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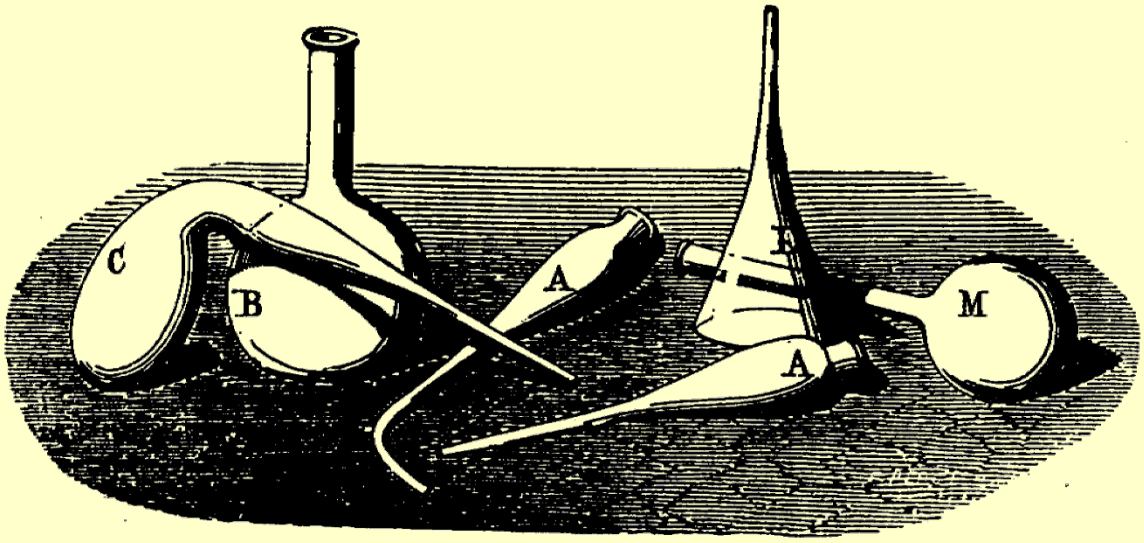
American Chemical Society

DIVISION OF THE HISTORY OF CHEMISTRY



NEWSLETTER, PROGRAM & ABSTRACTS

Spring 2026 ACS National Meeting
Atlanta, GA
March 22-26

Christine Hahn, Program Chair

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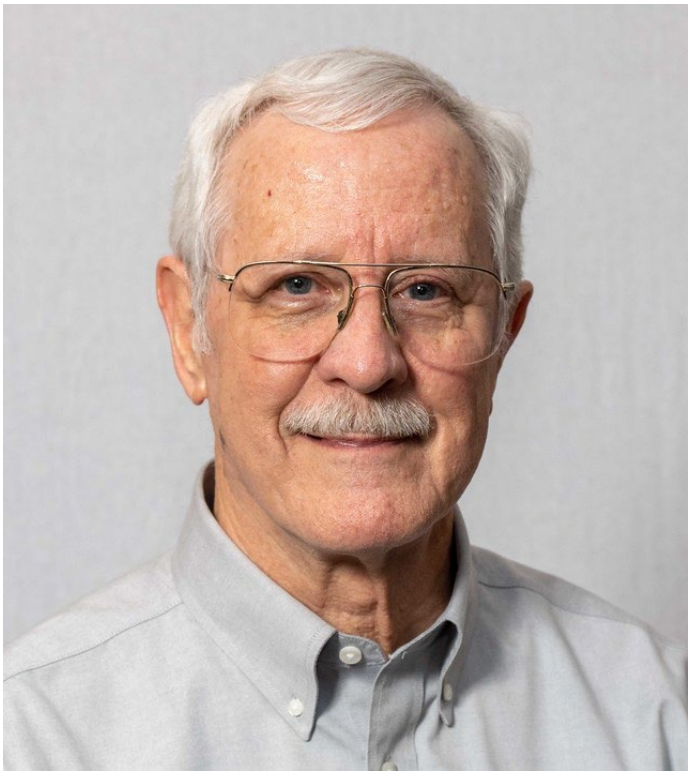
Mission Statement

The Division of the History of Chemistry (HIST) of the American Chemical Society (ACS) seeks to advance knowledge and appreciation of the history of the chemical sciences among chemists, educators, students, historians of science, and the broader public by

- Encouraging research and scholarship in history of the chemical sciences;
- Providing a welcoming environment for the discussion of history of chemistry in a variety of venues, particularly in symposia at national ACS meetings;
- Serving as a resource for chemical scientists in general, and members of the ACS in particular, who seek to
  understand the roots of their discipline, sub-discipline, or interdisciplinary subject;
- Recognizing major achievements from the past in the chemical sciences and the individuals who made those achievements;
- Publishing a scholarly journal in history of chemistry;
- Interacting with other organizations interested in the history of science; and
- Adding value to the ACS by helping it achieve its vision and missions.

Division Governance

Message from the HIST Division Chair



This is an exciting year as we celebrate the 150th anniversary of the American Chemical Society. Many program sessions in both the Spring and Fall meetings will participate in the celebration. Fortunately, we still have our normal pattern of meetings for the spring meeting in Atlanta. So, we will begin HIST sessions on Sunday, March 22, with Tutorial and General Papers. The full program and abstracts are at the end of this Newsletter.

With the reduced session footprint for fall meetings, HIST will not have a Sunday session. ACS, in their wisdom, cut HIST to four half-day sessions for fall meetings. Fortunately, this year HIST has collaborative sessions with other divisions and committees, giving HIST six half days of programming.

Nicholay Tsarevsky, HIST Chair-Elect, and Christine Hahn, HIST Program Chair, attended the January ACS Leadership Conference in Atlanta. It provided them with excellent contacts in planning for future meetings.

HIST congratulates Dr. Annette Lykknes, Department of Teacher Education, Norwegian University of Science and Technology, as the 2026 recipient of the Joseph P. Lambert History of

Chemistry Award. Her HIST Award Symposium and dinner will be held during the Fall ACS meeting in Chicago.

After each national meeting, the HIST Executive Committee selects two presentations from the meeting to be presented in the ChemHIST Talks series. Graeme Wyllie, Concordia College, Morehead, MN, presented "Glue and Adhesives: A Chemical History;" and Gregory Girolami, University of Illinois, Urbana-Champaign, presented "A Remarkable but Little-Known American Contribution to the Invention of the Periodic Table: The Work of Charles S. Peirce." Both talks are available at https://www.youtube.com/@histacs, as are previous ChemHIST Talks.

HIST is promoting HIST programming at ACS Regional Meetings. In 2025 HIST had symposia at Great Lakes Regional Meeting (GLRM), Southerneastern Regional Meeting (SERMACS) jointly with Southwest Regional Meeting (SWRM), and Western Regional Meeting (WRM). We are planning more. If you would like to organize a regional HIST symposium, please contact Seth Rasmussen, HIST Regional Meeting Coordinator, seth.rasmussen@ndsu.edu.

I would be remiss not to give special thanks to Vera Mainz, Secretary-Treasurer of HIST, Carmen Giunta, Editor of the Bulletin for the History of Chemistry, and Christine Hahn, HIST Program Chair, for the immense efforts they expend on behalf of HIST. HIST has many other dedicated volunteers too numerous to mention in this space. HIST is made up of volunteers. If you are so led, we welcome you to join us.

We hope to see you at the HIST and JOINT sessions. Visit us at the SciMix Division Row on Monday evening. HIST posters will also be available for interaction at SciMix.

DIVISION OF THE HISTORY OF CHEMISTRY
COUNCILORS' REPORT

American Chemical Society
ACS Fall 2025 Meeting
Washington, DC
August 2025

ACTIONS OF THE COUNCIL

Election Results: Elected Committees of Council (*elected)

- By electronic ballot, the Council elected Penny Beuning, Raychelle Burks, Jason Ritchie, and Frankie Wood-Black for three-year terms (2026 – 2028) on the Council Policy Committee (CPC). (Votes: *Penny Beuning 193, *Raychelle Burks 255, James Carver 174, Gregory Ferrence 165, Fran Kravitz 127, *Jason Ritchie 228, Stephanie Watson 161, *Frankie Wood-Black 207)
- By electronic ballot, the Council elected William Carroll, Jr., Carmen Gauthier, Thomas Lane, Louise Lawter, and Lori Stepan for three-year terms (2026 – 2028) on the Committee on Committees (ConC). Louise Lawter will begin serving immediately to fill a vacated seat. (Votes: *William Carroll, Jr. 296, Robert Cohen 6, Roger Egolf 105, *Carmen Gauthier 242 Timothy Hanks 133, *Thomas Lane 245, *Louise Lawter 237, Margaret Levenberg 157, *Lori Stepan 209, Keith Vitense 169)

- By electronic ballot, the Council elected Kelly Elkins, Jennifer Hollingsworth, Alison Hyslop, Gregory Tew, Kathryn Uhrich, Don Warner, and Peter Zarras for three-year terms (2026 – 2028) on the Committee on Nominations and Elections (N&E). After a tie vote and run-off election, Ellene Tratras Contis was elected to a two-year term (2026 – 2027) and Jingbo Louise Liu was elected to a one-year term (2026) to maintain rotation of terms as the committee expands its membership. (Votes: Mary Anderson 154, Maria Contel 139, *Kelly Elkins 218, *Jennifer Hollingsworth 227, *Alison Hyslop 191, Julie Jessop 171, *Jingbo Louise Liu 189, Marge Matthews 94, Lisa McElwee-White 151, Kristina Proctor 115, Elsa Reichmanis 186, *Gregory Tew 214, *Ellene Tratras Contis 189, Jackie Trischman 112, *Kathryn Uhrich 224, Lichang Wang 139, *Don Warner 210, *Peter Zarras 192)

Other Council Actions:

Highlights from Committee Reports and Key Actions

- On the recommendation of ConC, and with the concurrence of CPC, Council voted [Yes 343 (86.40%) / No 54 (13.60%)] to approve the *Petition to Establish the Committee on the Advancement of LGBTQ+ Chemists* (CALC), subject to the concurrence of the ACS Board of Directors. Members will be appointed to this committee with terms beginning in 2026.
- On the recommendation of ConC, and with the concurrence of CPC, Council voted [Yes 336 (83.58%) / No 66 (16.42%)] to approve the *Petition to Realign the Committee on Publications*, subject to the concurrence of the ACS Board of Directors. This petition dissolves the committee; the work formerly performed by this committee will be handled by a new Journals Advisory Board reporting to the Governing Board of Publishing.
- On the recommendation of ConC, and with the concurrence of CPC, Council voted [Yes 393 (97.52%) / No 10 (2.48%)] to approve the *Petition to Amend the Name and Duties of the Committee on Public Relations and Communications*, subject to the concurrence of the ACS Board of Directors. This petition changes the name of the Committee on Public Relations and Communications (CPRC) to the Committee on Communications (COMM).
- On the recommendation of ConC, and with the concurrence of CPC, Council voted [Yes 392 (97.76%) / No 9 (2.24%)] to approve the *Petition to Amend the Duties of the Committee on International Activities*, subject to the concurrence of the ACS Board of Directors. This petition aligns the duties of the Committee on International Activities (IAC) with those of other committees responsible for Unit functions (such as the Committee on Local Section Activities).
- On the recommendation of the Committee on Economic and Professional Affairs (CEPA), Council voted to approve the Professional Employment Guidelines, as amended [Yes 373 (93.02%) / No 28 (6.98%)], subject to the concurrence of the ACS Board of Directors. CEPA presented an amendment clarifying the language associated with intellectual property ownership.
- On the recommendation of the Committee on Local Section Activities (LSAC), Council voted [Yes 389 (97.49%) / No 10 (2.51%)] to approve the *Petition for Changes in Local Section Territory.* This petition adds territory not currently within the boundaries of a Local Section to adjacent Local Sections.

- On the recommendation of the Committee on International Activities (IAC), Council voted to approve the creation of a new International Chemical Sciences Chapter in Guatemala [Yes 383 (97.21%) / No 11 (2.79%)], subject to the concurrence of the ACS Board of Directors.

- The Committee on Constitution and Bylaws (C&B) reported the certification of nine-unit bylaws since the spring 2025 meeting. They include four Local Sections: Green Mountain, New York, Sacramento, and Southern Indiana; one Division: Rubber (RUBB); and four International Chemical Sciences Chapters: Ecuador, Ghana, Northeast China, and Shanghai.

Resolutions

The Council passed several resolutions:

- In memory of deceased Councilors;
- In sincere appreciation of the Chemical Society of Washington, host Local Section for the ACS Fall 2025 meeting, as well as the Divisional program chairs, symposium organizers, and ACS staff for the planning and execution of the meeting; and
- In appreciation of the outgoing Chair of Council, Dorothy J. Phillips.

Meeting Attendance

The ACS Fall 2025 meeting was held from August 17 – 21. As of August 19, there were 11,640 registrations (10,602 in-person and 1,038 online). The ACS Spring 2026 meeting will be held in Atlanta, GA from March 22 – 26, 2026.

Actions of the Board of Directors - Executive Session

The ACS Board of Directors met in Executive Session on August 15-16, 2025, at the Walter E. Washington Convention Center in Washington, DC.

Board Actions

- Upon recommendation of the Society Committee on Publications, the Board voted to approve the reappointment of several ACS journal editors. The reappointments will be announced after the individuals have been notified and appropriate arrangements for their continued service have been made.
- Upon recommendation of the Board Committee on Professional and Member Relations, the Board voted to approve a nominee for the 2026 Othmer Gold Medal.
- Upon recommendation of the Committee on Professional and Member Relations, the Board voted to approve that the ACS nominees for the Othmer Gold Medal and Perkin Medal must be an ACS member in good standing beginning with the 2027 cycle.
- Upon recommendation of the Governing Board for Publishing (GBP), the Board voted to approve a one-time extension of all current Governing Board member terms, to end on December 31 of their respective end term year. This will allow GBP member terms to transition to a Jan-Dec cycle in alignment with Society Committees.
- Upon recommendation of the Committee on Budget and Finance, the Board voted to approve that the advance member registration fee for 2026 ACS Spring and Fall meetings remain at $549 for in-person and $149 for virtual and approved associated pricing for all other registration fees.

- Upon recommendation of the Committee on Budget and Finance, the Board voted to approve the allotment funding request for the International Chemical Sciences Chapters.
- The Board also acted on confidential matters related to salary, merit, and inflation assumptions for the 2026 budget planning process.

Board Discussions

- The Board engaged in a strategic discussion on the strengths and opportunities of the ACS structure for component groups.
- Board Chair Wayne Jones facilitated a discussion about themes emerging from feedback Board members have received from the ACS community.

Reports

- The Chief Executive Officer (CEO) Albert Horvath and his staff provided organizational updates on current affairs and new initiatives. He shared the strong performance of ACS in 2025, and growth across many areas. He highlighted:

    - ✧ The Fall 2025 meeting announcement that one hundred $25,000 grants will be disbursed by year end under the one-time Graduate Student Success grant initiative as approved by the Board in June
    - ✧ ACS solutions-driven programs for industry partners
    - ✧ Collaborations with federal agencies, national labs, NGOs, foundations, and local government
    - ✧ ACS advocacy efforts, including letters to Congress, direct lobbying, interactions with federal agencies, legislative meetings and briefings, and ACS community activities
    - ✧ Executive Leadership Team (ELT) succession planning updates
    - ✧ Fall 2025 program updates, including registration exceeding the budgeted 11,000 attendees
    - ✧ ACS rebranding updates
    - ✧ Ongoing planning efforts for the ACS 150th Anniversary Celebration
    - ✧ Evolution of the ACS undergraduate scholarship portfolio, and
    - ✧ Sustainability efforts at ACS's Washington and Columbus campuses, including that the Washington, DC office buildings are LEED platinum certified.

- ACS Treasurer and Chief Financial Officer (CFO) Emily Kunchala reported on the strong financial healthof the organization. The report highlighted ongoing work in risk assessment, scenario planning, and cost optimization and productivity. For Q2 2025, the ACS financial guidelines have been met.
- Members of the presidential succession provided reports on their 2025 initiatives and activities.
- Committee Chairs Carolyn Ribes (Public Affairs and Public Relations), Katherine Lee (Professional and Member Relations), and Committee member Kimberly Agnew-Heard

(Strategic Planning) provided updates on their respective committee activities, ongoing efforts to review their processes, and future plans.

- Chair of the Governing Board for Publishing, Al Horvath, along with ACS Presidents Manny Guzman (CAS) and Jim Milne (Publications), shared key priorities aimed at driving growth and enabling sustained success. They also outlined strategic opportunities to strengthen ACS's information science and publishing portfolios.
- Chair of the Committee on Budget and Finance Natalie LaFranzo reported on efforts to refine the committee's scope and to differentiate it from a proposed Board Committee on Finance.
- Chair of the Committee on Corporation Associates Michael Abrams updated the Board on the committee's work on safety culture and strengthening stakeholder partnerships, the ACS Industry Roundtable, Heroes of Chemistry, and their upcoming strategic planning retreat.
- Written reports were reviewed from the General Counsel, Human Resources, and the Committees on Chemical Technical Professionals, Chemists with Disabilities, Chemistry and Public Affairs, Community Activities, Education, Environment and Sustainability, Intellectual Property, International Activities, Public Relations and Communications, Publications, Professional Training, Science, Women Chemists, and Younger Chemists

HIST COUNCILOR ACTIVITIES

Roger Egolf continues as a member of the Divisional Activities Committee (DAC). DAC has recently modified its subcommittee structure, and he now serves on the Program Enhancement Subcommittee. Roger Egolf also serves the division as its representative to the Affiliates Council of the Science History Institute in Philadelphia.

Submitted by Roger Egolf

News and Announcements

Awards

2026 Joseph B. Lambert HIST Award

The winner of the Joseph B. Lambert HIST Award for Outstanding Achievement in the History of Chemistry for 2026 is Annette Lykknes for her outstanding contributions to the advancement of the study and communication of the history of chemistry. In her nominating letter, Brigitte van Tiggelen lauded Professor Lykknes: "She acts as a figurehead for our discipline, embodying the values and ideals that make our field vibrant, creative, beneficial and inclusive."

Professor Lykknes is a true daughter of Norway, but she has become a mother of the European community of the history of chemistry. She was educated at the Norwegian University of Science and Technology (NTNU). She received a Masters degree in Chemical Education and taught mathematics and science for two years. While her interest in education remains a driving force for her, she decided to pursue a Ph.D. in the history of chemistry and obtained this in 2005 at NTNU under Prof. Lise Kvittingen, with thesis titled "Ellen Gleditsch: Professor, Radiochemist, and Mentor." Now she combines both pillars of her profession as Professor of Teacher Education at NTNU.

One of the secrets of her success is her commitment to an interdisciplinary approach to her scholarship. In her own words: "Over the course of my academic career, I have collaborated extensively with chemists and other natural scientists as well as with educators within these fields, with historians, philosophers and sociologists of science, with pedagogy scholars and with language experts and researchers of the Norwegian language, and even with a political scientist. The result of this is a foot in different fields and knowledge of quite distinct research methods and theoretical perspectives."

The Award committee noted: "Professor Lykknes has contributed to an amazing array of

research topical areas including: history of women scientists, studies of the collaborations of couples in science, history of the periodic table, discovery of the chemical elements, history of chemical education, how twentieth-century chemical engineers shaped the relationships between the academy and industries, and the application of the history of science to teach science." Alan Rocke especially noted her treatment of the work of Marie Curie as "revealing the complex nature of scientific discovery itself."

