

**MARCH 2021** 

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## Merck and U. MN Co-Host the Inaugural Jeannette Brown Lectureship Symposium



(Photo courtesy of Bettyann Howson)



North Jersey's Jeannette Brown shown with recipients of the 2018 Freddie and Ada Brown Encouragement Award for Future Careers in Chemistry.

(Photo courtesy of Tom Krone)

See article on page 5.



## THIS MONTH IN CHEMICAL HISTORY

Harold Goldwhite, California State University, Los Angeles • hgoldwh@calstatela.edu

My previous column was on the great contributions that Joseph Priestley made to pneumatick chemistry, many of which were recorded in his great book on "Experiments and Observations on Different Kinds of Air" (3 volumes, 1774 – 1777). In this column I will discuss the revolutionary work on chemistry published by Antoine Laurent Lavoisier (1743 – 1794) in 1789 entitled "Elementary Treatise on Chemistry". This book was translated into English in 1790 by the Scottish chemist Robert Kerr and retitled "Elements of Chemistry'. In 1965 Dover Books published an inexpensive facsimile copy of Kerr's version that was in print for many years.

The subtitle of "Elements of Chemistry" is "in a new systematic order, containing all the modern discoveries". The introduction to the Dover reprint is by Douglas McKie, a major historian of science and author of a superb one volume biography of Lavoisier. This 30 page introduction gives a summary of Lavoisier's career and of the events that led up to Lavoisier's revolution in chemistry. That revolution was the proposal that the phlogiston theory of combustion must be replaced by the oxygen theory. Oxygen, discovered independently by Priestley and Scheele and named by the former dephlogisticated air, was renamed oxygen by Lavoisier (meaning acid-former) and was presented by Lavoisier sier as the key to combustion and respiration.

Throughout "Elements" Lavoisier sticks rigorously to quantitative methods, and includes mass balances, and by implication the law of conservation of mass, in his calculations. The new systematic order promised in the subtitle begins with a first part "On the Formation and Decomposition of Aeriform Fluids – of the Combustion of Simple Bodies, and the Formation of Acids". This section ends with Lavoisier's "Table of Simple Substances", i.e. elements in modern nomenclature, an innovation. While this Table starts off with Light and Caloric (heat) it follows with oxygen, azote (nitrogen) and hydrogen, and then describes the non-metals (Oxydable and Acidifiable simple Substances not Metallic) including Sulphur, Phosphorus, Charcoal (carbon), and 3 still unknown radicals: muriatic (chlorine), fluoric (fluorine), and boracic (boron). Throughout the text Lavoisier uses the revolutionary new nomenclature of chemistry that he, with his colleagues Berthollet, Fourcroy, and De Morveau, had developed and published a few years earlier.

Part II of the text is "On the Combinations of Acids with Salifiable Bases, and of the Formation of Neutral Salts" and includes not only Lavoisier's own work but also most of the work in this area reported by others.

Part III is a "Description of the Instruments and Operations of Chemistry"; a comprehensive introduction that includes gas handling and weighing; thermometry; calorimetry; distillation; fermentation (!); and the operation of furnaces. At the back of the text is a series of Plates, many based upon sketches made by Madame Lavoisier who was a skilled artist and Lavoisier's note-taker, secretary, and companion in much of his laboratory work.

The Appendices include many conversion Tables of measurements of length, mass, and temperature from French into common English units – including the degrees of Reaumeur's Thermometer into its corresponding degrees of Fahrenheit's Scale. These tables remind me of the important work that Lavoisier did as a member of the Commission set up after the French Revolution to produce uniform systems of measurement bin France – the beginning of the metric system. Despite this work and all the important advances in science contributed by Lavoisier he was condemned during the Terror of offences against the People by being a member of a tax-collecting syndicate and was guillotined at the age of 51.

#### THE INDICATOR-MARCH 2021

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## Visit Us www.TheIndicator.org

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#### https://www.acs.org/editmyprofile.

Address advertising correspondence to Advertising Manager. Other correspondence to the Editor.

# **March Calendar**

## NEW YORK SECTION

Wednesday, March 17, 2020 Organic Topical Group *See pages 6-7.* 

Thursday, March 18, 2020 New York Section for Applied Spectroscopy See pages 7-8.

Friday, March 19, 2021 New York Section Board of Directors Meeting See page 6.

Friday, March 19, 2021 Computers in Chemistry Topical Group *See page 9.* 

#### also

Tuesday, April 6, 2020 Westchester Chemical Society See page 10.

Fridays, April 9, May 7, 2021 Computers in Chemistry Topical Group See page 9.

Friday, April 16, 2021 William H. Nichols Distinguished Symposium (Virtual) See pages 11-14. Fridays, June 4, September 10, November 19, 2021 New York Section Board of Directors Meeting See page 6.



## NORTH JERSEY SECTION

Monday, March 22, 2021 North Jersey Executive Meeting See page 15.

also

Mondays, April 19, May 17, June 14, September 27, October 18, November 15, December 13, 2021 North Jersey Executive Meeting See page 15.

