



Newsletter for Senior Chemists

March 2022

A New Senior Chemists Chair, Ionic Liquids, Women in Academia, Chiles and More!

A Warm Welcome from the New Senior Chemists Committee Chair

Dr. Robert A. Yokley retired from Syngenta (formerly Ciba-Geigy) in Greensboro, NC (world headquarters in Basel Switzerland). He was a research scientist and Manager of the Analytical Resources Group. In this position, he traveled to numerous countries in Europe, Africa, and Asia to provide support and/or solve analytical issues of importance to various Syngenta studies and projects. His previous service in the ACS includes the Committee on Environmental Improvement, the Nomenclature, Terminology, and Symbols Committee, and the Senior Chemists Committee (SCC).



His prior SCC service included being chair of the Local Section Activities Subcommittee. He also wrote several articles for the Celebrating Chemistry publication as an adjunct to the Local Section Activities Committee. He served the Central North Carolina Local Section as Chair (2004) and presently serves the local section as Councilor and Chair of the Senior Chemists Group. He received his B.S. degree in chemistry from Middle Tennessee State University and his Ph.D. in chemistry from the University of Tennessee, Knoxville under the direction of Professors Gleb Mamantov and Earl Wehry.

Welcome to the Spring 2022 issue of the Senior Chemists Newsletter! We hope you enjoy the variety of articles and find a topic(s) that is applicable and relevant to your interests. Let us know which articles you enjoy. If you have ideas for articles, please reach out to me or our editors, Lynn Hartshorn and Adriane Ludwick, at seniorchemists@acs.org. Feel free to forward this newsletter to others and encourage ACS members over age 50 to open and read. The “opening rate” for past issues of the newsletter has been outstanding.

I am honored to serve as Chair of this prestigious group of volunteers. The SCC will continue to focus on its goals to: (1) increase the number of senior chemist groups in Local Sections; (2) develop avenues to expand communications and promotions to enhance awareness of senior chemist activities, and (3) engage with community groups that benefit from senior chemists' expertise. I also wish to update the reader on what is planned for the hybrid Spring 2022 National ACS meeting in San Diego, March 20-24 as well as some of the on-going SCC activities.

San Diego Spring 2022 ACS National Meeting

The theme for the Spring ACS National meeting in San Diego is Bonding Through Chemistry. The SCC events include “A Memorial Symposium for Jane Veazey Thomas (1940-2021) at 8:00 AM on Sunday, March 20. Jane served on numerous ACS committees including the SCC. Other events include an ice cream networking social co-sponsored by the SCC, the Young Chemists Committee (YCC), and the Business Development and Management Division (BMGT) at 2:00 PM on Sunday, March 20 and a Retirement Symposium on Tuesday, March 22 at 2:00 PM. All these programs will take place in the Pacific Time Zone.

Due to the on-going pandemic, the very popular in-person SCC breakfast is again a virtual coffee hour and occurs on March 29, from 1:00-2:00 PM EDT. The guest speakers are Dr. Cordelia Running (Purdue University) and Dr. Matt Hartings (American University) who will inform us of everything we ever wanted to know about chocolate.

SCC Mini-Grant Program

The number of local sections with senior chemist groups increased the last few years partially due to support from the SCC mini-grant program. The program will continue this year and SCC members are asked to visit their respective local sections to share ways to engage more senior chemists at the local and regional levels. Many of the regional meetings now include some type of senior chemist activity such as a breakfast meeting with a guest speaker. Please let us know if you would like someone to visit your local section. The dates for submission of a mini-grant request are from February 15 – May 31, 2022.

SCC ACS Diversity, Equity, Inclusion, and Respect Activities

In 2021, the SCC allocated funding for new activities to advance the ACS Diversity, Equity, Inclusion, and Respect (DEIR) goals. To be funded, the project must be led by a senior chemist (i.e., over 50 years old) and must be submitted by a technical division, international chapter, or any official ACS entity other than a local section. The project proposal should address the impact on DEIR, an estimate of the impact on systemic racism, level of engagement by senior ACS members, and current and potential support from partners including the possibility of a long-term continuation of the proposed activity. Four such proposals were received and funded in 2021. Proposals may be submitted starting February 15 and closing on April 30, 2022. Local sections seeking similar DEIR grants should contact the Committee on Local Section Activities for information regarding funding and deadlines.

