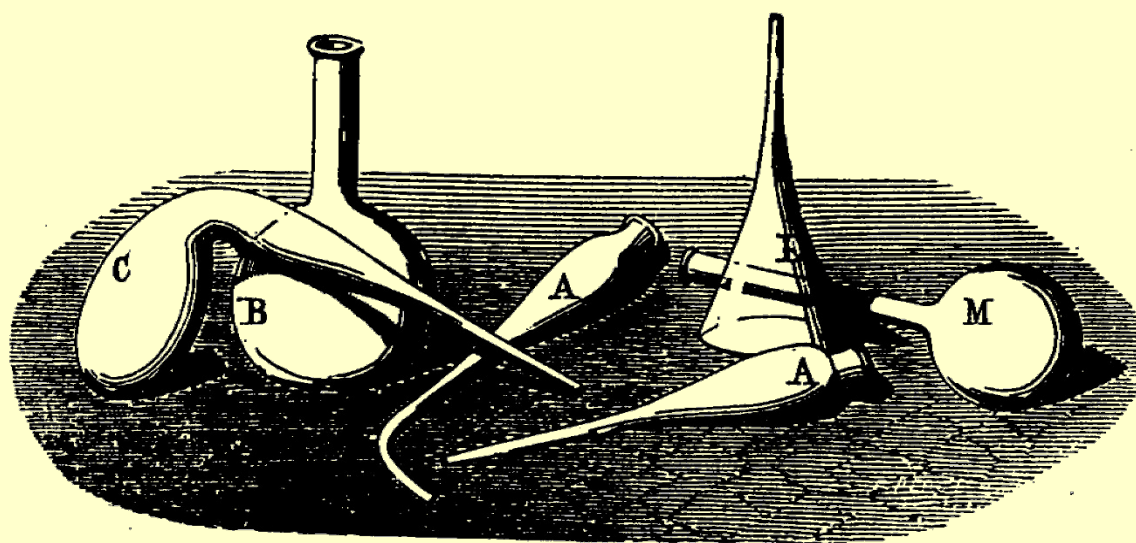




ACS
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American Chemical Society
**DIVISION OF THE
HISTORY OF CHEMISTRY**



NEWSLETTER, PROGRAM & ABSTRACTS

261st ACS National Meeting
Online
April 5-30, 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

When I gave my first HIST talk back in the spring of 2004, I never imagined making history an integral part of my research activities, much less one day serving as the chair of the division. Yet here I am, and I am honored to help lead the division as the HIST Chair for the next two years. Of course, I expect this to come with some significant challenges. HIST and the ACS are at somewhat of a crossroads, as we learn to move forward from the pandemic, particularly in terms of programming and conferences. With the shift to completely virtual meetings, HIST did not offer programming for the Fall 2020 meeting, but we are now in the process of preparing to hold our first fully virtual sessions for the upcoming Spring meeting, which I am sure will be a learning experience for many of us. Of course, the bigger question is what does the future of ACS meetings look like? Will virtual meetings become the new normal, and if so, what will HIST need to do to ensure that we are able to continue providing the type of programming and networking experiences that all of us value as part of HIST technical sessions at national meetings? This will be a particular focus for many of us on the HIST Executive Committee in the coming year and we welcome your input as to ways you might think we should meet this challenge.



At the same time, however, the core of HIST will remain unchanged and we will continue to provide essential benefits such as the internationally recognized *Bulletin for the History of Chemistry* and our important divisional award programs. At the same time, HIST will continue to strengthen its position both in the ACS and within the greater global historical community, particularly with respect to its long history of interaction and cooperation with the Science History Institute (formerly the Chemical Heritage Foundation). With this last point in mind, I will be representing HIST at the 26th International Congress of History of Science and Technology in Prague this July, as part of the Commission for the History of Chemistry and Molecular Sciences. Of course, this too will be now held virtually, so unfortunately my trip to Prague will now be from my office in North Dakota.

Lastly, a longstanding goal during my time in HIST has been to increase participation from students and younger researchers, such that we have the necessary pipeline of developing chemist-historians and future HIST leaders. I certainly would not be the chemist-historian that I have become if it was not for the encouragement and mentoring provided by many within the division, and I want to be able to repay this by similarly providing such help and encouragement to others with a growing interest in our shared history. This will remain a focus during my time as HIST Chair and I plan to continue

or expand ongoing efforts such as our greater visibility and participation in ACS Regional Meetings and workshops/tutorials on beginning research projects in the history of chemistry. On this note, I strongly encourage our younger HIST members to become more active in the division. If you are interested in ways that you might contribute and/or increase your participation, please do not hesitate to contact me.

In closing, my sincere thanks to Dan Rabinovich for his leadership over the last two years, as well as to all of the other officers and volunteers who keep the division moving forward.

Seth C. Rasmussen, HIST Chair

Report of Councilors, Division of the History of Chemistry 260th ACS National Meeting – San Francisco, CA, August 19, 2020

The Council meeting was held virtually due to the ongoing global COVID-19 pandemic that continues to affect our personal lives and our work. Councilors were urged to take into account their own actions and habits to make their own communities safer. Councilors were advised to use their positions as members of the scientific enterprise to spread helpful messages and encourage the safe practice of mask wearing, physical distancing, and limiting exposure within your communities.

The continuous and ongoing struggle in this country to create a safe and equitable society for all was brought to Council's attention. The ACS encourages inclusivity and opposes discrimination in scientific learning and practice. Councilors were urged to take active roles in dismantling any barriers that may deter or impede their colleagues in their research or careers. Councilors and guests were encouraged to review the ACS statements on diversity and reflect on how to implement these in their local sections and divisions.

Actions of the Council

1. Elections

Election Results: Candidates for Service on Standing Committees

By electronic ballot, the Council elected **Elizabeth M. Howson, Zaida C. Morales-Martinez, Margaret J. Schooler, & Jeanette M. Van Emon** for 3-year terms (2021-2023), & **Mark D. Frishberg** for a 1-year term (2021) on Council Policy Committee (CPC).

| | | | |
|----------------------|-----|----------------------------|-----|
| Gary D. Anderson | 97 | *Elizabeth M. Howson | 244 |
| Brian B. Brady | 146 | James M. Landis | 158 |
| Mitchell R. M. Bruce | 170 | *Zaida C. Morales-Martinez | 278 |
| James C. Carver | 148 | *Margaret J. Schooler | 237 |
| *Mark D. Frishberg | 171 | *Jeanette M. Van Emon | 201 |

By electronic ballot, the Council elected **Martha G. Holloman, Diane Krone, Sara M. Mullins, Andrea B. Twiss-Brooks and Javier Vela** for three-year terms (2021-2023) on the Committee on Committees (ConC).

| | | | |
|-----------------------|-----|-------------------------|-----|
| Catherine E. Costello | 149 | Michael D. Mosher | 170 |
| Debbie M. Decker | 76 | *Sarah M. Mullins | 227 |
| Harry J. Elston | 125 | Susan J. Olesik | 180 |
| *Martha G. Holloman | 226 | *Andrea B. Twiss-Brooks | 203 |
| *Diane Krone | 213 | *Javier Vela | 208 |

By electronic ballot, the Council elected **Jetty L. Duffy-Matzner, Kevin J. Edgar, Neil D. Jespersen, Julianne M. D. Smist and Linette M. Watkins** for three-year terms (2021-2023) on the Committee on Nominations and Elections (N&E).

| | | | |
|-------------------------|-----|-----------------------|-----|
| Thomas R. Beattie | 131 | Michael J. Kenney | 110 |
| Mark A. Benvenuto | 153 | R. Daniel Libby | 144 |
| *Jetty L. Duffy-Matzner | 252 | Robert A. Pribush | 144 |
| *Kevin J. Edgar | 162 | *Julianne M. D. Smist | 239 |
| *Neil D. Jespersen | 195 | *Linette M. Watkins | 29 |

2. Other Council Actions

Key Actions

On the recommendation of the Committee on Committees, and with the concurrence of the Council Policy Committee, Council approved the Petition to Clarify Amendments to the Standing Rules and disbanded the Joint Board-Council Committee on Chemical Abstracts Service, contingent on approval by the Board of Directors.

