

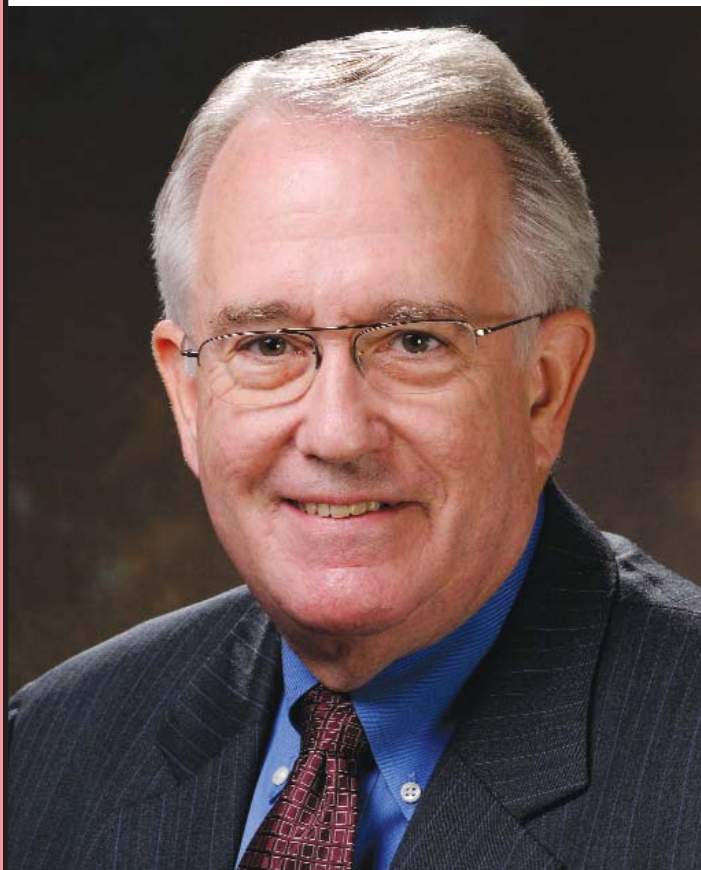
# THE Indicator

MARCH 2014

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## **Professor Amos B. Smith, III 2014 Nichols Medalist**



*See biography on page 8.  
Nichols Symposium Program and Registration Form  
on pages 9 and 10.*

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## Press Release

### **LYNWOOD SWANSON TO RECEIVE PITTCON HERITAGE AWARD**

**Co-founder and former chairman of FEI will receive award at opening plenary session of Pittcon 2014 in Chicago**

The Chemical Heritage Foundation (CHF) will present the **2014 Pittcon Heritage Award** to Lynwood Swanson, co-founder and former chairman, CEO, and chief scientist of FEI Company. Swanson will receive the award in recognition of his establishment and leadership of one of the world's largest instrument companies, as well as his landmark development of liquid metal ion sources. This 13th annual award will be presented at Pittcon 2014 in Chicago. The award will be presented at the opening plenary session on **Sunday, March 2, 2014**.

This award recognizes outstanding individuals whose entrepreneurial careers have shaped the scientific instrumentation community, inspired achievement, promoted public understanding of the modern instru-

mentation sciences, and highlighted the role of analytical chemistry in world economies.

"The company Lynwood Swanson founded creates devices that helped to make Moore's Law a reality," said Carsten Reinhardt, president and CEO of CHF. "His company made focused ion beam sources that allowed the number of transistors on a microchip to grow from tens to millions. He combines research, innovation, and entrepreneurship in the best tradition of Pittcon Heritage Award winners."

The Pittsburgh Conference donates nearly a million dollars each year in the form of science-equipment grants, research grants, scholarships and internships for students, awards to teachers and professors, and grants to public-science centers, libraries, and museums.

More information is available at [www.pittcon.org](http://www.pittcon.org).

#### **About Lynwood Swanson**

Born in 1934 in Turlock, California, Lynwood Swanson founded and led FEI Company, a producer of electron and ion beam instruments that in 2012 ranked among the top fifteen instrumentation companies in the world.

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

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## March Calendar

### NEW YORK SECTION

**Thursday, March 6, 2014**

Long Island Subsection  
See page 11.

**Thursday, March 6, 2014**

Chemical Marketing & Economics Group  
See pages 12-13.

**Wednesday, March 19, 2014**

Westchester Chemical Society  
See pages 13-14.

**Tuesday, March 25, 2014**

Biochemical Topical Group  
See pages 14-15.

**Friday, March 28, 2014**

Nichols Symposium  
See pages 8-10.

**Friday, March 28, 2014**

High School Teachers Topical Group  
See page 15.

### NORTH JERSEY SECTION

**Monday, March 10, 2014**

Careers in Transition Group  
See page 6.

**Monday, March 31, 2014**

North Jersey Executive Committee Meeting  
See page 6.

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

**Deadline for items to be included  
in the April 2014 issue of  
*The Indicator* is  
**February 20, 2014****



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## THIS MONTH IN CHEMICAL HISTORY

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

In my last column I described the way that I became interested in the 19th. century text on “The Chemistry of Creation” by Robert Ellis F.L.S. subtitled “A sketch of the chemical phenomena of the earth, the air, the ocean” third edition; published in 1855 under the direction of The Committee of General Literature and Education appointed by The Society for Promoting Christian Knowledge (S.P.C.K.). I also gave some of Ellis’s background, qualifications, and activities. In this column I will focus on the book itself.

As is to be expected from its origins, this is a propagandist work dedicated to showing, in Dr. Pangloss’s words from “Candide” that “All’s for the best in this best of all possible worlds”. There is nothing obviously wrong, given the knowledge of the times, in Ellis’s presentation of the science of the state of the Earth and of natural phenomena. But almost everywhere he can he puts in a plug for the beneficence of the divine creator. In Part III he discusses the salinity of the oceans. “The all-wise Creator suffers nothing to be done by chance; and if the ocean was to be made salt by the lixiviation of the crust of the earth, can we suppose that so important a result ... would be permitted to the operation of accident? If, instead of employing limestone it had pleased God to employ baryta ...in constructing ...the earth’s crust ...the ocean would have been unfit for the residence of a single living creature. The saltiness of the ocean is, therefore, a wonderful instance of the forethought and wisdom of the world’s Creator.” ( I have abbreviated by about one-third the content of this paragraph without, I believe, changing its meaning. Ellis tends to be long-winded in a very Victorian way.)

