

THE Indicator

MARCH 2017

Vol. 98 • No. 3

ISSN0019-6924

Professor Chad A. Mirkin **2017 Nichols Medal Awardee**



See Biography on page 5.

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THIS MONTH IN CHEMICAL HISTORY

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

In this column and the next I will look at the careers of two extraordinary women who made fundamental contributions to our understanding of surface chemistry. This month I focus on Agnes Pockels, a self-taught German experimenter, whose work was resoundingly supported and publicized by Lord Rayleigh (John William Strutt). In this column I have drawn heavily from an article "Agnes Pockels: Life, Letters and Papers" by Christiane A. Helm, available on the Internet.

Ms. Pockels was born in Venice in February 1862. Her father was an officer in the Austrian army but was invalided out when Agnes was 9 and the family relocated to Brunswick in Germany. Agnes attended the local high school for girls but the curriculum was light on science and included only two natural science classes a week in the final two years. As Agnes later wrote " I had a passionate interest in natural science, especially physics, and would have liked to study." Instead she had to stay at home to care for two sick parents. Her younger brother Fritz was not similarly burdened and majored in physics and mathematics at the Brunswick Technical University. Together Agnes and Fritz began to undertake scientific observations – in the kitchen! As a descendant later wrote " ... what millions of women see every day without pleasure and are anxious to get rid of, i.e. the greasy washing-up water, encouraged this girl to make observations and eventually ... do scientific investigations."

In England in 1890 Rayleigh published some observations on the influence of films of oil or grease on the surface tension of water. He speculated that such films can extend until they are only one molecule thick. Rayleigh's papers came to Agnes' attention through a report in a popular science journal to which her brother subscribed. She decided to write to Rayleigh describing her own work. "My lord ...having heard of the fruitful researches carried on by you on the hitherto little-understood properties of water surfaces ..it might interest you to know of my own observations...For various reasons [namely that she was a woman, and had no formal academic qualifications HG] I am not in a position to publish them..." Rayleigh had a translation of the letter published in the journal *Nature* fully supporting Pockels' work and her suggestions for further study.

Pockels had invented a novel piece of equipment for her experiments: a trough (very similar to one used later by Irving Langmuir) that had an adjustable barrier to vary the surface area, and a ring balance to measure surface tension. In 1891 *Nature* published her article "Surface Tension" which summarized ten years of her research. She drew over 10 major conclusions from her observations; I have room for only a couple. "I. The surface tension of a "contaminated" water surface varies if the surface is compressed or expanded. On compression the surface tension decreases up to a factor of two. On expansion it increases until a maximum value is reached, then remains constant." "VI. All solid bodies, no matter how clean, contaminate a water surface that is in normal state."

From the late 1870s until 1914 members of the Pockels family were often ill, sometimes gravely, and much of Agnes' time was spent in nursing duties. After 1902 she carried out very few experiments, though she continued to translate articles and contribute notes to a publication that her brother (now a Professor of Physics at Heidelberg) edited. She did do some original work on contact angles and fluid flow. Her brother died in 1913, and her avenue for publication was consequently lost. Her own health was also deteriorating. She led a quiet life in Brunswick; became known as "Auntie Agnes"; and her scientific work was almost forgotten. Almost – but not quite. In 1931 she was awarded the annual Laura-R.-Leonard prize of the German Colloid Society. To quote Ostwald: " She taught us not only cleanness in our work, she also taught us how to measure it." In the prize listing among the bevy of distinguished previous chemists and physicists who had won before her (including Pauli, Zsigmondy, and Liesegang) she is simply described as Agnes Pockels, Housewife. She died in 1935.

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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.

March Calendar

NEW YORK SECTION

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Thursday, March 2, 2017

Chemical Marketing & Economics Group
See pages 9-10.

Thursday and Friday, March 2 and 3, 2017

Dr. Joseph Nagyvary Series of Lectures
See pages 8-9.

Friday, March 3, 2017

Westchester Chemical Society
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Friday, March 17, 2017

High School Teachers Topical Group
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Friday, March 24, 2017

Nichols Symposium
See pages 5-7.

Thursday, March 30 2017

Long Island Subsection Board Meetings
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The Inaugural Edward J. McNelis Lecture in Chemistry - at NYU
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also

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See page 12.

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Westchester Chemical Society
See pages 12-13.

Wednesday, April 19, 2017

MetroWomen Chemists
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Fridays, April 21, and May 19, 2017

High School Teachers Topical Group
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Sunday, April 23, 2017

Earth Day Celebration
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Thursdays, April 27, and May 5, 2017

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also

Wednesday, April 12, and Tuesday, May 9, 2017

Mass Spec Discussion Group
See page 17.

Wednesday, April 19, 2017

Metro Women Chemists
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Thursday, April 20, 2017

Drug Metabolism Discussion Group
See page 17.

Friday, April 28, 2017

69th Annual Undergraduate Research Symposium
See pages 17-18.

**Deadline for items to
be included in the
April 2017 issue of
The Indicator is**

February 28, 2017

Biography of Professor Chad A. Mirkin

2017 NICHOLS MEDAL AWARDEE

The ACS New York Section congratulates and extends its best wishes to Professor Chad A. Mirkin of Northwestern University who will receive the William H. Nichols Medal Award on March 24, 2017 in White Plains, New York. The Nichols Medal is presented at an Award Dinner following the Nichols Distinguished Symposium. The title of the Distinguished Symposium is "Improving Life Through Advances in Chemistry and Nanoscience." Professor Mirkin will receive the Nichols Gold Medal Award for "Pioneering Practical Applications of Nanochemistry."

