

# THE Indicator

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## NoJ Honors Its 50, 60, 70 and 70+ Year Members



See article on page 5.

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## THIS MONTH IN CHEMICAL HISTORY

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

I received recently from a reader a "Family heirloom" perhaps originating from the reader's mother-in-law. It is a laboratory manual entitled "Progressive Chemistry; Laboratory Manual" subtitled "Practical Experiments for Secondary Schools". The manual was prepared by "Teachers of Chemistry in the High Schools of Minneapolis, Minnesota". The copy I was sent was printed by Riverside Press, and is copyrighted 1922. It apparently belonged to Myrtle Hanrahan who annotated some of it very neatly in pencil, and included excellent sketches of experimental apparatus for some of the experiments. The manual includes 46 experiments but apparently only the first ten were included in Ms. Hanrahan's course (perhaps just a one semester course). I found this book interesting as indicating the content of a beginning high-school chemistry course early in the twentieth century.

The experiments are all hands-on exercises carried out by the students apparently individually. The first experiment is entitled "Chemical Changes". The first exercise labelled "Analysis" is the classic Joseph Priestley reaction of heating mercuric oxide to generate oxygen, detected by a glowing splint. The following injunction occurs at the end of this part, printed in bold type: "Caution: Throw mercury and its compounds into the waste jar, never into the sink, as it spoils the metals used in plumbing." (!) The second exercise entitled "Synthesis" involves burning a strip of magnesium in air. The third, also a synthesis, is to observe the reaction between copper wire and sulfur vapor. The student is asked to report her observations and write equations for each reaction. While the observations are penciled in, the equations are not. I assume that a separate report was required by this student's teacher.

Experiment number 2 is the preparation of oxygen by heating potassium chlorate with a catalytic amount of manganese dioxide. The gas was collected over a pneumatic trough and its chemical properties were examined via reaction with glowing charcoal; with heated flowers of sulfur; and with heated steel wool. There is an accurate sketch of the preparatory method and again observational notes but no symbolic equations.

Experiment number 3, entitled hydrogen, raised my eyebrows. The first preparatory method involved dropping a small piece of freshly cut sodium (yes!) into a test-tube of water set in a rack. The evolved gas is tested with a blazing splinter. This process is then repeated with a fresh piece of metallic sodium. The solution in the test-tube is then tested by having the student rub a little of it between her fingers; she notes it feels "slimy"; and is also tested with red litmus paper which turns blue. The experiment continues by generating hydrogen by reaction between zinc and hydrochloric acid, collecting the gas in a pneumatic trough again. Once more the only chemical property of hydrogen examined is its combustion in air. Twice in her observations Ms. Hanrahan notes that hydrogen explodes on combustion.

After that experiment 4, on water, seems anti-climactic. Water of crystallization is explored with alum; copper sulfate, and, interestingly, cobalt chloride a solution of which is used as "invisible ink". Written at the bottom of the page, in pale pink writing, is: Cobalt Chloride. When sugar is heated the water given off is described as water of composition. This experiment also covers efflorescence and deliquescence; supersaturation of sodium thiosulfate solution; and precipitation of silver chloride.

The remaining experiments of the first ten included simple distillation of a salt solution; testing acids, bases, and salts with litmus paper - and stashed away between the pages covering this experiment are a number of strips of red litmus paper; neutralization of bases including sodium, potassium, and ammonium hydroxides with hydrochloric, nitric, and sulfuric acids; the preparation of chlorine gas in the hood (Injunction: Do not inhale chlorine) and exploring some of its reactions; and finally preparation of hydrochloric acid gas by reaction between salt and concentrated (70%) sulfuric acid.

Unlike current general chemistry laboratory manuals, where the emphasis is on quantitative experiments, this 1922 version contains only 3 out of 46 quantitative experiments. One is the determination of the specific gravity (density) of concentrated sulfuric acid. The second one is the percentage of oxygen in air by removing it via the slow reaction (at least 24 hours) with iron filings. And the third one is the Babcock Milk Test. This is an important test in an agricultural region for the percentage of butter fat in milk; Minneapolis requires 3.5%. No low-fat milk need apply. The test uses sulfuric acid to produce curds of butterfat that coagulate and are centrifuged down. A special graduated cylinder is then used to assay the fat content.

I found this manual very interesting. It codifies differences between general chemistry then and now. But I can't help thinking that perhaps the pendulum has swung too far in one direction. A bit more descriptive chemistry in our curricula might be a good thing. Just keep your students away from mercury and sodium!

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973-822-2575 • [chemphun@gmail.com](mailto:chemphun@gmail.com)**THE Indicator** 

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**CONTENTS**

ACS 255th National Meeting Notes	.23-27
Advertisers' Index	.34
Call for Applications	.30-31
Call for Nominations	.29
Call for Volunteers	.30
In the News	.32-33
MARM	.28
New York Meetings	.6-11
NY Section-Wide Meeting Recap	.13-16
North Jersey Awardees	.5
North Jersey Meetings	.18-19
Others	.27
Professional/Product Director	.34

**EDITORIAL DEADLINES**

June	April 28
September	July 28
October	August 28
November	September 28
December	October 28
January 2019	November 28, 2018
February 2019	December 28, 2018
March	January 28, 2019
April	February 28
May	March 28

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

## May Calendar

### NEW YORK SECTION

**Thursday, April 26, 2018**

Westchester Chemical Society  
See page 6.

**Thursday, May 3, 2018**

Chemical Marketing and Economics Group  
See pages 7 & 8.

**Saturday, May 5, 2018**

Undergraduate Research Symposium  
See pages 7 & 9.

**Thursday, May 17, 2018**

Laboratory Robotics Interest Group  
See page 7 & 10.

**Tuesday, May 22, 2018**

Biochemical Topical Group  
See pages 10-11.

**Wednesday, May 23, 2018**

NY/NJ Society for Applied Spectroscopy  
See page 11.

**Wednesday, May 23, 2018**

Organic Topical Group  
See page 11.

*also*

**Thursday, June 7, 2018**

Chemical Marketing and Economics Group  
See page 12.

**Friday, June 8, 2018**

NY Section Board of Directors Meeting  
See page 7.

**Tuesday, June 19, 2018**

Chemical Marketing and Economics Group  
See page 13.



### NORTH JERSEY SECTION

**Wednesday, May 9, 2018**

NMR Topical Group  
See page 18.

**Monday, May 21, 2018**

NoJ Awards and Recognition Dinner  
See pages 18-19.

**Wednesday, May 23, 2018**

NY/NJ Society for Applied Spectroscopy  
See page 19.

*The Indicator* is 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  
June 2018 issue of *The Indicator* is**

**April 28, 2018**



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## North Jersey Celebrates Its Many Awardees

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*By Dr. Miriam Gulotta, 2018 Chair, North Jersey Section*

The 2018 NJACS Awards dinner is quickly approaching, and as chair I was sent all the certificates for 50, 60, 70, 70-plus year members. It came in a big box — 85 certificates — how wonderful is that? If I estimate that the earliest members joined at age 20, then these people are at least 70 years old and have been involved with chemistry for at least 50 years! The 70 plus members are close to 100 years old.

Part of the NJACS Awards dinner is devoted to paying tribute to these long-time members and their contributions, scientific and otherwise. I decided to do a little pre-dinner investigation into who these people are.

Professionally they are chemists, chemical salesmen, pharmacologists, chemical engineers, environmental scientists, inventors and lawyers. Some worked in industry, some as professors and some as teachers. Many served in the military. Veterans of World War II, Korea, and Vietnam are all represented in this group.

All told they have published over 1000 papers, written numerous books, and are holders of hundreds of patents. There is a wide range of patent types: polymers, the design for a dispenser for viscous liquids that is now used for Cheese Wiz, and the creation of a rechargeable nonaqueous lithium battery, just to name a few. The creation of the nucleic acids database is also in part attributable to one of these members.

Members of this group are ACS Fellows, ACS Lifetime Achievement Award winners, Fellows of the American Institute of Chemistry, and the New Jersey Inventors Hall of Fame. Several are well known in the section: George Heinze won the Burton C. Beldon Distinguished Service Award and was chair of the section twice! Jefferson W. Tilley was also very active and chaired our section as well. Joseph Bozzelli won the NJACS Pro Bono Award and mentored numerous SEED students.

Outside of science these members were husbands and wives; mothers and fathers; grandmothers and grandfathers. Hobbies include climbing mountains (literally), operating Ham radios, fishing, boating, stamp collecting, and the love of dogs, especially Weimaraners.

But for me the most meaningful entry was the last one. The member who is to receive a certificate for 78 years of membership is one of only eight women in the group. She synthesized a molecule during WWII, and she was my high school teacher. **Dr. Dorothea H. Hoffman** (pictured on right) was a wonderful chemistry teacher who set the bar very high for me as a chemistry teacher to live up to.



Please join us on in celebrating all the members of the North Jersey section on Monday, May 21st at the Mansion at Fairleigh Dickinson University. See our website for further details: <http://www.njacs.org/events-calendar/awardsdinner>

## WESTCHESTER CHEMICAL SOCIETY

### Distinguished Scientist Award and Student Achievement Awards Dinner Meeting: "The Control of Spin Dynamics in Solid-State Nuclear Magnetic Resonance Spectroscopy"

Speaker: Eugene Stephane Mananga, PhD  
(See biography for affiliations)



#### Abstract:

Since the first demonstration of electron paramagnetic resonance (EPR) in 1944 and the first demonstrations of nuclear magnetic resonance (NMR) in condensed matter in 1946, the field of mag-

netic resonance spectroscopy has generated a continuous stream of conceptual advances, methodological innovations, and new applications that continues to the present day. From the results of numerous developments, magnetic resonance is now a central technique in nearly all areas of the physical, chemical, and biological sciences. So how can qualitative breakthroughs in magnetic resonance techniques and applications continue to occur after more than 70 years? The possibility of manipulating spin evolution in an endless variety of ways, which can be accurately described by quantum mechanics and mathematics, and the ability to control the dynamics of nuclear spins have been of general interest to the NMR community since the early days of the field. A celebrated example is Hahn's demonstration of the refocusing of spin magnetization by the application of a suitable RF pulse sequence, as nuclear spins of a liquid dephase due to static field inhomogeneity. Numerous examples of improving quantum control in NMR are known within the community, such as enhanced radio frequency pulses that precisely implement a desired system evolution. This talk is centered on the dynamics of spin systems in solid-state NMR spectroscopy, which is a kind of NMR spectroscopy characterized by the presence of anisotropic interactions. The importance of solid-state nuclear magnetic resonance stands in its ability to determine accurately intermolecular distances and molecular torsion angles. Controlling the spin dynamics in solid-state NMR is mainly a theoretical problem, which consists of striving to solve the time-dependent Schrodinger equation, which is a central problem in quantum physics in general, and solid-state NMR in particular. The commonly used methods to treat theoretical problems in solid-state NMR are the average Hamiltonian theory and the Floquet theory, which have been successful for designing sophisticated pulse sequences and understanding of different experiments. The Floquet-Magnus expansion recently introduced in solid-state NMR establishes the connection between the averaged Hamiltonian theory and the Floquet theory.