Establishment of an International Chemical Sciences Chapter

On the recommendation of the Committee on International Activities, and with the concurrence of the Council Policy Committee, Council approved the creation of an ACS International Chemical Sciences Chapter in Israel, contingent on approval by the Board of Directors.

Redistricting of a Local Section

On the recommendation of Nominations & Elections, the Council voted that the Pittsburgh Local Section be transferred from District II to District III in order to bring District III's member population into compliance with bylaw requirements.

Resolutions

The Council passed resolutions

- In memory of deceased Councilors;
- Acknowledging Luis Echevoyen's service as ACS President

Highlights from Committee Reports

1. Nominations and Elections

The Committee on Nominations and Elections solicits Councilors' input of qualified individuals for President-Elect, Directors, and the three Elected Committees for future consideration. Suggestions can be sent to nomelect@acs.org

Ballots for the 2020 fall national election will be distributed starting on September 28th, with a voting deadline four weeks later on October 23rd. ACS members eligible to vote and with an email address on file will receive an electronic ballot with the option to request a paper ballot. Those members with no email address on file will be sent a paper ballot with the option to vote electronically. The ACS election vendor, Survey & Ballot Systems, will send three email reminders during the voting period to those who have not voted as of the reminder dates. N&E encouraged all ACS members to vote for President-Elect. Election information may be viewed at acs.org/elections.

2. Budget and Finance

The Society's 2020 financial performance through July 31st yielded a Net from Operations of \$55.7 million, or \$25 million greater than the same period in 2019. Total revenues are \$354 million, 5% ahead of last year, and total expenses are \$298 million, or 3 percent below last year. Unrestricted Net Assets increased to \$466 million. The committee approved one program reauthorization request and one new pilot program request for consideration by the Board of Directors.

The most direct revenue impact to the Society related to the COVID pandemic has been to meeting-related revenues with the termination of the in-person Spring National Meeting and termination of the in-person Green Chemistry Conference. Significant effort has been devoted to expense management. The Society expects to meet its budgeted net contribution of \$41.3M.

San Francisco Meeting Attendance

The theme of the 258th ACS National Meeting was "Moving Chemistry from Bench to Market." As of August 19, registration broken down by category was:

| | |
|--------------------|--------------|
| Members | 3,494 |
| Student Member | 1,638 |
| Unemployed Member | 25 |
| Non Member | 945 |
| Student Non Member | 401 |
| Total | 6,477 |

Virtual Presentation Uploads

| | |
|-------------------------|-------|
| All Inclusive (SciMtgs) | 1,735 |
| Virtual Platform Only | 1,655 |
| Temporary Access Option | 640 |
| Presentation Uploads | 4,067 |

Other Society Business

- The Board held a **strategic discussion** on ways to turn the **ACS Core Value of Diversity, Inclusion, and Respect**, one of the most important strategic issues facing the Society today, into a prioritized action plan for the coming years. The development of such a plan would be undertaken in collaboration with the Advisory Board on Diversity, Inclusion and Respect and would promote the coordination of committee activities so as to emphasize the urgency of "moving the needle" both within ACS and in the broader chemistry enterprise.
- The Board received an update on the development of a re-envisioned **Professional and Leadership Development Portfolio**. The portfolio will position ACS to cultivate strategic partnerships with colleges and universities, corporations, and government agencies. There will be a continued focus on

members/potential members as well, one adhering to the goal of developing Highly Effective Professionals, which is the center point of the project framework developed by the NextGen Task Force on Leadership Development in December 2019.

- The Board received an initial debrief, led by the Chief Executive Officer, of the first-ever **virtual ACS National Meeting and Exposition**. There will be a complete review and assessment of the event from multiple perspectives in the weeks to come.
- The debrief noted above provided a lead-in to and context for a status update from the **Task Force on the Future of Meetings**. This task force has been charged with performing a “deep dive” on the current portfolio of ACS meetings and conferences, identifying current offerings, evaluating governance and staff support structures, revenue streams, financial targets, and business models, and recommending actions that will ensure the sustainability and future relevance of that portfolio.
- The Board offered a resolution in memory of **Nina I. McClelland**, a member of the ACS Board of Directors (1996-2004) who also served as its Chair (2001-2003).

Board Approval of Council Action

- The Board of Directors voted to confirm the amendments to Bylaw XI, per the Petition to Clarify Amendments to the Standing Rules approved by Council on August 19.
- The Board of Directors voted to confirm the disbanding of the Joint Board-Council Committee on Chemical Abstracts Service in accordance with Council action on August 19.
- The Board of Directors voted to authorize the formation of the Israel International Chemical Sciences Chapter in accordance with Council action on August 19.

HIST Councilors

Mary Virginia Orna is serving as a member of the Divisional Activities Committee (DAC) and the DAC Technical Programming and Collaboration Subcommittee. The subcommittee is exploring ways of adjusting to the reality of virtual meetings, especially with respect to the Convergent Communities initiative.

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.

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

News and Announcements

Awards

HIST Award

The Division of the History of Chemistry (HIST) of the American Chemical Society is pleased to announce that Dr. Mary Virginia Orna will receive the 2021 HIST Award for outstanding achievement in



the history of chemistry “for her exemplary leadership in the worldwide community of the history of chemistry, especially for her original research in the area of color and pigment chemistry and the discovery of the elements, her commitment to education, her decades of service to the Division of History of Chemistry, and her continuing role in supporting and participating in the worldwide research in the archeology of chemistry.” The award is international in scope and is the successor to the Dexter Award (1956-2001) and the Sydney M. Edelstein Award (2002-2009), also administered by the Division of the History of Chemistry (HIST) of the American Chemical Society.

Mary Virginia Orna was born and raised in New Jersey. She received a B.S. in Chemistry in 1955 from Chestnut Hill College, Philadelphia, PA. It is a Roman Catholic college with an outstanding reputation in the sciences. She pursued graduate education in Analytical Chemistry at Fordham University in New York and received her Ph.D. in 1962 under Michael Cefola. She completed her preparation for her professional life at the Catholic University of America in Washington, D.C. and received an M.A. in Religious Education in 1967. Sister Dr. Orna joined the College of New Rochelle (New York) in 1966 and is now Professor of Chemistry Emerita. Throughout most of its history, the College of New Rochelle was a private, Roman Catholic, women’s college. Although she is being

honored for her contributions to the worldwide community of historians of chemistry, she has devoted her life first to her Ursuline order and to her students, both in her own college and in the rest of the world. She has received many awards for her devotion to chemical education, including the CASE New York State Professor of the Year in 1989 and the ACS George C. Pimentel National Award in Chemical Education in 1999. She continues her efforts to inform and educate the world about Chemistry through her NSF spin-off enterprise, ChemSource.

