

THE Indicator

FEBRUARY 2018

Vol. 99 • No. 2

ISSN0019-6924

PRESIDENTS' DAY

**Honoring Those Who Helped
Make Our Country AMERICA!**



**George
Washington**

**Abraham
Lincoln**



THIS MONTH IN CHEMICAL HISTORY

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

I have sometimes started my columns in past years with a look back of a century through reviewing the Annual Reports of the Chemical Society on the Progress of Chemistry. This month's column will examine aspects of the chemistry of 1918 through such a review. The 1918 report (published in 1919 under the auspices of The Chemical Society of London, now known as The Royal Society of Chemistry) is a slim volume covering the final year of World War I, the Great War as it was known, when academic research in chemistry had to yield to the demands of wartime research.

The Reviewers in this volume are a distinguished group. The subject Radioactivity is covered by Frederick Soddy, collaborator of Ernest Rutherford, coiner of the term isotope, and Nobel Laureate in chemistry in 1921. The subject I will highlight in this column is Physiological Chemistry, which nowadays would be called biochemistry. The reviewer is Frederick Gowland Hopkins, (later Sir Frederick), Nobel Laureate in Physiology or Medicine in 1929 for his work on vitamins. He later was President of the Royal Society.

The war is not left out in this supposedly neutral account of recent science. Hopkins begins with this sentence: "Sir Henry Thompson, late Professor of Physiology at Trinity College Dublin, whose death was due to the dastardly outrage which sank the *Leinster*, was the only individual who before the war had taken the trouble to estimate a nation's actual food supply – imported and home produced – in terms of protein and calories". [The Royal Mail Steamer *Leinster* was sunk by a German submarine in the Irish Sea on October 10, 1918, just a month before the Armistice that ended World War I, with the loss of over 500 lives.] But I choose not to write about food and nutrition, important as they are. I think that the following material on the phosphoric acid complexes of living cells may be a modest augmentation to the view that DNA research began with Watson and Crick in the 1950s.

Research on nucleic acids had been previously reviewed in Annual Reports in 1911 and the 1918 report covered here provides an update and overview since then. P. A. Levene, examining recent work on thymus and yeast nucleic acids, has commented that the "apparent lack of differentiation in the nuclear material of living tissues was scarcely to be expected." As Hopkins notes, presciently: "The uniformity of the nucleic acids would seem to point to the fact that their structure is something fundamental to the make-up of the cell – something essential to the life of all tissues." He goes on to remind readers that the essential structure of nucleic acids is that they are polynucleotides. In mononucleotides orthophosphoric acid is combined with a carbohydrate and a purine or pyrimidine base. The manner of the linkage of mononucleotides to give polynucleotides is still obscure. In thymus nucleic acid the four different mononucleotides contain the bases adenine, guanine, cytosine, and thymine.

Work on yeast nucleic acid apparently isolated, by mild hydrolysis, two dinucleotides, one containing adenine and uracil; the other guanine and cytosine. However on more careful examination these "dinucleotides" appear to be simply mixtures of mononucleotides. More careful and more recent work strongly indicates the presence of a trinucleotide from yeast containing cytosine, guanine, and adenine. In plant nucleic acids the carbohydrate has been tentatively identified as d-ribose. In animal nucleic acids it is believed that a hexose is present, but that, too, is tentative.

Let me close with a quotation that encapsulates the chemical challenges of this difficult field. "The nucleotide structure ... is remarkable. One feels how unlikely it is that pure chemical suggestion would by itself have led to the idea of the existence of natural compounds in which a carbohydrate links phosphoric acid to a base. ... Their synthesis should tempt the chemist."

It would take decades before such syntheses were accomplished.

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

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The Indicator (ISSN0019-6924) is published on-line monthly except July and August by the New York and North Jersey Sections of the American Chemical Society, Office of Publication, 1 Milbark Court, Homosassa, FL 34446.

All views expressed are those of the editor and contributors and do not necessarily represent the official position of the New York and North Jersey Sections of the American Chemical Society unless so stated. Distributed electronically to members through the website www.TheIndicator.org. Non-members are invited to read it online. Members should register their email addresses at www.acs.org/editmyprofile.

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

February Calendar

NEW YORK SECTION

Friday, January 19, 2018

High School Teachers Topical Group
See page 8.

Thursday, February 1, 2018

Chemical Marketing & Economics Group
See pages 9.

Thursday, February 1, 2018

Long Island Subsection
See page 9.

Friday, February 9, 2018

High School Teachers Topical Group
See page 8.

Thursday, February 15, 2018

Westchester Chemical Society
See pages 9 and 11.

Friday, February 16, 2018

New York Section Board Meeting
See page 8.

Wednesday, February 21, 2018

NY/NJ Society for Applied Spectroscopy
See pages 11--12.

also

Thursday, March 1, 2018

Long Island Subsection
See pages 12-13.

Fridays, March 9 and April 20, 2018

High School Teachers Topical Group
See page 13.

Wednesday, March 28, 2018

Westchester Chemical Society
See pages 13-14.

Wednesday, March or April, 2018

MetroWomen Chemists
See pages 14-15.

Wednesdays, April 25, and May 23, 2018

NY/NJ Society for Applied Spectroscopy
See page 15.

Saturday, May 5, 2018

Undergraduate Research Symposium
See page 17.

Tuesday, June 19, 2018

Chemical Marketing and Economics Group
See page 9.

NORTH JERSEY SECTION

Monday, February 19, 2018

North Jersey Executive Committee Meeting
See page 5.

Wednesday, February 21, 2018

NY/NJ Society for Applied Spectroscopy
See pages 5 and 11-12.

also

Wednesdays, April 25, and May 23, 2018

NY/NJ Society for Applied Spectroscopy
See pages 5.

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

www.TheIndicator.org

**Deadline for items to be included in the
March 2018 issue of *The Indicator* is**

January 28, 2018

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 19, 2018

Time: 7:00 PM

Place: TBD

(See www.njacs.org for more details)



CAREERS IN TRANSITION MEETINGS

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

See article about Students 2 Science under "Others" on page 23.



NEW YORK/NEW JERSEY SOCIETY FOR APPLIED SPECTROSCOPY

"Spectroscopic Hyperspectral Chemical Imaging"

Speaker: Emil W. Ciurczak
Doramax Consulting

Date: Wednesday, February 21, 2018

See complete article under NY Meetings, pages 11 and 12.



NEW YORK/NEW JERSEY SOCIETY FOR APPLIED SPECTROSCOPY

FUTURE MEETINGS

"Laser-induced Breakdown Spectroscopy (LIBS) Addition to Microscopic Analyses and Raman and IR of Particles."