#### Biography:

Dr. Mananga is a Faculty Member in the Physics Doctorate Program and in the Ph. D Program in Chemistry at the Graduate Center of the City University of New York (CUNY). He is an Assistant Professor of Physics and Nuclear Medicine at Bronx Community College of CUNY, and an Adjunct Professor of Applied Physics at New York University. His initial education was at The University of Yaounde, Yaounde, Cameroon [B.Sc. Physics (minor in Chemistry), 1990, Maitrise, Physics (Minor in Mechanics), 1991, and DEA, Physics (Minor in Mechanics), 1992]. He continued his education at the CUNY, receiving an M.A in Physics (2002), an M.Phil in Physics (2004) and completing his Ph.D in Physics from the Graduate Center of the City University of New York in 2005 under the supervision of Prof. Steven Greenbaum at Hunter College. Dr. Mananga also has additional graduate degrees and training from various institutions including Harvard University, Massachusetts General Hospital, and City College of New York. He did his postdoctoral studies in the National High Magnetic Field Laboratory of USA, Harvard Medical School, and Massachusetts General Hospital. Prior to joining Harvard he was an "Ingenieur de Recherche" in the French Atomic Energy Commission and Alternative Energies ("Commissariat a l'Energie Atomique de France", CEA-SACLAY) where he introduced the Floquet-Magnus expansion in the field of Solid-State Nuclear Magnetic Resonance. Dr. Mananga has published more than 60 peer-review scientific articles (mainly as first and corresponding author) including prestigious and major scientific journals such as Physics Reports, Royal Society of Chemistry, the Journal of Chemical Physics, the Journal of Physical Chemistry, Chemical Physics, Journal of Magnetic Resonance, etc. and has been serving as editorial board member for more than 30 international scientific journals. He currently serves as the Editor-in-Chief of the Journal of Imaging Science and also serves the most prestigious position of "Chief Editor" for the editorial board of "The Scientific Journal of Molecular Physics". He has been an honorable Scientific Adviser and Organizing Committee Member for several major international scientific conferences in the US and around the world. His scientific contribution in the field of Nuclear Magnetic Resonance was honored during the 70th anniversary (1946 - 2016) of the Russian Academic of Sciences. Professor Mananga was selected by the Academy of Humanities and Sciences as Laureate of the prestigious 2017 Henry Wasser Award in Physics for outstanding achievements at the City University of New York.

**Date:** Thursday, April 26, 2018

**Times:** Social Hour - 5:00 PM  
Lecture and Awards - 6:00 PM  
Dinner - 7:00 PM

**Place:** Pace University, Wilcox Hall  
Stephen Friedman Room  
861 Bedford Road - Entrance #1,  
Pleasantville, NY 10570

**Cost:** \$30.00; Students: \$20.00

Please RSVP to Peter Corfield, E-Mail:  
[pcorfield@fordham.edu](mailto:pcorfield@fordham.edu); Phone 914-762-4468  
or Text 914-980-9128

## New York Meetings

[www.newyorkacs.org](http://www.newyorkacs.org)

### ACS, NEW YORK SECTION BOARD OF DIRECTORS

#### MEETING DATES FOR 2018

The dates for the Board of Directors Meetings of the ACS New York Section for 2018 have been 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 ought to inform the New York Section office by emailing Mrs. Marilyn Jespersen at [njesper1@optonline.net](mailto:njesper1@optonline.net) or by calling the Section office at (516) 883-7510.

The 2018 Board Meetings will be held at St. John's University, 8000 Utopia Parkway, Queens, NY except for the January 20 Section-wide Conference and April 13 Nichols Symposium. The meeting room will be posted on the New York Section website at [www.NewYorkACS.org](http://www.NewYorkACS.org). Dr. Joseph Serafin will chair all meetings. Refreshments will be available starting at 6:00 PM and the board meeting will start at exactly 6:30 PM.

The Board Meetings dates for 2018 are:

Friday, June 8, 2018

Friday, September 14, 2018

Friday, November 16, 2018

More information will be posted in future monthly issues of *The Indicator* and on the New York website at <http://www.NewYorkACS.org>

## CHEMICAL MARKETING & ECONOMICS GROUP

### Latin America Outlook

Speakers: George Rodriguez (host)  
Director  
Argeni LLC

and

Rita Quijada, PhD  
Vice President  
Oil Markets, Midstream,  
Downstream, Chemicals  
IHG Markit

**Date:** Thursday, May 3, 2018

**Times:** Registration and Networking  
11:15 AM - 12:00 Noon

Luncheon 12:00 Noon - 1:00 PM

Talk - Webcast 1:00 - 2:00 PM

**Place:** Penn Club

*For full details, see Flyer on page 8.*



## UNDERGRADUATE RESEARCH SYMPOSIUM

**Date:** Saturday, May 5, 2018

*See flyer on page 9.*



## NEW YORK LABORATORY ROBOTICS INTEREST GROUP

Networking and technology event to introduce Laboratory Robotics Interest Group (LRIG) in NYC and automation solutions for advancing research.

**Date:** Thursday, May 17, 2018

**Time:** 5:30 PM

**Place:** Kimmel Center  
New York University

*See flyer on page 10 for more details.*



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## LATIN AMERICA OUTLOOK

CME ACS NY Luncheon/Webcast • May 3, 2018 • Penn Club

### Abstract

Emerging markets provide a unique opportunity for growth and value creation. One key factor is understanding how Latin America fits in the extended petrochemical upcycle and relevant impact on chemicals and related markets. This event will provide you with insights about leading companies in Latin America that can help you grow your business and gain regional knowledge. Meet with an IHS Markit regional expert addressing outlooks and forecasts for key products throughout Latin America.

Join us on May 3rd to hear a discussion with Rina Quijada of key trends in the Latin American Market and IHS recommendations about strategies for success.



**Rina Quijada, PhD**, is Vice President, Oil Markets, Midstream, Downstream, Chemicals for IHS Markit.

For more than three decades, Dr. Rina Quijada has developed a prominent position as an authoritative international consultant to the petrochemical industry focusing in Latin America. She was formerly CEO of IntelliChem, Inc. Previously, she worked for CMAI and PDVSA's petrochemical subsidiary, Pequiven. Dr. Quijada earned a Bachelor of Science in Organic Chemistry from Bryan College, Tennessee, US. She holds a Master of International Management from Thunderbird School of Global Management, Glendale, Arizona, US, attended the Oxford University master's management program, and attained her doctorate at Universidad Santa Maria, Venezuela.



**George Rodriguez** (host), Director at Argeni LLC, an innovation and leadership advisory. Rodriguez served for 7 years at the U.S. subsidiary of Nagase, a \$7 billion Intelligence Japanese firm, as Deputy General Manager and VP of Business Development, Bio and Nanotechnology, in chemicals, plastics, electronics and health care. He led projects in biopharma, bioplastics, biofuels and biochemicals. During 11 years, he worked at Pfizer in global sales and marketing, acquisitions and operations in Latin America. He is CME Past Chair and former American Chemical Society NY Section Board Member. He received the highest honors in both degrees, a B.S. in Chemical Engineering, UNI Peru, and an M.S. of Industrial Management, Georgia Tech.



ARGENI



### Event Schedule

**Location:**  
Penn Club  
30 W 44th Street, NYC

**Event Times:** (ET)  
11:15 am - 12:00 noon  
Registration and Networking  
12 noon - 1 pm Luncheon  
1 pm - 2 pm Talk - Webcast

**Luncheon Fees**  
\$120 for non-members  
\$90 for members  
Check for Early-bird savings  
**Webcast:** \$30. Free webcast recording for ACS members

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ANNUAL UNDERGRADUATE  
RESEARCH SYMPOSIUM

**The New York Chemistry Students' Association  
Student Affiliate Committee – New York Section  
American Chemical Society**

**Saturday, May 5<sup>th</sup>, 2018 at York College CUNY**

**8:00 am – 3:00 pm (breakfast, luncheon and award reception included)**

**Sign up as an attendee at <http://www.newyorkacs.org/meetings/urs/urs.php>**

**Keynote Speaker**

**Dr. Dhabih V. Chulhai**

Dept. of Chemistry, University of Minnesota, Minneapolis MN

Dhabih Chulhai grew up in Guyana and began his studies in chemistry at the University of Guyana. He received his B.S. in Chemistry at York College of the City University of New York (CUNY) in 2011, where he worked with Prof. Ruel Desamero, and his Ph.D. in Chemistry from The Pennsylvania State University in 2016, working with Prof. Lasse Jensen. Since then, he has been working as a postdoctoral associate with Dr. Jason Goodpaster at the University of Minnesota. Dr. Chulhai was awarded the Eugene and Jane Apple Science Graduate Fellowship at Penn State University for his contributions to the National Science Foundation's (NSF), Center for Chemical Innovation (CCI) entitled Center for Chemistry at the Space-Time Limit (CaSTL). In CaSTL he worked with a team to develop and use theoretical methods to understand chemistry at the smallest possible length and time scales. He is currently a part of the Department of Energy's Nanoporous Materials Genome Center, where his research is focused on developing and using highly accurate quantum chemical methods to guide the discovery of novel materials.