I will present the book systematically. A 20 page introduction, headed by an engraving of an alchemist, covers the origins and development of chemistry from ancient Egypt to the nineteenth century. The illustrations are significant contributors to the beauty of this book. A full page engraving of a hilly scene with a waterfall and a vista of a river valley introduces Part I- The Earth. In this section the author discusses the elements as known in the 1850s. There are sixty-two of which number several are still doubtful. Curiously he does not give a list or Table of these elements; we have to infer their names from his later discussions. Ellis’s discussions in this section of the novel art of photography are interesting. The actinic ray of light has been long known for its effects on silver compounds. Now (1855) this effect has been captured in a number of processes: the Daguerrotype; the Talbotype; and the collodion plate. There are even announcements of photographs in color. Electricity is another wonder of the earth. The communication speed of the Electric telegraph means that “the Royal speech may be printed and distributed at the very ends of our island on the afternoon of its delivery”. In a Chapter on Chemistry of the Land Ellis does some careful tightrope walking over Niagara. “At the Falls of Niagara, for example, geologists are considered to have proved that in the course of time the river has cut its way back through several miles of rock, and is still gradually receding, though with extreme slowness, at the rate, it is said, of a foot a year.” He then adds in a telling footnote: “It will be understood that while admitting this fact, no assent is thereby given to the argument as to the assumed age of the earth, which is conceived to be supported by this phenomenon”. Arguments about the age of the earth were key to the debates raging at that time about the role of evolution in the development of living species.

Part II-The Air is introduced by a picture of various forms of clouds. The physics and chemistry of the atmosphere seem to be one of Ellis’s enthusiasms. There are pages and chapters of straightforward scientific analysis with hardly a word about the Creator. He contrasts the experiments of Dalton and Gay-Lussac agreeing with the latter that the proportions of oxygen and nitrogen in the air are constant regardless of place or altitude. This section does contain some remarkable allegations indicative in part of the state of medical science of the time. Malaria (as its name indicates) is “an atmospheric impurity resulting from vegetable decomposition..”. Cholera may be “a disease due to a deficiency in the amount of the electricity of the air”. In St. Petersburg it is alleged that a large magnet lost its power during a cholera epidemic, and the electric telegraph failed!

Part III-The Ocean is introduced by a picture of an ocean bay ringed by volcanic hills. I discussed some of Ellis’s observation on salinity earlier.

The whole work concludes with a paean of praise to the all-wise beneficent creator.

On the whole “The Chemistry of Creation” does its job of telling a believing audience about the overall chemistry of the earth well. It does it without including a single chemical symbol or formula. It does include a sketchy and relatively uninformative discussion of chemical equivalents, but there is no mention of atomic weights that were by 1855 central to any deep analysis of chemistry. This book is, for me, a fascinating insight into the views of believing Christians about the natural world in mid-nineteenth century Britain.

## 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 31, 2014

**Time:** 6:00 PM

**Place:** Rutgers, The State University of New Jersey  
Busch Campus  
Center for Integrative Proteomics Research, Room 126  
174 Frelinghuysen Road  
Piscataway, NJ

**Cost:** \$5.00 - pizza dinner

Directions can be found using map quest and the address above.

Reservations: call (973) 822-2575 or email [njacsoffice@aol.com](mailto:njacsoffice@aol.com) prior to **Wednesday, March 26, 2013**.

Dinner at the Section Meeting is payable at the door. However, if you are not able to attend and did not cancel your reservation, you are responsible for the price of your dinner.

\* \* \* \* \*

### Tentative Meeting Schedule:

Monday, April 23, 2014

Monday, May 22, 2014

Monday, June 18, 2014



### 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 10, 2014

**Times:** Meeting 5:30 - 9:00 PM

Pizza snack and soda 6:30 PM

**Place:** Students 2 Science, Inc.

66 Deforest Avenue

East Hanover, NJ

**Cost:** \$5.00 for pizza and soda

**Reservations:** at

[www.njacs.org/careers.html](http://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](mailto:billsuits@earthlink.net).

See [www.njacs.org](http://www.njacs.org) under the Career tab for Jobs hidden from sight and relevant blogs.



### NMR TOPICAL GROUP

There will be no meeting of our Topical Group in March.

Our next meeting will be **Wednesday, April 23, 2014**. See details in the April *Indicator*.



The New Jersey Pharmaceutical Quality Control Association (NJPCA) invites you to attend our Luncheon (11:30 AM to 2:00 PM) Monthly Meetings for 2013-2014; the following dates have been set for the upcoming year. Please mark your calendars!

January through May 2014	Our QA Certification Training Course (evening weekly sessions)	Registration will begin in the Fall of 2013
March 18, 2014	Monograph Harmonization: Throwing Down the Gauntlet	Speaker: Mark Wiggins
April 8, 2014	Rapid Micro Testing vs. Traditional Micro Testing (evening discussion panel)	Speakers: Dr. Daniel Prince, Dr. Scott Sutton, Dr. Michael Miller
May 21, 2014	FDA Conference More details to follow	Speakers: details to follow

Future updates on meeting information can also be found on the website (topics and speakers): [www.NJPCA.org](http://www.NJPCA.org)

## **BORON IN THE AMERICAS (BORAM) XIV – AT RUTGERS UNIVERSITY, NEWARK CAMPUS**



**Date: Sunday-Thursday, June 15-19, 2014**

As a biannual international conference, the BORAM conference attracts participants working in areas related to any of the many facets of boron chemistry (pharmaceutical, materials, medicinal, inorganic structural). The goal of this conference is to bring together scientists with an interest in the chemistry and applications of boron-containing compounds, to promote cross-fertilization between disciplines, and to provide a forum for sharing and discussing the latest developments. Examples of topics that will be discussed include:

<b>New Synthetic Methods</b>	<b>Boron-containing (Nano)Materials</b>
<b>Borates and Boron Clusters</b>	<b>Applications in Organic Synthesis</b>
<b>Organoboranes</b>	<b>Applications in Organic Electronics</b>
<b>Boron-containing Polymers</b>	<b>Biomedical Applications</b>

The 2014 BORAM conference will take place on the Newark campus of *Rutgers, The State University of New Jersey*. The conference venue is located less than 15 minutes from the Newark/New York (EWR) Airport and in close proximity to metropolitan New York (ca. 20-30 minutes to midtown or lower Manhattan).

