

THE Indicator

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Undergraduate Research Symposium

HBCS New York Section



*Left to right: Joseph Serafin, Justyna Widera, Louis Brus
(Keynote Speaker), Barbara Hillery, Yolanda Small.*

(Picture courtesy of Arpi Pap)

(Story and more pictures on pages 15 and 16.)

North Jersey Section Chemistry Olympiad Winners

(See page 10.)

Westchester Chemical Society Distinguished Scientist Award

(See pages 17-19.)

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GOT NECTAR?

To Hawkmoths, Humidity is a Cue

This story and photos are online at:
<http://uanews.org/node/47478>

Humidity emanating from a flower's nectar stores tells a moth if the flower is worth a visit, research led by a UA entomologist has discovered.

The myriad of ways in which flowers attract pollinators have been studied since the beginning of biology, and few ecological relationships between organisms are as well understood as those between plants and their pollinators.

Despite decades of research, a team led by Martin von Arx, a postdoctoral fellow in the lab of Goggy Davidowitz in the University of Arizona department of entomology, now has discovered a previously unknown sensory channel that is used in plant-animal interactions.

Funding for this research project came from the National Science Foundation, the Swiss National Science Foundation and the Johnson & Johnson Corporation.

THE INDICATOR**Manager / Editor** - LINDA ATKINS

1 Milbark Court, Homosassa, FL 34446

973-981-4383; Fax 352-503-7613

linatkins@tampabay.rr.com**Advertising Manager** - VINCENT GALE

MBO Services, PO Box 1150

Marshfield, MA 02050-1150 • 781-837-0424

vincegale@mboseervices.net**INDICATOR COMMITTEE****Chair, DR. LES MCQUIRE**

17 Crown Drive, Warren, NJ 07059

908-334-5473, Les@LesMcQuire.org**New York Section Rep.****DR. NEIL JESPERSEN**

Chemistry Dept., St. John's University

8000 Utopia Parkway, Jamaica, NY 11439

718-990-5221

jespersn@stjohns.edu**North Jersey Section Rep.****DR. ANITA BRANDOLINI**

TAS, Ramapo College, 505 Ramapo Valley Rd.,

Mahwah, NJ 07430 • 201-684-7753

abrandol@ramapo.edu**Web Masters**

NY Section - DR. BRIAN GIBNEY

postmaster@newyorkacs.org

NoJ Section - PAUL TUKEY

tukey@verizon.net**NEW YORK SECTION**<http://newyorkacs.org>**Chair, DR. JAIMELEE IOLANI RIZZO**

Department of Chemistry and Physical Science

Pace University, 1 Pace Plaza, New York, NY 10038

212-346-1761; Fax 212-346-1256

jrizzo@pace.edu**Chair-Elect, DR. PHILIP H. MARK**

1522 Luddington Road, East Meadow, NY 11554

516-489-7920

philip.mark@ncc.edu**Secretary, DR. BRIAN R. GIBNEY**

Dept. of Chemistry, Brooklyn College - CUNY

2900 Bedford Avenue, Brooklyn, NY 11210

718-951-5000 x6636; Fax 718-951-4607

brg33@newyorkacs.org**Section Office**

St. John's University, Chemistry Dept.

8000 Utopia Parkway, Jamaica, NY 11439

516-883-7510; Fax 516-883-4003

njesper1@optonline.net**NORTH JERSEY SECTION**<http://www.njacs.org>**Chair, DR. AMBER FLYNN CHARLEBOIS**

Associate Professor of Chemistry

Fairleigh Dickinson University - M-SB1-01

285 Madison Ave., Madison, NJ 07940

973-443-8761

charleb@fd.edu**Chair-Elect, DR. JEFFERSON TILLEY**

19 Evergreen Drive, North Caldwell, NJ 07006

973-723-6330

tilleyjk@optonline.net • tilleyjk@FDU.edu**Secretary, BETTYANN HOWSON**

49 Hillside Avenue, Madison, NJ 07940-2612

973-822-2575

chemphun@gmail.com**Section Office**

49 Hillside Avenue, Madison, NJ 07940-2612

973-822-2575

chemphun@gmail.com**THE Indicator** 

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Chemical Marketing & Economics Group
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Friday, September 14, 2012

New York Section Board Meeting
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Friday, September 14, 2012

Inorganic and Organometallic Topical Group
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Tuesday, September 25, 2012

Biochemical Topical Group
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NORTH JERSEY SECTION

Thursday, September 6, 2012

Mass Spectrometry Discussion Group
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Sunday, September 9 or 26, 2012

Younger Chemists Committee
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Monday, September 10, 2012

Careers in Transition Group
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Wednesday, September 19, 2012

NMR Spectroscopy Topical Group
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Wednesday, September 19, 2012

Chromatography Topical Group
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Monday, September 24, 2012

NoJ Executive Committee Meeting
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Monday, September 24, 2012

Younger Chemists Committee
See page 7.