**Keynote Address**

**Understanding Chemistry Using Theoretical Embedding Methods**

**Abstract:** All of chemistry may be understood by solving the time-dependent Schrödinger equation for the relevant system, although exact solutions are often impossible or computationally too expensive. Theoretical and computational chemists seek to find and use shortcuts that are both accurate and computationally tractable to solve this equation. Luckily, most of chemistry often occurs in a small region of an otherwise complex environment. As such, we are interested in using embedding methods—where we use a highly accurate method to describe the small region of interest but describe the rest of the environment using less accurate methods—to model systems. Experiments are now able to observe chemistry happening one molecule at a time, using techniques like surface-enhanced and tip-enhanced Raman scattering. We will show how using these embedding methods allows us to gain insights into these experimental findings.

2018 Co-chair

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Queensborough Community  
College psideris@qcc.cuny.edu

2018 Co-chair

**Dr. Yolanda Small**  
York College - CUNY  
ysmall@york.cuny.edu

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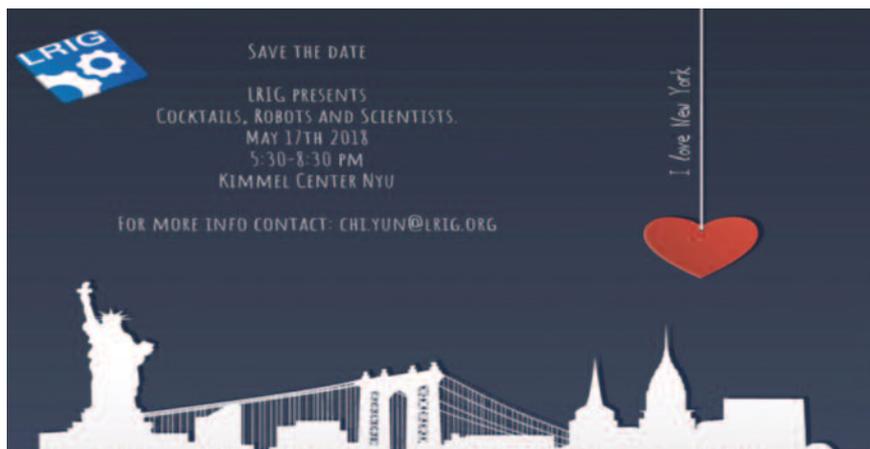
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**Dr. Naphtali O'Connor**  
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FRSE Registration for student members of the National ACS Society requires you register in advance and sponsors. For non-ACS members and guests, the registration is \$35 in advance. An on-site registration is \$45 for faculty, staff and guests. Checks for the registration fee should be made out to "NY ACS URS" and sent to: Prof. Joseph Santilli, St. John's University, Department of Chemistry, 333 St. Albert Hall, Queens, NY 11432.

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SEEKING STUDENTS AS MODERATORS!**



Networking and technology event to introduce Laboratory Robotics Interest Group (LRIg) in NYC and automation solutions for advancing research..

**BIOCHEMICAL TOPICAL GROUP – JOINT MEETING WITH THE NYAS BIOCHEMICAL PHARMACOLOGY DISCUSSION GROUP**

**Thinking Outside the ATP Box: New Ways to Target Kinases for Therapeutics**

*Organizers:* Lynn Abell, PhD  
Agios Pharmaceuticals  
Charu Chaudhry, PhD  
Bristol-Myers Squibb  
Amy Hart, PhD  
Bristol-Myers Squibb  
Ravi Kurumbail, PhD  
Pfizer  
Stephen Noell  
Pfizer  
Claire Stepan, PhD  
Pfizer  
Sara Donnelly, PhD  
The New York Academy of Sciences  
Sonya Dougal, PhD  
The New York Academy of Sciences

*Speakers:* Keynote:  
Nathanael S. Gray, PhD  
Harvard Medical School  
Kimberly Cameron, PhD  
Pfizer  
Elizabeth Goldsmith, PhD  
University of Texas,  
South Western Medical Center

Dorothee Kern, PhD  
Brandeis University  
Dustin James Maly, PhD  
University of Washington  
John Sanders, PhD  
Merck  
Markus Seeliger, PhD  
Stony Brook University  
Medical School  
Steven Wroblewski, PhD  
Bristol-Myers Squibb

This symposium will bring together experts in the field of kinase drug discovery to review the current landscape and explore new approaches and technologies driving the discovery of non-classical kinase inhibitors.

**Date:** Tuesday, May 22, 2018  
**Time:** 9:00 AM – 5:00 PM  
(reception to follow)  
**Place:** The New York Academy of Sciences  
7 World Trade Center  
250 Greenwich Street – 40th Floor  
New York, NY 10007  
**Cost:** This event is has reduced-rate registration for ACS and NYAS members, at \$60 or \$25 (for students and post-docs). Please select the appropriate non-member Registration Category and use the Priority Code ACS. Non-members may attend for a fee of \$160 (corporate), \$105 (non-profit or academic) or \$70 (students and post-docs).

For more information and to register for the event, go to [www.nyas.org/kinase2018](http://www.nyas.org/kinase2018)

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



## NEW YORK/NEW JERSEY SOCIETY FOR APPLIED SPECTROSCOPY

“Application of FTIR in Understanding  
the Changes in Protein Secondary  
Structure as a Result of Stress”

*Speaker:* Dr. John Wasyluk  
Bristol-Myers Squibb Company

**Date:** Wednesday, May 23, 2018

See [www.nysas.org](http://www.nysas.org) for details.



## ORGANIC TOPICAL GROUP – JOINT MEETING WITH THE NEW YORK ACADEMY of SCI- ENCES CHEMICAL BIOLOGY DISCUSSION GROUP

**Chemical Biology Discussion Group  
Year-End Symposium**

*Organizers:* Yimon Aye, PhD  
Cornell University  
Weill Cornell Medicine  
  
Sara Donnelly, PhD  
The New York Academy of  
Sciences  
  
Sonya Dougal, PhD  
The New York Academy of  
Sciences

*Speaker:* JoAnne Stubbe, PhD  
Massachusetts Institute of  
Technology

The Chemical Biology Discussion Group brings together chemists and biologists interested in discussing the latest breakthroughs. This year, the annual year-end meeting features keynote speaker Dr JoAnne Stubbe, Massachusetts Institute of Technology.

**Date:** Wednesday, May 23, 2018

**Time:** 12:00 – 5:00 PM

**Place:** The New York Academy of  
Sciences  
7 World Trade Center  
250 Greenwich Street – 40th Floor  
New York, NY 10007

**Cost:** This event is FREE for ACS and NYAS members. Please select the appropriate non-member Registration Category and use the Priority Code ACS. Non-members may attend for a fee of \$75 (corporate), \$65 (non-profit or academic) or \$30 (students and post-docs).

For more information and to register for the event, go to: [www.nyas.org/ChemBio2018](http://www.nyas.org/ChemBio2018)  
To become a Member of the Academy, visit [www.nyas.org/benefits](http://www.nyas.org/benefits)



## 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.

**S U R P R I S E**

our editor by calling and saying you appreciate the quality and content of our newsletter. Our editor works hard to maintain a publication of interest to our membership. Oh, and by the way, you could also give credit to our advertisers who financially support us.

## CHEMICAL MARKETING & ECONOMICS GROUP

### Mark Your Calendars:

#### A New Game in the Epoxy World

*Speaker:* Pat D. Dawson  
Executive Vice President  
Olin Corporation  
and  
President  
Epoxy and Olin International

**Date:** Thursday, June 7, 2018

**Times:** 11:15 AM - 2:00 PM

**Place:** Penn Club

\*\*\*\*\*

**Date:** Tuesday, June 19, 2018

**Times:** Refreshments — 7:00 PM

Science — 7:30 PM

**Place:** New York University  
Dept. of Chemistry, Room 1003  
(10th Floor) Silver Center  
31 Washington Place (between  
Washington Sq. East & Green St.)  
New York, NY



## CANDIDATES FOR THE NEW YORK SECTION 2018 ELECTIONS

At the January 2018 Section-wide Conference, the Nominating Committee presented the candidates for office for the 2018 elections. The biographies of the candidates will be posted on the New York Section website at [www.NewYorkACS.org](http://www.NewYorkACS.org).

Electronic ballots will be sent to the membership in mid-April and voting will be conducted according to ACS guidelines for confidentiality and security. If your e-mail address has changed, please update it on the ACS website. If no e-mail address is associated with your membership number, a paper ballot will be sent to you automatically. Members that do have an e-mail address associated with their membership number will be asked in a survey if they want a paper ballot.

To receive all electronic messages from the New York Section, please be sure that your e-mail account will accept messages from [NYACS-L@stjohns.edu](mailto:NYACS-L@stjohns.edu), [njesper1@optonline.net](mailto:njesper1@optonline.net) or [jespersn@stjohns.edu](mailto:jespersn@stjohns.edu).

**For New York Section elections, your e-mail account needs to receive messages from Survey Monkey.**

Members requesting paper ballots will receive them by **May 1, 2018**. If any member does not receive voting materials by May 1, please contact the New York Section Office at (516) 883-7510 or [njesper1@optonline.net](mailto:njesper1@optonline.net).

The Board of Directors extends a sincere thank you to the following candidates for accepting the nomination to run for office, and encourages ACS New York Section members to vote for these very worthy candidates.

The Candidates are:

#### Chair-Elect for 2019

Ruben Savizky (The Cooper Union)  
Yufeng Wei (New York City University)

#### Secretary for 2019 and 2020

Daniel Amarante (College of Mount Saint Vincent)  
Richard Rosso (St. John's University)

#### Director-at-Large for 2019

Ivan Dempsey Hyatt (Adelphi University)  
Aaron Muth (St. John's University)  
Daniel Silverio (Adelphi University)  
Sabesan Yoganathan (St. John's University)  
Joseph Wiener (Pepsico Global R&D)  
Yosra Badieli (St. Peter's University)

#### Councilor for 2019 - 2021

Donald Clarke (Fordham University)  
Ronald D'Amelia (Hofstra University)  
Brian Gibney (Brooklyn College – CUNY)  
Hiroko Karan (Medgar Evers College – CUNY)  
Pamela Kerrigan (College of Mount Saint Vincent)  
JaimeLee Rizzo (Pace University)  
Justyna Widera-Kalinowska (Adelphi University)

## Happy Mother's Day



## **ACS, NEW YORK SECTION'S 2018 SECTIONWIDE CONFERENCE, PACE UNIVERSITY, NEW YORK CITY**

Another successful New York Section Sectionwide Conference was held on January 20th at Pace University in Manhattan, NY. Members enjoyed a deliciously healthy and varied breakfast buffet along with the camaraderie of friends and colleagues. The conference also featured a presentation of awards for volunteerism and achievement, an excellent keynote address, research poster displays by New York Section SEED students, the introduction of the 2019 election candidates, planning sessions for 2018 Section activities and a luncheon social with the Younger Chemists Committee. Prof. Joseph M. Serafin of St. John's University and New York Section Chair for 2018 welcomed the Section's members and thanked them for their outstanding volunteer work in 2017.

