

## **Prof. Krzysztof Matyjaszewski 2020 William H. Nichols Award Recipient**



*See Biography on page 5.*

## **THIS MONTH IN CHEMICAL HISTORY**

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

The major discoveries and new ideas in chemistry in 1920, a century ago, are well covered in the Annual Reports of The Chemical Society (of London) for that year and in this column I continue my examination of that resource.

Some of the most remarkable developments of the year are in the area described as inorganic chemistry though general or fundamental chemistry might be a better description. ...“on the oxygen standard all atomic weights, with the exception of hydrogen [!] are exact whole numbers, and that the fractional values we have accepted as the result of highly accurate work are merely fortuitous statistical averages due to a mixture of two or more isotopes.” This refers back, of course, to the exploration of the isotope concept just a handful of years earlier by Soddy and Fajans. (While Soddy’s name is probably familiar to you, Fajans may be less so. I think I had better devote a column to Fajans soon. He deserves it).

The work of Harkins is probably also unfamiliar, but he was influential during the development of theories of atomic structure at this time. In 1917 he suggested that all elementary atoms were built up of helium or helium plus hydrogen atoms. A feature of Harkins’ idea is that “the hydrogen isotope H3 [sic] plays an integral part in atomic structure...that very probably it is identical with the nebular material called nebulium. First detected by [J.J.] Thomson, then more fully confirmed by Aston [it] has now been prepared from hydrogen.” It is fascinating to see, from our vantage point of a century more of discoveries, how distinguished scientists of 1920 were struggling with these new concepts of atomic and nuclear structure. A dozen years later the neutron was discovered and greatly clarified views of nuclear structure and isotopes.

Another quotation is apt:” Strange it is that after all these years the old hypothesis of Prout should rise triumphant..” In the early 19th. Century William Prout, struck by the fact that on the H=1 scale many atomic weights are close to whole numbers – far more than should be the case if atomic weights are randomly distributed. Prout’s hypothesis, that all atoms are built up from hydrogen atoms, was enthusiastically adopted by some leading chemists, including, for a while, Davy, but was dismissed by Berzelius who pointed to examples like chlorine that did not fit the hypothesis. And here, a century later, Prout finally triumphs.

Aston’s work on the positive ions in discharge tubes and the detection of isotopes appeared in 1920. Aston worked with J.J.Thomson originally, but is now an independent investigator. Neon has two clear isotopes of masses 20 and 22, the former being the more abundant. (Neon has a measured atomic weight of 20.2). Aston concludes from his mass spectral studies that chlorine has isotopes of masses 35 and 37; other masses observed are due to small amounts of hydrogen and carbonyl compounds. Nitrogen has no other isotope and is a pure element. Both hydrogen and helium are pure elements and the atomic mass of hydrogen is 1.008. Aston’s experiments were not sensitive enough to detect deuterium, and it was more than a decade later when Urey demonstrated the existence of “heavy hydrogen”. “It may now be supposed that an elementary atom of mass M may be changed to one of mass M+1 by the addition of a positive particle (H) [!] and an electron. If both enter the nucleus an isotope results..”

The International Committee on Atomic weights has reviewed recent work and has recommended only one change to revise the atomic weight of scandium from 44.1 to 45.1. Experiments on atomic weights of tin, fluorine, scandium, silicon, and bismuth, by conventional chemical methods, have confirmed previously accepted values.

I conclude with a report that has major significance today. McLennan has reported on the large scale extraction of helium from natural gas. The Bow Island gas supplied to Calgary in Alberta, Canada, was found to contain 0.36% helium; the majority of the gas was methane (91.6%). Liquefaction of the gas followed by two fractionations by Claude columns (used in preparing oxygen from liquid air) produced helium of 98-99% purity. The estimated costs of producing helium by this method were about \$50 per 1000 cubic feet (at STP). I include this because we are being profligate in our use of liquid helium, essential for the operation of nmr instruments and MRI equipment for medical diagnoses. This noble gas is a limited resource, and we must make every effort to conserve it.

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**EDITORIAL DEADLINES**

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## February Calendar

### NEW YORK SECTION

#### Tuesday, February 4, 2020

New York Nanoscience Discussion Group  
See page 8.

#### Thursday, February 6, 2020

Long Island Chemical Society Spring Seminar  
See pages 8-9.

#### Wednesday, February 12, 2020

Westchester Chemical Society  
See pages 9-10.

#### Friday, February 21, 2020

New York Section Board Meeting  
See page 8.

also

#### Thursdays, March 5, and April 2, 2020

Long Island Chemical Society Spring Seminars  
See pages 10-11.

#### Wednesday, March 18, 2020

Organic Topical Group  
See pages 11-12.

#### Wednesday, March 18, 2020

Westchester Chemical Society  
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#### Thursday, March 19, 2020

Biochemical Topical Group  
See pages 12-13.

#### Friday, March 20, 2020

Computers in Chemistry Topical Group  
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#### Thursday, March 24, 2020

Biochemical Topical Group  
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#### Friday, March 27, 2020

Nichols Symposium  
See pages 5-7.

#### Saturday, April 4, 2020

CCEW Illustrated Poetry Contest Deadline  
See page 15.

#### Fridays, April 17, June 5, September 11, November 13, 2020

New York Section Board Meetings  
See page 8.

#### Saturday, April 25, 2020

CCEW Walk the Brooklyn Bridge Event  
See pages 14-15.

#### Tuesday, June 2, 2020

New York Nanoscience Discussion Group  
See page 8.

#### Friday, June 12, 2020

MARM  
See pages 17-19.



### NORTH JERSEY SECTION

#### Monday, February 24, 2020

North Jersey Executive Meeting  
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## 2020 William H. Nichols Distinguished Symposium

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The New York Local Section is proud to honor Prof. Krzysztof (Kris) Matyjaszewski of Carnegie Mellon University with the 2020 William H. Nichols Medal for atom transfer radical polymerization (ATRP). The Nichols Medal was the first gold medal sanctioned by the American Chemical Society and is presented annually by the New York Local Section. A symposium entitled "Nanostructured Polymers by Molecular Engineering Using ATRP" includes talks by Prof. Alan J. Russell (Carnegie Mellon University), Prof. Brent S. Sumerlin (University of Florida), Prof. Jeffrey Pyun (University of Arizona), Prof. David A. Tirrell (CalTech) and Prof. Krzysztof Matyjaszewski, the 2020 Nichols Medalist. The symposium is followed by the award dinner at which the gold medal is presented.

### Biosketch

Krzysztof (Kris) Matyjaszewski is J. C. Warner University Professor of Natural Sciences at Carnegie Mellon University. He discovered Cu-mediated atom transfer radical polymerization, commercialized in 2004 in US, Japan and Europe. He has co-authored >1,000 publications (cited >100,000 times, h-index 155), co-edited 24 books, 99 book chapters and holds 62 US patents. He is the editor of Progress in Polymer Science. Matyjaszewski received 2017 Franklin Medal in Chemistry, 2015 Dreyfus Prize in Chemical Sciences, 2014 National Institute of Materials Science (Japan) Award, 2012 Prize of Société Chimique de France, 2012 Maria Curie Medal, 2011 Wolf Prize in Chemistry, 2009 Presidential Green Chemistry Challenge Award, and from the American Chemical Society: 2019 Chemistry of Materials Award, 2015 Overberger Prize, 2013 AkzoNobel North America Science Award, 2011 Hermann Mark Award, 2011 Award in Applied Polymer Science, 2002 Polymer Chemistry Award, 1995 Creative Polymer Chemistry Award. He received eleven honorary degrees (Ghent, Lodz, Athens, Moscow, Toulouse, Pusan, Paris, Haifa, Poznan, Coimbra and Padova) and is a member of National Academy of Engineering, National Academy of Sciences, Polish Academy of Sciences, Russian Academy of Sciences, Australian Academy of Science and a fellow of National Academy of Inventors, IUPAC and the American Chemical Society.

### Research Interests

Kris Matyjaszewski's laboratory is interested in preparation and characterization of various well-defined copolymers using controlled radical polymerization, primarily catalyzed by redox active transition metal complexes such as Cu with polydentate amine-based ligands. The currently developed catalysts are over billion times more active than originally used catalysts for atom transfer radical addition reactions. The polymers prepared by ATRP maintain controlled topology, composition and functionality. They include various hybrid materials synthesized by covalently linking synthetic polymers with either inorganic nanoparticles, various flat and curved surfaces or with biomolecules such as proteins and nucleic acids. The products find many applications as advanced nanostructured functional materials. They have been used as coatings, sealants, health and beauty products and also materials for applications related to energy, environment, catalysis and biomedicine. At Carnegie Mellon, Matyjaszewski formed a Controlled Radical Polymerization Consortium with other sixty international companies. ATRP was licensed 16 times since 2004 in US, Japan and Europe to commercially produce well-defined copolymers as various advanced materials.



