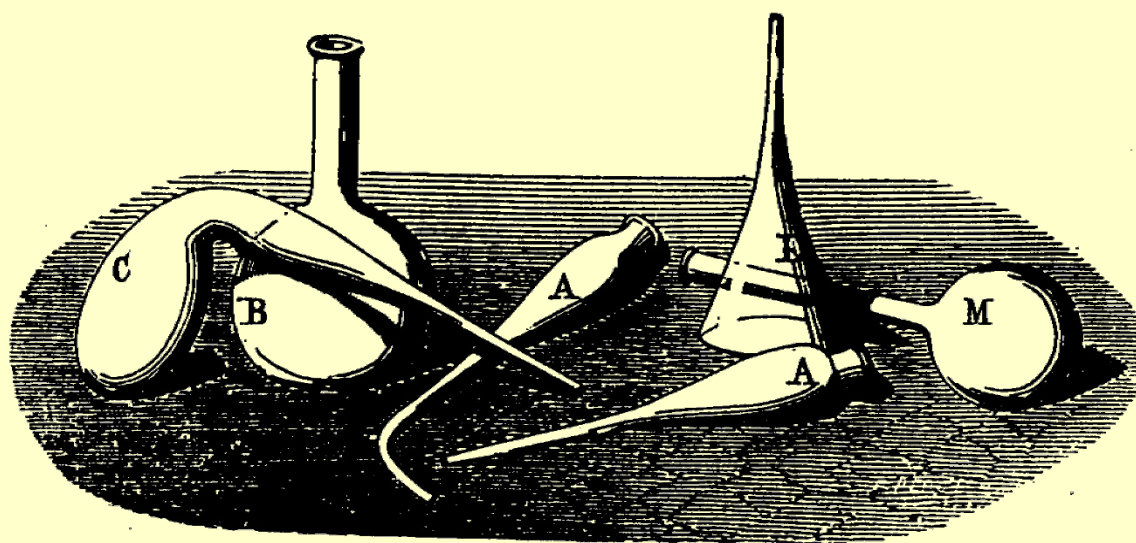




ACS
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American Chemical Society
**DIVISION OF THE
HISTORY OF CHEMISTRY**



NEWSLETTER, PROGRAM & ABSTRACTS

262nd ACS National Meeting
Atlanta, GA (in-person and virtual)
August 22-26, 2021

Nicolay V. Tsarevsky, 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, 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

Much has happened since my last message to the HIST membership. Since then, the division survived its first fully virtual sessions during the Spring national meeting and is now preparing for a mix of virtual and hybrid sessions for the Fall national meeting in Atlanta next month. While this will be a partial return to norm, with many speakers presenting in-person in Atlanta, many will also be participating virtually. Although the presence of HIST leadership will similarly be divided, several of the Executive Committee will be onsite to represent the division and everyone will be actively participating (either in-person or virtually) in what will hopefully be an exciting collection of HIST sessions. While the fully virtual sessions of the last meeting limited some critical aspects of meetings (such as informal discussions/networking between sessions, etc.), it also opened up HIST programming to members that normally would not be able to attend the national meeting. As such, we are all interested to see how the hybrid meeting format will work to see if it might be able to capture the best of both worlds, and what lessons we can learn for the future of HIST technical sessions. As I said last time, the future of national (and regional) meetings remains a particular focus for the HIST Executive Committee and we welcome your input as to ways you might think we should meet this challenge.

Speaking of the HIST Executive Committee, I happy to announce the addition of two new members to our merry band of jesters. Mihaela Stefan (University of Texas at Dallas) is joining as Associate Program Chair, where she will be assisting Nick with the planning and execution of HIST programming at national meetings. With the everchanging face of meeting formats and new challenges, this will be an important contribution to the future of HIST programming. In addition, Kristine Konkol (Albany State University) is joining the committee to fill the newly created position of Communications Chair. In this role, she will be working to enhance communication and outreach across the division, helping to advertise HIST activities, as well as to build connections both within ACS and internationally through interactions with other history organizations.

In continuing efforts to increase the visibility of HIST within the greater global historical community, as well as build connections between HIST and other historical societies, I have been busy this summer representing the division and



giving talks at various international symposia and conferences. This included a talk at the inaugural *Substantia Short Talks* symposium, an online event organized by the history of chemistry journal *Substantia*, and a recent talk at the 26th International Congress of History of Science and Technology as part of a symposium organized under the Commission for the History of Chemistry and Molecular Sciences. Here, particularly, I am working with those within the commission to see how HIST can partner to increase activities in the greater history of chemistry community. I will give one last talk in *The Nature of Discovery in the Chemical Sciences and Technology* symposium at the joint IUPAC World Chemistry Congress and Canadian Chemistry Conference and Exhibition, which will take place the week before the ACS meeting in Atlanta. Unfortunately, all of these conferences have been virtual, but I have been working to build new contacts and connections within the international community none-the-less.

Looking to the future, a couple new initiatives are in the works. One of these would provide formal history training for chemists with an interest in historical research, while the other aims to bring together chemists, chemists-historians, and professional historians of chemistry with the intent of promoting the publication of jointly authored papers. While these efforts are still in the early stages, I will share more details as they become available. Of course, both of these efforts would work to increase the number of active historians of chemistry, which is a worthwhile goal. As always, please don't hesitate to contact me with your ideas or suggestions.

Seth C. Rasmussen, HIST Chair

Report of Councilors, Division of the History of Chemistry 261st ACS National Meeting – Virtual Council Meeting (March 24, 2021)

Actions of the Council

1. Elections

Candidates for President-Elect, 2022

The Committee on Nominations and Elections presented to the Council the following nominees for selection as candidates for President-Elect, 2022: Gerard Baillely, Anne M. Gaffney, Judith C. Giordan, and John C. Warner. By electronic ballot, the Council selected **Judith C. Giordan** and **John C. Warner** as **candidates for 2022 President-Elect**. These two candidates, along with any candidates selected via petitions, will stand for election in the Fall National Election.

President-Elect, 2022a Nominee	1st Round	2nd Round	3rd Round
Gerard Baillely	63	73	-
Anne M. Gaffney	50	-	-
*Judith C. Giordan	174	187	212
*John C. Warner	128	155	175

Candidates for Districts I and V

The Committee on Nominations and Elections announced the results of the election held prior to the virtual Council meeting to select *candidates* from the list of *nominees* for Directors from District I and District V on the Board of Directors for the term 2022-2024. By internet ballot, the Councilors from these districts selected **D. Richard Cobb** and **Katherine L. Lee** as **District I candidates**; and **Lisa Balbes** and **Joseph A. Heppert** as **District V candidates**. Ballots will be distributed to members residing in District I and District V around October 1, 2021.

Candidates for Directors-at-Large

The Committee on Nominations and Elections announced the selection of the following **candidates for Directors-at-Large** for 2022-2024 terms: **Rodney M. Bennett, Arlene Garrison, Natalie A. LaFranzo, and Lee H. Latimer**. The election of two Directors-at-Large from among these four candidates and any selected via petition will be conducted in the fall. Ballots will be distributed to all Councilors around October 1, 2021.

2. Other Council Actions

Committee on Committees Petition

The Council approved the *Petition to Harmonize Committee Structures, Processes, and Terms*, as amended. • This petition places all committees in one category called “Society Committees” – eliminating the several different types of committees.

- The years of service and the number of committee members on each Society Committee would now be consistent and would match the present terms of the Elected Committees: three-year terms with a two-term maximum for committee members.
- Certain (6) Society Committees will no longer have the “Councilor only” designation, allowing an individual to join and continue service on a committee regardless of their status as a Councilor.
- The Committee on Committees amended the petition prior to bringing it to Council, in response to several committees’ concerns, to include the **bolded** phrase:

The terms for a member of a Society Committee shall be three calendar years. A member of a Society Committee shall be eligible to serve two successive three-year terms on the same committee, **however, that service could be extended if the appointing officer(s) determines that there is a compelling need for ongoing expertise on the committee.**

- The Petition will become effective immediately upon approval by the Board of Directors, however, existing committee assignments will be to start a transition to the term limits on January 1, 2022.