At the award ceremony, Prof. Brian R. Gibney received the official ACS past chair pin and an ACS engraved plaque for his excellent and dedicated service as Chair of the New York Section in 2017. Prof. Gibney thanked all the dedicated New York ACS volunteers who made his year as Chair so successful. The 2017 Outstanding Service Award went to Prof. JaimeLee Iolani Rizzo who is a former Section Chair and URS coordinator, current New York Section Councilor, and creator of the annual Chemists Celebrate Earth Week Walk across the Brooklyn Bridge event. The Section presented the Nichols Foundation High School Chemistry Outstanding Teacher Award for 2017 to Mrs. Carol E. Conti of Briarcliff High School. Prof. Joseph Serafin enumerated Carol's very successful teaching methods and achievements, and thanked her for her dedication.

Following the award ceremony, Prof. Serafin presented the names of the candidates for the upcoming 2018 elections and introduced the candidates who were present.

Professor Robert Engel, of Queens College – CUNY, gave a very interesting and informative keynote address titled "Adventures in Chemical Architecture." His talk summarized his laboratories' work on the syntheses and characteristics of polycationic organic species, their anti-microbial properties and indications of future directions of practical significance. Prof. Engel entertained many good questions.

The annual planning sessions for the New York Section's four active subsections, twelve topical groups, and thirty-two committees were held during the last hour of the conference, to discuss goals and activities for the upcoming year. At the same time, the revived Younger Chemists Committee, led by new chair Prof. Joseph Wiener, met to share ideas about goals for the group and upcoming events.

Following the conference, section members and family enjoyed lunch together with the Younger Chemists Committee who were starting their Building Your Technical Career Through Strategic Networking event. **(More photos on page 14.)**



**Groups planning events for 2018. Education Committees, Member Affairs Committees and Public Affairs Committees.**

*(All photos courtesy of Marilyn Jespersen)*



Keynote Speaker Prof Robert Engel, Outstanding Service Awardee Prof. JaimeLee Rizzo, Past Chair Awardee Prof Brian Gibney, Nichols Foundation Teacher Awardee Mrs. Carol Conti and 2018 New York Section Chair Prof. Joseph Serafin.



SEED students supported by the New York Section enjoying the buffet breakfast.



Dr. Joseph Wiener conducting the new Younger Chemists Group meeting.

## **CAROL CONTI RECEIVES THE NICHOLS FOUNDATION HIGH SCHOOL CHEMISTRY TEACHER AWARD FOR 2017**

Mrs. Carol Conti is the recipient of the ACS New York Section's Nichols Foundation High School Chemistry Teacher Award for 2017. This award was established in 1958



by Charles W. Nichols, Sr. for the purpose of recognizing highly effective teaching and inspirational leadership to students in chemistry within the New York Section of the ACS. The award was presented to Carol at the 2018 Sectionwide Conference held at Pace University on January 20th.

Mrs. Conti is currently a teacher at Briarcliff High School in Westchester County, NY. After a twenty-year career in chemical engineering, Carol followed her passion for teaching. She holds a Bachelor of Science and a Master of Science in Chemical Engineering from Manhattan College. From 1988 to 1995, Carol was a Senior Process Engineer for Union Carbide. She designed process technology equipment for refineries and chemical plants and travelled extensively throughout North America, Asia, and Europe. In 1995, Carol earned a Master of Business Administration in Finance from Fordham University and joined a consulting firm, advising major global corporations in the chemical, refining, and financial industries for the next 12 years.

Although Carol had a successful career as a chemical engineer, her true passion was teaching and mentoring. With a shortage of chemistry teachers, Carol decided to change paths and received a Master of

Science in Adolescent Education in 2007. She began her career at Briarcliff High School the same year. Carol has been teaching Regents chemistry and environmental science courses over the past ten years, and was awarded Briarcliff's Teacher of the Year in 2017.

Carol engages and inspires young minds by using real life connections and problem-based, student-centered learning. She infuses her lessons with her experiences as a chemical engineer, hands-on laboratory work and demonstrations, technology, and interdisciplinary learning.

In this age of technology with more competition for meaningful learning, Carol continuously pursues ways to engage all students and measure outcomes. Over the last two years, she has been attending summer workshops to modify her lessons to employ problem-based learning with more technology integration. She has spent over 100 hours in the last two years rethinking and revising her lessons to make them more student-centered. She recognizes that students must feel success to maintain interest in the subject. While keeping expectations high for all abilities, she often uses hands-on inquiry approaches to support critical thinking and creativity. She finds one of the most challenging topics to learn is intermolecular forces of attraction. She uses "mini-lab" investigations in which students compare the physical properties of about ten different substances. Similarly, she sets up lab stations to teach about solubility curves. About six teams work together to generate a solubility curve for a salt in water.

Carol's command of the subject is reflected in the ways she is able to help and inspire students of all abilities. While Carol has a passion for chemistry, she realizes that many students find it difficult. Students who may not normally enroll in a chemistry course due to poor math ability or reading comprehension, find confidence and comfort in her class. Cooperative learning and technology are used to promote student involvement where students are empowered to share their thought process and expertise.

Each year Carol encourages students who have an affinity for chemistry to pursue their interests in weekly after school "Enrichment" sessions. She instills confidence and determination, promoting the qualities needed to

*(continued on page 16)*

## CAROL CONTI

(continued from page 15)

succeed in STEM careers. She also encourages students by offering lab assistant positions. One Briarcliff graduate, who was Carol's assistant for two consecutive years, is now a pre-med student and writes, "It was Mrs. Conti's enthusiasm and commitment to chemistry that inspired me to get more involved in the sciences...My job as lab assistant was incredibly rewarding - I was able to take what I had learned in the classroom and apply it from a new perspective. It was my only way of giving back to Mrs. Conti after all she had done for me, and it was the opportunity that changed the course of my high school career."

Carol has been serving on Briarcliff's Professional Development Committee for over 5 years. She recognizes the importance for educators to continuously reflect, learn, and innovate to keep pace with an ever-changing world. She can't imagine a more important job than helping our youngest generation develop into confident, compassionate, and active citizens. As put by the High School's principal, Debora French, "Ms. Carol Conti is the quintessential professional educator and colleague. Her caring devotion to her students and inspiration has developed the confidence for many students to continue the study of science at the college level or consider a career in engineering or science."

Congratulations, Carol, and best wishes always!



## NY SECTION RECEIVES ACS GRANT

***This message is sent on behalf of Jason Ritchie, Chair of the Committee on Local Section Activities (LSAC) and Greg Milligan, Chair of the LSAC Subcommittee on Grants and Awards.***

Dear Dr. Joseph Serafin:

We are pleased to inform you that the New York Local Section has been funded \$3475 for the Local Section Innovative Project Grant (IPG) proposal entitled, 'Reaching Students with Disabilities'. The review committee feels that your activity will provide teachers with valuable insight on how to work with students with disabilities.

In order to receive funds in the amount of \$3475, you, being the Chair of the New York Section, need to acknowledge and accept the grant no later than Friday, May 11. This online acknowledgment form will prompt you to enter the chair and local section name, the amount of the grant, and that you accept the grant. The funds will be sent to the Local Section Treasurer within 4-6 weeks of receiving your acknowledgment.

If your grant includes the purchase of equipment, you will need to complete the statement in the online acknowledgement and acceptance form that refers to consumable equipment purchased through the IPG. Non-consumable equipment purchases remain the exclusive property of the local section and must be made accessible to the local section members.

A final report on the use and impact of the 2018 funds by your local section will be due upon completion of your project. Funds may not be used to pay honoraria or stipends for speakers/trainers/program coordinators nor may the money be used for alcoholic beverages or meals for local section members (other than light snacks).

This round of IPG proposals was very competitive with limited monies available to fund, so congratulations on submitting a winning proposal! LSAC looks forward to hearing about the success of your proposed activities in your Annual Report and possibly in a ChemLuminary Award self-nomination via FORMS. Please help us document the success and impact of your activities and programs in your final report so that we might share those ideas with other local sections.

Should you have any questions regarding this grant program, please contact Ben Hall at [b\\_hall@acs.org](mailto:b_hall@acs.org) or email [lsac@acs.org](mailto:lsac@acs.org).

Sincerely,  
Jason Ritchie and Greg Millig

Ben Hall  
Project Manager, Component & Career Services  
1155 16th St., NW | Washington | DC 20036  
T 202-872-4565 | F 202-833-7732 | M 202-579-7960  
[www.acs.org](http://www.acs.org)

## WESTCHESTER CHEMICAL SOCIETY

On March 28, 2018 Dr. Rita K. Upmacis spoke on "Achieving Global Sustainability: Huge Challenges and Opportunities." Dr. Upmacis is an associate professor in the Department of Chemistry & Physical Sciences at Pace University in New York City. She started noting that although chemistry had been received by the public positively, over the years "chemicals" had gotten a bad name because of various problems such as the environmental impact of DDT, the thalidomide babies and the industrial disasters at Bhopal and Seveso. In response, she noted the responsibility of chemists and other innovators to develop new processes and products that not only meet the needs of energy, clean water and food to sustain our growing population, but also protect human health and the environment. She noted that solutions to these challenges may be achieved using Green Chemistry, which is the "utilization of a set of principles that reduces or eliminates the use or generation of hazardous substances in the design, manufacture, and application of chemical products" (P.T. Anastas and J.C. Warner, "Green Chemistry Theory and Practice," Oxford University Press, 1998). She discussed the twelve principle tenets of Green Chemistry and the twelve additional tenets of Green Engineering. She examined some of the challenges that we face today, as well as some examples of innovative solutions that have been introduced. There was lively discussion during and following the talk, which was given at the Westchester Community College in Valhalla, N.Y.