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*The Indicator* is posted to the web around the 15th of the previous month at www.TheIndicator.org

Deadline for items to be included in the APRIL 2021 issue of *The Indicator* is FEBRUARY 28, 2021 To Comply With the Federal Regulations Regarding Social Distencing Necessitated by the COVID-19 Virus, it became imperative to cancel, postpone or "go viral" all Section Meetings for the past year.

Details of any relevant meetings will appear in the appropriate future issues of *The Indicator*.

# The Jeannette Brown Lectureship Symposium

### Jeannette Brown Lectureship



North Jersey's Jeannette Brown, above, on Edison Day, 2015. (Photo courtesv of Miriam Gulotta)

Merck co-hosted the inaugural Jeannette Brown Lecture symposium held in collaboration with the University of Minnesota. The 2021 lectureship was a two-day event on February 3 and 4, 2021. Prof. Richmond Sarpong presented a Diversity & Inclusion talk on February 3, followed by a fullday symposium on February 4 which included 1) a keynote lecture by Professor Sarpong, 2) Merck keynote seminar by Niyi Fadeyi, 3) a career panel, and 4) UMN student rapid fire talks.

On February 3, there was a short introduction for Jeannette by Minnesota faculty and Merck scientists. From Merck, Mike Kress and Amjad Ali provided an introduction on Jeannette. Professor David Blank provided the introduction from the University of Minnesota. This lectureship is the first endowed lectureship for a University of Minnesota alum. What a huge honor for Jeannette!! The entire North Jerseyy ACS is very

proud of Jeannette and all her contributions and accomplishments.

Jeannette Brown's pioneering legacy includes being a talented chemist in the pharmaceutical industry for 25 years, author, historian, and tireless leader and advocate for the inclusion and advancement of African American women in chemistry-related professional pursuits and careers.

Brown is the first African American to receive a degree from the University of Minnesota Department of Chemistry's graduate program, earning her master's degree in 1958. She is a former faculty associate in the department of Pre-College Programs at the New Jersey Institute of Technology.

For 25 years, she worked as a research chemist at Merck. She is the author of two books, "African American Women Chemists" and "African American Women Chemists in the Modern Era." She is a Société de Chimie Industrielle (American Section) Fellow of the Chemical Heritage Foundation (2004), and is a member of the first class of American Chemical Society (ACS) Fellows (2009).

For her distinguished service to professionalism, she received the Henry Hill Award from the ACS Division of Professional Relations in 2020. For her work as a mentor to minority students and science education advocacy, she was elected to the Hunter College Hall of Fame in 1991; was honored by the University of Minnesota with an Outstanding Achievement Award in 2005; and received the ACS national award for Encouraging Disadvantaged Students into Careers in the Chemical Sciences in 2005.

Also in 2005, the Freddie and Ada Brown Encouragement Award for Future Careers in Chemistry was established to encourage high achieving middle- and high-school students of African American and Native American heritage to further develop their academic skills, with views on careers in the chemical sciences. It was founded by Jeannette, in honor of her parents Freddie and Ada Brown, who encouraged her to pursue a career as an industrial medicinal chemist at a time when there were few African Americans in the field. Neither of her parents was a chemist. The North Jersey ACS recognizes at least two students in each grade category annually with the award.



Prof. Richmond Sarpong, U of Cal., Berkeley, presented the diversity and inclusion keynote address at the initial Jeannette Brown Lectureship.



David Blank, Dept. of Chemistry, U of MN, served as master of ceremonies for the Lectureship.

(Photos courtesy of Bettyann Howson)

## **New York Meetings**

### https://www.newyorkacs.org

## ACS, NEW YORK SECTION BOARD OF DIRECTORS

#### **MEETING DATES FOR 2021**

The dates for the Board of Directors Meetings of the ACS New York Section for 2021 were selected and approved. The meetings are open to all – everybody is welcome. All non-board members who would like to attend any of the meetings should inform the New York Section office by emailing Bernadette Taylor at **btaylor@NewYorkACS.org** or by calling the Section office at (732) 770-7324.

Dates of the meetings for 2021 are posted on the New York Section website at https://www.NewYorkACS.org, below, and monthly in *The Indicator*. Dr. Rita K. Upmacis will chair all meetings. The board meetings will start at exactly 6:30 PM. Until further notice, meetings will be held on-line. and will start at exactly 6:30 PM.