Annette Lykknes is at the center of the worldwide community of historians of chemistry. She is now the Editor-in-Chief of the flagship journal *Ambix.* She is currently the Chair of the Division of the History of Chemistry of the European Chemical Society. While her publication record is sterling, and her research is groundbreaking, her greatest achievements have been as a leader.

HIST is thrilled to honor Professor Annette Lykknes with the 2026 Joseph B. Lambert Award for Outstanding Achievement in the History of Chemistry.

Submitted by Vera Mainz

Brock Award for 2025 (SHAC)

The Society for the History of Alchemy and Chemistry is pleased to announce the winner of the first Brock Award. The Brock Award honors Professor William 'Bill' Hodson Brock (1936-2025), one of the leading historians of chemistry of the last fifty years and is for outstanding contributions in the fields of the history of alchemy and chemistry.

The Brock Award for 2025 is given to Bernadette Bensaude-Vincent for her lifetime of outstanding work in the history of chemistry. For about four decades she has produced original and thought-provoking research in the history and philosophy of chemical and materials science, significantly shaping the historiography of chemistry. Her work stands as an inspiring example of how innovative approaches in these fields can not only illuminate significant historical and philosophical ideas in the chemical sciences, but they can also meaningfully contribute to addressing contemporary societal challenges. Bensaude-Vincent has played a key role in establishing collaboration and building scholarly communities across Europe, and in nurturing new generations of scholars in history of chemistry, both formally and informally.

Bernadette Bensaude-Vincent, a philosopher by training holds a doctorate from the University of Paris 1 Panthéon-Sorbonne. A professor at University of Paris Nanterre from 1989 to 2010, she moved to the University of Paris 1 Panthéon-Sorbonne. She is now professor emerita and a member of the French Academy of Technologies. She continues to publish innovative work and engage with both the scholarly community and public audiences.

The Brock Award will be presented to Bernadette Bensaude-Vincent at a special SHAC meeting to honor Bill Brock's memory in spring 2026.

Submitted by Vera Mainz

Vera Mainz Announces Retirement as *Secretary/Treasurer of HIST*

Vera is using the Spring 2026 Newsletter to announce her retirement from her position as Secretary/Treasurer of the HIST Division. She is grateful for the many years you have allowed her to serve in this capacity. The HIST nominating committee chair (Arthur Greenberg) invites anyone interested to submit a nomination to run for either the Secretary position or the Treasurer position – yes, we would like to split them into separate positions for the upcoming election this fall and then evaluate whether they should remain separate positions or be combined for the 2028 election. The nominating committee is encouraging those interested in these positions to attend the HIST Executive Committee meetings at the Spring and Fall meetings. The time and place for the Spring 2026 Executive Committee meeting can be found in the program.

Vera joined the HIST Division in 1994, was elected to the position of Secretary/Treasurer in 1995 and has served as Secretary/Treasurer since that time. Over the course of these years, she has expanded the responsibility of the Secretary/Treasurer to include being the HIST Division webmaster. Vera hopes to continue as webmaster until she can do a major update to the site: she is committed to expanding the value and increasing the timeliness of the Division's website, including making all issues of the *Bulletin for the History of Chemistry* available to HIST members via the website.

Her interest in the HIST Division was kindled when she presented her work on the chemical genealogy of the University of Illinois Urbana-Champaign (UI) Chemistry Department at a HIST symposium on chemical genealogies in 1994. She has continued her work in this area, posting her information to a website at https://web-genealogy.scs.illinois.edu/ , and plans to update this project when her schedule allows. Vera's interest in the history of chemistry led her and her husband Gregory Girolami to co-curate two exhibits at the Univ. of Illinois' Rare Book Room:

1) From Alchemy to Chemistry: Five

Hundred Years of Rare and Interesting Books, https://rbx-exhibit2000.scs.illinois.edu/ and 2) Crystallography – Defining the Shape of Our Modern World, found online at https://xray-exhibit.scs.illinois.edu/index.php .

In her life before HIST, Vera was the Director of the NMR Lab in the School of Chemical Sciences at the University of Illinois Urbana-Champaign (now retired) from 1985-2010. She also served as the Interim Director, Microanalysis Laboratory, School of Chemical Sciences from 2004-2010, and the Interim Director, Mass Spectrometry Laboratory, School of Chemical Sciences from 2003-2009.

Vera received a B.S. in Chemistry and Mathematics at Kansas Newman College (1976), and a Ph.D. in Inorganic Chemistry at the University of California Berkeley (1981) with Richard A. Andersen (she was Dick's first Ph.D. student). She spent 1-1/2 years working at Rohm and Haas in Springhouse, PA, and then accepted a postdoctoral position at the University of Illinois Urbana-Champaign (1983-1985) with Walter Klemperer before becoming Director of the NMR Lab. She has been a member of the ACS since co-founding a student chapter of the ACS on her college campus in 1975. Vera was a member of the ACS Fellows Class of 2012, which honored her contributions to the ACS (HIST and local section service) and the many students she has helped while working in the NMR Lab.

Vera does needlepoint and a couple of her current favorite pieces are *Pyramids at the Oasis* (designed by Wendy Moore) and *Ambrosia Honey* (designed by Karen Steklasa Matze). She plans to continue working through her stash!

Submitted by Vera Mainz

Obituary

Remembering George K. Schweitzer
Dec. 5, 1924 – Sept. 20, 2024

It is with great sadness that the Department of Chemistry of the University of Tennessee announces the passing of Professor George K. Schweitzer. The longest serving faculty member in the history of the University of Tennessee, Schweitzer will be remembered for his pioneering work in inorganic chemistry and radiochemistry, and by the thousands of students he mentored and taught.

Born in Poplar Bluff, Missouri, Schweitzer earned a BA in chemistry from Central College in 1945. He went on to graduate studies at the University of Illinois, where he was granted a PhD in 1948. Schweitzer moved to Tennessee to join the chemistry faculty in 1948 and in 2023 celebrated his 75th year of teaching at UT.

During World War II, Schweitzer investigated fissionable nuclides, and his dissertation work has been described as an extension of the Manhattan Project. He said he came to UT because of its proximity to the Oak Ridge National Laboratory and its relevance to his research. Upon his arrival, Schweitzer was charged with establishing the PhD programs for Inorganic and Radiochemistry.

Schweitzer described his first day of teaching as "a hoot," noting that, at 23 years old, he was convinced most of the students in his class were older than him. He enjoyed telling the story of that day, when he joined class and sat down to

listen to the students discussing the new professor and what they expected him to be like. When the bell sounded for his class to begin, Schweitzer stood and introduced himself to his students, who all laughed.

At a time when the university was just beginning to develop its identity, Schweitzer was already exemplifying what it means to be a Volunteer. He served as radiation safety officer for the State of Tennessee during the Cold War. His work contributed heavily to the development of photoelectron scanning instruments, technology that made some modern medical scanning equipment possible. He was fond of the saying, "I have come to serve, not to be served."

In 1960, Schweitzer was named the inaugural Macebearer, an award presented to a faculty member who has exhibited longstanding commitment to the university and the community. His love of investigation and the pursuit of knowledge led him to earn an MA in philosophy from Columbia University, followed by a PhD in philosophy from New York University. He was later awarded a ScD for his work in the history of science.

Schweitzer's colleagues remember him fondly, often recalling his devotion to continued learning. Fellow professor and inorganic chemist Ben Xue met Schweitzer for the first time soon after joining the university in 1992.

"I was deeply impressed by his knowledge of the world, broad interests, and sharp mind," said Xue. "George was a unique scientist and colleague, and I will miss him."

During Professor Schweitzer's time at the university, he served under 13 UT presidents and seven department heads. He saw the creation of the UT College of Veterinary Medicine, the UT College of Nursing, and the development of the UT System itself. He was with the department when it moved into the then newly built Buehler Hall, after spending years working with its namesake, Calvin Buehler. He published more than 150 academic papers and authored 17 books on chemistry and local and family history, including a history of the Department of Chemistry at UT. In 1970 he was named an Alumni Distinguished Professor.

Though he cited his research as his greatest pride point, Schweitzer's teaching legacy cannot be ignored. Over the years he mentored more than 140 graduate students, ushering them toward PhD and MS degrees. He taught classes in the chemistry, philosophy, history, and nuclear engineering departments, and had the unique experience of teaching the grandchildren of students he had taught before.

"In my four years at the University of Tennessee, I have met with many of our alumni," said Viktor Nemykin, current head of the Department of Chemistry. "Everyone remembered George and wanted to talk to him. His more than 75 years of service to the department and university are truly unmatched." When asked if he planned to retire, Schweitzer once responded that he had considered it at one time, but he had since recovered. He continued to teach into the current academic year and had planned to teach in the spring. With a career as expansive as Professor Schweitzer's, it is impossible to recount every important contribution made to his discipline, the university, and beyond. At 99 years old, he experienced and contributed to the making of the world as it exists today, teaching and conducting research through most of it. The university and department are unlikely to see his legacy matched, and he will be sorely missed.

From: https://chem.utk.edu/remembering-george-k-schweitzer/

Submitted by Christine Hahn/ Deborha Penchoff

HIST News

Call for Papers: Frank Wigglesworth Clarke: ACS President and Geochemist – A HIST/GEOC Symposium for Fall 2026

One of the greatest American geochemists was Frank Wigglesworth Clarke (1847-1931). He was also an important figure in the founding and development of the ACS. The Fall ACS meeting in Chicago, August 23-27, 2026, will include a joint symposium between HIST and GEOC to celebrate F.W. Clarke. Five papers have already been proposed: 1) F.W. Clarke: Father of American Geochemistry and a Founder of the ACS, 2) F.W. Clarke: Chief Chemist at the US Geological Service, 3) F.W. Clarke: The Smithsonian Institution and the Constants of Nature, 4) F.W. Clarke and Atomic Weights, and 5) F.W. Clarke: President of the ACS 1901. Other topics might include F.W. Clarke and The Data of Geochemistry, F.W. Clarke and the Cosmos Club, and F.W. Clarke and the Golden Jubilee of the ACS. Submissions are warmly requested from all HIST and GEOC members. Abstract submission closes on March 30, 2026.

Submitted by Gary Patterson

SHAC Spring meeting
Remembering Bill Brock: Chemistry and Culture

The SHAC Spring meeting will be held on 10 April 2026 arranged with and at the Maison Française d'Oxford, 2-10 Norham Road, Oxford, OX2 6SE.

This meeting is being held to commemorate the life, work and legacy of William Hodgson Brock (1936-2025), who spent his entire career at the University of Leicester. Sometime chair of the Society for the History of Alchemy and Chemistry (SHAC) and editor of its journal *Ambix*, Brock was one of the leading historians of chemistry in his time, writing the Fontana/Norton *History of Chemistry*, as well as biographies of William Crookes, Justus von Liebig and Henry Edward Armstrong. (An extended obituary can be found at https://www.tandfonline.com/doi/full/10.1080/00026980.2025.2489298). The papers to be presented at this meeting take their starting point from Brock's work and historical interests.

Program schedule:

9.30 Registration and Coffee
9.55 Welcome: **Stéphane Van Damme**, MFO, and **Frank James**, SHAC
10.00 First Brock Award Lecture: **Bernadette Bensaude-Vincent**, Université Paris 1-Panthéon-Sorbonne, *The history of chemistry through the lens of materials. A very short introduction*
10.45 Session 1: **Alan Rocke**, Case Western Reserve University: *The Best of Frenemies: Liebig and Dumas (A Tribute to William H. Brock)*
11.15 Coffee
11.45 Session 2: **Eira H. Betthell** (Booth), University of Essex: *From Laboratory to Library: Bill Brock's Prolific Writing as Chemical Practice*; **Matthew Daniel Eddy**, Durham University: *A Context for Colonial Chemistry: Thinking with Bill Brock about the Biomedical Relevance of Dr J. A. B. Horton's Experiments on the Soil of Sierra Leone*; **Georgiana D. Hedesan**, University of Oxford: *The Foundation of the Society for the Study of Alchemy and Early Chemistry in 1935: Between Historical Research and the Transmutational Paradigm*; **Michael Jewess**, Independent Scholar: *Working with Bill: Robert Fergus Hunter (1904-1963)*
13.15 Lunch: Not provided but there are some good pubs nearby
14.30 Tribute from the Brock family: **Susannah Ahluwalia, Gareth Brock and Benjamin Brock**
14:50 Session 3: **Julia Carr-Trebelhorn**, University of Cincinnati: *Burning Diamonds: Lavoisier, Guettard, and the 1771 Develop-ment of Reduction Firing and Hard-Paste Porcelain in Paris*; **John R.R. Christie**, University of Oxford: *Commerce, Manufacture and Practical Chemistry in18th-Century Britain*; **Robert Bud**, Science Museum/UCL: *Poison gas and Art Deco: analysing early 20th century ambivalence about chemistry*
16.00 Coffee

16.20 Session 4: **Robin Mackie**, Open University and **Gerrylynn K Roberts**, Independent Scholar: *Counting the British Chemical Community, 1881-1971: Opening the 'Black Box'*; **Annette Lykknes**, Norwegian University of Science and Technology: *Crookes'* Vis Generatrix *in teaching and learning*
17.15 Closing remarks
17.20 End of meeting

There is no charge for this meeting, but please let Frank James, frank.james@ucl.ac.uk, know if you wish to attend.

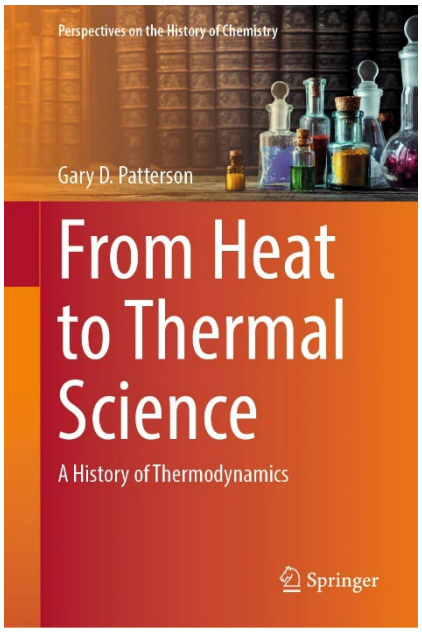
Submitted by Vera Mainz

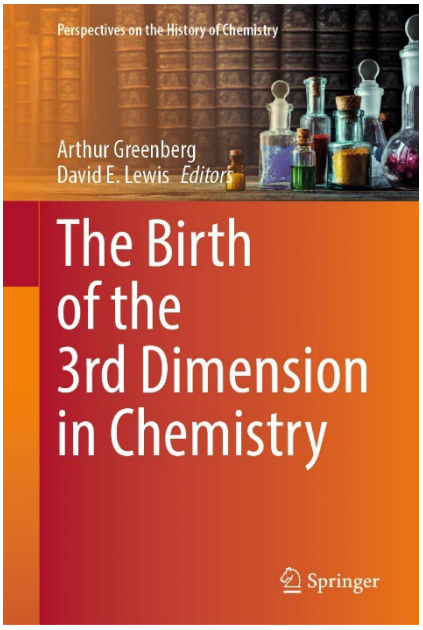
New Volumes in the Perspectives on the History of Chemistry Book *Series*

Over the past several months, three new volumes have been published as part of Springer's *Perspectives on the History of Chemistry* Book Series. This has included *From Heat to Thermal Science. A History of Thermodynamics* (ISBN 978-3-031-99675-7) by Gary D. Patterson, *The Birth of the 3rd Dimension in Chemistry* (ISBN 978-3-031-97742-8) edited by Arthur Greenberg and David E. Lewis, and *How Glass Changed the World. Revised and Expanded* (ISBN 978-3-032-11857-8) by Seth C. Rasmussen.

Patterson's *From Heat to Thermal Science* explores the human understanding of heat, from early cultural perceptions to the scientific developments that shaped thermal science. Beginning with historical musings on heat, it traces the evolution of scientific thought from 16th century Italy to the quantum understanding of heat in the 20th century. The book examines how humans have perceived, measured, and produced heat, leading to a unified concept that has remained constant: "heat flows from a hot body to a cold body."

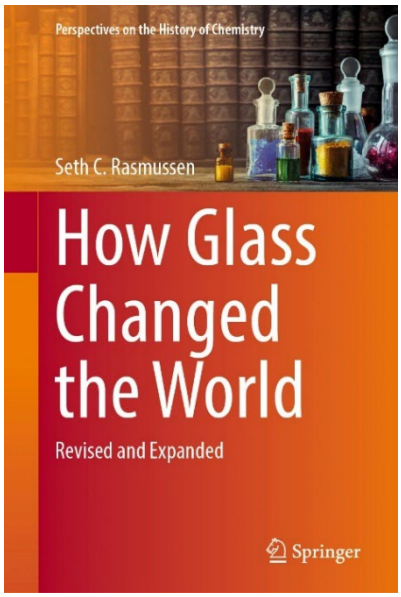
The second volume, *The Birth of the 3rd Dimension in Chemistry*, is based on presentations made at the 2024 Symposium on the sesquicentennial of the independent proposals of the tetrahedral carbon by van 't Hoff and Le Bel





(1874), presented to the Division of the History of Chemistry of the American Chemical Society in March 2024. Edited by Greenberg and Lewis, the book features chapters dedicated to the life and work of Le Bel and the history of stereochemistry. The expansion of the van 't Hoff-Le Bel theory to elements beyond carbon, such as metals and chiral centers based on sulfur and selenium, is also explored. Additionally, the book discusses the visualization of organic molecules in three dimensions through molecular models, the limits of bonding and

stereochemistry in organic molecules, and the role of crystallography in stereochemistry development. Specific topics include hydrocarbons with severely distorted geometry, the quantum chemical revolution, the effects of substituents on tetrahedral carbons, the Walden inversion, and the Fischer elucidation of monosaccharide configurations. Of particular note, a chapter by Kahr and Rossi includes the only English translation of the undergraduate thesis of the world-renowned author Primo Levi, a Jewish, Italian-born chemist and Holocaust survivor, and provides historical and scientific context.



Finally, Rasmussen's *How Glass Changed the World* explores the history and chemistry of glass technology, tracing its origins from antiquity through its evolution into a vital material for science and society. Beginning with early synthetic silica glass production around 2500 BCE, it examines its development up through the Roman period, the transformative innovations of Venetian and Murano glassmakers, and the eventual rise of Bohemian glass. The text highlights glass's crucial role in the development of mirrors, lenses, eyeglasses, and chemical apparatus, all of which enabled critical scientific advancements. Covering glass's refinement up to the 18th century, this book dives into its profound impact on both chemical practices and broader societal advancements. This volume is an updated and extended version of the author's earlier Springer publication, *How Glass Changed the World: The History and Chemistry of Glass from Antiquity to the 13th Century* (2012), expanding the historical scope and deepening the analysis of glass's transformative role in science and society.

Submitted by Seth C. Rasmussen

Other announcements of interest to HIST members

SHAC at SHI – 16-17 October 2025

A meeting on the history of alchemy and chemistry, jointly organized by SHAC and SHI, was held at SHI in Philadelphia. For further details please visit: https://www.sciencehistory.org/visit/events/fall-2025-meeting-of-the-society-for-the-history-of-alchemy-and-chemistry/

Special Issue of Ambix – August and November 2025 Double Issue

A special issue of Ambix was published as a special double issue covering August and November 2025. It explores the nature and agency of fire and its role in human interaction with the material world by focusing on premodern heat technologies. It takes a wide comparative view of different practices, including metalwork and distillation, with an emphasis on early modern Europe and pre-Hispanic South America. View special issue under:https://www.tandfonline.com/journals/yamb20. Online access to Ambix is included in SHAC membership.