Speaker: Dr. Markus Lankers
Rap.ID GmbH

Date: Wednesday, April 25, 2018

See www.nysas.org for details.

"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 for details.

ResMed: Residential School on Medicinal Chemistry and Biology in Drug Discovery

June 10-15, 2018

Drew University, Madison, NJ

This graduate level course concentrates on the fundamentals that are useful in drug discovery spanning initial target assay evaluation through clinical development. Case histories of recent successful drug development programs will also be presented. The five-day program covers:

Principles of Med Chem	DMPK
Cheminformatics	Toxicophores
Lead ID & Optimization	GPCRs
Epigenetics	Kinase Inhibitors
Fragment-based Drug Design	Ion Channels
Structure-based Drug Design	Enzyme Inhibitors
Drug-like Properties	Bioisosteres
Protein-Protein Interactions	Preclinical Toxicology
Molecular Modeling	Clinical Development
Antibody-Drug Conjugates	

Bill Greenlee, Vince Gullo & Ron Doll – Co-organizers

Attendees will be staying at the Madison Hotel

www.drew.edu/resmed

e-mail: resmed@drew.edu

phone: 973/408-3787; fax: 973/408-3504



**2018 WILLIAM H. NICHOLS MEDAL
DISTINGUISHED SYMPOSIUM AND AWARD DINNER**



Symposium: "THE FUTURE OF ENERGY SCIENCE ... WITHOUT CHEMICALS? UNACHIEVABLE"

Award Recipient: DR. DEBRA R. ROLISON

Date: Friday, April 13, 2018

Place: Crowne Plaza Hotel, White Plains, NY

PROGRAM

1:00 PM Welcome Dr. Joseph M. Serafin
2018 Chair, ACS, New York Section
St. John's University

1:05 PM Opening of the Distinguished Symposium Dr. Justyna Widera-Kalinowska
2018 Chair-elect, ACS, New York Section
Adelphi University

1:15 PM Designing Transition Metal Phosphide Nanoparticles and Composites for Effective Electrocatalytic and Photocatalytic Water Splitting Dr. Stephanie L. Brock
Department of Chemistry
Wayne State University

Transition metal phosphides are of considerable research interest for the wide range of catalytic functions they imbue. These include hydrodesulfurization of fossil fuels, hydrodeoxygenation of biofuels, and electrocatalytic water splitting reactions, among others. However, the functionality of the phosphide is sensitively dependent on composition, structure and particle size. In order to better understand the roles of structure, electronics, and surface chemistry on catalytic activity and stability, synthetic methods that enable composition, structure, and size to be targeted, and that yield low-polydispersity samples, are needed. In this presentation, the synthesis of bimetallic manganese and ruthenium phosphide nanoparticles $M_2-xMnxP$ ($M = Fe, Co$) and $Ni_2-xRuxP$ will be described and their composition-dependent activity for electrocatalytic water oxidation presented. The role of structure, site occupancy, and electronic considerations on functionality will be discussed in the context of designing more active and stable electrocatalysts. Finally, as a means to translate electrocatalytic activity into photocatalytic activity, the design of porous nanoparticle assemblies that blend phosphides with light-harvesting sulfide nanoparticles will be described and their efficacy for photocatalytic water reduction discussed in light of interfacial characteristics. The talk will conclude with a discussion of the importance of rational nanomaterials synthesis and design in addressing 21st century energy and environmental needs.

2:00 PM Modulating Proton-Coupled Electron Transfer Mechanisms for the Efficient Production of Fuels Dr. Jillian L. Dempsey
Department of Chemistry
University of North Carolina-Chapel Hill

Molecular transformations of interest for solar fuel production are underpinned by proton-coupled electron transfer (PCET) reactions. To optimize efficiency in the catalytic reactions that mediate fuel production, this proton-electron reactivity must be carefully orchestrated. Our group utilizes a combination of electrochemical methods and time-resolved spectroscopy to elucidate the mechanisms of PCET reactions in both transition metal-based hydrogen-evolving catalysts and model systems. By systematically examining the influence of various reaction parameters—including catalyst structure, ligand electronics and proton source—on the PCET mechanisms and the kinetics of their elementary reaction steps, we are revealing how the PCET reaction space can be intentionally traversed. These findings are providing the blueprints for next-generation catalyst design.

2:45 PM Coffee Break

3:15 PM Operando Methods for the Study of Energy Materials Dr. Héctor D. Abruña
Department of Chemistry and Biochemistry
Director, Energy Materials Center and
Émile M. Chamot Professor of Chemistry

This presentation will deal with the development of operando methods for the study and characterization of fuel cell and battery materials. The presentation will begin with a brief overview of the methods employed. Particular emphasis will be placed on the use of X-ray diffraction (XRD), X-ray absorption spectroscopy (XAS) X-ray microscopy and tomography and transmission electron microscopy (TEM) all under active potential control. The utility of these methods will be illustrated by selected examples including electrocatalysts for the oxygen reduction reaction and spectroscopic studies of Li/S batteries and lithium dendrite formation dynamics. The use of operando TEM will be illustrated by studies of fuel cell catalyst degradation and coalescence and lithiation/de-lithiation dynamics of $LiFePO_4$ via energy-filtered TEM. Finally the concept of symmetrical redox flow batteries will be demonstrated. The presentation will conclude with an assessment of future directions.

4:00 PM Architectural Design, 1D Walls, 3D Plumbing, and Painting Blind en Route to Dr. Debra R. Rolison
 Multifunctional Nanoarchitectures for Energy Storage Head - Advanced Electrochemical
 Materials Section, U.S. Naval Research Laboratory

Our team at the Naval Research Laboratory looks at rate-critical chemical processes where events per second are required for high performance in such technologies as energy storage, energy conversion, (electro)catalysis, and sensing. We then design next-generation systems built around pore–solid nanoarchitectures that seamlessly embody all of the requisite rate functions for high-performance electrochemistry: molecular mass transport, ionic/electronic/thermal conductivity, and electron-transfer kinetics. We have taken the lessons from 20 years of probing the operational and design characteristics of catalytic and energy-relevant nanoarchitectures to create a zinc sponge—a stand-alone, 3D-wired anode that improves current distribution within the electrode structure during charge–discharge cycling, thwarts dendrite-formation, and can challenge the energy density of Li-ion battery packs, all while using safer aqueous-based chemistry. With this breakthrough, we are now addressing the family of zinc-based rechargeable alkaline batteries: nickel–3D zinc, silver–3D zinc, MnO₂–3D zinc, and even rechargeable 3D zinc–air. The route we have taken to move from a creative concept to a fabricated reality to the necessary fundamental characterization to prototype development (and ultimately commercialization by outside companies) will be described.