The Board Meeting dates for 2021 are:

#### Friday, March 19, 2021 Board Meeting

Friday, April 16, 2021 Nichols Symposium (Virtual)

Friday, June 4, 2021 Board Meeting Friday, September 10, 2021 Board Meeting Friday, November 19, 2021 Board Meeting



Otto Diels- An Apolitical Chemist, A GrandTeacher and the 1950 Nobel Prize Winner: Celebrating His 145th Year Birth Anniversary

Speaker: Dr. Paris Svoronos Department of Chemistry Queensborough Community College

Otto Paul Hermann Diels (1876-1954) was born in Hamburg, studied chemistry at the University of Berlin and earned his doctorate under Emil Fischer (1899). His first academic position was at his alma mater where he eventually became a professor and the chair of its department. He eventually moved to the University of Kiel (1916) where he became the director of its Institute of Chemistry until his final retirement (1948). His research first dealt with the identification of carbon suboxide (C3O2) and continued with the skeletal structural treatment of steroids using metallic selenium as the dehydrogenating agent. His most famous student was Kurt Alder (1902-1958) with whom he discovered the cvclization of a conjugated diene-alkene (dienophile) mixture at basically room temperature, a reaction named after them. Its most significant application was the polymerization of isoprene to synthetic rubber whose extensive manufacture development took off in the middle 1950s. Diels and Alder were awarded the joined Nobel prize in 1950- the most significant mentor-student award. Diels' life and chemical work are not highlighted as extensively outside the German scientific world. An effort to highlight his private life and work that spanned over two World Wars will be attempted.

#### Date: Thursday, March 4, 2021

Time: 6:00 PM Place: Zoom Link:

https://stonybrook.zoom.us/j/982150878 47?pwd=dG0yRTRJNk15Um1GdHpWUm Y5T3cwZz09



ORGANIC TOPICAL GROUP – JOINT MEETING WITH THE NEW YORK ACADEMY OF SCIENCES CHEMICAL BIOLOGY DISCUSSION GROUP

#### Al in Chemical Biology: New Frontiers

Organizers: Nozomi Ando, PhD Cornell University



Free pick-up & delivery Restrictions apply César de la Fuente PhD University of Pennsylvania

Sara Donnelly, PhD The New York Academy of Sciences

Sonva Dougal, PhD The New York Academy of Sciences

- Kevnote: James Collins, PhD Massachusetts Institute of Technology
- Speakers: Tim Cernak, PhD University of Michigan

Joey Davis, PhD Massachusetts Institute of Technology

Alán Aspuru-Guzik, PhD University of Toronto

Anne Fischer, PhD DARPA

Debora Marks PhD Harvard Medical School

This one day symposium will showcase recent advances in chemical biology that were enabled by Artificial Intelligence (AI) and highlight best practices for employing AI techniques in this field.

- Date: Wednesday, March 17, 2021
- Time<sup>.</sup> 11:00 AM - 5:00 PM
- Place: Virtual Symposium
- Cost: ACS and NYAS members save \$30 or more on this event. Please select the appropriate non-member Registration Category and use the Priority Code "ACS".

For more information and to register for the event, go to www.nyas.org/AlChemBio

To become a Member of the Academy, visit www.nyas.org/benefits



## NEW YORK SECTION FOR APPLIED SPECTROSCOPY

Please join us on March 18, 2021 at 12 noon EST for two exciting presentations by Heinz Siesler and Marina de Gea Neves, from the University of Duisburg-Essen.

The titles of the presentation are:

Food Authentication and Classification Using Vibrational Spectroscopy in Tandem with Chemometrics Tools

Speaker: Marina de Gea Neves

#### University of Duisburg-Essen Germany

#### Biography



Graduated in chemistry-University of Campinas -Brazil 2013

Master degree in analytical chemistry applied to vibrational spectroscopy and chemometrics in food-University of Campinas – Brazil 2016

PhD in analytical chemistry applied to vibrational spectroscopy and chemometrics in food- University of Campinas - Brazil/University of Duisburg-Essen -Germany - 2020

The main focus is the development of chemometric models using Raman, NIR and MIR portable and benchtop instruments for authentication, classification, regression, identification of adulterations, contaminations, quality control, determination of nutritional parameters in edible oils, powder supplements, noodles and sauce, bread, powder milk, and others.

ICAVS Award 2017-honour mention in analytical application

SLACA Award 2017-inovation in food control \* \* \* \* \*

Handheld Near-Infrared Spectrometers: **On-Site Quality Control and Protection** against Product Counterfeiting

Speaker: Heinz Siesler Emeritus Professor of Physical Chemistrv University of Duisburg-Essen Germanv

#### Biography



Professor Heinz Siesler's expertise is in vibrational spectroscopy for chemical research, analysis and process control. He has written 240+ publications in peer-reviewed iournals and 4 books. and presented 350+ lectures worldwide

Since 2012 he is a Fellow of the Society for Applied Spectroscopy and he received several NIR spectroscopy awards (1994 EAS, 2000 Thomas Hirschfeld/PITTCON, 2003

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## NEW YORK SECTION FOR APPLIED SPECTROSCOPY

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Buechi). He also worked as guest professor at the Ecole Superieure (Paris, France), Kwansei Gakuin University (Sanda, Japan), and the University of Innsbruck (Innsbruck, Austria).

Prior to his academic position he gained industrial experience in molecular spectroscopy and thermal analysis in the R&D Department of Bayer AG, Germany. He received his PhD in Chemistry from the University of Vienna (Vienna, Austria).

The test and application of miniaturized handheld vibrational spectrometers is a special research focus over the last ten years.

\* \* \* \* \*

Please see below for additional information AND mark your calendars for these exciting talks!!!