Submitted by Nicolay Tsarevsky

International Congress on the Bicentenary of Stanislao Cannizzaro's Birth

The Società Chimica Italiana and the University of Palermo are proud to host an international congress on the bicentenary of Stanislao Cannizzaro's birth. The event will bring together historians of science, chemists, philosophers, and scholars from across the world to reflect on Cannizzaro's work and his time.

The congress will be held in several historic venues in Palermo from April 14 to 17, 2026. Registration deadline is March 1, 2026. https://cannizzaro2026.unipa.it/.

Sybmitted by Gisela Boeck

Call for Abstracts – 29th Conference of the International Society for the Philosophy of Chemistry, 29-31 July 2026

The organizing committee is pleased to announce that the 29th annual conference of the International Society for the Philosophy of Chemistry (ISPC 2026) will be held **July 29-31 2026**, at the University of California Los Angeles (UCLA) under the auspices of the UCLA Department of Chemistry & Biochemistry and the International Society for the Philosophy of Chemistry (ISPC): https://philosophyofchemistry.com/ .

Invited proposals will address a diverse range of contemporary questions in the epistemology and metaphysics of chemistry, in addition to historical and educational aspects of chemistry. Location: Royce Hall, at UCLA.

Confirmed keynote speakers: Prof. Pieter Thyssen, Liège University, Belgium and Prof. Guillermo Restrepo, Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany,

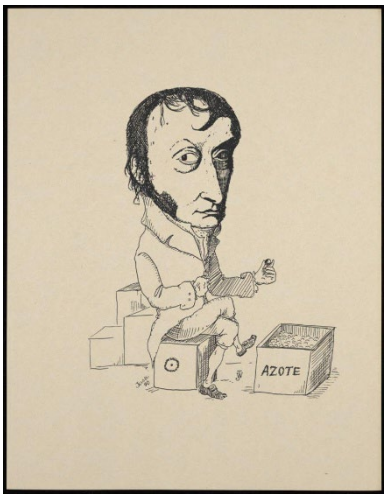
Submissions on any topic in the philosophy of chemistry, including historical and educational presentations of fundamental aspects of chemistry. Deadline for abstract submission: 31st March 2026. Notification of acceptance will be sent 20th April 2026. Please direct any inquiries to Dr. Eric Scerri, UCLA, scerri@g.ucla.edu.

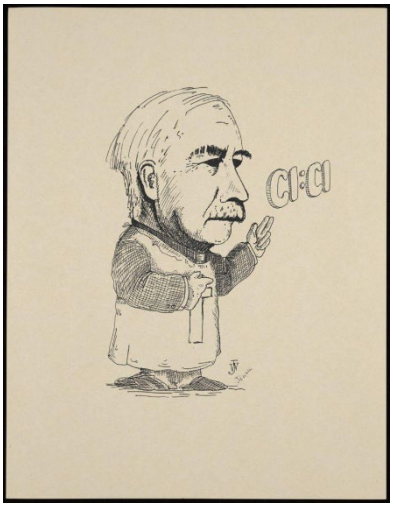
Updates on the Oesper Collections

The Oesper Collections recently launched a new digital collection on JSTOR of Bill Jensen's original hand drawn scientific caricatures. You are encouraged to use them in your lectures and papers with attribution. Lower resolution copies are available for immediate download and high-resolution copies can be provided upon request. Find the caricatures and our digital apparatus collections on JSTOR:

https://www.jstor.org/site/uc/oesper/

Please contact Mark Chalmers with any questions: mark.chalmers@uc.edu



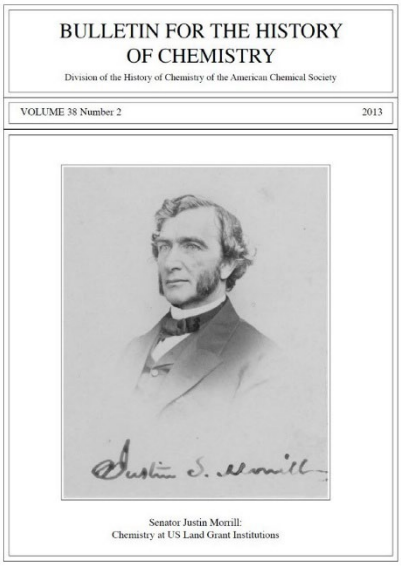


BULLETIN FOR THE HISTORY OF CHEMISTRY

A publication of the Division of the History of Chemistry of the American Chemical Society

Available online: http://acshist.scs.illinois.edu/bulletin/index.php

PAPER SUBMISSIONS: Articles of 4-20 pages, double-spaced (excluding references) should be submitted electronically by email attachment to the Editor, Carmen Giunta, at giunta@lemoyne.edu.
The title of the article should be of reasonable length (up to 15 words); a subtitle may be included if appropriate. Authors should strive to make the title descriptive of the specific scope and content of the paper. Preferred file formats for submissions are .doc, .docx, and .rtf.
Full instructions for authors can be found at http://acshist.scs.illinois.edu/info/bull-info.php



All matters relating to manuscripts, etc. should be sent to:

Prof. Carmen Giunta
Editor, *Bulletin for the History of Chemistry*
PO Box 522
Manlius, NY 13104
Email: giunta@lemoyne.edu

HIST Programming

Message from the HIST Program Chair

First, my congratulations to Annette Lykknes, the winner of the Joseph B. Lambert HIST Award 2026! As Joe Jeffers mentioned, we celebrate the 150th Anniversary of ACS this year. Therefore, it is a great opportunity for HIST to support a series of symposia of the various ACS divisions to look back on their history during the Spring and Fall meetings.

The Spring 2026 Meeting consists of a large variety of HIST program items including not only the traditional HIST oral and poster sessions but also digital and joint sessions. Three of the four joint symposia are dedicated to "ACS150".

The program starts on Sunday morning (10 am) with the digital session with four presenters. On Sunday afternoon a joint symposium with YCC is scheduled, "150 Years of Building Foundations in Chemistry". Also, on Sunday afternoon the HIST sponsored symposium "In Honor of Prof. George Schweitzer" organized by NUCL will take place. This symposium was rescheduled from last Fall to this Spring meeting. Sunday evening the HIST Executive Committee will meet.

Our program on Monday is most diverse. In the morning, we hold our traditional Tutorial and General paper session. It includes the Award Address of Stephen Cohen for his James T. Grady-James H. Stack Award for Interpreting Chemistry for the Public sponsored by ACS. Congratulations to Stephen Cohen! For the full day on Monday the joint symposium "Science Communication: Past, Present, and Future" with COMM is scheduled with poster session at noon. It is organized by H.N. Cheng and includes an introduction by ACS President-Elect Dr. Christina Bodurow. This symposium is co-sponsored by the Presidential Events. Another joint symposium will take place on Monday afternoon with the title "Historical Perspectives on Biotechnology Breakthrough" organized by BIOT. In addition, there is the HIST co-sponsored symposium "Chemistry and Film" organized by YCC. Monday evening HIST is listed with 7 poster presentations for SciMix. As usual HIST will be present at Division Row.

Tuesday is filled with the joint symposium with CHED and YCC: "Teaching Chemistry Using History, Art, and Pop Culture" organized by Sharon Hamilton, and Sara Hubbard. This symposium consists of short, educational, and entertaining talks with panel discussion at the end of each session.

On Wednesday the full-day symposium "History of Nomenclature, Terminology, and Symbols" will be held with nominal co-sponsorship by NST and organized by Seth Rasmussen.

For the Fall 2026 meeting in Chicago, there will be another series of "ACS150" themed joint symposia on the program (1) "Past ACS Presidents: Frank Wigglesworth Clarke (1847-1931)." (HIST-GEOC), (2) "Feeding the World" (HIST-AGRO-AGFD), (3) "Historical Contributions to Chemistry for All" (HIST-CHED & ACS Chicago Local Section), (4) "Tracing the Bonds: 150

Years of Organic Chemistry and Its Legacy" (HIST-DOC-MEDI), and (5) "Chemistry Behind Art & Art Conservation" (HIST-PHYS-YCC). For the last symposium we received a "ACS150" grant to support our speakers.

Looking further in the future, we plan for Spring 2027 a major symposium on "Archeological Chemistry" organized by Nicholas Zumbulyadis.

Now I welcome you to our Spring 2026 Meeting at Atlanta, and wish you all a very pleasant stay, enjoyable program, and safe travels!

Christine Hahn, HIST Program Chair

HIST SYMPOSIA, Spring 2026 ACS Meeting (March 22-26, 2026)

Schedules and abstracts are listed at the end of this Newsletter.

UPCOMING MEETINGS AND HIST DEADLINES

Subject to change. Check the HIST website (http://www.scs.illinois.edu/~mainzv/HIST/) for updates.

Fall 2026 ACS National Meeting (Chicago, IL, August 23-27)

HIST Award Symposium, Organizers: Brigitte Van Tiggelen, vantiggelen@memosciences.be, Science History Institute, Philadelphia, (PA); Carmen Giunta, PO Box 522, Manlius, NY 13104, Phone: 315-632-4992, Email: giunta@lemoyne.edu

Tutorial and General Papers (Seeking contributions) Organizer: Christine Hahn, Department of Chemistry, Texas A&M University-Kingsville, Kingsville, TX 78363, Phone: 361-593-3592, Email: Christine.Hahn@tamuk.edu

Past ACS Presidents: Frank Wigglesworth Clarke (1847-1931) (Invited and contributed) **Joint Symposium HIST-GEOC**. Organizers: Gary Patterson, Vancouver, WA 98661, Phone: 412-480-0656, Email: gp9a@andrew.cmu.edu, Carmen Giunta, PO Box 522, Manlius, NY 13104, Phone: 315-632-4992, Email: giunta@lemoyne.edu, and Vitalii Starchenko, Chemical Science Division, Oak Ridge National Laboratory, Phone: 865-574-1252, Email: starchenkov@ornl.gov

Feeding the World Through Chemistry. (Invited) **Joint Symposium HIST-AGRO-AGFD**. Organizers: Michael Tunick, Email: mht39@drexel.edu; Roger Egolf, Email: rae4@psu.edu, Pennsylvania State University - Lehigh Valley Campus, 2809 Saucon Valley Road, Center Valley, PA 18034, Phone: 610-285-5110; Dena Barett, Email dbarrett@agrodiv.org; Beth Lorsbach, Email: beth.lorsbach@nufarm.com; Sara Whiting, sara.whiting@bayer.com.

Historical Contributions to Chemistry for All. (Contributed) **Joint Symposium HIST-CHED & ACS Chicago Local Section**, Organizers: Amy Balija, Loyola University Chicago, 1032 W Sheridan Rd, Chicago, IL 60660, Email abalija@LUC.edu, Phone: 773-508-3178; Christine Hahn, Texas A&M University-Kingsville, Phone: 361-593-3592, Email: Christine.Hahn@tamuk.edu

Tracing the Bonds: 150 Years of Organic Chemistry and Its Legacy. (Invited) **Joint Symposium HIST-DOC-MEDI**, Organizers: Monica Arroyo, Pontifical Catholic University of Puerto Rico, Email: monicam.arroyo@gmail.com, Emily McLaughlin, Bard College, New York, Phone: 845-758-6822, Email: mclaughl@bard.edu.

Chemistry Behind Art & Art Conservation. (Contributed) **Joint symposium HIST-PHYS-YCC**, Organizers: Christine Hahn, Department of Chemistry, Texas A&M University-Kingsville, Phone: 361-593-3592, Email: Christine.Hahn@tamuk.edu; Taylor Keller, Email: tmkeller11@gmail.com; Bern Kohler, The Ohio State University, Columbus (OH), Phone: 614-688-2635, Email: kohler@chemistry.ohio-state.edu; Allison Smith, Email: amscrik@gmail.com.

There is a series of **HIST sponsored** symposia organized by a variety of divisions celebrating the 150th Anniversary of ACS.

Spring 2027 ACS Meeting

Archeological Chemistry. (Invited and contributed**), Joint Symposium HIST-ANYL-COMP-CHED**, Organizer: Nicolas Zumbulyadis, Email: nicholas.zumbulyadis@icloud.com. The symposium will include: 1. Advances in Analytical Technology and Automation Synchrotron Methods, Multispectral Imaging, Biomolecular Methods/Proteomics/Genomics, Laser Ablation-ICP-MS, Advances in Portability, Laser- Induced Breakdown Spectroscopy, XRF mapping; 2. Computational Methods; AI, big data management, spectral simulations, molecular dynamics simulations, archaeological chemistry and digital humanities; 3. New Approaches and Results in Experimental Archaeology, Recipes and replication

Proposed Symposia

History of Small Businesses, (Invited and contributed), joint symposium with SCHB, Xu Simon, xufits@gmail.com, and Christine Hahn, Department of Chemistry, Texas A&M University-Kingsville, Kingsville, TX 78363, Phone: 361-593- 3592, Email: Christine.Hahn@tamuk.edu

For updates and additional information, e.g., on symposia at regional ACS meetings, please check the HIST website (https://acshist.scs.illinois.edu/)

Final Program

DIVISION OF THE HISTORY OF CHEMISTRY (HIST)

C. Hahn, *Program Chair*

Sunday, March 22, 2026: Morning

Digital Meeting / Digital Session

Tutorial and General Papers

N. V. Tsarevsky, *Organizer*
C. Hahn, *Organizer, Presider*

10:00 Some early nurse educators and the chemistry laboratory manuals that they wrote. **W.P. Palmer**

10:30 Henry Sorby (1826-1908), the spectrum microscope, and 19th century advances in solution spectral analysis. **I.M. Davis**

11:00 Messenger (without RNA), mRNA (without organelle), viral RNA (without double strand) and poly-U (without T,C,A,G)" are not chemically similar to tRNA, rRNA, mature mRNA, mitochondrial RNA, chloroplast RNA, small nucleolar RNA, small cytoplasmic RNA, telomerace RNA, circular RNA, and template strand of DNA. **Y. Yang**

11:30 Fun things I saw and experienced at the Lindau meeting of Nobel laureates in physics. **M. Chorghade**

Sunday, March 22, 2026: Afternoon

HIST-YCC Joint Programming

Location: Room: C210 (Georgia World Congress Center)

150 Years of Building Foundations in Chemistry

J. Bobb, *Organizer, Presider*
A. Smith, *Organizer, Presider*

2:00 Introduction

2:10 Mining career opportunities at the fringes. **J. Frommer**

2:30 Leading with curiosity: Reflections on a journey in pharmaceutical innovation. **S. Coffin**

2:50 Career reflections: Lessons from an unusual synthetic chemist. **R Gilliard**

3:10 Intermission

3:20 Evolving careers in chemistry for the next 150 years from small molecule synthesis to big data bricks. **T. Shah**

3:40 Mentorship and building a research vision across disciplines. **A. Velian**

4:00 Withdrawn

4:20 Oh the places you'll go. **G. Richmond**

4:40 Intermission

4:50 Panel discussion. **S. Coffin, J. Frommer, R. Gillard, G. Richmond, T, Shah, A. Velian, J. West**

HIST sponsored NUCL Programming

Location: Room: B207 (Georgia World Congress Center)

Symposium in Honor of Professor George K. Schweitzer

J. Auxier, *Organizer, Presider*
J. Burn, *Organizer, Presider*
D. Penchhoff, *Organizer, Presider*

2:00-5:30

Sunday, March 22, 2026: Evening

Location: Room: C211 (Georgia World Congress Center)

5:30 – 7:30 **HIST Executive Committee Meeting**

Monday, March 23, 2026: Morning

Location: Room: C203 (Georgia World Congress Center)

Tutorial and General Papers

N. V. Tsarevsky, *Organizer*
C. Hahn, *Organizer, Presiding*
M. Orna, *Presiding*

8:00 Chemical arts of Byzantium: From ancient traditions to medieval innovations. **N.N. Mateeva**

8:30 From the Casino to the Albrechtsburg: The century-long journey of two recipes. **N. Zumbulyadis**

9:00 Closer look at orange pigments through the ages. **E. Bosch**

9:30 Intermission

10:00 Unique Yiddish textbook, Sol Feinstone's *Khemye: Tsu Lezen un Tsu Lernen*. **S.M. Cohen**

10:30 Role of chemical demulsifiers in enabling the growth of the petroleum industry. **D.W. Jennings**, P. Hart

11:00 **Award Address** (James T. Grady-James H. Stack Award for Interpreting Chemistry for the Public sponsored by ACS). Making good chemistry: Bringing the central science to non-chemists. **S.M. Cohen**

COMM- HIST Joint Programming

Location: Room: B302 (Georgia World Congress Center)

Science Communication: Past, Present, and Future

H.N. Cheng, *Organizer, Presider*
M. Windsor, *Organizer, Presider*
R. Hunter, *Organizer*

8:00 Introductory Remarks

8:05 Remarks by ACS President-Elect, **Dr. Christina Bodurow**

8:25 Evolution of ACS Publishing in the 21st century. **S. Minteer**

8:50 Connecting the world's science: From paper to predictive AI. **A. Jacobs**

9:15 Beyond facts and figures: Bringing your whole self to science communication and pedagogy. **A. Isaacs**

9:40 Taking care of business: Anticipating how decision-makers will perceive your science communication. **B. Ameer**

10:05 **Intermission**

10:20 SciComm, personal branding, and pid's. **J. Maclachlan**

10:45 Intersection of art, painting, and science communication. **D. Cordes**

11:10 Back to the scicomm future. **R. Burks**

11:35 We are family: The past, present, and future of science communication from the heart. **P. MacDougall**, T. MacDougall

Monday, March 23, 2026: Noon

COMM-HIST Joint Programming – Poster Session

Location: B3/B4 - EXHIBIT HALL, POSTERS (Georgia World Congress Center)

Science Communication: Past, Present, and Future

H.N. Cheng, *Organizer, Presider*
M. Windsor, *Organizer, Presider*
R. Hunter, *Organizer*

Fostering engagement in chemistry: Innovative strategies for inclusivity.
K. Claybrook, N. Neupane, E. Nadeem, W. Smith, M. Waite, B. Walker

Dyeing for chemistry: An excercise in creating ancient colors from natural sources.
M. Rumor, F. Fish, R. Srinivasan

How cover selection boosts article reach.
A. Tokarev, E. Zvorykina, A. Tay, E. Marushchenko

Comfort we owe to chemistry: The legacy of Thomas Midgley Jr.
A. Rahman, L. Mears, S. Pandit, Viraj Singh

Novel rubric adopted by communications committee for evaluating ACS award nominations for communicating chemistry through outreach
B. Ameer

"Your friendly physicist and other nerds" podcast: Communicating science beyond academia
L. Kreuzer

Monday, March 23, 2026: Afternoon

COMM-HIST Joint Programming

Location: Room: B302 (Georgia World Congress Center)

Science Communication: Past, Present, and Future

H.N. Cheng, *Organizer,*
M. Windsor, *Organizer, Presider*
R. Hunter, *Organizer Presider*
C. Hahn, *Organizer, Presider*

2:00 Bringing chemistry to the public through the visual and performing arts.
N. V. Tsarevsky

2:25 Science on air: Leveraging the podcast Wave to communicate science.
M. Wohl

2:50 Communication shift: Moments that shook the age. **A. Cooper-Morgan**

3:15 Bridging worlds: Five icons WHO shaped how we talk about science.
K. Biberdorf

3:40 Intermission

3:55 Using music as a medium to communicate science to public. **C. Hahn**

4:20 Write better abstracts: Humans are lazy, but let's not fight that.
R. Fortenberry

4:45 Wit and humor in communicating science. **M. Chorghade**

5:10 Starting a Public Relations Committee for your ACS local section or division: Tales from the first PR chair for a local section (Chicago) and first PR chair of a division (Industrial and Engineering Chemistry). **S. Seelig**