Committee on Local Section Activities Petition

The Council approved the *Petition to Amend the Duties of the Committee on Local Section Activities*.

- This petition provides the Committee on Local Section Activities with the authority to support Local Sections by taking action on their behalf, including appointing an interim executive committee and/or facilitating a Local Section’s election when there is a lapse in the local section’s leadership.

2022 Schedule of Membership

The Council approved the 2022 Schedule of Membership, upon recommendation of the Committee on Membership Affairs: • The Schedule reduces the base dues rate to \$160 per year

- It establishes various dues categories and benefits packages based upon career stages, role in the chemical enterprise, and desired level of interaction by the Member with the Society.

Updates to the ACS Strategic Plan

The ACS Board of Directors approved extensive changes to the ACS Strategic Plan last December. • Equity was added to our Core Values, which now include on Diversity, Equity, Inclusion and Respect.

- Our Vision and Mission statements were modified to make clear that these statements include all people.
- A fifth Strategic Goal: ‘To Embrace and to Advance Inclusion in Chemistry’, was added to make clear that Diversity, Equity, Inclusion and Respect was our commitment at the same level as our long-standing four strategic goals.

Continuation of Committees

The Council approved the recommendation of the Committee on Committees that the Committee on Ethics be continued.

Committee on Divisional Activities Distribution Formula

The Council approved the Distribution Formula for Division Allocations upon the recommendation of the Committee on Divisional Activities.

- ACS Standing Rules state that 9% of the ACS Member Dues Pool be allocated to the technical divisions.
- The new allocation formula is transparent, immediately implementable, reduces the year-to-year variation in the distribution amount and will work in all current national meeting formats.
- The new formula increases the base allotment and the per division member allotment portion of the pool to be distributed among the 32 Divisions.
- The portion of the pool devoted to Innovative Project and Strategic Planning Grants will increase from 10 to 15%. The intent is to support division strategic planning, expand the scope of innovative projects grants, and fund shortfalls due to the capping of year-to-year losses.
- A 7.5% cap on the year-to-year distribution gain/loss by a division is intended to increase stability and give divisions a chance to adjust to the new formula.
- This formula is considered transitional and will be reviewed by the Committee on Divisional Activities yearly.

Highlights from Committee Reports

Budget and Finance. In 2020, ACS generated a net from operations of \$61 million, which was almost \$20 million higher than the budget. Total revenues were \$618.4 million, increasing 3.9% or \$23.1 million over 2019. Expenses for the year were \$557.4 million, virtually even with the prior year and almost 5% below budget. This result was attributable to strong revenue performance from the Society's Information Services units (i.e., CAS and ACS Publications) and a combination of COVID-19 related impacts on, and careful management of, expenses across the ACS.

The Society's 2020 Net from Operations totaled \$130.5 million and included Information Services and Investments. The Society's financial position strengthened considerably in 2020, with Unrestricted Net Assets, or reserves, increasing by 35 percent to \$553 million at December 31. The increase was primarily the result of the \$61 million net from operations, and growth of the Society's investments totaling \$66 million.

Nominations and Elections. The Committee on Nominations and Elections solicits Councilors' input regarding qualified individuals for President-Elect and/or Directors for future consideration. Suggestions may be sent to nonelect@acs.org.

Meetings & Expositions. The Spring 2021 Meeting will be held virtually, with the live portion from April 5-16, followed by 2-weeks of on-demand access. There will be 120 scientific sessions held live per day, with live Q&A to follow, and visibility of other attendees in the room. The price for registration has been significantly reduced to \$99 for ACS Members and \$29 for students. To date, 8,724 abstracts have been accepted.

Online Preference Forms for Councilors. All Councilors, including new Councilors, were reminded to complete their online committee preference form for 2022 committee assignments. The committee preference form will open on April 1 and will close on July 1, 2021. If you are interested in serving on an ACS Committee, please go to <https://www.yellowbook.acs.org> to complete your preferences. This is especially important for committee associates, consultants, those finishing a term, those who will reach the statutory limit (final year) on their present committee, and those who are up for reelection as Councilor for a division or local section.

HIST Councilors

Mary Virginia Orna is serving as an associate member of the Senior Chemists Committee (SCC). She is on the SCC/YCC Networking Subcommittee and also on the Great Connections Working Group.

Roger Egolf is serving as a member of the Meetings and Expositions Committee (M&E) and its Technical Program Subcommittee. That subcommittee is responsible for advising the ACS meetings staff on the format of national meeting technical programming and the allocation of meeting rooms to the various divisions. Since the COVID pandemic began, M&E has been meeting regularly with the Program Chairs and ACS staff to get updates on the status of upcoming meetings and to make suggestions to ACS staff as they plan the future of ACS national meetings.

Prepared and submitted by Mary Virginia Orna and Roger Egolf, HIST councilors

News and Announcements

Awards

Morris Award 2021

The Morris Award of the Society for the History of Alchemy and Chemistry (SHAC) for 2021 has been given to Ernst Homburg for his outstanding work on the history of the chemical industry. His contributions include major studies on the history of the madder industry; his seminal paper on the early history of industrial R&D laboratories; his comprehensive history of twentieth-century modern chemistry and the chemical industry embedded within a broader history of the Netherlands in *Techniek In Nederland in the Twintigste Eeuw*. And, particularly (in the context of this award), his “The Era of Diversification and Globalization (1950-2012)” in *Solvay: History of a Multinational Family Firm* (CUP, 2013), a book he co-edited with Kenneth Bertrams and Nicolas Coupain.

Ernst Homburg has given great service to the history of chemistry community. He edited the *Ambix* book reviews for ten years; served as a member of SHAC Council for twenty years; chaired the Historical Group of the Dutch Chemical Society for twelve years; was president of the Dutch History of Science Society (GeWiNa) between 1995 and 1998; and chaired the Working Party on the History of Chemistry of the European Association for Chemical and Molecular Sciences for six years up to 2009. He was a Professor in the Faculty of Arts and Sciences at the University of Maastricht until his recent retirement.

The Morris Award honors the memory of John and Martha Morris, the late parents of Peter Morris, the former editor of *Ambix* and recognizes scholarly achievement in the History of Modern Chemistry (post-1945) or the History of the Chemical Industry. The next award will take place in 2024. A call for nominations will be circulated in 2023.

History of Chemistry Books

150 Years of the Periodic Table: A Commemorative Symposium published

An edited volume based on a 2019 symposium on the Periodic Table has been published recently by

Springer. *150 Years of the Periodic Table: A Commemorative Symposium*, is very much a HIST production. The volume editors, Carmen Giunta, Vera Mainz, and Gregory Girolami organized the symposium for the fall 2019 ACS national meeting, sponsored by HIST and INOR,

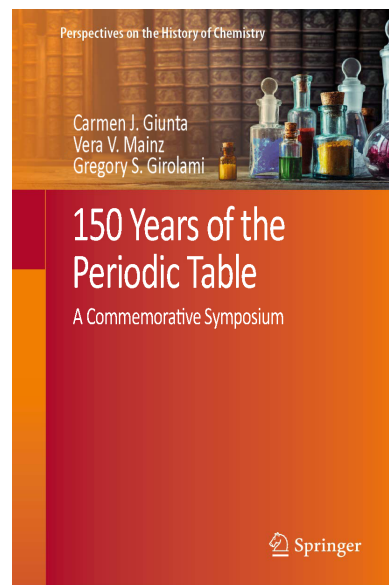
as part of the year-long UNESCO-sponsored International Year of the Periodic Table. The volume appears as part of the series Perspectives on the History of Chemistry, for which Seth Rasmussen is series editor. It is available in hardcover or as an eBook:

<https://www.springer.com/us/book/9783030679095> or electronically by chapter via SpringerLink.

We the editors are proud of the result, which, we believe, contains much new scholarship (not easy in a field that has been well-tilled by lots of people over many years) in a text written in a scholarly and highly interesting way. The chapters in the book relate a wealth of little-known and underappreciated aspects of the history of the periodic table, and they contain a large number of genuinely new and important facts and insights. Those with a general interest in the history of chemistry will find much of interest, and even experts will learn things they did not know.