We invite all interested persons to attend the on-line meeting of the NY Section of SAS.

Date: Thursday, March 18, 2021 Time: 12:00 noon EST.

#### \* \* \* \* \*

#### Information to join the meeting:

#### **Microsoft Teams meeting**

Microsoft Teams meeting Join on your computer or mobile app To join the meeting: Click the following link or copy and paste into your browser: https://teams.microsoft.com//meetupjoin/19%3ameeting\_NjIjYmJkNzAtMjYzM S000GZILTk00GIt0GRhMGVmMWQ2ZT E2%40thread.v2/0?context=%7b%22Tid %22%3a%2271e34cb8-3a56-4fd5-a259-4acadab6e4ac%22%2c%220 id%22%3a%227f61751f-b398-491c-b4e0aeb03ccafe95%22%7d

Or call in (audio only) +1 908-409-1059,,93048104# United States, Elizabeth (833) 733-5876,,93048104# United States (Toll-free) Phone Conference ID: 930 481 04# Audio for this meeting can be heard in the Microsoft Teams client. Please check your audio device settings before you join the call. If you see phone numbers above, you can use them to join the meeting's audio if necessary.





## WESTCHESTER CHEMICAL SOCIETY

#### FUTURE MEETINGS

Because of Covid-19, this meeting will be a remote meeting. Details are at the end of this announcement. You will need to have the Zoom software on your computer to access the link.

\*\*\*\*\*

Special Seminar – "How to Make Gold and Influence People: Prisons as Sites of Alchemical Practice in Early Modern Europe"

Speaker: Jennifer M. Rampling, Ph.D. Associate Professor of History

#### Biography:



Princeton, NJ

Jennifer M. Rampling, Associate Professor of History at Princeton University, is a historian of late medieval and early modern science and medicine, specializing in alchemy. She is the author of The Experimental Fire: Inventing English Alchemy,

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## WESTCHESTER CHEMICAL SOCIETY

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1300–1700 (Chicago, 2020), as well as numerous articles on alchemical theory and practice, including that of George Ripley (fl. 1470s) and John Dee (1527–1609). From 2013–17 she edited the history of chemistry journal, *Ambix*.

#### Abstract

This talk explores a neglected but fascinating theme in the history of alchemy—the strategies used by alchemical practitioners to extricate themselves from prison. In early modern Europe, alchemists found themselves incarcerated for various reasons. Some failed to make good on their gold-making promises, some were suspected of practicing magic, and others simply fell into debt. Once confined, some drew on their practical and rhetorical skills to write their way out of trouble, addressing petitions and alchemical treatises to princes and highly-placed figures in government. Perhaps surprisingly, they often ended up being released.

I will focus on English practitioners, starting



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in the fourteenth century when John of Walden fell foul of Edward III, and moving into the sixteenth century, when at least two alchemists were arrested as suspected conjurors under Henry VIII. Finally, the notorious Edward Kelley, best known for his collaboration with the mathematician John Dee, wrote a series of elaborate treatises to Emperor Rudolf II while imprisoned in Bohemia. Although Kelley's "prison writings" have not been previously studied, they offer new evidence for his alchemical experiments—and show how the promise of transmutation might offer a "get out of jail free" card for beleaguered alchemists.

#### Date: Tuesday, April 6, 2021

- Time: 7:00 PM (US and Canada) (Zoom link available from 6:45 PM)
- Place: Zoom Meeting
- Cost: Free and open to the public

#### URL

#### https://sunywccedu.zoom.us/j/86861649 919?pwd=cmtWdHdQQXpZRDRhNXBIaTZQQjJCQT09

One tap mobileMeeting ID: 868 6164 9919 Passcode: 596629

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- +1 253 215 8782 US (Tacoma)
- +1 346 248 7799 US (Houston)

#### Find your local number: https://sunywccedu.zoom.us/u/keGjpsPvJE

For further information: contact Rolande Hodel, rrhodel@aol.com,

#### Or

Peter Corfield, pcorfield@fordham.edu, Phone: 914-762-4468; Text: 914-980-9128 or 914-218-7607.,

#### Or

Paul Dillon, PaulWDillon2@hotmail.com, Phone: 914-941-0890, Text: 914-393-6940

**Please RSVP** by text or email to Rolande Hodel, Peter Corfield or Paull Dillon if you expect to come, to help us plan. But if you do not RSVP, you can still link in.

Please note that screen prints of the Zoom screen may be taken at the meetings and may be submitted for publication in the NY/North Jersey newsletter, *The Indicator.* If you do not want a photo of yourself submitted, let us know at the meeting.