For additional up-to-date information please pre-register or regularly check the conference website at <http://chemistry.rutgers.edu/BORAM>

If your organization is interested in sponsorship opportunities or would like to exhibit commercial products during the conference, please contact the organizer: Dr. Frieder Jäkle, Rutgers University-Newark. Tel: (973) 353-5064; Email: [boram@rutgers.edu](mailto:boram@rutgers.edu)



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## **Professor Amos B. Smith, III — 2014 Nichols Medalist**

The ACS New York Section congratulates and extends its best wishes to Professor Amos Smith, III, of the University of Pennsylvania, who will receive the William H. Nichols Medal Award on March 28, 2014 in White Plains, New York. The Nichols Medal is presented at an award dinner following the Nichols Distinguished Symposium. The Distinguished Symposium is titled "New Strategies And Tactics For Complex Molecule Synthesis." Professor Smith is being honored for "Outstanding Contributions to Synthetic Organic Chemistry."

Professor Amos B. Smith, III (born August 26, 1944) received his early education in Lewisburg, PA. In 1966 he was awarded Bucknell University's first combined four-year B.S.-M.S. degree in Chemistry. After a year in medical school (University of Pennsylvania), he earned his Ph.D. degree (1972) and completed a year as a Research Associate at Rockefeller University. In 1973, he joined the Department of Chemistry at the University of Pennsylvania; currently, he is the Rhodes-Thompson Professor of Chemistry. In addition, he is a Member of the Monell Chemical Senses Center, the Associate Director of the Penn Center for Molecular Discovery (PCMD), and from 1976-2000, he was a Member of the Laboratory for Research on the Structure of Matter (LRSM). In 2001, he was appointed as an Honorary Member at the Kitasato Institute, where he serves as Visiting Director. From 1988 to 1996 he served as Chairman of the Department of Chemistry. In 1998 he became the first Editor-in-Chief of the new American Chemical Society journal, *Organic Letters*.

Professor Smith's research interests encompass three diverse areas: natural product synthesis, bioorganic chemistry and materials science. To date more than 85 architecturally complex natural products have been prepared in his Laboratory. In addition, Professor Smith, in collaboration with Professor Ralph Hirschmann, has achieved the design and synthesis of non-peptide peptidomimetics of neuropeptidic hormone/transmitters and protease enzyme inhibitors and, also with Professor Stephen Benkovic (Penn State), haptens for the production of catalytic antibodies capable of peptide bond formation. At Monell, in collaboration with Professor Peter Jurs (Penn State), he pioneered the use of computerized pattern recognition techniques for the analysis of primate chemical communication. Collaborative programs at the LRSM include the chemistry and physics of novel liquid crystals and the fullerenes.

Professor Smith has been a Visiting Professor at Columbia, Cambridge (UK) and Auckland (NZ) Universities. Editorial Board memberships include the *Journal of the American Chemical Society* (1988-1993), the *Journal of Organic Chemistry* (1982-1986,1994-), *Accounts of Chemical Research* (2002-), *Journal of the Chemical Society, Perkin Transactions I* (1992-2001), *Organic Reactions* (1987-), *Organic Synthesis* (1990-1998), *Fullerene Science and Technology* (1993-1996), *Regional Editor* (1997-2001), *Synlett* (1995-1998), *Tetrahedron Publications* (1996-), *Journal of Antibiotics* (1999-) and *Chemical & Pharmaceutical Bulletin*. He has also served on the NIH Medicinal Chemistry A Study Section as Member (1993-1987 and 1995-1998) and as Chair (1997-1999), and on the Executive Committee of the Organic Division of the ACS, as Chair-Elect, Chair, and Past-Chair (1995-1997). Currently, he is a Member of the Board of Directors of both *Organic Reactions* (1995-) and *Organic Syntheses* (2002-), and a Member of the ACS Governing Board for Publications (2012-2015). In addition, Professor Smith is a Member of the ESPCI International Science Council, Paris, France (2007-), and then ACS Governing Board for Publishing (2011-). To date, he has co-authored over 640 publications and has delivered over 600 invited lectures, including plenary lectures at the National Organic Chemistry Symposium (1983, 1993), numerous Gordon Research Conferences, the Royal Society Christmas Lectures (Edinburgh, Scotland and Cardiff, Wales), the 3<sup>ème</sup> Cycle en Chimie (French Speaking Universities in Switzerland), the W. S. Johnson Symposium (Stanford University), the Leermakers Symposium, the Stork Lectureship (Columbia University), the Nelson J. Leonard Lectureship (University of Illinois) and the Bristol-Myers Squibb Lectureship (Harvard). His honors and awards include the Camille and Henry Dreyfus Teacher Scholar Award (1978), the NIH Career Development Award (1980), The John Simon Guggenheim Memorial Foundation Fellowship (1985), The Japan Society for the Promotion of Science Fellowship (1986), the Philadelphia Section Award of the ACS (1986), The Kitasato Institute Medal (1990), the first Philadelphia Organic Chemist's Club Award (1990), the Arthur C. Cope Scholar Award (1991), Honor Scroll Award-American Institute of Chemists (1991), the Alexander von Humboldt Research Award for Senior U.S. Scientists (1992), Bucknell University Alumni Award for Outstanding Professional Achievement (1993), the ACS Ernest Guenther Award (1993), the University of Oregon Creativity Award (1997), the ACS Award for Creativity in Organic Chemistry (1997), Honorary Membership in the Pharmaceutical Society of Japan (1999), Fellow, American Association for the Advancement of Science (2002), the Centenary Medal, Royal Society of Chemistry, London, UK (2002), the 2003 Yamada Prize (Tokyo, Japan), the first Provost's Award for Distinguished Teaching and Mentoring of Ph.D. Students, University of Pennsylvania (2004), the Order of the Rising Sun, Gold Rays with Neck Ribbon from the Government of Japan (2004), Fellow, American Academy of the Arts and Sciences (2006), RSC Simonsen Medal (2008), Inaugural Fellow, American Chemical Society (2009), DSC (honoris causa), Queens University, Belfast, Northern Ireland (2009), the Wilsmore Professorship, Melbourne University, Melbourne, Australia (2011), Honorary Professor, Jiangsu Normal University, Xuzhou, China (2012-) and the William H. Nichols Medal of the New York Section (2014).