MEDAL AWARD BANQUET

5:15 p.m. Social Hour

6:15 p.m. Medal Award Dinner

Presiding: **Dr. Joseph M. Serafin**
 2018 Chair, ACS New York Section
 St. John's University

ACS Greetings: **Dr. Peter K. Dorhout**
 2018 President
 American Chemical Society

Introductory Address: **Dr. Henry S. White**
 University of Utah

Presentation of the Medal: **Dr. Joseph M. Serafin**

Acceptance Address: **Dr. Debra A. Rolison**
 Nichols Medalist

For More Information: Please visit the New York Section website at www.NewYorkACS.org

Online registration using PAYPAL for payment is available at
www.newyorkacs.org/meetings/Nichols/2018Nichols.php

Or use the Tear Off reservation form at this line **BANQUET RESERVATIONS DEADLINE – April 4, 2018**

MAIL RESERVATIONS TO:

ACS, New York Section Office
 St. John's University, Department of Chemistry
 8000 Utopia Parkway
 Queens, NY 11439

More Information:

<http://www.NewYorkACS.org>
 Phone: 516-883-7510 Fax: 516-883-4003
 E-mail: njesper1@optonline.net

		Number	Total
Symposium only:	\$65 (\$45 for ACS Members)	_____	\$ _____
Student, unemployed, retired	\$30	_____	\$ _____
50 year ACS member	\$0	_____	\$ _____
Banquet only:	\$130 (\$120 for ACS Members)	_____	\$ _____
Symposium & Banquet:	\$160 (\$130 for ACS Members)	_____	\$ _____
Table of 8 or more for symposium/banquet	\$130 per person	_____	\$ _____

Reserve our table in the name of: _____

Enclosed is my check, payable to: **NEW YORK SECTION, ACS** in the amount of \$ _____

If reservations are for more than one person, please attach a list of the guests' names, and dinner selections where needed.

DINNER CHOICES: Chicken _____ Prime Rib _____ Salmon _____ Vegetarian _____

Tickets will be mailed to the person designated below

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New York Meetings

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 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. 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, February 16, 2018 – Electronic Meeting

Friday, March 9, 2018

Friday, June 8, 2018

Friday, September 14, 2018

Friday, November 16, 2018

Friday, April 13, 2018 - William H. Nichols Distinguished Symposium and Medal Award Banquet, Crowne Plaza Hotel, 66 Hale Avenue, White Plains, NY.

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



HIGH SCHOOL TEACHERS TOPICAL GROUP

“Bigger Isn't Always Better. Tuning the Size, Composition, and Structure of Nanostructured, Precious Metal Electrocatalysts for Enhanced Performance in PEM Fuel Cells”

Speaker: Prof. Christopher Koenigsmann
Fordham University,

A key technological shortfall in the development of polymer electrolyte membrane fuel cells (PEMFCs) has been the high-cost and poor durability of the precious metal catalysts that drive electrochemical reactions within the operating device. This has hindered the widespread, commercialization of PEMFCs particularly in the automotive and portable power markets. In light of this challenge, there has been a broad effort to rationally design precious metal electrocatalysts at the nanoscale, which has led to considerable advancements in catalysts performance. In recent work, we have focused our efforts on employing solution-based methods to produce alloy-type Pt-based nanostructures with tunable structure, size, and composition. Specifically, platinum is combined with abundant and less expensive metals such as silver and first-row transition metals to increase the cost-effectiveness of the catalyst. The electrochemical properties and electrocatalytic activity of the as-synthesized catalysts toward the oxygen reduction reaction and the oxidation of small organic molecules is examined as a function of the structure of the active sites at the catalytic interface.

Date: Friday, January 19, 2018

Place: UFT Headquarters
50 Broadway, Room E/F, 2nd floor

* * * * *

“Charting a Path to Renewable Energy”

Speaker: Dr. John L. Roeder
Physics Teacher
The Calhoun School

Richard Heinberg and David Fridley write in *Our Renewable Future: Laying the Path for One Hundred Percent Clean Energy* (Island Press, Washington, DC, 2016) that making the transition to a future of 100% renewable energy will require a revolution in the role of energy in our lives like the agricultural revolution and the fossil-fueled industrial revolution. This presentation will discuss what the revolution will entail and what life will be like afterward.

Date: Friday, February 9, 2018

Place: New York University
Silver Center Room 207
32 Waverly Place
New York, NY

CHEMICAL MARKETING & ECONOMICS GROUP

Flavor Science

Speaker: Yelena Barbosa
Sr. Food Technologist and
Global Technical Coordinator
IFF

Date: Thursday, February 1, 2018
Times: Registration: 5:00 - 6:00 PM
11:00 AM - 12:00 Noon
1:00 PM - 2:00 PM
Webcast 1:00 - 2:00 PM
Room: Club
30 West 44th Street
New York, NY

See Flyer on page 10.

Mark your Calendars:

Dates: 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



LONG ISLAND SUBSECTION

Trapping the Enzyme-catalyzed Reactions Using Different Approaches of X-ray Crystallography

Speaker: Rakhi Y. Agarwal, PhD
Department of Chemistry
Nassau Community College, NY

Molecular details of substrate recognition, binding, and catalysis plays an important role in understanding the fundamental enzyme-catalyzed reactions. However, co-crystal structure determination of enzyme-substrate complexes can be challenging due to photoelectric effects of X-ray that can catalyze the reaction *in-situ* leading to the product formation. Here, two approaches have been presented; first, the co-crystal determination of one of the most poisonous "Botulinum neurotoxin" (BoNT) with its neuronal substrate-cum-inhibitor "VAMP" using traditional X-ray Crystallography and, second, determination of crystal structure of Stachydrine-demethylase (stc2) using X-ray free-electron laser using drop-on-demand Serial Femtosecond Crystallography.

Date: Thursday, February 1, 2018
Time: Refreshments start 5:30 PM
Meeting 6:00 PM
Place: S-112 Queensborough Community College
222-05 56th Avenue
New York, NY 11364



WESTCHESTER CHEMICAL SOCIETY

SCIENCE CAFÉ — Seminar/Discussion — "Climate Change"

Speaker and Discussion Leader:
David Mendenhall, PhD
President
Eastern Sources, Inc.

Talk Summary:

The global increase in CO₂ concentrations can be offset by a concerted effort to sequester carbonaceous material in an amount equal to that burned as fossil fuel. This simple approach, which does not require new technology or punitive taxes, is generally ignored by articles on global warming.

