

## **Dr. Mirlinda Biba** **2021 North Jersey Section Chair**



*See article on page 5.*

## THIS MONTH IN CHEMICAL HISTORY

Harold Goldwhite, California State University, Los Angeles • [hgoldwh@calstatela.edu](mailto:hgoldwh@calstatela.edu)

Most of the works I have discussed or will discuss in upcoming columns dedicated to “Great Books of Chemistry” are by authors whose names are likely to be familiar to you. But this column’s book is by someone you probably have not heard of unless you are quite familiar with 17th Century science. This author is Nicolas Lemery, born in Rouen in November 1644 or 1645, died in Paris in 1715. His father was a lawyer to the Normandy Parliament and a Protestant. Nicolas was apprenticed to a pharmacist who was a relative, but he moved to Paris in 1666 to work at the Jardin du Roi, the Royal Botanic Garden that included science laboratories, and sponsored science lectures. (Lavoisier, a century later, learned much of his chemistry at this institution.) Lemery’s mentor was Glaser but they did not get on and he moved to Montpellier where he set up a laboratory, made and sold chemicals and pharmaceuticals, and began to give lectures on chemistry illustrated by experiments. These lectures established his fame and attracted many (paying) attendees including women and foreign students.

Lemery’s Protestant faith led to conflicts with the Catholic authorities and from 1683-84 he visited Protestant England. Returning to France he earned an M.D. and he became a practicing Catholic in 1686 and was accepted into the Paris Academy in 1699.

In 1675 Lemery published his “Cours de Chymie” which became by far the most popular chemistry text published to that date and is the reason for the inclusion of Lemery in this series. The “Course of Chemistry; containing the way of carrying out the operations useful in medicine, with the rationale for each operation, for the instruction of those who want to apply themselves to this science” was a volume of over 500 pages with many illustrations. It went through at least 11 authorized editions in French in the next 40 years; there were also pirated editions. The work was first translated into English and published in 1677 and three further editions appeared, the last in 1720 The “Cours” was also translated into German, Dutch, Italian, and Spanish.

Lemery also compiled a popular Pharmacopeia (first edition in 1698) and a monograph on “antimony” (1707) that echoes Basil Valentine’s “Triumphal Chariot of Antimony”

Lemery’s text is clear and reasonably concise. It follows on from earlier German and French authors, particularly Le Fevre, and shows Paracelsian influences in its endorsement of remedies derived from antimony and other metals. Its period is before the rise of the phlogiston theory and it was eventually replaced by texts that embraced the newer ideas. Lemery was unimpressed by the claims of alchemy. He described them as mostly trickery. However he does support an element theory; his five elements or principles are mercury, oil, sulfur, water and earth. The incorporation of the fire principle into sulfur is familiar in the writings of many Arabic alchemists.

The “Cours” is eminently pragmatic and describes in detail the apparatus, including furnaces, needed to embark on practical chemistry. It includes a glossary and tables of symbols. The body of the book covers the three separate areas of minerals; vegetable materials; and animal materials. These three divisions were not novel to Lemery but his book helped popularize them. He did add one new theoretical speculation derived from the ideas of the corpuscularists (including Gassendi, Descartes, Boyle and Newton) – that corpuscles might have particularly shaped spikes and orifices. This became a popular way of explaining acid/base interactions.

A clear, comprehensive, and popular view of practical chemistry in the late 17th. Century Nicolas Lemery’s “Cours de Chimie” takes its place among the “Great Books of Chemistry”.

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Indicator** 

The monthly newsletter of the New York & North Jersey Sections of the American Chemical Society. Published jointly by the two sections.

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**EDITORIAL DEADLINES**

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March 2021	January 28, 2021
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<https://www.acs.org/editmyprofile>.

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

## January Calendar

### NEW YORK SECTION

**Thursday, January 14, 2021**

New York /New Jersey Section for Applied Spectroscopy

See pages 6-7

**Saturday, January 30, 2021**

New York Section's 2021 Sectionwide Conference

See pages 6, 8-9.

*also*

**Thursday, February 4, 2021**

Long Island Subsection

See page 10.

**Tuesday, February 9, 2021**

Westchester Chemical Society

See pages 10-12.

**Wednesday, March 17, 2020**

Organic Topical Group

See page 12.

**Friday, April 16, 2021**

William H. Nichols Distinguished Symposium (Virtual)

See pages 13-15,



### NORTH JERSEY SECTION

**Thursday, January 21, 2021**

ChemLuminary Awards - Registration Deadline

See page 28.

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posted to the web  
around the 15th  
of the previous  
month at**

**[www.TheIndicator.org](http://www.TheIndicator.org)**

**Deadline for items to  
be included in the  
FEBRUARY 2021 issue  
of The Indicator is  
DECEMBER 28, 2020**

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## 2021 North Jersey Section Chair's Message

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Dear Members of the North Jersey Section,

It is a great honor to serve as the 2021 Chair of the North Jersey Section. I would like to thank the officers, members, and volunteers of the North Jersey Section for giving me this opportunity to serve as the chair and for all they do to continue the impactful work of this section within our chemistry community. This year has been particularly challenging for all of us with the Covid-19 pandemic, but I am very proud of our members and volunteers who despite these challenges they continued to drive the mission of this section by organizing virtual events and Zoom meetings.

Our members and volunteers contribute to our section through many activities, such as topical groups and various outreach events. I encourage all our members to visit the section's website [www.njacs.org](http://www.njacs.org) to learn more and consider volunteering in the various topical groups, including Mass Spectrometry, Chromatography, NMR Spectroscopy, Organic Chemistry, Drug Metabolism, Minority Affairs, Women Chemists Committee, Senior Chemists, Younger Chemists and Teacher Affiliates. These groups organize meetings and symposia throughout the year which provide excellent opportunities for continued education and networking. This section will also host the Leo Hendrik Baekeland Award and symposium in late 2021.

The North Jersey Section also continues its important mission through numerous outreach programs including Project SEED, National Chemistry Week, Chemistry Olympiad, Earth Day, Community Nights at Liberty Science Center, Science Cafes, and partnership with Students 2 Science. Through these public outreach activities, the section strives to deliver on its mission for "advancing the broader chemistry enterprise and its practitioners by providing resources, programs, and outreach for the benefit of all communities."

As Chair of the Section, I will continue to support and promote the various topical groups and public outreach activities. Some of my main goals are the following: I will focus on increasing membership and participation of chemists from industry and local chemical companies by connecting through the different topical groups, find ways to increase participation by local college chemistry groups and reach out to more students, and encourage increased participation for next generation of volunteers to continue the excellent work, service and dedication from our previous chairs and executive committee members.

As we look ahead into 2021, first and foremost I hope everyone stays safe and healthy! I encourage all our members to participate and become more involved in different activities of the North Jersey Section. I also encourage you all to contact me with any thoughts, ideas and suggestions. Thank you for your continued support and I look forward to connecting with you during the coming year.

Mirlinda Biba

2021 Chair, North Jersey Section

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## New York Meetings

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<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](mailto: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:

#### Saturday, January 30, 2021 Sectionwide Conference

Friday, February 19, 2021 Board Meeting  
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

We hope to provide further details concerning the NY ACS Sectionwide Conference and the virtual Nichols Symposium soon.



### NEW YORK/NEW JERSEY SECTION SOCIETY FOR APPLIED SPECTROSCOPY

**NY/NJ SAS January 2021 NEW YEAR!  
Invitational Announcement**

#### Webinar Title: FUNdamentals of Vibrational Spectroscopy

*Speakers:* John Wasylyk  
Senior Principal Scientist  
BMS

and

Debbie Peru  
Consultant

DP Spectroscopy and Training,  
LLC

#### Abstract:

In this presentation, John will provide an overview of basic vibration spectroscopy and several methods used in the pharmaceutical industry for process optimization and problem solving. Focus will be on the basic theory of three widely applied tools: mid-infrared, near-infrared and Raman spectroscopies, and how the key fundamentals of vibrational spectroscopy enhance our process knowledge in the area of research and development. Specific examples provided will give an insight into which technique is best suited for answering specific analytical problems and then applied in a manufacturing environment for maintaining quality, enhancing productivity, and lessening environmental impact.

Debbie has over 35 years experience in developing quantitative spectroscopy methods for pharmaceutical, consumer products, and specialty chemical industries. Her presentation will provide a 30,000 foot view of the method development process starting with an overview of the stages of method development and how to create an excellent training set of standards for calibrating your instrument. In this presentation Debbie will review the importance of reviewing the integrity of both the X Block and Y Block of data. This will lead into a discussion of the two main approaches for developing a calibration curve and the benefits of supervised modeling using variable selection methods.