Dr. Upmacis obtained her B.Sc. in Chemistry and Ph.D. in Inorganic Chemistry from the University of Nottingham, U.K. Her Ph.D. research involved the spectroscopic characterization of catalytic intermediates in liquid xenon, including early examples of metal-dihydrogen compounds. She moved to the U.S. as a postdoctoral fellow (California Institute of Technology), where she learned how to modify proteins and measure electron-transfer processes using laser spectroscopy. She subsequently was employed by the Rohm & Haas Company (now the Dow Chemical Company, PA) as a Senior Chemist, working on the acrylic acid process, developing polymerization inhibitors, and improving the quality of acrylic acid, which resulted in 9 patents being awarded. She then returned to academia as an Associate Research Professor in the Department of Pathology & Laboratory Medicine at Weill-Cornell Medical College, NY, studying how specific fatty acids and certain forms of reactive oxygen and nitrogen species are involved in inflammatory and disease processes, such as atherosclerosis. Since 2010, she has been at Pace University, where she introduced Green Chemistry as an undergraduate course. Teaching this course has sparked her interest in monitoring the global challenges and opportunities that face mankind in achieving sustainability.

After the talk Dr. Upmacis, her husband, Dr. Gerard Parkin (Professor of Chemistry at Columbia University), and several of the attendees enjoyed a dinner together at a nearby restaurant. The photo below is of the Drs. Upmacis and Parkin and the other WCS board members who attended the meeting.



Rolande Hodel, Gerard Parkin, Rita Upmacis, Paul Dillon, Jody Reifenberg and Sally Mitchell.

*(Photo courtesy of Paul Dillon)*

## North Jersey Meetings

<http://www.njacs.org>

### NORTH JERSEY EXECUTIVE COMMITTEE MEETING

Section officers, councilors, committee chairs, topical group chairs, and section event organizers meet regularly at the Executive Committee Meeting to discuss topics of importance to running the section and representing the membership. All ACS members are welcome to attend this meeting and to become more involved in section activities.

**Date:** This month's Executive Meeting is replaced by the Awards Dinner on Monday, May 21, 2018

**Time:** See article in right-hand column

**Place:** Lenfell Hall, The Mansion  
Fairleigh Dickinson University  
Florham Campus  
285 Madison Avenue  
Madison, NJ 07940

(See [www.njacs.org](http://www.njacs.org) for more details.)



### CAREERS IN TRANSITION MEETINGS

There will be no Careers in Transition Meetings until further notice.



### NMR TOPICAL GROUP

#### "Bruker Night"

**Speakers:** George Anastasi  
Bruker (new NMR technology advancements)

and

Kalina Ranguelova  
Bruker (applications of EPR spectroscopy).

Save the date as we look forward to "Bruker Night", including sponsored dinner, door prizes, and two Bruker speakers.

**Date:** Wednesday, May 9, 2018

**Times:** 6:00 - 8:00 PM

**Place:** Princeton University

### NORTH JERSEY SECTION ACS AWARDS AND RECOGNITION DINNER

Join us as we honor our volunteers and students.

Directions to campus and a campus map can be found at <http://tinyurl.com/j6j9nsl>.

Reservations: Please make your reservation at our website, <http://www.njacs.org> prior to Thursday, May 10, 2018.

Questions: Call (973) 822-2575 or e-mail [chemphun@gmail.com](mailto:chemphun@gmail.com)

**Date:** Monday, May 21, 2018

**Times:** Social 4:30 PM

Presentation of Certificates of Service to 50, 60 and 70 year members 5:30 PM

Dinner 6:00 PM

Presentation of Awards to volunteers and students 7:00 PM

**Place:** Lenfell Hall, The Mansion  
Fairleigh Dickinson University  
Madison, NJ 07940

**Cost:** \$35.00

Congratulations and a special thank you are in order to the members of the North Jersey Section who have reached 50, 60, and 70 years of service!

#### 50 YEAR MEMBERS

Mr. Cornell L. Adams  
Mr. Stuart M. Bauer  
Mr. Julius Frank Bitay  
Dr. Lesser Blum  
Dr. Joseph Bozzelli  
Dr. Jui Chang Chuang  
Dr. Allen Irving Cohen  
Dr. Arthur Donovan Dettling  
Mr. Joseph Charles Dettling  
Dr. Stephen Walker Drew  
Mr. Erginio Fernandez  
Mr. Bernard Foss  
Dr. George Gordimer  
Dr. Allan L. Greenberg  
Dr. Andrew Kaldor  
Dr. Faizulla G. Kathawala  
Mr. Richard Allen Kaufman  
Mr. Harvey Lembeck Kellman  
Dr. Gerald Kirshenbaum  
Dr. Steven Jeffrey Lee  
Mr. Vito J. Mancini  
Dr. Richard Millar Montgomery  
Ms. Margaret Marion Mooney  
Dr. Donald W. Murphy  
Dr. Birendra Kumar Patnaik  
Mr. Robert J. Penque

Ms. Bierce Riley  
 Dr. Gary Warner Sanderson  
 Dr. Alan Sherman  
 Dr. Jefferson W. Tilley  
 Mr. Richard William Tkach  
 Dr. Forrest Allen Trumbore  
 Dr. Yun Yen Tsong  
 Dr. Clara M. Watnick  
 Mr. William Fredrick Wright  
 Mr. Ronald Gilbert Yarger  
 Mr. Joel Barry Yudkovitz

#### 60 YEAR MEMBERS

Mr. Seymour Baron  
 Mr. Leonard Berkowitz  
 Dr. Bruce M. Collins  
 Ms. Ramona T. Crosby  
 Dr. Mary Lease Deem  
 Dr. Arthur M. Felix  
 Mr. John K. Gillham  
 Dr. J. Brown Goehring  
 Mr. George E. Heinze  
 Mr. David Kristol  
 Dr. JuliaN Lakritz  
 Mr. Theodore Legatt  
 Mr. Ira Loter  
 Dr. Donald J. Martin  
 Mr. John F. O'Brien  
 Dr. Louis A. Pilato  
 Dr. Jay A. Rashkin  
 Dr. Alvin Segal  
 Ms. Nancy C. Swanson  
 Dr. James J. Tietjen  
 Mr. Patrick Tolve  
 Dr. Herbert H. Waddell  
 Mr. C. J. Waitkus  
 Dr. George T. Wildman  
 Dr. David Zudkevitch

#### 70 YEAR MEMBERS

Mr. Robert F. Bann  
 Dr. Murray S. Cohen

Dr. Robert Ehrlich  
 Dr. William Hodes  
 Dr. Horst Walter Hoyer  
 Dr. Herbert A. Lieberman  
 Dr. Charles Driscoll Mason  
 Dr. William Edward Rosen  
 Mr. Ira Marcus Schafeer

#### 73 YEAR MEMBERS

Dr. Neil W. Berst  
 Mr. William R. Bingham  
 Mr. James Harding  
 Dr. Henry T. Hoffman, Jr.

#### 74 YEAR MEMBERS

Mr. John Burton  
 Mr. Leonard Kenner  
 Mr. Harvey Segal

#### 75 YEAR MEMBERS

Dr. Frank A. Cutler, Jr.  
 Mr. Neil E. Gordon, Jr.  
 Mr. Dominic T. Walker

#### 77 YEAR MEMBERS

Dr. William B. Wright, Jr.

#### 78 YEAR MEMBERS

Dr. Dorothea H. Hoffman



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

**“Application of FTIR in Understanding  
 the Changes in Protein Secondary  
 Structure as a Result of Stress”**

*Speaker:* Dr. John Wasyluk  
 Bristol-Myers Squibb Company

**Date: Wednesday, May 23, 2018**

See [www.nysas.org](http://www.nysas.org) for details.



**James Mizvesky, Fairleigh Dickinson University, Madison, received a travel grant to present his research at the 2018 ACS Spring National Meeting in New Orleans, LA. His research is entitled, “Structure-based design of molecularly imprinted polymers for G-quadruplex nucleic acids.” Presenting the grant is Bettyann Howson, NJACS Education Committee Chair.**

*(Photo courtesy of Bettyann Howson)*

## **NMR TOPICAL GROUP MARCH MEETING**

A Nor'easter tried but was unsuccessful at keeping the NJ-ACS NMR Topical Group from meeting in March! On Wednesday, March 14th at Rutgers University (postponed from March 7th), the Group hosted Andrew Nieuwkoop, PhD and Assistant Professor at Rutgers University, Department of Chemistry & Chemical Biology. Andy's seminar described the highly impactful work he was a part of during his PhD studies at the University of Illinois and as a postdoctoral fellow at the FMP in Berlin, Germany. Throughout his training, he has used solid-state NMR techniques to solve high-resolution structures of challenging proteins, such as membrane proteins (OmpG) and large macromolecular complexes ( $\alpha$ -synuclein fibrils). Since joining the Rutgers faculty in December of 2016, Andy has been building his lab with students and postdocs along with acquiring the necessary technology to drive their solid-state NMR efforts. Andy was grateful the storm delayed our meeting by one week, as he was able to collect his first successful solid-state NMR spectrum at Rutgers the day before his seminar. Talk about timing! An excellent turnout of 22 attendees were present to enjoy great food, wine, science, and fellowship.

*See page 18 for announcements of our May meeting.*



**NMR Topical Group's March speaker, Andy Nieuwkoop, PhD.**



**Content with food and wine, attendees smile before the evening's seminar begins.**



**Overhead view of the dinner and networking hour, including Italian cuisine from a local Highland Park restaurant.**

*(Photos courtesy of Mary Harner and Luciano Mueller.)*

## CHEMAGINATION

The North Jersey Section of the American Chemical Society held its annual Chemagination Contest on March 20th at Passaic Valley Regional High School in Little Falls, NJ. For this event, teams of two or three high school students are asked to imagine that they are living 25 years in the future and have been invited to write an article for ChemMatters, a magazine for high school students that focuses on the role of chemistry in everyday life. Students are also asked to design the magazine cover. The subject of the article is: "Describe a recent breakthrough or innovation in chemistry (and/or its applications) that has improved the quality of people's lives today." The article must be written to fit in one of four categories: Alternative Energy, Environment, Medicine/Health, or New Materials.