Biography:

David Mendenhall has his BS degree from the University of Michigan, and his PhD from Harvard University. After postdoctoral studies with K.U. Ingold at the National Research Council of Canada, he worked with S.W Benson at the Stanford Research Laboratories on the kinetics of atmospheric chemical reactions. Following employment at Battelle Laboratories in Columbus, OH, developing chemiluminescence for materials characterization, he joined Michigan Technological University in Houghton, MI, serving as professor for 19 years. After retirement in 1999 he started his own company, Eastern Sources, Inc., specializing in custom synthesis and consulting.

Date: Thursday, February 15, 2018
Times: Lecture and Discussion 5:30 PM
(Snacks, coffee, tea, cold drinks freely available as well as a Cash Bar)
Option to Order Dinner 7:00 PM
Place: The Briar's Restaurant
512 N. State Road
Briarcliff Manor, NY 10510
Phone: 914-762-3424

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FUTURE FLAVORS

CME ACS NY Luncheon/Webcast • February 1, 2018 • Penn Club

Abstract

Flavor Science

The modern food industry depends on science. The textures and flavors that you love are products of laboratory and kitchen research, arrived at through extensive and delicious experimentation. Speakers from IFF and PepsiCo will



Event Schedule

Location:
Penn Club
30 W 44th Street, NYC

Event Times: (ET)
12:00 noon
and
5
pm Luncheon
in Talk - Webcast
Fees
on-members
members
early-bird savings
\$30. Free webcast
for ACS members

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December 4, 2018

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WESTCHESTER CHEMICAL SOCIETY

(continued from page 9)

Cost: Students \$3.00
All others \$5.00

For further information:
contact Peter Corfield
E-Mail pcorfield@fordham.edu
Phone 1-914-762-4468

Directions:

From the South:

Take the Taconic Parkway North. Take the exit for Route 100 North. At the first light (Chappaqua Road) make a left turn. At the first light (North State Road) make a right turn. The Briars is on the right at number 512.

From the North:

Take the Taconic Parkway South. Take the Briarcliff Manor/Millwood exit. At the end of the exit ramp (traffic light) make a left turn onto Route 100 South. Pass the exit for Route 133 (traffic light). Take the next exit (right) onto North State Road. The Briars is on the left at number 512.



NY/NJ SOCIETY FOR APPLIED SPECTROSCOPY

*Fairleigh Dickinson University,
Department of Chemistry &
Pharmaceutical Science with its Student
Affiliates of the American Chemical
Society, and the Gamma Sigma Epsilon
Chemistry Honor Society*

“Spectroscopic Hyperspectral Chemical Imaging”

Speaker: Emil W. Ciurczak
Doramaxx Consulting

The original practice of spectroscopy involved destroying a sample to analyze it: we grind, mix with a solvent, extract the analyte, bring the (filtered) solution to a known volume, then place it in a cuvette for scanning. This may show the amount(s) of analyte(s) in a single sample, but the vast majority of information has been lost: hardness, distribution of analyte(s), particle size(s) of analytes, polymorphic form(s) of the analytes, and so forth.

When reflection near-infrared spectroscopy was developed, solid samples (e.g., tablets, capsules, foodstuffs, etc.) were able to be

examined. Without destroying sample and using Chemometrics, we could now analyze (predict) individual chemical entities and macro-parameters (hardness, density) as well as discovering the potential changes in crystallinity and morphology of the chemicals of interest. But, we are still seeing the average values and still have no idea of distribution of actives.

With chemical imaging, we generate a 3-D “hypercube” of data. That is we have a 2-D portrait of the sample (displayed as thousands or tens of thousands of pixels), with each pixel also containing a full spectrum (NIR, IR, Raman, or fluorescence) of the material in that pixel. This allows the analyst to show where each component is located: how much, size of clusters, morphology of EACH CRYSTAL, and much more.

We will look at the hardware and software available for these measurements and examine a number of applications, showing the wealth of data available as well as seeing how many uses spectroscopy can have in both end uses and in-process controls. The applications in medicine, drug development, food, and so on will be discussed.

Brief Biography for Emil W. Ciurczak

Emil W. Ciurczak has advanced degrees in Chemistry from Rutgers and Seton Hall Universities, has been in the pharmaceutical industry since 1970, performing method development on most types of analytical equipment. In 1983, he introduced NIR spectroscopy to pharmaceutical applications. He also consults for numerous instrument companies. His research is largely pharmaceutical applications of NIR where he has published over five dozen articles in refereed journals, over 250 magazine columns, and presented over 200 technical papers.

Since 2005, Emil has been Contributing Editor for Pharmaceutical Manufacturing magazine (wrote a column for Spectroscopy; 1987-2007) and for Contract Pharma magazine since 2013. He has written and edited several texts and chapters: “Handbook of NIR Analysis” (1st, 2nd, and 3rd editions, 4th in progress), “Pharmaceutical and Medical Applications of NIRS” (1st & 2nd editions), “Molecular Spectroscopy Workbench,” and chapters on NIR applications to life sciences. Emil sits on several magazine editorial boards, is active

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NY/NJ SOCIETY FOR APPLIED SPECTROSCOPY

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in SAS, is a founder of the Council for NIRS, and was the 2002 chair for IDRC (Chambersburg Conference).

He has been teaching (college adjunct) since 1979: Stevens Tech, College of St. Elizabeth, Hood College, and Mount St. Mary's College; as well as short courses (in NIR, Raman, and PAT/QbD) for the ACS, CIPA (US and Europe), PTI, SPIE, ASSA, and other organizations.

Emil is a consultant in the field of NIR (lab and process applications) and holds more than a dozen patents for NIR-based devices and software. He consults with various pharmaceutical companies, instrument manufacturers, and the FDA. He was a member of the PAT sub-committee (Validation) for the FDA and member of the PAT Expert Committee for the USP. He was the 2004 recipient of the EAS Achievements in NIR Award.

Date: Wednesday, February 21, 2018

Time: Networking 6:00-6:30 and
7:30--8:00 PM
Talk 6:30-7:30 PM

Place: Science Building Room S-11
Fairleigh Dickinson University
175 Park Avenue
Florham Park, NJ 07932

<http://view2.fdu.edu/campuses-and-centers/florham-campus/florham-campus-index/directions-to-the-campus/>. In case of snow, the university posts the closings for inclement weather on the website.

See www.nysas.org for more information about our society and future meetings.

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.