#### Biographies:

##### John Wasylyk

Background in Natural Products Chemistry, Marine Biology, and Cryobiology. Over the last thirty years, focus has been on traditional Analytical Chemistry techniques and more recently on non-invasive vibration spectroscopy, including off-line and in-line (PAT) and in-line mass spectrometry. These PAT-related techniques support process development, quality by design (QbD) and increase process efficiency. In addition, the routine application of these techniques are 'green' or 'sustainable' analytical analyses in the Pharmaceutical arena. Current focus is the application of vibrational spectroscopy to biopharmaceuticals and its application to downstream processing.

Pharmaceutical and Biopharmaceutical Section Co-Chair for SciX 2015-2020, current Chair for NY/NJ SAS.

**Debbie Peru**

Debbie Peru is a consultant and owner of DP Spectroscopy and Training, LLC. She has extensive industrial experience in applied spectroscopy (Near Infrared, Mid infrared, Raman, UV/Vis), data analysis, method development and is a certified facilitator for classroom & virtual training courses.

Debbie has 35 years of experience working in R&D, Manufacturing, and Quality Assurance in diverse fields including oil recovery, specialty chemicals, pharmaceuticals, and consumer products. Her career has been highly focused on the area of applied spectroscopy for qualitative and quantitative analysis, quality assurance, problem solving,

understanding ingredient interactions, manufacturing cost savings, and product testing.

Debbie is the current Secretary for the NY/NJ SAS and has been an officer of this organization for over 20 years.

**Date:** Thursday, January 14, 2021

**Time:** 12:00 – 1:00 PM. We will live stream the presentation using Join Microsoft Teams Meeting 11:45 AM Log-in. For more information, go to our website [www.nysas.org](https://www.nysas.org).

**Place:** On-line

Contact John Wasyluk for details on Microsoft Teams meeting [john.wasyluk@bms.com](mailto:john.wasyluk@bms.com)



## NY/NJ SAS PRELIMINARY SCHEDULE OF SPEAKERS 2020-2021



**Everyone is Welcome to Attend**

Note: All meetings will be on-line. Click on this link to join [Join\\_Microsoft\\_Teams\\_Meeting](#). For more information, go to <https://www.nysas.org/>

**Open Access Virtual Presentations, sponsored by:  
New York/New Jersey Section of The Society for Applied Spectroscopy**

Date	Time	Speaker	Title	Affiliation
14-Jan.	12 noon is EST 5:00 PM is GMT	Debbie Peru	FUNDamentals of Vibrational Spectroscopy	DP Spectrometry and Training  Bristol-Myers Squibb Co.
		John Wasyluk		
18-Feb.	12 noon is EST 5:00 PM is GMT	Karen Faulds	Development of SERS and SESORRS for Multiplexed Bioanalysis	University of Strathclyde
18-Mar.	12 noon is EST 5:00 PM is GMT	<sup>1</sup> Heinz Siesler &	<sup>1</sup> Food Authentication and Classification Using Vibrational Spectroscopy in Tandem with Chemo- metrics Tools	University of Duisburg-Essen
		<sup>2</sup> Marina deGea Neves		

**All presentations will be held LIVE via Microsoft Teams. For further information:  
<https://www.nysas.org> or [john.wasyluk@bms.com](mailto:john.wasyluk@bms.com)**



## 2021 VIRTUAL SECTION-WIDE CONFERENCE

Registration is free and details will be announced soon

**Date:** SATURDAY, JANUARY 30, 2021

**Times:** 10:00 AM – 1:00 PM

### PROGRAM

10:00 AM	GREETINGS FROM THE ACS NEW YORK SECTION 2021 CHAIR	Dr. Rita Upmacis Pace University
10:10 AM	AWARD PRESENTATIONS. Service Plaque and Pin to the 2020 ACS New York Section Chair	Dr. Ruben Savizky The Cooper Union
	ACS New York Section Outstanding Service Award for 2020	Dr. Ping Furlan US Merchant Marine Academy
	Outstanding Four-Year University with Graduate School Chemistry Faculty Teaching Award	Dr. Gerard Parkin Columbia University
	Outstanding Four-Year Undergraduate College and University Chemistry Faculty Teaching Award	Dr. Gina Florio St. John's University
	Outstanding Two-Year College Chemistry Teaching Award	Dr. Abel Navarro Borough of Manhattan Community College
10:20 AM	PRESENTATION OF CANDIDATES FOR THE 2021 ELECTIONS	Dr. Kathleen Kristian Iona College 2021 Chair Elect ACS, NY Section
10:30 AM	KEYNOTE SPEAKER: "21st Century Alchemy: Making Coinage Metals Act Like Ir and Pt"	Dr. Mark E. Thompson University of Southern California
11:30 AM	PROJECT SEED. Presentations by New York Section Project SEED Students.	
11:45 AM	ACS, NEW YORK SECTION COMMITTEE PLANNING SESSIONS FOR 2021. <b>Educational Activities:</b> (Chemagination, Chemists Celebrate Earth Day, Continuing Education, High School Chemistry Olympiad, National Chemistry Week, Nichols Foundation Teacher Award, Project SEED, Student Membership) <i>Chair:</i> Dr. Alison G. Hyslop <b>Member Affairs:</b> (ACS Fellows, Awards, Employment and Professional Rela- tions, History of the New York Section, Indicator, Membership, Outstanding Service Award) <i>Chair:</i> Dr. Joseph M. Serafin <b>Program Review:</b> (Subsection and Topical Discussion Group Chairs) <i>Chair:</i> Dr. Anne T. O'Brien <b>Public Affairs:</b> (Academe and Industrial Relations, Environmental Chemistry, Fund Raising, Government Affairs, Information Technology, Public Relations, Speakers Bureau) <i>Chair:</i> Dr. Robert P. Nolan	
12:30 PM	REPORTS FROM THE CHAIRS OF THE COMMITTEE PLANNING SESSIONS.	
12:45 PM	CONCLUSION OF THE MEETING.	



## NEW YORK SECTION 2021 SECTIONWIDE CONFERENCE

### 21st Century Alchemy: Making Coinage Metals Act Like Ir and Pt.

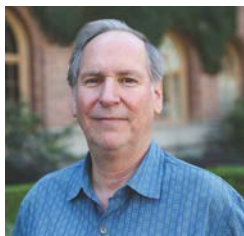
**Speaker:** Mark E. Thompson  
 Department of Chemistry  
 University of Southern California  
 Los Angeles, CA 90089 USA  
 email: [met@usc.edu](mailto:met@usc.edu)

#### Abstract:

Heavy metal containing phosphors, especially iridium-based emitters, have become the standard in high performance mobile displays and televisions, involving organic light emitting devices (OLEDs). The high spin orbit coupling in these compounds facilitates the efficient harvesting of both singlet and triplet excitons generated in the electroluminescent process. An alternative to Ir-based emitters are solely-organic emitters based on Thermally Assisted Delayed Fluorescence (TADF). Heavy-metal and TADF emitters give similar OLED performance, which stems from the fact that they give very similar radiative lifetimes. We have found that the key to achieving higher performance for TADF emitters is to put the metal ions back into the TADF emitters.

My talk will cover the evolution of OLEDs and how metal complexes have been designed to give these devices near 100% efficiency for electroluminescence (EL). I will then focus on the photophysical and electroluminescent properties of two-coordinate copper, silver and gold carbene complexes, i.e. (carbene)M(donor), where the carbene acts as an acceptor and the donor is an amide[1] or aryl group[2]. These complexes show high phosphorescence quantum yield (FPL = 0.7 – 1.0), with radiative lifetimes in 0.4-3 microsecond regime, with emission lines spanning from the violet to red (see Figure). Cryogenic photophysical measurements show these are TADF emitters with properties rivalling the state of the art iridium based phosphors. We have prepared organic LEDs with these dopants and achieved ~ 100% EL quantum efficiency for green emissive OLEDs and > 60% for blue emissive OLEDs, both at comparatively low drive voltages.

#### Biography:



Mark Thompson received his B.S. degree in Chemistry in 1980 (U.C. Berkeley), his Ph.D. in chemistry in 1985 (California Institute of Technology) and was a postdoctoral fellow at Oxford University. Thompson currently holds the Ray R. Irani Chair of Chemistry at the University of Southern California. He is a Fellow of the AAAS and Humboldt Society, has received a number of national and international awards and has been elected to the National Academy of Inventors and the National Academy of Engineering (NAE). His research involves the study of materials and devices for electroluminescence, photovoltaics and solar cells, chemical/biological sensing and catalysis. Thompson is the author of approximately 400 papers in refereed professional journals and holds more than 250 patents primarily in the areas of optoelectronic applications, such as light emitting devices (LEDs) and solar cells.