Dr. Chad A. Mirkin is the Director of the International Institute for Nanotechnology and the George B. Rathmann Prof. of Chemistry, Chemical and Biological Engineering, Biomedical Engineering, Materials Science & Engineering, and Medicine at Northwestern University. He is a chemist and a world-renowned nanoscience expert, who is known for his discovery and development of spherical nucleic acids (SNAs) and SNA-based biodetection and therapeutic schemes, Dip-Pen Nanolithography (DPN) and related cantilever-free nanopatterning methodologies, On-Wire Lithography (OWL), and Co-Axial Lithography (COAL), and contributions to supramolecular chemistry and nanoparticle synthesis. He is the author of over 660 manuscripts and over 1,000 patent applications worldwide (290 issued), and he is the founder of multiple companies, including Nanosphere, AuraSense, and Excicure, which are commercializing nanotechnology applications in the life sciences and biomedicine. Dr. Mirkin has been recognized with over 100 national and international awards, including the 2016 Dan David Prize and the inaugural Sackler Prize in Convergence Research. He is a Member of the President's Council of Advisors on Science & Technology (Obama Administration), and one of very few scientists to be elected to all three US National Academies. He is also a Fellow of the American Academy of Arts and Sciences and the National Academy of Inventors, among others. Dr. Mirkin has served on the Editorial Advisory Boards of over 20 scholarly journals, including JACS, Angew. Chem., and Adv. Mater; at present, he is an Associate Editor of JACS. He is the founding editor of the journal Small, and he has co-edited multiple bestselling books. Dr. Mirkin holds a B.S. degree from Dickinson College (1986, elected into Phi Beta Kappa) and a Ph.D. degree from the Pennsylvania State University (1989). He was a NSF Postdoctoral Fellow at the Massachusetts Institute of Technology prior to becoming a professor at Northwestern University in 1991.



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**2017 WILLIAM H. NICHOLS MEDAL
DISTINGUISHED SYMPOSIUM AND AWARD DINNER**


Symposium: IMPROVING LIFE THROUGH ADVANCES IN CHEMISTRY AND NANOSCIENCE

Award Recipient: **PROFESSOR CHAD A. MIRKIN**
Northwestern University

Date: Friday, March 24, 2017

Time: 12:30 PM Registration 1:00 PM – 5:30 PM Symposium
5:45 PM Reception 6:45 PM Award Dinner

Place: Crowne Plaza Hotel, White Plains, NY

PROGRAM

- 1:00 PM Welcome Professor Brian R. Gibney
2017 Chair, ACS, New York Section
Brooklyn College and Graduate Center of CUNY
- 1:05 PM Opening of the Distinguished Symposium Professor Joseph M. Serafin
2017 Chair-elect, ACS, New York Section
St. John's University
- 1:15 PM Dynamic Droplets: Biosensors from Changes in Orientation and Morphology of Complex Liquids Professor Timothy M. Swager
Massachusetts Institute of Technology

This lecture will focus on the design of systems wherein reconfiguration of complex liquid emulsions (droplets) can be triggered chemically or biochemically. The utility of these methods is to generate new transduction mechanisms by which chemical and biological sensors can be developed. Complex liquid droplets behave as optical lens systems and small changes in surface tensions can change focal lengths or cause systems to switch between optically transmissive or scattering states. Central to this scheme is that the fluids in the droplets have different densities and hence are aligned by the earth's gravity. The induced optical changes can be triggered with chemical, photochemical, or biochemical stimuli and thereby create new generations of sensors. Demonstrations of these methods for the detection of enzyme concentrations and pathogens will be presented.

- 2:00 PM Molecular Imaging of Transition Metal Signaling in the Brain and Beyond Professor Christopher J. Chang
University of California, Berkeley

Metals are essential for all forms of life, and the traditional view of this bioinorganic chemistry is that mobile fluxes of alkali and alkaline earth metals like sodium, potassium, and calcium are used as dynamic signals and transition metals like copper and iron must be buried and protected as static metabolic cofactors to prevent oxidative stress. We have identified a new paradigm of transition metal signaling, using copper as a primary example to show how such elements can influence neural circuitry and regulate fundamental behaviors such as eating and sleeping.

- 2:45 PM Shape-Shifting Drug Carriers for Targeting Cytotoxins and Immunotherapeutics to Cancer Professor Nathan C. Gianneschi
University of California, San Diego

Nanoparticle targeting strategies have largely relied on the use of surface conjugated ligands designed to bind overexpressed cell-membrane receptors associated with a given cell-type. We envisioned a targeting strategy that would lead to an active accumulation of nanoparticles by virtue of a supramolecular assembly event specific to tumor tissue, occurring in response to a specific signal. For this purpose, we utilize enzymes as stimuli, rather than other recognition events, because they are uniquely capable of propagating a signal via catalytic amplification. We will describe the preparation of highly functionalized polymer scaffolds utilizing ring opening metathesis polymerization, their development as *in vivo* probes and their utility as a multimodal imaging platform and as drug carriers capable of targeting tissue. Furthermore, we will describe new methods and approaches for characterizing this kind of dynamic material at the nanoscale, including by liquid cell transmission electron microscopy and combined isotopic and optical nanoscopy.

3:30 PM Coffee Break

- 4:00 PM Metal-oxos in Chemistry and Biology Professor Harry B Gray
California Institute of Technology

The dianionic oxo ligand occupies a very special place in coordination chemistry, owing to its ability to stabilize high oxidation states of metals. The ligand field theory of multiple bonding in metal-oxos was published in two papers in the first volume of *Inorganic Chemistry*. The theory, which accounts for the ground state electronic structures and spectroscopic properties of these complexes, predicts that an

“oxo wall” separates Fe-Ru-Os and Co-Rh-Ir in the periodic table. I will review this early work, then discuss the roles metal-oxos play in two of the most important chemical reactions on planet Earth, hydrocarbon oxygenation catalyzed by cytochrome P450, and solar-driven water oxidation catalyzed by photosystem-II.