ACS Scholars Program

A successful program with similar goals is the ACS Scholars Program. African American, Hispanic/Latino, and American Indian students enrolled in chemical science programs are eligible to compete to receive up to \$5,000 per year in renewable college scholarships. Since the program's inception in 1994, many of the more than 3,500 men and women who have participated are now established in important roles in industry, academia, and government. To support tomorrow's chemistry leaders, please go to <http://www.donate.acs.org/scholars>. The site provides instructions for how to donate by credit card or mail. For information on how to contribute via an individual retirement account (IRA) or estate plan, please visit www.acs.org/legacy or contact Mary Bet Dobson at m_dobson@acs.org. With SCC help, more than \$600,000 was raised in 2021.

A SCC strategic planning retreat during the Fall 2022 ACS National Meeting in Chicago is in the planning stage.

Thanks for reading. Let me know if you have questions, comments, and/or recommendations.

Senior Chemists Events at ACS Spring 2022

Networking with Chemistry

Professionals & Students | March 20th at 2PM PT

The ACS Senior Chemists Committee is hosting a "Networking with Chemistry Professionals & Students" event onsite during the ACS National Meeting in San Diego. The event will take place on Sunday, March 20 from 2:00-3:30 p.m. PT at the San Diego Convention Center, Room 17A/B.



Professionals in industry, academia, government, small businesses, and non-profit, are invited to come out and share your expertise and experiences with undergraduates and younger chemists and enjoy a frozen treat as part of our thanks for your participation. The Younger Chemists Committee, the ACS Undergraduate Student Advisory Board, and the Division on Business Management & Development are cosponsors for the event. If you are traveling to the meeting and would like to participate, please send an email to seniorchemists@acs.org. We hope you will join us in San Diego!

Virtual Coffee Hour Social | March 29th at 1PM EST

FREE LIVE ACS Webinar

Chocolate Chemistry

Save my Seat



The SCC will host its virtual “coffee hour social” event on March 29 at 1:00 p.m. ET. The theme will be “Chocolate Chemistry.”

[Register Here](#)

The keynote speakers for the event are Cordelia Running, an assistant professor in Nutrition & Food Science at Purdue University, and Matt Hartings, an associate professor of Chemistry at American University and author of *Chemistry in Your Kitchen*. Come and join us for this special event.



Senior Chemists Symposia - Spring 2022

**Sponsored by ACS Divisions on Professional Relations, Small Chemical
Businesses, Business Development & Management, and History
Cosponsored by SCC**

Honoring a Legacy of Service: The Life and Career of Jane V. Thomas

Sunday, March 20 from 8:00 am-12 pm PT – Hilton San Diego Bayfront, Sapphire C/D

Chemical Angel Network: Chemical Professionals Investing

Sunday, March 20 from 7:00-9:00 pm PT

Networking Throughout Your Industrial Career

Monday, March 21 from 8:00-11:30 am PT – Hilton San Diego Bayfront, Sapphire M/N

Leaving a Legacy of Service: Honoring the Legacy of Mark D. Frishberg

Monday, March 21 from 2:00-4:00 pm PT – Hilton San Diego Bayfront, Sapphire M/N

Senior Chemists Planning for Retirement Symposium

Tuesday, March 22 from 2:00-6:00 pm PT – Hilton San Diego Bayfront, Sapphire 410

HISTORY Award Honoring Mary Virginia Orna

Tuesday, March 22 from 8:00 am-12 pm PT and 2:00-6:00 pm PT
Hilton San Diego Bayfront, Sapphire C/D

SCC Zoom Socials - A Nice Time to Share Stories and Laugh ***By Arlene Garrison, SCC Consultant and former SCC Chair***

In 2021, the Senior Chemists Committee decided to hold monthly Zoom social hours. With all the official meetings online, the committee members were missing the chance to share informal conversations and stay connected on a personal level. Meetings were held roughly monthly, with consensus for Tuesdays at 4:00 p.m. ET as the most assessable time.