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

**"NANOSTRUCTURED POLYMERS BY MOLECULAR  
ENGINEERING USING ATRP "**

**HONORING: PROFESSOR KRZYSZTOF MATYJASZEWSKI**

**Date: Friday, March 27, 2020**  
Place: Crowne Plaza Hotel, White Plains, NY

**PROGRAM**

- 1:00 PM Welcome Professor Ruben M. Savitzky  
2020 Chair, ACS New York Section, The Cooper Union
- 1:05 PM Opening of the Distinguished Symposium Professor Rita K. Upmacis  
2020 Chair-elect, ACS New York Section, Pace University
- 1:15 PM Polymer-Enhanced Biology Professor Alan J. Russell  
Department of Chemical Engineering, Carnegie Mellon University

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

- 2:00 p.m. Responsive Materials from Dynamic Bonds Professor Brent S. Sumerlin  
Department of Chemistry, University of Florida

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

- 2:45 PM Dancing in the Dark with CHIPs: Polymers for Next Generation Photonics and Imaging Professor Jeffrey Pyun,  
Department of Chemistry and Biochemistry,  
University of Arizona

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

- 3:30 PM Coffee Break

- 4:00 PM Polymers, Cells and Spores: Macromolecular Engineering of Living Thin Films Professor David A. Tirrell,  
Department of Chemistry, California Institute of Technology

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

- 4:45 PM Macromolecular Engineering by Taming Free Radicals using Atom Transfer Radical Polymerization Professor Krzysztof Matyjaszewski, Nichols Medalist,  
Center for Macromolecular Engineering  
Carnegie Mellon University

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

### MEDAL AWARD BANQUET

5:45 PM Social Hour

6:45 PM Medal Award Dinner

Presiding:

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

ACS Greetings:

Dr. Katherine L. Lee  
District 1 Director, American Chemical Society

Introductory Address:

Dr. David A. Tirrell  
California Institute of Technology

Presentation of the Medal:

Dr. Ruben M. Savitzky

Acceptance Address:

Dr. Krzysztof Matyjaszewski  
Nichols Medalist

**For More Information: Please visit the New York Section website at [www.NewYorkACS.org](http://www.NewYorkACS.org)**

**Online registration using PAYPAL for payment is available at [www.newyorkacs.org/meetings/Nichols/2020Nichols.php](http://www.newyorkacs.org/meetings/Nichols/2020Nichols.php)**

Or use the Tear Off reservation form at this line

**BANQUET RESERVATIONS DEADLINE – MARCH 15, 2020**

#### MAIL RESERVATIONS TO:

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<b>50 year ACS member</b>	<b>\$0</b>	_____	\$ _____
<b>Banquet only:</b>	<b>\$150 (\$130 for ACS Members)</b>	_____	\$ _____
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<b>for symposium/banquet</b>	<b>\$150 per person (non-ACS Members)</b>	_____	\$ _____

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## New York Meetings

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<https://www.newyorkacs.org>

### ACS, NEW YORK SECTION BOARD OF DIRECTORS

#### MEETING DATES FOR 2020

The dates for the Board of Directors Meetings of the ACS New York Section for 2020 were selected and approved. The meetings are open to all – everybody is welcome. All non-board members who would like to attend any of the meetings should inform the New York Section office by emailing Bernadette Taylor at [btaylor@NewYorkACS.org](mailto:btaylor@NewYorkACS.org) or by calling the Section office at (732) 770-7324.

Dates of the meetings for 2020 are posted on the New York Section website at <https://www.newyorkacs.org> below, and monthly in *The Indicator*. Dr. Ruben Savizky will chair all meetings. Refreshments will be available starting at 6:00 PM and the board meetings will start at exactly 6:30 PM.

The Board Meeting dates for 2020 are:

#### Friday, February 21

Friday, April 17

Friday, June 5

Friday, September 11

Friday, November 13

All meetings will take place at Cooper Union, 41 Cooper Square, New York NY 10003.

#### Directions

<http://cooper.edu/admissions/visit-location-and-directions>



### NEW YORK NANOSCIENCE DISCUSSION GROUP

Hosted by the New York University  
Department of Chemistry

*Speakers to be announced.*

The NYNDG is an ACS Topical Group that meets in the New York University Department of Chemistry. Sessions feature three 30-minute presentations on nanoscience, one each with strong orientation in biology, chemistry, and physics/applied mathematics. Presentations will be focused on discussion of recent work, although speakers will place the work in a context understandable to a broad audience.

**Date:** Tuesday, February 4, 2020

**Times:** Refreshments at 7:00 PM  
Science at 7:30 PM

**Place:** NYU Silver Center  
Room 1003 (10th floor)  
31 Washington Place  
New York, NY

**Next meeting:** June 2, 2020

**Topical Group Page**

[https://www.newyorkacs.org/grp\\_nano-tech.php](https://www.newyorkacs.org/grp_nano-tech.php)



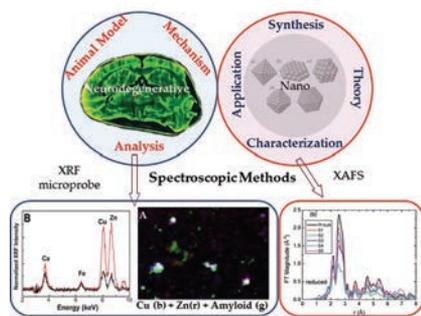
### LONG ISLAND ACS 2020 SPRING SEMINAR PROGRAM

**Synchrotron Views of Transition  
Elements: Understanding Neuro-  
degeneration and Nanostructures**

**Speaker:** Dr. Qi Wang  
Department of Chemistry  
Nassau Community College  
Garden City, NY 11530

**Abstract:** *Transition elements* feature varied electronic and structural properties and have great *importance* in both biological and chemical systems. The interplay among the atoms of these elements and others leads to rich behaviors and surprising functions. For example, traces of metallic ion-contained proteins play essential roles for the biological metabolisms while the excess or deficiency may disrupt the normalities. Dr. Wang will present the evidence that metal accumulation is associated with protein-misfolding, which has been believed to be a critical factor in neurodegenerative disorders (Alzheimer's disease, Scraipe, etc.). The work highlighted the utilization of synchrotron-based x-ray fluorescence (XRF), *in situ* imaging metal (notably Cu, Fe, Zn) ion distributions, concentrations and oxidation states as the function of disease severity (using an animal model). The results were spatially and temporally correlated with the secondary structure of proteins ( $\alpha$ -helices vs.  $\beta$ -sheets) in the same tissue samples by applying synchrotron Fourier transform infrared microspectroscopy (FTIRM). The coordinated analysis of metal species and protein conformations shed light on the association between metal dyshomostasis and neurodegeneration. In the second example, I will discuss an investigation of the nanostructures involved with transition metals (eg. Pt, Pd). We have conducted the research aimed at the fundamen-

tal understanding of nanoparticles by examining the electronic attributes, structural parameters (particle size, shape) and thermal behaviors. In this regard, a third synchrotron-based technique, x-ray fine structure spectroscopy (XAFS), was employed. The study provided the benchmark information for designing and tailoring the formation of nanostructures towards the potential properties and applications. The materials are based upon the research work done at National Synchrotron Light Source and Advanced Photon Sources. The presenter acknowledges the supports by the grants from U.S. Department of Energy and National Institute of Health.



**Date** Thursday, February 6, 2020

**Time:** Refreshments start at 5:30 PM  
Seminar 6:00 PM to 8:00 PM  
Dinner follows Seminar at a nearby restaurant

**Place:** Science Building, S-112  
Queensborough Community College  
222-05 56th Avenue  
Queens, NY 11364

**Cost:** \$25 per person

**Direction:**

<http://www.qcc.cuny.edu/about/getting-here.html>



## WESTCHESTER CHEMICAL SOCIETY

**Special Seminar – “Microengineered Biomaterials and Biosystems for Cancer and Immunoengineering”**

**Speaker:** Weiqing Chen, Ph.D.  
Assistant Professor  
Departments of Biomedical Engineering and of Mechanical and Aerospace

Engineering  
New York University  
New York, NY

**Abstract:** Taking advantages of state-of-the-art micro/nanotechnologies, fascinating functional biomaterials and integrated analytical systems, we can address numerous important problems in fundamental biology as well as clinical applications in cancer diagnosis and treatment. This seminar will discuss interdisciplinary approaches that leverage engineering advances in biomaterials, microfluidics and organ-on-a-chip systems for new and better solutions for emerging problems in cancer and immunoengineering. Specific examples include microfluidic lab-on-a-chip systems for capture and analysis of immune cells as well as rare circulating tumor cells for cancer diagnosis. I will also discuss how my lab has developed novel microfluidics-based organotypic leukemia and glioblastoma brain tumor models to screen new cancer immunotherapies by reconstituting key cellular and immune interactions from in vivo microenvironments, which may help identify new cancer biomarkers and develop personalized models for therapeutics. I will highlight how our cancer sensing and modeling systems can be used to study underlying mechanisms of tumor progression and screen personalized cancer immunotherapies.