**Date:** Saturday, January 30, 2021

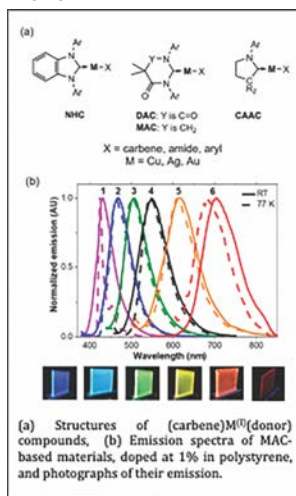
**Time:** 10:00 AM – 1:00 PM

**Place:** Virtually

#### References:

[1] Hamze, R.; Shi, S.; Kapper, S. C.; Muthiah Ravinson, D. S.; Estergreen, L.; Jung, M.-C.; Tadler, A. C.; Haiges, R.; Djurovich, P. I.; Peltier, J. L.; Jazzar, R.; Bertrand, G.; Bradforth, S. E.; Thompson, M. E., *Journal of the American Chemical Society* 2019, 141 (21), 8616-8626. Hamze, R.; Peltier, J. L.; Sylvinson, D.; Jung, M.; Cardenas, J.; Haiges, R.; Soleilhavoup, M.; Jazzar, R.; Djurovich, P. I.; Bertrand, G.; Thompson, M. E., *Science* 2019, 363 (6427), 601.

[2] Tian-yi Li, Daniel Sylvinson M. R., Ralf Haiges, Peter I. Djurovich, Mark E. Thompson, *Journal of the American Chemical Society* 2019, 142, 6158-6172.



## EMPLOYMENT AND PROFESSIONAL RELATIONS COMMITTEE OF THE NEW YORK SECTION

To Human Resources Departments in Industry and Academia

The Employment and Professional Relations Committee maintains a roster of candidates who are ACS members seeking a position in the New York metropolitan area. If you have job openings and would like qualified candidates to contact you, please send a brief job description and educational/experience background required to [hessytaft@hotmail.com](mailto:hessytaft@hotmail.com).

Candidates from our roster who meet the requirements you describe will be asked to contact you.



### LONG ISLAND SUBSECTION

\*\*\*\*\* Future LIACS Seminar \*\*\*\*\*

**“Investigation of Siderophores and Their Structural Derivatives as Potential Chemotherapeutic Agents”**

*Speaker:* Dr. Sabesan Yoganathan, PhD  
Department of Pharmaceutical Sciences  
College of Pharmacy and Health Sciences  
St. John's University

#### Abstract:

Siderophores are a diverse class of secondary metabolites secreted by microorganisms under iron-deficient conditions for iron acquisition. Microorganisms utilize dedicated enzymes for siderophore biosynthesis and membrane proteins for transport. Siderophores play an important role in microbial pathogenesis. Siderophore biosynthetic machinery and transport proteins are potential target to develop a new class of antibiotics. Moreover, due to their metal binding properties, and ability to interfere with iron-dependent biological processes, siderophores have emerged as potential anticancer natural products. Our research lab focuses on the synthesis and evaluation of siderophores and their analogs as potential antimicrobial agents and anticancer agents. Azotochelin is one of the catechol-based siderophores that we are currently investigating. This seminar will discuss our efforts towards the development of azotochelin-derivatives as potential chemotherapeutic agents. We have taken

a medicinal chemistry approach to understand the structure activity relationship of azotochelin scaffold, and discovered a series of azotochelin analogs with promising anticancer activities. Current efforts are focused on investigating the mechanism of cytotoxicity of these new lead compounds.

**Date:** Thursday, February 4, 2021

**Time:** 6:00 PM.

**Place:** Zoom

**Link:** <https://youtu.be/AiwpOMwPx0A>

**Meeting ID:** 878 6151 9540

**Passcode:** 563026

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## WESTCHESTER CHEMICAL SOCIETY

### SPECIAL SEMINAR

*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.*

**Clinical Decision Support Tool and Rapid Point-of-Care Platform for Determining Disease Severity in Patients with COVID-19**

**Invited Speaker:** John T McDevitt  
Professor of Biomaterials,  
School of Dentistry

Professor of Chemical  
and Biomolecular  
Engineer  
Tandon School of  
Engineering  
New York University  
NY and Brooklyn, NY

#### Abstract

SARS-CoV-2 is the virus that causes coronavirus disease (COVID-19) which has reached pandemic levels resulting in significant morbidity and mortality affecting every inhabited continent. The large number of patients requiring intensive care threatens to overwhelm healthcare systems globally. Likewise, there is a compelling need for a COVID-19 disease severity test to prioritize care and resources for patients at elevated risk of mortality. In this talk, an integrated point-of-care COVID-19 Severity Score and clinical deci-

sion support system is presented using biomarker measurements of C-reactive protein (CRP), N-terminus pro B type natriuretic peptide (NT-pro-BNP), myoglobin (MYO), D-dimer, procalcitonin (PCT), creatine kinase-myocardial band (CK-MB), and cardiac troponin I (cTnI). This COVID-19 Severity Score combines multiplex biomarker measurements and risk factors in a statistical learning algorithm to predict mortality. The COVID-19 Severity Score is trained and evaluated using data from 160 hospitalized COVID-19 patients from Wuhan, China. Our analysis finds that COVID-19 Severity Scores are significantly higher for the group that died versus the group that is discharged with median (interquartile range) scores of 59 (40–83) and 9 (6–17), respectively, and an Area Under the Receiver Operating Curve (AUROC) of 0.94 (95% CI 0.89–0.99). In more recent studies, these efforts have been expanded to include 701 patients with COVID-19 are collected across practices within the Family Health Centers network at New York University Langone Health. A two-tiered model is developed with Tier 1 using easily available, nonlaboratory data to help determine whether biomarker-based testing and/or hospitalization is necessary. Likewise, Tier 2 predicts probability of mortality using biomarker measurements) and age. Both Tier 1 and Tier 2 models are validated using two external datasets from hospitals in Wuhan, China comprising 160 and 375 patients, respectively. The Tier 1 and Tier 2 internal validation had AUROC (95% confidence interval) of 0.79 (0.74–0.84) and 0.95 (0.92–0.98), respectively. The Tier 1 and Tier 2 external validation had AUROCs of 0.79 (0.74–0.84) and 0.97 (0.95–0.99), respectively. Collectively these promising initial models pave the way for a point-of-care COVID-19 Severity Score system to impact patient care. Clinical decision support tools for COVID-19 have potential to empower healthcare providers to save lives by prioritizing critical care in patients at high risk for adverse outcomes.

## Biography



John T. McDevitt now serves as a Full Professor within the Department of Biomaterials at New York University, is a member of NYU's Bioengineering Institute and participates as a faculty member in the NYU

Department of Chemical and Biomolecular Engineering within the Tandon School of Engineering. Prior to this time, he served for 5 years as the Brown-Weiss Professor of Bioengineering and Chemistry at Rice University and rose through the academic ranks at University of Texas at Austin where he was positioned for 20 years. McDevitt completed his Ph.D. degree in Chemistry from Stanford University.

Professor McDevitt is a pioneer in the development of 'programmable bio-nano-chip' technologies. He has a strong track record of translating essential bioscience, artificial intelligence and medical microdevice discoveries into real-world clinical practice. In this capacity, he has served as the Scientific Founder for a number of diagnostic and clinical services companies. One of his most recent companies, OraLiva, Inc. features clinical services and diagnostic apps with potential to impact patient treatment and management. McDevitt and his team have raised over \$45M in Federal and Foundation support. His recent research has been sponsored by major programs funded by the National Institute of Dental and Craniofacial Research (NIDCR) division of the National Institutes of Health (NIH), National Institute on Drug Abuse (NIDA) at NIH, the Bill and Melinda Gates Foundation, Cancer Prevention Research Institute of Texas (CPRIT), the National Aeronautics and Space Administration (NASA), the Army and the United Kingdom's Home Office Scientific Development Branch.

McDevitt and his team have written more than 200 peer-reviewed scientific manuscripts and have contributed to more than 100 patents and patent applications. This work was recognized with the "2016 AACC Wallace H. Coulter Lectureship Award," "Best of What's New Award" in the Medical Device Category by Popular Science as well as for the "Best Scientific Advances Award" by the Science Coalition. Dr. McDevitt's individual honors include the Presidential Young Investigator Award, the California Polytechnic Distinguished Alumni Award and the Exxon Education Award. Over the past years, Dr. McDevitt has served as the Principal Investigator for 6 major clinical trials and 2 clinical pilot studies, all involving the programmable bio-nano-chip. Through these clinical efforts, mini-sensor ensembles are being developed for major diseases in the areas of COVID-19 disease severity, oral cancer, cardiac heart disease, trauma, drugs of abuse, ovarian cancer and prostate cancer.