The book's first section treats Dmitri Mendeleev and his predecessors.

- Ann Robinson, “Dmitri Mendeleev and the Periodic System: Philosophy, Periodicity, and Predictions”
- William Jensen, “The Trouble with Triads”
- Gary Patterson and Ronald Brashear, “Josiah Parsons Cooke, the Natural Philosophy of Sir John F. W. Herschel and the Rational Chemistry of the Elements”



- Carmen Giunta, “Vis tellurique of Alexandre-Émile Béguyer de Chancourtois”
- Carmen Giunta, Vera Mainz, and Julianna Poole-Sawyer, “Periodicity in Britain: The Periodic Tables of Odling and Newlands.”
- Gregory Girolami, “Gustavus Hinrichs and his Charts of the Elements”
- Gisela Boeck, “The Periodic Table of the Elements and Lothar Meyer”
- Vera Mainz, “Translation of §§ 91-94 of Lothar Meyer’s *Modernen Theorien* (1864)”

The next several chapters treat the discoveries of new elements, particularly after Mendeleev first formulated his periodic system in 1869.

- Mary Virginia Orna and Marco Fontani, “Discovery of Three Elements Predicted by Mendeleev’s Table: Gallium, Scandium, and Germanium”
- Simon Cotton, “The Rare Earths, A Challenge to Mendeleev, No Less Today”
- Jay Labinger, “The History (and Pre-History) of the Discovery and Chemistry of the Noble Gases”
- Kit Chapman, “Element Discovery and the Birth of the Atomic Age”
- Vera Mainz, “Mary Elvira Weeks and *Discovery of the Elements*”

The final set of chapters examines aspects of the periodic system and its elements from perspectives of other disciplines.

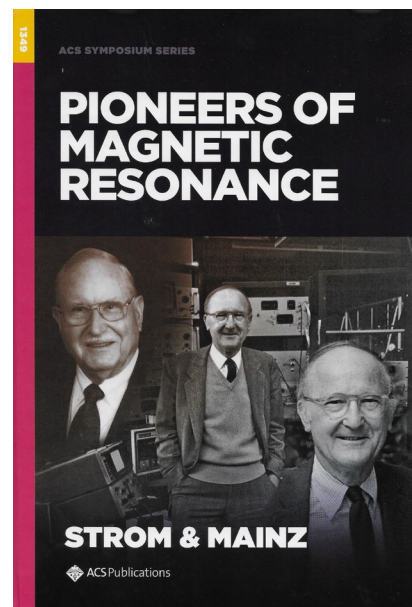
- Virginia Trimble, “Astronomy Meets the Periodic Table. Or, How Much Is There of What, and Why?”
- Eric Scerri, “The Impact of Twentieth Century Physics on the Periodic Table and Some Remaining Questions in the Twenty-first Century”
- Pekka Pyykkö, “An Essay on Periodic Tables”
- Daniel Rabinovich, “The Periodic Table at 150: A Philatelic Celebration”

Submitted by Carmen Giunta

HIST Volumes in Hard Copy: Pioneers of Magnetic Resonance

Several HIST symposium volumes that were published online last year have finally appeared in hard copy. Among them was our co-edited volume “Pioneers of Magnetic Resonance.” Over the last year or so ACS Books has been changing the formatting of the book cover pages, so the new format may be

unfamiliar to many of you. The previous volume size was 9 ¼ in. by 6 ¼ in. The new volume size is 10 ¼ in. by 7 in. In the new format the lettering of the book title and authors’ names is much larger than for the old format, ½ in. vs 3/16 in. Also, more of the front page is given to photo images than previously. Finally, in the old format no use was made of the back cover. In this new hard copy of



“Pioneers,” the back cover contains additional descriptive material about NMR and EPR history and the scientists who made that history. Previously we have co-edited three books in this series together. Our impression is that enlarging the book size and sprucing up the covers gives this book more visual impact. We two are all for the changes.

Of course, ultimately the book’s contents are what are most important. The five NMR chapters give a good overview of NMR history, paying tribute to Rabi, Bloch, and Purcell, Herb Gutowsky, Ed Stejskal, and Don Woessner. Pierre Laszlo’s chapter introduces the reader to even more NMR pioneers. Regrettably, because of copyright issues Morton Meyers was unable to co-author a chapter on the Lauterbur/Damadian dispute regarding credit for the discovery of MRI. However, Tom Strom covers much of the MRI dispute in his Woessner chapter. The EPR section of the book covers the career of discoverer Y. K. Zavoiskii plus the accomplishments of EPR stalwarts Sam Weissman, George Fraenkel, Harden McConnell, and R. Linn Belford. Finally Gareth and Sandra Eaton survey the relationship between spin relaxation and EPR history.

Change just for the sake of change happens a lot, but we think this change in ACS Symposium Books is a change for the better. We hope you agree.

Submitted by Tom Strom and Vera Mainz

Conferences and Meetings of Interest

Southwest Regional meeting of the ACS

The 2021 Southwest Regional Meeting (SWRM) theme is “Chemical Innovations for Global Challenges.” The symposium on History of Chemistry and Art will focus on innovative approaches to incorporating both the history of chemistry and the history of art into course development, publications, museum exhibits, blogs, social media, research in chemical education, and Divisional and Local Section programming. The Central Texas Section is committed to facilitating a safe and interactive environment for innovation, learning and networking in the chemical enterprise. For the latest meeting information: SWRM2021.org or info@SWRM2021.org. For more information on the symposium on Chemistry and Art, please refer to the Upcoming Meetings and HIST deadlines section of this Newsletter.

Submitted by Mary Virginia Orna

HIST at Pacifichem 2021

Although the original 2020 International Chemical Congress of Pacific Basin Societies (Pacifichem 2020) to be held in Honolulu in December of 2020 has gone through a number of changes - first being delayed by a year to become Pacifichem 2021 and then transitioning from a traditional in-person conference to the current hybrid format, the conference is still alive and well, and on track for its December 16-21, 2021 dates. As with the previous Pacifichem in 2015, HIST has organized a full-day symposium entitled *Hands across the Pacific: History of Collaborations and Exchange Programs between Countries of the Pacific Rim* (Corresponding Symposium Organizer (CSO): Seth C. Rasmussen), including 16 talks by a diverse collection of international speakers. The HIST-organized symposium will be held December 20th and will consist of two in-person oral sessions, as well as an evening virtual session. Conference registration options include both in-person and virtual attendance, with the only limitation being that virtual guests will only have access to the virtual sessions,



as the in-person sessions will not be broadcast. Registration and housing reservations opened August 3rd, with reduced registration available through October 20th. Additional information on the conference can be found at <https://pacifichem.org>.

Submitted by Seth C. Rasmussen

Announcements

Transcribing Humphry Davy's Notebooks

A public-facing project set to uncover previously unpublished material from the early nineteenth century's 'foremost man of science' has launched online. Sir Humphry Davy (1778-1829) discovered more chemical elements than any individual has before or since. His achievements saw him rise up through society's ranks from relatively modest origins to become, just over 200 years ago, the President of the Royal Society of London. In 1815, he invented a miners' safety lamp that came to be known as the Davy Lamp, saving countless lives in Britain and Europe, and vastly improving the nation's industrial capability. Davy kept notebooks throughout his life, but most of the pages of these notebooks have never been transcribed before. Most entries have yet to be dated or considered in the light of what they tell us about Davy, his scientific discoveries, and the relationship between poetry and science.

The £1 million project, funded by the Arts and Humanities Research Council (AHRC) and led by Lancaster University with the University of Manchester and UCL, will use the people-powered research platform Zooniverse to bring to light Davy's notebooks – the documents he used to work out scientific ideas alongside lines of poetry, philosophical musings, geological drawings, and accounts of his life.