Although her professional base was in New Rochelle, she has often posted to other locations to pursue some of her many passions. She became Director of Educational Services at the Chemical Heritage Foundation (now Science History Institute) in Philadelphia from 1997-2000. She was also the Editor of Chemical Heritage Magazine. Dr. Orna was instrumental in founding the Edelstein Center for the Analysis of Middle Eastern Textiles and Artifacts. During her Fulbright Fellowship in Israel (1994-95), she lectured at Hebrew University, the Weizmann Institute of Science and the Shenkar College of Textile Technology. During her posting to Rome she partnered with Marco Fontani and Mariagrazia Costa to produce *The Lost Elements: The Periodic Table’s Shadow Side* (2015). Wherever she has been, she has reached out to the worldwide community of chemical historians for the benefit of all.

Sister Orna joined the Division of the History of Chemistry in 1976 and rapidly became an essential member of the Executive Committee. She served as Chair in 1984 and as Treasurer in 1989-90. She has been a Division Councilor for more than 30 years and has served on all the elected and standing ACS Council Committees. She received the ACS Volunteer Service Award in 2009. Her life of dedicated and unselfish service to the American Chemical Society community, local, regional and national, was honored with the 2018 Radding Award.

Sister Professor Dr. Mary Virginia Orna is the recipient of the 2021 HIST Award for Outstanding Lifetime Achievement in the History of Chemistry. She has devoted her technical career to the study of color and its role in human culture: *The Chemical History of Color* (2013). She has been a champion of the Archeological Chemistry community:

Archeological Chemistry: A Multidisciplinary Analysis of the Past (with Seth Rasmussen, 2019). She has been a leader in the appreciation of the geography of Chemistry: *Science History: A Traveler's Guide* (2014), and has made major contributions to the understanding of the chemical elements: *Development of the Periodic System and its Consequences* (*Substantia* special issue, with Marco Fontani, 2019). Professor Orna appreciates the personal side of Chemistry and has published biographies: *Carl Auer von Welsbach: Chemist, Inventor, Entrepreneur* (2017). Her achievements in pure history of chemistry would easily qualify her for this Award.

One of the ways in which Dr. Orna has blessed the worldwide community in the History of Chemistry is as an organizer of symposia (with corresponding books): History and Preservation of Chemical Instrumentation (1985); Electrochemistry, Past and Present (1989); Chemistry's Role in Food Production and Sustainability: Past and Present (with Gillian Eggleston and Alvin Bopp, 2019). She is also one of the most frequent contributors to symposia organized by others (dozens of papers). Her role in the growth and development of historians of chemistry is another one of her major achievements (dozens of people). Sister Orna has also taken a leadership role in researching the contributions of women scientists to the history of chemistry: *Dame Kathleen Lonsdale: Scientist, Pacifist, Prison Reformer* (2018).

Sister Dr. Mary Virginia Orna has accomplished much for the History of Chemistry. She has served this community with both grace and humor. She has helped to establish HIST within both the ACS and the worldwide community of historians of chemistry.

Paul R. Jones Best Paper Award

The winner of the Best Paper Award for 2017 is Emeritus Professor Carmen Giunta of the Le Moyne College in Syracuse, NY. The paper was "*Isotopes: Identifying the Breakthrough Publication*," published in the *Bulletin of the History of Chemistry*, volume 42, number 2, 2017, pp. 103-111. This paper is the result of work for the History of Chemistry Division of the American Chemical Society Citation for Chemical Breakthrough Award that Carmen performed in connection with the award for "*Isotopes*," which was awarded to the University of Glasgow for Frederick Soddy's publication in *Nature* (92, 399-400 (1913)).

Carmen Giunta received his B.S. in Chemistry (*summa cum laude* with Honors) from the University of Scranton



in 1982. He received his Ph.D. in Chemical Physics from Harvard University in 1989. After serving as a Post-Doctoral Fellow for a year at Harvard, he joined Le Moyne College in 1990. He is currently Professor of Chemistry Emeritus at Le Moyne.

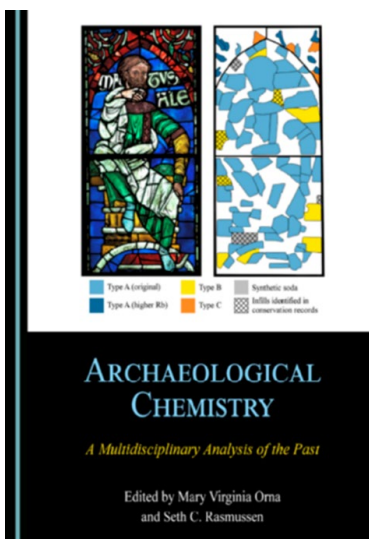
Carmen developed an interest in the History of Chemistry early in his academic career and joined the ACS Division of the History of Chemistry in 1996. By 2002 he was serving as an Alternate Councilor. He was very active in planning symposia. I fondly remember the one on "*200 Years of Atoms in Chemistry: From Dalton's Atoms to Nanotechnology*" at the 2008 ACS meeting in Philadelphia. Another great symposium was held in Anaheim in 2011 on "*What's in a Name? Histories of Units and Constants*." Carmen has served on the ACS Committee on Nomenclature, Terminology, and Symbols from 2008 through 2019.

In 2011, Carmen Giunta became the Editor of the *Bulletin for the History of Chemistry*. He had been a regular contributor to the *Bulletin* and was the unanimous choice to succeed Paul R. Jones.

History of Chemistry Books

A New New Archaeological Chemistry Volume

Continuing the long history of archaeological chemistry volumes published under the auspices of the Division of the History of Chemistry, the newest entry in this series was recently published by Cambridge Scholars Publishers (Newcastle upon Tyne, UK;



<https://www.cambridgescholars.com>) in December of 2020. Entitled *Archaeological Chemistry: A Multidisciplinary Analysis of the Past*, the volume was edited by Mary Virginia Orna and Seth C. Rasmussen and is based on the multi-day symposium that took place at the ACS 2019 Spring National Meeting in Orlando, Florida. Consisting of 18 chapters written by a diverse collection of international authors, this volume presents new research in archaeological chemistry collected under four major archaeological headings: Applications to Education, Materials Science, Analysis of Organic and Coloring Materials. In addition to providing current advancements in analysis, this volume aims to highlight the unique multidisciplinary nature of the field that combines aspects of analytical chemistry, history, archaeology, and materials science, while also illustrating efforts to include archaeological chemistry in science education. As this subject utilizes current scientific advances to better understand our past, this should be of broad general interest to the chemical, archaeological, and historical communities. A full list of the available chapters and the corresponding details can be found at <https://www.cambridgescholars.com/product/978-1-5275-5979-0>.

Announcements

2021 Morris Award Call for Nominations

The Society for the History of Alchemy and Chemistry (SHAC) solicits nominations for the 2021 John and Martha Morris Award for Outstanding Achievement in the History of Modern Chemistry or the History of the Chemical Industry. This award honours the memory of John and Martha Morris, the late parents of Peter Morris, the former editor of *Ambix*, who has contributed the endowment for this award. The recipient chosen to receive the Morris Award will be expected to deliver a lecture at a mutually convenient meeting, where the awardee will be presented with an appropriate framed photograph, picture or document and the sum of £300. The award is international in scope, and nominations are invited from anywhere in the world. The award is not limited to professional historians or members of SHAC and chemists with a track record in publishing the history of modern chemistry and/or the history of the chemical industry are invited to apply or be nominated.