On average, roughly half the committee joined the socials, and almost every committee member attended at least one. Former members of the committee also attended, and as word of the meetings spread, a few other ACS leaders joined. Conversations covered a wide range of topics, including where and how to get COVID vaccines, travel restrictions and plans, hobbies, and climate change. SCC members occasionally shared their screens, including Zoom lessons by Milt Levenberg and pictures of family by Joshua Obaleye from Nigeria.

Without the chance to chat over breakfast and lunch at national meetings as previously done, the committee needed a way to get to know each other. Zoom Socials worked well and provided continuity throughout the year.



**Chiles: The Chemistry of Capsaicin - Part 2 of 4: Structure, “Heat” Sensation, and the Scoville Scale (Part 1 appeared in the July 2021 issue)
By Robert A. Yokley, Ph.D. and Chair, Senior Chemists Committee**

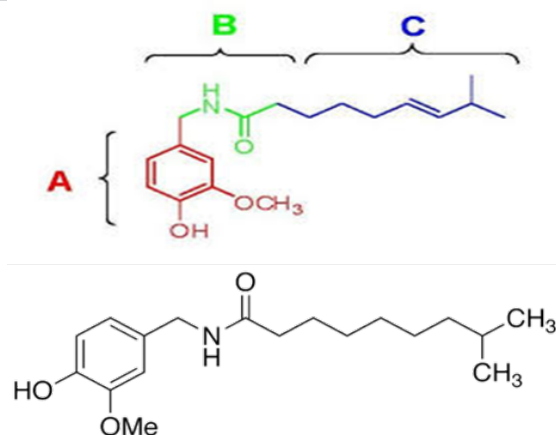


Figure 1. Structures of Capsaicin and Dihydrocapsaicin

Capsaicin and dihydrocapsaicin are the most abundant (>90%) and pungent of the six naturally occurring capsaicinoids (Figure 1). Part of the molecule is structurally similar to vanillin (A), whereas the remainder of the molecule is an amide (B) and hydrocarbon chain (C) (an alkylamide). The amide creates low volatility rendering the molecule completely odorless. The long lipophilic hydrocarbon chain facilitates transmission through lipid-rich cell membranes.

Living organisms recognize molecules just as locks recognize keys - by shape. Capsaicin binds to sensory neurons (recognized by a specific protein receptor) located in the membranes of the mouth, lips, throat, and nasal cavity. The tongue contains millions of these microscopic receptors. One of these, Transient Receptor Potential Vanilloid 1 (TRPV1), is important in the detection of noxious stimuli including heat, acids, and vanilloids. It provides a channel for Ca^{2+}

and Na^+ ions to enter the sensory nerve cells triggering a release of neuropeptides such as substance P (an undecapeptide – a chain of 11 amino acid residues). This generates a signal to the pain-processing centers of the brain that triggers a release of endorphins. Endorphins have pain-relieving properties similar to opiates and are the closest structure to morphine produced by the human body. The precise mechanism for the interaction of capsaicinoids and TRPV1 is not well understood (Figure 2). However, the fact that capsaicinoids bind to the same receptor that responds to a thermal stimulus is why eating a chile is sensed as “hot”.

In 1912, W. Scoville (Parke Davis, now Pfizer) reported an organoleptic test to semi-quantify the “heat” content of chiles. The Scoville scale, reported in Scoville heat units (SHU is a function of capsaicinoid concentration but is dependent on the capsaicinoid sensitivity of taste testers. Thus, it is not a precise or accurate method and results vary widely between laboratories ($\pm 50\%$) due to human subjectivity. By definition, pure capsaicin has a SHU index of 16 million.

A measured amount of dried chile is dissolved in alcohol to extract the capsaicinoids and further diluted in a 5% aqueous solution of sucrose. Dilution is so that 5 tasters in a panel cannot detect “heat”. Increasing concentrations are tasted until at least 3 of the 5 can detect the heat. The heat level is based on the extent of dilution. For example, a Scoville rating of 50,000 means capsaicinoid oil from that chile was diluted 50,000 times before the testers could just barely detect the “heat”. The higher the Scoville rating the hotter the chile.