4:45 PM Unlocking the Potential of Spherical Nucleic Acids
in Biology and Medicine

Professor Chad A. Mirkin
NICHOLS MEDALIST

A fundamental tenet of nanotechnology is that bulk materials, when miniaturized, exhibit new and interesting chemical and physical properties. These properties often positively impact the development of new technologies, especially in the areas of biology and medicine where frontier advances require rapid changes in how living systems are probed and regulated. Spherical nucleic acids (SNAs), nanostructures typically made by chemically templating short strands of DNA or RNA on the surface of a particle, display extraordinary architecture-dependent properties. Unlike conventional nucleic acids, SNAs can rapidly enter cells without the need for transfection agents, and they can be utilized as novel intracellular probes and efficacious agents for regulating gene expression and immune system response. Consequently, SNAs constitute an entire new class of therapeutics that are being utilized to attack diseases and disorders, including autoimmune diseases and many forms of cancer, at their genetic roots.

5:45 PM Social Hour

6:45 PM William H. Nichols Medal Award Dinner

Professor Harry B. Gray will introduce
Professor Mirkin, Nichols Medalist

More information on the William H. Nichols Medal Events is available on the New York Section’s website at <http://www.NewYorkACS.org>.

Tickets may be reserved using the following form, or preferably through the New York Section website that accepts credit cards or Paypal. <http://www.NewYorkACS.org>.

***** RESERVATION FORM *****

2017 WILLIAM H. NICHOLS DISTINGUISHED SYMPOSIUM & MEDAL AWARD BANQUET in honor of Professor Chad A. Mirkin

Return to: ACS, New York Section, c/o Dr. Neil D. Jespersen, Department of Chemistry, St. John’s University, 8000 Utopia Parkway, Queens, NY 11439 (516) 883-7510

- Please reserve _____ places for the symposium & banquet at \$125/person ACS member
- _____ places for the symposium only at \$45/person ACS member
- _____ places for the banquet only at \$115/person ACS member
- _____ places for the symposium & banquet at \$155/person Non-member
- _____ places for the symposium only at \$65/person Non-member
- _____ places for the banquet only at \$125/person Non-member
- _____ places for the symposium only at \$30/person, Students, Retired, Unemployed
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Indicate numbers in your group who choose:

- Chicken _____
- Prime Rib _____
- Salmon _____
- Vegetarian _____

Mail Tickets to:

- Name: _____
- Address: _____
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BANQUET RESERVATION DEADLINE: MARCH 13, 2017

Please make checks payable to: ACS, NEW YORK SECTION Check for \$ _____ enclosed

New York Meetings

www.newyorkacs.org

NEW YORK SECTION BOARD MEETING DATES FOR 2017

The dates for the Board Meetings of the ACS New York Section for 2017 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 should 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.

All 2017 Board Meetings will be held at The Graduate Center, Science Center, Room 4102, 365 Fifth Avenue, New York, NY 10016, except for the January 21 Section-wide Conference and March 24 Nichols Symposium. Prof. Brian Gibney will chair all meetings. Refreshments will be available starting at 6:00 PM while the actual meeting will start at exactly 6:30 PM.

The board meetings dates for 2017 will be

Friday, March 24, 2017 – William H. Nichols Symposium and Medal Award Dinner at the Crowne Plaza Hotel, White Plains, NY.

Friday, April 28, 2017

Friday, June 9, 2017

Friday, September 15, 2017

Friday, November 17, 2017

More information will be posted in future monthly issues of *The Indicator* and on the New York website at

<http://www.NewYorkACS.org>.



JOSEPH NAGYVARY LECTURES

From Mixing Molotov Cocktails to Mining Stradivari's Secrets

Dr. Joseph Nagyvary, Professor Emeritus at Texas A&M University, will give a series of lectures in the New York area **March 2 and 3, 2017**. He recently published his memoir of Hungary that describes the lives of chemistry students during the period of the Cold War, and their participation in the 1956 uprising and fight for freedom. As noted by Dr. Nagyvary "some great chemists, Olah, Somorjai, Pavlath, etc. came out of Hungary in 1956."

His presentations will be based on his book, published in October to coincide with the sixtieth anniversary celebrations of the 1956 events and now available at Amazon:

<https://www.amazon.com/Violence-Violins-Making-Hungarian-Refugee/dp/1536894060/>

For more information on its content, go to www.violenceandviolins.com and see the news release from Texas A&M University:

<http://today.tamu.edu/2016/10/13/violence-and-violins-prof-recalls-his-role-in-hungarian-revolution/>

Many students living under a communist dictatorship picked a major in chemistry because it was best for survival there, but also because it offered a good career path if they would make it to the west. This talk will describe what members of Dr. Nagyvary's class did during the three weeks of the 1956 uprising (there will be some exciting video footage), and his escape to Zurich, Switzerland, which then was the Mecca of natural products chemistry. Video clips (24 minutes) of the 1956 student uprising, aired in 1957 by CBS and narrated by Walter Cronkite, are available at: https://www.youtube.com/watch?v=0Vq_LgruDQY

Dr. Nagyvary will also discuss his research (which has received international recognition) into the Stradivarius violin, inspired by a childhood passion for classical music. In 1976, he proposed that the chemicals used to treat the wood – not Stradivarius' violin-making skills – were responsible for its unique, pristine sound. His theory caused considerable outrage in music circles, but was indeed correct (Nature, 444, 30 Nov. 2006, p.565).