A complete nomination consists of a complete curriculum vitae for the nominee, including biographical data, educational background, awards, honours, list of publications, and other service to the profession; a letter of nomination summarising the nominee's outstanding scholarly achievement in either the history of the chemical industry or in the history of recent chemistry (post -1945) and the unique contributions that merit this award; and names of two or three individuals for the panel to contact for further information if needed.

Only complete nominations will be considered for the award and the nomination documents must be submitted in electronic form. The Award will be judged by the selection panel on the basis of scholarly publication. All nomination materials should be submitted by e-mail to Peter Morris at doctor@peterjtmorris.plus.com and a separate email which indicates that the material has been submitted should be sent to the same address (a precaution in case of incomplete transmission of documents) for arrival no later than 1 May 2021.

More information can be found on the Society's website here: <https://www.ambix.org/morris-award/>. Please address any queries, including issues of eligibility, to the Secretary of the Awards Committee at doctor@peterjtmorris.plus.com.

***ACS Division of the History of Chemistry (HIST)
Centennial, January 1, 2022***

While I am not in the habit of citing a Pope to support my remarks, there is one timely statement by Pope Francis that resonates with the purpose of this article: “This is perhaps among the most baffling paradoxes...: in order to progress towards the future, we need the past, we need profound roots.” (Address of Pope Francis to the Council of Europe; Strasbourg, November 25, 2014.)

The ACS Division of the History of Chemistry (HIST) has these profound roots: on January 1, 2022, it will celebrate its hundredth birthday as an ACS Division. Founded by Edgar Fahs Smith (1854-1928) and others, it “grew up” parallel to its “twin,” the Division of Chemical Education. Today, HIST has over 1,000 members from every sector of the ACS, programs regularly at ACS National Meetings and at many regional meetings, publishes two Newsletters per year, and for 43 years has published an internationally recognized peer-reviewed journal, the *Bulletin for the History of Chemistry*. Its publishing record also includes 37 history-related volumes published over the course of the past 60 years that include topics in archaeological chemistry, biography, centennials and other landmark anniversaries, history of chemical sub-disciplines, chemical entertainment and history of chemistry outside non-ACS venues.

While many of these activities fulfill HIST’s stated mission to advance knowledge and appreciation of the history of the chemical sciences, HIST also serves as a resource for chemical scientists in general, recognizes past major achievements in the chemical sciences, and interacts with other organizations interested in the history of science.

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 (gp9a@andrew.cmu.edu), the Editor, welcomes contributions: please send written material, photographs, ephemera, etc. to him and indicate if you wish to author a full or part chapter. 50 chapters are projected.

(2) The *Bulletin for the History of Chemistry* is preparing a special Centennial issue in HIST’s honor.

Guest editor Jeffrey I. Seeman and Editor in Chief Carmen Giunta have obtained commitments from 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.” topics and concepts ripe for exploration, opportunities for interdisciplinary investigations, and new ways of analyzing previously studied topics will be featured. The issue will be open access to all; HIST members will receive hard copies.

HIST Fellows added to Divisional Award Programs

The HIST awards programs are an important part of the division’s mission to bring attention to not only historically significant publications (*Citation for Chemical Breakthrough*), but also scholarship by current historians of chemistry (*HIST Award for Outstanding Achievement in the History of Chemistry* and *Paul R. Jones Outstanding Paper Award*). The division is now happy to announce the addition of *HIST Fellows* to these ongoing divisional programs. The designation of HIST Fellow aims to recognize HIST members who have made a significant impact on the advancement of history in the chemical sciences, as well as dedicated service to the division, and is open to all current HIST members who have been in good standing for at least five years. Successful awardees must meet both criteria of scholarship and service, although what constitutes evidence of these criteria may be the loosely defined. In terms of scholarship, this could include history publications in the *Bulletin* or other journals, authoring or editing history-oriented books, or even extensive participation in HIST symposia. In terms of service, this could include service as an elected officer or member of the HIST Executive Committee, service on other history-focused committees within HIST, ACS, or other historical societies, significant organization of HIST symposia, or notable service to the general history community. HIST Fellows will be awarded yearly and will be given out as part of the annual HIST Awards Banquet. The award will consist of a certificate and a pin. Further details, including how to nominate potential candidates, will be released in the coming months.

Submitted by Seth Rasmussen

The Division of Chemical Education celebrates its 100th anniversary

In 1921, much of historical significance occurred. Einstein received the Nobel Prize in Physics that year; a baseball game was broadcast on radio for the first time (the Pirates beat the Phillies 8-5); Warren G. Harding was inaugurated to the Presidency; and Coco Chanel introduced the world to her still famous No. 5. And if this wasn't enough, in September 1921, many folks gathered in New York City for the ACS National Meeting, during which the ACS Division of Chemical Education (CHED) was born. So grab your best Gatsby garb and come join us for a special symposium, celebrating the 100th anniversary of the division of Chemical Education at the Atlanta national meeting – even better, submit an abstract!

Submitted by Irv Levy (CHED)

The Flynn Research Group is looking for educators to help with studies in visualization

Your participation will first consist of participating in a 10-15 min. questionnaire about your perspective on implementing a systems thinking (ST) approach, the types of barriers for implementing ST into your course(s), and your experience with ST. No specific prior knowledge needed to participate. To participate in the questionnaire, use the following link: <https://bit.ly/380xIz9>

The uOttawa Health Science and Science Research Ethics Board has approved the ethical components of the project. Your responses would be confidential and you would be given a pseudonym to protect your identity. Participation is voluntary. The findings from this questionnaire will help create potential solutions to overcome educator and student barriers and will allow us to determine the feasibility of this approach in different contexts. Your participation is important to help make this project a success!

If you have any questions about the study, you can contact the research team member, Alisha Szozda, at aszoz104@uottawa.ca or the Principal Investigator, Alison Flynn, at alison.flynn@uottawa.ca.

BULLETIN FOR THE HISTORY OF CHEMISTRY

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

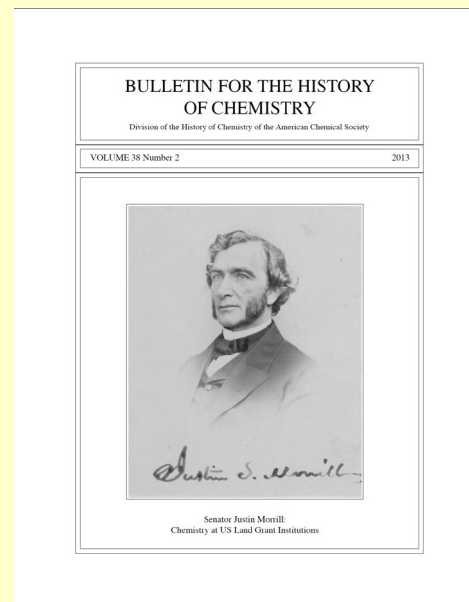
Available online: <http://acshist.scs.illinois.edu/bulletin/index.php>

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*
4827 Cavalry Green Dr.
Manlius, NY 13104
Email: giunta@lemoyne.edu



HIST Programming

Message from the HIST Program Chair

Greetings to all my fellow historians of science, chemical educators, and history aficionados! On behalf of the Division of the History of Chemistry, I welcome you to our new programming! After a painfully long break, HIST will once again offer a number of interesting presentations and I sincerely hope you will attend many or even all of them.