**Biography:** Weiqiang Chen is an Assistant Professor in the Departments of Mechanical and Aerospace Engineering and Biomedical Engineering at New York University. He received his B.S. in Physics from Nanjing University in 2005 and M.S. degrees from Shanghai Jiao Tong University in 2008 and Purdue University in 2009, both in Electrical Engineering. He earned his Ph.D. degree in Mechanical Engineering from the University of Michigan in 2014. He is the recipient of the Biomedical Engineering Society Young Innovator Award of Cellular and Molecular Bioengineering (2019), the Chroma Young Investigator Award in Biomedical Engineering (2019), the Lab on a Chip Emerging Investigator Award (2018), the National Institute of Biomedical Imaging and Bioengineering Trailblazer Award (2018), the NYU Whitehead Fellowship in Biomedical and Biological Sciences (2017), the Goddard Junior Faculty Award (2017), the American Heart Association Scientist Development Award (2016), the Baxter Young Investigator Award (2013). Dr.

(continued on page 10)

## WESTCHESTER CHEMICAL SOCIETY

(continued from page 9)

Chen's research interests focus on Lab-on-a-Chip, biomaterials, analytical chemistry, cell mechanobiology, stem cell biology, cancer biology, and immune engineering.

**Date:** Wednesday, February 12, 2020

Times: Refreshments: 5:30 PM

Lecture: 6:00 PM

Place: Westchester Community College  
Gateway Building, Room 110  
75 Grasslands Road  
Valhalla, NY 10595

Cost: Free and Opened to the Public

For further information: contact Paul Dillon

E-Mail [PaulWDillon2@hotmail.com](mailto:PaulWDillon2@hotmail.com)

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Inclement weather: The WCC information number for closures: 1-914-606-6900

RSVP: Appreciated but not necessary.



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



## LONG ISLAND ACS 2020 SPRING SEMINAR PROGRAM

\*\*\*\*\*

March Seminar

"Synthesis and Characterization of  $M(\text{CO})(\text{CN})$  and  $M(\text{RS}_2)_x$  Complexes to Mimic Hydrogenase"

*Speaker:* Dr. Daniel Amarante  
Department of Chemistry  
Stony Brook University

**Abstract:** Currently, the energy infrastructure is dominated by fossil fuel production and combustion. This is causing massive emissions of greenhouse gases which are harming the planet. Hydrogen is often suggested as alternative fuel, sometimes called the "fuel of the future". This statement has been mentioned for at least a generation, usually with greater seriousness during high petroleum prices. The technology to utilize hydrogen as fuel is highly advanced, however it is the scaling up that remains an issue. Hydrogen fuel cells have been designed and used, but because of the high cost and limited availability of platinum group metals used in these cells, this technology has not become widespread to the retail market. Scientists have turned to biological systems that utilized hydrogen in order to develop new catalysts that do not require platinum group metals. In nature, hydrogen is consumed/produced with certain efficiency by hydrogenase enzymes. These enzymes are characterized as metalloenzymes which contain iron and/or nickel core. The discovery of  $[\text{Fe}(\text{CN})_x(\text{CO})_y]$  units in hydrogenase enzymes has prompted the study of iron-cyanide-carbonyl compounds. Recently, compounds of the general structure  $[\text{Fe}^{\text{II}}(\text{CN})_4\text{L}_2]^{2-}$ , where L = DMSO, CO, pyridine, were synthesized for the first time. This prompted studies of related compounds of the congener elements of iron, specifically using ruthenium and osmium. These studies have produced the first compounds of ruthenium with the general structure,  $[\text{Ru}^{\text{II}}(\text{CN})_4\text{L}_2]^{2-}$  where L = CO and pyridine. Iron carbonyl complexes with the  $\text{H}_2\text{PS}_2$  ligand have been previously used to mimic the iron centers in hydrogenase enzymes. To expand on these studies, ruthenium was used to replace iron in the general structure  $[\text{M}^{\text{II}}(\text{CO})_3(\text{PS}_2)]$ . Various compounds were also synthesized using  $\text{Li}_2\text{NS}_2$  in place of  $\text{Li}_2\text{PS}_2$ .

**Date:** Thursday, March 5, 2020

Time: Refreshments start at 5:30 PM

Seminar 6:00 PM to 8:00 PM

Dinner follows Seminar at a nearby restaurant

Cost: \$25 per person

Place: Science Building, S-112  
Queensborough Community College  
222-05 56th Avenue  
Queens, NY 11364

Directions:  
<http://www.qcc.cuny.edu/about/getting-here.html>

\* \* \* \* \*

### April Seminar

#### “Design and Total Synthesis of Self-healing Cyanine Fluorophores”

*Speaker:* Dr. Zhou Zhou  
 Assistant Professor  
 Queensborough Community College

**Abstract:** Small organic fluorophores are powerful research tools in biological imaging that have enabled unprecedented insights into mechanisms of bio-functions. Fluorescence applications as Single-molecule fluorescence resonance energy transfer (smFRET) requires high photo-stability and brightness of fluorophores. A series of cyanine dye molecules have been synthesized with significantly enhanced brightness, lifespan and water solubility by covalently attaching triplet state quenchers (TSQ) to the fluorophores along with other structural modifications. The advanced physical properties of these new fluorophores have already led to several previously impossible research projects, and shed light on both cellular and molecular processes masked by ensemble averaging in bulk investigations.

**Date:** Thursday, April 2, 2020  
**Time:** Refreshments start at 5:30 PM  
 Seminar 6:00 PM to 8:00 PM  
 Dinner follows Seminar at a nearby restaurant  
**Cost:** \$25 per person  
**Place:** Science Building, S-112  
 Queensborough Community College  
 222-05 56th Avenue  
 Queens, NY 11364

Directions:  
<http://www.qcc.cuny.edu/about/getting-here.html>



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

#### Natural Products: From Discovery to Therapeutic Applications

*Organizers:* Derek Tan, PhD  
 Memorial Sloan Kettering  
 Cancer Center

Mo Seyedsamdost, PhD  
 Princeton University

Justin Cisar, PhD  
 Janssen Research &  
 Development

Sara Donnelly, PhD  
 The New York Academy of  
 Sciences

Sonya Dougal, PhD  
 The New York Academy of  
 Sciences

*Keynote:* Jon Clardy, PhD  
 Harvard Medical School

*Speakers:* Emily Balksus, PhD  
 Harvard University  
 Rebecca Butcher, PhD  
 University of Florida  
 Bo Li, PhD  
 University of North Carolina,  
 Chapel Hill

Elizabeth Sattely, PhD  
 Stanford University

Dan Nomura, PhD  
 University of California,  
 Berkeley

Peter Senter, PhD  
 Seattle Genetics

Steven D. Townsend, PhD  
 Vanderbilt University

This one-day symposium will discuss the latest research in natural products with a focus on their discovery, mechanisms of action and therapeutic applications across a wide range of disease indications.

**Date:** Wednesday, March 18, 2020  
**Time:** 8:30 AM – 4:20 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:** ACS and NYAS members save \$50  
 or more on this event. Please  
 select the appropriate non-member  
 Registration Category and use the  
 Priority Code “ACS”. **The Early  
 Bird Discounted Registration  
 deadline is February 7, 2020.**

For more information and to register for the event, go to [www.nyas.org/NaturalProducts2020](http://www.nyas.org/NaturalProducts2020)

(continued on page 12)

## ORGANIC TOPICAL GROUP

(continued from page 11)

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



## WESTCHESTER CHEMICAL SOCIETY SCIENCE CAFÉ

### Science Café – Topic To Be Announced

*Speaker and Discussion Leader:* Monona Rossol, M.S., M.F.A., Industrial Hygienist  
President: Arts, Crafts & Theater Safety, Inc.  
New York, NY

Science Cafés are designed for informed interaction with members of the public on scientific matters of current concern in society. The essence of a Science Café is informality, with groups seated around tables, with food and drink to encourage conversation.

**Date:** Wednesday, March 18, 2020

**Time:** 5:15 PM Social and Snacks, (Cold drinks and a variety of snacks freely available, as well as a cash bar.)  
5:30 PM Lecture and Discussion  
7:00 PM Option to Order Dinner

**Place:** Stone Manor Restaurant  
101 Saw Mill River Road  
(Route 9A)  
Hawthorne, NY 10532  
Tel: 914-703-4112

**Cost:** \$3.00 Students, \$5.00 All Others

For further information: contact Peter Corfield, [pcorfield@fordham.edu](mailto:pcorfield@fordham.edu)  
Phone: 914-762-4468; Text: 914-980-9128  
or 914-218-7607.