Dr. Nagyvary studied chemistry in his native Hungary at the University of Budapest. During the 1956 uprising, he escaped to Austria and ended up in Switzerland. He earned his doctorate at the University of Zurich, where his dissertation on curare alkaloids won the annual prize of the Swiss National Foundation (1962). He did post-doctoral work, with Lord Todd, at Cambridge University. After Cambridge, he emigrated to the United States in 1964. Following temporary positions at the University of Connecticut and Creighton, he taught biochemistry at Texas A&M University from 1968 to 2003. His field was nucleotide chemistry but in 1985, he gave that up in favor of his study of Stradivari violins, proving that chemists can do almost anything. In addition to his Swiss National Foundation prize, he has won a career devel-

opment award from US Public Health in 1967 and the Gold Medal of the Japanese Society for Industrial Physics in 2005. He lives in Jonestown, Texas, with his wife, Mary Ann. He has four children.

The presentations will be made at

- St. John's University, March 2, 2:00 PM (contact information: Dr. Neil Jespersen, jespersen@stjohns.edu)
- Queensboro Community College, March 2, 3:30 PM (contact information: Dr. Dominic Hull, DHull@qcc.cuny.edu)
- Nassau Community College, March 3, 2:00 PM (contact information: Dr. Daniel Resch, Daniel.Resch@ncc.edu)
- Westchester Community College, March 3, 5:30 PM (contact information: Dr. Paul Dillon, PaulWDillon2@hotmail.com).



LONG ISLAND SUBSECTION

From Mixing Molotov Cocktails to Mining Stradivari's Secrets

Speaker: Dr. Joseph Nagyvary
Professor Emeritus
Texas A&M University

Date: Thursday, March 2, 2017

Times: Refreshments 5:30 PM

Lecture 6:00 PM

Place: Queensborough Community College

Science Building, Room S-112

222-05 56th Avenue

Bayside, NY, 11364

Cost: Free and Open to the Public

More Information: Dominic Hull

dhull@qcc.cuny.edu



NY SECTION CHEMICAL MARKETING & ECONOMICS GROUP

CVC: Powering Manufacturing Industry Reinvention

Speaker: Thomas Kichler

Partner

CVC Capital Partners

Date: Thursday, March 2, 2017

Time: 11 a.m. - 2 p.m.

Place: Penn Club

Webcast free for ACS members

See flyer on page 10.



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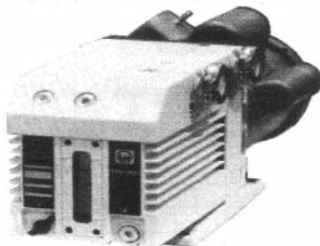
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Luncheon/Webcast • March 2, 2017 • Penn Club

Abstract

CVC Capital Partners manages \$52 Billion in assets and is one of the world's leading private equity and investment advisory firms. Founded in 1981, CVC today employs over 420 people throughout Europe, Asia and the US.

The firm is active in the chemicals space. The presentation will give an overview of the CVC current and recent investments in the chemical field. After exiting its remaining positions in Evonik and Univar in 2016, CVC remain invested in ChemicalInvest, a carve-out of four DSM Chemical Assets and its operating units, Aliancys (composite resins) and Fibrant (acrylonitriles).

The DSM transaction took place in mid-2015 with the resulting valuation uplift and positive share-price impact of 5% within a month after the completion. The JV structure provided multiple benefits for DSM as it divested and de-consolidated non-core divisions to focus on its strategic businesses.

The renewed focus on manufacturing is generating a new array of opportunities for investors in the businesses of chemistry. Join us to hear the insights of the CVC architect of its US industrials and energy portfolio and his views about the investment outlook.



CVC
Capital Partners

Speaker: Thomas Kichler. Three decades of experience as advisor and principal investor in over 100 M&A transactions with a value exceeding \$50 billion have not slowed down Thomas Kichler in his quest for finding growth opportunities as Partner and US Head of Industrials and Energy at CVC. He joined CVC in 2016 as the US head of industrials and energy.

Prior to joining CVC, he was a partner at One Equity Partners (the investment arm of JP Morgan), where he worked since 2002. He previously worked at Citigroup CIB (Salomon), Wasserstein Perella and Ernst & Young.

Kichler previously served on the Boards of Peroxychem, Sonneborn, Columbian Chemicals, LBC Holdings, Western Hospitals and Progress Rail Services. He received the 2014 Leadership Award for Distinction in Private Equity at the CME Diamond Jubilee.

Kichler received a BSE from the Wharton School at the University of Pennsylvania.



Event Schedule

Location:
Penn Club
30 W 44th Street, NYC

Event Times: (ET)
11:15 am - 12:00 noon
Registration and
Networking
12 noon - 1 pm Luncheon
1 pm - 2 pm Talk - Webcast
Luncheon Fees
\$120 for non-members
\$90 for members
Check for Early-bird savings
Webcast : \$30. Free webcast
recording for ACS members

Event Host
Chris Cerimele

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December 5, 2017

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WESTCHESTER CHEMICAL SOCIETY

Special Seminar – “From Mixing Molotov Cocktails to Mining Stradivari’s Secrets”

Speaker: Joseph Nagyvary, PhD
Professor Emeritus
Texas A&M University

See article on pages 8-9.

Date: Friday, March 3, 2017

Times: Refreshments 5:30 PM
Lecture 6:00 PM

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

Cost: Free and Open to the Public

Further Information: Paul Dillon

PaulWDillon2@hotmail.com

(914) 393-6940

Note: Inclement Weather: Cancellation Due to Inclement Weather

Should Westchester Community College's Valhalla campus close due to inclement weather (or has delayed opening or closes early) the meeting will be cancelled.