The pandemic, which started just over a year ago, forced us to rethink and readjust many aspects of our lives. We quickly learned to do our jobs, attend performances, and even catch up with friends and relatives from home, taking advantage of the Internet and staring at a screen. Although many had reservations about (or even detested) the new style of communication, we soon began to appreciate the fact that we have a safe, efficient, and much more personal than the phone means to function and share thoughts with our colleagues, peers, and friends. Virtual business and scientific meetings, as well as lectures, became the norm. In this spirit, the 261st ACS National Meeting, originally planned to take place in San Antonio, TX, will be entirely virtual and will be markedly longer than usual (April 5-30, with live technical presentations taking place during the first two weeks, followed by two weeks of on-demand access).

We will begin our programming on Monday, April 5, with the postponed symposium on the *History of Polymer Science*, in which our audience will have the chance to gain knowledge about some important discoveries that not only yielded useful materials but have helped and inspired research in diverse disciplines, such as physics, biology and medicine, engineering, etc. We will also get acquainted, in a session aptly titled *Faces and Places*, with some of the “players” who transformed the discipline. The morning session of the next day, will be dedicated to a very successful series of books on the history of chemistry, *The Springer Briefs*, edited by our own Seth Rasmussen (my predecessor as Program Chair and current Chair of HIST). It has been more than a decade since the first books in the series appeared and this calls for a celebration. The attendees will learn about the subjects of some of the books but also meet the authors. We will finish our technical program with two *General Papers* sessions on Tuesday afternoon and evening. The detailed schedule and abstracts are presented on the following pages. When you expect them, you will see that a variety of topics will be covered during all HIST sessions. I am sure you will find the lectures to be enlightening and useful (perhaps in your teaching), and definitely enjoyable! We will also participate in one non-technical event. On the evening of Friday, April 9, please visit the HIST “virtual table” at *Division Row*. We will be thrilled to meet you and talk with you about the Division. Ideas from you are always welcome and much appreciated.

Last, you may remember the HIST-sponsored contest *Elemental Art*. We have received a number of contributions – cartoons, photographs, and poems – dedicated to the elements, their uses and discoveries, or the Periodic Table. We shifted the original deadline several times and as a result still have time to prepare and submit your original art, and to compete for the awards. The contest will close at the end of April 2021 and the winners will be announced in the fall. If the Muses visit you during the next month or so, please consider sending me your creative work at nvt@smu.edu or nicktsarevsky@gmail.com.

As always, we at HIST wish you a productive and fulfilling meeting and very much look forward to seeing you and talking with you at our sessions. We expect that our next meeting will be in person. Hope is certainly in the air and is almost palpable. Be well!

Nick Tsarevsky, HIST Program Chair



HIST SYMPOSIA, 261st ACS Meeting, April 5-30, 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.

262nd ACS Meeting, Atlanta, GA, August 22-26, 2021

African American Chemists: Academia, Industry and Social Entrepreneurship. (*Invited and Seeking Contributions*). Organizers: Taiya Fabre, Department of Chemistry, Mathematics and Physics, Houston Baptist University, Houston, TX 77074, Phone: 281-649-3191, email: tfabre@hbu.edu; Tracey Simmons-Willis, Department of Chemistry, Wharton County Junior College, Wharton, Texas 77488, Phone: 979-532-6572, e-mail: willist@wcjc.edu; Sibrina Collins, The Marburger STEM Center, Lawrence Technological University, Southfield, MI 48075, Phone: 248-204-2227; e-mail: scollins@ltu.edu

A. Ye. Chichibabin: The man and his chemistry. (*Invited and Seeking contributions*) David E. Lewis, Department of Chemistry and Biochemistry, University of Wisconsin-Eau Claire, Phone: 715-836-4744, email: lewisd@uwec.edu

Despite Disability. (*Invited and Seeking contributions*) David E. Lewis, Department of Chemistry and Biochemistry, University of Wisconsin-Eau Claire, Phone: 715-836-4744, email: lewisd@uwec.edu

HIST 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

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

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

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

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

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

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

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*

*Zoom links for all sessions will be made available to registered attendees.
Please note that all times refer to Pacific Time (PDT).*

Monday, April 5, 2021: Morning session (9:00 am – 12:00 pm PDT)

History of Polymer Science: Ideas and Materials

G. D. Patterson, S. C. Rasmussen, N. V. Tsarevsky, *Organizers*

9:00 Introductory remarks. **N. V. Tsarevsky, S. C. Rasmussen**

9:10 From polymer to macromolecule: origins and historical evolution of polymer terminology. **S. C. Rasmussen**

9:40 Early observations and studies of radical polymerization. **N. V. Tsarevsky**

10:10 History of poly (organophosphazenes). **H. Allcock**

10:40 Intermission

11:00 Following the PVC pipeline: Misconceptions and milestones from discovery to industrialization. **E. W. Culver**, S. C. Rasmussen

11:30 History vs. legend: Discovery and development of conducting polymers. **S. C. Rasmussen**

12:00 Business meeting – open to all
(<https://american-chemical-society.zoom.com/j/6320555274>)

Monday, April 5, 2021: Afternoon session (1:00 – 4:00 pm PDT)

History of Polymer Science: Faces and Places

G. D. Patterson, S. C. Rasmussen, N. V. Tsarevsky, *Organizers*

1:00 Introductory remarks. **G. D. Patterson**

1:10 The nifty fifty: Polymer scientists who created the discipline. **G. D. Patterson**

2:10 Professor Mihai Dimonie's contribution to polymer science and to the education of many generations of students at Politehnica University of Bucharest. **M. C. Stefan**, M. Teodorescu, H. Iovu

2:40 Intermission

3:00 Origin and development of polymer science in India: Historical Perspectives. **S. Sivaram**

3:30 Chemical philately: A stamp collector's view of polymer science. **D. Rabinovich**

Tuesday, April 6, 2021: Morning session (9:00 am – 12:00 pm PDT)

Springer Briefs in the History of Chemistry: The 10th Anniversary

S. C. Rasmussen, *Organizer*

9:00 Introductory remarks. **S. C. Rasmussen**

9:10 Life and achievements of Carl Auer von Welsbach, chemist, inventor, and entrepreneur. **M. V. Orna**, R. Adunka

9:40 John Winthrop, Jr.: The making of an adept. **G. D. Patterson**

10:10 Ten years on: How a Springer brief led to a decade of Russian conferences. **D. E. Lewis**

10:40 Intermission

11:00 Writing *Frederick Sanger: Two-time Nobel Laureate in Chemistry*. **J. S. Jeffers**

11:30 How glass changed the world: Revised and expanded. **S. C. Rasmussen**

12:00 Networking session

(<https://american-chemical-society.zoom.com/j/6320555274>)

Tuesday, April 6, 2021: Afternoon session (1:00 – 4:00 pm PDT)

General Papers and Tutorial

N. V. Tsarevsky, *Organizer*

1:00 Introductory remarks. **N. V. Tsarevsky**

1:10 J. A. R. Newlands: beyond the law of octaves. **C. Giunta**

1:40 Astatine: the elusive one. **K. KostECKa**

2:10 Fritz Reitzenstein: A little known figure in the Werner-Jorgensen controversy. **David R. Manke**

2:40 Intermission

3:00 Withdrawn

3:30 Chemists with moral courage in France's Dreyfus Affair. J. Gal

Tuesday, April 6, 2021: Evening session (5:00 – 8:00 pm PDT)

General Papers and Tutorial

N. V. Tsarevsky, *Organizer*

5:00 Nikolai Aleksandrovich Menshutkin (1834-1907): Physical organic chemistry four decades before Hughes and Ingold. **D. E. Lewis**

5:30 William McPherson (1864-1951) and William Edwards Henderson (1870-1962): authors of an outstanding series of chemistry textbooks and manuals. **W. P. Palmer**

Paper ID: 3531389

From polymer to macromolecule: origins and historical evolution of polymer terminology

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

The common term “polymer” was initially introduced in 1832 by Jacob Berzelius, although its initial meaning differed significantly from the modern use. The accepted meaning of the word then changed over time, particularly with the growing number of reactions being referred to as polymerizations in the late 1800s and early 1900s. As the field of polymeric materials developed, the broader uses of the term polymer was one factor that led Hermann Staudinger to introduce the alternate term “macromolecule” in the 1920s to specifically designate long-chain polymeric species. Of course, further terms were also eventually required to differentiate between different types of polymeric species, including “copolymer”, “homopolymer”, and “oligomer”. The origins, history, and evolution of these various terms used in reference to polymeric materials will be presented.