Please RSVP by text or email to Peter Corfield if you expect to come, to help us plan. But if you do not RSVP, you can still drop by!

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

**Deadline for items to be included  
in the March 2020 issue of  
*The Indicator* is  
JANUARY 28, 2020**

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

### Branched Chain Amino Acids and Human Disease

*Organizers:* Zoltan Arany, MD, PhD,  
University of Pennsylvania

Michelle Clasquin, PhD  
Pfizer

Kevin Filipiski, PhD  
Pfizer

Rachel Roth Flach, PhD  
Pfizer

Claire Steppan, PhD  
Pfizer

Yibin Wang, PhD  
University of California  
Los Angeles

Sonya Dougal, PhD  
New York Academy of  
Sciences

Kari Fischer, PhD  
New York Academy of  
Sciences

*Keynote:* Susan Hutson, PhD  
Virginia Tech

*Speakers:* Tracy Anthony, PhD  
Rutgers University

Zoltan Arany, MD, PhD  
University of Pennsylvania

David Chuang, PhD,  
UT Southwestern

Christian Metallo, PhD  
University of California  
San Francisco

Christopher Newgard, PhD  
Duke University

Rachel Roth Flach, PhD  
Pfizer

Rong Tian, MD, PhD  
University of Washington

Yibin Wang, PhD  
University of California  
Los Angeles

Altered branched chain amino acid (BCAA) metabolism is implicated in multiple diseases including diabetes/metabolic syndrome,

heart failure, and cancer. This symposium will review the landscape of what is known about BCAA metabolism in various systems, discuss knowledge gaps, and identify potential therapeutic nodes of intervention to ameliorate human diseases.

**Date:** Thursday, March 19, 2020

**Time:** 8:30 AM – 6:00 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:** ACS and Academy members save \$50 or more on this event. Please select the appropriate non-member Registration Category and use the Priority Code “ACS”.

**Poster Abstract Deadline: Monday, January 13, 2020**

**Early Bird Discounted Registration Deadline: Thursday, February 6, 2020**

For more information and to register for the event, go to: [www.nyas.org/BCAA2020](http://www.nyas.org/BCAA2020)

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



## NYACS COMPUTERS IN CHEMISTRY TOPICAL GROUP

**ACS Local Section**  
New York  
Computers in Chemistry Topical Group

**PYTHON Workshop**  
Date: Friday, March 20<sup>th</sup>, 2020  
Time: 9:00am – 4:00pm  
York College: AC-3G09 (Library)

**YORK College**

<https://www.eventbrite.com/e/nyacs-python-workshop-tickets-88142080335>

Limited seats, Lunch provided, Register online by Feb. 7<sup>th</sup>, 2020.  
<https://www.eventbrite.com/e/nyacs-python-workshop-tickets-88142080335>

If you have questions, contact the NYACS Co-chairs at [ny.acs.comp.chemistry@gmail.com](mailto:ny.acs.comp.chemistry@gmail.com)  
Yolanda Small (YC), Imran Khan (Build Well Labs), Yufeng Wei (NJCU), Marta Kowalczyk (LaGCC)

**Organizers:** These organizers have committed to collaborate for the next four years 2019-2023.

Yolanda Small (York College CUNY)  
[ysmall@york.cuny.edu](mailto:ysmall@york.cuny.edu)

Imran Khan (Build Well Labs)  
[buildwelllabs@gmail.com](mailto:buildwelllabs@gmail.com)

Marta Kowalczyk (LaGuardia CC, CUNY)  
[mkowalczyk@lagcc.cuny.edu](mailto:mkowalczyk@lagcc.cuny.edu)

Yufeng Wei (New Jersey City Univ.)  
[ywei@njcu.edu](mailto:ywei@njcu.edu)

To contact all co-chairs:  
[ny.acs.comp.chemistry@gmail.com](mailto:ny.acs.comp.chemistry@gmail.com)

### Mission/Focus:

Our goal is to expose undergraduate students to the interdisciplinary nature of computers in the chemical sciences. We will create annual themes and accomplish our goal in three ways: (1) by hosting workshops which demonstrate the applicability of computing in real-world chemical research, (2) by hosting seminars which invite faculty to present their research topic to students, and (3) connecting students to the broader NYC community of scientists who utilize computing in their work.

### Upcoming Activities/Agenda:

#### Python Workshop

**Date:** Friday, March 20, 2020

**Times:** 9:00 AM - 4:00 PM

**Place:** York College CUNY (Room 3G09)

Python's readability makes it a great first programming language, it allows one to think like a programmer without the confusing syntax requirements of more sophisticated programming languages. Python is powerful and is used by companies like Google, Dropbox, Spotify, and Netflix, to name a few. For scientists, it is especially useful. Data scientists use python to create machine learning algorithms, perform data mining, build data models, create web services and classify data sets. It is a popular programming language but it is not currently a standard component of the natural science degree outline. As such, this workshop fills a critical niche in preparing chemical scientists for modern careers.

**Register Online by Feb. 7th, 2020:**

<https://www.eventbrite.com/e/nyacs-python-workshop-tickets-88142080335>

**For Questions:** contact the NYACS Co-chairs at

[ny.acs.comp.chemistry@gmail.com](mailto:ny.acs.comp.chemistry@gmail.com)



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

**Novel Approaches in Pulmonary  
Fibrosis: Beyond the Fibroblast**

*Organizers:* Anthony V. Azzara, PhD  
Bristol-Myers Squibb

Erica Herzog, MD, PhD  
Yale University

Julia Kaufman, PhD  
Boehringer Ingelheim

Chris Kitson, PhD  
Bristol-Myers Squibb

Scott Macdonnell, PhD  
Regeneron

Glenda Trujillo, PhD  
Bristol-Myers Squibb

Sara Donnelly, PhD  
The New York Academy of  
Sciences

*Keynote:* Oliver Eickelberg, MD  
University of Colorado  
Anschutz Medical Campus

*Speakers:* Megan Ballinger, PhD  
The Ohio State University

Stijn De Langhe, PhD  
University of Alabama  
at Birmingham

Wonder Puryear Drake, MD  
Vanderbilt University

Anjelica Gonzalez, PhD  
Yale University

Louise Hecker, PhD  
University of Arizona

Boris Hinz, PhD  
University of Toronto

James Kirkland, MD, PhD  
Mayo Clinic

Ana Mora, MD  
University of Pittsburgh

Idiopathic pulmonary fibrosis (IPF) is a chronic, progressive lung disease that remains poorly treated. This symposium will discuss the importance of cellular senescence and immune signaling in IPF as well as the roles of endothelial cells and alveolar epithelial cells, which are emerging as key drivers of disease.

**Date:** Tuesday, March 24, 2020

**Time:** 8:30 AM – 4:50 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:** ACS and Academy members save \$50 or more on this event. Please select the appropriate non-member Registration Category and use the Priority Code “ACS”. Early Bird Discounted Registration Deadline: **Tuesday, February 11, 2020**

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

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



**COME AND JOIN US  
CELEBRATE EARTH  
WEEK WITH OUR 9th  
ANNUAL “WALK THE  
BROOKLYN BRIDGE”  
EVENT**



This year's Chemists Celebrate Earth Week's theme is: **“Protecting Our Planet Through Chemistry”**

*Speaker:* Dr. Monica Palta  
Director of Environmental  
Science Undergraduate  
Program  
Pace University

Our festivities will begin at 11:00 AM with check in and a healthy light breakfast including a “blender bar” followed by a keynote address delivered by Dr. Monica Palta. We will then head out for our annual parade over the beautiful Brooklyn Bridge and then return to Pace for lunch, dessert/coffee/tea, and some fun games and a raffle!

The event is free and open to all, but EVERYONE must register **by April 17**. Past the registration deadline there will be a \$15 onsite fee at the event (cash only). To register:

<http://www.newyorkacs.org/meetings/EarthDay/CCED.php>

Contact: Prof. JaimeLee Rizzo, CCED  
Coordinator [jrizzo@pace.edu](mailto:jrizzo@pace.edu)

**Date: Saturday, April 25, 2020**

**Time: 11:00 AM – 4:00 PM**

**Place:** Pace University, Bianco Room  
**Cost:** Free and open to the public, but everyone must register by April 17 or pay a \$15 (cash only) onsite fee.



## Chemists Celebrate Earth Week (CCEW) 2020 "Protecting Our Planet Through Chemistry" Illustrated Poem Contest

The New York City Local Section of the American Chemical Society (ACS) is sponsoring an illustrated poem contest for students in Kindergarten through 12th grade.