Students were judged on the accuracy of the chemistry and science concepts, the history of the changes of their innovation over the 25 years, the creativity and relevance of their cover, and their ability to answer questions related to their article and cover.

The first place teams are eligible to participate in the MARM 2018 Chemagination Contest on June 3rd at Lehigh University.

Abbie Young, Barbara McNally, Jayasree Sankar, John Penna, and Natalie Macke, members of the NJACS-Teacher Affiliates volunteered as judges.

The First Place Teams and their article titles are:

Entry Category	Article Title	Team	High School
Alternate Energy Sources	Energy Generator Through Thermo-regulation	Nahyeon Kim and Lauren Pesantes	Bergen Academies
Environment	The Road to the Future is Solar	Brian Katat Gabriella Pesantes Leandra Pesantes	Passaic Valley High School
Medical/Healthcare	Vit Lit	Lexie DeLuca Julianna Perro	Passaic Valley High School
New Materials	Humanitent: The Tent That Does It All	Casey Chan Yerin Kim Yena Woo	Bergen Academies

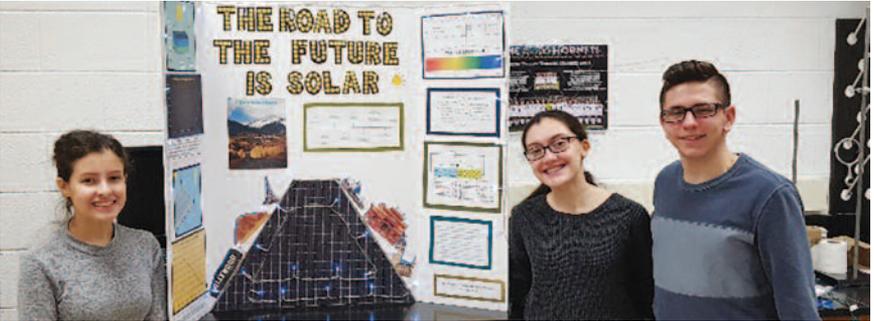


Back row from left, Casey Chan, Lauren Szeto, Nahyeon Kim, Yena Woo, Julianna Perro, Brian Katat. Front row from left: Gabriella Pesantes, Lexie DeLuca, Leandra Pesantes. (More photos on page 22.)

*(All photos courtesy of Susanne Iobst)*



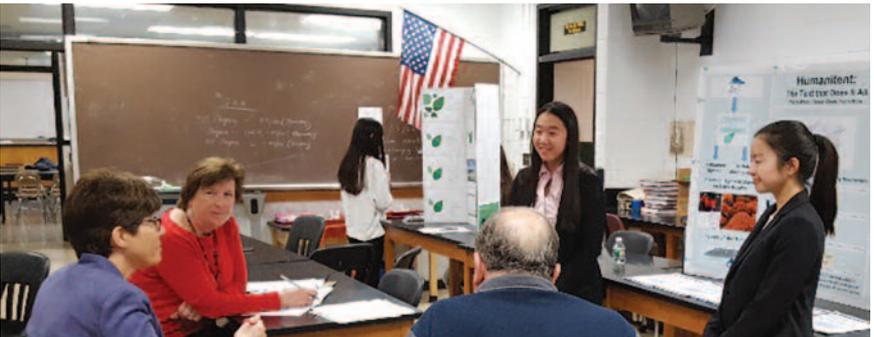
Standing in front of poster, from Left, Lauren Szeto and Nahyeon Kim. Judges: Natalie Macke and Jayasree Sankar.



From left: Leandra Pesantes, Gabriella Pesantes, Brian Katt.



From left: Lexie DeLuca and Julianna Perro.



Standing in front of the poster from left, Yena Woo and Casey Chan. Judges, from left to right, Barbara McNally, Brenda Young, and John Penna.

**American Chemical Society  
255th ACS National Meeting  
New Orleans, LA  
March 18-22, 2018**

**The following Councilors and Alternate Councilors from NJACS Attended Council:**

Mirlanda Biba, Jeannette Brown, Mohammed Elshaer, Jackie Erickson, Bettyann Howson, Diane Krone, Amanda Peterson Mann, Cecilia Marzabadi, Les McQuire, John Piwinski, Monica Sekharan

**Councilor Talking Points of Interest to NJACS :  
Summary of Governance Issues and Actions**

The following summary is provided to help Councilors report to their Local Sections and Divisions on key actions of the ACS Council meeting held March 21, and Board of Directors meetings held March 16-18, at the 2018 spring national meeting in New Orleans, Louisiana.

**Actions of the Council**

**Election Results**

**Candidates for President-Elect, 2019**

◆ The Committee on Nominations and Elections presented to the Council the following nominees for selection as candidates for President-Elect, 2019: **Harmon B. Abrahamson, Luis A. Echegoyen, Thomas R. Gilbert, and Mary Virginia Orna**. By electronic ballot, the Council selected **Luis A. Echegoyen** and **Thomas R. Gilbert** as **candidates for 2019 President-Elect**. These two candidates, along with any candidates selected via petitions, will stand for election in the Fall National Election.

**President-Elect, 2019\***

<b>Nominee</b>	<b>1st Round</b>	<b>2nd Round</b>	<b>3rd Round</b>
Harmon B. Abrahamson	84	-	-
*Luis A. Echegoyen	116	132	152
*Thomas R. Gilbert	129	168	206
Mary Virginia Orna	92	117	-

\*421 valid electronic ballots were cast, with 211 being the majority. The results of the first preference vote totals are shown in the 1st round column. No nominee attained a majority. Following the procedures approved by Council, second-preference votes were distributed in two subsequent rounds. Those marked with an \* were declared elected as candidates.

**Candidates for Directors-at-Large**

◆ The Committee on Nominations and Elections announced the selection of the following candidates for Directors-at-Large for 2019-2021 terms: **Frank D. Blum, Lee H. Latimer, Ingrid Montes, and Angela W. Peters**. The election of two Directors-at-Large from among these four candidates and any selected via petition will be conducted in the fall. Ballots will be distributed to the Council on or before October 1, 2018.

**Special Interim Election: Committee on Committees**

◆ The Committee on Nominations and Elections announced that **Susan M. Schelble** received 142 votes to **Rick Ewing's** 128 votes to fill a vacancy on the Committee on Committees (ConC) for a full two-year term (2018-2019).

*(continued on page 24)*

## **ACS 255TH NATIONAL MEETING NOTES**

*(continued from page 23)*

### **Other Council Actions**

#### **Amendments to the ACS Bylaws**

◆ The Council approved Petition on the Composition of Society Committees [Bylaw III, Sec. 3, e, (3), (4), and (8)], which will change the requirement for Councilors on Society Committees from at least two thirds (2/3) to a majority, and remove the requirement that the Chair and Vice-Chair of a Society Committee must be Councilors.

◆ The Petition for Election of Committee Chairs [Bylaw III, Sec. 3, c, (1); d, 3, (3), (8); e, (3), (8); g, (3); i (3)], which would allow the voting members of all ACS committees to select their own Chairs, failed to gain the approval of Council.

#### **2019 Member Dues**

◆ The Council voted on the recommendation of the Committee on Budget and Finance to set the member dues for 2019 at the fully escalated rate of \$175. This rate is established pursuant to an inflation-adjustment formula in the ACS Constitution and Bylaws.

#### **Distribution Formula for Division Funding**

◆ The proposed formula for allocating dues funds to divisions, recommended by the Committee on Divisional Activities, was recommitted to the committee.

#### **Continuation of Committees**

◆ The Council approved the recommendation of the Committee on Committees that the Committee on Ethics be continued; and that the committees on Publications and on Younger Chemists be continued contingent on approval by the Board of Directors.

#### **Resolutions**

◆ The Council passed several resolutions:

— in memory of ACS Past President Ronald Breslow and other deceased Councilors;

— in gratitude for the officers and members of the Louisiana Section, host for the 255th National Meeting, the divisional program chairs, symposium organizers, and ACS staff for the planning and execution of the meeting; and

— to recognize Dr. Harry P. Schultz, former Councilor for the South Florida Section (1974-1977), on the occasion of his 100th birthday.

### **Highlights from Committee Reports**

#### **Nominations and Elections**

The Committee on Nominations and Elections solicits Councilors' input of qualified individuals for President-Elect and/or Directors for future consideration. Suggestions may be sent to [nomelect@acs.org](mailto:nomelect@acs.org).

#### **Budget and Finance**

In 2017, ACS generated a Net from Operations of \$28.6 million, which was \$4.8 million higher than 2016. Total revenues were \$553.1 million, increasing 5.0% or \$26.4 million over 2016. Expenses ended the year at \$524.5 million, which was \$21.6 million or 4.3% higher than prior year. This was attributable to strong performance from the Society's Information Service units (CAS and ACS Publications) and a continued emphasis on expense management across the ACS.

Additional information can be found at [www.acs.org](http://www.acs.org). At bottom, click 'About ACS', then 'ACS Financial Information'. There you will find several years of the Society's audited financial statements and IRS 990 filings.

### Membership

The ACS ended 2017 with over 150,000 members. While this means that ACS remains the world's largest scientific society, this number represents a continuing decline in overall membership for the sixth year in a row. The Committee on Membership Affairs is committed to working with Council, the Board of Directors, the Committee on Budget and Finance, ACS staff, and other stakeholders to halt this trend and return ACS to a growing and engaged membership.

### New Orleans Meeting Attendance

As of Monday, March 19:

Attendees	8,470
Students	6,432
Exhibitors	877
Expo only	301
Guests	505
Total	16,585

### Actions of the Board of Directors

#### *The Board's Executive Session*

The ACS Board of Directors met in Executive Session March 16-17, and considered a number of key strategic issues and responded with several actions.