**2014 WILLIAM H. NICHOLS MEDAL DISTINGUISHED SYMPOSIUM AND AWARD DINNER**

**Symposium: NEW STRATEGIES AND TACTICS FOR COMPLEX MOLECULE SYNTHESIS**

*Award Recipient:* PROFESSOR AMOS B. SMITH, III  
Rhodes-Thompson Professor of Chemistry, University of Pennsylvania

**Date: Friday, March 28, 2014**

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

Place: Crowne Plaza Hotel, White Plains, NY

**PROGRAM**

1:30 PM Welcome Professor Pamela K. Kerrigan  
2014 Chair, ACS, New York Section  
The College of Mount Saint Vincent

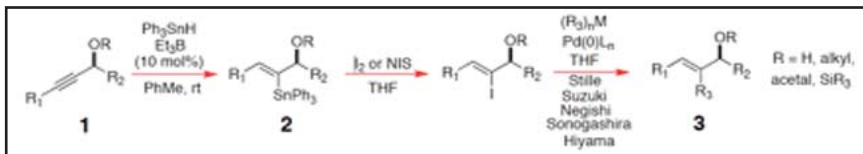
1:35 PM Opening of the Distinguished Symposium Professor Paris Svoronos  
2014 Chair-elect, ACS, New York Section  
CUNY – Queensborough Community College

1:45 PM Natural Product Synthesis Professor Yoshito Kishi  
Harvard University, Cambridge, MA

The halichondrins, originally isolated from the marine sponge *Halichondria okadai* by Hirata and Uemura, are polyether macrolides, which have received much attention due to their intriguing structure and extraordinary anti-tumor activity. In this presentation, we will discuss our recent efforts toward a unified total synthesis of the halichondrin class of natural products.

2:30 PM The O-Directed Free Radical Hydrostannation Professor Karl J. Hale  
Queens University Belfast,  
Northern Ireland, UK  
Reaction Mechanism and Applications in  
Complex Molecule Total Synthesis

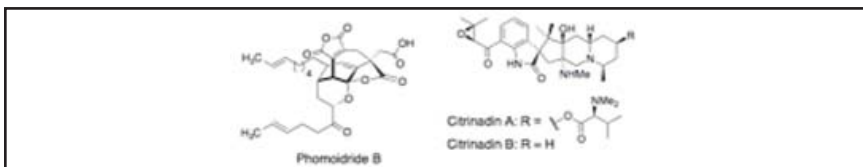
In 2005, our group reported the first truly reliable method for performing the O-directed free radical hydrostannation on propargylic-allyl-oxygenated alkylacetylenes **1**. The protocol, which utilizes Ph<sub>3</sub>SnH and catalytic Et<sub>3</sub>B/O<sub>2</sub> in PhMe at room temperature, generally affords vinyl triphenylstannanes of predominant structure **2** in high yield, with excellent levels of stereo- and regio-control. In this lecture, I will show the great utility of this new O-directed free radical hydrostannation process in trisubstituted olefin synthesis, and I will also discuss its highly complex reaction mechanism, which involves multiple reversible stannyl radical addition-elimination and vinylstannane isomerization events all occurring in unison to give **2** as the primary reaction product. I will then show how our group has recently used this methodology to synthesize the frog toxin, (+)-pumiliotoxin B, and the antitumor oxazole, (+)-inthomycin C. The application of this method to a projected synthesis of the antitumor macrolide, (+)-acutiphycin will also be discussed.



3:15 PM Coffee Break

3:45 PM Recent Progress in the Synthesis of Professor John L. Wood  
Baylor University, Waco, TX  
Complex Natural Products

Recent efforts in our laboratories have focused on the synthesis of several complex natural products. The evolution of synthetic strategies directed toward the phomoidrides and citrinadins will be discussed.



**NICHOLS SYMPOSIUM***(continued from page 9)*

4:30 PM Evolution of Anion Relay Chemistry (ARC): Professor Amos B. Smith, III  
Design, Synthesis and Validation NICHOLS MEDALIST

Anion Relay Chemistry (ARC), a robust multi-component synthetic tactic, permits rapid construction of complex natural and "natural-like" molecules for biomedical applications. By exploiting various anion (i.e., charge) relocation strategies via [1,n]-Brook Rearrangements, the controlled, sequential assembly of architecturally diverse structures can be achieved by virtue of the latent nucleophilicity of the designed bifunctional ARC linchpins, thus comprising a reaction sequence not dissimilar to "living polymerization." Importantly, the iterative ARC protocol can be carried out in a "single flask!"

Recent integration of Anion Relay Chemistry (ARC) with the Takeda and Hiyama reactions has revealed a "new ARC dimension," namely the validation of efficient palladium-catalyzed cross-coupling reactions (CCRs) of aryl and alkenyl organolithium agents with aryl and vinyl halides, that permits near quantitative recovery of the siloxane-based transfer agent. This tactic offers a practical protocol to circumvent undesired processes, such as lithium-halogen exchange.

5:45 PM Social Hour

6:45 PM William H. Nichols Medal Award Dinner Professor Carl R. Johnson  
(Wayne State University)  
will introduce the Medalist

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

Tickets may be reserved using the following form, or through the New York Section website using Paypal.

\*\*\*\*\* **RESERVATION FORM** \*\*\*\*\*

**2014 WILLIAM H. NICHOLS DISTINGUISHED SYMPOSIUM & MEDAL AWARD BANQUET in honor of Professor Amos B. Smith III**

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

Please reserve \_\_\_\_\_ places for the symposium & banquet at \$120/person, ACS member  
 \_\_\_\_\_ places for the symposium only at \$40/person, ACS member  
 \_\_\_\_\_ places for the banquet only at \$110/person, ACS member  
 \_\_\_\_\_ places for the symposium & banquet at \$150/person, Non-member  
 \_\_\_\_\_ places for the symposium only at \$60/person, Non-member  
 \_\_\_\_\_ places for the banquet only at \$120/person, Non-member  
 \_\_\_\_\_ places for the symposium only at \$25/person, Students, Unemployed  
 \_\_\_\_\_ places for the symposium only complimentary for 50 year + ACS members

(For table reservations of 8 or more, use the ACS member \$120/person rate for combination tickets)

Reserve a table in the name of: \_\_\_\_\_

Names of guests are: \_\_\_\_\_ Indicate numbers in your group who choose:

\_\_\_\_\_ Chicken \_\_\_\_\_

\_\_\_\_\_ Filet Mignon \_\_\_\_\_

\_\_\_\_\_ Salmon \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ Mail Tickets to:

\_\_\_\_\_ Name: \_\_\_\_\_

\_\_\_\_\_ Address: \_\_\_\_\_

\_\_\_\_\_

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**BANQUET RESERVATION DEADLINE: MARCH 18, 2014**

Please make checks payable to: ACS, NEW YORK SECTION

Check for \$\_\_\_\_\_ enclosed

## New York Meetings

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

### NEW YORK SECTION BOARD MEETING DATES FOR 2014

The dates for the Board Meetings of the ACS New York Section for 2014 were chosen and approved at the September 2013 Board Meeting. The meetings are open meetings – all are welcome. If non board members would like to attend the meeting, please let the New York Section office know by emailing Mrs. Marilyn Jespersen at [njesper1@optonline.net](mailto:njesper1@optonline.net) or calling the office at (516) 883-7510.