**Contest Deadline: Saturday, April 4, 2020**

**Prizes: 1<sup>st</sup> Prize in each category receives a \$20 gift certificate**

**Winners of the New York City Local Section's Illustrated Poem Contest will advance to the ACS National Illustrated Poem Contest for a chance to be featured on the ACS website and to win prizes!**

**Contact: Elmer E. Mojica, Department of Chemistry and Physical Sciences, Pace University, One Place Plaza, New York, NY 10038 (Phone: 2123461344; Email: [emojica@pace.edu](mailto:emojica@pace.edu))**

Write and illustrate a poem using the CCEW theme, **"Protecting Our Planet Through Chemistry"**. Your poem must be **no more** than 40 words and in the following styles to be considered:

**HAIKU - LIMERICK - ODE - ABC POEM - FREE VERSE - END RHYME - BLANK VERSE**

**Possible topics related to chemistry include:**

Sustainability, recycling, conservation

**Entries will be judged based upon:**

Relevance to and incorporation of the CCEW theme, word choice and imagery, colorful artwork, adherence to poem style, originality and creativity and overall presentation



**Contest Rules:**

- All entries must be original works without aid from others.
- Poems may be submitted by hand on an unlined sheet of paper not larger than 11" x 14" or scanned and sent via email.
- Illustrations may be created using crayons, watercolors, other types of paint, colored pencils, or markers. The illustration may also be electronically created by using a digital painting and drawing app on a computer, tablet or mobile device. The text of the poem should be easy to read and may be type before the hand-drawn or digital illustration is added or the poem may be written on lined paper, which is cut out and pasted onto the unlined paper with the illustration. No clipart or unoriginal images can be used.
- There will be 4 categories: Grades K-2, Grades 3-5, Grades 6-8 and Grades 9-12.
- Only one entry per student will be accepted. All entries must include an entry form. If the illustration is created using a digital painting or drawing app, the name of the program must be included on the entry form.
- All illustrated poems and/or digital representations of the poems become the property of the American Chemical Society.
- Acceptance of prizes constitutes consent to use winners' names, likenesses, and entries for editorial, advertising, and publicity purposes.

## **WESTCHESTER CHEMICAL SOCIETY**

On December 5, 2019 we had an unusual presentation; three speakers, all Senior Consultants with Geosyntec Consultants, Inc. The topic was "Pharmaceuticals in the Environment – the Chemical Basis for the Problem and Potential Solutions". The three sub-talks blended seamlessly with each other. The first was given by Matthew R. Basso, CHMM, IHIT. He has a B.A. in Environmental Science from St. Michael's College and an M.A. in Environmental and Occupational Health from the City University of New York. He was an Environmental Health and Safety manager at American Cyanamid, American Home Products, and Pfizer. He has co-authored key EHS standards and guidelines for environmental evaluations at active manufacturing sites to minimize/eliminate manufacturing chemicals and active pharmaceutical ingredients (APIs) to the environment. He introduced the presentations with a "Primer on Pharmaceuticals in the Environment (PiE)" noting that >90% come from APIs excreted after use by humans and animals. This is the most difficult source to remediate. Less than 5% each come from more easily remediated sources (pharmaceutical manufacturing and unused/discarded medications [if disposed of through proper channels]). The major impacts of environmental APIs are outright toxicity, endocrine disruption (e.g., feminization of fish or other animals) and anti-infectives (leading to, e.g., antibiotic resistance). APIs can end up in both surface and ground water and, ultimately, our drinking water. In general, <50% of environmental APIs are even detected.

The second speaker was Daniel W. Elliot. He has an A.B. in Chemistry from Vassar College, an M.S. in Environmental Science and Engineering from the University of North Carolina at Chapel Hill, and a Ph.D. in Environmental Engineering from Lehigh University. He is a highly experienced environmental engineer with more than 25 years of environmental affairs experience from the diverse perspectives of industry, consulting, and a major research university. At Merck & Co., Inc., he managed the wastewater pre-treatment program for their manufacturing complex in Rahway, NJ which included 5 API manufacturing facilities. He also served as Corporate Environmental Engineer for American Standard Inc., managing environmental affairs for 100 manufacturing sites around the globe. As a consultant, he works for clients in the chemical and pharmaceutical industries. He is a board-certified Environmental Engineer (BCEEM) by the American Academy of Environmental Engineering. He discussed the "Background on APIs" with emphasis on constituent functional groups. These can affect solubility (aqueous/lipid), administration, ability to interact with biological targets, mechanism of action, pharmacodynamics (including kinetics, duration of action), possible adverse side effects, route of elimination. They also affect treatments to mitigate environmental APIs. Most waste water treatment plants attempt to reduce C, N and P in the mg/L concentration range. Many APIs are present in the ng/L to µg/L range. The impact of functional groups was illustrated with several examples (azithromycin, doxycycline and fluconazole).

The last speaker was Joseph Cleary. He has a B.S. in Civil Engineering and an M.S.E. in Environmental Engineering from Manhattan College. He has more than 40 years' experience in environmental engineering consulting specializing in industrial wastewater treatment and hazardous waste remediation. He has directed projects from treatability studies, process selection and design through engineering design and construction, plus operation and maintenance services. His wastewater experience includes many major pharmaceutical, refinery, food and beverage, paper and electric and gas utility clients. He is a professional engineer in several states and is a board-certified environmental engineer (BCEE) by the American Academy of Environmental Engineers. His discussion focused on "Wastewater Treatment Technologies Applicable to API". This talk focused on wastewater collected at the point of generation. Mr. Cleary discussed collection of waste water, treatment (e.g. activated sludge, bioactive membrane filtration, chemical treatment [such as photochemical reactions, ozonolysis, other oxidations, electrochemical reactions, all affected by susceptibility of constituent functional groups], solid/liquid separation (e.g., evaporation), and offsite-disposal (e.g., incineration). The talk concluded with a "Case Study" at an Irish pharmaceutical plant that manufactured hormone replacement therapies, oral contraceptives and tranquilizers. Ireland was concerned with feminization effects in effluent wastewater and required non-detectable API concentrations. A membrane filtration followed by ozone oxidation was chosen. Ultimately a yeast estrogen screen was used that indicated a concentration decrease of more than 6 powers of 10.

There was lively, enthusiastic and informative discussion and questions both during and after the talk. Following the meeting, the speakers and several Westchester Chemical Society (WCS) board members had dinner at a nearby restaurant after the meeting. The photo below is of the speakers and the WCS board members who attended the meeting, which was held at the Westchester Community College in Valhalla, NY.



**Back Row: Joseph Cleary, Paul Dillon, Daniel Elliot, Matthew Basso, Peter Corfield.  
Front Row: Rolande Hodel, Jody Reifenberg, Kay Whiten, Sr. Mary Virginia Orna**

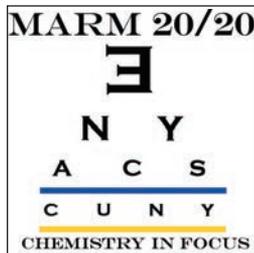
*(Photo courtesy of Paul Dillon)*

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## Call for Papers

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### MIDDLE ATLANTIC REGIONAL MEETING



The call for papers for the 2020 Middle Atlantic Regional Meeting has been issued. The meeting will take place on Friday, June 12, 2020 at The Graduate Center of the City University of New York, in New York City kitty-corner from the iconic Empire State Building.

Details, including names and contact information for program and session chairs, can be found on the meeting website at [www.marm2020.org](http://www.marm2020.org). The final program summary will be published in C&EN in the Spring; the online program will be available on May

25, 2020.

The symposium will highlight technical advances in chemistry that focus on improving people's lives. In addition to technical symposia and poster sessions, the symposium will feature a plenary lecture, a 50-, 60-, 70-year member luncheon, an industrial exhibition, graduate school recruitment, and an awards dinner. The regional Chemagination competition and high school teacher programming will be held the following day at St. John's University, New York.

The symposium sessions include "Flavor and Fragrance Chemistry"; "Cosmetic Chemistry"; "Environmental Chemistry"; "Forensic Chemistry"; "The Chemistry of Life Sciences"; and "Materials Chemistry"; as well as poster sessions. The symposium will also feature three-minute long data-blitz talks selected from the submitted poster abstracts.

**ACS's Meeting Abstracts Programming System (MAPS) opens on January 27, 2020 for abstracts. Please visit either the symposium website or MAPS at [maps.acs.org](http://maps.acs.org), to submit an abstract. Abstracts are due March 9, 2020.**

MARM 20/20

CHEMISTRY IN FOCUS  
www.marm2020.orgACS Local Section  
New York

August 1, 2019

Dear Potential MARM 2020 Exhibitors:

The New York Section of the American Chemical Society (NYACS) is hosting the 48<sup>th</sup> Middle Atlantic Regional Meeting (MARM 2020) on **Friday, June 12, 2020**. It will be held at **The Graduate Center of the City University of New York**, located in the center of Manhattan at 365 5<sup>th</sup> Avenue, across from the Empire State Building, and two blocks east of Penn Station.