In 2019, AHRC funding enabled Professor Sharon Ruston and Dr Andrew Lacey, both of the Department of English Literature and Creative Writing at Lancaster University, to crowdsource transcriptions of five of Davy's notebooks, dating from between 1795 and 1805, using Zooniverse. Following on from this successful pilot project, during which more than 500 participants from around the world transcribed 626 notebook pages in under 20 days, the project team will now crowdsource transcriptions of Davy's entire 75-strong notebook collection. Some 70 notebooks are held at the Royal

Institution of Great Britain in London and 5 are held in Kresen Kernow in Redruth, Cornwall.

Crowdsourcing is now underway. It's free to take part, and you can transcribe as much or as little as you like. The edited transcriptions will later be published online, alongside images of the notebooks, on a free-to-access website, as part of Lancaster Digital Collections. Online and in-person discussions with participants will enable the project team to find out how transcribing Davy's notebooks changes their views of how poetry and science could co-exist today.

To take part in transcribing Davy's notebooks, sign up at Zooniverse and check the following site: wp.lancs.ac.uk/davynotebooks

Historian's Report for 2021

Things have been very busy on the historical front for HIST. The Centennial History of HIST project is in full swing. Please visit the HIST website and read the chapters that have been posted for inspection. Please send all corrections and suggestions to me and to Vera Mainz.

One year from now, a symposium on the history of HIST will be held at the Fall ACS meeting (now faith is the evidence of things not seen).

One of the most exciting HIST events for 2021 is the HIST Award symposium for Larry Principe. It will be held at the Science History Institute on Saturday, October 16, 2021 from 10:30 to 5:30. All members of HIST are invited to attend, either in person or by YouTube. (The event will be recorded and posted on the HIST and Science History Institute website.) A registration form will be circulated starting in September. For those attending in person, a lunch will be provided (cost \$25). The outstanding list of speakers includes William Newman, Jenny Rampling, Bruce Moran and many more.

Submitted by Gary Patterson

HIST to Celebrate Its 100th Birthday

The American Chemical Society (ACS) Division of the History of Chemistry (HIST) will celebrate its hundredth birthday as an ACS Division in 2022. Today, HIST has over 1,000 members from every sector of the ACS, mounts symposia regularly at ACS National Meetings and at many regional meetings, publishes two Newsletters per year, and since 1988 has published this journal, the *Bulletin for the History of Chemistry*. HIST's publishing record also includes

37 history-related volumes published over the course of the past 60 years that include topics in archaeological chemistry, biography, anniversaries of important chemical events, and history of chemical sub-disciplines.

Two major projects to celebrate its Centennial Year are currently in development:

1) *The Centennial History of the Division of the History of Chemistry*: A thorough treatment of what happened before, during the foundation, during its evolution and up to the present. The project will be open access and published online. Gary Patterson, Historian of HIST, is organizing the project. Further information, including a projected table of contents, can be found on the HIST website at: acshist.scs.illinois.edu/centennial/index.php

Gary welcomes contributions: please send him written material, photographs, ephemera, etc., at gp9a@andrew.cmu.edu. You too can author a full or partial chapter!

2) The *Bulletin for the History of Chemistry* is preparing a special issue in honor of the centennial. Guest editor Jeffrey I. Seeman and Editor in Chief Carmen Giunta have obtained commitments from several recipients of HIST's major awards and current leaders in the history of chemistry to write on the theme "Novel Insights in the History of Chemistry: Looking Back Yet Mostly Looking Forward." The issue will be open access to all online. HIST members will also receive hard copies.

Submitted by Carmen Giunta

Elemental Art Contest

The window for submission of original art, dedicated to the chemical elements or the Periodic Table, as part of the HIST/IPG-sponsored "*Elemental Art*" contest in celebration of the 150th anniversary of the Periodic Table closed on April 30, 2021. We received 60 contributions in total, which were judged by a committee of chemical educators and historians with expertise in art. The winners will be notified later in the fall and their names will be published in the next issue of the HIST *Newsletter*, as well as on the HIST website. We plan to publish the prize-winning artworks in the *Newsletter*, subject to clearing any potential copyright issues. Thanks to all who submitted their original art!

Submitted by Nick Tsarevsky

BULLETIN FOR THE HISTORY OF CHEMISTRY

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

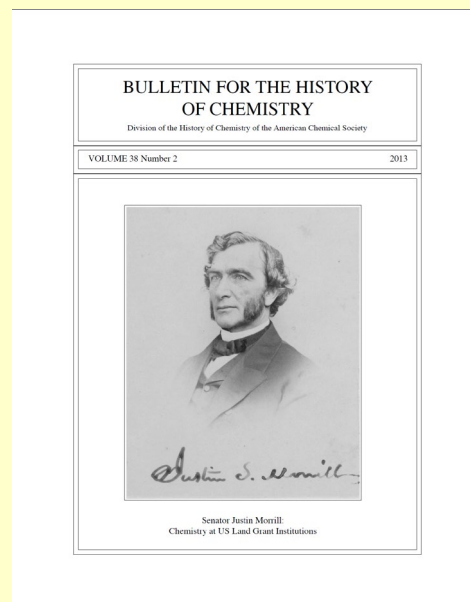
Available online: <http://acshist.scs.illinois.edu/bulletin/index.php>

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.

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

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Editor, *Bulletin for the History of Chemistry*
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HIST Programming

Message from the HIST Program Chair

It is about two years since the last time HIST friends, supporters, and presenters were able to interact with each other in person at a large-scale event, such as the National Meeting of the ACS. Yes, the COVID-19 pandemic (which, alas, is still ongoing) halted many regular activities we had come to enjoy and love, and perhaps take for granted. Fortunately, in the meantime, science – once again – came to our rescue and the vaccines that were developed will likely make it possible for life to resume its normal course. The fall 2022 ACS Meeting will comprise in-person and virtual talks, which certainly feels like taking a step towards normality. On behalf of my friends at HIST, I am delighted to welcome you to our program, and I know you will enjoy the rather diverse lectures our presenters will offer – whether you see them in Atlanta or on a screen at your room. We will commence on Sunday afternoon with a two-session symposium on the contributions of African American chemists. It is organized by Sibrina Collins, Taiya Fabre, and Tracey Simmons-Willis, and by attending it, you will have the chance to learn about and find inspiration in the work of several African American chemical educators and scientists, who can serve as true role models for the current and future generations of students, teachers, chemists – and for all of us. On Sunday evening and all day on Monday, we will continue with our traditional General Papers sessions. As always, a variety of topics will be covered by the presenters, including the life and work of famous or undeservedly forgotten (al)chemists and educators, as well as the history of compounds, techniques, and other impactful discoveries. You can find all details about the schedule and the abstracts on the subsequent pages of this *Newsletter*. In addition, you will be able to find out about future symposia and events. Please note that this fall, the HIST Award symposium honoring Larry Principe, organized by Gary Patterson, will take place at the Science History Institute in Philadelphia in October. In addition, a HIST symposium on the history of chemistry and art, organized by Sara Hubbard and Mary Virginia Orna, will be offered as part of the Southwest Regional Meeting (SWRM) of the ACS in Austin, TX, in late October and early November. We hope you will be able to attend these exciting gatherings.



I feel the need to add that during the past gloomy months, I came to realize that, while we may have felt severely restricted physically, the creative minds of many of our colleagues were not arrested in the slightest. You probably remember the *Elemental Art* contest, which was announced in previous issues of the *HIST Newsletter*, on the HIST website, and on the pages of *Chemical and Engineering News*. The competition closed at the end of April, after we extended the original deadline for submissions, and we received 60 entries (poems, cartoons, and photographs) from around the country and the world, which affirmed my statement above concerning the imagination and creativity of our fellow chemists. The winners will be announced, and their creations will be published (after potential copyright issues are cleared), in the next issue of the *Newsletter* but I wanted to use this space to express my gratitude to all who shared their beautifully crafted work, as well as to my HIST comrades Mary Virginia Orna and Art Greenberg who kindly agreed to serve as chairs of the Awards Committee and did a spectacular job. I am particularly indebted to them because, being unable to serve on the committee due to a conflict, I had to leave all the hard work in their hands. The winners will receive monetary prizes and certificates. Stay tuned for further

information. Based on the exceptional quality of the original artworks we received, I can certainly envision similar contests in the future.