Decisions about delay/closure are made around 6am for day courses and 3pm for evening courses. The college will communicate delays, closings or early dismissals on their website (www.sunywcc.edu), Facebook, Twitter, and the 914-606-6900 phone line.

HIGH SCHOOL TEACHERS TOPICAL GROUP

Preparing an Application for the Math for America Master Teacher Fellowship

Speaker: Lena Douris
clenadouris@gmail.com

I will share information about my experience in the MfA Master Teacher program. The details of the application process and the benefits of being involved in the wonderful MfA community. Note: MfA covers the Chemistry program in New York City.

Date: Friday, March 17, 2017

Times: Social and Dinner — 5:45 PM
Meeting — 7:15 PM

Place: Social & Dinner — DoJo Restaurant
14 West 4th St. (@Mercer Street)
New York, NY
Meeting — New York University
Silver Center for Arts and Sciences, Room 207
Enter from 32 Waverly Place
South-east corner Washington Sq. East or Washington Place
New York, NY



LONG ISLAND SUBSECTION

Board Meeting

Date: Thursday, March 30, 2017

Time: 6:30PM

Place: Nassau Community College
Life Science Building
Chemistry Dept, 2nd Floor



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SPRING 2017 SEMESTER AT NYU

Mark Your Calendars

The Inaugural Edward J. McNelis Lecture in Chemistry

Speaker: John F. Hartwig
University of California/Berkeley

Date: Friday, March 31, 2017

Times: 3:30 PM

Place: New York University, Silver Center
Hemmerdinger Hall, Room 102
31 Washington Place (between
Washington Square East and
Greene Street)

For more information, contact: James
Canary (james.canary@nyu.edu)



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 FUTURE MEETINGS CALENDAR

Spring Seminars

Thursday, April 6, 2017

Speaker: Dr. Fabiola Barrios Landeros
Yeshiva University

Title and abstract: TBA

OTHER EVENTS:

Friday, April 21, 2017
Chemistry Challenge

Saturday, May 6, 2017
Undergraduate Research Symposium

Tuesday, May 9, 2017
High School Awards

Board Meeting Dates

Thursday, April 27, 2017

Thursday, May 25, 2017

Time: 6:30PM

Place: Nassau Community College
Life Science Building
Chemistry Dept, 2nd Floor



WESTCHESTER CHEMICAL SOCIETY

FUTURE MEETINGS

Special Seminar – “Cutting and Pasting with DNA: Genome Editing”

Speaker: Evan Merkhofer, PhD
Assistant Professor (Biology)
Mount Saint Mary College

Humans have long attempted to shape the world around them; in the field of biology this is no different. Through agriculture and domestication, humans have harnessed aspects of biology for their advantage. However, with rapidly evolving molecular biology tools and the post-genomic era of genetic information, the ability to manipulate DNA sequences has opened up a new world of potential implications in research, medicine, ecology and many more fields. The CRISPR/Cas9 system of genome editing allows precise modifications of DNA far superior to previous methods. The potential uses for this technology include somatic and germ cell therapy, gene drives, genetically modified crops and much more. However, these applications are not without biological and societal implications. This presentation will address the uses and consequences of this paradigm-shifting technology.

Dr. Merkhofer obtained his B.S. in biochemistry and molecular biology, Magna Cum Laude, at Gettysburg College, Gettysburg, PA having completed an honors thesis, “Genetic Variation for the Thermal Stability of Leucine Aminopeptidase P in *Drosophila melanogaster*,” working under Dr. Kazuo

Hiraizumi in 2002. He was a cytogenetic technologist in the cytogenetics lab (Dept. of Pathology) at Brigham and Women's Hospital in Boston working with Dr. Cynthia Morton. He obtained his Ph.D. in Genetics and Molecular Biology from the University of North Carolina (UNC) at Chapel Hill, completing his dissertation, "Elucidating the Role of NF- κ B in Her2+ Breast Cancer," for Dr. Albert Baldwin in 2010. He then commenced a postdoctoral fellowship at the University of California, San Diego (UCSD), Division of Biology, Molecular Biology Section, working for Dr. Tracy Johnson. For this work the research focus was coordination between chromatin and DEAD-box ATPases in co-transcriptional pre-mRNA splicing and spliceosomal rearrangements, using *Saccharomyces cerevisiae* as a model organism. Since 2014, Dr. Merkhofer has been an assistant professor of Biology in the Division of Natural Sciences at Mount Saint Mary College, where he has mentored a number of undergraduate students. In addition to his current post at the College of Saint Mary, Dr. Merkhofer has held positions as an instructor, a lecturer or guest lecturer at UNC (Chapel Hill), UCSD and San Diego State University. He is also active in diversity services, academic service, community service and professional societies.

Date: Wednesday, April 12, 2017

Times, Place, Cost and Further Information:
See under March meeting, page 11.