We invite your organization to take advantage of the benefits of MARM 2020 as an Exhibitor. This is the opportunity to connect with chemists, biochemists and science educators in the Middle Atlantic Region of the ACS, from Washington, DC, to New York, NY. The MARM 2020 theme is "Chemistry in Focus". The meeting will highlight the areas of flavor and fragrance, cosmetic, forensic, life science, materials science, and environmental chemistry. We anticipate 250 attendees from academia, government, industry, and K-12 education. Your presence will maximize your visibility with attendees including decision makers and prospective workforce employees.

Included in your sponsorship are:

- Exhibit areas located in a high traffic area to ensure a steady stream of attendees to frequent your display. The exhibit hall will be immediately adjacent to the registration area, poster session, lunch area, refreshment area, and technical session.
- A 5-ft rectangular table and two chairs.
- Exhibit spaces available with standard (110 V, 15 A) power, if needed.
- Wireless internet access is available throughout The Graduate Center.
- Two complimentary meeting registrations, that includes technical symposia and boxed-lunches.
- Meeting attendees' contact information.
- Logo with a 50 word-description of your organization along with a link to your company website on the MARM 2020 website at [www.marm2020.org](http://www.marm2020.org).

Register before March 1, 2020 to receive the Early Bird Discount Rate, and register by April 15, 2020 to ensure full benefits. Returning MARM exhibitors receive additional 15% discount if they register before March 1, 2020. **Exhibit space and power are limited**, and spaces will be reserved on a first come-first serve basis. Please see the attached exhibitor application form.

For application form and additional information, please see [MARM2020.org](http://MARM2020.org). Please feel free to contact us if you have any questions. We look forward to your sponsorship and seeing you at MARM 2020.

Sincerely,

Dr. Ping Furlan  
Professor of Chemistry  
U. S. Merchant Marine Academy  
Kings Point, NY 11024  
516 726-5783  
[furlanp@usmma.edu](mailto:furlanp@usmma.edu)

Dr. Yosra Badiei  
Assistant Professor of Chemistry  
Saint Peter's University  
Jersey City, NJ 07306  
201 761-6442  
[ybadiei@saintpeters.edu](mailto:ybadiei@saintpeters.edu)

**Exhibits/Sponsorship Chairs**

**Ping Furlan**  
(516) 726 - 5783  
[furlanp@usmma.edu](mailto:furlanp@usmma.edu)

**Yosra Badiei**  
(201) 761 - 6442  
[ybadiei@saintpeters.edu](mailto:ybadiei@saintpeters.edu)

**General Chairs**

**Alison Hyslop**  
(718) 990 - 5218  
[hyslopa@stjohns.edu](mailto:hyslopa@stjohns.edu)

**Joseph Serafin**  
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**Program Chair**

**Brian Gibney**  
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[BGibney@brooklyn.cuny.edu](mailto:BGibney@brooklyn.cuny.edu)

**Treasurer**

**Jill Rehmman**  
[jrehmann@sjcny.edu](mailto:jrehmann@sjcny.edu)

**MARM Executive Board Contact**

**Martha Hollomon**  
[MarthaHollomon@comcast.net](mailto:MarthaHollomon@comcast.net)

**ACS Meeting Planning Partner**

**Kimberly Savage**  
[K\\_Savage@acs.org](mailto:K_Savage@acs.org)

**Deadline for items to be included in the March 2020 issue of *The Indicator* is**

**January 28, 2020**

MARM 20/20

48<sup>TH</sup> MIDDLE ATLANTIC REGIONAL MEETING

## CHEMISTRY IN FOCUS

## EXHIBITION OPPORTUNITIES

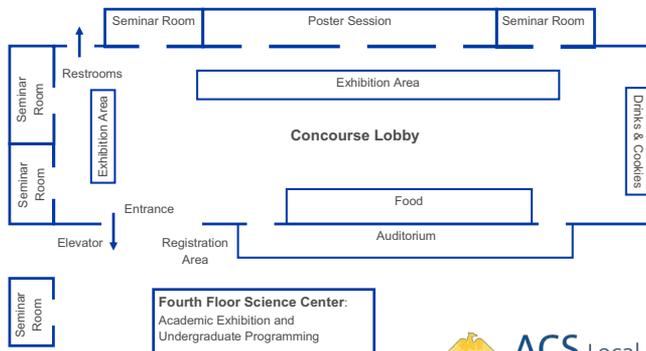
THE GRADUATE CENTER OF THE CITY UNIVERSITY OF NEW YORK | JUNE 12, 2020

## Exhibitor Categories and Fees\*

	MARM Returning Exhibitor	Early	Regular	Included
Commercial	\$270	\$320	\$375	Power: first come-first serve basis. Five foot rectangular table, two chairs, two meeting registrations, access to the meeting attendee contact information, corporate logo displayed on website and in program.
Academic **	\$210	\$235	\$275	Five foot rectangular table, two chairs, two meeting registrations, access to the meeting attendee contact information, institute logo displayed on website and in program.

\*MARM Returning Exhibitor & Early Bird rates by *March 1, 2020*; full payment by *April 15, 2020* to ensure full benefits.  
 \*\*Academic Exhibition will be held near the undergraduate programming, Fourth Floor Science Center.

**Exhibition Hours:** 11:30 a.m.—1:00 p.m. (Lunch); 4:00–p.m.—5:00 p.m. (Poster Session)  
**Exhibit Set-up** begins at 9:30 a.m. and **Exhibit Removal** by 6:00 p.m.



Contact Information:  
 expo@marm2020.org



ACS Local Section  
 New York

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

MARM 20/20



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## LONG ISLAND SUBSECTION ANNUAL HOLIDAY DINNER

On Thursday, December 5, 2019 from 6:00 pm to 8:00 pm, sixty-nine members of the Long Island ACS (LIACS) Subsection enjoyed their gathering at the Annual Holiday Dinner that took place in the CCB Building Room 251/252 of the Nassau Community College (NCC), Uniondale, NY.

At the Dinner, Dr. Ping Furlan, the 2019 Chair of the LIACS thanked the members for a wonderful year and for generously giving their support to LIACS functions all year round. "Through our monthly seminars, high school award dinner and the chemistry challenge program, we have filled the year of 2019 with lots of good times, fabulous memories, new friends, new experiences and great learnings, while at the same time, greatly promoted STEM and chemistry among our members and in the communities", she said. "We could not have done this without the dedicated support and devoted care demonstrated our incredible members and terrific leadership team", she added. Dr. Justyna Widera-Kalinowska, the New York ACS (NYACS) Section Chair, also attended the event and praised the LIACS' efforts and achievements. "What's most impressive is that students' active involvement is always an integral part and important component of the LIACS programming", she remarked.

In addition to celebrating another successful year they made it through together, the members commemorated the special year of 2019, the International Year of the Periodic Table (IYPT 2019). The Dinner site was well decorated with the Periodic Table Elements, designed and constructed by the NYACS members, and with a large poster prepared by the NCC Chemistry



**Members of Long Island ACS enjoy their gathering at the Annual Holiday Dinner that commemorate the International Year of the Periodic Table 2019 and celebrate a wonderful year they made it through together.**

*(Photo courtesy of Dr. Adejere Adeniran)*

Club members. The poster displayed the Mendeleev's Periodic Table published exactly 150 years ago. The evening was enlightened by Professor Paris Svoronos, the Chemistry History Committee Chair of the LIACS, who presented the historical upgrading of the Mendeleev's Table and highlighted important element discoveries and the scientists associated with these discoveries. Attendees, especially the college students, were delighted to be given a chance to win gifts and prizes for correctly answering the "Jeopardy" questions on Periodic Table and its Elements posted by both Dr. Svoronos and the QCC Chemistry Club members.

To recognize the members and student clubs of the Queensborough Community College (QCC) Chemistry Department for the devotion, commitment, and leadership they bring to each of the LIACS functions, the LIACS Board presented the 2019 Award of Excellence to the QCC Chemistry Department at the event. Dr. John Sleckman, the 2020 LIACS Chair, and Dr. Widera-Kalinowska also presented Dr. Furlan with the leadership award for her successfully chairing of the LIACS Subsection this year. This was followed by an announcement of the 2020 Board Election results and the introduction of the new board members. The Holiday Seminar ended with the popular Holiday Raffle, raffling off element ties, periodic table blankets, electronics, etc., and with the air filled with laughter, happy surprises, and good wishes for the best of holiday season.