## AMERICAN CHEMICAL SOCIETY'S NEW YORK SECTION, INC. – WILLIAM H. NICHOLS DISTINGUISHED SYMPOSIUM

"Nanostructured Polymers by Molecular Engineering Using ATRP"

Honoring: Professor Krzysztof Matyjaszewski

### Date: Friday, April 16, 2021

Time: 1:00 PM – 7:00 PM Place: Virtual Symposium

#### 1:00 PM - Welcome

Professor Ruben M. Savizky, 2020 Chair, ACS New York Section, The Cooper Union

#### 1:05 PM — Opening of the Distinguished Symposium

Professor Rita K. Upmacis, 2020 Chair-elect, ACS New York Section, Pace University

#### 1:15 - 2:00 PM — Polymer-Enhanced Biology

Professor Alan J. Russell, Department of Chemical Engineering,

Carnegie Mellon University

The growth of polymers from the surface of proteins has opened the door to tuning and supplementing protein function by rational design. Protein-polymer conjugates are synthesized from pure starting materials and the struggle to separate conjugates from polymer, native protein, and from isomers has vexed scientists for decades. We have discovered that covalent polymer attachment has a transformational effect on protein solubility in salt solutions. Charged polymers increase conjugate solubility in ammonium sulfate and completely prevent precipitation even at 100% saturation. This transformational impact on protein solubility can be used to simply purify mixtures of conjugates and native proteins into single species. Increasing protein solubility in salt solutions through polymer conjugation could lead to many new applications of protein-polymer conjugates.

#### 2:05 - 2:50 PM — Responsive Materials from Dynamic Bonds

Professor Brent S. Sumerlin, Department of Chemistry, University of Florida

By relying on a variety of reversible covalent reactions that lead to readily cleaved bonds, we have prepared materials that combine the physical integrity of covalent materials and the structural dynamics of supramolecular complexes. Enaminone, boronic esters, boronate esters, and Diels-Alder linkages have all been employed to prepare these responsive and dynamic materials, with particular attention having been dedicated to the preparation of hydrogels, elastomers, and nanoparticles. We seek to exploit the reversible nature of these bonds to prepare responsive and self-healing materials.

#### 2:55 - 3:35 PM — Dancing in the Dark with CHIPs:

#### Polymers for Next Generation Photonics and Imaging

Professor Jeffrey Pyun, Department of Chemistry and Biochemistry, University of Arizona

The ability to manipulate light with materials is critical for a wide range of optical applications for devices, imaging and sensing applications. We will discuss our recent efforts to make new functional polymers and materials that are designed to transmit, reflect, rotate or guide light across a wide optical spectrum to enable creation of new imaging and sensing platforms. We will discuss how these systems will improve human-machine interfaces and next generation sensors for transportation.

# 3:40 - 4:25 $\rm PM-Polymers,$ Cells and Spores: Macromolecular Engineering of Living Thin Films

Professor David A. Tirrell, Department of Chemistry, California Institute of Technology

This lecture will describe our ongoing effort to engineer the physical and biological properties of thin bacterial films by display of adhesive proteins on the cell surface, by release of matrix proteins into the extracellular space, and by the inclusion of stable bacterial spores. Studies of film fabrication, cell viability, film growth, film structure, indentation behavior, and regeneration following injury will be discussed.



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## AMERICAN CHEMICAL SOCIETY'S NEW YORK SECTION, INC. – WILLIAM H. NICHOLS DISTINGUISHED SYMPOSIUM

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# 4:30 - 5:15 PM — Macromolecular Engineering by Taming Free Radicals Using Atom Transfer Radical Polymerization

Professor Krzysztof Matyjaszewski, Nichols Medalist, Center for Macromolecular Engineering, Carnegie Mellon University

Macromolecular Engineering (ME) is a process comprising rational design of (co)polymers with specific architecture and functionality, followed by precise and efficient polymer synthesis and processing in order to prepare advanced materials with target properties. We employed radical polymerization for ME due to its tolerance to many functionalities although radicals are difficult to be controlled, since they have very short life times (<1 s) and are involved in side reactions. Taming free radicals was accomplished via dynamic equilibria between minute amounts of radicals and large pool of dormant species using copper-based ATRP (atom transfer radical polymerization) catalytic systems. By applying new initiating/catalytic systems. Cu level in ATRP was reduced to a few ppm and ME provided polymers with precisely controlled molecular weights, low dispersities, designed shape, composition and functionality as well as block, graft, star, hyperbranched, gradient and periodic copolymers, molecular brushes and organic-inorganic hybrid materials and bioconjugates. These polymers can be used as components of various advanced materials such as health and beauty products, biomedical and electronic materials, coatings, surfactants, lubricants, additives, sealants as well as nanostructured multifunctional hybrid materials for application related to environment, energy and catalvsis.

5:20 PM — Social Time in Breakout Rooms

6:00 PM — Medal Award Dinner

Presiding: Dr. Ruben M. Savizky 2020 Past Chair, ACS New York Section

 

 ACS Greetings:

 Introductory Address:
 Dr. David A. Tirrell California Institute of Technology

 Presentation of the Medal:
 Dr. Ruben M. Savizky

 Acceptance Address:
 Dr. Krzysztof Matyjaszewski Nichols Medalist

For More Information and to register (free): Please visit the New York Section website at www.NewYorkACS.org

#### Biography



Krzysztof (Kris) Matyjaszewski was born in Poland, in 1950. He obtained his PhD degree in 1976 at the Polish Academy of Sciences in Lodz, Poland, working with Prof. S. Penczek. Since 1985, he has been at Carnegie Mellon University (CMU) where he is currently J. C. Warner Professor of Natural Sciences and a director of Center for Macromolecular Engineering. He served as Head of Chemistry Department during 1994-1998. He also holds appointments of Adjunct Professor at the University of Pittsburgh, the Polish Academy of Sciences in Lodz and Technical University in Lodz, as well as Departments of Chemical Engineering and Materials Science at CMU.