* * * * *

Distinguished Scientist Award and Student Achievement Awards Dinner Meeting:

Topic to Be Announced

Date: Tuesday, May 2, 2017

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

Place: Pace University
861 Bedford Road – Entrance #2
Pleasantville, NY
The Campus Center
Butcher Suite

Cost: To be announced



METRO WOMEN CHEMISTS

Nitric Oxide Signaling in Bacteria: Discovery of a New Mechanism for Regulating Bacterial Biofilms

Speaker: Dr. Elizabeth Boon
Associate Prof. of Chemistry
Stony Brook University
Stony Brook, NY

Abstract:

Bacteria colonize most surfaces, forming multicellular, antibiotic-resistant, communities known as biofilms. Biofilms cause chronic infections and persistent biofouling of medical implants, marine vessels, and environmental sensors. Biofilm dispersal by nanomolar nitric oxide (NO) appears to be a general phenomenon, but fundamental questions remain concerning the identity of the NO sensor and mechanism of signal transduction. NO has been reported to disperse bacterial biofilms through regulation of intracellular cyclic-di-guanosine monophosphate (c-di-GMP) concentrations. C-di-GMP is a tightly regulated second messenger-signaling molecule that is tightly correlated with biofilm formation. H-NOX (heme-nitric oxide/oxygen binding) proteins are well known NO sensors in eukaryotes that are also conserved in many environmental and opportunistic pathogenic bacteria. Indeed, we have shown that NO/H-NOX signaling disperses bacterial biofilms through a mechanism consistent with c-di-GMP signaling. However, H-NOX proteins are not conserved in most human pathogens, even those for which the mechanism of action is known to involve c-di-GMP signaling. Therefore, an alternate NO sensor must also exist. We have identified a potential alternate NO sensor, a novel hemoprotein we named NosP (nitric oxide sensing protein). NosP domains are conserved in 91% of bacterial genomes, they bind NO, but not molecular oxygen, as expected for a NO-specific sensor, and they are encoded as fusions with, or in close chromosomal proximity to, proteins annotated as c-di-GMP synthesis or hydrolysis enzymes. Therefore we hypothesize that NO generally disperses bacterial biofilms through regulation of intracellular c-di-GMP concentrations, but the sensor varies; both NosP and H-NOX can fill this role. Evidence from biochemical characterization of proteins in the NosP and H-NOX signaling pathways, as well as genetic and biofilm growth studies, will be presented to support our hypothesis.

About the Speaker:

Dr. Elizabeth (Liz) M. Boon grew up in Durham, NC. She received her A.B. with Highest Honors in Chemistry from Kenyon College in 1997 and her Ph.D. in Chemistry from the California Institute of Technology in

(continued on page 14)

METRO WOMEN CHEMISTS

(continued from page 13)

2003. Liz completed a NIH Postdoctoral Fellowship in Biochemistry at the University of California, Berkeley before starting in the Chemistry Department at Stony Brook University in the fall of 2006. She has received several awards for her research including the Presidential Early Career Award for Scientists and Engineers (PECASE), the American Chemical Society PROGRESS/Dreyfus Lectureship Award, The NYSTAR Watson Young Investigator Award, the Office of Naval Research Young Investigator Award, and the Rising Star Award from the Research Foundation of the State University of New York. In 2011 the Kavli Foundation and the National Academy of Sciences elected Liz a Kavli Fellow. In 2016-2017 she is serving as an Honorary Faculty Member to the SUNY Research Foundation Council.

Date: Wednesday, April 19, 2017
Times: 12:15 PM – 1:15 PM
Place: Pace University
 Lecture Hall North (2nd Floor)
 One Pace Plaza
 New York, NY

Please contact Dr. Rita K. Upmacis (Chair of the Metro Women Chemists' Committee (rupmacis@pace.edu)) if you plan to attend.



HIGH SCHOOL TEACHERS TOPICAL GROUP

FUTURE MEETINGS:

“Demo Derby II”

Date: Friday, April 21, 2017
 For times and place, see under March meeting, page 11.

The Development of Carolacton-derived Macrolactones for the Perturbation of Bacterial Biofilms

Speaker: Dr. Americo J. Fabroni
 Department of Chemistry
 Temple University
 Philadelphia, PA.

Date: Friday, May 19, 2017
 For times and place, see under March meeting, page 11.

COME AND JOIN US CELEBRATE EARTH DAY



WITH OUR 6TH ANNUAL “WALK THE BROOKLYN BRIDGE” EVENT



Keynote address “Achieving Global Sustainability: Green Chemistry Needs You!”

Speaker: Prof. Rita Upmacis
 Pace University

We will meet at Pace University in the Bianco Room at 11 am for check-in followed by welcoming remarks, our keynote address, and our celebratory “Earth Day Parade” across the iconic Brooklyn Bridge! Participants will be provided with continental breakfast and Earth Day gifts.

Date: Sunday, April 23, 2017
Time: 11:00 AM – 3:00 PM
Cost: The event is free and open to all, but EVERYONE must register:
<http://www.newyorkacs.org/meetings/EarthDay/CCED.php>

Contact: Prof. JaimeLee Rizzo, CCED
 Coordinator — jrizzo@pace.edu



NEW YORK NANOSCIENCE DISCUSSION GROUP

2017 Sessions

Hosted by the New York University
 Department of Chemistry


Speakers and details 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.

Dates: Tuesday, June 6, 2017
Times: Refreshments at 7:00 PM
 Science at 7:30 PM
Place: New York University, Silver Center
 31 Washington Place (between
 Washington Square East and
 Greene St.), Rm. 1003 (10th Fl.)