Monday, March 23, 2026: Afternoon – continued

BIOT-HIST Joint Programming

Location: Room: B408 (Georgia World Congress Center)

BIOT X HIST: Historical Perspectives on Biotechnology Breakthroughs

R. Gudhka, *Organizer, Presider*
B. Woolston, *Organizer, Presider*
C. Hahn, *Organizer*
K. Mehta, *Organizer*
R. Saha, *Organizer*

2:00 Gene therapy: The biotechnological achievements that helped deliver the promise of a cure. **R. Ramelmeier**

2:30 From baffles to biofuels and beyond: Advancing toward a sustainable bioeconomy. **D. Clark**

3:00 Better by design and what it means for infectious diseases. **T. Mukhopadhyay**

3:30 Break

3:50 Integrated and Continuous Bioprocessing: How we got here, and what's holding us back and where do we go from here. **J. Coffman**

4:20 Therapeutic antibody engineering. **K.D. Wittrup**

4:50 Cell-free systems for biomanufacturing. **M. Jewett**

5:20 Panel Discussion

HIST Sponsored YCC Programming

Location: Room: B5 - EXHIBIT HALL ChemPod 2 (Georgia World Congress Center)

Chemistry & Film

Patrick Fedick, *Organizer, Presider*

Allison Smith, *Organizer, Presider*

2:00 – 6:00

Monday, March 23, 2026: Evening

Location: Georgia World Congress Center B3/B4 - EXHIBIT HALL, POSTERS

HIST/JOINT Sci-Mix and Division Row

8:00 – 10:00

Naming the un-nameable: PFAS terminology, industrial complications, and environmental challenges. **L.A. Royer**

Messenger (without RNA), mRNA (without organelle), viral RNA (without double strand) and poly-U (without T,C,A,G)" are not chemically similar to tRNA, rRNA, mature mRNA, mitochondrial RNA, chloroplast RNA, small nucleolar RNA, small cytoplasmic RNA, telomerace RNA, circular RNA, and template strand of DNA. **Y. Yang**

Using music as a medium to communicate science to public. **C. Hahn**

Traveling through time: Exploring how chemistry influenced history and culture. **S.K. Hamilton**, **S.E. Hubbard**

Harry Potter: The science behind the magic. **O. Owens**

Dyeing for chemistry: An exercise in creating ancient colors from natural sources. **M. Rumor**, **F. Fish**, **R.R. Srinivasan**

Comfort we owe to chemistry: The legacy of Thomas Midgley Jr.. L. Mears, S. Pandit, V. Singh, **A. Rahman**

Tuesday, March 24, 2026: Morning session

CHED-HIST-YCC Joint Programming

Location: 2026 Room: C210 (Georgia World Congress Center)

Teaching Chemistry Using History, Art, and Pop Culture

Sharon Hamilton, *Organizer*, *Presider*
Sara Hubbard, *Organizer*, *Presider*
Leslie Hiatt, *Presider*
Johnathan Broome, *Presider*

8:00 Introductory Remarks

8:05 Situating the general chemistry i discussion of nuclear chemistry on Oppenheimer and the white sands trinity site: Affordances and limitations of place-based general chemistry. **E. Day**

8:20 Traveling through time: Exploring how chemistry influenced history and culture. **S. Hamilton**, **S. Hubbard**

8:35 From alembics to stained glass: A study abroad history of chemistry course. **J. Broome**

8:50 Decoding archaeology with chemistry: Teaching concepts and the literature through the lens of archaeology. **P. Hare**

9:05 Using history, art, and results of scientific travels in teaching chemistry. **D. Katz**

9:20 Using history, art, and results of scientific travels in teaching chemistry, part 2. **D. Katz**

9:30 Intermission

9:50 Assessing the decline of iodine potency in Nepal's fortified salt: A sub-national investigation from point of sale to consumption. **A. Bhatta, B. Baral**

10:05 Chemical philately in science communication and chemistry teaching. **D. Rabinovich**

10:20 Brushstrokes to blood spatter: Making chemistry come alive for everyone. **L. Hiatt**, **A. Pathiranage**, C. Covington

10:35 Leveling up chemistry education: Teaching advanced concepts through art and video games. **C. Hudecek**

10:50 Periodic Puzzle Project: Development of a variant sudoku puzzle book full of chemistry history and trivia. **W. Alexander**

11:05 Game on! Teaching chemistry with video games and interactive simulations. **A. Harrison**

11:20 Panel Discussion

Tuesday, March 24, 2026: Afternoon

CHED-HIST-YCC Joint Programming

Location: 2026 Room: C210 (Georgia World Congress Center)

Teaching Chemistry Using History, Art, and Pop Culture

Sharon Hamilton, *Organizer*, *Presider*
Sara Hubbard, *Organizer*, *Presider*
Michael Haaf, *Presider*

2:00 Introductory Remarks

2:05 Chemistry in action: history, movies, and the classroom. **E.-R. Mojica**

2:20 Harry Potter: The science behind the magic. **O. Owens**

2:35 Crochet, campaigns, and chemistry: Engaging the public through art and pop culture. **V. Russell**

2:50 Art in science: A roadmap to confidence through creativity & communication **F. Tuazon, A. Isaacs**

3:05 Art and chemistry: Partners in progress. **M. V. Orna**

3:20 From public murals to pop culture: Integrating art into general chemistry courses. **A. Norbutus**

3:35 Intermission

3:55 Bringing history and chemistry into focus through daguerreotype art. **R. M. Theall**

4:10 Forging a Fake to Simulate reality in Fine art analysis. **M. Haaf**, G. Wells, A. Lobos

4:25 Artisanal chemistry: Teaching science and art to non-science majors. **J. Bayline**

4:40 Communicating the joy of chemistry to non-science majors via the course: Art and chemistry: Beautiful together. **G. Arbuckle-Keil**

4:55 Connecting chemistry and cultural heritage: Teaching non-majors through traditional Chinese arts and conservation. **J. Esson**

5:10 Beyond the lab coat: A four-iteration journey teaching chemistry through cultural heritage before, during, and after the pandemic. **B. Galarreta**, P. Gonzales

5:25 Panel Discussion

Wednesday, March 25, 2026: Morning

Location: Room C210 (Georgia World Congress Center)

History of Nomenclature, Symbols, and Terminology
Cosponsored by NTS

S. C. Rasmussen, *Organizer, Presider*

8:00 Introductory Remarks

8:05 Chemical symbolism through the ages: A Rookwood fountain's visual journey. **M. Chalmers**

8:35 Torbern Bergman and his contributions to the development of the language of chemistry. **N.V. Tsarevsky**

9:05 *Méthode de nomenclature chimique*: Nomenclature that stuck and symbols that did not. **C.J. Giunta**

9:35 Intermission

9:55 Nikolai Prokof'evich Shcheglov (1793-1831) and chemical nomenclature in Russia. **D.E. Lewis**

10:25 From Frémy to Ewans-Basset: The evolving nomenclature of coordination complexes. **S.C. Rasmussen**

10:55 Toward consensus in standardization: The 1892 Geneva congress on organic nomenclature. **K.L. Konkol**

Wednesday, March 25, 2026: Afternoon session

Location: Room C210 (Georgia World Congress Center)

History of Nomenclature, Symbols, and Terminology
Cosponsored by NTS

S. C. Rasmussen, *Organizer, Presider*

2:00 From polymers to macromolecules and back again: The evolution of terminology and nomenclature for polymeric materials. **S.C. Rasmussen**

2:30 Metric system and the United States. **C.J. Giunta**

3:00 Philatelic history of the metric system and the SI units. **D. Rabinovich**

3:30 Intermission

3:50 IUPAC, IUPAP and the symbols for Helmholtz free energy. **B. Van Tiggelen**

4:20 Symbolic representation and the computerization of chemistry. **D.C. Thompson**

4:50 Naming the un-nameable: PFAS terminology, industrial complications, and environmental challenges. **L.A. Royer**

ABSTRACTS

HIST 4411871 - Some early nurse educators and the chemistry laboratory manuals that they wrote

***William P. Palmer**, bill_palmer15@hotmail.com.* STEM, Curtin University, Perth, Western Australia, Australia

I have a collection of about four hundred chemistry laboratory manuals completed by students from all over the United States written between 1880 and 1950. I use these manuals to provide a background to the chemical knowledge of the students who did the experiments suggested in the manuals. Some of the manuals were completed by secondary school students, some by university students and some entering specialised professions such as dentists or nurses. This paper will concentrate on three chemistry manuals written for student nurses in the 1920s. Four manual writers will be considered as one manual is jointly authored; brief biographies of all four writers will be provided. The manuals' authors are: Stella Goostray (1886-1969), Walter Gerald Karr (1892-1946), Jean Bogert (1888-1970), and Joseph Leon Rosenholtz (1899-1963). Contemporary reviews of the manuals will be provided where possible and data from the student nurses' answers from the manuals will be presented.

HIST 4413979 - Henry Sorby (1826-1908), the spectrum microscope, and 19th century advances in solution spectral analysis

***Ian M. Davis**, im.davis514@gmail.com.* Center for Interdisciplinary Studies, Universidade de Coimbra Instituto de Investigacao Interdisciplinar, Coimbra, Coimbra District, Portugal

Research initiated by Henry Clifton Sorby in 1865 and continued until 1879 produced one of the earliest instrumental analysis techniques that combined two separate technologies to improve on previous spectral analysis methods. Sorby's initial work with the spectrum microscope gained him a reputation for then-unique examinations of rocks, minerals, metals, and sediments, obtained by creating thin slices of the materials and reporting their structural and spectroscopic properties. Sorby, an independent gentleman scientist from a wealthy Sheffield family, was elected to The Royal Society in 1857 on the strength of his contributions to mineralogical knowledge, realized that his spectrum microscope methods could also be applied to biological materials in solution. Sorby was initially inspired by spectral analysis of blood performed by George Gabriel Stokes (1819-1903), who in turn was examining initial blood analysis work by Felix Hoppe (1825-1895). Sorby used his spectrum microscope and innovative spectral scale method to explore, first, the visible spectrum of human blood, and then the spectra of various pigments extracted from plants and animals. His methods led to a suggestion of a forensic method for detection of blood on cloth and other methods for the examination of food and beverage adulteration. His 1867 article titled *On a definite method of qualitative analysis of animal and vegetable colouring-matters by means of the spectrum microscope*, included spectra ranging from human blood in various oxidized and reduced states and used a variety of reagents for adjusting the spectral results. A review of Sorby's instrumentation, method, and results for biological materials will be presented.

HIST 4406682 - Messenger (without RNA), mRNA (without organelle), viral RNA (without double strand) and poly-U (without T,C,A,G)" are not chemically similar to tRNA, rRNA, mature mRNA, mitochondrial RNA, chloroplast RNA, small nucleolar RNA, small cytoplasmic RNA, telomerace RNA, circular RNA, and template strand of DNA

Yang Xing Yang*, david@be-bolt.com.cn.* Chemical Fastener Research Center, Beijing BeBolt Fastener Co.Ltd, Beijing, Beijing, China

This study reports discovery that hypothesis and experiments of "Central Dogma" overlapped with that of "mRNA" and "poly-U" in history. It might be a "mutual boasting chemistry" (Fig. 1) between "central dogma","mRNA molecule" and "poly-U". Single word "messenger (without RNA)" appeared 36 times in 1961 in paper *Genetic Regulatory Mechanisms in the Synthesis of Proteins and* was used to express the structural replacement of DNA in galactosidase synthesis in living cells. "Poly-U", without T, C, A, and G of DNA, was used to express "information functions" of DNA in Matthaei and Nirenberg poly-U experiment in 1961. By 1962, poly-U with honor of carrying first genetic code UUU was announced as the breakthrough of "finding mRNA" in Crick Nobel lecture. As mutual boasting,"Central Dogma"of 1957 was then proved by"poly-U stimulating incorporation of phenylalanine"and by"messenger inducing and repressing galactosidase synthesis", "finding mRNA" was changed to decipher the 64 triplet codes. "Viral RNA" in 1961 acted as a transfer of "Central Dogma" from hypothesis to experiments because virus has a property of self-replication, also a transfer from "messenger" to "messenger RNA" because of its RNA. Furthermore, "viral RNA" having uracil and DNA having no uracil together made poly-U a standard "mRNA molecule". This lead Ochoa to design series of experiments of"poly-U(100% code), lots of U(75% code), few U(25% code), no U(0% code)"to decipher the codes. Ironically, rRNA was also mRNA before April 1961; tRNA was called "intermediate" to denote "mRNA" before 1961; "Template strand of DNA" also meant mRNA in Crick papers. In contrast, Mitochondrial RNA, Chloroplast RNA, Small Nucleolar RNA, Small Cytoplasmic RNA, Telomerace RNA and Circular RNA are organellar RNAs. Due to missing chances of mutual boasting with"deciphering the 64 codes", organellar RNAs are assigned to noncoding RNA. "Mature mRNA" is the latest version of "mRNA" .

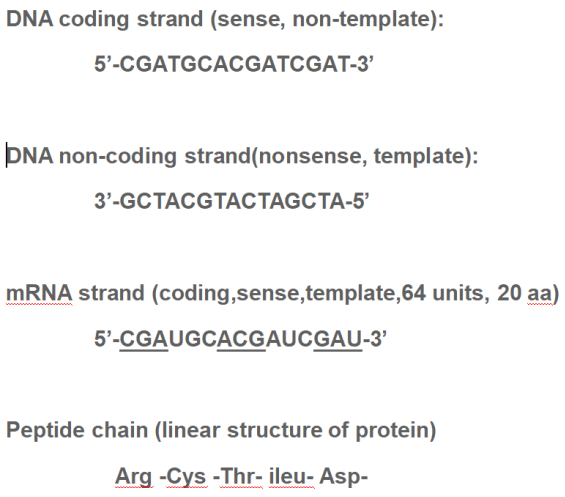


Fig 1. Central Dogma overlapped mRNA

HIST 4416597 - Fun things I saw and experienced at the Lindau meeting of Nobel laureates in physics

***Mukund Chorghade**, chorghade@gmail.com.* Chemistry, THINQ, Hillsborough, NJ, New Jersey, United States

The magnificent edifice of Chemistry was constructed by the phenomenal work of distinguished scholars in academia, industry and government was delighted elated and honored to be invited to attend the “Lindau meeting of Nobel Laureates” at Lindau in June 2024. Since 1951, the Lindau Nobel Laureate Meetings have supported scientific exchange between different generations, scientific disciplines, and cultures.These meetings are spectacular. Nobel laureates in a particular field are invited to attend. Organizers select postdoctoral fellows and students from around the world; these are complemented with junior faculty members and special invitees. What transpires in the discussions is hugely inspirational, highly glamorous. Attendees get to spend the week with Nobel Prize winners in a particular field. The meeting agenda includes lectures by eminent scholars and well-organized events wherein individual Nobel laureates are matched up with scientists / young scholars to go out to lunch or for a nature walk. Students get interested in setting up connections for learning from the masters. I report on some of the fun things I saw and encountered at the Lindau meeting.

HIST 4421592 - Chemical arts of Byzantium: From ancient traditions to medieval innovations

***Nelly N. Mateeva**, nellymateeva@yahoo.com.* Chemistry, Florida Agricultural and Mechanical University, Tallahassee, Florida, United States

The Byzantine Empire (4th–15th centuries CE) played a pivotal yet often overlooked role in the preservation, transformation, and application of chemical knowledge. While modern “chemistry” as a discipline did not yet exist, Byzantium fostered a distinctive blend of alchemy, craft practices, and applied materials science. Byzantine scholars preserved and reinterpreted Hellenistic and Greco-Roman traditions, ensuring the survival of texts on alchemy, pharmacology, metallurgy, and mineralogy that later shaped Islamic and Western European science. At the applied level, Byzantine artisans advanced technologies in glassmaking, enameling, pigment preparation, and textile dyeing, including the tightly controlled production of Tyrian purple. The most celebrated example of Byzantine applied chemistry is Greek Fire, a secret incendiary mixture credited with safeguarding Constantinople and remaining one of history’s most enigmatic chemical inventions. Texts attributed to Byzantine alchemists such as Christianos reveal both practical recipes (for dyes and resins) and philosophical dimensions of transformation. Recent archaeometric analyses of Byzantine materials (glass, mosaics, pigments) further highlight a sophisticated empirical understanding of substances and their properties. Far from being a passive transmitter of ancient knowledge, Byzantium emerges as an active innovator, integrating technical practices with spiritual and philosophical frameworks. This reevaluation positions Byzantine “chemical arts” as a crucial bridge between antiquity, the Islamic Golden Age, and the Renaissance, underscoring its enduring influence on the history of science.

HIST 4399753 - From the Casino to the Albrechtsburg: The century-long journey of two recipes

***Nicholas Zumbulyadis**, nicholas.zumbulyadis@icloud.com.* Independent Scholar, ROCHESTER, New York, United States

Initially intended to house Francesco I de' Medici's alchemical laboratory to investigate glass and Medici (pseudo)porcelain, the Casino di San Marco is mainly remembered as the birthplace of Antonio Neri's L'Arte Vetraria (The Art of Glass) published in 1612. Slightly over a century later, during the 1720's, Johann Gregorius Höroldt developed the first extensive palette of colors for painting on porcelain at the Meissen Manufactory located in the Albrechtsburg Castle. Transcription and detailed interpretation of Höroldt's (not readily available) manuscripts on pigment recipes reveal a direct influence of Neri's recipes for the preparation of at least two colors, iron red and copper green. The presentation will trace the trajectory of the recipes from Italy to the German-speaking lands, including the Royal Society of London's role in the process. Textual analysis of the recipes and the associated commentaries accrued over the ensuing period will be used to establish the direct connection between them.

HIST 4420636 - Closer look at orange pigments through the ages

***Eric Bosch**, ericbosch@missouristate.edu.* Chemistry and Biochemistry, Missouri State University, Springfield, Missouri, United States

This talk will provide an overview of the chemical history of natural and synthetic sources of orange pigments, dyes and lakes. Minerals used as pigments include iron oxides, realgar and orpiment. Synthetic inorganic pigments include cadmium orange, orange molybdate, chrome orange. Synthetic organic pigments include benzimidazolone, pyrrole and quinacridone orange. Dyes and lakes include nature-sourced colorants and synthetic organic dyes.

HIST 4400214 - Unique Yiddish textbook, Sol Feinstone's *Khemye: Tsu Lezen un Tsu Lernen*

***Stephen M. Cohen**, drstevecohen@earthlink.net.* Independent Scholar, Huntingdon Valley, Pennsylvania, United States

Yiddish, the language of the Central- and Eastern-European Jews, is known for its humor, folk wisdom, songs, and stories, but not widely appreciated for its academic literature. Among Yiddish chemistry books, Sol Feinstone's *Khemye: Tsu Lezen un Tsu Lernen* ("Chemistry: To Read and To Learn"; Arbeter-Ring Bibliotek Num. 19, Arbeter-Ring, New York, 1920) is unique because it was written by a native Yiddish-speaker who was a practicing chemist. With 274 pages, containing chapters on inorganic and organic chemistry plus a glossary, the ambitious book was designed to inform and self-instruct the new immigrants from Eastern Europe ill-educated in secular matters on the wonders of modern science. *Khemye* was from a series of small volumes from the Workers' Circle on scientific and political topics deemed fitting for the modern socialist era. Feinstone, a teen immigrant to New York from what is now Belarus, quickly passed night-school and attended college as a forestry major with a specialization in chemistry, then became an analytical chemist in Philadelphia. This talk will focus on the content of Feinstein's *Khemye*.