Matyjaszewski's main research interests include controlled/living radical and ionic polymerization, catalysis and synthesis of advanced materials for optoelectronic, energy-related, environmentally-related as well as for biomedical applications. In 1994, he discovered Cu-mediated atom transfer radical polymerization (ATRP). In order to tame the uncontrolled free radical polymerization behavior. Matviaszewski introduced a new concept to insert periods of ca. 1 min dormancy after each ca. 1 millisecond of radical activity. This way, the overall life of propagating chains was extended from about 1 second to several hours with hundreds of intermediate dormancy periods. This would be like extending person's life from 100 years to 3000 years, if after each 1 day of activity a person could be dormant for 1 month. The concept of equilibria between active and dormant species applies not only to polymer systems but also operates in biological systems. such as Vitamin B-12, and also redox equilibria in the respiratory chain and lipid isomerization or redox recycling of the antioxidant systems. ATRP has its roots in atom transfer radical addition/cvclization, a highly selective and efficient organic reaction. Organic chemists originally used very high concentration (ca. 10 mol %) of copper catalysts. Matyjaszewski invented new catalysts for ATRP, which are million times more powerful. This year he reported new ATRP catalysts, which are billion times more reactive than original catalysts used in seminal 1995 paper. Thus, they can be used at very low concentrations, parts per million (ppm) relative to monomer. The catalysts used in so small amounts can be continuously regenerated using mild reducing agents such as ascorbic acid, iron or copper wire, electrical current, mechanical forces or light under excellent spatio-temporal control. Now, organic chemists adopted these catalytic systems also to organic reactions.

ATRP has enabled preparation of well-defined, essentially tailor-made polymers via macromolecular engineering. In these systems, all polymer chains grow concurrently and steadily. This allows synthetic chemists to prepare a myriad of well-defined polymers, including block and gradient copolymers, stars, molecular brushes, also various bioconjugates by linking synthetic polymers with nucleic acids, proteins and enzymes, as well as inorganic-organic hybrids by anchoring polymers to nanoparticles, flat wafers and other inorganic materials. In 1996 and 2000, Matyjaszewski founded two industrial Consortia with over sixty participating international chemical companies to facilitate technology transfer to industry. So far, ATRP has been licensed 17 times and commercial production of advanced polymers by ATRP started in 2004 in US, Japan and Europe. ATRP has been used to prepare well-defined polymers with precisely designed and controlled macromolecular architecture, including various hybrids and bioconjugates, as well as smart, stimuli responsive systems. ATRP has been successfully used to commercially produce better pigment dispersants for inkiet printing, automotive and appliances coatings, cosmetics, chromatographic packings, adhesives, sealants for self-cleaning windows, flat panel display and automotive gaskets. Other applications, being evaluated, include drug and nucleic acid delivery, coatings for cardiovascular stents, scaffoldings for bone regeneration, biocidal surfaces, degradable plastics, and others in biomedical, optoelectronic, and automotive industry.

Matyjaszewski's group at CMU has comprised over 100 graduate students, 100 undergraduate students and over 140 postdoctoral fellows. He has co-authored over 1,100 publications (cited 100,000 times, h-index 154, ISI), co-edited 20 books, 99 book chapter and holds 62 US and over 150 international patents.

Matyjaszewski received the 2017 Benjamin Franklin Medal in Chemistry, 2015 International Dreyfus Prize in Chemistry, 2014 National Institute of Materials Science (Japan) Award, 2013 Madison Marshall Award, 2012 Prize of Société Chimique de France, 2012 Maria Curie Medal, 2012 Dannie-Heineman Prize, Goettingen Academy of Science, 2011 Wolf Prize in Chemistry, 2009 Presidential Green Chemistry Challenge Award, and from the American Chemical Society: 2019 Award in Chemistry of Materials, 2013 AkzoNobel North America Science Award, 2011 Hermann Mark Award, 2011 Award in Applied Polymer Science, 2002 Polymer Chemistry Award, 1995 Creative Polymer Chemistry Award. He received eleven honorary degrees (Ghent, Lodz, Athens, Moscow, Toulouse, Pusan, Paris, Technion, Poznan, Padova, Coimbra) and is a member of National Academy of Sciences, Australian Academy of Sciences, honorary member of Israel and Chinese Chemical Society and a fellow of National Academy of Inventors, International Union of Pure and Applied Chemistry, and American Chemical Society.