For more information, contact: James
 Canary (james.canary@nyu.edu)

Topical Group History: <http://www.nyu.edu/projects/nanoscience>

	ACS Chemistry for Life®	65th	ANNUAL UNDERGRADUATE RESEARCH SYMPOSIUM
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**The Student Activities Committee of the
New York Section of the American Chemical Society**
Saturday, May 6th, 2017 at Fordham University

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. Jin Kim Montclare

NYU Tandon School of Engineering

Jin Kim Montclare is an Associate Professor in the Department of Chemical and Biomolecular Engineering (CBE) at NYU Tandon School of Engineering (NYU SoE), who is performing groundbreaking research in engineering proteins to mimic nature and, in some cases, work better than nature. Prior to joining NYU SoE, Jin was an NIH postdoctoral fellow at the California Institute of Technology in the Division of Chemistry and Chemical Engineering in the Tirrell lab. She received a Bachelor of Science in Chemistry from Fordham University as a Goldwater and Clare Boothe Luce undergraduate fellow, a PhD in Bioorganic Chemistry from Yale University as an NSF and Pfizer predoctoral fellow. In 2015 began serving as Graduate Studies Director for CBE and Associate Director for Technology Advancement for the NYU Materials Research Science and Engineering Center, while leading the multidisciplinary Center for Innovation and Entrepreneurship at NYU SoE. Among her many honors and awards are the 2016 ACS WCC Rising Star Award, 2015 Agnes Faye Morgan Research Award from Iota Sigma Pi, 2014 Executive Leadership in Academic Technology and Engineering Fellowship, and 2014 Distinguished Award for Excellence, Dedication to Invention, Innovation and Entrepreneurship.



Keynote Address

Intelligent Self-Assembling Biomaterials

Through centuries of evolution, nature has developed biopolymers capable of folding and assembling into discrete structures with a functional consequence. Inspired by this, our lab focuses on engineering “intelligent” protein materials with entirely new properties and function. In particular, our lab has fabricated protein-derived nanomaterials: helix-elastin block polymers and coiled-coil fibers. We investigate the fundamental self-assembly and molecular recognition capabilities of these systems. More importantly, we are able to harness these structure as well as others to interface with small molecule therapeutics, genes, cells and inorganic metals. Central to this work is the integration of stimulative domains through rational design.

SIGNIFICANT DATES FOR 63rd URS

Deadline for Abstract Submission - **March 20, 2017** Abstract acceptance notification – April 3, 2017

Deadline for Symposium Advanced Registration – April 21, 2017

2017 Co-chair Dr. Paul Sideris Queensborough CC - CUNY psideris@qcc.cuny.edu	2017 Co-chair Dr. Ipsita Banerjee Fordham University banerjee@fordham.edu	2017 Co-chair Dr. Naphthali O'Connor Lehman College - CUNY naphthali.oconnor@lehman.cuny.edu	2017 Co-chair Dr. Meredith Foley New Jersey City University mfoley@njcu.edu
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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. Checks for the registration fee should be made out to: “NY ACS URS” and sent to: Prof. Paul Sideris, Queensborough Community College, Department of Chemistry, Science Building S-445, 222-05 56th Avenue, Bayside, NY 11364.

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, March 20, 2017

Time: 6:30 PM

Place: Location TBD & Teleconference
(See www.njacs.org for details)



CAREERS IN TRANSITION MEETINGS

Job Hunting??

Resume & LinkedIn writing and key word search rules are changing. To be found, come and utilize our latest insights. Our ACS trained Career Consultants offer assistance at Students2Science to help members with their job search on the second Monday of each month. Topics at this free workshop are:

- Techniques to enhance resume effectiveness
- Interview practice along with responding to difficult questions
- Networking to find hidden jobs
- Planning a more effective job search

Date: Monday, March 13, 2017

New from now on is a second CIT meeting in East Windsor on the third Monday. Contact Bill for details.

Times: Meeting 2:30 - 5:00 PM

Place: Students 2 Science, Inc.
66 Deforest Avenue
East Hanover, NJ

Cost: No charge

Reservations: at www.njacs.org/careers.html

A job board and networking assistance is offered at most topical group meetings.

Appointments with Bill can be arranged for personal assistance at (908) 875-9069 or billsuits@earthlink.net.

See www.njacs.org under the Career tab for Jobs hidden from sight and relevant blogs.



NJACS PARTNERS WITH STUDENTS2SCIENCE

Members are encouraged to volunteer at their East Hanover facility and explore their website at www.students2science.org to learn more about this innovative program.

S2S continues to expand their exciting laboratory experience the disadvantaged children. Many of our members continue to volunteer as mentors. At their 2 million dollar analytical lab, every 40 kids are assisted by 16 professional volunteer mentors. The experiments performed really make chemistry and science come alive using state of the art analytical equipment working with students starting in 6th grade up to HS seniors. Each day is optimized for grade level and curriculum.

Now the program has further expanded with internet video and experiments performed in the classroom for 4th & 5th grades. Internet allows views of the lab in operation and relates to simpler experiments setups done in the classroom with their teacher and a partnering chemist.

North Jersey members who volunteered benefited in many ways. Those in transition expanded their network and received job finding assistance. Retired chemists met up with old friends and made many new friends. Those with jobs used the volunteer hours as part of the company outreach programs and team training. All feel great about making a difference in the lives of the youth who may have never met a scientist or considered a career in the sciences.

Please consider volunteering and discovering more about this innovative program. If you want to learn more, you can speak with either Ellen Barrabee (908) 244-4328 or Fran Nelson (201) 220-2680.

S U R | R I S E

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

NOJ MASS SPEC DISCUSSION GROUP

Upcoming 2017 Meetings

Date: Tuesday, March 14, 2017

(Sponsored by Waters)

Wednesday, April 12, 2017

(Sponsored by AB Sciex)

Tuesday, May 9, 2017

(Sponsored by Bruker)

Times: Social and Registration 5:30 PM

Complimentary Dinner 6:15 PM

Welcome and Opening Remarks

7:00 PM

Presentations 7:05 PM

Place: Holiday Inn Somerset-Bridgewater

195 Davidson Avenue

Somerset, NJ

Registration will open approximately 2 week prior to the meeting on our website (<http://www.njacs.org/topical-groups/mass-spectrometry>). Meeting updates will also be posted here.