We would like to thank Dr. Rakhi Argarwal, the advisor of the NCC Chemistry Club – we are very pleased that the NCC Chemistry Club students actively took part in and contributed to our IYPT celebration at the Holiday Dinner! Special thanks also go to Dr. Justyna Widera-Kalinowska, Dr. Paris Svoronos, Dr. Philip Mark, Dr. John Sleckman, Dr. Frank Romano, Dr. Dan Resch, Dr. Adejere Adeniran, Dr. Terrence Black, Dr. Paul Sideris, Dr. Neil Jespersen,

and Dr. Marlon Moreno for all their help in making the event celebrative, inspiring, and experiences special and memorable.



The Long Island ACS Subsection Board presents the Award of Excellence to Queensborough Community College Chemistry Department for its years of dedicated support and continued contribution to the success of the Subsection and the members it serves.

*(Photo courtesy of Dr. Adejare Adeniran)*



The Long Island ACS Board Members at their Annual Holiday Dinner that took place on Thursday, December 5, 2019 from 6:00 PM to 8:00 PM at the Nassau Community College (NCC), Uniondale, NY.

*(Photo courtesy of Dr. Adejere Adeniran)*

*See next page for more pictures.*

## **LONG ISLAND ACS 2020 BOARD MEMBERS**

**Chair:** Dr. John Sleckman  
Queensborough Community College

**Chair-Past:** Dr. Ping Furlan  
United States Merchant Marine Academy

**Chair-Elect:** Dr. Daniel Amarante  
SUNY Stony Brook

**Treasurer:** Dr. Phillip Mark  
Nassau Community College

**Secretary:** Dr. Terry Brack  
Hofstra University

**Directors:**  
Terrence M. Black  
Nassau Community College  
Sujun We  
Queensborough Community College

Rakhi Agarwal  
Nassau Community College

Nadja Grobe  
Renal Research Institute

## ADDITIONAL PHOTOS FROM 2019 LONG ISLAND ACS HOLIDAY DINNER

(continued from page 21)

(All photos courtesy of Dr. Adejare Adeniran)



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

## 2020 NEW YORK SECTION COLLEGE TEACHING AWARDS

The New York Section is proud to announce the winners of the newly instituted College Teaching Awards. These awards will be presented annually to recognize highly effective teaching and inspirational leadership by chemistry faculty within the New York Section. There were three award categories.

Calls for Nominations will be announced at the New York Section webpage ([Newyorkacs.org](http://Newyorkacs.org)) for the 2021 awards.

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

**Dr. Brian Gibney** (CUNY Graduate Center)

In addition to recognition within the classroom such as a named professorship, the Jacques Edward Levy Professor of Analytical Chemistry, by his colleagues at Brooklyn College, Dr. Gibney has also made significant program improvements while serving as the Executive Officer of the CUNY Ph. D. program in Chemistry such as adding an innovative new course in professional development for new doctoral students.



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

**Dr. JaimeLee Iolani Rizzo** (Pace University)

Dr. Rizzo is not only recognized as an excellent faculty member by her peers, but also by the toughest critics, her students. Dr. Rizzo has been named as the recipient of the 2018 Homer and Charles Pace Faculty Award. This award is “given to a faculty member whose commitment to education has had a transformative effect on generations of talented and successful students.” Pace University alumni nominate a faculty member who, “set them on the path to achievement and self-fulfillment – this award commemorates those revered professors.”



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

**Dr. Paris Svoronos** (Queensborough Community College)

In addition to recognition within the classroom, such as the 2003 Carnegie Endowment Foundation Outstanding Community College Professor of the Year, Dr. Svoronos has worked tirelessly to ensure that the QCC students engage in meaningful research activities in their first, and most formative, college years. Dr. Svoronos has put forth great effort over many years into developing research programs and securing external support for those research programs at QCC. It is not an overstatement to say that he was instrumental in changing the culture at QCC towards undergraduate research.



## 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:** Monday, February 24, 2020

**Time:** 6:30 - 8:30 PM

**Place:** Seton Hall University  
Jubilee Hall, Room 132  
400 South Orange Avenue  
South Orange, NJ 07079

To connect to the meeting remotely, please contact Cecilia Marzabadi at [cecilia.marzabadi@shu.edu](mailto:cecilia.marzabadi@shu.edu) for information.

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**Deadline for items to be included in the March 2020 issue of *The Indicator* is**  
**January 28, 2020**

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## CELEBRATION OF THE 2019 INTERNATIONAL YEAR OF THE PERIODIC TABLE AT SETON HALL UNIVERSITY

By Marius Pelmus

Seton Hall University (SHU) students and faculty celebrated the IYPT2019 during two days in December of 2019. These events were made possible by a grant awarded to chemistry graduate student Marius Pelmus from the Royal Society of Chemistry (RSC). On Dec. 4th, demonstrations were conducted testing the pH of common household products using “Red cabbage –as a natural pH indicator.”

The red cabbage was extracted with hot water to produce the indicator solution. The pH of household products (i.e. lemon juice, vinegar, tap water, 5% baking soda solution, 1% hand soap solution, and soda) was tested by mixing them with the natural indicator. With the help of the scale shown in Figure 1, students were able to determine the pH of the tested products.



Figure 1. The pH scale for a red cabbage pH indicator.

(Photo courtesy of Andy Brunning Compound Interest/2018)

Graduate students from the Department took shifts and undergraduate students were encouraged to stop by the booth to learn about this easy and fun experiment (Figure 2).



Figure 2. Red cabbage – natural pH indicator booth.

(Photo courtesy of Marius Pelmus.)

The event was received very well and approximately 100 students stopped by the booth and asked about the purple solutions. We were thrilled to see that most of the students had an idea around where the pH of the household products lies, but they were all amazed by the change in colors. Topics such as why lemons are sour (citric acid present in citrus fruits) were discussed. Information about the natural pH indicator’s production and change in the structure at different pH values was kindly offered.

<http://www.rsc.org/events/detail/42443/red-cabbage-natural-ph-indicator-2019iypt-setonhall>

The second event occurred on the evening of December 9, 2019 and consisted of a workshop/bundle of presentations called “Elements of Life”. For this event, SHU Ph.D. candidates: Mary Okorie, Jeff Raab, Mario Da Costa, and Marius Pelmus joined forces with SHU alumni:

(continued on page 26)

## **CELEBRATION OF THE 2019 INTERNATIONAL YEAR OF THE PERIODIC TABLE AT SETON HALL UNIVERSITY**

(continued from page 25)

Marta Sauzo (Pfizer), Gianina Luisi (BASF), Ralph Foglia (Robert Wood Johnson Medical School), and Christopher Colomier (McDermott Lummus Technology LLC) (Figure 3). A range of topics connected to the elements of the periodic table were presented:

- a brief history of the periodic table, highlighting Mendeleev's work,
- the abundance of elements in the Universe and on Earth,
- the abundance of elements in the human body and special considerations,
- fun facts about the elements (e.g. names, properties, discovery, etc.),
- information about rare metals (Au, Ag, Pt, Pd, etc.) present in old and new electronic devices (microchips, phones, laptops, tablets, PCs),
- environmental issues and information about the proper recycling of electronic devices (batteries, phones, tablets, laptops, PCs), and
- greener gadgets (Li-Ion batteries 2019 Nobel Prize in Chemistry, USB batteries, devices powered by solar cells and solar panels).



**Figure 3.** “Elements of Life” workshop, the auditorium (left), Chem Squad speakers (right).

(Photo courtesy of Dr. Joseph Badillo)

The workshop continued with a Q&A session where the students were very interactive and had curiosities connected to the element's abundance and the importance of proper recycling. The event ended with a raffle where USB batteries were offered to the audience members. Approximately 200 students attended the event.

<https://www.rsc.org/events/detail/42448/celebration-of-2019-international-year-of-periodic-table-at-seton-hall-university-2019iypt-setonhall>

Courtesy of this grant, a series of books about the periodic table were also purchased and donated to the Seton Hall's library.

§ *The Elements Book. A Visual Encyclopedia of the Periodic Table* by Tom Jackson, DK Publishing, 2017

§ *The Disappearing Spoon: And Other True Tales of Madness, Love, and the History of the World from the Periodic Table of the Elements* by Sam Kean, Little, Brown and Company, 2010

§ *The Periodic Table: Its Story and Its Significance* by Eric R. Scerri, Oxford University Press, 2007

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## Call for Nominations

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### COMMITTEE ON THE HISTORY OF THE NEW YORK SECTION

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

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

Please send your nomination, with supporting documentation, to the Chair of the Committee, Dr. Neil Jespersen, at [jespersn@stjohns.edu](mailto:jespersn@stjohns.edu).