*(continued on page 12)*

## WESTCHESTER CHEMICAL SOCIETY

(continued from page 11)

**Date:** Tuesday, February 9, 2021

**Time:** Zoom Meeting 7:00PM  
Zoom link available from 6:45 PM  
(US and Canada)

**Place:** Zoom

**Cost:** Free and Open to the Public

<https://sunnywcc-edu.zoom.us/j/87192908761?pwd=VGdIdFE0bFhoZWZh2dEs5UUtJOUVLUT09>

**Meeting ID:** 871 9290 8761

**Passcode:** 61697e

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Find your local number: <https://sunnywcc-edu.zoom.us/j/87192908761?pwd=VGdIdFE0bFhoZWZh2dEs5UUtJOUVLUT09>

For further information: contact Rolande Hodel, [rrhodel@aol.com](mailto:rrhodel@aol.com),

Or

Peter Corfield, [pcorfield@fordham.edu](mailto:pcorfield@fordham.edu),  
Phone: 914-762-4468;

Text: 914-980-9128 or 914-218-7607.,

Or

Paul Dillon, [PaulWDillon2@hotmail.com](mailto:PaulWDillon2@hotmail.com),  
Phone: 914-941-0890, Text: 914-393-6940



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

### AI in Chemical Biology: New Frontiers

**Organizers:** Nozomi Ando, PhD  
Cornell University

César de la Fuente, PhD  
University of Pennsylvania

Sara Donnelly, PhD  
The New York Academy of  
Sciences

Sonya Dougal, PhD  
The New York Academy of  
Sciences

**Keynote:** 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:** 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/AIChemBio](http://www.nyas.org/AIChemBio)

To become a Member of the Academy, visit [www.nyas.org/benefits](http://www.nyas.org/benefits)



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## 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:** 1:00PM – 5:30 PM

**Place:** Virtual Symposium



### Welcome

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

### Opening of the Distinguished Symposium

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

### 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.

### 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.

### 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.

### 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.

*(continued on page 14)*

## WILLIAM H. NICHOLS DISTINGUISHED SYMPOSIUM

(continued from page 13)

### 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 nano-structured multifunctional hybrid materials for application related to environment, energy and catalysis.

### 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, Matyjaszewski 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/cyclization, 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 inkjet 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 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 Engineering, National Academy of Sciences, Polish Academy of Sciences, Russian 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.



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## 2021 NEW YORK SECTION COLLEGE TEACHING AWARDS

*The New York Section's Members Engaging Through Technology (METT) grant proposal, "Enhancing Member's Social Media Profiles via in-person Social Media Socials" was awarded partial funding by the American Chemistry Society. Congratulations to all of our members that worked so hard to make this proposal be accepted!*

The New York Section is proud to announce the winners of the College Teaching Awards. These awards will be presented annually to recognize highly effective teaching and inspirational leadership by chemistry faculty within the New York section. There are three categories, depending on the type of institution the faculty members is affiliated with.

Calls for Nominations will be announced at the New York Section webpage ([newyorkacs.org](http://newyorkacs.org)) for the 2022 awards.

### 1. Outstanding Two-Year College Chemistry Teaching Award



**Dr. Abel Navarro** (Borough of Manhattan Community College)

Abel E. Navarro received his undergraduate degree in chemistry at the Universidad Peruana Cayetano Heredia, followed by his M.S. and Ph.D. in Chemistry at New York University, where his doctoral research involved the unfolded state of small peptides. Prior to joining BMCC, he worked as an adjunct at New York University, Hostos Community College and BMCC. Now as a Full Professor at BMCC, Dr. Navarro is conducting research involving bioremediation of environmental pollutants using biological wastes. In addition to his impressive research performed with undergraduates, Dr. Navarro is also an accomplished instructor. He is deeply committed to his students and serves as an exceptional role model and mentor to them all.

### 2. Outstanding Four-Year Undergraduate College and University Chemistry Faculty Teaching Award



**Dr. Gina M. Florio** (St. John's University)

Interim Dean and Associate Professor, Chemistry and Physics

Gina Florio earned her bachelor's degree in chemistry at Vassar College and her Ph.D. in physical chemistry at Purdue University. She subsequently did a post-doctoral fellowship at Columbia University. Dr. Florio is currently an associate professor and interim Dean at St. John's University, where she has been a faculty member since 2005. Dr. Florio's research interests lie primarily in the field of interfacial systems. Dr. Florio has received numerous awards, including a Salute to Excellence Award: Chemagination from the New York Section in 2016, and the Faculty Merit Award at St. John's University (on five separate occasions!). She is also an honorary member of the St. John's University chapter of the Sigma Alpha Pi National Society of Leadership and Success. Dr.

Florio is a steering committee member and supported the development of the St. John's Academic Center for Equity and Inclusion that was recently created. Furthermore, Dr. Florio is recognized as an excellent teacher by both her peers and her students – most notably, she has co-created new, innovative and exciting courses and has been instrumental in transforming the pedagogical culture within the chemistry department at St. John's University.

**Deadline for items to be included in the  
FEBRUARY 2021 issue of *The Indicator* is  
DECEMBER 28, 2020**



### 3. Outstanding Four-Year University with Graduate School Chemistry Faculty Teaching Award



**Dr. Gerard (Ged) Parkin** (Columbia University)

It is difficult to put into words the impact that Dr. Parkin has had throughout his illustrious career. Dr. Parkin received all of his undergraduate and graduate degrees from the Queen's College, Oxford University. After a post-doctoral fellowship at the California Institute of Technology, he joined the faculty at Columbia University – where he has remained since 1988. He served as Chairman of the Department from 1999 to 2002, as well as the Chair of the New York Section in 2003. A prolific investigator with well over 300 publications throughout his academic career, Dr. Parkin's research interests are in synthetic, structural and mechanistic inorganic chemistry. Dr. Parkin has been recognized internationally, as he is an elected Fellow of the Royal Society of Chemistry as well as the American Chemical Society. In addition

to this teaching award, Dr. Parkin has been the recipient of too many awards to mention - the Presidential Faculty Fellowship Award, the Columbia University Presidential Award for Outstanding Teaching, the Lenfest Distinguished Columbia Faculty Award and the James Flack Norris Award for Outstanding Achievement in the Teaching of Chemistry are all excellent illustrations of his abilities as a teacher and a scholar. Perhaps most notably, he also received the Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring, an award that was presented at a White House ceremony.




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## Education

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### Spring 2021 Courses

591	Biomolecular Design and Nanotechnology Dr. Zhang	Mon. 6:00-9:00 PM Virtual Instruction
514	Polymer Chemistry Dr. Jäkle	Tues. 6:00-9:00 PM Virtual Instruction
529	Computational & Quantum Chemistry Dr. Pavanello	Wed 6:00-9:00 PM Virtual Instruction
579	Coordination Chemistry Applied to Catalysis Dr. Prokopchuk	Th 6:00-9:00 PM Virtual Instruction
561	Quantum Mechanics Dr. Maitra	Th 6:00-9:00 PM Virtual Instruction

For more information, see

<https://sas.n.rutgers.edu/academics-admissions/academic-departments/chemistry/ms-phd-chemistry> or contact Ms. Sophia Bautista Chinchay at [syb26@newark.rutgers.edu](mailto:syb26@newark.rutgers.edu). Up to 2 graduate courses can be taken on a non-degree basis.