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



LONG ISLAND SUBSECTION

A Facile Synthesis of Porphyrinoid Scaffolds using Dipolar Cycloadditions

Speaker: Dr. Junior Gonzalez
Chemistry Department
Hunter College of the
City University of New York

De novo chlorin synthesis can be quite challenging to achieve in good yields and many chlorins are not stable to photobleaching and/or are readily oxidized, this has limited the use of these porphyrinoids in clinical research and care. Exploitation of chlorins also depends on the availability of these chromophores, to produce valuable data in the trials for photodynamic therapy and as nano-carriers for drug delivery. The reduced symmetry of the chlorin macrocycle further complicates the addition of the exocyclic motifs. A facile approach to a stable, synthetic chlorin with a fused N-methyl pyrrolidine uses a sarcosine-based azomethine ylide and cyclo addition on 5, 10, 15, 20-tetrakis-(2, 3, 4, 5, 6-pentafluorophenyl)-porphyrin (TPPF₂₀) is increasingly used, but this approach has limitations. We report the divergent synthesis of chlorin scaffolds starting with the same TPPF₂₀ using a glycine-based ylide. Unexpectedly, we found that careful control of the 1,3-dipolar cycloaddition reaction allows directed formation of new chlorins, including the fused N-H pyrrolidine, two dimers, and the same N-methyl chlorin product from the sarcosine ylide reaction. The

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mechanism begins with the formation of an alcoholic glycine, which then reacts with TPPF₂₀ to form a key N-(hydroxymethyl)-17, 18-pyrrolidinyl-chlorin intermediate. Deformylation of this intermediate affords the N-H pyrrolidine, whereas a Cannizzaro-type of reaction promotes a hydride attack to an imine chlorin cation to yield the same N-methyl chlorin as the sarcosine ylide. The exocyclic NH-pyrrolidine provides a unique hemisphere-mode of attaching chiral moieties that avoids formation of diastereomers at the bridging carbons. The mechanism also unfolds a new route to furnish a hemiaminal chlorin and (N-carbaldehyde)-17, 18-pyrrolidinyl-chlorin).

Date: Thursday, March 1, 2018

Time: Refreshments start 5:00 PM
Meeting 6:00 PM

Place: S-112 Queensborough Community College
222-05 56th Avenue
New York, NY 11364



HIGH SCHOOL TEACHERS TOPICAL GROUP

Rest-of-Year Schedule, 2018:

“Before They’re All Gone—The Dramatic Decline of Frogs and What Can We Do?”

Speaker: Robert Alvey
US EPA

During the last half century, a steep decline in populations of frogs, toads, and other amphibians around the world has been observed and documented. This drop in the total numbers and individual species continues to accelerate but has not received the public attention and interest given to polar bears, whales, birds, bats, and many other animals. Amphibians have played an important role in sustaining the world’s ecosystems, and the effects of the population collapses are being researched. They are environmentally sensitive and show responses to a variety of environmental pollutants and contaminants. The presentation discusses reasons for the decline and efforts being done to help save some of the species, including citizen science.

Date: Friday, March 9, 2018

Place: New York University
Silver Center Room 207
32 Waverly Place

Demo Derby II

Attendees provide demonstrations that should be brief (5 to 8 minutes maximum). Claim your presentation order by writing your name on the board when you enter. We have moved a Demo Derby to the beginning of the academic year by popular demand because some of these demos should be useful immediately. Please provide printed instructions for attendees with contact information to help your colleagues replicate your procedures. Remember that our refurbished room 207 no longer has gas, water, or hood. You are responsible for safety, procedures, and cleanup. Please bring enough safety glasses for front row observers.

Date: Friday, April 20, 2018

Place: New York University
Silver Center Room 207
32 Waverly Place



WESTCHESTER CHEMICAL SOCIETY

FUTURE MEETINGS

Special Seminar – “Achieving Global Sustainability: Huge Challenges and Opportunities”

Speaker: Rita K. Upmacis, PhD, FRSC
Associate Professor
Department of Chemistry &
Physical Sciences
Pace University
New York, NY

Abstract:

Future generations of chemists and innovators are charged with the responsibility of developing new chemical 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. While some of the early industrial developments contributed to a downfall in the overall perception of chemistry, there is an ever-increasing need, and also, opportunity for chemists to solve these issues. Solutions to some of these challenges can be achieved by using Green Chemistry, which is the “utilization of a set of principles that reduces or eliminates

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WESTCHESTER CHEMICAL SOCIETY

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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). In this presentation, I will examine some of the challenges that we face today, as well as some examples of innovative solutions that have been introduced.

Biography:

Dr. Rita 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 was recruited by Rohm & Haas Company (now the Dow Chemical Company, PA) as a Senior Chemist, and worked on the acrylic acid process, developing polymerization inhibitors and improving the quality of acrylic acid, which resulted in 9 patents being awarded. After 6 years in industry, she returned to academia and became an Associate Research Professor (Department of Pathology & Laboratory Medicine, 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.

Date: Wednesday, March 28, 2018

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

Phone 1-914-393-6940



METRO WOMEN CHEMISTS

Please join us for a seminar sponsored by the NY ACS Metro Women Chemists' Committee.

Chemistry Through Social Contexts

Speaker: Dr. Bhawani Venkataraman
Associate Professor of
Chemistry
Eugene Lang College of
Liberal Arts
The New School, NY

Abstract:

What happens at the molecular level dictates much of the world around us. Yet, Chemistry is a discipline that is often hard for students and the public to relate to. This presentation will start with examples of curricular materials developed to teach chemical principles through social and policy contexts. The goal is for students to recognize why a molecular scale understanding is important to address many current social and environmental challenges – for example access to safe drinking water and air quality. The talk will end by presenting a current project on the development of an interactive and visual educational tool that conducts a comparative analysis of the health, environmental, and social costs and benefits associated with the energy sources used for electrical energy. The intent of the tool is to educate individuals on the complexities of energy sources used for electrical energy and to provide objective comparisons of the pros and cons of these energy sources.

Biography:

Bhawani Venkataraman is Associate Professor of Chemistry at Eugene Lang College of Liberal Arts, The New School. Educated as a physical chemist, her research is in the field of chemical education and focuses on understanding ways to engage students in learning chemistry. Currently she is investigating two approaches: 1) the use of software visualization tools to assist students in "seeing" molecules and molecular interactions and in understanding how these microscopic constructs influence

the macroscopic world; and 2) the use of contexts as a motivator and learning tool. Another area of her research interest is in understanding what constitutes effective communication of scientific research to non-scientists on issues such as water quality, air pollution and climate change. Bhawani received her B.Sc. in Chemistry from St. Xavier's College, Mumbai, India. She received her M.A., M.Phil. and Ph.D. in Chemistry from Columbia University, New York.

Date: Wednesday, April 4, 2018

Time: 12:15 PM – 1:15 PM

Place:: Pace University

Lecture Hall North (2nd Floor)

One Pace Plaza

New York, NY 10038

For further information, please contact Dr. Rita K. Upmacis (rupmacis@pace.edu), Chair of the Metro Women Chemists' Committee.