## AMERICAN CHEMICAL SOCIETY'S NEW YORK SECTION, INC. – WILLIAM H. NICHOLS DISTINGUISHED SYMPOSIUM

(continued from page 13)

## THE WILLIAM H. NICHOLS MEDAL AWARD

Dr. William H. Nichols, a charter member of the American Chemical Society and its president in 1918 and 1919, was a pioneer in the development of the chemical industry in the United States and an early champion of the importance of chemistry in the future growth of the nation. The success of his companies can be traced to several notable principles that guided Dr. Nichols' career. First was his deep belief in research and development. Second was his support for science education and the students of chemistry. Third was his concern for the welfare of his employees. Overriding all of these was his often quoted belief that "the Golden Rule is as applicable in business as it is in church". It is this legacy of Dr. William H. Nichols that the New York Section is proud to maintain in its annual award of the Nichols Medal each spring.

It was in 1902, that Dr. Nichols established this annual award, the first in its field, of a gold medal to be presented to a chemical scientist for original research. The William H. Nichols



Medal was first awarded in 1903. Since its inception, the New York Section of the American Chemical Society has administered the award. It has been perpetuated through the generosity of Dr. Nichols, his family, and the Nichols Foundation, Inc. The award ceremony has evolved into a Distinguished Symposium and a Medal Award Banquet during which scientists can interact with their colleagues and with chemistry students. The Nichols Medal itself depicts the allegorical figure of Dr. Faust in his laboratory as described by Goethe, and the obverse side bears an inscription of the name of the medalist and the award citation. A listing of all of the William H. Nichols Medalists and their medal citations can be found at www.newyorkacs.org/nicholsmedalists.html.

## WESTCHESTER CHEMICAL SOCIETY

Our co-chair, Paul Dillon was gifted with a tee-shirt using items from the periodic table. He forwarded it to several friends, one of whom (Richard Currie, a friend from Brooklyn Technical High School, undergraduate days at The Polytechnic Institute of Brooklyn, now NYU's Tandon School of Engineering, and fraternity, Pi Kappa Phi, membership) sent back a picture of his periodic table-based tee shirt. The elements depicted were beryllium, carbon, erbium, fluorine, gold and iodine. Paul's tee shirt is in support of the science to help mitigate the Covid-19 pandemic and Richard's recognizes something that may help us to live through these mitigations efforts.



(Left) Paul Dillon (Photo courtesy of Paul Dillon)

(Right) Richard Currie (Photo courtesy of Richard Currie)



## **North Jersey Meetings**

## https://www.njacs.org 2021 NORTH JERSEY EXECUTIVE COMMITTEE MEETINGS

Section officers, councilors, committee chairs, topical group chairs, and section event organizers meet regularly at the Executive Committee Meetings to discuss topics of importance to running the section and representing the membership. The team is scheduling monthly virtual meetings on Monday evenings at 7 – 9 PM (EST). See below table for the 2021 meeting dates. All ACS members are welcome to attend these meetings and become more involved in section activities. For any additional information, please contact Mirlinda Biba (NJACS 2021 Chair) at mbiba@njacs.org.

There are no other Subsection meetings scheduled for March.

### 2021 ACS North Jersey Local Section Executive Committee Meetings (virtual) Schedule

Month	Meeting Date Time: 7-9 PM EST (virtual)
March	Monday, March 22, 2021
April	Monday, April 19, 2021
Мау	Monday, May 17, 2021
June	Monday, June 14, 2021
September	Monday, September 27, 2021
October	Monday, October 18, 2021
November	Monday, November 15, 2021
December	Monday, December 13, 2021

# Obituary

## *IN MEMORY OF JACQUELINE "JACKIE" ERICKSON*



Jackie Erickson passed away on January 8, 2021 after a short battle with cancer. She was a long-time member of the American Chemical Society where she was very active until her last day. She is survived by her husband, Martin Erickson, her father, Peter Tuitt, and her sister, Deborah Richards.

She graduated from the University of Delaware in 1988 with a B.S. degree in chemistry and obtained her M.S. degree in chemistry from Rutgers University in 1999. She worked as an Analytical Chemist for GlaxoSmithKline Consumer Health Care for over 30 years in various roles with increasing responsibilities. She was a dedicated analytical chemist and very proud of her work in the science field.

Jackie was a long-time member of the ACS and North Jersey Local Section since 1988. She served as the North Jersey Local Section Treasurer from 2008 to 2020. She was the local section chair in 2005 and served as a Councilor during 2000-2011 and 2014-2020, and alternate councilor in 2012-2013. Her dedication, commitment and contributions to the North Jersey Local Section over the many years was extraordinary. She was very active and supported various section activities and outreach programs.

Jackie was also very active at the ACS national level where she served in many different committees, including Women Chemists Committee in 2001-2005, Membership Affairs in 2006-2011, Economic and Professional Affairs in 2010-2011, Community Activities in 2014-2018, and Committee on Committees (ConC) during 2019-2021. As a member of ConC, she was also the ConC Liaison for the Committee on Minority Affairs and the Committee on Chemistry and Public Affairs. Her outstanding achievements and contributions to the chemistry profession and

> (More pictures on pages 16 and 17, all courtesy of Tom Krone)

### IN MEMORY OF JACQUELINE "JACKIE" ERICKSON

#### (continued from page 15)

the American Chemical Society were recognized and honored by receiving the distinguished 2019 ACS Fellow award.