#### **The Board's Committees**

The Board of Directors received and discussed reports from its committees on Executive Compensation, Strategic Planning, Corporation Associates, Pensions and Investments, Professional and Member Relations, the Joint Board-Council Policy Committee Task Force on Governance Design, the Joint Board-Council Committee on Publications, and the Leadership Advisory Board. In particular,

- ◆ The Board received an extensive briefing and approved several recommendations from its Committee on Executive Compensation. The compensation of the Society's executive staff continues to receive regular review from the Board.
- ◆ On the recommendation of the Joint Board-Council Committee on Publications, the Board voted to approve the reappointments of Editors-in-Chief for several ACS journals. Those appointments will be announced in C&EN once the appointed individuals have been notified and arrangements for their continued service have been made.
- ◆ On the recommendation of the Committee on Professional and Member Relations, the Board approved a Society nominee for the 2019 King Faisal International Prize for Science, and screened lists of nominees for the 2019 Priestley Medal and the ACS Award for Volunteer Service. The Board will select the recipients of these latter two awards from the screened lists provided.
- ◆ The Board liaison to the Leadership Advisory Board gave an update on the history of the Advisory Board and the ACS Leadership Program, and offered key observations and strategic questions regarding the direction of the program in light of future Society and member needs.
- ◆ The Board liaison to the Committee on Corporation Associates offered an update on the future design state of the committee in the context of the landscape for chemical corporations and professional societies.

(continued on page 26)

## ACS 255TH NATIONAL MEETING NOTES

(continued from page 25)

◆ The co-chair of the Task Force on Governance Design offered brief comments on its written interim report and provided a preview of its planned presentation to the Councilor caucuses focusing on streamlining the Society's governing documents.

### The Executive Director/CEO Report

The Board received an extensive report from the Executive Director and CEO on issues relating to the Safety and Professionalism core values of the Society as well as on Membership, ACS financial performance, Operational Excellence, and upcoming events and activities. He also led a discussion on the strategic direction of the Science History Institute (formerly the Chemical Heritage Foundation) and its ramifications for ACS. His direct reports then engaged in discussions with the Board on the activities, opportunities and challenges of the Education Division, Chemical Abstracts Service (CAS), and the ACS Publications Division.

### Other Society Business

As is customary, the Board heard reports from the Presidential Succession on their current and planned activities for 2018. Several presidential symposia and events incorporating and supporting the meeting's theme of Food, Energy and Water were highlighted in those reports.

### Board Resolution

Finally, the Board approved a resolution that recognizes and applauds the United Nations for proclaiming 2019 as the International Year of the Periodic Table, and pledged that the Society will do its utmost to recognize and participate in events celebrating this important scientific milestone and achievement.

### The Board's Regular (Open) Session

The Board held a well-attended open session on March 18, which featured a presentation from Dr. Lisa M. Balbes (Balbes Consultants, LLC) on Nontraditional Careers in Chemistry: Thinking Outside the Beaker. She also introduced two alumni from the ACS Scholars Program, Brandon Presley and Isa Watson, who briefly shared their careers paths to date with the assembled audience.

Prior to the presentation, the Board Chair gave a report on Board actions and issues from its Executive Session March 16-17. Members of the presidential succession and the Executive Director & CEO also offered brief reports on their activities. The officers provided more extensive reports on their activities and/or future plans as part of their written and oral reports to the Council.

### Contact the Board

Your Board of Directors is elected by and acts in the best interests of the members of the Society. Please contact them with your comments, concerns, ideas, and suggestions at [secretary@acs.org](mailto:secretary@acs.org).

## SUPPLEMENTAL INFORMATION FOR COUNCILORS

The following is a list of URLs and email addresses for supplemental information offered in oral reports at the Council meeting.

### Officers

Peter K. Dorhout, President

[p.dorhout@acs.org](mailto:p.dorhout@acs.org)

Bonnie A. Charpentier, President-Elec

[tb.charpentier@acs.org](mailto:tb.charpentier@acs.org)

Allison A. Campbell, Immediate Past President

[a.campbell@acs.org](mailto:a.campbell@acs.org)

### **ACS Offices**

Office of Secretary & General Counsel  
[secretary@acs.org](mailto:secretary@acs.org)

Chemists Celebrate Earth Day Coordinator  
[outreach@acs.org](mailto:outreach@acs.org)

### **Committees**

Budget and Finance  
[www.acs.org](http://www.acs.org) → [About ACS](#) → [Financial Information](#)

Constitution and Bylaws  
[bylaws@acs.org](mailto:bylaws@acs.org)

Economic and Professional Affairs  
Work-related Visa Working Group  
[policy@acs.org](mailto:policy@acs.org)

Local Section Activities  
[www.acs.org/getinvolved](http://www.acs.org/getinvolved)

Nominations and Elections  
[nomelect@acs.org](mailto:nomelect@acs.org)

Women Chemists  
[wcc@acs.org](mailto:wcc@acs.org)

### **Resources on the Web**

Committee Preference Forms  
[www.yellowbook.acs.org](http://www.yellowbook.acs.org)

Highlights of ACS Achievements  
[www.acs.org/acshighlights](http://www.acs.org/acshighlights)

Governing Documents  
[www.acs.org/bulletin5](http://www.acs.org/bulletin5)

Resources on mentoring  
[www.acs.org/grad](http://www.acs.org/grad)

Guidelines & Recommendations on Teaching HS / Middle School Chemistry  
[www.acs.org/mshsguidelines](http://www.acs.org/mshsguidelines)

Career Consultant Program  
<https://goo.gl/2sppC9>

<https://www.acs.org/content/acs/en/about/governance/councilors.html>

- ◆ Legal Resource Manual for Divisions and Local Sections (2nd Edition)
- ◆ Freedom to Meet Without Limitation

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## Others

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### **STUDENTS 2 SCIENCE: BUILDING TOMORROW'S STEM LEADERS, TODAY**



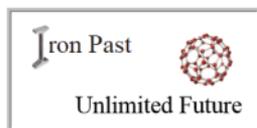
Students 2 Science, a 501(c)(3) model program in New Jersey that bridges the needs of the public and private sectors has a mission to inspire, motivate, and educate elementary, middle and high school students to pursue careers in science, technology, engineering and math (STEM subjects). The organization will begin running its programs at its sister site in Downtown Newark! The 10,000-square foot facility is equipped with \$4 million worth of state-of-the-art equipment.

With the new facility, the organization will double its need for volunteer mentors to support students in their laboratories. If you are in transition, retired, a postsecondary or graduate student, or if your employer allows you to volunteer outside of the office, S2S is a great charity to support and helps build tomorrow's STEM leaders, today! The organization has volunteer opportunities for as little as one to six hours on any given week-day throughout the academic year. It's a meaningful way to give back and ignite interest in STEM career pathways. Call Cyndi Roberson, Director of Corporate Relations, to learn more or to schedule your day of service at (973) 947-4880 ext. 516.

## Memorial Day May 28

### Remember to Fly Your Flag





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## 2018 Middle Atlantic Regional Meeting

NanoMARM Small Meeting - Big Results  
A One Day Meeting for the Mid-Atlantic Region

**June 3, 2018**

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### Meeting Highlights

#### Poster Sessions

12:00-2:00 PM & 2:00-4:00

Chemagination 12:00-4:30 PM

#### Oral Sessions

12:00-2:00 PM & 2:00-4:00 PM

**Plenary Speaker** 4:00 PM

**Awards Dinner** 5:00-7:30 PM

#### Plenary Speaker:

**Dr Jenny Rampling**

*Assistant Professor*

*History of Science*

*Program*

*Princeton University*

on

“George Ripley (c.1414-1490) and the Image of English Alchemy”

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MARM Awards

Chemagination

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Contact: [nanomarm2018@gmail.com](mailto:nanomarm2018@gmail.com)

Website: [www.marmacs.org/2018](http://www.marmacs.org/2018)

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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 [newyorkacs.org](http://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 send your nomination, with supporting documentation, to the Chair of the Committee, Dr. Neil Jespersen, at [jespersen@stjohns.edu](mailto:jespersen@stjohns.edu).



### WILLIAM H. NICHOLS MEDAL AWARD FOR 2019

The New York Section is accepting nominations for the William H. Nichols Medal Award for the year 2019. This distinguished award, established in 1902 by Dr. William H. Nichols, for the purpose of encouraging original research in chemistry, is the first award authorized by the American Chemical Society. The award is presented annually in recognition of an outstanding contribution in the field of chemistry, and consists of a gold medal and a bronze replica. In March or April, the medals are awarded during the William H. Nichols Meeting that features the Distinguished Symposium related to the medalist's field of expertise and the Medal Award Dinner.

Investigators who have published a significant and original contribution in any field of chemistry during the five calendar years preceding the presentation meeting are eligible for consideration by the Nichols Medal Jury. The New York Section encourages nomina-

tions from academia, government and industry.

Each nomination requires a completed nomination form, biographical and professional data, and seconding letters. Since the nomination process utilizes the New York Section website, please access the nomination form and instructions at [www.newyorkacs.org/meetings/Nominations/Nichols.php](http://www.newyorkacs.org/meetings/Nominations/Nichols.php).

Nominations must be received **by May 31, 2018**. The Nichols Medal Award Jury will meet in June 2018 to select the William H. Nichols Medalist for 2019.

Questions regarding the nomination procedure should be directed to the ACS, New York Section Office, at [njesper1@optonline.net](mailto:njesper1@optonline.net).



### NY SECTION'S OUTSTANDING SERVICE AWARD FOR 2018

Many members of the New York Section provide their time, leadership talent, and knowledge to the New York Section. The tradition of excellence of the New York Section is attributable directly to the cumulative effect of these dedicated individuals. Each year the New York Section presents the Outstanding Service Award to a most deserving member of the section. The New York Section is now accepting nominations for this award.

A nomination letter with supporting data should be emailed to the 2018 OSA Committee Chair, Dr. Marc A. Walters at [marc.walters@nyu.edu](mailto:marc.walters@nyu.edu). Nominations will be accepted **until June 30, 2018**.

The nominations will be reviewed by a committee consisting of the previous five winners of the award. The Outstanding Service Award for 2018 will be presented at the New York Section's Section-wide Conference in January 2019.