NEW YORK/NEW JERSEY SOCIETY FOR APPLIED SPECTROSCOPY

FUTURE MEETINGS

“Laser-induced Breakdown Spectroscopy (LIBS) Addition to Microscopic Analyses and Raman and IR of Particles.”

Speaker: Dr. Markus Lankers
Rap.ID GmbH

Date: Wednesday, April 25, 2018

See www.nysas.org for details.

“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 for details.

WESTCHESTER CHEMICAL SOCIETY

On December 5, 2017 Dr. Linda Kidder Yarlott spoke on “FTIR Microscopy and Imaging – When You Need It and How To Use It.” Dr. Kidder Yarlott is the Product Manager for Molecular Spectroscopy at Shimadzu Scientific Instruments, Inc., Columbia, MD. She spoke on various techniques to image and map substrates using Fourier-Transform Infrared (FTIR) spectroscopy. Today, this can be done at microscopic scale and can be useful in characterizing various materials spatially. For example, the homogeneity and/or heterogeneity of a solid mixture can be determined. The chemical nature of a small speck of contaminant on, say, an electronic chip, may be determined. This can be useful in forensic trace analysis, in determining contamination of food products, etc. On a large scale, IR mapping/imaging can be used, for example, to determine crop cover in a region. For micro-scale work, attenuated total internal reflection systems are particularly useful. Automated systems using raster motion are used for microscopic mapping. Alternatively, direct imaging of many pixels may be done. Because of the large numbers of locations sampled, and the use of full (or partial) IR spectra, the numbers of data involved in creating these images is tremendous (multi-megabytes). The ability to store and process huge amounts of data cheaply and quickly makes this imaging possible. There was lively discussion during and following the talk, which was given at the Westchester Community College in Valhalla, N.Y.

Dr. Kidder Yarlott obtained her B.A. in Chemistry from Williams College and her Ph.D. in physical chemistry from the Johns Hopkins University, where she was the recipient of the Sonneborn and Ernest Marks Fellowships. During her post-doc in the Laboratory of Chemical Physics at NIH, she developed a deep appreciation for molecular spectroscopy: developing, deploying, and characterizing Raman and Fourier transform infrared hyperspectral imaging systems. Since then, her career has focused on the development and commercialization of novel analytical instrumentation: as co-founder of Spectral Dimensions, Senior Scientist at Malvern Instruments as part of the Bioscience Development Initiative, Vice

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WESTCHESTER CHEMICAL SOCIETY

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President of Market Development at BrightSpec, and currently as Strategic Product Leader at Shimadzu Scientific Instrumentation. She is a long-standing member of the Society for Applied Spectroscopy, the Coblenz Society, and the American Chemical Society, and has contributed to ASTM on both E13.10 and E55 committees. She has also worked on outreach for vibrational spectroscopy, as program coordinator at the FACSS (now SciX)

and EAS meetings, as well as organizing the SAS Tour Speakers program in 2011 and upcoming in 2018.

Her talk was arranged with the help of Kathleen Anderson, also of Shimadzu Scientific Instruments. We acknowledge and thank Ms. Anderson for her assistance (and the snacks she kindly provided before the meeting). After the talk Dr. Kidder Yarlott, Ms. Anderson and several of the attendees enjoyed a dinner together at a nearby restaurant. The photo below is of Dr. Kidder Yarlott, Ms. Anderson and the WCS board members who attended the meeting.



Paul Dillon, Linda Kidder Yarlott, Rolande Hodel, Peter Corfield, and Kathleen Anderson

(Photo courtesy of Paul Dillon)



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66th

ANNUAL UNDERGRADUATE
RESEARCH SYMPOSIUM

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

Saturday, May 5th, 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.

SIGNIFICANT DATES FOR 66th URS

Deadline for Abstract Submission - **March 15, 2018** Abstract acceptance notification – March 26, 2018
Deadline for Symposium Advanced Registration – March 27, 2018

2018 Co-chair
Dr. Paul Sideris
Queensborough Community
College psideris@qcc.cuny.edu

2018 Co-chair
Dr. Yolanda Small
York College - CUNY
ysmall@york.cuny.edu

2018 Co-chair
Dr. Ipsita A. Banerjee
Fordham University
banerjee@fordham.edu

2018 Co-chair
Dr. Naphtali O'Connor
Lehman College - CUNY
naphtali.oconnor@lehman.cuny.edu

FREE Registration for student members of the National ACS, faculty mentors who register in advance and sponsors. For non-ACS members and guests, the registration is \$95 in advance. All 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 Serath, St. John's University, Department of Chemistry, 333 St. Albert Hall, Queens, NY 11439.

Call for Papers



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66th

ANNUAL UNDERGRADUATE RESEARCH SYMPOSIUM

Call for Papers for the 66th ANNUAL UNDERGRADUATE RESEARCH SYMPOSIUM sponsored by the Student Activities Committee of the New York Section of the American Chemical Society. The symposium provides an excellent opportunity for undergraduate chemistry students in the NY metropolitan area to present the results of their research. The program includes a keynote address by Dr. Dhabih Chulhai, Department of Chemistry, University of Minnesota, presentation of student papers, followed by a luncheon. Abstracts of original research in chemistry will be accepted.

Date: Saturday, May 5th, 2018

Place: York College, The City University of New York, Queens, NY

To:

1. Submit an abstract on-line (Please strictly follow the abstract template format)
2. Print a flyer for posting - Click "Download Flyer" in the blue frame
3. Obtain directions to York College CUNY

Go To: <http://www.newyorkacs.org/meetings/urs/urs.php>

SIGNIFICANT DATES FOR 66th URS

Abstract submission and online registration opens - February 1, 2018

Deadline for abstract submission - March 15, 2018

Notification of the abstract acceptance - March 26, 2018

Deadline for early registration - April 15, 2018

FREE Registration for student members of the National ACS, faculty mentors who register in advance and sponsors. For non-ACS members and guests, the registration is \$35 in advance. All on-site registration is \$45 for faculty, staff and guests. Students can obtain a discounted 1-yr membership to the ACS for \$25 by visiting <http://undergrad.acs.org/>

Checks for the registration fee should be made out to: "NY ACS" and sent to:
Prof. Paul Sideris, Queensborough Community College, Science Building S-445, 222-05
56th Avenue, Bayside, NY 11364

If you have any questions, please contact: nyacsurs2018@gmail.com

2018 Co-chair
Dr. Paul Sideris
Queensborough Community
College psideris@qcc.cuny.edu

2018 Co-chair
Dr. Yolanda Small
York College - CUNY
ysmall@york.cuny.edu

2018 Co-chair
Dr. Ipsita A. Banerjee
Fordham University
banerjee@fordham.edu

2018 Co-chair
Dr. Naphtali O'Connor
Lehman College - CUNY
naphtali.oconnor@lehman.cuny.edu

Grants Available

ACS — APPLY FOR LOCAL SECTION GRANT FUNDING

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

Dear Local Section Officer and/or Councillor,

We invite your local section to apply for a Local Section Activities Committee Innovative Project Grant (IPG). The IPG Program seeds new projects in local sections to increase member involvement and the public's understanding of chemistry as well as improve services to members. IPG funds can also be used to recruit new ACS members. Therefore, Local Sections are especially encouraged to implement new ways to boost and energize membership. Apply for an ACS Local Section Innovative Project Grant (IPG). Up to \$3,500 is available; the submission deadline is **Thursday, January 18, 2018**.