ResMed: Residential School on Medicinal Chemistry and Biology in Drug Discovery
June 12-16, 2017
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. Several case histories of recent successful drug development programs will also be presented. The five-day program covers:

Principles of Med Chem

Cheminformatics

Lead ID & Optimization

Epigenetics

Fragment-based Drug Design

Structure-based Drug Design

Drug-like Properties

Plasma Protein Binding

Molecular Modeling

Protein-Protein Interactions

Antibody-Drug Conjugates

DMPK

Toxicophores

GPCRs

Kinase Inhibitors

Ion Channels

Enzyme Inhibitors

Bioisosteres

Preclinical Tox

Clinical Dev

Case Histories

W. Greenlee, V. Gullo and R. 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

METRO WOMEN CHEMISTS

Date: Wednesday, April 19, 2017

See details on pages 13-14.



NOJ DRUG METABOLISM DISCUSSION GROUP

Spring Symposium

Date: Thursday, April 20, 2017

Time: 8:00 AM - 3:45 PM

Place: The Palace at Somerset Park

333 Davidson Avenue

Somerset, NJ

Registration Information:

Pre-registration fee is \$125 (pre-register by April 10, 2017).

Registration fee at the door is \$150 (Checks only)

Registration fee is \$10 for students and postdocs and \$50 for faculty

Registration is free for unemployed

Please plan to pre-register as a group, as coordinated by a member of the NJACS DMDG Steering Committee List from your organization (see website at <http://www.njacs.org/topical-groups/drug-metabolism> for more information)..

If you have no DMDG member at your company, please contact Bo Wen (bo.1.wen@gsk.com) for registration.

Payments by personal or company checks. Sorry, cash and credit cards are not accepted.

Checks should be made payable to: **NJ Drug Metabolism Discussion Group.**

Exhibitors:

Please contact Anima Ghosal (ghosala@aol.com) for information concerning exhibits



NORTH JERSEY SECTION'S 69th ANNUAL UNDERGRADUATE RESEARCH CONFERENCE

The Sixty-Ninth Annual Undergraduate Research Conference provides an opportunity for talented undergraduate students in the North Jersey Section to give an oral presentation on their research results. All

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NoJ 69th ANNUAL URS

(continued from page 17)

undergraduate students in the North Jersey Section are invited to participate in this very rewarding event. The research presentations will be judged by local chemists working in industry or academia and the student giving the best presentation will be given the 2017 Jean Asell Duranna Award. In addition the top three presenters will be awarded cash prizes. The student award winners and their advisors will then be invited to attend the North Jersey Section's Annual Awards Dinner held on the Fairleigh Dickinson University campus in Madison, NJ.

Abstract Information: Clearly indicate the title of the presentation and all authors. Abstracts must be no more than 200 words and need to be submitted as a word document attached to an email to Matthew Mongelli at mmongell@kean.edu

Abstracts **deadline is Wednesday April 12, 2017**

Date: Friday, April 28, 2017

Times: Noon until 5:00 pm

Place: Drew University
Crawford Hall in the Ehinger
Center
Madison, NJ 07940

For more information about this event contact Matthew Mongelli at mmongell@kean.edu

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 2 Science is seeking volunteers to aid in our Virtual Lab program. We have a series of elementary, middle, and high school experiments that we will be running in various schools across New Jersey. Members are especially needed to help with the North Jersey section's IPG funded project to bring hands-on science to South Jersey. We need professionals to help in the classroom with the students. It's great fun, a wonderful

way to give back, and only requires a few hours of your time. Opportunities begin in November. For more information, contact Fran Nelson, frannelson@students2science.org and visit our website at Students2Science.org

Call for Nominations

COMMITTEE ON THE HISTORY OF THE NEW YORK SECTION

Over the past twenty-three years the New York Section has participated in the designation of seven National Historic Chemical Landmarks and four New York Section Historic Chemical Landmarks. A brief description of these National and local section landmarks may be found on the NY Section Home Page at 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

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

National

ACS Statement on the Immigration Executive Order

This message is being sent on behalf of Denise L. Creech, Executive Vice President,

ACS Membership Division

Dear Division and Local Section Councilors and Leaders:

Recent White House executive orders and various rumors about possible political intrusion at federal agencies have given rise to great concern at ACS, among our members as well as our sister scientific societies.

I wanted to make you aware of two statements ACS issued in the past several days as well as a multi-society letter ACS signed with over 150 organizations. All documents can be accessed from a link on the ACS homepage.

On Wednesday, January 25, ACS issued a statement of concern in response to rumors of political intrusion at several federal agencies, such as directives to remove climate science pages from websites.

On Monday, January 30, ACS issued a statement of concern regarding the 1/27 White House executive order banning immigration of certain parties and from seven countries.

On Tuesday, January 31, a letter was sent to President Trump signed by over 150 organizations, including ACS, asking that he rescind his executive order on immigration barring travel to the US for various periods of time by refugees as well as individual from seven countries.

There is also quite a bit of discussion going on among ACS members, and generally in the science community, about the April 22nd grassroots Science March in Washington, DC and in many other cities. This initiative, started organically and has grown extremely fast through social media, has attracted significant attention from the media and ACS members. ACS is carefully looking into the goals and messaging of the march before deciding if it would be appropriate to commit ACS in any way. Guidance to ACS members at this time is that they are free to become involved with the march as long as they do not imply ACS commitment or support.

Finally, I would also like to remind our members that while they communicate or discuss these current events, especially on social media, that they be sure to express those thoughts and opinions as individuals and not make any representation that we are speaking on behalf of the ACS.

If you, or anyone in your local section or division has any questions, please direct them to John Katz, Director, Member Communities and Recognition, (j_katz@acs.org).

Best regards,
Denise L. Creech

Professional/Product Directory

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

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numegalabs.com P- 858-793-6057

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