## NEW YORK ACS CELEBRATES NATIONAL CHEMISTRY WEEK 2020 WITH VIRTUAL EVENTS

On Sunday October 25, 2020, from 11:00 am to 4:30 pm the New York Local Section of the American Chemical Society celebrated the National Chemistry Week (NCW) 2020 by hosting virtual chemistry demonstrations, a chemistry knowledge Contest through Kahoot.it, and an illustrated poem contest, celebrating the yearly theme, “Sticking with Chemistry”, at: [https://www.newyorkacs.org/meetings/NCW/2020\\_ncw.php](https://www.newyorkacs.org/meetings/NCW/2020_ncw.php). At the event, the New York Section presented Dr. Neil Jespersen, a chemistry professor from St. Johns University (SJU), with a NCW Distinguished Volunteer Award Plaque for his 30+ years of dedicated support of the NYACS National Chemistry Week Hands-on Demonstration Program. The program had 140+ recorded individual/group/family visits and received extremely positive feedback from students, teachers, professors, and parents. 80+ volunteers from at least 15+ area organizations helped make this year’s virtual NCW events a huge success! Program highlights can be viewed at: <https://youtu.be/7E9iKTMJwMY>

**STICKING WITH CHEMISTRY**  
October 18-24, 2020  
[www.acs.org/ncw](http://www.acs.org/ncw)

**ACS**  
American Chemical Society

**NCW**

**New York Local Section Sticks with Chemistry & Sticks Together!**  
Sunday, October 25, 2020 from 11:00 am to 4:00 pm

Welcome Remark by  
**Dr. Ruben Savisky**  
The Cooper Union  
Chair, New York ACS

**ACS** Local Section  
New York  
American Chemical Society's New York Section, Inc. | <http://newyorkacs.org>

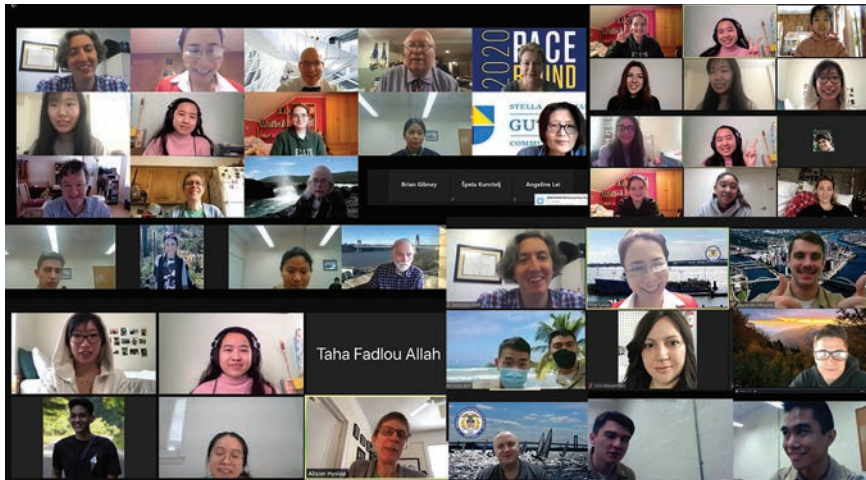
**NATIONAL CHEMISTRY WEEK**

The virtual program was kicked off at 11 AM via a Zoom platform with Dr. Ping Furlan, the Chair of the NCW Committee, congratulating the 1000+ volunteers whose projects, including the 2019 Giant 3-D Periodic Table Display Project, were named the prestigious National Chemluminary Award Finalists. “What a terrific job the New York ACS Team did”, she said while showing the photos of volunteers celebrating IYPT (International Year of the Periodic Table) and NCW 2019, “these heart-warming memories we created together along the way will never fade away”, she added.

Dr. Ruben Savisky, the Chair of the NYACS, welcomed everyone to the 33rd annual and NYACS’ first virtual NCW event. He talked about the central roles chemistry plays in our everyday lives including Covid-19 vaccine development and thanked volunteers and virtual event sponsors for offering our future scientists the great opportunity to learn about glues, adhesives and the wonders of chemistry.

Dr. Neil Jespersen shared his lifelong love for chemistry demos. “These demos are a great way to show youngsters what chemistry or science is like, which can be the start of their science career”, said Dr. Jespersen. Dr. Jespersen’s first few years’ “exciting” and “exploding” demos took place in his backyard on a picnic table with his young children and their friends shielded from him by a plexiglass. Years later, he joined the NYACS in 1987, when NCW first started, and put on a demo show at the American Museum of Natural History (AMNH). “This continued until AMNH underwent a renovation in 1997”, stated Dr. Jespersen as he briefed the history of NYACS NCW program. “After that”, he said, “we moved the NCW demo site to New York Hall of Science (NYSCI) and have come back every year since”. “One of the great-

est things the ACS has done is our National Chemistry Week”, continued the Professor, “Not only we are getting youngsters out to see what real chemistry is like, but also we are taking advantage of our college students who, I think, know how to communicate with these youngsters a lot better than some old people like me and they are having a ball doing it!”



Throughout the day, synchronous demonstrations in several parallel Zoom sessions were offered live and recorded for future viewing. The sessions were hosted by sponsor volunteers who had a blast creating these demo videos that effectively highlighted the NCW yearly theme using everyday materials and demonstrated how science can be fun. These included water suspension experiment, walking water experiment, the “secret” of slimy slime, the stickiness in the arts, you can’t believe this is not milk, it’s sweet but you cannot eat, the erratic molecule, edible glue, how hand sanitizer kills a virus, clock reaction, lycopodium experiments and superconductivity. The links for the recorded demos are shown below:

#### Youtube Links :

- **United States Merchant Marine Academy**  
<https://www.youtube.com/watch?v=gTU-EwPABmA>
- **Yeshiva University**  
[https://drive.google.com/file/d/1IUTV6\\_gFnp64kONZZdeppos5E1cVhZ9/view](https://drive.google.com/file/d/1IUTV6_gFnp64kONZZdeppos5E1cVhZ9/view)
- **Guttman Community College**  
[https://www.youtube.com/watch?v=NaEbn\\_rE5ml&feature=youtu.be](https://www.youtube.com/watch?v=NaEbn_rE5ml&feature=youtu.be)
- **Queensborough Community College** <https://youtu.be/xRePNwMBEDw>
- **St. John’s University** <https://www.youtube.com/watch?v=nRtBxLr5jmM>,
- **St. John’s University** [https://www.youtube.com/watch?v=JMubOgcgu\\_8](https://www.youtube.com/watch?v=JMubOgcgu_8)
- **St. John’s University** [https://www.youtube.com/watch?v=0b7wzWUre\\_0](https://www.youtube.com/watch?v=0b7wzWUre_0)

This year, the New York Local Section sponsored a chemistry knowledge competition via a 15-30 min. online Kahoot game for students of all ages ranging from K to 12th graders and college freshmen. Among the fun and age/level appropriate questions, there were about one-third of the questions in each category relating to NCW themes. Many players participated in the Grades 9-12 category competition and the teachers were very happy for what we offered to their students. Winners were announced by Dr. Dempsey Hyatt, the NCW Committee Co-chair, at the conclusion of the day. Students in grades K-12 were also reminded to submit their illustrated poem contest entries online by 11:59 PM ETD on Oct. 25, 2020.

*(continued on page 20)*

## NYACS CELEBRATES NCW 2020

(continued from page 19)

Finally, visitors to the New York NCW virtual event website also got to view many asynchronous demonstrations selected to illustrate the concepts of “cohesion” and “adhesion”, their roles in affecting how glues and adhesives function, and how chemists continue to invent new glues and adhesives by learning from nature. These included ACS’ “G is for Glue”, Dr. Binocs Shows on the inventions of super glue, sticky notes, Elizabeth Cox’s “Which is strong, Glue or Tape” along with videos on “gecko feet”, “Lotus leaf”, and “Story of Velco”. Videos for teachers/parents created by National Informal STEM Education (NISE) Network were also listed. Examples include “Nano Sand”, “Nano Fabric” and Gum and Chocolate”.

Once again, we would like to extend our warmest thanks to our sponsors, volunteers, and event participants. Their enthusiastic support, their strong leadership and community spirit have made the continued success of this largest chemistry public educational event in the area possible even during the Covid-19 pandemic.



### NCW 2020 Virtual Event Sponsors

Columbia University Chandler Society, Manhattan College ACS Chapter, New York University Draper Chemical Society, Queensborough Community College Chemistry Club, Rye High School, Stony Brook University ACS Chapter, United States Merchant Marine Academy, Adelphi University ACS Chapter, Guttman Community College, Queensborough Community College Science Research Alliance Club, St. John’s University ACS Chapter, Stern College for Women – Yeshiva University, United States Merchant Marine Academy ACS Chapter, Brooklyn College – CUNY, The Cooper Union, and ACS Education Committee.