In part 3, we shall focus on chile types, annual consumption, and applications.

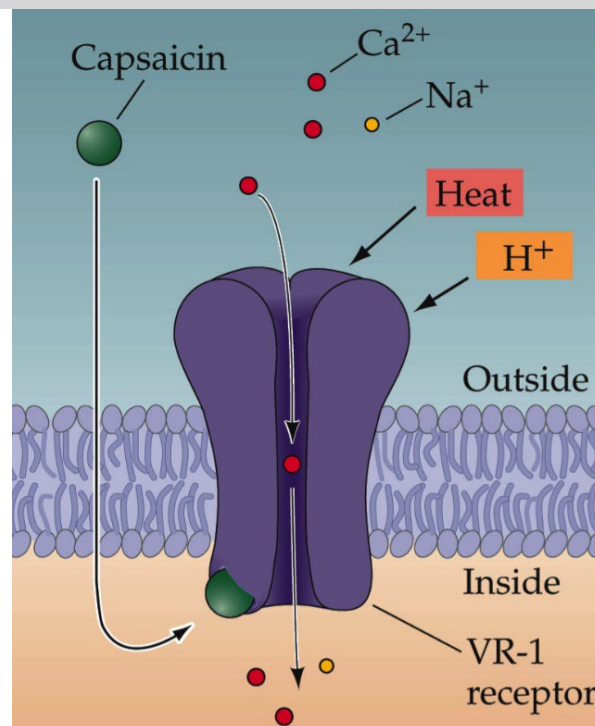


Figure 2. Depiction of Ca^{2+} and Na^+ transport to the nerve cell via the TRPV1 receptor

Women Will Continue to Be Scarce in Academia

By Valerie J. Kuck, SCC Member and Secretary

In 2020, I started doing research on the graduate training and hiring of women chemists. After retiring from Bell Labs, I collaborated with three professors at Seton Hall University in New Jersey, Cecilia Marzabadi, a chemistry professor, and two psychology professors, Susan Nolan and Janine Buckner, to explore the reasons for the paucity of female professors at RI institutions (universities with very high research activity).



Articles in *Chemical & Engineering News (C&EN)* were showing that female tenured and tenure-track chemistry faculty members at the top fifty federally funded universities were scarce. It was not known if this had resulted from few women completing their doctoral studies at one of the top institutions. We found that 60% of the faculty members at the top fifty federally funded institutions had earned their doctorates from just ten schools. During the years 2008-2015, those ten schools had awarded doctorates to 885 women and 1562 to men, indicating that there were many well-trained women. However, in 2016, women held only 20% of the tenure and tenured-track positions in chemistry departments at the top fifty schools.

In one study that was funded by the American Chemical Society and the Camille and Henry Dreyfus Foundation, we surveyed chemistry graduates five years after they had received their doctorates from a highly ranked RI chemistry department. Three hundred fifty individuals completed the survey. Analysis of the data showed that the female respondents were less satisfied than the males with their graduate experience. Both sexes gave mediocre ratings to their graduate experience and indicated a flawed relationship with their research advisors. Women also gave lower ratings than men to their relationship with their post-doc advisors. Twenty-nine percent of the respondents thought it was a mistake to have studied chemistry. Sadly, after all that effort and government expense, 37% of the women and 25% of the men reported they had left the field of chemistry.

In another major effort, I visited twenty-eight chemistry departments and conducted small, single sex, discussions with groups of faculty members, graduate students, and post-docs. I also met with department heads. There were eight hundred and seventy-seven individuals in this study funded by the National Science Foundation. Many of the participants said that they had no idea why the number of female faculty members was low. Others blamed the small size of the female applicant pool and the demands of the job. Many of the males stated that female applicants did not meet their high standards, there were few female candidates, and women were in the “wrong” sub-fields. Others stated that life-work balance is more difficult for women. The women recalled being labelled as affirmative action hires, given little respect, marginalized, and stereotyped. The female graduate students and postdocs noted that their career aspirations were taken less seriously than the men’s and they found the scarcity of female professors along with the poor treatment accorded female faculty members had discouraged them. Change will be slow!