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

**Deadline for items to be included in the
October 2012 issue of *The Indicator* is
August 20, 2012.**



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THIS MONTH IN CHEMICAL HISTORY

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

Liebig, Woehler, Bunsen, Kolbe, Hofmann – the litany of great German contributors to the early development of organic chemistry in the nineteenth century is so familiar, at least to those with an appreciation for chemical history, that it may lead us to ignore important contributors to that history – from Russia. A very enjoyable new book, apparently the first in a series of brief volumes on the history of chemistry, has just appeared. “Early Russian Organic Chemists and Their Legacy” is written by David E. Lewis of the University of Wisconsin Eau-Claire who has been active in the Division of the History of Chemistry of the ACS and has published several articles on this topic in the Bulletin for the History of Chemistry. So let me recite the litany of great Russian contributors to the early development of organic chemistry in the nineteenth century: Zinin, Butlerov, Menshutkin, Borodin, Beilstein, Markovnikov, Zaitsev, Reformatskii. Most of these are names anyone who has taken a full course in organic chemistry will recognize. Of course it would take a book to cover the contributions of these distinguished chemists – and David Lewis has written that book. But in this and some subsequent columns I will single out a few of these chemists and examine their accomplishments.

Nikolai Nikolaevich Zinin (1812 – 1880) was born in the area now known as Azerbaijan. His degrees in physics and mathematics were from Kazan University where he studied with the great mathematician Lobachevskii. [Any of my readers recall the Tom Lehrer song about this famed figure?] He was appointed to an academic post in Kazan but the faculty council decided that there was need for new approaches to chemistry teaching at Kazan and picked Zinin as an adjunct in chemistry despite his lack of formal training in the area. There was a movement at that time for the “Russification” of Russian Universities as a counterbalance to the many German faculty teaching in them. Zinin’s instructions were to attend lectures of well-known European chemists, take notes, and return to teach from his notes. But Zinin had other ideas.

From 1838-1841 he attended Wurtz’s lectures in France, met many eminent chemists in western Europe, and spent his final year working in Liebig’s laboratory in Giessen. This experience convinced him to institute a similar laboratory program in Russia. Upon returning he passed the examinations for the Dr. Chem. degree at St. Petersburg, wrote his dissertation on the work he had done with Liebig, and was awarded the degree. He was then appointed to the Chair in Chemical Technology at Kazan; however most of his teaching was on chemistry, particularly organic chemistry. In 1848 he moved to the Chair of Chemistry at the Medical-Surgery Academy in St. Petersburg; in 1855 he worked there for a time with Alfred Nobel.

In Liebig’s laboratory Zinin worked on the chemistry of benzaldehyde – a key compound in Liebig and Woehler’s work on the oil of bitter almonds which led them to the concept of organic radicals (NOT a typo; this is the original spelling which connects with the idea of fundamental roots; the replacement of radicals by radicals is not, in my opinion, an improvement!). Zinin discovered the benzoin condensation – the catalysis by cyanide ion of the condensation of two molecules of benzaldehyde to give benzoin. Nitric acid oxidation of benzoin yielded benzil. After his return to Kazan Zinin continued work on benzene derivatives. Reduction of nitrobenzene by hydrogen sulfide gave a compound Zinin termed benzidam; Fritzsche pointed out that benzidam was identical to a compound that he had earlier obtained from the degradation of indigo and had named aniline. Zinin’s new method for producing aniline led him to a rapid development of a new area of organic chemistry. Within a few years he had made azoxybenzene, and azobenzene, and had accidentally discovered the benzidine rearrangement of hydrazobenzene.

This work took place while Hofmann was exploring coal tar chemistry and the dyestuffs that could be prepared from aniline derivatives, work inspired by Perkin’s preparation of the synthetic dye mauveine in 1856. Zinin’s new routes to aniline, its analogs, and its derivatives gave a boost to this newly emerging area, one that was to be of great economic importance to the chemical industry of the mid-nineteenth century.