The 2014 Board Meetings will be held on the following Fridays at 6:00 PM at the College of Mount Saint Vincent, Riverdale, NY. Dr. Pamela K. Kerrigan will chair the meetings.

Friday, May 2

Friday, June 13

Friday September 19

Friday November 21

Also, please mark your calendar with the dates of the following major events.

**Friday, March 28**, William H. Nichols Medal Award Symposium and Dinner

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



### LONG ISLAND SUBSECTION

#### Water Splitting Chemistry Using Photocatalytic Semiconductors and Molecular Co-Catalysts

*Speaker:* Dr. Yolanda A. Small  
Assistant Professor  
York College - CUNY  
Jamaica, NY

From the energy demands of the modern age and the need to preserve environmental quality, there is a current push towards finding renewable energy technology. Fuel cells are one such target because the energy source can be garnered from solar power and the naturally abundant water supply. Water oxidation and hydrogen production are fundamental steps in the so-called water splitting process. The availability of photo-generated excitons in semiconductor mate-

rials facilitates water oxidation and proton reduction through an unknown mechanism. Efficient photoanodes for water oxidation are crucial for any scheme to convert the energy in sunlight to fuels. We utilize computational methods, based on density functional theory, to obtain a fundamental, atomistic understanding of water oxidation mechanisms in photocatalytic semiconductors. To aid our understanding of hydrogen production and oxidation, we turn to hydrogenase enzymes which catalyze both processes efficiently. Aiming to design hydrogenase-like catalysts with equal efficiency, computational methods are applied to explore features of molecular catalysts and evaluate their contributions to overall catalytic ability.

Dr. Small's research is at the interface of biology, chemistry and condensed matter physics where she applies computational techniques to address questions ranging from reactions in enzymes, to reactions at the aqueous/semiconductor interface. Her scientific expertise is in two main areas: (1) Quantum Mechanical/Molecular Mechanical (QM/MM) modeling and simulations. Targeting the design of pharmaceuticals for a variety of diseases, Dr. Small uses optimized QM/MM techniques to study the mechanism of proton and hydride transfer reactions in enzymes. Extensive molecular dynamics calculations provide insight into protein motions that are relevant to understanding reaction pathways supporting enzyme reactivity. (2) Electronic structure methods using Gaussian-based Density Functional Theory (DFT). With the aim of impacting the energy crisis, the work in Dr. Small's group is to design novel renewable energy materials with an appropriate band gap to harvest sunlight.

**Date:** Thursday, March 6, 2014

Times: Coffee/Social 5:30 PM

Seminar 6:00 PM

Place: Queensborough Community College  
Science Building, S-111

Times: Dinner 7:00 PM

Place: Nearby Greek restaurant

Cost: Dinner \$25.00 per person

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## CHEMICAL MARKETING & ECONOMICS GROUP

### 2014 Making Green with Green Chemistry

*Panel:* Professor Paul Anastas  
Director, Yale Center for Green  
Chemistry and Green Engineering

Dr. Rui Resendes  
Executive Director  
GreenCentre Canada

Rodolfo Bayona  
Director  
Technical Service & Development  
Dow Coating Materials

Neil A. Burns (moderator)  
Managing Partner  
Neil A. Burns LLC and  
CEO at P2 Science

Rebecca Coons (moderator)  
Associate Editor  
IHS *Chemical Week* Magazine

Following three years of successful panels we will update with another report from the Green Chemicals market: An editor from *ChemicalWeek* and Neil A. Burns LLC's managing partner will moderate a panel that will examine what works and what makes sense in this market with huge potential:

- Network with investors, executives and prime-movers in the fast-growing field of renewable chemicals
- Gain insights from one of the fathers of green chemistry, director of a leading research institute in the field and former EPA Assistant Administrator
- Learn about a pioneering incubator of green chemistry businesses that enjoys the support of some major corporations
- Meet one the managers behind a corporate winner of the presidential award for green chemistry

#### Biographies

**Paul T. Anastas** is the Teresa and H. John Heinz III Professor in the Practice of Chemistry for the Environment. He has appointments in the School of Forestry and Environmental Studies, Department of Chemistry, and Department of Chemical Engineering. In addition, Prof. Anastas serves as the Director of the Center for Green Chemistry and Green Engineering at Yale. Anastas took public service leave from Yale to serve as the Assistant Administrator for the US Environmental Protection Agency

and the Agency Science Advisor from 2009-2012. From 2004 -2006, Paul Anastas served as Director of the ACS Green Chemistry Institute in Washington, D.C. He was previously the Assistant Director for the Environment in the White House Office of Science and Technology Policy where he worked from 1999-2004. Trained as a synthetic organic chemist, Dr. Anastas received his Ph.D. from Brandeis University and worked as an industrial consultant. He is credited with establishing the field of green chemistry during his time working for the US Environmental Protection Agency as the Chief of the Industrial Chemistry Branch and as the Director of the U.S. Green Chemistry Program.

**Rodolfo Bayona** is Director Technical Service & Development at Dow Coating Materials. He has been instrumental in the success of the EVOQUE polymer line at Dow, which won the 2013 Presidential Award for Green Chemistry. During his career with Dow, Mr. Resendes has managed R&D in polyurethanes and industrial coatings. He was lived and worked globally including in Brazil, Colombia, China and the USA. His research specialties include work in the fields of Water Treatment with Reverse Osmosis and ion Exchange, Formulation of Agrochemicals and Oxygenated Solvents and Chlorinated Solvents. He holds an MBA from the Richard De Vos Graduate School of Management at Northwoods University.

**Rui Resendes** graduated from the University of Toronto with a PhD in chemistry and a specialization in advanced materials. Since then, he has filled numerous leadership roles in research and business development with Bayer MaterialScience and LANXESS. During this time, he has contributed to several patent families and has numerous technical and commercial publications and presentations to his credit. In 2007, Dr. Resendes assumed the role of Director of Commercial Development, Chemistry and Materials, at Queen's University's PARTEQ Innovations, one of Canada's foremost technology transfer offices. Shortly after joining PARTEQ, Dr. Resendes led the creation of GreenCentre Canada, an exciting new commercialization model that is the first of its kind in North America. In 2009, he was appointed the Centre's Executive Director.