Paper ID: 3554925

Early observations and studies of radical polymerization

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

By the close of the 19th Century numerous observations had been made related to the ability of unsaturated (vinyl and vinylidene) compounds to form thick oils or resinous substances with the same elemental composition as the starting material when stored and especially when heated or exposed to light. For instance, in 1835, Victor Regnault reported the polymerization of vinyl chloride and three years later, he described that vinylidene chloride, when stored in sealed ampoules, deposits a white non-crystalline substance, which he considered an isomeric form. While studying the properties of acrolein and acrylic acid in 1843, Josef Redtenbacher noticed that the former formed resin, named “disacryl”, when heated. In the same year, the formation of glass-like material from styrene (which refracted light very strongly and was “not improbable that it might be applied to several optical purposes”) was described by John Blyth and August Wilhelm von Hoffman. In fact, the “steady conversion of the oil [styrene] by air, light, and heat to a rubberlike substance” was communicated in 1839 by E. Simon who assumed the compound was styrene oxide. The nature of these and many other similar transformations was unclear and was the subject of speculations and (occasionally, lucky) guesses. There were indications that radicals were

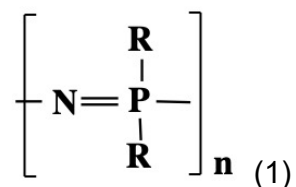
involved in the processes. For example, as early as 1924, Charles Moureu and Charles Dufraisse showed that hydroquinone, which inhibits the oxidation of acrolein (a chain reaction), also inhibits the formation of resin from it. In 1928, George Stafford Whitby and Morris Katz assumed that the chain growth in the thermal polymerization of indene (and presumably other unsaturated compounds) involved hydrogen migration. However, only within several years of these studies, the mechanism of radical polymerizations was already well understood and it was established that the reactions were comprised of three distinct steps (now termed initiation, propagation, and termination). Papers published in 1934 by William Chalmers, in 1935 by H. Dostal and Herman Mark, and by G. V. Schulz, and in 1937 by Paul Flory described the kinetics of the polymerizations as well as the molecular weight distribution functions of the polymers. The mentioned early studies of radical polymerization will be presented and discussed.

Paper ID: 3548630

History of poly (organophosphazenes)

Harry R. Allcock, hra1@psu.edu. Chemistry, Pennsylvania State University, University Park, Pennsylvania, United States

The first poly(organophosphazenes) (1) were synthesized in the 1960's via a chemical reaction that most observers believed was impossible - the replacement of thousands of chlorine side atoms arrayed along an inorganic polymer chain by organic groups to yield stable macromolecules with unique properties. Today, several hundred different poly(organophosphazenes) with a wide range of unique property combinations have been produced by this same technique. Other synthesis methods have also been developed that include access to block- and graft-copolymers with classical organic macromolecules and poly(organosiloxanes). Applications that utilize the polymers are known that range from biomedical materials, aerospace elastomers, films, membranes, fibers, ionic conductors, and controlled surface materials. Many of these polymers are also resistant to combustion. This talk will trace the development of the field and its unique challenges. It is an example of the value of academic research coupled with the involvement of industry and government laboratories in the search for new property combinations and applications.



Paper ID: 3554598

Following the PVC pipeline: Misconceptions and milestones from discovery to industrialization

Evan W. Culver¹, culver.evan@gmail.com, Seth C. Rasmussen². (1) Chemistry and Biochemistry, North Dakota State University, Fargo, North Dakota, United States (2) Department of Chemistry and Biochemistry, North Dakota State University, Fargo, North Dakota, United States

Historical accounts in chemistry have often been subject to biases that lead to incorrect claims and timelines of important scientific discoveries. One problem that is frequently encountered when telling the history of polyvinyl chloride (PVC) is who should be given credit for the discovery and when the discovery was made. A primary complicating factor seems to stem from a limited understanding of the macromolecule prior to the 1920s. The field in its infancy at this point would advance significantly due to the work by Herman Staudinger and happened to coincide with the patent submissions of Fritz Klatte which began the process of looking at industrialization and application. Additionally, the historical emphasis on plastics often ignores contributions that preceded the patenting and commercialization of polymeric products. The discovery of PVC has been incorrectly attributed to industry patents in the early 20th century, along with other erroneous attributions prior to and after the historically accepted account of Eugene Baumann in 1872. It is not to say that the contributions made in the 20th century were not substantial, as without the contributions of Fritz Klatte, industrial scalability would still have been out of reach. The presentation will focus on how PVC progressed from a material of only academic interest, to the billion-dollar industry we know today.

Paper ID: 3531394

History vs. legend: Discovery and development of conducting polymers

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

The discovery that the conductivity of conjugated organic polymers can be controlled through oxidation or reduction (i.e. doping) has led to organic materials that combine the electronic properties of metals with the weight and density of plastics. For this reason, such materials have been studied extensively and their importance has been recognized with the awarding of the 2000 Nobel Prize in chemistry to Alan Heeger, Alan MacDiarmid, and Hideki Shirakawa “for the discovery and development of conductive polymers.” Due to the wording of this award, as well as other factors, the common view has become that these materials originated with the collaborative work of the Nobel Laureates on doped polyacetylene in the late 1970s. At odds with this view, however, are numerous similar reports of conducting organic polymers dating back to 1963. An overview of the history of conjugated polymers from their origin in 1834 up through the rapid expansion of these materials in the 1970s and 80s will be presented, with a focus on the known reports of conducting polymeric materials.

Paper ID: 3530017

The nifty fifty: Polymer scientists who created the discipline

Gary D. Patterson, *gp9a@andrew.cmu.edu*. Carnegie Mellon University, Pittsburgh, Pennsylvania, United States

As noted in *A Prehistory of Polymer Science*, a true scientific community of polymer scientists gelled at the 1935 Faraday Discussion on Polymerization. These men were from many different scientific fields, and from many different countries. But they all chose to commit their time and effort to articulating the paradigm of chain molecules. This talk will detail fifty of them, with more extended treatments of perhaps ten of them. Some from each of the decades since 1890 are included. Some of them are even still alive, like Richard Stein. I have personally met more than half of them in my career both as a polymer scientist and as a historian of the field. A professional length biography of Paul Flory has appeared (and can be purchased).