NCW 2020 Distinguished Volunteer Award Recipient

Dr. Neil Jespersen

Professor of Chemistry (Emeritus)

St. John’s University

### NCW 2020 Adhere to Chemistry – Kahoot.it Contest Winners

#### Grades 9-12

First Prize:

Emily Chen

Brooklyn Technical High School

Second Prize: Yameen Halim  
Thomas A. Edison CTE HS

Third Prize: Mazeed Raji  
EF Academy New York

Honorable Mention: Shaoning Peng, Seungyeon Choe, Runzhi Wu, Mong Na Loi,  
Ruichen Liu, Josephine  
EF Academy New York

### Grades 6-8

First Prize: Dhanesh Benny  
Shaw Avenue Elementary School

**NATIONAL CHEMISTRY WEEK**  
October 18-24, 2020  
[www.acs.org/nchemweek](http://www.acs.org/nchemweek)

**STICKING WITH CHEMISTRY**

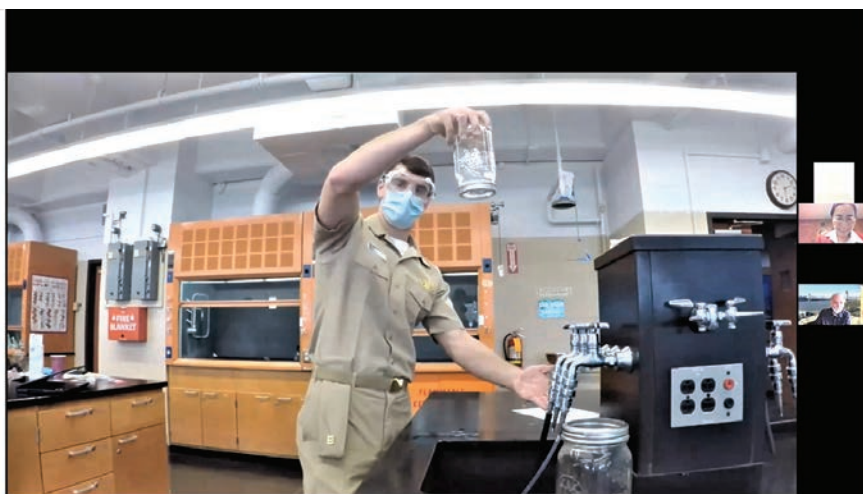
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**New York Local Section Sticks with Chemistry & Sticks Together!**  
Sunday, October 25, 2020 from 11:00 am to 4:00 pm

Welcome Remark by  
Dr. Neil Jespersen  
Retired Professor  
St. John's University  
Councilor, New York ACS

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### NCW 2020 Distinguished Volunteer Award Recipient



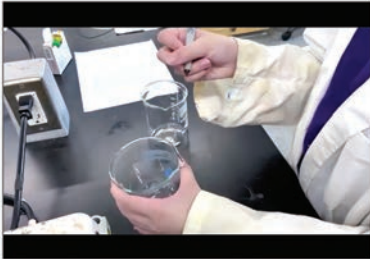

(continued on page 22)

## NYACS CELEBRATES NCW 2020







(continued from page 21)

### "The Erratic/Fickle Molecule"


- 1 teaspoon Borax
- 120 mL warm water
- Corn starch
- 1 tablespoon glue (clear glue for transparent ball and white glue for opaque ball)
- Food coloring (optional)

### Coronavirus vs Soap & Hand Sanitizer

Mixing sanitizers with virus particles

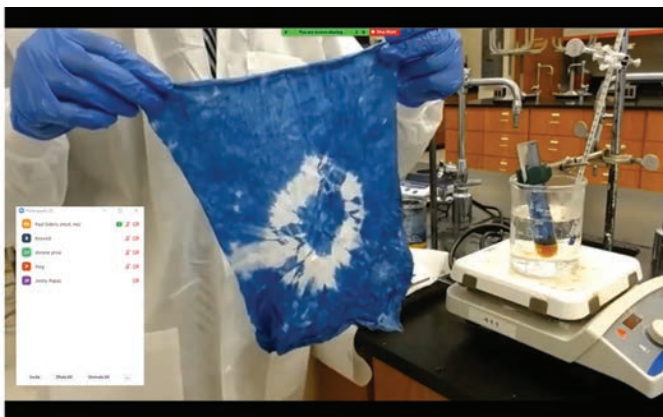


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NATIONAL CHEMISTRY WEEK

### SCW National Chemistry Week.mov





**NATIONAL CHEMISTRY WEEK 2020**  
October 16-24, 2020  
[www.acs.org/nchw](http://www.acs.org/nchw)

**STICKING WITH CHEMISTRY**

ACS  
American Chemical Society

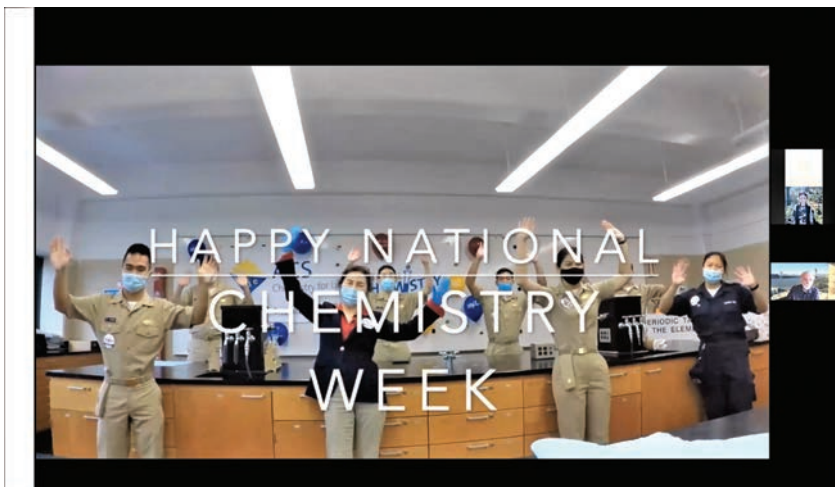
**New York Local Section Sticks with Chemistry & Sticks Together!**  
Sunday, October 25, 2020 from 11:00 am to 4:00 pm  
[https://www.newyorkacs.org/meetings/NCHW/2020\\_nchw.php](https://www.newyorkacs.org/meetings/NCHW/2020_nchw.php)

**Kahoot Contest Winners – Grades 9-12 Category**

First Place	Emily Chen	Brooklyn Technical High School
Second Place	Yameen Halim	Thomas A. Edison CTE HS
Third Place	Mazeed Raji	EF Academy New York

ACS Local Section  
New York  
American Chemical Society's New York Section, Inc. | <http://newyorkacs.org>

**NATIONAL CHEMISTRY WEEK**



## WESTCHESTER CHEMICAL SOCIETY

On Tuesday, November 10, 2020 our co-chair, Rolande Hodel, Ph.D. gave a Zoom presentation at Lake Forest College, Lake Forest, IL. Dr. Hodel shared her life experiences navigating various obstacles and situations (coming from East Germany, escaping to the west, emigrating to the US and being a woman in a STEM field) that led her to working in non-profits and founding AIDS-freeAFRICA. This is a non-profit she founded seeing an opportunity to apply a career in pharmaceuticals into an international context. In particular, she has worked for many years in the west African nation of Cameroon. There she has helped build a local pharmaceutical manufacturing infrastructure and created the country's first reference laboratory. She discussed the various challenges of working in a third-world country. One problem is transportation, illustrated with her photo of the main road to Esu, a "village" of 40,000 inhabitants:



**The Main Road to Esu a "Village" of 40,000 Inhabitants**

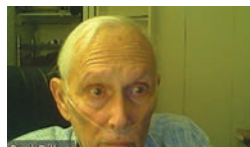
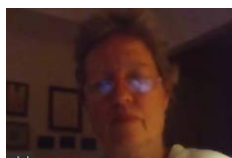
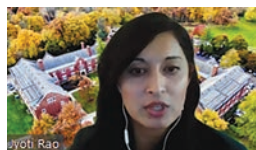
*(Photo courtesy of Rolande Hodel)*

Dr. Hodel noted that Esu has one nurse, no medical doctor, no hospital and no pharmacy. Dr. Hodel is interested in being invited to give this presentation to other colleges. Students benefit from attending this zoom lecture realizing that a carrier in Chemistry is not limited to working in a laboratory. Dr. Hodel's experience shows students that pursuing their own ideas can be successful and fulfilling. Contact: Dr. Rolande R. Hodel, Ph.D., President & Founder AIDSfreeAFRICA, [RRHodel@aol.com](mailto:RRHodel@aol.com), (914) 923-2073, (237) 9667.32.21, 125 South Highland Ave., #3-B1 Ossining, NY 10562-5881, <http://www.AIDSfreeAFRICA.org>

Dr. Hodel was born in East Germany but escaped to West Germany. She emigrated to the U.S. and is both a U.S. citizen and a legal resident of Cameroon. She has worked for companies such as BASF/Germany, Nano-

crystals Technology/NY, Pharmaceutical Discovery Corporation/NY (today Mannkind/CT) and Emisphere Technologies/NY. She received her Masters of Science in Inorganic Chemistry from the University of Kansas in 1995 and her Ph.D. in Organic Chemistry from the City University of New York in 2005. She is an adjunct professor of chemistry at the Westchester Community College, Valhalla, N.Y., serves on the board of directors of Chemists Without Borders, and is active at the local, national, and international levels within the American Chemical Society (ACS). Currently, she is co-chair of the Westchester Chemical Society. Dr. Hodel received the 2009 Astellas USA Foundation Humanitarian Award for her work as founder and president of AIDSfreeAFRICA.