Following these guidelines will maximize chances for funding. The Frequently Asked Questions (FAQs) outlines ways projects can be innovative, and highlights several model proposals. This list of recently funded IPGs describes many successful projects. Local Sections are welcome to incorporate ideas that were implemented successfully by other local sections, adapting to their local section's needs and goals. However, it is a requirement that local sections submit final reports for any previously funded IPGs in order for new proposals to be considered. Complete a final report.

Once any outstanding final reports are received, your local section can apply for an IPG by completing the online application form linked on www.acs.org/localsectionipg. Upon clicking "submit" on this online form, your application will automatically transmit to lsac@acs.org.

If you have questions, concerns, or comments about this grant program, please contact lsac@acs.org.

Sincerely,
Greg Milligan
ACS, 1155 Sixteenth Street, NW
Washington, DC 20036



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Call for Volunteers

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

Can you spare a few hours of your time? Do you like working with students and would you like the opportunity to share your science knowledge in a classroom? Students 2Science (S2S) is seeking volunteers to support its V-Lab program. S2S has a series of elementary, middle, and high school experiments that run in various schools across New Jersey. Members are especially needed to mentor students in participating schools to help with experiments. It's great fun, a wonderful way to give back, and only requires 1-2 hours of your time. Experiments include CO₂ 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.



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 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!

Call for Applications

FREDDIE AND ADA BROWN AWARD

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

Award Amounts

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

Who is Eligible

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

Grades

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

Letter of Recommendation

Math or Science/Chemistry Teachers or Guidance Counselor

Statement

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

Selection Criteria

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

Transcript

Official transcript required.

Financial Need

Not Required.

Applications available on the web:

www.njacs.org/freddieadabrown

or from your school guidance office.

Return Application To

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

Due Date

Completed Applications must be post-marked no later than March 31 Annually

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

Call for Applications

OPEN-NJ Scholarship Program Department of Chemistry and Biochemistry



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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

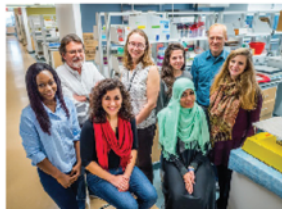
- Minimum overall 3.0 GPA (B.S. or B.A. degree)
- Completed General Chemistry I (with lab), General Chemistry II (with lab), Organic Chemistry I (with lab), Organic Chemistry II, Calculus I and II and a year of Physics.
- US citizen, national, admitted refugee or permanent resident
- Enrolling full time 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) 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).



Call for Nominations

WESTCHESTER CHEMICAL SOCIETY DISTINGUISHED SCIENTIST AWARD 2018

The Westchester Chemical Society is accepting nominations for the "WCS Distinguished Scientist Award 2018". Scientists who live or work in Westchester or the Bronx qualify. The awardee is expected to attend the Awards Dinner (April/May time-frame) 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. New this year, we will allow teams to be nominated. The team should include only those who have made substantial scientific contributions to its work. If a team is selected, then a single presentation of about an hour will be made by either a single team member or more than one; a choice to be made by the team. Please send a cover letter stating why your nominee should receive the award along with the nominee's resume (or all team members' resumes with an indication of team-specific contributions) **by January 31, 2018** to:

Dr. Paul Dillon at
PaulWDillon2@hotmail.com or
 67 Matthes Road, Briarcliff Manor, NY
 10510

or to:

Dr. Peter Corfield at pwrc@earthlink.com.



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 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



NY SECTION – SOCIETY FOR APPLIED SPECTROSCOPY

2018 GOLD MEDAL AWARD

Nominations are being sought for the 2018 Gold Medal Award of the New York Section of the Society for Applied Spectroscopy. This coveted award was established in 1952 to recognize outstanding contributions to the field of Applied Spectroscopy. The Gold Medal will be presented at a special award symposium, arranged in honor of the awardee, at the 2018 Eastern Analytical Symposium. A nominating letter describing the nominee's specific accomplishments should be submitted along with a biographical sketch and list of publications **by January 28, 2018**. Please email all materials to daniel.sanborn@tec5usa.com.



Others

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 has brought 2018 in a big way as it plans to open its sister site in Downtown Newark! The facility offers a 10,000-square foot technology center equipped with \$4 million worth of state-of-the-art commercial equipment. Students 2 Science (S2S), the City of Newark and Newark Public Schools have embarked on a remarkable new partnership to take S2S services and programs district-wide and reach over 32,000 Newark students providing an authentic transformational STEM education program for an entire school district.

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: (973) 947-4880 ext. 516

About Us

Students 2 Science, Inc. is a 501(c)(3) model program in New Jersey that bridges the needs of the public and private sectors. Our mission is to inspire, motivate, and educate elementary, middle and high school students to pursue careers in science, technology, engineering and math (STEM subjects). We do so by providing an authentic, state-of-the-art laboratory experience complete with modern instrumentation and professional scientists. Additionally, we offer a remote, web-based virtual STEM experi-

ence that eliminates geographic and language constraints and broadens our reach to serve a wider audience. Teams of students, working collaboratively with scientific professionals who serve as role models, solve real life problems while being introduced to a wide variety of 21st century STEM career opportunities.

Take a look at our About Us Video:

<https://students2science.wistia.com/medias/hbxylzpw5o>.



OPIOID PROBLEM — A POSSIBLE SOLUTION

According to CBS News (<https://www.cbsnews.com/news/more-than-one-third-americans-prescribed-opioids-in-2015/>), "more than one out of three Americans used prescription opioid painkillers in 2015, despite growing concerns these medicines are promoting widespread addiction and overdose deaths." Now, leading pain researcher and expert Adam Heller reveals that pain drugs are killing "approximately 175 people per day. That's the equivalent of a 9-11 every 2.5 weeks."