Together on Two Wheels

By Joan Newmark: Richard Newmark retired from 3M. (St Paul) as a corporate scientist. Joan Newmark taught high school chemistry and physics and worked in 3M's Abrasives Analytical lab.

My husband, Richard, has been an avid biker since his childhood. But when a pinched nerve in his neck forced him off his touring bike, he switched to a recumbent one. After getting used to its quirks, he convinced me to join him on a tandem recumbent (see photo). What's not to like? Soft foam seat, nice backrest, no pressure on your shoulders and arms—and he does all the hard work, like shifting, steering and braking. Granted, it is harder to go up hills, but we have 27 gears for that.



Our best adventure on the tandem was our trip on Florida's Pinellas Trail out of St. Petersburg. It was Christmas Day, with all the eating establishments either closed or fully booked. So, we set out on the trail for Clearwater Beach, a tourist town 25 miles up the trail. Fifty miles round trip is quite a stretch for us but, hey, Florida's really flat. But the trail crossed over all the major roads with bridges, and then we had to climb the giant bridge over the inlet that led to Clearwater Beach. We were bushed! Fortunately, all the restaurants were open, and we had a nice fish luncheon and a rest before heading back.

Our more typical trips are 10–15-mile jaunts on the trails near our home in Woodbury (an eastern suburb of St Paul, MN). But a few times a year we bike 30–35-mile organized rides like the St. Paul Classic and the Tour of Saints from the College of St. Benedict, past St. John's University, and return (St John's University and the College of St Benedict are about two hours north of the Twin Cities in attractive countryside). And we manage to drive to Sanibel, Florida, each winter for seven weeks to bike the island's off-road trails.

The Fifth Chapter - ACS Industry News

Avoid the Trap of Saying 'Yes' Too Often: Arlene Garrison cautions about taking on too much, too soon, in retirement - Reprinted from [Industry Matters Newsletter](#), December 16, 2021

Dr. Arlene Garrison retired in 2020 from Oak Ridge Associated Universities (ORAU) as vice president for university partnerships. Her first career was with the University of Tennessee, where her final role was associate vice president for research. She has bachelor's degrees in chemistry and electrical engineering, and a PhD in analytical chemistry. Her research focused on sensors for chemical process control.



Arlene is former chair of the Division of Business Development and Management and is currently chair of the Senior Chemists Committee and alternate councilor for the East Tennessee Local Section. She is a Fellow of the American Chemical Society and the American Association for the Advancement of Science, and had the privilege of carrying the Olympic Torch as it traveled to Atlanta in 1996. [READ MORE](#)

How I "Celebrated" My Recent Retirement

By Larry Berliner: Dr. Berliner did his undergraduate work in chemistry at University of California, Los Angeles, and graduate work in physical/biophysical Chemistry at Stanford University. Most of his career was spent at Ohio State University. Now retired from both Ohio and University of Denver, he enjoys gardening, theater, and grandchildren.

In early June 2021, the University was still in the grasp of COVID restrictions, but I wanted any celebration to be absolutely in person. Hence, I declined my department's offer of a "virtual sendoff, "which was also accompanied by orders to vacate my office and 'lab' by June 30. Instead, I planned three retirement parties about two weeks before I officially retired.

The first party was at a local campus bar to thank my close friends still working on campus or recently retired. I also wanted to thank staff friends who helped me at the University. I invited only a few colleagues from my own department. Everyone had a lot of fun!

Two days later, I invited six or seven close undergraduate advisees and mentees who had studied with me over the years. This was the most touching event of my 'soon to be retired' life. They all came with gifts and cards and hugs. While the BBQ was scheduled from 4 to 6 PM, nobody left until at least 9:30!

The third (but not last) party was a wine and cheese get-together at our home with all of those who couldn't attend the campus bar event (which still had Covid restrictions). I invited colleagues, retirees, and off-campus friends who had faithfully presented guest lectures to my bioethics seminar classes over the years. Lo and behold, although I told the earlier partygoers 'Please don't bring anything,' we had so much extra wine, cheese, etc., that we threw a 'makeup' party a week later with some of the same crowd!