She was such an energetic and constant presence that, even after the "professional chemists" and high school groups merged into one day's offerings, and then pharma groups diminished in their physical presence, she would be there with a booth sometimes alone.

Jackie was a remarkable volunteer who promoted the chemistry profession and the mission of ACS. Her passion for science and dedication to ACS is highlighted through her many contributions and achievements over the many years. She will be greatly missed and fondly remembered by everyone who knew her in the ACS community.





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(Right) Jackie writing checks to winners at National Chemistry Week event. (Below) Also at NCW event.

(Photos courtesy of Bettyann Howson)





## **Call for Volunteers**

## NY ACS OLYMPIAD IS NOW RECRUITING VOLUNTEERS TO



## **BE PROCTORS**

NY ACS Olympiad Committee Chair, Sally Mitchell, is organizing the Chemistry Olympiad. She needs approx. 20 volunteers to help with proctoring breakout rooms during the zoom event which will be held on **Saturday, March 27, 2021** from 2:30-5:00pm. There will be 10-15 students per breakout room for the proctor to monitor. People willing to help proctor should contact Sally Mitchell directly at sbmitchell2@gmail.com



## OPPORTUNITY FOR ACS MEMBERS TO AID STUDENTS 2 SCIENCE IN A HYBRID VIRTUAL LAB PROGRAM

Can you spare a few hours of your time? Do you like working with students and would you like the opportunity to share your science knowledge in a classroom? Students 2Science (S2S) is seeking volunteers to support its V-Lab program. S2S has a series of elementary, middle, and high school experiments that run in various schools across New Jersey. Members are especially needed to mentor students in participating schools to help with experiments. It's great fun, a wonderful way to give back, and only requires 1-2 hours of your time. Experiments include  $CO_2$  to the Rescue, Curious Crystals, Mystery of M&Ms, Thermochemistry: *Exothermic and Endothermic Chemical Reactions, and Glow it Up: The Chemistry of Luminol.* All are age-appropriate and volunteers are provided with instructions on how to support in the classroom prior to your scheduled volunteer day.

For more information, contact Cyndi Roberson, Director of Corporate Relations, at (973) 947-4880 ext. 516 or visit the website to register for the upcoming school year: https://www.students2science.org.



## SEMINAR SPEAKERS WANTED

The New York Section of the ACS is in search of speakers that we can add to our Speakers Bureau database of interested local area speakers who are available for Section-wide seminars and symposia. If you have an area of research or interest that would provide an interesting talk appropriate for our Section members. and would like to be included in our Speakers Bureau, please contact the New York Section Office at (732) 770-7324 or send an email to Bernadette Taylor btaylor@NewYorkACS.org with the following information that will be posted on the Section's website: your name, affiliation, a title, and 5-6 words briefly summarizing your area of specialty. We look forward to hearing from you about topics that you wish to share with our other members!

Deadline for items to be included in the APRIL 2021 issue of *The Indicator* is FEBRUARY 28, 2021

## **Call for Applications**

## FREDDIE AND ADA BROWN AWARD

This Award recognizes and encourages high achieving middle- and high-school students, of African American and Native American heritage, to further develop their academic skills, with views on careers in the chemical sciences.

#### Award Amounts

Middle School \$100.00 Check and \$50.00 gift certificate : High School \$200.00 Check and \$100.00 gift certificate.

#### Who is Eligible

Middle School students enrolled in a science class : High School students who have completed a chemistry course

#### Grades

Middle School B Average or better in Science, B Average overall : High School B Average in Chemistry, B Average overall

#### Letter of Recommendation

Math or Science/Chemistry Teachers or Guidance Counselor

#### Statement

Middle School "Why I Like Science" : High School "Why I Like Chemistry"

#### Selection Criteria

Applicants must be African American (Black) or Native American (including Pacific Islander) or of mixed race.

#### Transcript

Official transcript required.

#### **Financial Need**

Not Required.

Applications available on the web: www.njacs.org/freddieadabrown or from your school guidance office.

#### **Return Application To**

Freddie and Ada Brown Award, NJACS Section Office, 49 Pippens Way, Morristown, NJ 07960

#### Due Date

Completed Applications must be postmarked no later than March 31 Annually

Questions: Contact Jeannette Brown Jebrown@infionline.net or (908) 239-1515

## **Call for Nominations**

## COMMITTEE ON THE HISTORY OF THE NEW YORK SECTION

Over the past twenty-three years the New York Section has participated in the designation of seven National Historic Chemical Landmarks and four New York Section Historic Chemical Landmarks, A brief description of these National and local section landmarks may be found on the NY Section Home Page at https://www.newyorkacs.org under the Committee on the History of the NY Section. These landmark programs recognize achievements in the chemical sciences and related areas, in order to enhance public appreciation for the contributions of the chemical sciences to modern life.