An important new development related to HIST programming is that my dear friend of two decades Mihaela Stefan of the University of Texas at Dallas joined the Executive Committee as the Associate Program Chair of the Division. I am thrilled to work with her and would like to encourage you to share any thoughts and ideas about future symposia or events with us. We very much look forward to hearing from you.

Enjoy the meeting and please help us by sharing the news about HIST with your friends, students, teachers, and colleagues. Be well!

Nick Tsarevsky, HIST Program Chair

HIST SYMPOSIA, 262nd ACS Meeting, August 22-26, 2021

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.

HIST Award Symposium, Science History Institute, October 16, 2021

HIST Award Symposium honoring Larry Principe (Invited). Organizer: Gary Patterson, Vancouver, WA, Phone: 412-480-0656, email: gp9a@andrew.cmu.edu. The symposium will be held at the Science History Institute on Saturday, October 16, 2021, from 10:30 am to 5:30 pm.

ACS Southwest Regional Meeting, Austin, TX, October 31-November 3, 2021

History of Chemistry and Art (Invited and Seeking Contributions). Organizers: Sara E. Hubbard, Department of Chemistry, Ouachita Baptist University, Arkadelphia, AR 71998, Phone: 870-245-5533, email: hubbards@obu.edu; Mary Virginia Orna, ChemSource, Inc., 39 Willow Drive, New Rochelle, NY 10805, Phone: 914-310-0351, email: maryvirginiaorna@gmail.com; mvorna@protonmail.com.

263rd ACS Meeting, San Diego, CA, March 20-24, 2022

HIST Award Symposium (Invited) Jeff Seeman, Department of Chemistry, University of Richmond, Richmond, VA 23273, email: jseeman@richmond.edu

Tutorial and General Papers (Seeking contributors) Nicolay V. Tsarevsky, Department of Chemistry, Southern Methodist University, Dallas, TX 75275, Phone: 214-768-3259, email: nvt@smu.edu

264th ACS Meeting, Chicago, IL, August 21-25, 2022

HIST Anniversary (Invited) Gary Patterson, Vancouver, WA 98661, 412-480-0656, email: gp9a@andrew.cmu.edu

HIST Award Symposium (Invited) Nicolay V. Tsarevsky, Department of Chemistry, Southern Methodist University, Dallas, TX 75275, Phone: 214-768-3259, email: nvt@smu.edu

History of Forensic Chemistry (Invited and contributed) Nicolay V. Tsarevsky, Department of Chemistry, Southern Methodist University, Dallas, TX 75275, Phone: 214-768-3259, email: nvt@smu.edu

Tutorial and General Papers (Seeking contributors) Nicolay V. Tsarevsky, Department of Chemistry, Southern Methodist University, Dallas, TX 75275, Phone: 214-768-3259, email: nvt@smu.edu

265th ACS Meeting, Indianapolis, IN, March 26-30, 2023

History of Glass (Invited and contributed) Seth C. Rasmussen, Department of Chemistry and Biochemistry, North Dakota State University, NDSU Dept. 2735, P.O. Box 6050, Fargo, ND 58108, Phone: 701-231-8747, email: seth.rasmussen@ndsu.edu; Dan Rabinovich, Department of Chemistry, UNC Charlotte, Charlotte, NC 28223, Phone: 704-687-5105, email: drabinov@uncc.edu

Tutorial and General Papers (Seeking contributors) Nicolay V. Tsarevsky, Department of Chemistry, Southern Methodist University, Dallas, TX 75275, Phone: 214-768-3259, email: nvt@smu.edu

Final Program

DIVISION OF THE HISTORY OF CHEMISTRY (HIST)

N. V. Tsarevsky, *Program Chair*

The sessions and lectures can be attended using the virtual program published on the ACS website. For HIST presentations, please refer to <https://acs.digitellinc.com/acs/live/21/page/411/1?eventSearchInput=&eventSearchTrack%5B%5D=127>

SUNDAY AFTERNOON: SESSION 1 (2:00 – 4:00 pm)

Section A

Virtual Session. Zoom Room 42

Contributions of African American Chemists

S. N. Collins, T. Simmons-Willis, *Organizers*
T. Fabre, *Organizer, Presiding*

2:00 Introductory Remarks.

2:10 The importance of storytelling in chemical education. **S.N. Collins**

2:35 Biochemistry and leadership in academic affairs. **A.W. Peters**

3:00 The importance of mentorship and science outreach to the next generation. **D.A. Boyd**

3:25 St. Elmo Brady: A life of service. **V.V. Mainz**, G. Girolami

3:50 Concluding Remarks.

SUNDAY AFTERNOON: SESSION 2 (4:30 – 6:30 pm)

Section A

Virtual Session. Zoom Room 41

Contributions of African American Chemists

S. N. Collins, T. Fabre, *Organizers*
T. Simmons-Willis, *Organizer, Presiding*

4:30 Introductory Remarks.

4:40 My career pathway at a national laboratory: What do you really need to know?. **N. Bridges**

5:05 Dr. Marie Maynard Daly: An African American pioneer in chemistry and a role model for every young woman who aspires for success. **P.D. Svoronos**

5:30 Destined. **S.C. Good**

5:55 History repeating: Spelman's legacy of cultivating agency in Black women in STEM through culturally relevant curriculum. **L. Winfield**

6:20 Concluding Remarks.

SUNDAY EVENING (7:00 – 9:00 pm)

Section A

Virtual Session: Zoom Room 39

General Papers & Tutorial: Chemists and Chemistry Concepts

N. V. Tsarevsky, *Organizer*
M. Stefan, N. V. Tsarevsky, *Presiding*

7:00 Melvin S. Newman's contributions to organic chemistry. **M.C. Stefan**, M.C. Biewer

7:30 Historical and philosophical evaluation of green chemistry. **M. Yatin**

8:00 2021: The sesquicentennial of the birth of the pioneer of pyridine chemistry, Aleksei Yevgen'evich Chichibabin (1871-1945). **D.E. Lewis**

8:30 Gomberg and Chichibabin: Two Russian expatriates and the triarylmethyl saga. **D.E. Lewis**

Resilience of (Women in) Chemistry

Sponsored by WCC, Cosponsored by HIST

MONDAY MORNING: SESSION 1 (8:00 – 10:00 am)

Section A

Georgia World Congress Center, B211 - B212

General Papers & Tutorial

N. V. Tsarevsky, *Organizer*

M. Stefan, N. Tsarevsky, *Presiding*

8:00 The mother of invention: Maria the Jewess and early contributions to chemical apparatus. **S.C. Rasmussen**

8:30 Invention of gas chromatography-mass spectrometry. **M.E. Jones**

9:00 Award siblings: The ACS national historic chemical landmarks and the HIST citation for chemical breakthrough programs. **C.J. Giunta**, J. Seeman

9:30 Wit and humor associated with famous chemists. **M. Chorghade**

MONDAY MORNING: SESSION 2 (10:30 am – 12:30 pm)

Section A

Georgia World Congress Center, B211 - B212

General Papers & Tutorial: History of Chemical Compounds

N. V. Tsarevsky, *Organizer*
M. Stefan, N. Tsarevsky, *Presiding*

10:30 From poison to life-saving medicine: The use of arsenic compounds in the twentieth-century China. **J. Niu**

11:00 Cellulose solutions: Early discoveries and applications. **N.V. Tsarevsky**

11:30 Di- and polysulfide polymers: Early investigations and industrial applications. **N.V. Tsarevsky**

12:00 Insulin's centennial: A philatelic history. **D. Rabinovich**

MONDAY AFTERNOON

Section A

Georgia World Congress Center, B310

General Papers & Tutorial: History of Chemical Education and Educators

N. V. Tsarevsky, *Organizer*
M. Stefan, N. Tsarevsky, *Presiding*

4:30 John Maclean (1771-1814): An early American chemist and slave owner. **W.P. Palmer**