Finally, the piece de resistance was going to Maui on July 2 for a week that included our youngest daughter, her husband, and two very young grandchildren. We celebrated our first real 'travel' in almost a year and a half. My wife and I took Delta Airlines using award miles which were about to expire. Unfortunately, due to airline schedule changes, we wouldn't arrive in Maui for over two hours after the 'family' arrived. But as life will have it, all the Delta flights departing Denver that connected with any Maui flights were overbooked. After volunteering to take another flight, I asked the agent "you wouldn't put us on the United nonstop, would you?" She punched a few keys on the computer and said, "you'll be the last ones to board" - in case they still had empty seats - "and you'll get money" (not air travel vouchers). So, as a 'retirement gift' from Delta airlines my wife and I surprised the family on the United nonstop to Maui. Plus, we had \$1000 between us for giving up our Delta seats! We arrived in Maui, not knowing if the State of Hawaii knew that we were on a different flight than we reported with our Covid test and vaccination results, but everything went smoothly. Overall, this somewhat stressful travel day and the retirement celebrations were wonderful and something that I'll never forget.

A Materials Approach to Analytical Chemistry by Isiah M. Warner, Department of Chemistry, LSU, Baton Rouge

Ionic liquids, the focus of Professor Warner's current research, are potential alternatives for volatile organic solvents. As such, they are a "green" solution. Over the years, there have been many reviews related to ionic liquids. A recent review that may be of interest to the reader is "Ionic Liquids as a Sustainable Platform for Nanocellulose Processing from Bioresources: Overview and Current Status", in ACS Sustainable Chemistry & Engineering 2021, 9, 3, 1008-1034.



I was trained as a classical analytical chemist and my earlier research focused on spectroscopy and separation science. However, over the past couple of decades, I have pursued ionic liquid chemistry in combination with my analytical research focus and this has morphed into materials related research based on ionic liquids, i.e., organic salts with melting points less than 100°C. In this new area of research, my group has also extended the range of room temperature ionic liquid (RTIL) chemistry to include applications to similar solid phase materials, i.e., organic salts with melting points of solid phase ionic liquids (25°C to 100°C) up to melting points of 250°C. While the emphasis is on development of new materials, the focus of applications is still primarily analytical chemistry.

To contrast our newly developed materials from the well-defined definition of ILs, we have created the acronym, GUMBOS (Group of Uniform Materials Based on Organic Salts). These GUMBOS have the tunable properties associated with RTILs, including tunable solubility, melting point, viscosity, thermal stability, and functionality. Thus, when taken in aggregate, these properties allow production of solid phase materials with a wide range of useful applications. Applications of GUMBOS that we have recently explored include GUMBOS as cancer therapeutic agents, sensors, imaging agents, selective extraction, and for production of nanomaterials (nanoGUMBOS) for specific applications. Regarding nanoGUMBOS, we have demonstrated that our methodology represents an extremely useful approach to production of nanomaterials since our materials are designed and assembled for specific uses. In contrast, most nanomaterials are adapted for specific use through complex functionalizations.

To demonstrate the power of our nanoGUMBOS approach, I will use our cancer therapeutic work as an example. Consider the diagram in Figure 1 where rhodamine 6-G is converted from its normal chloride form into a GUMBOS form using the common IL counterion of Beti [bis(pentafluoroethylsulfonyl)imide]. In this aqueous reaction, chloride is replaced with Beti. Separation of the product and by-product is simple since R6G Beti is insoluble in water and LiCl is soluble in water. The insolubility of R6G Beti also allows production of nanoparticles in aqueous solution. It is well established that nanoparticles of R6G Cl are toxic to both normal breast cells (Hs578Bst) and cancer cells (Hs578T and MDA). Note in Figure 2A that R6G Cl is toxic to all cells with increasing concentration where the blue bars represent the normal cells (Hs578Bst) and the cancer cells represented by the red bars (Hs578T) and the green bars (MDA). Stabilities of cells are reflected on the Y-axis as cell viability. A cell viability of 100% indicates that a given material at a concentration reflected on the x-axis does not affect cells. In contrast, Figure 2B shows that when converted to the Beti form, the R6G is essentially only toxic to cancer cells and essentially non-toxic to normal cells. Also, note that greater toxicity occurs toward the more aggressive MDA cancer cells.