**Neil Burns** is managing partner of Neil A Burns LLC, an investment and advi-

sory firm focused on the chemical industry and CEO of P2 Science Inc., a manufacturer of novel renewable specialty chemicals. As part of the advisory practice, Neil A Burns LLC manages the surfactant technology business of Desmet Ballestra sPa in North America and also has JV with ICIS to produce surfactant conferences. Mr. Burns sits on the board of P2 Science, Inc. and the operating boards of GenNx360 Capital Partners and Linley Capital. Previously, Mr. Burns was CEO of Oxiteno USA and VP US Operations of VVF Ltd. He holds a BS in Chemistry (University of York) and an MBA (Wharton School)

**Rebecca Coons** covers green chemistry and industrial biotechnology for Chemical Week magazine, a leading source of news and analysis for the chemical, petrochemical, specialty chemicals and related industries. She also maintains the blog CW Renewables, which tracks developments in biobased chemicals in the \$3-trillion global chemical market. Previously, she worked in the editorial departments of Genetic Engineering and Biotechnology News and the peer-reviewed journal Industrial Biotechnology. She earned undergraduate degrees in Chemistry and English from Providence College, and received a Masters in marketing from Baruch College.

**Date:** Thursday, March 6, 2014

**Times:** Registration and Networking  
11:30 AM - 12:00 Noon  
Luncheon 12 Noon - 1:00 PM  
Talk & Webcast 1:00 - 2:00 PM

**Cost:** Luncheon \$110 for Non-members  
\$70 for 2014 CM&E Members  
Webcast \$40

Register now at [www.cmeacs.org](http://www.cmeacs.org)



## WESTCHESTER CHEMICAL SOCIETY

**Special Seminar – “From the Death of an Icon to the Birth of a Physical Principle for Ultra-Sensitive Label-Free Biosensing”**

**Speaker:** Stephen Arnold  
Thomas Potts Professor of  
Physics and University Professor  
of Physics and Chemistry  
Director of the Micro-Particle  
Photo-Physics Laboratory  
Polytechnic Institute of  
New York University

The announcement (in 2002) that the death of my favorite teacher and arguably the world's most prolific science fact and fiction writer (Asimov, >500 books) had been from an HIV infection (contracted during open heart surgery) redirected my laboratory's efforts to inventing a means for immediate detection of individual virions in blood. Although trials in serum may not have begun, the physical principle that evolved is likely the most ubiquitous approach for research in ultra-sensitive label-free sensing of bio-monolayers and individual bio-particles.

I will trace the evolution of the so-called Reactive Sensing Principle (RSP) in Micro-cavity frequency shift detection from its inception in 2003, and discuss its intimate connection to Opto-mechanics.

Finally, by marrying Micro-photonics with Nano-optics, specifically a Whispering Gallery Mode Resonator and a Nano-Plasmonic Enhancing Epitope, we have recently managed to detect cancer marker protein molecules one at a time, and pushed the label-free limit of detection to the unprecedented level of 10 zepto-grams (5 kDa) in solution. This is less than one-hundredth the mass of all known viruses, and lower than the mass of existing cancer markers.

Stephen Arnold is University Professor of Physics and Chemistry and the Thomas Potts Professor of Physics at NYU-Poly. He received his B.S. in Engineering Physics from the University of Toledo and his Ph.D. in Physics from The City University of New York. He has worked in both industry and academia and has been at Poly-NYU (and predecessors, Polytechnic Institute of New York and Polytechnic University) since 1985. He has numerous awards and honors, and more than 100 publications to his credit.

For further information, see the web page for the MicroParticle PhotoPhysics Lab ([www.mp3l.org](http://www.mp3l.org)).

**Date:** Wednesday, March 19, 2014

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

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

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

(continued on page 14)

## WESTCHESTER CHEMICAL SOCIETY

(continued from page 13)

Further Information: Paul Dillon  
[PaulWDillon2@hotmail.com](mailto:PaulWDillon2@hotmail.com)  
 (914) 393-6940

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### Next Meeting:

#### Special Seminar – “Micro-Tools to Study Single-Cell Immunology”

*Speaker:* Qing Song  
 Department of Chemical and Biomolecular Engineering  
 Polytechnic Institute of New York University

**Date:** Tuesday, April 24, 2014

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

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

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

Further Information: Paul Dillon  
[PaulWDillon2@hotmail.com](mailto:PaulWDillon2@hotmail.com)  
 (914) 393-6940

*Residential School on Medicinal Chemistry and Biology in Drug Discovery*  
 June 8-13, 2014  
 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:

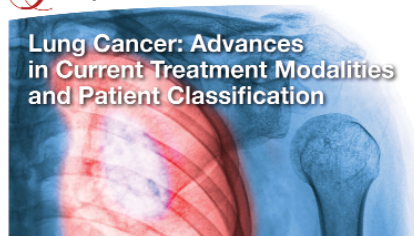
Principles of Med Chem	DMPK
Cheminformatics	Toxicophores
Lead ID & Optimization	GPCRs
Epigenetics	Kinase Inhibitors
Fragment-based Drug Design	Ion Channels
Structure-based Drug Design	Enzyme Inhibitors
Drug-like Properties	Bioisosteres
Plasma Protein Binding	Preclinical Tox
Molecular Modeling	Clinical Dev

**W. Greenlee, V. Gullo and R. Doll – Co-organizers**

For more information and application forms:

[www.drew.edu/resmed](http://www.drew.edu/resmed)  
 e-mail: [resmed@drew.edu](mailto:resmed@drew.edu)  
 phone: 973/408-3787; fax: 973/408-3504

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



### Lung Cancer: Advances in Current Treatment Modalities and Patient Classification

*Organizers:* Magdalena Alonso-Galicia, PhD  
 Forest Research Institute  
 Shashidhar S. Jatiani, PhD  
 Forest Research Institute  
 Huiping Jiang, PhD  
 Boehringer-Ingelheim Pharmaceuticals  
 George Zavoico, PhD  
 HC Wainwright  
 Jennifer Henry, PhD  
 The New York Academy of Sciences

*Speakers:* Jessica S. Donington, MD  
 NYU Langone Medical Center  
 Suresh S. Ramalingam, MD  
 Emory University  
 Rolf Brekken, PhD  
 UT Southwestern  
 Balazs Halmos, MD  
 Columbia University Medical Center  
 Roy S. Herbst, MD, PhD  
 Yale School of Medicine

Recent treatment advances may improve lung cancer patient survival rates, as understanding genetic heterogeneity can improve trial patient selection. Hear updates on common mutations, intraoperative chemotherapy, and insights from clinical trials.