Zinin was an important figure in Russian chemistry – a role model. He was a Full Academician of the Russian Academy of Sciences and helped found the Russian Physical-Chemical Society, of which he was President for its first ten years.

SEPTEMBER HISTORICAL EVENTS IN CHEMISTRY

It is with profound sadness that we report the recent death of Dr. Leopold May, the author of this most informative and entertaining column which has run in The Indicator for many years. Dr. May died on June 15, and we were informed of his passing by the staff at Catholic University where he was held in the highest regard both professionally and personally. The readers of The Indicator will greatly miss his contribution to our publication.

STRESS — THE TRUE GATEWAY DRUG

Physicians Explain How Stress, 12-Step Programs Change the Brain

When Bill W. and Dr. Bob created Alcoholics Anonymous 77 years ago, they borrowed principles learned from a Christian fellowship called the Oxford Group to create their 12-step recovery program.

"They knew that their spiritual program was effective where other 'cures' had failed, and over the years, there have been many theories as to why," says Dr. Harry Haroutunian, physician director of the Betty Ford Center in Palm Springs, and collaborator with Dr. Louis Teresi on the book, *Hijacking the Brain: How Drug and Alcohol Addiction Hijacks our Brains – The Science Behind Twelve-Step Recovery* (www.HijackingTheBrain.com).

"Now we know that stress is the fuel that feeds addiction, and that stress and drug and alcohol use cause neurological and physiological changes," Haroutunian says. "The changes are primarily in the deep brain reward centers, the limbic brain, responsible for decisions, memory and emotion. These centers are 'hijacked' by substance abuse, so that the addicted person wants the booze or drug over anything else."

As a scientist and physician applying the 12-step program to his own life, Teresi studied the physiological changes triggered by this seemingly non-scientific treatment.

"One response is that elements of 12-step programs reduce stress and increase feelings of comfort and reward through chemical changes in the brain and body. These changes allow for neurogenesis – the birth of neurons in the brain," Teresi says.

"As substances of abuse affect the limbic brain, so do 12-step recovery practices."

Teresi says the 11th step in the program, which emphasizes spiritual practices such as prayer and meditation, works for the following reasons:

- **Chilling out:** Addiction is a cycle of bad habits. When something bad happens, an alcoholic drinks to feel better. When something good occurs, he drinks to celebrate. After years of this behavior, a person needs a way to step outside of himself to maintain sobriety. Regular prayer or meditation achieves that and becomes "that other habitual option" for responding to emotions, he says.
- **"Mindfulness" meditation:** While certain forms of prayer are effective, meditation may be a more direct way to achieve the kind of beneficial self-regulation that makes the 11th step so crucial, Teresi says. Mindfulness meditation incorporates active Focused Attention and the more passive Open Monitoring to raise a person's awareness of his impulses, leading to better self-control.
- **The three-fold manner:** A successful 11th step tends to have the following benefits: First, stress is relieved in both cognitive and emotional reactivity, as evidenced by reduced cortisol (stress hormone) levels and other biological indicators. Second, some forms of meditation are shown to stimulate the brain's reward centers, releasing dopamine – a mood elevator -- while improving attention and memory. Third, an increased sense of connectivity and empathy to others is achieved, satisfying our natural need for social connection and reducing stress.

Sobriety is not so much about not drinking or drugging, Teresi says.

"It's about developing an attitude and lifestyle that brings sufficient serenity and personal reward that drinking, or taking any mood-altering drug, is simply unnecessary."

About Dr. Teresi & Dr. Haroutunian

Louis Teresi earned his medical degree from Harvard, where he completed honors concentration courses in neuroscience. In more than 24 years of practice, Teresi has authored numerous peer-reviewed papers, winning 14 national and international awards for his research, and is a senior member of the American Society of Neuroradiology. He is a grateful recovering alcoholic.

Dr. Harry L. Haroutunian, known as "Dr. Harry," is an internationally known speaker on addiction who has created the "Recovery 101" lecture series. As physician director of the Betty Ford Center, Dr. Haroutunian has contributed to the development of a variety of programs. He is the author of the soon-to-be-published book "Staying Sober When Nothing Goes Right" and collaborated with Dr. Louis Teresi, author of "Hijacking the Brain: How Drug and Alcohol Addiction Hijacks our Brains – The Science Behind Twelve-Step Recovery."