Paper ID: 3553879

Professor Mihai Dimonie's contribution to polymer science and to the education of many generations of students at Politehnica University of Bucharest

Mihaela C. Stefan¹, *mci071000@utdallas.edu*, **Mircea Teodorescu**², **Horia Iovu**². (1) Dept Chem UT Dallas, Richardson, Texas, United States (2) Polymer Science, Universitatea Politehnica din Bucuresti Facultatea de Stiinte Aplicate, Bucuresti, Romania

Professor Mihai D. Dimonie was born in Ploiesti (Romania) on January 17, 1934. He received his BS in Chemical Engineering from Politehnica University of Bucharest (Romania) with specialization in Organic Compounds Technology. He received his Ph.D. in Chemistry under the supervision of S.S. Medvedev from Lomonosov Moscow Institute of Fine Chemical Technology in 1965. He joined the Department of Organic and Macromolecular Compounds at Politehnica University (Bucharest) in 1957 as Junior Assistant Professor. He was promoted to Assistant Professor in 1965, to Associate Professor in 1969, and Professor in 1980. Professor Dimonie was the Head of the Department of Technology of Organic and Macromolecular Compounds in the period 1990 to 2004. He was also the Head of the Elastomers Department at the National Institute of Chemical Research (ICECHIM) in 1990 and 1991. Professor Dimonie taught Technology of Polymer Synthesis, Ionic and Coordination Polymerizations, Ring Opening Polymerizations, Emulsion Polymerizations, Stereospecific Polymerizations, and Modern Methods for Investigation of Polymerization Processes undergraduate and graduate courses. He advised the dissertation theses of ~200 undergraduate students, and he advised ~30 Ph.D. students in his entire career. The Polymer Technology course he developed and taught for more than 40 years was the most crucial course for undergraduate students who majored in Chemical Engineering with Polymer Science Specialization. Professor Dimonie published more than 300 papers, four books, and 35 patents in the field of polymer science and technology. He received the Nicolae Teclu

Award of the Romanian Academy in 1980 and the Opera Omnia Award from Politehnica University of Bucharest for his entire scientific career. Professor Dimonie published papers in heterogeneous media polymerizations, ionic and coordination polymerizations, ring-opening polymerizations, composites and nanocomposites, and polymer additives for road bitumen. His most recognized research in the field of ring-opening metathesis polymerization targeted the synthesis of polypentenamer and polyoctenamer elastomers. Professor Dimonie was a role model for students and an outstanding mentor who shaped the careers of many of his students. Professor Mihai Dimonie's contribution to polymer science and the education of many generations of students at the Politehnica University of Bucharest.

Paper ID: 3555831

Origin and development of polymer science in India: Historical Perspectives

Swaminathan Sivaram, *sivaramswaminathan01@gmail.com*. Department of Chemistry, Indian Institute of Science Education and Research, Pune, Maharashtra, India

Polymer Science as a discipline took roots in India in the early 1950s, almost concurrently with the birth of this scientific discipline in many other parts of the world. From its small beginning, polymer science has grown into a vibrant discipline practiced, in both, industry and academia in India. This talk will trace the origins and the early pioneers who established this discipline in India. Many of these early pioneers received their training in Brooklyn Polytechnic under the most venerable Hermann Mark. 1970s saw the birth of Indian polymer manufacturing and processing industry, which continues to grow in double digits even today. In the early 2000, several global companies set up their R&D Centers in India in the area of polymers to take advantage of the large pool of scientific and technical talent available in this discipline in India. This talk will highlight the drivers for the growth of the discipline in its early years and what sustains this discipline today. Major themes of current research in the area in both, academic institutions as well as industry in India, will be presented.

Paper ID: 3552214

Chemical philately: A stamp collector's view of polymer science

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

This presentation will rely on the use of postage stamps to illustrate the history of polymer science, starting with natural polymeric materials known for centuries, such as silk and caoutchouc. Milestones in the development of early polymer chemistry will be described, including the work of Schönbein on nitrocellulose, Chardonnet's production of artificial silk, the beginning of the textile industry, and the vulcanization of rubber. Contributions from key personalities in the history of plastics, such as Baekeland, Staudinger, Flory, Ziegler, and Natta, will also be discussed. Last but not least, an array of fascinating topics that are

(unexpectedly) found on postage stamps will be presented, for example hydrogels and the pioneering research of Otto Wichterle, the introduction of plastic banknotes, and the evolution of conductive polymers.



Paper ID: 3530038

Life and achievements of Carl Auer von Welsbach, chemist, inventor, and entrepreneur

Mary Virginia Orna¹, maryvirginiaorna@gmail.com, **Roland Adunka**². (1) Chemistry, The College of New Rochelle, New Rochelle, New York, United States (2) Auer von Welsbach Museum, Althofen, Carinthia, Austria

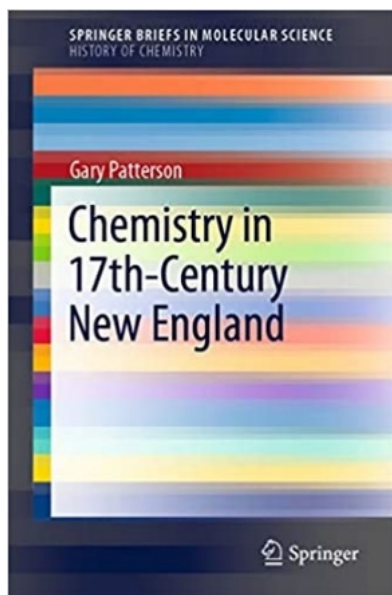
Carl Auer von Welsbach was considered the most important chemist in Austria spanning the decades from the late 19th through the third decade of the 20th century. Following postdoctoral study in the laboratory of Robert Bunsen, he went on to do pioneering work on the rare earth elements, including the discovery of new elements. As a result of his knowledge of the rare earths, he was able to develop new materials for a variety of practical uses, to invent useful new devices, and to found major industries. Throughout his career, he was at the forefront of scientific developments, maintaining correspondence and networking with such major scientists as William Ramsay, Niels Bohr, Ernest Rutherford, Lise Meitner and Max Planck.

Paper ID: 3530144

John Winthrop, Jr.: The making of an adept

Gary D. Patterson, gp9a@andrew.cmu.edu. Carnegie Mellon University, Pittsburgh, Pennsylvania, United States

This talk is based on a chapter in the recent book: *Chemistry in 17th Century New England*. How is it that the Colonial Governor of Connecticut was universally recognized as an adept? How could he have been a founding member of the Royal Society of London? How could he have been the Father of industrial chemistry in Colonial America? This is a fascinating story and one that every American chemist should know.



Paper ID: 3554334

Ten years on: How a springer brief led to a decade of Russian conferences

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

In 2012, my SpringerBrief, *Early Russian Organic Chemists and Their Legacy* was published, and I sent a copy of the book to Academician Konovalov in Kazan, with whom I had corresponded nearly two decades earlier. Our correspondence lapsed because I was moving, so we lost contact. Since his receipt of my book, doors that I never imagined existed have opened for me to speak at universities in Russia: Ekaterinburg, Kazan, Moscow, St. Petersburg, Tomsk and Vladikavkaz. In this rather personal account, I will discuss the evolution of my research in the history of chemistry in the light of its genesis in that one little book.

Paper ID: 3560371

Writing *Frederick Sanger: Two-time Nobel Laureate in Chemistry*

Joe S. Jeffers, *jeffers@obu.edu. Ouachita Baptist Univ, Arkadelphia, Arkansas, United States*

This biography is based on reading the works of Fred Sanger and conducting 18 hours of interviews with Sanger over a period of ten years. Additionally, more than 40 of Sanger's students, colleagues, and family members were interviewed. The assembling of that story will be presented.