**Date:** Tuesday, March 25, 2014

**Time:** 12:00 – 4:00 PM  
 (reception to follow)

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

Cost: This event is FREE for ACS and NYAS members. Please select the appropriate non-member Registration Category and use the Priority Code ACS. Non-members may attend for a fee of \$30, or \$15 for students and post-docs.

For more information and to register for the event, go to:

[www.nyas.org/LungCancer2014](http://www.nyas.org/LungCancer2014)

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



## HIGH SCHOOL TEACHERS TOPICAL GROUP

### Sustainable Schools and Sustainable Communities

*Speaker:* Sabina Pendse  
Environmental Scientist  
US Environmental Protection Agency

I will discuss how teachers and students can develop pilot projects in their schools to learn about the environment and promote sustainability in their communities. From recycling efforts to rain gardens, these projects provide hands-on experience for students and also reduce the environmental impact of their school facilities.

**Date:** Friday, March 28, 2014  
**Times:** Social and Dinner — 5:45 PM  
**Place:** M&G Pub

(Murphy and Gonzales  
21 Waverly Place (at Green  
Street, North-east corner)  
New York, NY

No reservations required

**Times:** Meeting 7:15 PM  
**Place:** New York University  
Silver Center Room 207  
32 Waverly Place (South-east  
corner Washington Sq. East)  
New York, NY

Security at NYU requires that you show a picture ID to enter the building. In case of unexpected severe weather, call John Roeder, (212) 497-6500, between 9:00 AM and 2:00 PM to verify that meeting is still on; (516) 385-4698 for other info.

Note: For those who prefer indoor attended

parking, it is available at the Melro/Romar Garages. The entrance is on the west side of Broadway just south of 8th Street, directly across from Astor Place. It is a short, easy walk from the garage to the restaurant or meeting room.



## BROOKLYN SUBSECTION

### 2014 Brooklyn Frontiers in Science Lecture

#### “Signaling Through DNA”

*Speaker:* Dr. Jacqueline Barton

The Brooklyn subsection of the NY/NJ ACS proudly presents Dr. Jacqueline Barton as speaker for the 2014 Brooklyn Frontiers in Science lecture. Dr. Barton is a native New Yorker and currently Chair of the Division of Chemistry and Chemical Engineering at the California Institute of Technology. Dr. Barton attended Barnard College and received a Ph.D. in Inorganic Chemistry at Columbia. After a post-doctorate at Bell Laboratories and Yale University, she became an assistant professor at Hunter College, associate professor of chemistry at Columbia, joined the faculty at Cal Tech in 1989 and in 2009, she began her term as Chair of the Division. Dr. Barton has won many prestigious awards, including the 2010 National Medal of Science from President Obama. For more information on Dr. Barton please visit [caltech.edu/BartonBiography](http://caltech.edu/BartonBiography).

Dr. Barton will present Signaling Through DNA. We think of the DNA double helix as the library of the cell, encoding all that we are. But the DNA helix can also serve as a conduit for the flow of electrons, a medium for signaling. Like a stack of copper pennies, the stack of DNA base pairs can be conductive. Many experiments have now shown that double helical DNA can serve as a conduit for the transport of electrons over long molecular distances. Importantly, since DNA conductivity depends upon base pair stacking, we can utilize this chemistry in designing sensitive DNA-based diagnostic sensors. But, within the cell, do electrons and holes migrate along the DNA helix? We are also finding that this chemistry is used by Nature in finding where DNA is damaged and in need of repair, an important mechanism in maintaining our genetic library against the onslaught of damage associated with aging, cancer and oxidative stress.

(continued on page 16)

## BROOKLYN SUBSECTION

(continued from page 15)

**Date:** Thursday, April 3, 2014  
**Time:** 5:30 - 7 PM  
**Place:** Pfizer Auditorium  
 NYU Polytechnic School of  
 Engineering  
 5 Metrotech Center  
 Brooklyn NY  
**Cost:** There is no charge for this lecture,  
 but registration is required. Web  
 registration is at:

[http://www.newyorkacs.org/meetings/  
 Brooklyn/Frontiers.php](http://www.newyorkacs.org/meetings/Brooklyn/Frontiers.php)



## NY NANOSCIENCE DISCUSSION GROUP

### 2013-2014 Sessions.

*Hosted by the New York University  
 Department of Chemistry*

*Speakers to be announced.*

The NYNDG is an ACS Topical Group that meets in the New York University Department of Chemistry. Sessions feature three 30-minute presentations on nanoscience, one each with strong orientation in biology, chemistry, and physics/applied mathematics.

### Mark Your Calendars:

**Dates:** Tuesday, April 8, 2014

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

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

Learn more about the  
 New York Section at  
[www.NewYorkACS.org](http://www.NewYorkACS.org)

Learn more about  
*The Indicator* at  
[www.TheIndicator.org](http://www.TheIndicator.org)

## COME AND JOIN US CELEBRATE EARTH DAY WITH OUR 3rd ANNUAL

“WALK THE BROOKLYN BRIDGE”!



We will meet at Pace University at 12:00 PM and begin our celebratory “Earth Day Parade” across the Brooklyn Bridge at 1:00 PM. We will walk half-way across the bridge and do a turn-around at the Tower. Total distance is approximately 1 mile.