HIST 4417932 - Role of chemical demulsifiers in enabling the growth of the petroleum industry

David W. Jennings*, david.jennings@bakerhughes.com,* Paul Hart, Baker Hughes Company, Houston, Texas, United States

In the early years of the petroleum industry little was known about the complexities of crude oil chemistry and how it can affect the production and refining of petroleum. Or how specialty production chemicals could be used to mitigate various production (and refining) issues and significantly increase assets' production & efficiency. Today an entire multibillion dollar specialty chemical industry supplies vital production chemicals to the petroleum industry. The beginnings of oilfield specialty production chemicals can be traced back to William S. Barnickel who invented and applied the first chemical demulsifer (in 1916) which allowed then unusable emulsified "rolly oil" to be refined and not be discharged into the environment. These first demulsifiers branded Tret-O-Lite laid the foundation for Barnickel's specialty chemical company serving the early petroleum industry. This company later would evolve into the Petrolite Corporation which would further advance demulsification science. And in conjunction with other companies would through the years develop and offer production chemicals to treat a multitude of petroleum production challenges beyond demulsification. Demulsification though is the most enabling production chemistry technology which has allowed the petroleum industry to grow to the extent that exists today. Demulsification is simply essential for petroleum production. This paper will chronicle the invention, development, and commercialization of chemicals counteracting the effects of emulsion stabilizing components in crude oils that act at oil-water interfaces. The paper will review the role of demulsification both from a historical and chemical science perspective. It will cover the history of the ingenuity and persistence of William Barnickel in building a company to serve the petroleum industry which both allowed the use of hundreds of millions of barrels of crude oil for a rapidly industrializing nation as well as reducing the impact of the discharge emulsified crude oil which was at the time nothing short of an environmental disaster. It will also cover the subsequent demulsification advancements of the Petrolite Corporation under the direction of Melvin DeGroote (prolific inventor with 963 patents) and other major significant demulsification advancements in the ensuing subsequent decades. The impact of all these advancements have been immense for the petroleum industry and society.

HIST 4400209 - Award Address (James T. Grady-James H. Stack Award for Interpreting Chemistry for the Public sponsored by ACS). Making good chemistry: Bringing the central science to non-chemists

Stephen M. Cohen*, drstevecohen@earthlink.net.* Independent Scholar, Huntingdon Valley, Pennsylvania, United States

Chemistry has had a public image-problem for decades, resulting in rising chemophobia and misunderstanding, and thus needs repair. Simultaneously, chemical writings are rarely considered "literature" within the humanities, hence are ignored by non-science academics. Science communication to the public has been taken over by non-chemists such as Neil deGrasse Tyson, Brian Cox, and David Attenborough. Therefore, my work in promoting specifically chemistry to non-chemists takes many forms: books where chemistry can be found, i.e., travel-writing for adults (*America's Scientific Treasures*, 2nd edition), and how chemistry developed, e.g., a graphic novelization of chemical history for teens and up (*O Mg! How Chemistry Came to Be*); a podcast on the history of chemistry for those preferring to listen to more detailed events rather than read ("The History of Chemistry"); public presentations about specific chemists, their life and work (e.g.,

Alexander Borodin and Stefanie Horovitz); chemical demonstrations for Yiddish-speaking non-scientists to improve their scientific vocabulary in the Yiddish language; articles and research on chemical literature and terminology in Yiddish (*Bulletin for the History of Chemistry*, *Aleph*, *RSC Historical Group Newsletter*); and bringing more chemical knowledge among Jewish non-scientists (an article on Maria the Jewess for *The Shalvi/Hyman Encyclopedia of Jewish Women*). The common theme for most of these activities is the history of chemistry, the diversity of chemical practitioners, and how chemistry has affected, or is affected by, social circumstances. How and why these various forms of communication about chemistry to non-chemists arose for the speaker will be discussed in the presentation.

4452532 - Mining career opportunities at the fringes

Jane Frommer, *frommer@scvacs.org***.** Collabra Inc, San Jose, CA, United States

The landscape of scientific endeavors has changed and will continue to change as you proceed through your careers. Choose to thrive in the evolving scientific landscape. Cross boundaries, step into new territory, bring a different approach, make it relevant, and back it with your own knowledge and expertise. In today's shift from hands-on to machine-predicted science, your domain expertise of scientific principles and molecular behaviors is more valuable than ever. Use it wisely. We'll discuss mining opportunity at the fringes. From interfaces between domains - cultural and scientific – arise opportunities for the open-minded. Illustrations come from my own journey of endocrinology at Mass General, conducting polymers at Honeywell, molecular manipulation at IBM Research, phase separation in monolayers at the University of Basel, and chemical curation at Google. The willingness to question the conventional and to channel challenges to win-win alternatives garnered a gold medal and a spot on your podium.

4452541 - Leading with curiosity: Reflections on a journey in pharmaceutical innovation

Stephanie Coffin*, coffin_stephanie@lilly.com.* Eli Lilly and Company, Indianapolis, IN, United States

Stephanie Coffin, Ph.D. is currently a Senior Director at Eli Lilly and Company where she provides technical oversight of the company's peptide manufacturing portfolio. Over the course of her career, Stephanie has navigated the challenge of being a working mother in a fast-paced industry while maintaining a high standard of professional excellence. By embracing challenges and leading teams through uncertainty, she has helped deliver life-changing medicines to patients. In this talk, Stephanie will share key lessons learned, including how scientific curiosity, continuous learning, and strategic networking have fueled her success. Attendees will gain practical insights for overcoming career challenges and driving innovation, inspired by Stephanie's journey and her recent recognition as an ACS Hero of Chemistry.

4421513 - Career reflections: Lessons from an unusual synthetic chemist

Robert Gilliard, *robertjgilliard@gmail.com*. Massachusetts Institute of Technology, Cambridge, MA, United States

Academica as a system is made up of many parts and becoming a successful early-career scientist requires a multi-faceted approach. This lecture will cover aspects that I have found useful in terms of building the skillset and experiences necessary to increase the probability of success at the early-career stage.

4456464 - Evolving careers in chemistry for the next 150 years from small molecule synthesis to big data bricks

Tejas Shah, *tejas.shah@corteva.com*. Corteva Agriscience LLC, Indianapolis, IN, United States

Chemistry has always been about building: molecules, materials, or ideas. As we celebrate 150 years of ACS, the way we “build” is rapidly changing. Today’s chemists are not only at the bench but also behind keyboards, coding algorithms, analyzing massive datasets, and collaborating across disciplines. While synthesis and experimentation remain a cornerstone, the rise of machine learning, automation, and data science are redefining discovery and accelerating innovation. This presentation looks at how traditional skills connect with new digital tools, offering practical insights and personal experiences to help early-career chemists stay agile and thrive in a future where chemistry meets computation. We’ll explore what’s driving this transformation and how you can build a career that’s ready for the next 150 years.

4420257 - Mentorship and building a research vision across disciplines

Alexandra Velian, *avelian@uw.edu*. Department of Chemistry, University of Washington Seattle, WA, United States

My career in chemistry has been guided by curiosity about how molecular-level insights can drive the design of new materials, and by mentors and collaborators who helped shape the questions I chose to pursue. From early explorations of reactive phosphorus intermediates to building a research group at the University of Washington, I leaned into crossing disciplinary boundaries, defining a research vision, and cultivating a collaborative and inclusive laboratory culture. In this talk, I will reflect on lessons learned in the formative years of starting an independent laboratory: the value of mentorship and teamwork, the importance of resilience in the face of setbacks, and strategies for identifying meaningful problems that bridge fields. I will also share perspectives on the evolving landscape of chemistry—driven by interdisciplinary approaches and new opportunities for impact—and offer thoughts on how early-career chemists can chart rewarding paths in this changing environment.

4412974 - Oh the places you'll go

Geraldine Richmond, *richmond@uoregon.edu*, University of Oregon, Eugene, OR, United States

You have brains in your head.
You have feet in your shoes.
You can steer yourself any direction you choose;
So be sure when you step.
Step with care and great tact.
And remember that life's a great balancing act.
Join me while we explore the wisdoms and career advice of Dr. Suess.

4409238 - Evolution of ACS Publishing in the 21st century

Shelley Minteer, *shelley.minteer@mst.edu*. Missouri University of Science and Technology, Rolla, MO, United States

The American Chemical Society has played an important role in chemistry publishing over the last 150 years. Peer reviewed publications have been critical to communicate chemistry innovations over that time period, but the publishing world is evolving rapidly in the last decade and will continue to evolve over the next decade. This paper will discuss the new ACS Au journals and their role as fully open access journals in this evolution of the chemistry publishing that is currently occurring.

4414088 - Connecting the world’s science: From paper to predictive AI

Andrea Jacobs, *ajacobs@cas.org*. CAS, a division of the American Chemical Society, Columbus, OH, United States

Enabling effective communication between scientists is foundational to scientific progress. In this session, we will examine the evolution of scientific information over the last 150 years and discuss how technologies, from books to digital discovery platforms, and more recently, agentic AI, connect scientific researchers and drive innovation worldwide. By sharing ways CAS is leveraging AI to enable both our work and the work of scientists across industries, we will explore the current state of AI-enabled knowledge management and consider exciting future possibilities and potential hurdles across the scientific research ecosystem.

4400802 - Beyond facts and figures: Bringing your whole self to science communication and pedagogy

Andre Isaacs, *akisaacs@holycross.edu*, College of the Holy Cross, Worcester, MA, United States

Broadening participation in STEM requires a multipronged approach that acknowledges generational differences in how students learn and engage with the world. For Gen-Z students, social media is not just entertainment but a primary space for cultural exchange, identity formation, and engagement with social concerns. Leveraging these platforms offers unique opportunities to

communicate scientific concepts both formally and informally. This lecture will explore strategies for creating effective science communication videos while emphasizing the importance of authenticity. By bringing one's full self—personal identity, values, and lived experiences—into the act of teaching and communication, educators and scientists can foster deeper connections, build trust, and make science more accessible and inclusive. I will showcase my work on social media as a case study for improving STEM identity and integrating culture through dance and skits in collaboration with students and colleagues.

4394840 - Taking care of business: Anticipating how decision-makers will perceive your science communication

Barbara Ameer, *ameerbcps@gmail.com*, Rutgers-Robert Wood Johnson Medical School, New Brunswick, NJ, United States

For individual scientists, a typical and often preferred audience is a group of scientist-peers with whom they share a common knowledgebase and understanding of science norms. Yet increasingly the audiences reached extend to journalists and the general public but also to decision-makers for financial, regulatory, advocacy and policy groups. Communication with these groups can be risky and complex. Attention is needed to engage the audience in a manner that inspires confidence in scientists' expertise and trust in their motives and message. The goal is to effectively impact business and policy decisions that would benefit from the input of scientists. Building connection, confidence and trust with a business-oriented group is aided by knowledge of business principles, terminology and an appreciation of organizational behavior. With basic business knowledge and communication skills, scientists are more likely to be included in decisions and better able to anticipate how science messages are perceived by decision-makers.

4427513 - SciComm, personal branding, and pid's

Jennifer Maclachlan, *jmaclachlan@hnu.com*. PID Analyzers, LLC, Sandwich, MA, United States

This presentation, told from the perspective of a small chemical business owner, will provide an overview of a 30+ year career in science-based sales and marketing, public relations, science communication, and science education and outreach. From key clients and 1990's print advertising to social media marketing, personal branding and business relationships, this talk will anecdotally share which science communication strategies worked, those that didn't, how some science communication methods have stood the test of time and how some need to keep pace with technology and social norms, and work-life balance in the late 2020's.

4401633 - Intersection of art, painting, and science communication

David Cordes, *cordes@pacificu.edu*. Department of Chemistry, Pacific University, Forest Grove, OR, United States

The long and colorful history of science is a story often told through iconic visual works prepared by artists and craftspeople. Through their drawing, printmaking, sculpting, photography, painting and other techniques, these creators provide literal portraits of the early practitioners of "science".

Often, such artworks also help us understand something of the nature of the scientific work and, occasionally, they might somehow convey a significant finding, observation, or other discovery. More commonly, however, the “science” that is communicated through visual artistic practice rarely contains a practical or didactic quality. With some limited counterexamples, painting is particularly ineffective as a formal science communication tool – but it is unquestionably at its best expressing and communicating the complex ways that individuals and social groups experience or “feel” about science. This presentation surveys historical and contemporary approaches to how art and painting can be used to illustrate and communicate scientific history, information, and practice.

4412075 - Back to the scicomm future

Dr. Raychelle Burks, *burks@american.edu*. American University, Washington, DC, United States

A chemist's brief view of communicating our science using new, new-to-us, and old tools or venues.

4400883 - We are family: The past, present, and future of science communication from the heart

Preston MacDougall[1], *pmacdougall@mtsu.edu*, ***Tara MacDougall***[2], 1. Department of Chemistry, Middle Tennessee State University, Murfreesboro, TN, United States, 2. Discovery Center at Murfree Spring, Murfreesboro, TN, United States

From Humphry Davy to Roald Hoffmann, the best science communicators have been master story-tellers. That was a lesson not lost on participants, including one of us, in the ACS Experts program when we received training by instructors at the Alan Alda Center for Communicating Science on story-telling from the heart. The Discovery Center at Murfree Spring is a hands-on children’s museum emphasizing imaginative play and constructive creativity. You can tell that the exhibits and activities inside are wonderfully effective at communicating science form the heart by the excitement of children running to the door when they return, and the frequent tears when it’s time to go home. More info at explorethedc.org. When we last co-presented during a CPRC symposium in New Orleans, the Discovery Center had just launched the Tennessee STEAM Festival; where “curiosity meets creativity” (more info at tnsteam.org). Organizers are presently preparing for the 10th year of 150+ state-wide events engaging over 50,000 people in 25 or more counties. Here, we will highlight some of the more memorable and impactful events which had in common the art of communicating science from the heart. With regard to the future of communicating science from the heart, we will share some efforts to nurture young story-tellers at Middle Tennessee State University, and in the Young Leaders Council at the Discovery Center.

4406328 - Fostering engagement in chemistry: Innovative strategies for inclusivity

Kolton Claybrook, *kdclaybrook@ualr.edu*. ***Nistha Neupane***, *nneupane@ualr.edu.* ***Eshaal Nadeem***, *enadeem@ualr.edu*. ***Warren Smith***, *wdsmith@ualr.edu*. ***Maria Waite***, *mwaite@ualr.edu*. ***Brian Walker***, *blwalker2@ualr.edu*. University of Arkansas at Little Rock Donaghey College of Science Technology Engineering and Mathematics, United States

The University of Arkansas at Little Rock is a small, diverse campus with a significant non-

traditional student population. Although only a small number of students currently major in chemistry, the innovation of the American Chemical Society (ACS) student chapter officers has expanded membership to over 250+ students across multiple disciplines. Recruiting new members while maintaining engagement has been both a challenge and an opportunity for growth. The chapter fosters interest by hosting monthly meetings featuring diverse topics and guest speakers, including faculty and professionals who share research opportunities and career insights. These events provide valuable networking experiences and encourage participation in undergraduate research. For example, an upcoming event will feature a UA Little Rock alumnus employed at the Arkansas State Crime Lab, expected to attract strong interest from the university's large criminal justice student population. In addition to formal talks, the chapter has found success with informal, community-building activities such as "Pie a Professor" on Pi Day, which generated record participation and engagement. Building on this momentum, the chapter plans to continue incorporating interactive and approachable programming, such as "The Chemistry Behind Making Slime" and events highlighting green chemistry during Chemists Celebrate Earth Week and Tinkerfest. Through these inclusive and dynamic activities, the UA Little Rock ACS student chapter seeks to strengthen community, broaden interest in chemistry, and demonstrate its relevance across diverse fields of study.

4409820 - Dyeing for chemistry: An exercise in creating ancient colors from natural sources

Maddalena Rumor[2]*, mxr530@case.edu,* ***Fish Fish***[1,2]*, acf98@case.edu,* ***Rekha R. Srinivasan***[1]*, rxs111@case.edu.* 1. Chemistry, Case Western Reserve University, Cleveland, Ohio, United States, 2. Classics, Case Western Reserve University, Cleveland, Ohio, United States

This poster presents the results of a series of dyeing experiments designed to replicate the vibrant colors described on an ancient cuneiform tablet found in Sippar, Iraq, dating to the Neo-Babylonian period (circa 6th century BCE). The tablet contains instructions for dyeing natural wool in luxurious reds and purples, achieved with inexpensive materials. However, the dye recipes are difficult to interpret due to the fragmentary nature of the tablet and the obscurity of its technical terminology. To reconstruct the dyes, we carried out a series of dye extractions from plants such as indigo, safflower, madder, beetroot, and tamarind, as well as from insects like cochineal and kermes. The wool was then dyed using these extracts, both with and without mordants. Additionally, we explored various combinations of over-dyeing with multiple colors, leading to some unexpected results.

4412343 - How cover selection boosts article reaches

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In the competitive world of academic publishing, an article's visibility can significantly influence its impact. While citations and journal rankings often dominate discussions about scientific influence, another factor—cover image selection - may play a crucial role in shaping an article's reach. To explore this, we analyzed data on papers from Nature Medicine, Nature Physics and Nature Materials, examining how cover-featured articles perform compared to the articles that were not selected to be on the cover. Using metrics such as access counts, Altmetric scores, and social

media engagement, our study reveals that being showcased on the cover correlates with significantly higher visibility and engagement, based on the citations, accesses and exposure in social media. These findings highlight the power of visual storytelling in science communication and raise important questions about how editorial decisions influence the dissemination of research. This effect is not entirely surprising. In an era where information overload makes it challenging for even groundbreaking research to stand out, visual representation serves as a powerful tool for grabbing attention. Cover images are carefully curated by journal editors to reflect high-impact, visually compelling research, making these studies more likely to be noticed not only by fellow researchers but also by journalists, policymakers, and the public. Our findings suggest that the visual framing of science plays an important role in determining how widely research is accessed, discussed, and ultimately, cited.

4415054 - Comfort we owe to chemistry: The legacy of Thomas Midgley Jr.

Abul Rahman, *Fazlur.Rahman@ossm.edu*. ***Leonidas Mears***, ***Siddharth Pandit***, ***Viraj Singh***, Oklahoma School of Science and Mathematics Oklahoma City, OK, United States

The modern conveniences we enjoy today—from automobiles to refrigeration and air conditioning—can be traced back to the work of one man: **Thomas Midgley Jr.**, a mechanical engineer and Cornell graduate. This presentation explores his groundbreaking innovations, his life, and the complex legacy he left behind. Midgley's story is one of the most consequential chapters in the history of chemistry. He stands as both a symbol of scientific ingenuity and a cautionary tale of unintended consequences. His work, though revolutionary, had far-reaching impacts on public health and the environment, making him one of the most fascinating and controversial figures in chemical history.

4416181 - Novel rubric adopted by communications committee for evaluating ACS award nominations for communicating chemistry through outreach

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Organizations communicate their values in part through awards. The communications committee of the American Chemical Society (ACS) inspires and recognizes excellence in communication through awards for 2 categories of recipients. Groups of ACS volunteers (organized in sections, divisions or international science chapters) are eligible to self-nominate for the committee's ChemLuminary awards. The other type of award, the Helen M. Free Award, is open to an individual ACS member who is nominated for exceptional volunteer work in public outreach. Methods. An online search did not identify a suitable evaluation tool. The committee's working group that had experience with the internal process volunteered to develop the first-ever rubric to support and refine criteria associated with each award. The working group tested the new rubric using past nomination packages submitted to the committee. Results. In the rubric adopted by the communications committee, the criteria common to both types of awards include 1) overall impact, 2) sustained volunteer efforts in public outreach, 3) creativity and innovation, including collaboration in outreach activities, 4) visibility, 5) audience scope and reach, and 6) messaging significance to understanding chemical science and its applications. Additional criteria relevant to the Society were considered. Discussion and Conclusion. It is anticipated that measures and examples for the criteria may be revised or expanded during future award review cycles. Tailored to the needs of specific types of ACS communication-outreach awards, the novel rubric and scoring system will help guide discussion among peers tasked with evaluating nominations.