5:00 Florence Schaeffer at the Woman's College of UNC and the legacy of Mount Holyoke College. **A. Haddy**

5:30 A historical comparison of fundamental general chemistry concepts. **R.M. Jones**, K. Zaidi

Resilience of (Women in) Chemistry

Sponsored by WCC, Cosponsored by HIST

MONDAY EVENING

Georgia World Congress Center, Hall B4

Sci-Mix

8:00 Gomberg and Chichibabin: Two Russian expatriates and the triarylmethyl saga. **D.E. Lewis**

8:00 2021: The sesquicentennial of the birth of the pioneer of pyridine chemistry, Aleksei Yevgen'evich Chichibabin (1871-1945). **D.E. Lewis**

Virtual Room

Sci-Mix

8:00 A historical comparison of fundamental general chemistry concepts. **R.M. Jones**, K. Zaidi

8:00 Historical and philosophical evaluation of green chemistry. **M. Yatin**

TUESDAY MORNING

Resilience of (Women in) Chemistry

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TUESDAY AFTERNOON

Resilience of (Women in) Chemistry

Sponsored by WCC, Cosponsored by HIST[‡]

WEDNESDAY AFTERNOON

Understanding Enzyme Function in 3D: Celebrating 50 Years of the Protein Data Bank

Sponsored by CINF, Cosponsored by BIOL, CHED, COMP, and HIST

ABSTRACTS

Paper ID: 3579238

The importance of storytelling in chemical education

Sibrina N. Collins, sibrina.collins@gmail.com. *The Marburger STEM Center, Lawrence Technological University, Southfield, Michigan, United States*

Storytelling is an important pedagogical tool to address equity in chemistry. The intellectual contributions of Black, Indigenous and people of color (BIPOC) are generally not celebrated in the chemistry curriculum. In this discussion, the author will highlight the scientific achievements of women and BIPOC chemists and teaching strategies to engage students in the chemistry classroom.

Paper ID: 3580440

Biochemistry and leadership in academic affairs

Angela W. Peters, angelawpeters@gmail.com. *Academic Affairs, Albany State University, Albany, Georgia, United States*

This presentation discusses the importance of role models and mentors in science, technology engineering and mathematics (STEM). To attract and retain female scientists we must utilize methods that have proven to be impactful such as mentoring, professional development activities and providing role models for support and encouragement. The mentoring arrangement can be informal or formal such as one-on-one peer mentorship arrangements or even programs that match new faculty with alumnae and local professionals. Too often, girls and women who venture into STEM find themselves pushed out of the field because of feelings of isolation or not feeling confident in their own skillsets. This presentation provides experiences and evidence of how to attract and retain more women in STEM while preparing them for leadership roles in the discipline. Conversations surrounding outreach, mentorship, professional development, leadership development and experiential learning will enhance the overall experience of female students in STEM, and provide a launchpad for their promotion throughout the academy, industry, laboratory and/or the K-12 classroom

Paper ID: 3591682

The importance of mentorship and science outreach to the next generation

Darryl A. Boyd, drboydthechemist@gmail.com. *Science Made Simple, LLC, Fort Washington, Maryland, United States*

The journey that led Dr. Darryl Boyd into a career in science, and ultimately into STEM (Science, Technology, Engineering and Mathematics) entrepreneurship, is detailed. His recollections of people, programs and events that led to his success in the scientific realm clearly show that exposure to science at an early age, and mentorship from science educators can have a positive and profound impact on a child's desire to pursue science as a career. Particular focus is given to several influential women who have served a prominent role in his success as a scientist and STEM entrepreneur.

Paper ID: 3591571

St. Elmo Brady: A life of service

Vera V. Mainz¹, mainz@illinois.edu, **Gregory Girolami**². (1) *School of Chemical Sciences, University of Illinois at Urbana-Champaign, Urbana, Illinois, United States* (2) *Chemistry, University of Illinois at Urbana-Champaign, Urbana, Illinois, United States*

St. Elmo Brady (1884 – 1966) was the first African American to obtain a Ph.D. degree in chemistry in the United States; earning this degree at the University of Illinois at Urbana-Champaign in 1916. Brady went on to serve leadership roles at four historically black colleges and universities (HBCUs): Tuskegee, Howard University, Fisk University, and Tougaloo College, where he helped build strong undergraduate curricula and founded graduate programs in chemistry. At Brady's retirement from Fisk, Dr. Joseph C. Dacons, Acting Head of the Chemistry Department, described Brady's accomplishments eloquently, as follows: "One of the greatest contributions anyone can make to society, and certainly one that should afford a large amount of satisfaction, is to be useful helping young people to take their places as useful if not leading citizens in the communities in which they live. Dr. Brady can always feel that he has done an admirable and successful job in this respect. Many are the chemists, medical doctors, dentists and people in all walks of life who will always be grateful for the early education and guidance received at the hands of Dr. St. Elmo Brady. He is one with whom scarcely any ambitious person can be associated even for the shortest period of time without feeling that he has benefited by the association. He has been an inspiration not only to students but also to those who have worked with him." St. Elmo Brady was honored with an ACS National Historic Chemical Landmark designation on February 5, 2019, at the University of Illinois at Urbana-Champaign. The paper will focus on his life, scientific and educational achievements.

Paper ID: 3580217

My career pathway at a national laboratory: What do you really need to know?

Novella Bridges, nbridges@msn.com. *US Department of Homeland Security Countering Weapons of Mass Destruction Office, Washington, District of Columbia, United States*

What are the expectations of a chemist working at a national laboratory? This discussion will provide an overview of my career working at a national laboratory. Specifically, the discussion will highlight the recruitment process and the different pathways to becoming a staff member.

Paper ID: 3595556

Dr. Marie Maynard Daly: An African American pioneer in chemistry and a role model for every young woman who aspires for success

Paris D. Svoronos, psvoronos@qcc.cuny.edu. *Chemistry, Queensborough Community College, Bayside, New York, United States*

Dr. Marie Maynard Daly (1921-2003) was born and raised in Corona, Queens and attended Hunter College High School. She was accepted to Queens College and graduated *magna cum laude* and as a Queens College scholar with a degree in chemistry (1942). She proceeded to earn her master's at New York University and her doctorate at Columbia University, the first ever African American woman to reach this level of achievement in the United States. She first started as a faculty member at Howard University and continued with a seven-year career at the Rockefeller Institute studying the protein construction in the body. She then joined Columbia University and finished her academic career at the Albert Einstein College of Medicine at Yeshiva University, where she principally taught biochemistry to medical students. Until her retirement (1986) and beyond she was a serious advocate of including and promoting minority women in the health sciences and was recognized for her efforts to build a pathway for their contributions and success. She has had many peer-reviewed publications and was bestowed many awards that recognized her pioneering efforts. Dr. Daly's life and a brief synopsis of her research accomplishments will be presented.

Paper ID: 3595443

Destined

Sonya C. Good, sonya.good@tsu.edu. *Chemistry, Texas Southern University, Houston, Texas, United States*

Sonya Caston Good's journey in chemistry is not the one she envisioned. With some bumps in the road, her path led to academia, her destiny. A synopsis of how she entered academia, faced the challenges of teaching millennials and triumphed over promotion and tenure is provided. Sonya Caston Good is a native of Mississippi and a HBCU graduate of Jackson State University.

Paper ID: 3580027

History repeating: Spelman's legacy of cultivating agency in Black women in STEM through culturally relevant curriculum

Leyte Winfield, lwinfield@spelman.edu. *Chemistry and Biochemistry, Spelman College, Atlanta, Georgia, United States*

According to the National Center for Science and Engineering Statistics, Spelman College is the No. 1 HBCU and the top undergraduate institution of origin for Black women who have earned doctoral degrees in science, technology, engineering, and mathematics (STEM). Institutions like Spelman have provided culturally relevant learning environments designed to build social capital, provide academic development, and increase students' sense of agency. Spelman continues to expand and reimagine the liberal arts learning environment to ensure the rigor and relevance of all disciplines, including chemistry. Such an environment is ripe for the creation of culturally relevant curricula and black feminist pedagogies. With culturally relevant curriculum, individuals at the College have created strategies to promote students' voices, allowing them to see themselves in the space. The strategies capitalize on the inclusion of black women's intellectual contributions and privileging their knowledge and creativity to develop learning resources. This presentation will address Spelman's history in cultivating STEM talent by showcasing efforts in the Department of Chemistry and Biochemistry. Particular attention will be paid to traditional and contemporary strategies for allowing students to co-create knowledge within their educational experience. The presentation will also showcase curricular resources contributing to the burdening repository of black feminist pedagogy at the College. Example resources include *A Chemist Like Me*, *Beyond the Experiment*, *Letter to my Future Self*, peer-led virtual workshops, and the creation of quilts. Examples of each will be shared.