Screen shots of various attendees were taken from the Zoom screen during the meeting (all courtesy of Paul Dillon). These include the Lake Forest host, **Jyoti Rao, M.S.**, **Dr. Hodel** and three attendees from the Westchester Chemical Society board, our other co-chair, **Paul Dillon, Ph.D.**, **Peter Corfield, Ph.D.** and **Sr. Mary Virginia Orna, O.S.U., Ph.D.**





## WESTCHESTER CHEMICAL SOCIETY

On Tuesday, November 17, 2020, the Westchester Chemical Society (WCS) held a remote (Zoom) meeting.

The WCS co-chair, Paul Dillon, Ph.D. spoke on "Clinical Tests and COVID-19" The talk was an update of an invited talk, given via Zoom, to the Boston and Cape Cod support groups of the Interstitial Lung Disease Collaborative (ILDC). Dr. Dillon discussed the availability of COVID-19 tests. Considering the short time-frame, tests have been developed quite well and quickly. He briefly reviewed clinical testing in general, and the SARS-CoV-2 virus structure. He discussed the types of clinical tests (diagnostic-for viral RNA and/or antigens) and serological (for antibodies to the virus), and the difference between qualitative tests (those concerned with COVID-19) and quantitative tests, addressing topics such as sensitivity, specificity, prevalence, predictive values, and poitivity. He noted a concern that false positive serological results could be used to prematurely relax our cautions. Fortunately such fears were unfounded; large numbers of presumably negative samples indicate a false positive rate of only about 1%.. Dr. Dillon, however, noted that we must be cautious in handling positive antibody tests on individuals who have been asymptomatic and never tested positive for the virus. Unless we know that the local population has a reasonably high prevalence, such positive tests can be misleading. He developed and presented models for positive predictive value vs. prevalence and for estimating prevalence. The CDC recommends using pairs of serological tests, and of neutralizing antibody tests (i.e., for antibodies that can be shown to kill the virus or impede its propagation). He noted that most neutralizing tests require using live viruses but that a surrogate (completely in vitro) neutralization test has just received an FDA Emergency Use Authorization. Finally, Dr. Dillon noted the use of pooling for test efficiency, testing of waste-water and prognostic (severity) tests for patients newly diagnosed with COVID-19.

Dr. Dillon is a chemist turned biostatistician. He received his B.S. from The Polytechnic Institute of Brooklyn (now NYU's Tandon School of Engineering) in 1966, his M.S. and Ph.D. from New York University's Graduate School of Arts and Science in 1969, and

1974, respectively (all degrees in Chemistry). He was a chemist for Union Carbide Corp., Tarrytown, NY from 1965-1970 working on paint latexes and took a leave to do his dissertation research from 1970-1973. Although technically in Chemistry, his research dealt with creating an optimization program to estimate molecular geometries by minimizing quantum calculated energies as functions of bond distances and angles. Back at Union Carbide in 1973 he worked on urethane foam flammability, modeling the evaporation of aqueous solutions of organic solvents and internally consulting in engineering statistics. In 1977, he received the first prize in the Roon Awards administered by the Federation of Societies for Coatings Technology for his development of the concept of critical relative humidity. In 1986, he joined Technicon Instruments Corp., also in Tarrytown, NY, as a biostatistician. There, and for successor companies (Miles Laboratories, Bayer Diagnostics, Siemens Diagnostics, and Siemens Healthineers), he worked on protocol development, data analysis and generated reports for internal and external reviews. He retired in 2012 but continued consulting until the end of 2018. He has also been active in the Westchester subsection of the NY Section of the American Chemical society, serving as its Program Director since 2009 and its co-chair since 2015. He has served on the board of the NY section of the ACS (2016-2018). He has also served on the Advisory Board of the Center for Sustainable Energy at Bronx Community College (2014-2015) and the Industrial Advisory Board of the Polytechnic Institute of New York University, Department of Chemical and Biomolecular Engineering (2012-2013). Dr. Dillon recently became a Patient Advisor at the Interstitial Lung Disease Collaborative, a Massachusetts non-profit (2020). He has also helped develop some clinical trial protocols for the use of an OPEP (a lung compression device) for COVID-19 patients.

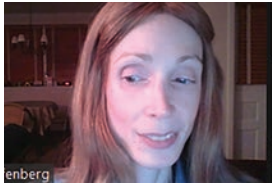
***Following are screen shots (all courtesy of Paul Dillon) of Dr. Dillon, our co-chair, Rolande Hodel, Ph.D., our treasurer and education secretary, Peter Corfield, Ph.D., our Westchester Community College Liaison and Insurance Secretary, Jody Reifenberg, M.D., and another member of our board attending, Sr. Mary Virginia Orna, C.S. U., Ph.D. Finally is a group shot,***

*(continued on page 26)*

## WESTCHESTER CHEMICAL SOCIETY

(From Tuesday, November 17 Meeting)

(continued from page 25)



## WESTCHESTER CHEMICAL SOCIETY

On Thursday, December 3, 2020, the Westchester Chemical Society (WCS) held a remote (Zoom) meeting.

Matthew R. Basso, CHMM and George Hollerbach, PE, BCEE, both from Geosyntec Consultants spoke on "The Science of Making Colleges and Universities Safe in the Age of Covid-19 – A Case Study" The talk actually was much broader than its title would indicate; it covered many environmental aspects of Covid-19 tests (waste water, surfaces, air, saliva). It also covered environmental testing more widely than just colleges. Mr.

Hollerbach spoke initially, giving an overview of the talk: the science of SARS-CoV-2 sampling in waste water, a refresher on its epidemiology, approaches to detection, Geosyntec's SARS-CoV-2 wastewater analytical program, some case studies and a review of Geosyntec's other SARS-CoV-2 services. Many labs' detection limit is around 100,000 virions per liter. Geosyntec's concentration process lowers this all the way to 330 virions/liter.

Mr. Basso continued with the bulk of the talk. He noted that wastewater testing has been used in the past to monitor other infectious diseases and illicit drug use. There was a concern that SARS-CoV-2, or its RNA, may

not be shed into fecal matter but it has been shown that this is not the case. He gave a cogent example of the value of wastewater testing as a leading indicator of a surge. Data from Valencia, Spain (February-April, 2020) showed the first elevation of SARS-CoV-2 in wastewater about February 10 but the first individual case was not reported until just after February 24. The wastewater and active case (positivity) curves paralleled each other, with wastewater at higher levels, until each plateaued around the beginning of April. Geosyntec has developed models relating SARS-CoV-2 levels in wastewater to prevalence in the corresponding population. Mr. Basso briefly reviewed the National Wastewater Surveillance System. He then discussed disease etiology, noting that a typical sneeze has around 40,000 droplets, each with up to 2 million virions/droplet. In other words nearly 100 billion virions/sneeze. The dose at which infection is potentially to initially occur is in the 1000s to 10,000s of virions. These can be spread directly from person to person (airborne) but also can reach environmental surfaces where they can be picked up by hands. Mr. Basso next

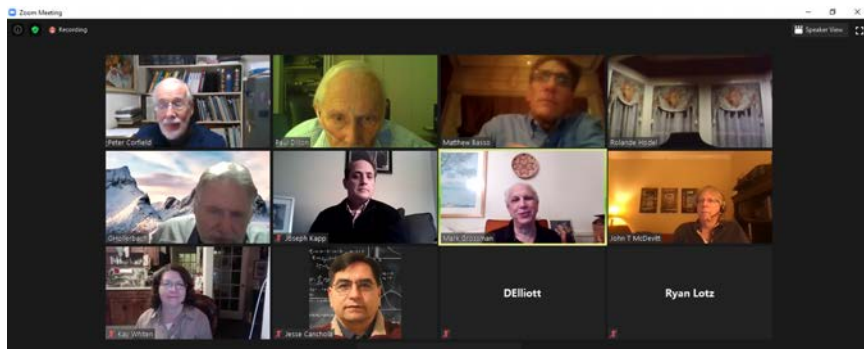
discussed detection methods. For wastewater, after inactivation of the viral RNA, concentration and purification, reverse transcriptase quantitative PCR (RT-qPCR) is used. The need for, and types of, controls were discussed, specifically negative and positive trip and lab controls. The first allows detection of contamination by the technologist, the second indicates whether or not the lab system is working properly. Geosyntec also uses wipe testing (i.e., testing for SARS-CoV-2 on environmental surfaces), pooled (e.g., all residents of a dormitory) saliva testing, and testing of air samples. These can be used not only to estimate the presence of SARS-CoV-

2 but also to estimate the efficacy of mitigation efforts. Several examples (Clemson University and surrounding municipal sewarsheds, U. of Arizona, a Utah meat packing plant's wastewater which gave an early warning, cruise ship holding tank sampling, Pratt Institute in Brooklyn, NY).