4417598 - "Your friendly physicist and other nerds" podcast: Communicating science beyond academia

***Lucas Kreuzer**, lucas.kreuzer@frm2.tum.de*. Technische Universität München, Garching, Germany

Science thrives on discovery, but too often its stories remain confined within the boundaries of academia. I created the podcast, *Your Friendly Physicist and Other Nerds*, to bridge this gap: bringing the voices, experiences, and personal journeys of scientists to a broader audience. Rather than focusing solely on research results, the podcast highlights the “stories behind the science”: What drives scientists to pursue their work? How do they navigate the challenges of academic life? And in what ways do their discoveries connect back to society at large? By sharing human-centered narratives, the podcast makes science relatable and accessible to listeners both within and beyond the scientific community. Since launching the podcast in late 2022, I have had the opportunity to speak with physicists, chemists, entrepreneurs, and policy-makers, exploring not only their research but also their motivations, failures, breakthroughs, and advice for the next generation. These conversations demonstrate that effective science communication is not just about simplifying complex topics, but about building empathy, fostering curiosity, and creating a sense of connection between researchers and the public. The podcast format, with its conversational style and intimate tone, provides a powerful platform for doing exactly that. I want to share my experience producing and hosting a science communication podcast: from developing a concept and inviting guests, to building an audience across multiple platforms, to integrating personal storytelling as a means of communicating science. I will discuss both the challenges and opportunities that arise when communicating science beyond traditional academic settings, including strategies for balancing accuracy with accessibility, and lessons learned about engaging diverse audiences. My goal in contributing to this session is twofold: first, to provide insights and practical takeaways for others interested in using podcasts or similar media for science communication; and second, to connect with fellow science communicators to exchange experiences, build collaborations, and explore how we can collectively expand the reach and impact of science communication. By reflecting on past lessons, sharing present practices, and imagining future possibilities, I hope to contribute to a broader conversation about how we, as scientists and communicators, can tell better stories. And in doing so, strengthen the relationship between

4414950 - Bringing chemistry to the public through the visual and performing arts

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Chemistry and the work of its practitioners have often been misunderstood, underappreciated, or, in extreme cases, even feared by the public. One of the ways to remedy such an unfortunate situation is to popularize the “central science” by demonstrating its beauty, utility, and relevance to virtually all aspects of everyday life. In this talk, the power of some forms of the visual arts (coins and medals, cartoons, and newspaper or magazine ads), as well as the performing arts (specifically theatre and opera) as strategies to kindle curiosity about and to communicate the value and strengthen the appreciation of chemistry will be highlighted.

4411291 - Science on air: Leveraging the podcast Wave to communicate science

***Margot Wohl**, m_wohl@acs.org*. American Chemical Society, Washington, DC, United States

Over the past decade, podcasts have experienced explosive growth, transforming from a niche medium into a mainstream platform for storytelling, education, and entertainment. As of 2025, about **584 million people worldwide** listen to podcasts, with the U.S. alone accounting for more than **150 million monthly listeners**—a number that has more than doubled since 2015. This surge in popularity presents a compelling opportunity for science communicators to engage audiences where they already are: with headphones on, immersed in episodes of their favorite shows. In this talk, we will explore the unique strengths and limitations of podcasts as a science communication tool. From their ability to foster intimacy and trust through voice, to their flexibility in format and tone, podcasts offer a powerful way to make complex scientific ideas accessible and engaging. However, they also come with challenges, including discoverability, audience segmentation, and the difficulty of conveying visual or data-heavy content through audio alone. By examining case studies, listener demographics, and communication strategies, we'll discuss how science communicators can effectively leverage podcasts to reach broader and more diverse audiences—while also navigating the medium's constraints.

4399295 - Communication shift: Moments that shook the age

***Amalene Cooper-Morgan**, acoopermorgan@setonhill.edu*. Seton Hill University Greensburg, PA, United States

Over the past 50 years, the chemical sciences have undergone a profound transformation in how chemical knowledge is produced, shared, and created. The late 20th century saw the integration of advanced analytical methods like NMR, mass spectrometry, and chromatography into routine research. This led to the acceleration of data generation and fostered collaboration. The emergence of electronic databases, digital publishing, and email revolutionized scientific exchange, enabling near-instant access to literature and fostering international partnerships. The digital era of the 21st century, brought searchable literature databases- such as SciFinder and PubChem, open-access journals, and multimedia resources that placed primary chemical information at our fingertips. Social media, virtual conferences, and online education platforms expanded public engagement and saw us through the COVID-19 pandemic. Most recently, AI-assisted literature mining, automated synthesis planning, and big-data analytics have redefined the pace and scope of discovery. This timeline of innovation underscores the interplay between technology, ethics, accessibility, and highlights the vital role of educators in preparing students to navigate an increasingly complex technological landscape. How we respond to this era, as a Society, will impact and shape the global chemical enterprise.

4419504 - Bridging worlds: Five icons WHO shaped how we talk about science

Kate Biberdorf, *kbiberdo@nd.edu*. Department of Chemistry & Biochemistry Chemistry, University of Notre Dame, Notre Dame, IN, United States

From Galileo's decision to write in Italian rather than Latin, to Mary Somerville's elegant translations of complex physics and astronomy for general readers, to Darwin's groundbreaking Origin of Species written for a broad audience, the history of science communication reveals a consistent theme: the most powerful ideas are those that reach beyond laboratories and into the

public imagination. In the 20th century, Carl Sagan brought the cosmos to millions through Cosmos, while David Attenborough transformed television through a window into the natural world. Each of these figures shaped not only how scientific ideas were conveyed but also how society came to see science as part of everyday life. Following in the footsteps of Galileo, Somerville, Darwin, Sagan, and Attenborough, Professor Kate Biberdorf (known to many as “Kate the Chemist”) underscores how scientists can move beyond the deficit model and instead inspire wonder, trust, and connection through dialogue, performance, and authentic engagement.

4403940 - Using music as a medium to communicate science to public

Christine Hahn, *christine.hahn@tamuk.edu*. Department of Chemistry, Texas A&M University-Kingsville, TX, United States

Music is a medium which is commonly used to express inner emotional and mental states or to describe external phenomena such as landscapes, nature, or the seasons. Music has a central place in religious and spiritual life. J. S. Bach composed about 200 spiritual cantatas for the Sunday services for the church year. Whereas music describing scientific content is rather limited or unusual. A few compositions are known on chemical content, for example *Les Élémens* composed 1737 by Jean-Féry Rebel (1666-1747) or *Oxygen* by the contemporary composer Jean-Michel Jarre. On the other site it is interesting to note that John A. R. Newlands (1837-1898), one of the pioneers of the periodic table, used an expression from the music theory, the octave rule, to describe the periodicity of the chemical elements when arranged according to their increasing atomic weight. This is the starting point for composing sonatas to celebrate each individual element using a distinct keys. The composition of element sonatas is not a mere intellectual exercise or reflection on the element’s chemical character analogous to the musical cycles such as The Well-Tempered Clavier but is a musical interpretation of elemental poems written by Atto Rex Vincent. Paintings will complete the artistic communication on chemical elements. The idea of the project is to combine poetry, music, and visual art to communicate chemistry and history of chemistry. It resembles in its structure and purpose the emblem book *Atalanta Fugiens* by the alchemist Michael Maier (1569-1622).

4395116 - Write better abstracts: Humans are lazy, but let's not fight that

Ryan Fortenberry*, r410@olemiss.edu*. Department of Chemistry & Biochemistry, University of Mississippi, Oxford, MS, United States.

The only sentence that a reader is guaranteed to read is the first sentence of the abstract. This is true of papers, conference submissions, and even proposals. That first sentence is everything. In borrowing from journalism, this is the lead sentence. It encapsulates the entire essence of what is to follow, but it also intrigues and entices the reader to continue to find out more. Or it gives the reader enough information to know that this is not something they want to put their energies into consuming. In either case, it keeps your abstract and the associated medium from being immediately dismissed. Reading the first sentence and quitting is also human nature, something that is built into our natural rhythms. Instead of fighting this and trying to get people to act differently, we should embrace this and learn how to work within this construct.

4416582 - Wit and humor in communicating science

***Mukund Chorghade**, chorghade@gmail.com.* Chemistry, THINQ, Hillsborough, NJ, New Jersey, United States

Informing and inspiring the public about scientific knowledge is an art and science that is more easily exemplified and epitomized than it is articulated and summarized. Wit and humor outlining the salient features of a science is pivotal in preventing misinformation and truly informing the public. Fun examples will be presented wherein outstanding scientists made lasting contributions to public discourse through endearing wit, humorous commentary and precision in communications.

4404941 - Starting a Public Relations Committee for your ACS local section or division: Tales from the first PR chair for a local section (Chicago) and first PR chair of a division (Industrial and Engineering Chemistry)

***Stanley Seelig**, ssseelig@aol.com*. Seelig and Associates, Gladwyne, PA, United States

Most Scientists do not have the tools to be involved in Public Relations but communication skills are essential for anyone involved in academia. government and/or industry. The American Chemical Society (ACS) can support your efforts in this area through training and can prepare you to excel in your career.. My career within Public Relations prepared me for my future in industrial chemistry as a chemical research applications scientist, chemical consultant and chemical entreprenuer. I have over 50 patents, publications and presentations as well as organizing two symposia (one international) within the ACS. Now, as a retired professional scientist, my stories and experiences hope to demonstrate how improving your communication skills can prepare you for an exciting future.

4415011 - Gene therapy: The biotechnological achievements that helped deliver the promise of a cure

***Rolf Ramelmeier**, aramelmeier@adverum.com*. Adverum Biotechnologies Inc, Redwood City, CA, United States

[TBA]

4415630 - From baffles to biofuels and beyond: Advancing toward a sustainable bioeconomy

***Douglas Clark**, clark@berkeley.edu*. Department of Chemical & Biomolecular Engineering, University of California Berkeley, Berkeley, CA, United States

Biotechnology has had a profound impact on society for centuries, with products ranging from foodstuffs to industrial chemicals to therapeutic biomolecules. Of particular significance for biochemical engineering was the development of large-scale penicillin production in the 1940s, which expanded the scope of industrial biotechnology and helped launch academic biochemical engineering as we now know it. Throughout academia, biochemical engineering experienced phenomenal growth as an academic discipline in parallel with the spectacular commercial success

of a burgeoning industry. In this presentation I will use the example of acetone-butanol-ethanol (ABE) fermentation to illustrate progress and setbacks in the century-old quest for renewable biofuels, culminating in efforts to develop new technologies and bioprocesses for decarbonizing the global economy. New strategies for meeting pressing needs will be touched on, as will future directions in which the field may be headed. One clear lesson to emerge is that while much has changed in biotechnology over the last few decades, one constant is the vital role of biochemical and bioprocess engineering, and the importance of close collaboration and partnership between academia and industry.

4444128 - Better by design and what it means for infectious diseases

***Tarit Mukhopadhyay**, tarit.mukhopadhyay@merck.com*. Merck & Co Inc, West Point, PA, United States

Over the past century our industry has made incredible advancements against infectious diseases, resulting in significant reductions in disease burden and mortality. However, sustained investment is required to tackle emerging and re-emerging pathogens, shifting epidemiology, and a crowded immunization space. Respiratory diseases caused by RSV (respiratory syncytial virus) and Streptococcus pneumoniae still present substantial burden. RSV is one of the leading causes of infant hospitalization, while pneumococcal pneumonia is a leading cause of community-acquired pneumonia worldwide. Thankfully, interventions are available. Passive immunization of RSV using mAbs, and pneumococcal conjugate vaccines will be used as examples to demonstrate how better products can be designed to meet evolving unmet medical needs, key Target Product Profile attributes, and the challenges it places on bioprocess design. Tailoring products to meet community coverage, durability, immunogenicity, and resistance profiles are part of the design process that starts in the discovery space and is pulled through development into commercialization. The strategic choices and their implementation will be discussed within this talk.

4475198 - Integrated and Continuous Bioprocessing: How we got here, and what's holding us back and where do we go from here

***Jon Coffman**, jon.coffman@astrazeneca.com*. AstraZeneca Pharmaceuticals LP, Gaithersburg, MD, United States

The evolution of integrated and continuous bioprocessing (ICB) represents one of the most transformative advances in modern biopharmaceutical manufacturing since the introduction of recombinant therapeutics. Progress over the past two plus decades has been remarkable—from early labile commercial products, which used continuous perfusion well over 20 years ago, to studies on simulated-moving bed chromatography and annular chromatography in the early '90s. The modern framework for continuous processing begins in Warikoo et al.'s (2012) pioneering integration of perfusion bioreactors and multi-column Protein A chromatography, continuing to full end-to-end continuous antibody processes demonstrated by Godawat et al. (2015), and ultimately, large-scale GMP implementations by companies such as Sanofi, Novartis, and Merck. These efforts, supported by economic and environmental analyses (Pollock et al., 2017) and guided by comprehensive regulatory frameworks such as ICH Q13 (2023), have validated both the technical and quality feasibility of continuous production. Yet, despite this maturity, widespread industrial adoption has been far slower than anticipated. Several structural and behavioral barriers persist. Capital constraints remain a primary limitation: the industry's extensive installed base of stainless-steel, batch-oriented infrastructure—both in-house and at contract manufacturing organizations—

dampens the financial rationale for transition. Psychological resistance also plays a significant role, as organizations hesitate to disrupt qualified, validated systems, fearing both operational risk and the internal energy needed to manage transformative change. Additionally, economic drivers have historically diminished the urgency for implementation. For many therapeutics, especially until recently, the cost of goods manufactured (COGM) contributes minimally to overall drug pricing, limiting the incentive to invest in efficiency-driven process innovation. This dynamic is now shifting. The expansion of biologics beyond oncology, combined with dramatically higher production demands for checkpoint inhibitors and new modalities, is making manufacturing economics more strategic. As the benefits of ICB—sustainability, cost agility, and rapid scalability—align more directly with business imperatives, the next phase of adoption may depend less on technological capability and more on organizational willingness to reimagine what pharmaceutical manufacturing can look like.

4498743 - Therapeutic antibody engineering

***Karl Dane Wittrup**, wittrup@mit.edu*. Koch Institute for Integrative Cancer Research, Massachusetts Institute of Technology, Cambridge, MA

Monoclonal antibodies represent a large and rapidly growing fraction of new drug approvals. Antibody discovery and engineering has developed into a mature discipline, with both in vitro and in vivo platforms available to rapidly identify promising development candidates. In recent years, machine learning approaches have made tremendous advances in protein binder discovery, but remain in the early stages of impacting the antibody field. This talk will discuss where such contributions are most likely to succeed.

4473588 - Cell-free systems for biomanufacturing

***Michael Jewett**, mjewett@stanford.edu*. Stanford University, Stanford, CA, United States

Cell-free gene expression (CFE) systems empower synthetic biologists to build biological molecules and processes outside of living intact cells. This concept circumvents mechanisms that have evolved to facilitate species survival, bypasses limitations on molecular transport across the cell wall, and provides a significant departure from traditional, cell-based processes that rely on microscopic cellular “reactors.” These features have led to a significant increase in the development and use of CFE systems over the past two decades. Here, we discuss recent advances in CFE systems and highlight how they are transforming efforts to build cells, control genetic networks, create molecular diagnostics, and manufacture biobased products.

4421059 - Situating the General Chemistry I discussion of nuclear chemistry on Oppenheimer and the White Sands Trinity Site: Affordances and limitations of place-based General Chemistry

***Elizabeth Day**, elday@utep.edu*. Department of Chemistry and Biochemistry, The University of Texas at El Paso, El Paso, TX, United States

The University of Texas at El Paso (UTEP) sits about 70 miles down the road from the White Sands Trinity Site in the Jornada del Muerto desert. This place of the first test of the massive plutonium bomb was so impactful that J. Robert Oppenheimer retrospectively claimed to be thinking the

famous quote “Now I am become Death, the destroyer of worlds” in the moments after the implosion. This historical—and pop-cultural because of the recent Hollywood blockbuster hit Oppenheimer—provides a place-based phenomenon to engage General Chemistry I students in a unit about nuclear chemistry and the forces that hold the nucleus together. In a reflective writing piece to capstone this unit, students were read testimony from the locals, unknowingly a part of that history. Students were asked to use their knowledge to consider the socio-scientific issue (SSI), specifically “Based on your understanding of forces and energy involved in nuclear reactions, how would you have proceeded if you were (1) a scientist in 1945 and (2) a community member in 1945?"

4399382 - Traveling through time: Exploring how chemistry influenced history and culture

***Sharon Hamilton**, hamiltons@obu.edu. **Sara Hubbard**, hubbards@obu.edu*. Ouachita Baptist University, Arkadelphia, AR, United States

There is frequently a disconnect between what students learn in their chemistry classes and how that impacted what they learn in their history classes. From advances in warfare that shaped the face of the globe to materials that allowed humans to build skyscrapers and create artwork to the women’s liberation movement, chemistry has played a significant part in all of these historical advances and events. A Chemistry travel class was developed at Ouachita Baptist University to help students build these connections. Participating students learn about historically significant compounds in various areas of chemistry in addition to exploring the chemistry behind culturally relevant things like artistic materials and food. The course blends classroom lectures with laboratory experiences, including the training and use of a handheld x-ray fluorescence (XRF) spectrometer to analyze cultural heritage items from Ouachita’s collection. Upon completion of the semester-long class, students and faculty travel to Europe to visit places of chemical and historical importance. This presentation will highlight some of the history of chemistry that students learn in the course; sites that are visited during the trip; and changes that were made to the course over the last three years between the first and second iterations. With the goal of the class being to connect concepts, events, and discoveries across a liberal arts education, student impressions and testimonials will be discussed as well.

4413646 - From alembics to stained glass: A study abroad history of chemistry course

Johnathan Broome, *Johnathan.Broome@usm.edu***.** University of Southern Mississippi, Hattiesburg, MS, United States

This presentation explores the design, implementation, and impact of the course: *History of Chemistry in London*, a 16-day study abroad course that introduces students to chemical history through the lens of glass. Set in London and surrounding locales, the course blends academics and cultural exploration, guiding students through museums, historical sites, and scientific institutions that showcase the pivotal role of glass in chemical discovery and scientific thought. From the Royal Society, the Science Museum, the Greenwich Observatory, and the History of Science Museum in Oxford, students engage with artifacts, lectures, and guided tours that illuminate the evolution of chemistry and scientific thought. The presentation will also showcase activities such as scavenger hunts, reflective writing, and discussions that encourage students to connect historical developments with modern scientific understanding. This talk will highlight locations, activities, and pedagogical strategies used to foster cultural sensitivity and student engagement, offering a model for integrating history, culture, science, and travel in chemical education.

4414310 - Decoding archaeology with chemistry: Teaching concepts and the literature through the lens of archaeology

Patrick Hare*, harep1@nku.edu*. Chemistry and Biochemistry, Northern Kentucky University, Highland Heights, KY, United States

A one-semester honors course for non-majors was developed to teach aspects of chemistry through its application to the study of archaeological sites and artifacts. The course is organized around ten articles from the literature focused on specific sites or artifacts, each covering a topic like carbon dating, proteomics, or plastics. Chemistry topics are explored through in-class group exercises and hands-on demos. A special emphasis is placed on local sites and artifacts to build on and deepen students' connections to the region. Course learning outcomes, topics, student impressions, and possibilities for adaptation to other audiences will be presented.