Paper ID: 3593126

The mother of invention: Maria the Jewess and early contributions to chemical apparatus

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

Various modern forms of chemical apparatus can find their origins in alchemical traditions, many of which have been attributed to the first century alchemist Maria the Jewess. Specific inventions for which she is credited include distillation apparatus, the water-bath (which is still called the bain-marie in France), and the kerotakis apparatus. Unfortunately, little is really known about Maria other than writings ascribed to her, which survive only in quotations by the later alchemist Zosimos. Yet, Maria remains the earliest known female figure in the history of chemistry and a notable contributor to chemical instrumentation. The current collected knowledge concerning Maria and her contributions will be presented.

Paper ID: 3594497

Invention of gas chromatography-mass spectrometry

Mark E. Jones, acs_mj@mjphd.net. Retired, Midland, Michigan, United States

Gas chromatography-mass spectrometry (GC-MS) is arguably one of the most powerful and flexible analytical tools ever developed. It is a prime example of two technologies, each with severe limitations, coupled together and working in concert to produce something that is truly more than the sum of the parts. The journey began in Michigan in 1955, with scientists from the Dow Spectroscopy Lab connecting a GC with a Bendix time-of-flight mass spectrometer. They continued development and refinement, laying the foundation for an analytical tool that remains important to this day. Midland is now a National Chemical Heritage Landmark for this important advance.

Paper ID: 3589640

Award siblings: The ACS national historic chemical landmarks and the HIST citation for chemical breakthrough programs

Carmen J. Giunta¹, giunta@lemoyne.edu, Jeffrey Seeman². (1) Chemistry, Le Moyne College, Syracuse, New York, United States (2) University of Richmond, Richmond, Virginia, United States

The American Chemical Society's National Historic Chemical Landmarks program (NHCL) recognizes chemical achievements that impact on society and the environment, from Bakelite to St. Elmo Brady, since 1993. The Citation for Chemical Breakthrough awards program (CCB) of the ACS Division of the History of Chemistry has been celebrating seminal breakthrough publications since 2006, from Avogadro's number to the structure determination of DNA. Similarities and differences between the programs in missions, procedures, scales, and resources expended will be described.

Paper ID: 3596037

Wit and humor associated with famous chemists

Mukund Chorghade, chorghade@gmail.com. Chemistry, THINQ, HILLSBOROUGH, New Jersey, United States

Some humorous stories of celebrated chemists will be presented

Paper ID: 3586104

From poison to life-saving medicine: The use of arsenic compounds in the twentieth-century China

Jia Niu, jia.niu@bc.edu. Chemistry, Boston College, Chestnut Hill, Massachusetts, United States

During the 20th century, China underwent some of the most dramatic transitions that that land has ever seen: from an empire to a Communist state, and from a weak country that suffered a century of humiliation to an emerging superpower. Based on a few case studies, this presentation focuses on the use of arsenic compounds in China in the 20th century, first as a potent poison involved in the political power struggle, later as a medicine that offered hopes of life to numerous cancer patients. From a chemist's perspective, the transition of the use of arsenic compounds over this period reflects the transition that China as a country has undergone.

Paper ID: 3592156

Cellulose solutions: Early discoveries and applications

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

In the 19th Century, numerous efforts were made to dissolve cellulose and examine (and find applications of) the formed solutions. Some of the early attempts involved chemical transformations (e.g., nitration and later acetylation) of the natural polymer, which afforded soluble cellulose derivatives. Regeneration of cellulose was not possible in these cases. The preparation of solutions of cellulose, from which it could be isolated unchanged, proved more challenging until 1857 when the Swiss chemist Eduard Schweizer (1818–1860) reported that the dark blue solutions formed by the reaction of copper(II) compounds with excess of strong ammonia dissolved efficiently plant fibers. It was ascertained that when the solutions of cellulose thus prepared were added to acids, cellulose precipitated again – a process, which served as the basis of the viscose process for production of cellulose (rayon) fibers, patented in 1890 by the French chemist Louis-Henri Despeissis. In 1892, another important finding was patented by Charles Frederick Cross (1855-1935), Edward John Bevan (1856-1921), and Clayton Beadle (1868-1917), namely the dissolution of cellulose in carbon disulfide in basic media with the formation of soluble cellulose xanthate, which could then be easily converted (by acidic hydrolysis) again to cellulose. The early research on cellulose solutions and their uses in the production of fibers (“artificial silk”) and films will be described.

Paper ID: 3587019

Di- and polysulfide polymers: Early investigations and industrial applications

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

Synthetic linear macromolecules containing polysulfide groups as structural elements, $-(R-S_x)_n-$ ($x > 1$), were first reported in the late 1830s and early 1840s by Carl Loewig (1803-1890) and his assistant, Salomon Weidmann, who noticed that the reaction between “chloraetherin” (essentially 1,2-dichloroethane) and potassium (poly)sulfides, yielded a product, which “becomes soft... turns dark yellow... and elastic like rubber.” Similar polymers were studied by Victor Meyer (1848-1897) in the late 1880s, but it was not until the late 1920s that the useful properties and applications of these materials were fully realized. Patents issued to Jean Baer in 1928 and to Joseph Cecil Patrick and Nathan Maxwell Mnookin in 1929 fueled the interest in the polysulfide artificial rubbers. It was shown that they could serve as excellent sealants or plastics, which could be molded and machined. The properties and therefore the applications depended on the type of dihaloalkane used in the synthesis and the number of sulfur atoms in the polymer chain. In 1929, Thiokol Co. (from the Greek words $\thetaειο$ (sulfur) and $κόλλα$ (glue)) was founded in Trenton, NJ, by Bevis Longstreth who served as President and General Manager until his death in 1944. In this talk, the early studies and applications of linear polysulfide polymers (including ones prepared by ring-opening polymerization of cyclic disulfides) will be described.

Paper ID: 3590565

Insulin’s centennial: A philatelic history

Daniel Rabinovich, drabinov@uncc.edu. *Dept. of Chemistry, University of North Carolina at Charlotte, Charlotte, North Carolina, United States*

The story of insulin, a protein hormone widely used in the treatment of diabetes, began 100 years ago with the pioneering research of Frederick Banting and coworkers at the University of Toronto. This presentation uses postage stamps and related philatelic materials to illustrate milestones in the history of insulin, such as the determination of the amino acid sequence of the two polypeptide chains of bovine insulin by Frederick Sanger in the early 1950’s. Likewise, Dorothy Crowfoot Hodgkin’s elucidation of the molecular structure of insulin, completed in 1969, five years after she received the Nobel Prize in Chemistry “for her determinations by X-ray techniques of the structures of important biochemical substances”, will be discussed in this presentation. Finally, a number of stamps, postmarks, and special covers that highlight awareness campaigns and scientific conferences, which underscore the importance and general interest in the prevention and treatment of diabetes, will be presented.