(Reprinted with permission)

North Jersey Meetings

<http://www.njacs.org>

NORTH JERSEY EXECUTIVE COMMITTEE MEETING AND PROJECT SEED POSTER SESSION

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, September 24, 2012
Times: SEED Poster setup 3:30 PM
 Judging 4:00 - 6:00 PM
 Dinner 6:00 PM
 Awards and Presentation 6:30 PM
 Executive Meeting immediately following event.
Place: Seton Hall University
 University Center
 Main Lounge
 400 South Orange Avenue
 South Orange, NJ
Fee: \$25.00 — free for judges

Attendees are encourage to register at www.njacs.org
 Reservations: call (732) 463-7271 or email chemphun@gmail.com prior to **Wednesday, September 19, 2012**.

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.



NORTH JERSEY YOUNGER CHEMIST COMMITTEE

Monday, September 24, 2012
 Poster judging – Seton Hall

Learn more about the
 North Jersey Section at
www.NJACS.org

MASS SPECTROMETRY DISCUSSION GROUP

Vendor Show and Vendor Sponsored Workshop

The 2012 Vendor Show includes all major Mass Spectrometry vendors, and it features three distinguished lecturers:

Lecturers: Professor Ileana Cristea
 Princeton University

Professor Steven Gross
 Weill Cornell Medical College

Professor David M. Lubman
 University of Michigan.

Mass Spectrometry is relied upon in analytical support and research laboratories for identification of variety of unknown materials or quantitation analysis. American Chemical Society (ACS) NJ MSDG is a professional association and it is the largest in New Jersey and the second largest (behind ASMS) in the nation.

“Meetings at the event like this have opened up many new ideas and new areas of discussions between vendors and Mas Spec professionals every year,” says Dr. Ron Kong, the chair of ACS NJ MSDG, “and making personal contact is an important reason for attending shows”. There lectures have been added to the event this year based on the feedbacks from previous attendees.

Date: Thursday, September 6, 2012
Time: 12:01 PM – 9:00 PM
Place: The Palace at Somerset Park
 333 Davison Avenue
 Somerset, NJ

Register FREE at
<http://www.njacs.org/msdg/index.html> or
 contact Kathleen Anderson at
kathleen.anderson@varianinc.com

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NORTH JERSEY YOUNGER CHEMIST COMMITTEE

Sunday, September 9, 2012
Rain Date Sunday, September 16, 2012

YCC Picnic – Possible Locations: Johnson Park, Piscataway and Rahway River Park



CAREERS IN TRANSITION MEETINGS

Job Hunting??

We 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

Dates: Monday, September 10, 2012

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

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.



NMR SPECTROSCOPY TOPICAL GROUP

Bruker Night Sponsored by Bruker Biospin

Date: Wednesday, September 19, 2012

Times: Dinner 6.00 PM
 Seminar 7:00 PM

Place: Fuji Japanese Sushi & Seafood
 1345 US Route 1
 North Brunswick, NJ

NORTH JERSEY CHROMATOGRAPHY GROUP

Wednesday, September 19, 2012

Evening Seminar at the Crown Plaza, in Somerset, NJ



NORTH JERSEY YOUNGER CHEMIST COMMITTEE

Future Events:

Saturday, October 20, 2012

Mole Day/National Chemistry Week – 10 AM - 2 PM, at Liberty Science Center – science activities for kids.

Other Events this year - TBD

Evolution of a Scientist Lecture Series - now accepting recommendations for future presenters (presentation to be in Oct./Nov.)

Happy Hours – May and Nov. at TBD –

Let us know if you are interested in any of the following:

Mini-golf (who says it is just for kids), Hiking (summer), Bus trip to AC

About us: Membership is Free

The role of the NJACS Younger Chemists Committee is to promote the interests of members under the age of 35 (or close to that age). It provides graduate students, post-doctoral chemists, and young professionals with the opportunity to interact with other chemists in the section, to help them better direct their careers, and to increase their involvement in the ACS. We do it through organizing social events, volunteering, networking and mentor/mentee opportunities, talks, seminars, and generally having a bit of fun.

So what can you do?

If you are under 35 (or just think you are!!) we need your feedback. What events do you want to see? How can we help you? We are here to serve you, so please send us your comments and suggestions. Better still, get involved!