4398900 - Using history, art, and results of scientific travels in teaching chemistry

David Katz*, dakatz45@msn.com*. Retired, Wilmington, DE, United States

Modern textbooks and course content generally present chemistry and chemical concepts as finished products. The process of science that leads from initial observations to our modern models and concepts is lacking from most chemistry textbooks and chemistry courses. History not only presents concepts starting with a simplified view, but tracing the evolution of chemical knowledge through the lens of explorers, artists, and pioneering scientists, students gain a richer understanding of both the discipline and the world it has shaped. Thus, chemistry, in the opinion of this author, encourages students to view chemistry not only as a science, but as a dynamic narrative woven through human achievement. This author has incorporated historical information, photos, diagrams, and observations from personal travel into course notes and PowerPoint presentations used in classes. This presentation will show a number of PowerPoint slides, along with excerpts from classical papers, that can be accessed from the author's website (http://www.chymist.com) for inclusion into your own course notes and PowerPoint presentations on history of chemistry, measurement, element symbols, and the periodic classification of the elements.

4398903 - Using history, art, and results of scientific travels in teaching chemistry, part 2

David Katz*, dakatz45@msn.com*. Retired, Wilmington, DE, United States

This presentation continues the discussion on the innovative use of history, art, and scientific travels to enhance the teaching of chemistry. The focus is on providing a number of PowerPoint slides, original papers, and related articles that can be accessed from the author's website (http://www.chymist.com) for inclusion into your own course notes and PowerPoint presentations on atomic theory and nuclear chemistry.

4411931 - Assessing the decline of iodine potency in Nepal's fortified salt: A sub-national investigation from point of sale to consumption

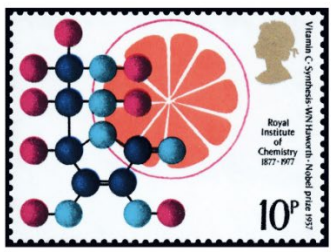
Aryan Bhatta[1]*, ab1340@rit.edu. Bipin Baral*[2], [1]Biomedical Engineering, Rochester Institute of Technology, Rochester, NY, United States, [2]Chemistry, Premier International Ltd, Kathmandu, Nepal.

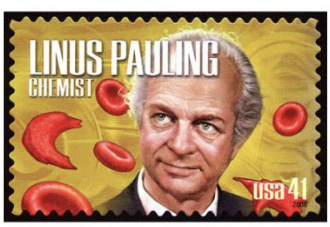
Iodine deficiency remains a critical public health issue in the country of Nepal, and universal salt iodization is a widely adopted strategy to address it. This study investigates the stability of iodine in fortified table salt (NaCl) by comparing iodine levels between the point of sale and the point of consumption across four out of seven provinces of the country. Samples were collected from sealed commercial packages and household kitchens, and iodine content was quantified using the redox titration method with sodium thiosulfate. Results indicate that while iodine levels at the point of sale consistently fell within the WHO-recommended range of 15–40 ppm, concentrations at the point of consumption were lower, in some cases approaching the lower threshold. This reduction is attributed to iodine's volatile nature and its loss during storage and handling. The findings emphasize that the main challenge to maintaining adequate iodine intake is not fortification quality at production or sale, but rather post-purchase factors that influence iodine stability. Improved consumer awareness and storage practices are therefore critical for sustaining iodine effectiveness in salt fortification programs. Moreover this sub-national assessment illustrates how chemistry education can integrate public-health challenges into laboratory instruction, with the methodology and results serving as a teaching tool that links everyday nutrition to core chemical principles of analysis and reaction dynamics.

4413729 - Chemical philately in science communication and chemistry

Daniel Rabinovich*, Dan.Rabinovich@uncg.edu.* Dept. of Nanoscience, UNC Greensboro, Greensboro, North Carolina, United States

Postage stamps are a simple yet effective means of communication, often used by governments and postal authorities to apprise the public on a variety of topics, including historical events, tourist attractions, and national accomplishments in the arts. A surprisingly large number of stamps have also been issued to commemorate scientific discoveries or to honor well-known scientists. This presentation will feature postage stamps illustrating the history of chemistry, the discovery and natural sources of several chemical elements, the development of the periodic table, chemical formulas and molecular structures, glassware and laboratory equipment, biochemistry, and various aspects of the chemical industry. As such, stamps have been used by the author to enhance lectures in general and inorganic chemistry, to communicate science to lay audiences, and to appeal to the broad community in a range of outreach activities.





4412754 - Brushstrokes to blood spatter: Making chemistry come alive for everyone

***Leslie Hiatt**, hiattl@apsu.edu.* ***Anuradha Pathiranage**, pathiranagea@apsu.edu*. *Cody Covington*, Chemistry, Austin Peay State University, Clarksville, TN, United States

Engaging non-science majors in chemistry requires bridging scientific principles with cultural, historical, and creative contexts that resonate beyond the laboratory. At Austin Peay State University, we developed *Chemistry for Everyone*, a lecture–lab course designed to make chemistry accessible and relevant through real-world connections. Many non-majors enter the classroom with anxiety, past struggles, or the belief that chemistry is abstract and irrelevant. Meeting this challenge requires more than simplifying content; it calls for reframing concepts to connect with everyday experiences, cultural conversations, and creative expression. Lecture topics link chemistry to topics such as forensics with mock crime scenes, the chemistry of fire and fireworks, poisons and medicines in history, and materials in warfare. Laboratory activities reinforce these themes with hands-on experiences such as painting with red cabbage pH indicators, tie-dyeing with indigo, and even metal forging. Together, these approaches provide multiple entry points for curiosity and engagement. This presentation will share strategies, activities, and outcomes that other faculty can adapt in diverse teaching settings. *Chemistry for Everyone* has quickly become a popular general education science option, with growing enrollment each semester. Its success highlights how hands-on exploration and cultural connections can spark curiosity, reduce barriers to learning, and make chemistry meaningful for students who might otherwise disengage.

4421418 - Leveling up chemistry education: Teaching advanced concepts through art and video games

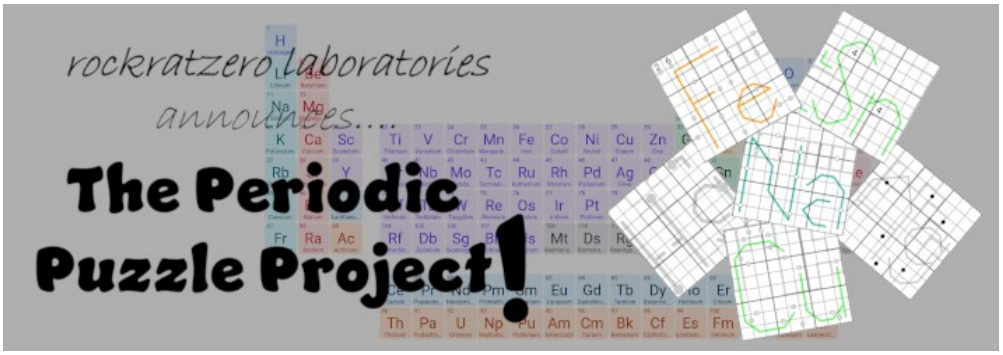
***Caitlin Hudecek**, chudecek@ucsd.edu*. University of California San Diego, La Jolla, CA, United States

Students often struggle with advanced chemistry concepts due to their complexity, compressed instructional timeframes, and limited engagement in traditional lecture- or textbook-based formats. Art, animation, and video games can enhance the teaching of chemistry by making complex topics engaging and accessible. Here, we will present a series of recently developed chemistry-focused educational tools including fantasy-themed video games, interactive lectures, and reaction animations that teach college level organic chemistry and biochemistry topics. By testing their impact on student learning and engagement, we aim to prepare these tools for widespread deployment in chemistry education.

4422142 - Periodic Puzzle Project: Development of a variant sudoku puzzle book full of chemistry history and trivia

***William Alexander**, w.alexander@memphis.edu*. Chemistry, The University of Memphis, Memphis, TN, United States.

This presentation will detail efforts to develop a book of elemental chemistry history and trivia, and corresponding variant sudoku puzzles themed for all 118 elements in the periodic table! The book project went through a sucessful Kickstarter campaign launch in fall 2025, achieving over 750% of it's backing goal. The presentation will share lessons learned along the way from conception-to-production of the book. See updates and information about the book at https://www.kickstarter.com/projects/rockratzero/periodic-puzzle-project



4410070 - Game on! Teaching chemistry with video games and interactive simulations

***Aaron Harrison**, harrisoaar005@trinity.edu*. Chemistry, Trinity University, San Antonio, TX, United States.

Video games and interactive simulations provide novel avenues for engaging students and enhancing conceptual understanding in chemistry. This presentation examines how authentic chemical principles are represented in popular video games such as absorption spectroscopy in *Playstation's Spider-Man* (2018), polymer design in *PolyCraft World*, and protein structure prediction in *FoldIt*. In addition, the presentation highlights the integration of PhET Interactive Simulations into undergraduate physical chemistry curricula to illustrate topics in quantum mechanics. By connecting chemical theory with digital interactive environments and games, these approaches have the potential to support active learning and promote student engagement.

4417313 - Chemistry in action: history, movies, and the classroom

***Elmer-Rico Mojica**, emojica@pace.edu*. Department of Chemistry and Physical Sciences, Pace University, New York, NY, United States

Teaching chemistry becomes more engaging when concepts are embedded in stories that students already find compelling. This presentation introduces the use of Chemtertainment, the integration of movie clips, historical narratives, and cultural references as a strategy to enrich the learning experience in introductory chemistry. Cinematic recreations of historical events where chemistry played a pivotal role are highlighted to illustrate fundamental scientific principles.

Examples include Napoleon's failed Russian campaign and the instability of tin buttons in extreme cold, the deployment of chlorine gas during World War I, and the Hindenburg disaster demonstrating hydrogen's flammability. By showing film and documentary scenes that dramatize these events, chemistry is presented not only as an abstract discipline but also as a force that has shaped the course of human history. These clips are paired with guided discussions and concise explanations that link the cinematic portrayals to the underlying chemical concepts, demonstrating how history on screen can serve as a powerful and memorable classroom tool for teaching science.

4418048 - Harry Potter: The science behind the magic

***Olivia Owens**, owenso@obu.edu*. Ouachita Baptist University, Arkadelphia, AR, United States. 2. Vanderbilt University, Nashville, TN, United States

Popular culture offers a unique and powerful entry point for engaging students in chemistry and related sciences. This presentation highlights a course built around the Harry Potter series, where magical phenomena from the books and films are reimagined through the lens of real-world scientific principles. Lessons are framed as "wizarding classes" such as Potions, Charms, Herbology, and Flying, each paired with core topics including polymers and crosslinking, acids and bases, magnetism, plant and animal science, and the physics of gravity and motion. Students participate in themed experiments, demonstrations, and assessments, ranging from house competitions and O.W.L. exams to hands-on challenges like a Golden Snitch catapult contest, that transform abstract concepts into tangible experiences. By reimagining traditional STEM content through the lens of a familiar cultural narrative, this approach fosters curiosity, improves conceptual understanding, and makes science feel magical in its own right. Students leave seeing science not as a collection of formulas, but as a field alive with creativity, discovery, and wonder.

4420606 - Crochet, campaigns, and chemistry: Engaging the public through art and pop culture

***Victoria Russell**[1,2], victoria.russell@utah.edu*. 1. Department of Chemistry, The University of Utah, Salt Lake City, UT, United States. 2. NSF Center for Synthetic Organic Electrochemistry, Rolla, MO, United States

Chemistry comes alive for broader audiences when it connects to familiar cultural practices and creative expression. Through the STEM Ambassador Program (STEMAP), scientists are trained to design outreach projects that engage communities in nontraditional venues. Building on this model, graduate students and postdocs with the NSF Center for Synthetic Organic Electrochemistry (CSOE) developed projects that merged chemistry with art, craft, and pop culture. One project used crochet to introduce concepts such as molecular structures, the mole, chemistry glassware, and even electrochemistry through handmade plush molecules and laboratory equipment. Another designed a Dungeons & Dragons campaign where players encountered electrochemistry woven into the storyline of their quest. These efforts show how blending chemistry with cultural touchstones not only draws in new audiences but also reshapes how scientists think about communication, creativity, and their role in society.

4410924 - Art in science: A roadmap to confidence through creativity & communication

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Science& is a nonprofit organization that uses art to teach essential communication skills to scientists. Science& is dedicated to providing the next generation of STEM leaders with professional development that empowers their authenticity. This talk will provide a roadmap for increasing the confidence, resilience, cultural awareness, and sense of belonging of undergraduate, graduate, and early-career scientists through arts-based programming. Science& workshops focus on the visual, written, and verbal communication of data, as well as resilience to failure and authentic professionalism. To teach these skills, Science& translates practices from across the arts to the everyday needs of scientists. We will share data from over 300 participant surveys demonstrating the positive impact of our approach on science identity. By introducing arts-based skills like graphic design and performance, and utilizing tools like audience interaction and pop culture references, Science&'s methodology effectively and inclusively engages early career scientists.

4401924 - Art and chemistry: Partners in progress

Mary Virginia Orna*, maryvirginiaorna@gmail.com*. ChemSource Inc, Mount Vernon, NY, United States

The discovery, use and development of various materials for artistic purposes is the subject of this presentation. Beginning with the Stone Age, ancient humans applied heat to plant, animal and mineral substances, effecting chemical transformations into products useful for artistic expression. Some of these products, like metals and glass, gave rise to flourishing artistic specialties like sculpture and ceramics. A key component of almost every work of art was color, a property that remained associated intimately with the material in which it inhered; how it was produced stretched the artist-chemist's versatility to the limit. Discovery of new artistic materials also went hand in hand with the discovery of the elements, particularly in the area of pigment production. At every step along the way, new discoveries by chemists placed new artistic materials into the hands of artists so quickly that the two disciplines actually co-evolved as partners in progress. This theme was the thread that guided my course, "Chemistry and Artists' Colors," and my accompanying textbook, which has been adopted by many educational institutions, for many years.

4419887 - From public murals to pop culture: Integrating art into general chemistry courses

Amanda Norbutus, Valencia College

Chemistry is deeply connected to the human experience, yet in traditional classrooms it is often presented in the abstract, with an equation-driven focus and limited connections to everyday life. This presentation will highlight approaches for bridging general chemistry concepts with art, history, and pop culture to create student learning experiences that resonate beyond the textbook. Examples from a *Science of Art* lecture and lab course will be used to illustrate strategies for designing authentic assessments, projects and discussions without reliance on a standard chemistry textbook. These include exploration of pigment chemistry, weathering mechanisms in public murals, the molecular basis of historical dyes, and the chemistry underlying cultural touchpoints in popular media such as cosmetics, tattoos, and special effects in theme parks.

Practical methods for incorporating shorter *Art in Chemistry* modules into general chemistry courses will also be reviewed, including lectures on graffiti removal, analysis of plastics in consumer products, scientific exploration of viral social media hacks, and preservation concerns for local cultural artifacts, such as Mr. Rogers' sneakers and hand-knit sweaters. These integrative approaches demonstrate how chemistry instruction can be made more accessible and memorable by linking core scientific concepts to cultural narratives and materials. The presentation will conclude with reflections on student engagement, the challenges and rewards of teaching at the intersection of chemistry and the arts, and recommendations for instructors seeking adaptable strategies for their classrooms.

4419362 - Bringing history and chemistry into focus through daguerreotype art

Rachel Morgan Theall*, rmtheall@semo.edu*. Chemistry and Physics, Southeast Missouri State University, Cape Girardeau, MO, United States

A project has been undertaken with students to capture daguerreotype images of campus and the night sky using antique cameras. The details of the chemical processes necessary to create daguerreotypes are not well studied and the creation of a daguerreotype is challenging. To create a daguerreotype a layer of silver atoms must first be deposited on a perfectly smooth copper surface. The silver is then layered with iodine. Exposure of the iodine layer to light causes the reaction of the silver with the iodine and with processing reveals a black silver iodide image that is fixed with gold (I) cyanide. Further study of the images will be undertaken to determine thickness of the layers, the structure of the layers, and what other reactions the surface may have undergone. Though this is a historical process for creating an image, there are still many aspects of the chemistry that are relevant and left to be studied, particularly for preservation of images created 175 years ago and of the techniques used to create the images.

4412950 - Forging a Fake to Simulate reality in Fine art analysis

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Everyone loves a mystery. When a painting with a potential attribution to a well-known artist emerges, the work must be scrutinized by experts in art history and science to evaluate its authenticity. In the Chemistry and Art class at Ithaca College, this premise was used as inspiration for an activity designed to simulate such an evaluation. Students were presented with a painting purported to be made by Henry Fuseli, an established Swiss painter active in the later 18th century. They were asked to generate a list of questions, through the lens of both an art historian and an analytical scientist, that would guide their initial evaluation of the painting. They were then given time to seek answers to these questions, through scholarly art historical research and empirical scientific analysis. The students had several analytical tools at their disposal (X-ray fluorescence, IR spectroscopy, mass spec, microscopes, and IR cameras, e.g.) but were given strict limitations for their scientific analyses. All tests performed were required to be non-destructive, with the exception of one experiment done with GC/MS on serendipitously collected paint samples. Students were then tasked with presenting their conclusions, based on their art historical research and scientific analysis. Unbeknownst to the students in our class, this painting was created ahead of time, with the help of a talented art student. The student created a painting in the style of Fuseli, based on one of his lesser known works, using many of the materials available to artists during the purported time period. However, other materials were intentionally included that were incongruous

with materials available to painters at the time. For example, portions of the painting were done with titanium white and cadmium pigments that didn't become available until well after Fuseli's time. Other inconsistencies were also included with the expectation that students would apply a critical approach to style and materials as discussed in class through case studies. This project underscored the complementary nature of two seemingly disparate disciplines to yield a meaningful outcome. It also gave students a chance to use advanced instrumentation to carry out their project, connecting theory to practice in a hands-on setting. The development and implementation of this hypothesis-driven project in the course will be discussed. Outcomes will be shared, as well as lessons learned for future iterations of the activity.

4419174 - Artisanal chemistry: Teaching science and art to non-science majors

***Jennifer Bayline**, jlogan@washjeff.edu.* Chemistry, Washington and Jefferson College, Washington, PA, United States

A non-science major course *Artisanal Chemistry* is presented. Here, topics blending science and art are used to teach fundamental concepts in chemistry with a particular focus on artisanal goods. We discuss where fragrance comes from through methods of extraction followed by applications such as soap or perfume. We investigate how color works, recreating historic pigments to make paint and using metal mordants and pH to dye fabric. We use chemistry to break down plants and turn them into homemade paper. We form copper patinas to craft jewelry and learn about nanoparticles in working with stained glass. Such products represent what UNESCO defines as "intangible cultural history," traditional craftsmanship passed down through generations. This course thus combines history, chemistry, and art in considering the production of old-world artistry.