References can be provided upon request to Dr. Warner at seniorchemists@acs.org.

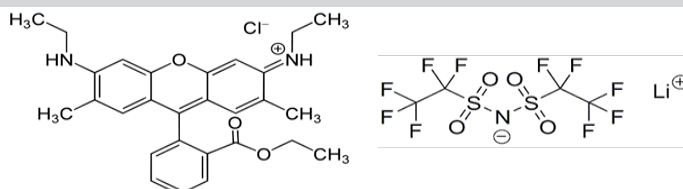


Figure 1. Reaction of R6G Cl with Li Beti in H₂O gives R6G Beti + LiCl

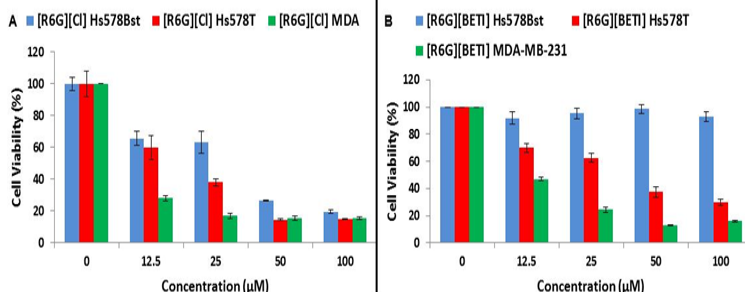
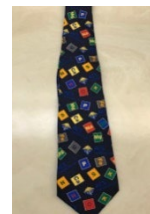


Figure 2. Effect of [R6G][Cl] and [R6G][BETI] on Normal (Hs578Bst), and Breast Cancer Cell Lines (Hs578T and MDA-MB-231)

Where's the Boron? By Lol Barton, Member of SCC

A couple of years ago I purchased an ACS Periodic Table tie and was shocked to note that boron, one of the most important elements, was missing. Boron is much less abundant in the earth's crust than most rare earths, and deposits of borate minerals are found in just a few places in the world.



Boron chemistry has been the focus of three Nobel Prizes: to W. N. Lipscomb in 1976, HC Brown in 1979, and A. Suzuki in 2010. I recently attended a celebration of the life of 2009 ACS Priestly Medalist Fred Hawthorne, a pioneer of polyhedral borane chemistry and Boron Neutron Capture Therapy (BNCT). So why has boron attracted such attention? Perhaps it is the remarkable range of chemistries that it manifests.

Boron was discovered in borax minerals and was used between 300 and 1700 AD in ceramic glazes. It was recognized as an element in the early 1800s by Humphrey Davy, Gay Lussac, and Jacques Thenard. In 1892 Henri Moissan first prepared a relatively pure amorphous form, and in 1909 Alfred Stock, who had worked as a student with Moissan, was appointed to direct the new Inorganic Chemistry Institute at Breslau. He began to study boron hydrides but was discouraged by Nobel Prize winner Sir William Ramsey, who said that these compounds were too difficult to isolate, characterize and handle. Stock continued his work, devising the vacuum line to isolate these very unstable compounds, and soon identified B₂H₆, B₄H₁₀ and B₁₀H₁₄.

The easiest of these to prepare and study was B₂H₆, whose composition was established but whose structure and bonding were still uncertain. Then in 1943 Oxford undergraduate H.C. Longuet-Higgins analyzed the IR spectra and confirmed the H-bridged structure. Although there were not enough valence electrons to describe the bonding, Lipscomb and others confirmed the nature of these "electron deficient" compounds. We now have structural data on

boron hydrides, polyhedral boranes, elemental boron, etc., that has led to a better understanding of cluster compounds that require electron delocalization to describe their bonding. This was my area of research, and we can now link the structure of boron clusters to the relatively new carbon clusters, the fullerenes.