For more information about our group or upcoming events please visit us on the YCC Google group, and post your questions: http://groups.google.com/group/ycc_njacs

Or check us out on the National ACS YCC site: <http://membership.acs.org/Y/ACC/>

NORTH JERSEY CHROMATOGRAPHY GROUP

Please mark your calendars for our upcoming NJCG events for 2012:

Wednesday, October 17, 2012

Evening Seminar in conjunction with CPSA, in PA

Monday, November 12, 2012

Evening Seminar at the Crown Plaza, in Somerset, NJ (EAS week)

Please check our website: www.NJCG.org for more information on specific events.



NORTH JERSEY YOUNGER CHEMIST COMMITTEE

Evolution of a Scientist Lecture Series-- A Chemist with a Badge

This unique free lecture series showcases regional chemists from academia, industry and the private sector and invite them to share their unique journeys and detail how they arrived at where they are today.

The New Jersey Younger Chemists Committee held the second installment in the Evolution of a Scientist lecture series at Rutgers University on April 26, 2012.

Our speaker was Danielle Sherwood, Ph.D. who shared her journey from college, to graduate school, as well as the application and training process to achieve her current position as a Special Agent with the FBI. Danielle offered advice and insight for younger chemists who may be interested in a career with the FBI, whether in the crime lab or as a special agent.

In addition to sharing the ins and outs of Quantico and the FBI application process, Danielle shared with the group how scientific research and knowledge, both in industry and academia, can be targets for foreign intelligence services.

We would like to thank Danielle for her insights and the NJACS for making this event possible.

NORTH JERSEY ORGANIC TOPICAL GROUP

The Award for Creativity in Molecular Design and Synthesis

**2012 Award Recipient:
Professor K.C. Nicolaou
The Scripps Research
Institute and the
University of California,
San Diego**



The award symposium honoring Professor Nicolaou will feature lectures from Professor Phil S. Baran (The Scripps Research Institute), Professor Scott A. Snyder (Columbia University), Professor Erik J. Sorensen (Princeton University), Dr. Janet L. Gunzner-Toste (Genentech, Inc), and Professor Nicolaou.

Seating is limited, so please register early! For information and on-line registration, visit our website: <http://www.njacs.org/organic.html>

Date: Wednesday, November 14, 2012

Times: 9:00 AM - 5:00 PM

**Place: The Palace at Somerset Park
333 Davidson Avenue
Somerset, NJ**

Cost: \$80 (including lunch) (a discounted rate of \$35 will be available for a limited number of students)



NORTH JERSEY SLATE OF CANDIDATES

The North Jersey Section ACS is proud to announce the slate of candidates for 2013 chair-elect and 2013-2015 councilors. The Section election will take place from mid-September to the beginning of November. The Election will again be by ELECTRONIC BALLOT. Additional information will be sent to all section members via email.

Chair-elect:

Ron Kong
Monica Sekharan

Councilor/Alternate Councilor:

Ray Baylouny	Ron Kong
Amber Charlebois	Diane Krone
Jiwen Chen	Cecelia Marzabadi
Susan Fahrenheitoltz	Michael Miller
Stan Hall	Monica Sekharan

NORTH JERSEY SECTION CHEMISTRY OLYMPIAD-2012

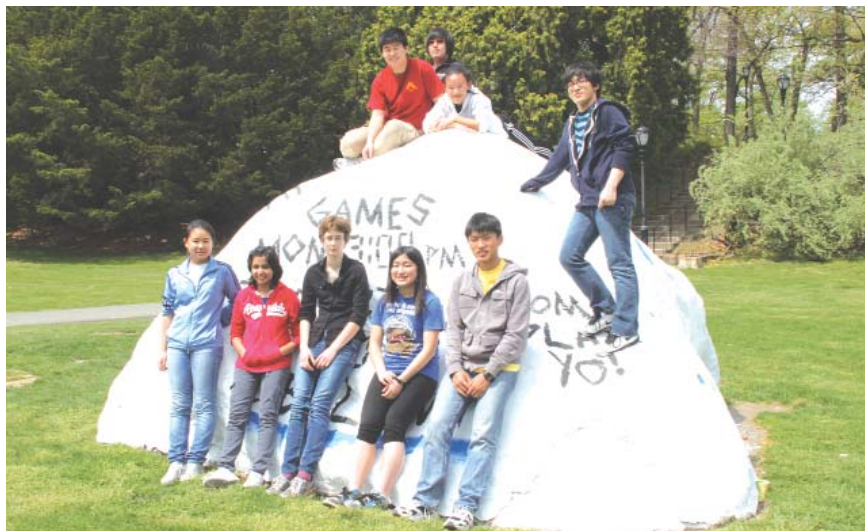
By the time you read this, the 2012 International Chemistry Olympiad will have been finished. However, the North Jersey Section is honored and proud to announce those students who have achieved 2nd and 3rd levels in the Chemistry Olympiad this year.