4415499 - Communicating the joy of chemistry to non-science majors via the course: Art and chemistry: Beautiful together

***Georgia Arbuckle-Keil**, arbuckle@camden.rutgers.edu*. Department of Chemistry, Rutgers The State University of New Jersey, Camden, NJ, United States

Engaging non-science majors in the joy of chemistry is one of the aims of the course that satisfies the general education requirement: Physical and Life Sciences (PLS) at Rutgers Camden. A Gen Ed PLS course is required to teach fundamental facts and principles about the scientific method while relating them to the world beyond the classroom. As an educator at a PUI, I offered to design and teach the course: Art and Chemistry: Beautiful Together with the hope of conveying the joy of learning and understanding chemistry by teaching about art. One of the premises of the course is that we are all scientists (curious about the world) and all artists (demonstrate creativity or enjoy art broadly defined to include music, theatre and creative arts). Weekly learning goals include fundamental chemistry concepts from the periodic table to acids & bases as well as basic oxidation/reduction. Many concepts are illustrated and reinforced via hands-on activities such as invisible ink (Prussian Blue), marbling of paper (pigments float on water) as well as glow sticks (demonstrate luminescence). The videos produced by The Beauty of Science (https://www.beautyofscience.com/) match well with the eBook: The Beauty of Chemistry: Art, Wonder, and Science (P. Ball, 2021) to wonderfully illustrate the amazingly intricate details of chemistry. One chapter is discussed each week both in class as well as via the app: Hypothesis. Students respond via the CMS app to questions as well as to each other thereby encouraging communication outside of the classroom. As one of the PLS goals is to communicate scientific concepts, all students select an art/chemistry topic early in the semester and develop a presentation/report focused on their unique interests. Student presentations have varied from

‘chemistry of cooking’ (sharing brownies with the class) through ‘chemistry of crocheting’ (bringing their own completed items to show) to ‘3D printing’ and ‘scuba diving.’ All reports and presentations are required to explain the chemistry, the art and why the topic is important to the student. Highlights of the course, which has been taught 6 times, will be shared.

4416837 - Connecting chemistry and cultural heritage: Teaching non-majors through traditional Chinese arts and conservation

***Joan Esson**, jesson@otterbein.edu*. Department of Chemistry, Otterbein University, Westerville, OH, United States.

Chemistry often feels abstract to non-science majors, but cultural heritage provides a powerful context for connecting chemical concepts to the materials and practices that shape human history. Two courses – a semester-long on-campus class and a short-term, faculty-led study abroad program in China – explore similar themes at the intersection of chemistry, art, and culture. While the on-campus course uses case studies and demonstrations to introduce topics such as pigments in historic paints, the material science of silk and dyeing, and approaches to studying and conserving cultural heritage objects, the study abroad experience allows students to encounter these concepts firsthand through immersive, site-based learning. The study abroad course, centered in Shanghai, Hangzhou, and Suzhou, engages students directly with cultural heritage practices and conservation work. Sample activities include visiting museums and colleges to study the chemistry of fibers and natural dyes, participating in traditional Chinese painting workshops to explore pigments and binders, and observing conservation laboratories where chemical analysis informs the preservation and restoration of cultural artifacts. These experiences provide a living laboratory for understanding how chemistry underpins artistic traditions and cultural heritage conservation. This presentation will discuss strategies for adapting on-campus course content into a dynamic study abroad format, highlighting how topics explored through readings and demonstrations can be transformed into hands-on, experiential learning. In addition, it will consider key elements of program planning, including developing partnerships with local institutions, designing culturally rich and scientifically meaningful activities, and navigating logistics such as budgeting and student preparation. By comparing and connecting these two approaches, participants will gain insights into how a shared curriculum can be adapted for both classroom learning and global engagement, helping students appreciate chemistry as a vital tool for interpreting and preserving cultural heritage.

4412764 - Beyond the lab coat: A four-iteration journey teaching chemistry through cultural heritage before, during, and after the pandemic

***Betty Galarreta**, bgalarreta@pucp.pe*. *Patricia Gonzales*, Sciences - Chemistry Section, Pontificia Universidad Catolica del Peru, Lima District, Lima Region, Peru.

The elective course "Chemistry applied to Art and Archaeology" has served as a living experience for pedagogical innovation, taught across four distinct contexts: once pre-pandemic, twice during lockdowns, and once in the "new normal" on-site sessions. Our course, taught four times between 2014 and 2025, navigated the extreme ends of this spectrum, moving from fully on-site lecture sessions, to a completely virtual mode that combined lectures, lab sessions and a research project, and, finally, to a synergistic hybrid model. We share how teaching chemistry through art and archaeology necessitates a balance between theoretical knowledge and practical application, and how it could become a catalyst for deeper learning. During the lockdowns, the loss of physical lab access prompted a strategic pivot from data acquisition to data interpretation. Using specialized

software and real datasets (XRF, Raman, FORS, SEM), students engaged in a "detective" process, proposing analytical sequences for case studies. This shift prioritized critical thinking over technical procedures. Furthermore, the virtual platform dismantled geographical barriers, allowing guest experts to become continuous collaborators rather than one-time speakers, fostering a truly interdisciplinary dialogue. Returning to on-site sessions, we integrated these successful strategies with restored hands-on opportunities. Most significantly, this model enabled us to expand into novel research topics, guiding students through different case studies, such as archaeological ceramics, ancient textiles, and sun-dried adobe bricks. This journey demonstrates that a flexible, student-centered approach can transform constraints into opportunities, ultimately creating a more robust and engaging learning experience, and promoting effective interdisciplinary communication. Our experience confirms that embracing flexibility can lead to a more profound and resilient pedagogical framework for teaching multidisciplinary science.

HIST 4409980 - Chemical symbolism through the ages: A Rookwood fountain's visual journey

Mark Chalmers*, mark.chalmers@uc.edu.* UC Libraries - Oesper Collections, University of Cincinnati, Cincinnati, Ohio, United States

Chemical symbols and imagery have changed dramatically throughout history, representing the predominant scientific understanding of their era. At the University of Cincinnati, a one-of-a-kind Rookwood Pottery fountain created in the early 20th century provides a unique artistic embodiment of this evolution. Recently, during the renovation of UC's Old Chemistry building in 2025, this century-old artifact underwent a careful 2-year preservation journey as a Rookwood specialist disassembled and reinstalled the fountain. The fountain's design elements have even inspired architectural features in the renovated building, creating a bridge between chemistry's past and future. This presentation will explore the rich symbolism integrated into this remarkable ceramic artifact, which traces the development of chemical nomenclature and symbolism from ancient cultures through the quantitative revolution of the modern era. The fountain's design incorporates ancient planetary/metallic symbols, alchemical imagery from medieval texts, representations of the four Aristotelian elements and three Paracelsian principles, phlogiston theory, Dalton's early atomic notation, and quantitative instruments embodying the state of the art of Chemistry at the time. The fountain serves as a physical timeline chronicling how chemists have represented and communicated their understanding of matter's fundamental nature over time.

HIST 4416722 - Torbern Bergman and his contributions to the development of the language of chemistry

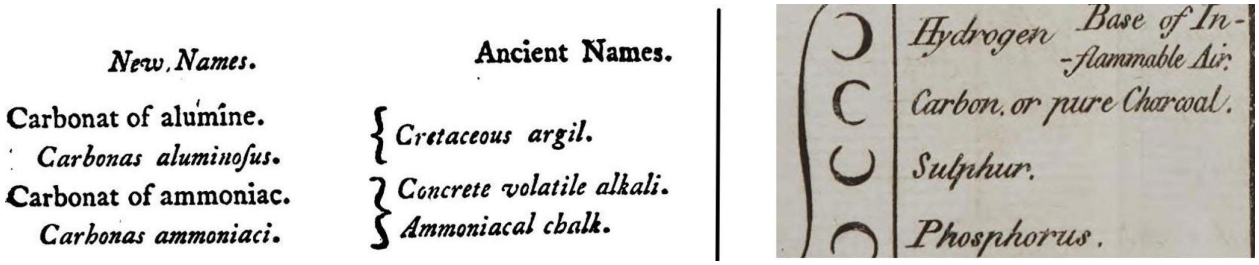
Nicolay V. Tsarevsky*, nvt@smu.edu.* Department of Chemistry, Southern Methodist University, Dallas, Texas, United States

During his relatively short life, Torbern Bergman (1735-1784) made impactful discoveries in the fields of analytical and physical chemistry and was among the pioneers of ideas related to chemical reactivity or affinity. He also made important contributions to the development of at least two aspects of the language of chemistry, specifically, a rational, composition-based chemical nomenclature and a representation of chemical reactions by what can be considered some of the first reaction schemes or "chemical equations." By the second half of the 18th Century, the number of individual substances (particularly salts, but also acids, bases, and organic compounds) that were isolated in pure form and studied had grown to a great degree, and a scientific and universally accepted system for the naming of all these substances was sorely needed. The binomial nomenclature in biology that had been proposed and was still being modified and perfected by Carl Linnaeus (1707-1778) and the classification of minerals described by Axel Cronstedt (1722-1765) in his mineralogical works were important precedents in natural science, which may well have influenced Bergman (who knew Linnaeus personally). In addition, Bergman was actively corresponding with some of the French progenitors of the upcoming chemical nomenclature, particularly Louis-Bernard Guyton de Morveau (1737-1816). Bergman realized the importance of reforming the old chemical naming system relatively early, as is evident in the notes and comments he added to *"The Chemical Lectures of H. T. Scheffer,"* published in 1775. He continued working on an improved nomenclature until the end of his life. Unfortunately, he did not live to see the publication of "*Méthode de Nomenclature Chimique*" by Guyton de Morveau, Lavoisier, Berthollet, and Fourcroy in 1787, but his ideas were certainly very influential in the creation of that work. In this talk, the evolution of Bergman's ideas on chemical nomenclature will be traced, along with his depiction of chemical reactions.

HIST 4410853 - *Méthode de nomenclature chimique*: Nomenclature that stuck and symbols that did not

Carmen J. Giunta*, giunta@lemoyne.edu.* Chemistry and Biochemistry, Le Moyne College, Syracuse, New York, United States

The *Méthode de nomenclature chimique*, published in 1787, provided the basis for the systematic nomenclature of binary inorganic compounds still recognizable more than two centuries later. The publication consists of memoirs on the need for a reformed chemical nomenclature, principles for a systematic nomenclature and explanations of a proposed system; a long list of substances named under the proposed nomenclature and names previously in use; and a proposed system of chemical symbols. The nomenclature proved to be enduring; the symbols were never widely used.



Examples of proposed new names and symbols from the English translation, *Method of Chymical Nomenclature*

HIST 4408906 - Nikolai Prokof'evich Shcheglov (1793-1831) and chemical nomenclature in Russia

***David E. Lewis**, lewisd@uwec.edu.* Chemistry and Biochemistry (Emeritus), University of Wisconsin-Eau Claire, Eau Claire, Wisconsin, United States

The nomenclature of chemistry developed in much the same way world-wide: Latin and Greek names were first used [e.g., hydrargyrum (Latin) from υδραργος (Greek), ferrum (Latin)]. The 18th century was a period during which the increasingly international reach of chemistry highlighted the need for a standardized, systematic nomenclature in chemistry. By the end of the 18th century, largely due to the work of Antoine-Laurent (de) Lavoisier (1743-1794), French had become the dominant modern language of chemistry. One of the major forays into the field was *Méthode de Nomenclature Chimique* by Louis-Bernard, baron Guyton de Morveau (1737-1816), Lavoisier, Claude Louis Berthollet (1748-1822) and Antoine-François de Fourcroy (1755-1809). The problems addressed by these French chemists were exacerbated in Russia because of the general lack of "modern" chemical education. In addition, the need for transliteration of the French names into Russian also posed a problem, despite the fact that the learned classes (i.e., the nobility) spoke French and could read both French and Latin. One of the first Russian forays into the question of a systematic Russian chemical nomenclature was set out in his *Nachal'nye Osnovaniya Khimii [First Principles of Chemistry]* by Nikolai Prokof'evich Shcheglov (1793-1831), who advocated for the replacement of the French names for certain chemical species by their common Russian names. In 1871, almost four decades after Shcheglov's premature death from cholera, Markovnikov discussed his work in a call for the modernization of Russian chemical nomenclature. A brief account of the history of Russian chemical nomenclature will be presented.

Nikolai Prokof'evich Shcheglov (1793-1831)

HIST 4397940 - From Frémy to Ewans-Basset: The evolving nomenclature of coordination complexes

Seth C. Rasmussen*, seth.rasmussen@ndsu.edu.* Chemistry and Biochemistry, North Dakota State University, Fargo, North Dakota, United States

The first general approach for naming metal complexes was the color nomenclature introduced by Edmond Frémy in 1852. While such names were originally introduced for cobalt-ammonia compounds, they were then adapted for other analogous species as well. Following the introduction of his coordination theory in 1893, Alfred Werner then went on to propose a new system of nomenclature for what were now known as coordination compounds in 1897. Although much of his nomenclature is retained in modern use, further modifications were made over time, particularly in terms of denoting the charge on either the central metal or the complex ion. This talk will present an overview of the development of our current nomenclature, beginning with the previous color-based system of Frémy. Werner's preferred systematic nomenclature will then be introduced, followed by discussion of the later contributions of Alfred Stock, Henry Bassett, and Ronald V. G. Ewens.

HIST 4421291 - Toward consensus in standardization: The 1892 Geneva congress on organic nomenclature

Kristine L. Konkol*, kristine.konkol@asurams.edu.* Department of Natural Sciences, Albany State University, Albany, Georgia, United States

By the end of the 19th century, the rapidly expanding field of organic chemistry had produced a disorganized collection of competing names for newly discovered compounds. In response to the lack of standardization, chemists from across Europe convened in Geneva in 1892 at the *Congrès de Nomenclature Chimique.* This meeting marked the first international effort to establish a systematic method for naming organic compounds, resulting in the ‘Geneva system’, a set of rules that laid the foundational principles for the nomenclature of aliphatic compounds and demonstrated the viability of international agreement in chemical language. Although the rules established at the Geneva Congress were later expanded and revised, the consensus achieved at the meeting formed a crucial step toward the modern system of standardized nomenclature in use today. This presentation will examine the historical context, determinations, and lasting impact of the Geneva Congress on the evolution of chemical nomenclature.

HIST 4415601 - From polymers to macromolecules and back again: The evolution of terminology and nomenclature for polymeric materials

Seth C. Rasmussen*, seth.rasmussen@ndsu.edu.* Department of Chemistry and Biochemistry, North Dakota State University, Fargo, North Dakota, United States

Fully synthetic polymers date to 1834, only two years after the term polymer was first introduced by Jacob Berzelius (1779-1948). Of course, the meaning of what constitutes a polymer has changed significantly over time, leading to the introduction of new terms in efforts to better describe these materials. Considering the confusion involved with just developing such suitable terms to describe these species, the development of a standard nomenclature was even more complicated

and problematic. This talk will first present an overview of the early development of polymer terminology, before covering early efforts to establish a form of systematic nomenclature for both simple polymers and the more complicated copolymeric analogues.

HIST 4410885 - Metric system and the United States

***Carmen J. Giunta**, giunta@lemoyne.edu.* Chemistry and Biochemistry, Le Moyne College, Syracuse, New York, United States

It is widely known that the United States is the largest of a very few nations that do not use the metric system directly in everyday weights and measures. Less well known are the facts that the US was among the signatories of the Metre Convention in 1875 and that the meter and the kilogram have been the fundamental standards of length and mass in the US since the late nineteenth century. The US and the metric system are nearly the same age, and the US had opportunities to develop an alternative decimal system of units and to become an early adopter of the metric system. This presentation gives an overview of the history of the status of the metric system in the US.

HIST 4413696 - Philatelic history of the metric system and the SI units

***Daniel Rabinovich**, Dan.Rabinovich@uncg.edu.* Dept. of Nanoscience, UNC Greensboro, Greensboro, North Carolina, United States

The International System of Units (SI) constitutes the modern form of the metric system and is the world's most widely used system of measurement, playing a fundamental role in modern science, technology, industry, and commerce. This presentation will use postage stamps to describe the history of the metric system, starting with the first attempts to standardize the units of measurement towards the end of the French Revolution (1789-1799). The metric system slowly spread to other countries in Europe and South America in the ensuing decades even though alternative units of measurement were still prevalent in many other regions of the world. The quest for a more broadly recognized system of measurements led in 1875 to the *Convention du Mètre*, where the International Bureau of Weights and Measures (BIPM) was created to oversee the implementation of universal metric standards. The development and implementation of the seven base units of measurement (meter, kilogram, second, ampere, kelvin, mole, candela) as well as several derived SI units (*e.g.,* newton, hertz, coulomb, volt, tesla) will also be discussed in this presentation.

HIST 4419628 - IUPAC, IUPAP and the symbols for Helmholtz free energy

Brigitte Van Tiggelen*, bvantiggelen@sciencehistory.org.* Science History Institute, Philadelphia, Pennsylvania, United States

International scientific organizations are expected to negotiate regulations and guidelines to support a standard language that all scientists across the globe can share. It's not only about names of elements, units, or terminology, but also the symbols used in the mathematical discourse that supports scientific theories and explanations. What happens when disciplinary usage and traditions on symbols collide and how do different communities come to an agreement? Among other situations that confronted chemists' and physicists' views was the symbol to represent the Helmholtz free energy. The so-called Helmholtz and Gibbs energies were both represented by F, while A was also in use for the Helmholtz energy. The commission on symbols, terminology and units recommended that 'A' be used for the Helmholtz energy and 'G' for the Gibbs energy, a suggestion which was endorsed by the IUPAC in 1961 and 1963. Thermodynamics however was also the playground of physicists who didn't agree with this change and wanted to stick with F… This paper will review the case and examine what it reveals on the arbitration between disciplines at the international level.

HIST 4399590 - Symbolic representation and the computerization of chemistry

David C. Thompson*, dthompson@chemcomp.com.* Chemical Computing Group, Montreal, Quebec, Canada

The advent of quantum theory heralded a mathematization of chemistry and chemical systems. Evolving definitions of electronic structure, patterns of bonding, and reaction schemes resulted in clearly defined entities of chemical interest. Once suitably formalized, and in conjunction with the development of devices capable of automated computation, the computerization of chemistry was an inevitability. This work describes the historical development of the representational choices required to enable that computerization. Encoding molecular information into file formats required deliberate choices. Here, emphasis is placed on the decisions surrounding symbolic representation, terminology, and nomenclature, along with their consequences. Accordingly, decades of adoption have given rise to ecosystems of participants who routinely 'perform' chemistry with computers, often within multiscale platforms now capable of operating across molecular modalities. The second section explores this chemistry-focused software ecosystem, with a focus on the inherent challenge of interoperability among competing representations. Finally, comments are made on the evolution of molecular representation in the age of artificial intelligence and machine learning.

HIST 4421569 - Naming the un-nameable: PFAS terminology, industrial complications, and environmental challenges

Laurel A. Royer*, carinaliscandr@gmail.com.* Carinalis Consulting and Research, Atlanta, Georgia, United States

The language of per- and polyfluoroalkyl substances (PFAS) reveals the deep entanglement of chemistry, industry, and society. Since their commercial introduction in the 1940s, PFAS have been described in multiple—and sometimes conflicting—ways, from trade names to regulatory categories such as “long-chain” and “short-chain,” to the popular yet contested moniker “forever chemicals.” These shifting terms reflect evolving scientific understanding and political framing, but they often obscure the structural and functional diversity of PFAS, leaving a persistent gap between chemical precision and public communication. Ambiguities in PFAS terminology complicate regulatory action, international trade, and corporate accountability. Standard identifiers such as CAS numbers fail to capture broad classes of PFAS, while umbrella terms mask critical differences in behavior, toxicity, and environmental fate. At the same time, symbolic phrases like “forever chemicals” amplify public concern but risk oversimplification. The struggle to define PFAS illustrates the broader challenges of chemical nomenclature in a globalized, industrial context: the names we choose determine what is measured, regulated, substituted, or overlooked. This presentation situates PFAS within the history of chemical nomenclature, showing how the terms, we adopt not only reflect scientific progress but also shape industrial practices, regulatory decisions, and public understanding—ultimately influencing what becomes visible in global environmental impacts and what remains obscured.