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



### WESTCHESTER CHEMICAL SOCIETY

#### Distinguished Scientist Award 2020

The Westchester Chemical Society is accepting nominations for the "WCS Distinguished Scientist Award 2020". Scientists who live or work in Westchester or the Bronx qualify. The awardee is expected to attend the Awards Dinner (**April 23, 2020**) and to present aspects of his or her work. Self-nominations are acceptable. Nominations are not carried over from previous years. New and possibly updated nominations should be submitted. Please send a cover letter stating why your nominee should receive the award along with the nominee's resume **by January 31, 2020 to:**

Dr. Paul Dillon at [PaulWDillon2@hotmail.com](mailto:PaulWDillon2@hotmail.com) or 67 Matthes Road, Briarcliff Manor, NY 10510

or to: Dr. Peter Corfield at [pwrc@earthlink.com](mailto:pwrc@earthlink.com).



### 2020 AWARD FOR CREATIVITY IN MOLECULAR DESIGN & SYNTHESIS

The ACS North Jersey Section is soliciting nominations for the 2020 Award for Creativity in Molecular Design & Synthesis. The award recognizes initiative, creativity, leadership, and perseverance in pure and/or applied chemistry. Nominees must have had broad impact in the areas of chemical synthesis, method development, bioorganic/medicinal chemistry, pharmaceutical sciences, and/or molecular recognition.

Nominations should include a letter describing the nominee's achievements, a brief biography and curriculum vitae, and a list of the nominee's important published works. Supporting letters are strongly encouraged.

Please submit materials **by February 28** to [Susan\\_Zultanski@merck.com](mailto:Susan_Zultanski@merck.com). The award is presented by the section every two years, and the prize consists of a crystal plaque and a \$5,000 honorarium.

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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

*(continued on page 28)*

## CALL FOR VOLUNTEERS

(continued from page 27)

CO<sub>2</sub> to the Rescue, Curious Crystals, Mystery of M&Ms, Thermochemistry: *Exothermic and Endothermic Chemical Reactions*, and *Glow it Up: The Chemistry of Luminol*. All are age-appropriate and volunteers are provided with instructions on how to support in the classroom prior to your scheduled volunteer day.

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



## SEMINAR SPEAKERS WANTED

The New York Section of the ACS is in search of speakers that we can add to our Speakers Bureau database of interested local area speakers who are available for Section-wide seminars and symposia. If you have an area of research or interest that would provide an interesting talk appropriate for our Section members, and would like to be included in our Speakers Bureau, please contact the New York Section Office at (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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## Positions Available

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### NEW JERSEY INSTITUTE OF TECHNOLOGY

#### Biological Chemistry

#### Department of Chemistry and Environmental Science

The Department of Chemistry and Environmental Science (CES) at the New Jersey Institute of Technology (NJIT) invites applications for a tenure-track faculty position at the Assistant Professor level in Biological Chemistry, preferably with a leading interest in gene and cell therapy science, starting in the Fall of 2020. The CES Department at NJIT, within the College of

Science and Liberal Arts, is committed to exceptional core education in the liberal arts and excellence in research and scholarship. Many resources, facilities, and collaboration opportunities exist within the Department, College, University, and neighboring institutions. Competitive salary, startup funds, and laboratory space will be provided. Minimum qualifications are a PhD in chemistry, molecular biology, chemical/biochemical engineering, or a closely related field from an accredited institution, and relevant post-doctoral research experience. The successful candidate is expected to establish an active, externally funded research program and to demonstrate excellence in graduate and undergraduate teaching, particularly in biological and pharmaceutical chemistry-related courses.

The successful candidate will have the opportunity to collaborate with NJIT's recently established Cell and Gene Therapy Development Center. This center enables companies and researchers to access and utilize state-of-the-art equipment to develop cutting-edge cell and gene therapy products in a cost- and time-effective manner. In the accelerating race to improve products and gain FDA approval, biopharmaceutical companies and researchers will greatly benefit from an industry-agnostic platform that offers a variety of resources and services in the field of cell and gene therapy.

CES (<http://chemistry.njit.edu>) at NJIT is in a dynamic growth phase, with ten new hires in the past five years, and a recent renovation and expansion of facilities. CES offers degree programs in Biochemistry, Chemistry, Environmental Science, Forensic Science, and Pharmaceutical Chemistry. NJIT is an R1 Doctoral University, conveniently located in the New York metropolitan area. With an enrollment of nearly 12 thousand students, it is continuing to build internationally-recognized programs in chemical and environmental sciences.

Applicants must apply online at <http://njit.csod.com/ats/careersite/JobDetails.aspx?site=1&id=1741> and submit a letter of application, curriculum vitae, maximum five-page description of research plans, one-page description of teaching philosophy and interests, and names and contact information of at least three references. Review of applications will begin on November 1, 2019, and continue until the position is filled. Inquiries can be sent to [sadik@njit.edu](mailto:sadik@njit.edu). Additional positions available in our Department are posted at <http://jobs.njit.edu>.

As an EEO employer, NJIT is committed to building a diverse workforce and encourages applications from individuals with disabilities, minorities, veterans, and women.

\*\*\*\*\*

**Inorganic Chemistry**  
**Department of Chemistry and**  
**Environmental Science**

The Department of Chemistry and Environmental Science (CES) at the New Jersey Institute of Technology (NJIT) invites applications for a tenure-track faculty position at the Assistant Professor level in Inorganic Chemistry, preferably with a leading interest in energy-related applications, including photovoltaic materials and solar cells, starting in the Fall of 2020. CES at NJIT, within the College of Science and Liberal Arts, is committed to exceptional core education in the liberal arts and excellence in research and scholarship. Many resources, facilities, and collaboration opportunities exist within the Department, College, University, and neighboring institutions. Competitive salary, startup funds, and laboratory space will be provided. Minimum qualifications are a PhD in Chemistry, Chemical Engineering, Material Science or a closely related field from an accredited institution, and relevant postdoctoral research experience. The successful candidate is expected to establish an active, externally funded research program and to demonstrate excellence in graduate and undergraduate teaching, particularly in Inorganic Chemistry related courses.

CES (<http://chemistry.njit.edu>) at NJIT is in a dynamic growth phase, with ten new hires in the past five years, and a recent renovation and expansion of facilities. CES offers degree programs in Biochemistry, Chemistry, Environmental Science, Forensic Science, and Pharmaceutical Chemistry. NJIT is an R1 Doctoral University, conveniently located in the New York metropolitan area. With an enrollment of nearly 12 thousand students, it is continuing to build internationally-recognized programs in chemical and environmental sciences.

Applicants must apply online at <http://njit.csod.com/ats/careersite/JobDetails.aspx?site=1&id=1743> and submit a letter of application, curriculum vitae, maximum five-page description of research plans, one-page description of teaching philosophy and interests, and names and contact information of at least three references. Review of applications will begin on November 1, 2019, and continue until the position is filled. Inquiries can be sent to [mitra@njit.edu](mailto:mitra@njit.edu). Additional positions available in our Department are posted at <http://jobs.njit.edu>.

*As an EEO employer, NJIT is committed to building a diverse workforce and encourages applications from individuals with disabilities, minorities, veterans, and women.*

\* \* \* \* \*

**University Lecturer – Chemistry**  
**Department of Chemistry and**  
**Environmental Science**

New Jersey Institute of Technology (NJIT) has an opening for a University Lecturer - Chemistry with both lecture and laboratory teaching capabilities in the Department of Chemistry and Environmental Science (CES). The position will start in Fall 2020, with responsibilities starting in late August 2020.

The University Lecturer - Chemistry position is a 10-month full-time non-tenure-track faculty position. The successful candidate will have capabilities in teaching general chemistry as well as one or more of the following: physical chemistry lecture and general and physical chemistry laboratories. The ideal candidate will have a PhD in Chemistry or a related field, and experience teaching college-level chemistry.

The successful candidate will be expected to:

- Teach freshman chemistry courses
- Teach physical chemistry and related courses
- Teach laboratory classes in general and physical chemistry
- Participate in Department and University service through committees and workgroups

CES (<http://chemistry.njit.edu>) at NJIT, within the College of Science and Liberal Arts, is in a dynamic growth phase, with fourteen tenured and tenure-track faculty. It has diverse teaching, and research interests and a strong commitment to the success of our approximately 170 students enrolled in the department's degree programs in Biochemistry, Chemistry, Environmental Science, Forensic Science, and Pharmaceutical Chemistry. NJIT, which is conveniently located in the New York metropolitan area, is a top-tier research university ranked 97th in the National Universities category by U.S. News & World Report Best Colleges. More than 11,000 students (about 8,000 undergraduates and 3,000 graduates) are enrolled in the University's campus in downtown Newark.

Applicants must apply online at <http://njit.csod.com/ats/careersite/JobDetails.aspx?site=1&id=1752> and submit a letter of application, curriculum vitae, comprehensive statement of teaching experience (including summary student evaluations), and the names and contact information of at least three references. Review of applications will begin November 1, 2019, and continue until the position is filled. Inquiries can be sent to [gilbert@njit.edu](mailto:gilbert@njit.edu). Additional positions available in our Department are posted at <http://jobs.njit.edu>.

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