In 1952 efforts to utilize boranes as fuels, due their lower masses and higher exothermicity in burning, led to programs by U.S. Navy Aeronautics' Project Zip and the U.S. Air Force's Project HEF (High Energy Fuels). These were finally abandoned but in 1971 triethylborane was used in Apollo 15 as a takeoff ignitor and an article in The Economist in May 2021 suggests that "Boron, a hitherto-neglected element, may have a military use" again. The 1950s work led to the discovery of the polyhedral boranes and carboranes by Hawthorne, Muetterties, and others and to stockpiles of boranes to be used by future researchers.

Examples of unique structural aspects of boron compounds have been observed by the work of Cowley, Power, Braunschweig, and others, as has the utility of boron and boranes in organic synthesis, carbon-carbon coupling reactions, catalytic C–H activation/borylation, and other applications. Of note is the ^{10}B isotope, with its large neutron capture cross section. This enables it to serve as a neutron shield in nuclear reactors and as an agent in BNCT, where slow neutrons are directed toward cancer cells enriched with ^{10}B and the α -particle emitted destroys the adjacent cancer cells.

Boron may be missing from my tie, but it is very much present in our lives. Major applications are domestic, in fiber glass insulation materials, and in wood treatment products for termites. And you'll find 20 Mule Team Borax nationwide, to boost your detergent and freshen your laundry!

Senior Chemists at SWRM and SERMACS

The SCC encourages all regional meetings to hold a senior event. The local section hosting the regional meeting can submit a proposal to the local section mini-grant



program to request for up to \$500 to support any type of special senior event at the regional meeting. Breakfast meetings are a popular choice, as many seniors are happy to meet early. In fall 2021, the Southwest Regional and Southeast Regional meetings (SWRM and SERMACS) were both held in-person and hosted excellent breakfast events.

SWRM was held in Austin, Texas from October 31- November 3. The breakfast event began at 7:00 a.m. to avoid overlap with the technical program. The event was well-attended and included senior chemists along with undergraduates. After a short presentation by SCC Chair Arlene Garrison, discussions at each table focused on careers. Through a series of questions posted by event organizer Barry Streusand, attendees described to tablemates ways that their careers had transitioned from original expectations. The groups also discussed how ACS had continued to be a career anchor through career changes. Students were excited to network with professionals and were particularly interested in the unexpected positive changes described by many of the seniors.

SERMACS was held in Birmingham, Alabama from November 10-13. Following the short presentation on national SCC activities by SCC Chair Arlene Garrison, Steve Burgess, the Managing Director of Avanti Polar Lipids, discussed lipid nanoparticle technology and its application to mRNA vaccines and other products in development. Steve gave a history of lipid technology that emphasized the huge difference in efficiency that newer lipids provide compared to the lipids from 30 years ago. Registration at SERMACS 2021 was 1,422.

It was exciting to participate in these two in-person events. The SWRM event was particularly exciting as it represents a new model of networking between senior chemists and undergraduates.



Free Resources to Help You Stick to a Popular New Year's Resolution

If you've been putting off the task of creating or updating your will, the new year is a good time to check this off your list. It's simpler than you might suspect, so make this one of your [2022 resolutions!](#) By visiting the [wills and living trusts](#) page on the [ACS legacy planning website](#), you can access a [free planning kit](#). You can also learn how you can include ACS in your estate plans in as little as one sentence. Making this type of donation to ACS helps ensure that we carry out [our mission](#) for years to come. For more information, please contact Mary Bet Dobson, CAP® at 202-872-4094 or PlannedGifts@acs.org.

We Need Help from Our Readers!

We hope that you have enjoyed this Senior Chemists Newsletter. So that we can keep on publishing this, we need help from you, our readers. Could you write a short (less than 500 words) article for this Newsletter? What could you write about? We publish a wide range of articles. Some suggestions are: a retirement pastime or hobby that you enjoy; a review of a book or movie that you enjoyed (especially with a science background, though this is not essential); what permanent changes (if any) that the pandemic has made to your life; volunteer work that you do; travel that you enjoyed, or plan to do soon; an article about chemistry or other science that you have done or that you would like to find out about (note—we are not asking for research level science here, but a more general approach); and many more! If you

have an idea, even if you are not sure, please send us an email at seniorchemists@acs.org.
Thanks!



Lynn Hartshorn and Adriane Ludwick, members of SCC and editors of the Newsletter

2022 Senior Chemists

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