For more information about the award along with a list of former award recipients, please visit the ACS New York Section's website at [http://www.newyorkacs.org/awards\\_nyacs.php](http://www.newyorkacs.org/awards_nyacs.php)

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## Call for Volunteers

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### **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: [www.students2science.org](http://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 (516) 883-7510 or send an email to [njesper1@optonline.net](mailto:njesper1@optonline.net) 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!

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## Call for Applications

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### **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 post-marked no later than March 31 Annually

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

## Call for Applications

### OPEN-NJ Scholarship Program Department of Chemistry and Biochemistry



## MONTCLAIR STATE UNIVERSITY

Receive one of the scholarships (\$10,000/year for 2 or 3 years) to enter one of the following programs at Montclair State University

- *Masters in Pharmaceutical Biochemistry*
- *Masters in Chemistry*
- *Masters in Chemistry with a Concentration in Biochemistry*

*This program is open for the following majors: Biochemistry, Chemistry, Physics, Molecular Biology, Biology, Environmental Sciences, and related degrees (B.A., B.S.).*

*Summer Research Stipends available for highly qualified students.*

*Information: <https://www.montclair.edu/csam/open-nj/>*

*<https://www.montclair.edu/graduate/news/article.php?ArticleID=16127>*

### Requirements for Program

- Minimum overall 3.0 GPA (B.S. or B.A. degree)
- Completed General Chemistry I (with lab), General Chemistry II (with lab), Organic Chemistry I (with lab), Organic Chemistry II, Calculus I and II and a year of Physics.
- US citizen, national, admitted refugee or permanent resident
- Enrolling full time in an MSU Department of Chemistry and Biochemistry M.S. program
- Financial aid eligible as determined by the Office of Financial Aid.
- Committed to participating in all OPEN-NJ meetings including networking events.

### Apply

Apply to the Graduate Program at Montclair State University (<http://www.montclair.edu/graduate/>) AND email Dr. Nina Goodey ([goodeyn@mail.montclair.edu](mailto:goodeyn@mail.montclair.edu)) to indicate interest in the OPEN-NJ Scholarship Program. The OPEN-NJ Selection Committee will use your graduate school application.

### Questions?

Please, email Dr. Nina Goodey ([goodeyn@mail.montclair.edu](mailto:goodeyn@mail.montclair.edu)).



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## In the News

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### UNIVERSITY OF SURREY

**One in ten people who have never used cocaine or heroin have traces of it on their fingertips, say Surrey scientists that have developed new test that cannot be fooled.**

Scientists have found that drugs are now so prevalent that 13 per cent of those taking part in a test were found to have traces of class A drugs on their fingerprints – despite never using them.

But there is no easy escape for users as researchers from the University of Surrey, who have previously developed a quick fingerprint test to identify users, have created a definitive way to prove the difference between those using cocaine and heroin, and those exposed to the drugs due to environmental factors.

In a study published by Clinical Chemistry, researchers from the University tested the fingerprints of 50 drug free volunteers and 15 drug users who testified to taking either cocaine or heroin in the previous 24 hours.

Researchers tested fingerprints from the unwashed hands of the drug-free volunteers and, despite having no history of drug use, still found traces of class A drugs. Around 13 per cent of fingerprints were found to contain cocaine and one per cent contained a metabolite of heroin. By setting a “cut-off” level, researchers were able to distinguish between fingerprints that had environmental contaminants from those produced after genuine drug use - even after people washed their hands.

To test the possibility of transferring drugs through a handshake, drug free volunteers were asked to shake hands with a drug user. Fingerprints were then collected from the drug free volunteers after contact. Although cocaine and heroin can be transferred by shaking hands with a drug user, the cut-off level established allowed researchers to distinguish between drug use and secondary transfer

Dr Melanie Bailey, Lecturer in Forensic Analysis at the University of Surrey, said: “Believe it or not, cocaine is a very common environmental contaminant – it is well known that it is present on many bank notes. Even so, we were surprised that it was detected in so many of our fingerprint sam-

ples. By establishing a threshold for significance on a fingerprint test, we can give those tested the piece-of-mind of knowing that whatever the result of the test may be, it was not affected by their everyday activities or shaking hands with someone that had taken drugs.”

Mahado Ismail, lead-author of the paper from the University of Surrey, said: “It’s clear that fingerprint testing is the future of drug-testing. There are many factors that set fingerprint testing apart – it’s non-invasive, easy to collect and you have the ability to identify the donor by using the sample. Our study will help to add another robust layer to fingerprint drug testing.”

The study was co-funded by Intelligent Fingerprinting, developers of the world’s first commercially-available portable drug test that works by analysing the sweat from a fingerprint sample. According to Intelligent Fingerprinting’s CEO, Dr Jerry Walker: “this important study confirms the University of Surrey’s position as one of the world’s foremost academic research groups when it comes to fingerprint diagnostics using mass spectrometry. Critically, it also helps to establish a quantifiable high threshold for environmental drug traces – further establishing the validity of our commercial fingerprint-based drug test for cocaine, opiates, cannabis and amphetamines.”



### PVA TePla AMERICA

**Making the Case for the ROI of Plasma Treatment Equipment**

*Despite its effectiveness, plasma treatments for surface modification and chemical deposition remain less than fully understood. So, too, are the tool selection choices. For this, vendors work with customers to select equipment and help justify the ROI*

Plasma treatments are a powerful technique for solving challenging surface issues whether through precision cleaning or by increasing surface wettability to promote adhesion. Plasma can also be used to deposit a wide range of chemistries onto surfaces.

So, when surface challenges arise and engineers and production personnel are tasked with evaluating plasma as a possible solution, it often involves a quick immersion into the physics and chemistry behind the tech-

nology.

But it also extends to how plasma is applied to each part, the type and size of chamber, tooling options, and facility requirements. Because any investment in technology must be justified based on ROI, factors such as budget, throughput and maintenance costs, must be considered prior to equipment purchase.

Therefore, whether looking to purchase equipment for full-scale manufacturing or for R & D, here are some of the key factors that should be considered when approaching an equipment vendor.

### **Plasma Consideration**

With the right type and configuration of equipment, the collective properties of the plasma (ions, electrons and radicals) produced in the chamber can be controlled to alter the properties of surfaces without affecting the underlying materials.

For example, surface etching can be achieved through pure chemical etching of the surfaces or through physical etching or through both chemical and physical etchings.

In chemical etching, plasma activated gas species attack the material surfaces forming volatile derivatives of the materials that leave the surfaces. In physical etching, ions in the plasma are accelerated towards the substrate surfaces. On their way to the substrate surfaces they may collide with other neutral atoms/molecules to ionize them while the original ions may become neutrals. The ionized atoms/molecules start accelerating toward the substrates and the newly created neutrals continue heading toward the substrate surfaces by maintaining their pre collision velocities. As a result large number of ions and neutral species bombard the substrate surfaces causing substrate materials

### **Equipment Selection**

Although there are atmospheric systems for inline manufacturing, the majority of plasma treatments are conducted in low pressure vacuum chambers. So, from an engineering perspective, Barden says it can be important to understand the basics of what occurs within the plasma chamber.

Most low pressure plasma systems involve a chamber, vacuum pump, power supply, electrodes, the system interface and control, electrical components, gas/monomer distribution components, and exhaust system.

In general, these components have multiple options to accommodate the various processes that will be performed in the chamber.

In other words, if the vacuum chamber will be used for chemical deposition, surface functionalization, etching or cleaning, it likely will require a slightly different gas delivery system, power generator, temperature controls or chamber pressure.

There can be other important considerations as well.

The temperature requirements for the processes conducted in the chamber will determine the required maximum substrate temperature for the system. Understanding the thermal budget of the substrates may require adding a temperature controller/chiller to the system.

Another key factor is whether the tool will be used for production or R&D. If for production, will it be a fully automated or a semi-automated? For R&D, will it be a semi-automated or a manual?

### **Facility Considerations**

For production engineers, the facility considerations such as the footprint of the system, types of connections required and accessibility for maintenance are equally important.

So, too, are the ongoing consumable costs for electricity, gas, compressed air, reagents and chemicals involved. The production volumes factor heavily in this consideration as the cost-per-piece for 100,000 parts is very different than production of 8 million parts.

Estimating the number of hours each day the tool will be utilized is also important to calculate cost of ownership (COO).

### **Budget Considerations**

According to Barden, most potential customers arrive with a pre-determined budget and delivery timeline. For this reason, companies like PVA TePla prefer to understand the parameters up front so they can tailor a solution that meets the requirements and throughput of the applications.

Still delivering a quote is only part of the battle. Barden says it is incumbent on companies like PVA TePla to assist customers in calculating COO to justifying the purchases to company execs.

For more information, contact PVA TePla America at 951-371-2500 or 800-527-5667, [rayc@pvateplaamerica.com](mailto:rayc@pvateplaamerica.com) or visit [www.pvateplaamerica.com](http://www.pvateplaamerica.com).

## Professional/Product Directory

**Oh, No!  
Did You  
Forget?**



**Mother's Day  
May 13**



**Eastern Scientific**  
www.easternsci.com  
781-826-3456

### Vacuum Pump Problems?

Eastern Scientific specializes in the repair and precision rebuilding of all makes of mechanical vacuum pumps.

*Free pick-up & delivery  
Restrictions apply*



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### SEARCHING FOR THAT SPECIAL JOB?

There are many companies and organizations searching for chemical and biochemical personnel to fill important jobs in their organizations.

- Companies for laboratory and management positions
- Universities & Colleges for teaching positions and laboratory personnel
- Hospitals for technical and research personnel

There are several web sites that may help you search for these open positions.

- [www.mboservices.net](http://www.mboservices.net)
- <http://newyorkacs.org/jobs.html>
- <http://njacs.org/jobs.html>

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## Ad Index

### ANALYTICAL

Micron Inc. ....	4
Robertson Microlit Labs .....	7

### EQUIPMENT

Eastern Scientific Co. ....	34
-----------------------------	----

### GENERAL

ACS-NY/NoJ Sections .....	11
ACS-NY/NoJ Sections .....	34
ACS-NY/NoJ Sections .....	34
ACS-NY/NoJ Sections .....	34