depressed freezing point ($\Delta T_f = K_f \cdot b \cdot i$) where:

ΔT_f is the freezing point depression,

K_f = cryoscopy constant = 1.86 K kg/mol for water

b = molality

i = van't Hoff factor (1 for non-electrolytes, 2 for salts like NaCl and CaSO_4 , 3 for CaCl_2 , etc.)

Salt corrodes everything; rinse off the car after the trip if salt was applied to the road. The effect of salt on concrete is seen with side-by-side sidewalk surface comparison near building entrances that have part of the walkway salted and part not salted.

Sand is used to provide traction. Over time the white snow will turn brown or black as the tires agitate the snow with the sand and road grime. Three days after a snow storm the snow on the road looks horrible.

Snow is the one item that people think favorably about, unless you are stuck in a snow pile or there is too much of it. Snow comes down slowly. Snow is a mixture of frozen water and air. A good rule of thumb is 10 inches snow = 1 inch water. Fresh snow makes a crunching sound when you drive / walk over it. Bring a sled or plastic disk when you go. For the young kids the best place is not the ski resort, but off the side of the road, at a rest stop, or a parking lot. A small snowman or snow creature is easy, cheap entertainment. Two hours will be enough for an outing. Ski and snow board at the ski resort.



Initial Snow Fall.

These days you might experience more than snow, ice, sleet, slush, hail or graupel. Try this: open a plastic water bottle and replace the water with air. Note the bottle has maximum volume at this point. On the way down the hill, the bottle will crush ($PV=nRT$). Note the temperature increase with decreasing elevation. Even though the temperature increases the internal bottle pressure, the external atmospheric pressure increase will have a greater effect on the bottle volume than the absolute temperature

increase.

Note that even on hot days, snow will be around if protected from direct sunlight.

“Nonlinear Career Path: A New Normal and a Fun One”:

Women Chemists Committee Talk by Atefeh Taheri, Ph.D., 2/25/2023

This year's first meeting of the Women Chemists' Committee (WCC) of our ACS California Section featured a talk by our 2023 Section Chair Dr. Atefeh Taheri.

WCC Chair Dr. Elaine Yamaguchi cordially welcomed all to the well-attended ZOOM meeting. Seminar guests included students at various levels of their studies, active chemists in industry and academia, and retired scientists of diverse backgrounds. Dr. Yamaguchi pointed out how these ZOOM meetings have been helpful during COVID times and how the seminars provided excellent opportunities for networking. The various break-out rooms before the beginning of the main talk allowed for small groups of guests to get to know each other and to meet colleagues.

Dr. Taheri first addressed her rigorous education in Tehran, Iran, leading to her Bachelor of Science and then her Masters of Science in Analytical Chemistry. After her Masters she moved across the globe and obtained her Ph.D. at Johns Hopkins University, with thesis work on dye-sensitized solar cells. She stressed how important it is to work on improving English speaking and writing skills and to practice giving presentations, to work hard, to befriend group mates, and not to forget relaxation. In order to network she recommended getting involved in the local ACS chapter.

After obtaining her Ph. D. the question was whether to continue as a post doc. As an international student this also involves the challenge of obtaining a green card. Dr. Taheri continued to do postdoctoral work at UC Davis on electrocatalytic conversion of CO₂ to hydrocarbons.

After her postdoctoral work, more crucial decisions awaited, mainly whether to continue in academia or to work in industry. Going from academia to industry is usually a one-way decision. She described the various pros and cons of the two major pathways, e.g. working hours, deadline driven projects, financial aspects, potential relocation opportunities. Her first industry job, obtained from a UC Davis career website, led her to a job at The Clorox Company, formulating advanced disinfectants for healthcare applications. This involved working with microbiologists and it gave her experience with marketing and sales aspects of the industry. While learning a lot and making many new connections, she was ready to try a different place. She moved on to become a fundamental scientist with Oronite at Chevron, working on understanding deposit formation and prevention. In her next position, she moved to Chevron's Downstream and Technology services; her team does R&D work for Chevron lubricants. Following these positions she joined and now manages an industrial maintenance team for Chevron in the western US, a position that she enjoys a lot. The success of her latest assignment depends on supreme people skills, the so-called “soft skills”.

As for switching jobs Dr, Taheri shared some important ideas. She described a career more like a jungle gym, with many pathways going in different directions, unlike the models of earlier

times where staying on with the same company or type of job for years or even decades was the norm. In any case, do each job as best as you can!

Dr. Taheri is a committed outreach volunteer and supports diversity and inclusion efforts.

(As an aside: As an incentive to carefully listen to the talk presented all the way to the end, three questions relating to themes of the talk were asked at the meeting's end. If answered correctly (by email) a small prize could be obtained as a reward!)

By Margareta Sequin