A former head of the DEA claims that "70% of opioid addiction begins with a legitimate medical prescription." Drawing from that startling statistic, Heller reveals that "it's not the opioids that the cause of this worldwide epidemic, it's the pain. Eliminate the pain and there is no need for the initial prescription."

Heller created the Zero Pain Now® program (<https://zeropainnow.com/>) - A conservative, proven and duplicatable way to eliminate the pain along with the original opioid prescription.

Chairman of the National Opioid Commission, New Jersey Governor Chris Christie, recently commented, "this program began in the doctor's offices and hospitals." Heller agrees with Chairman Christie and also goes on to say that "the thinking that created this epidemic will not be the thinking to solve it. The solution comes from outside the old-fashioned pain management mentality. "We need to eliminate the cause rather than treat or mistreat the symptoms."

Heller subsequently spent 2 decades learn-

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OPIOID PROBLEM

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ing from the best medical and non-medical teachers while observing people with and without pain. What he discovered was a superior, tested, conservative and often permanent pain relief method called Zero Pain Now®. Heller states, "We here at Zero Pain Now® have a 97.4% success rate in eliminating chronic pain. Our success even includes diagnoses such as bulging disc, herniated disc, spinal stenosis, fibromyalgia, sciatica and other incomplete diagnoses."

Since the program's inception, Heller has received a constant string of testimonials from satisfied patients throughout the world. A write-up from a pilot at the most highly regarded healthcare provider in the U.S reads., "Using the Zero Pain Now process, ALL patients were pain-free and their cases were closed in 28 days or less."

With a proven solution in place, Heller is asking people to visit and share his Zero Pain Now website in order to further efforts to eliminate the national opioid crisis for good.

For interviews and information please contact cheryl@zeropainnow.com

For time sensitive interviews contact Adam directly (949) 497-8383

Online Media PR Kit:
www.adamheller.com/media

Main Site: www.adamheller.com

With Love
Cheryl Jones
Media and PR for Adam Heller

In the News

VACUUM DEGASSING CHAMBER REMOVES AIR, GAS AND WATER VAPOR

A robust benchtop vacuum degassing chamber for the elimination of entrapped air, gas, and water vapor from epoxies, resins, urethanes and other liquids is available from Mass-Vac, Inc. of North Billerica, Massachusetts.

The MV Vacuum Degassing Chamber is constructed from 304 Stainless Steel with a pump out port, isolation valve, vent valve,

Bourdon vacuum gauge, and a VisiTrap® inlet trap to prevent damage to the vacuum pump from vapors. Featuring a 1.5" thick clear Lucite® top for interior viewing, it rapidly removes entrapped air, gas, and water vapors from a variety of materials.

Available in 15- and 4-gallon sizes, the MV Vacuum Degassing Chamber can be supplied with rotary motion feed-thrus, shelves, other accessories, and can be custom designed to user specifications. This versatile degas system is capable of operating at up to 29.9" Hg (0.5 Torr) and can be supplied with or without single- or multiple stage vacuum pumps from 5 to 20 CFM

The MV Vacuum Degassing Chamber is priced from \$1,375.00 to \$2,549.00. Literature and pricing are available upon request.

For more information contact:
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IDTechEx RESEARCH REPORT

Notes Billions of Low Power Electronics and Electricians Operating without Batteries

The new IDTechEx Research report, Battery Elimination in Electronics and Electrical Engineering 2018-2028 notes that billions of wireless electronic and electrical products consuming microwatts to milliwatts or more operate without batteries or even capacitors to store energy. Among the most successful are the piezoelectric gas lighter, the bicycle light with dynamo and the EnOcean wireless building controls such as sensors, lights and light switches in over 400,000 buildings and some boats. In the Torre Crystal building in Madrid alone they have installed 30,000 of them. It is managed with energy harvesting, sometimes two types at a time to reduce intermittency and increase security of supply. In the case of EnOcean that is electrodynamic, photovoltaic and thermoelectric. To further enhance its virtuosity as a "no battery" company, EnOcean is also developing vibration harvesting and thermoelectrics that operate using tiny inputs.

Now a 3.5 microwatt mobile phone with no battery is being developed and a city pollution sensor is on sale from Drayson Technologies, both harvesting ambient radio to make their electricity, something only possible now circuits use much less power. The battery free phone developed by the University of Washington phone will also use solar power in addition and it involves a total rethink of the phone system. There is potential for at least millions yearly and probably much more if emerging countries adopt lowest-cost "everlasting" phones with no battery.

For more see www.IDTechEx.com/nobatts and find out more about IDTechEx at www.IDTechEx.com.



IDTechEx LAUNCHES RESEARCH IN LIFE SCIENCES

IDTechEx, a market intelligence company with nearly two decade's worth of experience tracking the cutting-edge developments in science and technology, has expanded their expertise into the life sciences.

This new endeavor has already led to the production of five new dedicated market research reports in the key fields of biosensors, bioelectronics, and regenerative medicine. The reports, available now at www.idtechex.com/lifesci, include:

- 3D Bioprinting
- Biosensors for Point-of-Care Testing
- Neuroprosthetics
- Technologies for Diabetes Management
- Tissue Engineering

Such areas add to the already impressive portfolio of engineering-based specialties covered by the company, including RFID,

printed electronics, and energy storage. Previous topics like wearable technology and stretchable/conformal electronics have also covered developments in healthcare and medicine.

Contact www.IDTechEx.com



NYSCC (SOCIETY OF COSMETIC CHEMISTRY)

The following article and photo were provided by Thomas Drwiega, the chemistry lab supervisor at FDU Metro and a current member of the NYSCC (Society of Cosmetic Chemists).

On December 11, 2017, the School of Natural Sciences, represented by its director Dr. James Dougherty, was invited to the Hard Rock Café in NYC by the Society of Cosmetic Chemists. The event was themed "The NYSCC Supports Education Night". The benefit was chaired by FDU Metro alumni Giorgino Macalino who is currently the Secretary of the New York Chapter. The cosmetic program was awarded a sizable donation for future equipment and supplies. In the photo below, Dr Dougherty is on the far right. FDU Metro has had a long standing relationship with the SCC for over 30 years and counting. This was an esteemed honor for both the department and the university as a whole.

For more information, contact:
 Thomas Drwiega
 201-692-2346
 Chemistry Lab Supervisor, FDU Metro
 Chemical Safety Coordinator – Metro Campus, 2015-18
 Member of Society of Cosmetic Chemists, 2018
 Chair of Hudson Bergen Chemical Society, 2015-16



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