Paper ID: 3588533

John Maclean (1771-1814): An early American chemist and slave owner

William P. Palmer, drspalmer@optusnet.com.au. STEM, Curtin University, Perth, Western Australia, Australia

John Maclean had a short but interesting life which had an impact on the development of chemistry in America. He was born on 1st March 1771. Both his parents died when he was young and he was brought up by his guardian, George Macintosh who was the father of Charles Macintosh, the inventor of the raincoat (Macintosh). He was accepted by the University of Glasgow before his thirteenth birthday. In about 1787 he left Glasgow to continue studies in Edinburgh, London and Paris. In 1790 he resumed his studies at the University of Glasgow receiving a Diploma that allowed him to practice surgery and pharmacy in 1791. In 1795, he moved to America to practice medicine and surgery in Princeton, New Jersey. He also was appointed as a Professor of Chemistry and Natural History at the College of New Jersey (Princeton), being the first Professor of Chemistry in America not affiliated with a medical school. He stayed at Princeton until just before his death in 1814. His significance in American chemical history was his support of Lavoisier's views of combustion and his vigorous opposition to Priestley's phlogiston theory. He was also the owner of three slaves, which may affect the way in which his life is evaluated today.

Paper ID: 3591559

Florence Schaeffer at the Woman's College of UNC and the legacy of Mount Holyoke College

Alice Haddy, ahaddy@uncg.edu. Chemistry and Biochemistry, University of North Carolina at Greensboro, Greensboro, North Carolina, United States

Florence Schaeffer was head of the Department of Chemistry at the Woman's College of the University of North Carolina (now the University of North Carolina at Greensboro) from 1934 until 1964 and a member of the faculty for fifty years starting in 1922. An important influence on the women chemists who graduated from the Woman's College, Florence benefited from the unique example provided by her experience at Mount Holyoke College where she received her Master's degree. With productive research programs in chemistry, Mount Holyoke College was a leader in the research training of young women chemists, many of whom went on to receive PhDs at other universities. Although records of her work are sparse, Florence evidently pursued studies toward a PhD at Yale University focusing on synthesis of antiseptics, an area making advances at the time. This study of her life looks at the path she took in her graduate studies, the possible reasons her PhD went uncompleted, and the lasting influence she had on generations of women chemists at the Woman's College.

Paper ID: 3594984

A historical comparison of fundamental general chemistry concepts

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Chemistry has been taught at colleges in the United States since the late 18th century and the evolution of chemical education is of interest to science educators today. We analyzed two primary sources from the Library of Congress; Lecture Notes from General Chemistry by Elijah Patrick Harris from Amherst College (1888) and Lecture Notes on Chemistry for Dental Students by Henry Carlton Smith from Harvard University (1917). We compared the content and topics in these sources to that which is general chemistry courses in 2021. We used Chemistry and the Molecular Nature of Matter and Change (2015) by Silberberg and Amateius and Chemistry, 6th edition (2020) by Gilbert, Kirss, Bretz, and Foster for modern sources. We explored the general definition of chemistry and the units used in the field, as well as the concepts of valence theory and descriptions of an atom. The definition of chemistry is very similar across the sources, however the descriptions of an atom and valence are very different. This presentation will compare and contrast the terms and language used in the different sources and make connections to the historical development of chemistry as a science. As our understanding of chemistry has changed over time, so has the way topics have been taught.

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Melvin S. Newman's contributions to organic chemistry

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Melvin Spencer Newman (Mel) was born on March 10, 1908 in New York City. He received his B.S. degree magna cum laude in 1929 and his Ph.D. in 1932 from Yale University. He did postdoctoral research work at Yale University, Columbia University, and Harvard University. He joined the Department of Chemistry at the Ohio State University in 1936, where he remained until the end of his academic career. In 1956, he edited the book "Steric Effects in Organic Chemistry". He also published "An Advanced Organic Laboratory Course" in 1976. He reported the Newman projection formulas in his seminal paper published in 1952. This paper earned him recognition in the field of organic chemistry. His name is known to every student taking organic chemistry and learning about Newman projections. Professor Newman served on the editorial boards of the Journal of the American Chemical Society, the Journal of Organic Chemistry, Organic Syntheses, and Synthetic Communications. He was a member of the National Academy of Sciences. He received many honors for his scientific work, including the Roger Adams Award from the American Chemical Society, the Morley Medal from the Cleveland ACS section, the Columbus Section Award, the Cross Medal from Yale University, and the Sullivan Medal from The Ohio State University. In the presentation, we will show his most significant contributions to organic chemistry and the significance of teaching Newman projections in the introductory organic chemistry course.

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Historical and philosophical evaluation of green chemistry

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This presentation investigates the history and relationship of environmental philosophy and green chemistry. In its broad definition in connection to human survival in the environment, the roots of ecological philosophy go back to ancient times in history. Modern environmental ethics as a social phenomenon only recently emerged in the 1970s after Carson's "Silent Spring" developed from several earlier publications on how pesticides affect the ecological chain. As perceived and accepted in its current construction, green chemistry initially evolved to respond to the Pollution Prevention Act and strict regulatory laws. In 1998, Anastas and Warner published 12 principles of green chemistry. The Presidential Green Chemistry Award, a federal government, awards program established in 1996, and since then, political and institutional recognition and support have exponentially grown for green chemistry. Multiple universities are now offering Ph.D. programs in green chemistry, and almost every university in the US has a green chemistry course or program in the curriculum. Although academia and the chemical industry accept and brace green chemistry as an environmentally healthy, eco-friendly, and sustainable practice, minimal studies connect environmental ethics and philosophical evaluation of green chemistry principles. In a historical context, the ancient traditions of human societies, present-day philosophy of science, and ecological ethics should criticize and improve green chemistry's efforts for a sustainable environment and evaluate its "12 Principles."

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2021: The sesquicentennial of the birth of the pioneer of pyridine chemistry, Aleksei Yevgen'evich Chichibabin (1871-1945)

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Aleksei Yevgen'evich Chichibabin is best known for his work in pyridine chemistry, which began when he was carrying out research for his *Magistr Khimii* degree at Moscow University. Chichibabin's life reads very much like a Greek tragedy: his battle from an impoverished upbringing through all sorts of adversity during his education finally allowed him to rise to become a respected member of the USSR Academy of Sciences. His happiness was short-lived, however: just a year after he had been elected a Full Member of the Academy of Sciences, his only daughter was killed by an entirely preventable accident in the dye-works when an autoclave filled with oleum that she was running exploded. This incident, which took the only child he ever had, was so horrific that he was allowed to leave the Soviet Union for his wife's mental health. His refusal to return to Soviet Russia led to his expulsion from the Academy, and to the loss of his Soviet citizenship. Following the break-up of the Soviet Union, one of the last acts of the USSR Academy of Sciences was the restoration of his status as Academician. The life and chemistry of this persevering chemist will be discussed.



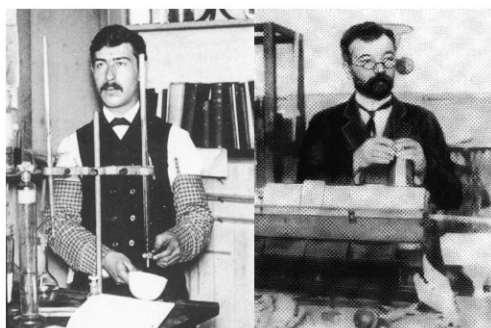
Aleksei Yevgen'evich Chichibabin

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Gomberg and Chichibabin: Two Russian expatriates and the triarylmethyl saga

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In 1900, Russian expatriate, Moses Gomberg (1866-1941), who had left Russia in 1884, during the anti-Jewish programs that followed the assassination of sar Alexander II, provided unequivocal evidence for the existence of the first free stable radical in solution. He obtained triphenylmethyl by the dehalogenation of the triphenylmethyl halides with metallic silver. In the solid form, the compound was a colorless solid that dissolved in benzene to give a yellow solution with a lower molecular weight. He and others proposed that the solid was hexaphenylethane. Two years later, another Russian chemist, Aleksei Yevgen'evich Chichibabin (1871-1945), who later left the Stalinist Soviet Union and went into exile in Paris, was the first to give definitive proof that the structure of the dimer was not hexaphenylethane, but a derivative of *p*-benzhydryltetraphenylmethane. In the course of his studies of trivalent carbon, Chichibabin developed the synthesis of what is now known as "Chichibanin's hydrocarbon." The work of these two Russian expatriates will be explored.



Moses Gomberg

A. Ye. Chichibabin