Participants will be provided with healthy snacks and Earth Day gifts. To register and for more information go to: <http://www.newyorkacs.org/meetings/EarthDay/CCED.php>

or contact Prof. JaimeLee Rizzo, CCED  
 Chair: [jrizzo@pace.edu](mailto:jrizzo@pace.edu)

**Date:** Saturday, April 26, 2014

**Time:** 12:00 PM – 3:00 PM



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

### To Human Resources Departments in Industry and Academia

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

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



## 62ND ANNUAL UNDERGRADUATE RESEARCH SYMPOSIUM

The New York Chemistry Students' Association Student Member Committee — New York Section American Chemical Society

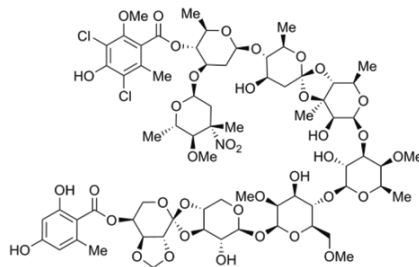
Keynote Address: "Structure-Facilitated Bioengineering of Antivirals and Antibiotics to Combat Global Health Threats"



Keynote Speaker:  
Dr. Tina Iverson  
Departments of  
Pharmacology &  
Biochemistry  
Vanderbilt University

Nature is the world's most venerable chemist, with bacteria, fungi, and plants all able to biosynthesize complex secondary metabolites that are difficult to replicate by organic synthesis (see, for example, **Fig. 1**). Many natural products have potent antimicrobial activity, which we hope to harvest for clinical use. Unfortunately, many of these natural products are also associated with undesirable pharmacological properties, such as organ toxicity. Chemical derivatization is a common method to alter the pharmacology of a compound and reduce side effects, however, most natural products are challenging to synthesize or derivatize in the laboratory due to limitations in chemical

methods. Accordingly, improving methods of chemical synthesis could increase the arsenal of compounds that we use to treat life-threatening infections.



**Fig. 1.** Ziracin™. One example of a potential antibiotic where the natural complexity makes it prohibitively challenging to synthesize or chemically modify. Ziracin is a present target of interest in the laboratory.

### Significant Dates for 62nd URS:

Deadline for Abstract Submission -  
**March 15, 2014**

Deadline for Early Registration -  
**March 31, 2014**

URS Date - **May 3, 2014** at St. John's University, Queens, NY

2014 Co-chair: Dr. Joseph Serafin

2014 Co-chair: Dr. Yolanda Small

2014 Co-chair: Dr. Paul Sideris

2014 Co-chair: Dr. Sharon Lall-Ramnarine

## HIGHLIGHTS FROM THE 2013 ANNUAL UNDERGRADUATE RESEARCH SYMPOSIUM (61st URS)

The New York Chemistry Students' Association of the New York Section held its 61st URS on **Saturday, April 27, 2013**, at The City College of New York, CUNY. Around one hundred and thirty papers from 28 different colleges and universities were presented in twenty concurrent sessions. The areas covered were analytical, biochemistry, environmental/green, inorganic, organic, nano- and surface chemistry, physical and polymer chemistry.

On the advice of the NY ACS Executive Board, a leadership workshop was also held once again for officers of student chemistry organizations to help develop their chapters and increase communication between the student chapters. This workshop was facilitated by Christopher Zeigler and Nancy Bakowski from the National ACS office.

Opening remarks were given by Avrom Caplan, Pamela Kerrigan and Joseph Serafin to begin the program. Yolanda Small then introduced the keynote speaker, Dr. Ruth Stark from City College. Dr. Stark's keynote address was titled - **Research Adventures in Molecular Biophysics: Fungal, vegetable and animal tales.**

*See photos (courtesy of Yolanda Small) on page 18.*

## PHOTOS FROM THE 2013 ANNUAL UNDERGRADUATE RESEARCH SYMPOSIUM

(continued from page 17)



## Call for Nominations

### WILLIAM H. NICHOLS MEDAL AWARD FOR 2015

The New York Section is accepting nominations for the William H. Nichols Medal Award for the year 2015. This distinguished award, established in 1902 by Dr. William H. Nichols, for the purpose of encouraging original research in chemistry, is the first award authorized by the American Chemical Society. It is presented annually in recognition of an outstanding contribution in the

field of chemistry, and consists of a gold medal, a bronze replica and \$5000. The medals are presented at the William H. Nichols Meeting that consists of a Distinguished Symposium related to the medalist's field of expertise and a Medal Award Dinner.

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

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

**Nominations must be received by May 31, 2014.** The Nichols Medal Award Jury will meet in June 2014 to select the Nichols Medalist for 2015.

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



## **METRO WOMEN CHEMISTS**

The Metro Women Chemists Committee is now accepting nominations for the **5th annual Gift of Mentoring Award**. Please share your stories with us if you have benefited from mentorship or you have had positive influence over other people's lives or careers. Please write your stories with no more than 300 words and send them to Sarah Carberry at [sbolton@ramapo.edu](mailto:sbolton@ramapo.edu). **Deadline: April 1, 2014.**

The mentoring award will be presented at the MWCC event on May 14, 2014 at Farleigh Dickinson University in Madison. The event will start at 6:00 PM and include dinner.

For Further details as the event approaches please check our website (<http://njacs.org/metrowomen.html>) or email Sarah Carberry ([sbolton@ramapo.edu](mailto:sbolton@ramapo.edu)).

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## **Call for Volunteers**

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### **LIBERTY SCIENCE CENTER**

#### **FREE Community Evenings**

Volunteers are needed to host a table or do a demo at this event. The dates selected are the prime dates for these events as they are near National Chemistry Week and Earth Day. If we have more volunteers, we can go more days.

Community Evenings are exclusive events hosted throughout the year for all students, teachers and families from NJ's 31 former Abbott Districts. Held from 5:30 PM until 9:00 PM, families are invited to explore the Science Center's themed exhibition galleries; experi-

ence the excitement of IMAX films\* and RealD 3D shows\*; and engage in special family programming, live demonstrations and hands-on activities – all at no cost.

**Dates: March 19, 2014, April 30, 2014, May 21, 2014**

To Volunteer or if you have questions contact Miriam Gulotta [mirjet2@yahoo.com](mailto:mirjet2@yahoo.com) or Jeannette Brown [Jebrown@infionline.net](mailto:Jebrown@infionline.net).

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## **Call for Participants**

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### **NORTH JERSEY SECTION EARTH DAY OUTREACH**

**Chemists Celebrate "The Wonders of Water" with an Undergraduate Outreach Competition – Earth Day is April 22**

#### **Attention Student Chapters**

Come to the Essex County Turtle Back Zoo and Celebrate the Party for the Planet Event on **Sunday, April 27, 2014**, from 11:00 AM to 4:00 PM with your best Undergraduate Hands-on Demonstration. The Student Chapter with the **best** interactive demonstration that applies to the theme of the wonders of water will receive a **\$175** cash prize and the title of **"CCED Undergraduate Student Chapter 2014."** (Second place gets \$75.)

For details check the website <http://www.njacs.org>. Student Chapters must register by **April 15** to be considered for the title and the cash awards. If interested send an email describing your demonstration to [afcharleb@gmail.com](mailto:afcharleb@gmail.com).

**Date: Sunday, April 27, 2014**

Times: 11:00 AM - 4:00 PM

Place: Essex County Turtle Back Zoo  
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