Both speakers concluded with an overview of Geosyntec's other SARS-CoV-2 monitoring services waste water-sanitary, pooled saliva surveillance, disinfection verification using wipe and air samples. After the talk, there was an enthusiastic and very informative question and answer period. This presentation elicited so much interest that the talk and question period were longer (2 1/2 hours) than our typical meeting (just over 1 hour).

Mr. Basso has a BA in Environmental Science from St. Michael's College and an MA in Environmental and Occupational Health from the City University of New York. He has extensive experience in Environment, Health and Safety (EHS) and was an EHS Manager at American Cyanamid, American Home Products and Pfizer before joining Geosyntec. Mr. Hollerbach is a senior principle at Geosyntec and director of their Process Engineering Design Group. He has more than 40 years' experience in water, wastewater, chemical and pharmaceutical process engineering, construction projects and EHS.

Following are several screen shots of groups attending the meeting (all *Courtesy of Paul Dillon*). These include pictures of the speakers (**George Hollerbach** and **Matt Basso**), members of the Westchester Chemical Society Board attending the meeting (**Peter Corfield**, **Paul Dillon** and **Kay Whiten**.) and the planned speaker for February 9, 2021 (**John McDevitt**).



## North Jersey Meetings

**There is no Executive Meeting scheduled to be held in the North Jersey Section during the month of January 2021.**

**The next meeting will be announced shortly.**



### CHEMISTRY OLYMPIAD

North Jersey will participate in the 2021 ACS International Chemistry Olympiad. Students may sit for the local section qualifying test during the month of **March 2021** through their schools or individually if the school is not participating.

**Registration is open through January 15, 2021.**



### NORTH JERSEY SECTION 2021 ELECTION RESULTS

Congratulations to the new officers, councilors and alternate councilors of the North Jersey Section ACS

#### Chair-elect (2021)

Qi Gao

#### Secretary (2021-2023)

Elizabeth (Bettyann) Howson

#### Councilors (2021-2023)

Alan Cooper  
Amanda Mann  
Cecilia Marzabadi

#### Alternate Councilors (2021-2023)

Steven Silverman  
Jasmine Lu  
Justyna Sikorska

**The Indicator is posted to the web around the 15th of the previous month at [www.TheIndicator.org](http://www.TheIndicator.org)**



### NORTH JERSEY CHROMATOGRAPHY GROUP

On Dec. 11, 2020, the North Jersey Chromatography Group hosted the virtual Symposium: Control of Nitrosamines in Pharmaceutical Products. The Chromatography Group chair, Jinjian Zheng, served as moderator of the half-day event with local section chair, Cecilia Marzabadi welcoming everyone. Four speakers representing Merck, BMS, USP and Thermo Fisher spoke on various procedures and products related to nitrosamines within the pharmaceutical industry. The event ended with a panel discussion and closing remarks. The complete program may be viewed at: [http://www.njcg.org/upcoming\\_meeting](http://www.njcg.org/upcoming_meeting)

**Reminder:** Topical Group proposed budgets must be sent to the No J treasurer, Jackie Erickson, **by January 15, 2021**, for inclusion in the 2021 section budget.

*(continued on page 29)*

Trace Analysis and Control: Sub-ppm or ppb Level Limits

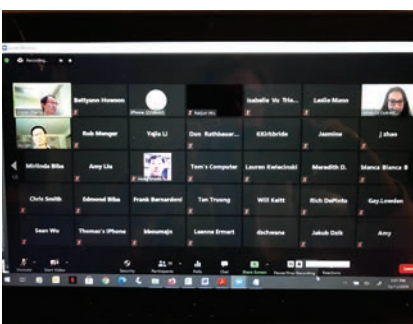
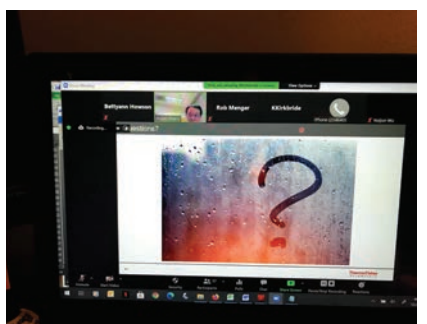
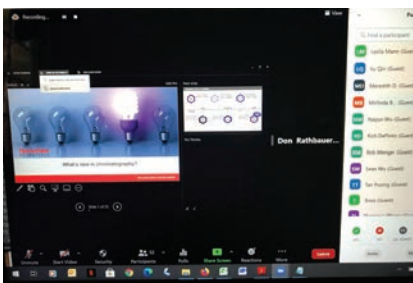
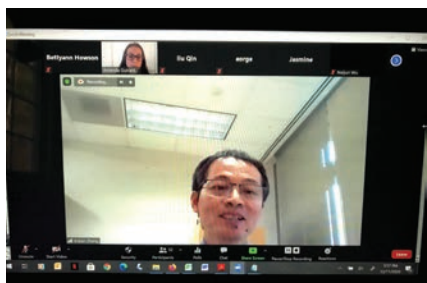
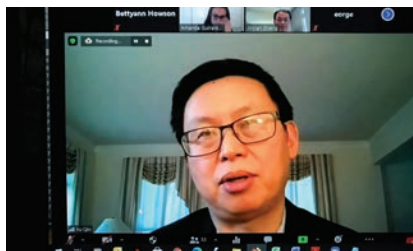
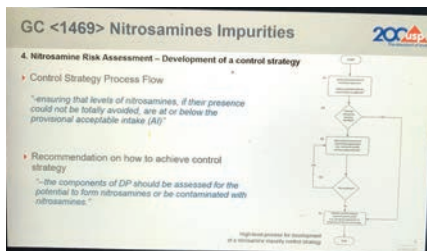
—An illustration of Theoretical Testing Limits Based on the Acceptable Intakes (AI)

Free to include in a haystack!

Nitrosamine	Acceptable Intake (AI) Limit (ng/day)	Control limit assuming max daily dose 100 mg/day	Testing limit (ppb)
		ppm	10% AI, 10% AI
NDMA	96.0	0.960	288.0
NDMA	26.5	0.265	79.5
NDMA	96.0	0.960	288.0
NMBA	26.5	0.265	79.5
NMBA	26.5	0.265	79.5
NMBA	26.5	0.265	79.5
NMBA	26.5	0.265	79.5
NDPNA	26.5	0.265	79.5
Others		0.180	54.0

## NORTH JERSEY CHROMATOGRAPHY GROUP

(continued from page 28)



**Deadline for items to be included in  
 the FEBRUARY 2021 issue  
 of *The Indicator* is  
 DECEMBER 28, 2020**

## 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](http://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](mailto:Jebrown@infionline.net) or (908) 239-1515

## Call for Volunteers

### 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<sub>2</sub> 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](mailto: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 speciality. We look forward to hearing from you about topics that you wish to share with our other members!

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## Call for Nominations

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### 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.

Please consider making a nomination for an historic chemical landmark. The Committee on the History of the NY Section will consider all nominations. In addition to a particular achievement, an historic library, building or association may be worthy of this distinction.

Please reach out to your members to consider sending recommendations for this award. All nominations must be submitted by the Division or Committee, after approval from the respective Chair.

Nominations with supporting data should be sent to the Office Administrator email [btaylor@newyorkacs.org](mailto:btaylor@newyorkacs.org).



### GOLD MEDAL AWARD: The SOCIETY for APPLIED SPECTROSCOPY – NEW YORK/NEW JERSEY REGIONAL SECTION

This coveted award was established in 1952 to recognize outstanding contributions to the field of Applied Spectroscopy. The Gold Medal will be presented at a special award symposium, arranged in honor of the awardee, at the Eastern Analytical Symposium.

#### ANNOUNCEMENT

Nominations are being sought for the 2021 Gold Medal Award of the New York/New Jersey Regional Section of the Society for Applied Spectroscopy. A nominating letter describing the nominee's specific accomplishments should be submitted along with a biographical sketch and list of publications **by January 15, 2021**. Please e-mail all materials as well as questions and inquiries to Dana Garcia at [dana.garcia@arkema.com](mailto:dana.garcia@arkema.com). For more information go to: [www.nysas.org](http://www.nysas.org)

*The Very Best Wishes to  
All Our Readers for a  
Healthy, Happy and  
Prosperous New Year.  
From The Indicator*