Paper ID: 3531385

How glass changed the world: Revised and expanded

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

Glass and its uses predate recorded history. The production of synthetic glass, however, is thought to date to no earlier than 3000 BCE. Such glass technology was not discovered fully fashioned, but grew slowly through continued development of both chemical composition and techniques for its production, manipulation, and material applications. This development had become fairly advanced by the Roman period, resulting in a wide variety of glass vessels and the initial use of glass windows. After the fall of the Roman Empire, glass technology was further advanced in Venice and Murano, where improvements in composition and production resulted in both more chemically stable and clearer forms. The quality of this new glass ushered in the development of lenses and eyeglasses, as well as the greater use of glass as a material for chemical apparatus, all of which significantly impacted society and the pursuit of science. Finally, glass in the North developed along different lines to ultimately result in a new form of glass that eventually replaced Venetian glass. This Bohemian glass became the glass of choice for chemical glassware and dominated the chemical laboratory until the final advent of borosilicate glass in the 1880s. A brief overview of the early history of silica glasses from their origins to the development of borosilicate glasses will be presented.

Paper ID: 3536057

J. A. R. Newlands: beyond the law of octaves

Carmen J. Giunta, *giunta@lemoyne.edu. Le Moyne Coll, Syracuse, New York, United States*

John Alexander Reina Newlands (1837-1898) is remembered today by historians of chemistry for one thing, namely being one of those who independently discovered the periodic law; he called his version the “law of octaves.” This presentation examines other aspects of Newlands’s life and work. For example, Newlands was one of a group of volunteer soldiers who served under Garibaldi for the unification of Italy, and he had a volume of verse published at about the same time when the Chemical Society of London declined to publish a paper on the law of octaves. Analytical chemistry and the production of sugar were Newlands's principal occupations. The law of octaves was not his only foray into chemical classification and systems, or even his first: he wrote about classification in organic chemistry and systematic organic nomenclature as well.

Paper ID: 3543994

Astatine: the elusive one

Keith KostECKA, *kkostECKA@colum.edu. Science and Mathematics, Columbia College - Chicago, River Forest, Illinois, United States*

Astatine has proven, since its isolation by Corson, Mackenzie and Segre in 1940 to be an element with a fascinating history with respect to its discovery, confirmation and naming. It has also proven to have an interesting set of physical and chemical properties as well as isotopes of significant note. This element also has several applications of note as well as a captivating chemistry and the question whether it is or is not diatomic.

Paper ID: 3542243

Fritz Reitzenstein: A little known figure in the Werner-Jorgensen controversy

David R. Manke, *dmanke@umassd.edu. Chemistry & Biochemistry, University of Massachusetts Dartmouth, Fairhaven, Massachusetts, United States*

This presentation will examine the life of Fritz Reitzenstein, a chemistry faculty member at the University of Würzburg at the turn of the 20th century. The talk will examine his birth, education, research, involvement in the German Chemical Society, and his final years. There will be specific focus on his involvement in the Werner-Jorgensen controversy.

Paper ID: 3551445

Chemists with moral courage in France's Dreyfus Affair

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French Jewish army captain Alfred Dreyfus was falsely prosecuted and convicted of treason in 1894, in what became the infamous antisemitic Dreyfus Affair, one of the most egregious miscarriages of justice in history. He was imprisoned for almost five years under appalling conditions on Devil's Island, off the northern coast of South America. In 1899, Dreyfus was pardoned but only in 1906 was he exonerated by France's highest court. Many in France among the population at large, in the government, among intellectuals, scientists, and artists, etc., believed in Dreyfus' guilt. Some, however, recognized his innocence and courageously defended him. Such principled supporters included some eminent chemists, e.g., Édouard Grimaux and Auguste Scheurer-Kestner. Grimaux (1835-1900), chemist, pharmacist, and member of the French Academy of Sciences, was professor at the *École polytechnique*, a prestigious university-level educational institution in Paris. His research in organic chemistry had important industrial applications. In 1898 he signed a petition to the Parliament requesting a review of Dreyfus' conviction and testified in defense of renowned French writer Émile Zola during the latter's prosecution for defamation, a baseless charge levelled at Zola for his pro-Dreyfus stand. For testifying in defense of Zola, Grimaux was dismissed from his professorship, and his ordeal is thought to have contributed to the health problems that led to his death. Scheurer-Kestner (1833-1899) was an industrial chemist, director of a chemical factory, and researcher in a variety of industrial-chemical problems. He was also an eminent politician, and he fearlessly defended Dreyfus, which cost him his political career, his friends abandoned him, and he suffered fierce attacks from French politicians and the press. He died on September 19, 1899, the very day Dreyfus was pardoned by Émile Loubet, the president of France. Scheurer-Kestner is considered today a historical figure of great moral authority in France.

Paper ID: 3554368

Nikolai Aleksandrovich Menshutkin (1834-1907): Physical organic chemistry four decades before Hughes and Ingold

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The deaths of Beilstein (1906), Mendeleev (1907) and Menshutkin (1907), following the deaths of Markovnikov (1904) and Vagner (Wagner, 1903) signaled the end of an era in organic chemistry in the Russian Empire. Each of these chemists in one way or another is well known to modern organic chemists: Mendeleev through his Periodic Table, and the others through eponymous reactions, rules and tests. One of the less appreciated members of this group, Nikolai Aleksandrovich Menshutkin (the first Editor of the *Journal of the Russian Chemical Society*), is the subject of this paper. In an era when organic chemistry was basically

a qualitative science, Menshutkin was among the first to obtain quantitative data for the influence of structure on the rates of chemical reactions. In one study, he studied the rates of quaternization of tertiary amines with alkyl bromides and iodides, a reaction that has come down to us as the Menshutkin reaction. However, this was not the only reaction he studied. He also studied the effects of structure on the rate of the Williamson ether synthesis, and the effects of alcohol structure on the rates of esterification. Menshutkin's life and chemistry will be explored.



Nikolai Aleksandrovich Menshutkin

Paper ID: 3533489

William McPherson (1864-1951) and William Edwards Henderson (1870-1962): authors of an outstanding series of chemistry textbooks and manuals

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William McPherson was born near Xenia, Ohio in 1864. He attended Ohio State University obtaining B. S, M.S. and Sc.D. degrees. He obtained a Ph.D. degree from the University of Chicago and also completed about five years teaching in High Schools. He returned to Ohio State University as assistant to Professor Sidney A. Norton in 1892 where he had an illustrious career until his second retirement in 1938. William Edwards Henderson was born in Wilksburg, Pennsylvania in 1870. He attended Wooster College obtaining a B. A degree in 1891. He obtained his Ph.D. degree from Johns Hopkins University in 1897. He taught at Ohio State University from 1899 to 1941. McPherson and Henderson both saw the tremendous increase in the popularity of chemistry reflected in student numbers in the early part of the twentieth century. Observing this trend, they wrote a book, *Elementary study in chemistry* (1905), for High School and first year College chemistry students which included more physical chemistry than other textbooks of the period. This was followed by a chemistry laboratory manual entitled *Exercises in chemistry* in 1906. They published over twenty different manuals and textbooks in a variety of editions, providing an introduction to chemistry

for an estimated two million students; they are thus amongst the most widely used chemistry textbooks ever published. The McPherson and Henderson manuals are usually owned by individual students. The students perform the experiments as indicated in the manual and fill in answers in the spaces provided. Each manual is thus a unique notebook of the student's results. The "William Palmer" collection contains about 370 different of such manuals collected using Ebay over twenty years and *Exercises in chemistry* is the most numerous manual title in the collection.