Earlier this year, the NoJ Section screened an unprecedented 390 high school students who entered the Olympiad with hopes of reaching its goal. From this record number, 11 student won honor grades and went on to the 2nd level. A photo of the students who took the tests is below. Their names, schools and teachers are listed below:

Name	High School	Teacher
Steven Wooseok Ahn	Bergen Academies	Dr. Rocco Galante
Woncheol Jeong	Bergen Academies	Dr. Rocco Galante
Grace Zhang*	East Brunswick	Dr. Paul Kimmel
Dhriti Kishore	East Brunswick	Dr. Paul Kimmel
Emma Chant	Highland Park	Mrs. Keisha Stephen
Justine Jang*	Livingston	Mrs. Susan Spadafina
Alex Nie*	Livingston	Mrs. Susan Spadafina
William Krinsman	Milburn	Mr. John Yi
Henry Meng	Milburn	Mr. John Yi
Jessica Xu*	Watchung Hills	Mr. Michael Gangluff
Michael Ma	Watchung Hills	Mr. Michael Gangluff

*students who ranked in the top 20 in the USA

The above students were invited to take 2nd level exams at FDU – College at Florham. These exams, two written and one laboratory, were taken at the same time with approximately 1200 nation-wide, graded by national ACS, provided the highly revered top 20. The NoJ Section had four students make the top 20 ranking in the country. They are listed above with asterisks next to their names. The four were invited to the Air Force Academy in Colorado Springs for a 3rd level – a two-week crash course in all phases of chemistry. For inquiries – raybaylouny@optonline.net



Chem Olympiad students who took the 2nd level exams in the North Jersey Section at FDU: (bottom row left to right) Grace Zhang, Dhriti Kishmore, Emma Chant, Justine Jang, Michael Ma. (top row left to right) Alex Nie, Steven Wooseok Ahn, Jessica Xu, Woncheol Jeong

(Photo courtesy of Ray Baylouny)

Call for Volunteers

Come Join Us at the Liberty Science Center

Last year The North Jersey Section of American Chemical Society celebrated National Chemistry Week at the Liberty Science Center. We had a great time and the attendees really appreciated all of our efforts. Why don't you join us this year? On **Saturday, October 20, 2012** the North Jersey Section will be holding its annual **ChemExpo** in celebration of National Chemistry Week. As usual we will have many tables offering all kinds of hands-on activities for budding scientists. You can set up your own table or help out at another table. We need you to help us make a difference!

The theme for this year is "Nanotechnology". Engage visitors in exploring the positive impacts of chemistry as it relates to the emerging field of "Nanotechnology". Check out the National Chemistry Week web page at <http://portal.acs.org/> Click on "Education" and then "National Chemistry Week" to get some ideas for hands-on activities that you might want to present.

Your activities should be geared for 8 to 12 year olds. As usual our first priority is safety. Preferably presenters should use household materials to demonstrate a scientific principle. We would like the students to be able to repeat these experiments at home and at school so it would be very helpful if you had handout instructions to distribute.

To minimize duplication of the presentations, we will need to know by October 1 the activity you would like to conduct at your table. Individuals contacting us first with their idea(s) will be given priority, so please let us hear from you as soon as possible. Contact Bobbi Gorman at rosellerams@yahoo.com or Mita Chaki at mitachaki@gmail.com and let us know what activities you will be doing at your table or if you want to volunteer at the Expo.

We also value and look forward to receiving financial support to help cover many of the expenses associated with the Section's NCW activities. If you would contact the appropriate individuals at your company, the Section would be most grateful. A donation of \$500.00 indicates Gold Sponsorship, a \$250.00 gift indicates Silver Sponsorship

and a \$100.00 gift indicates a Bronze Sponsorship. Checks should be made out to the North Jersey ACS Section with a memo of "ChemExpo" and sent to Jacqueline Erickson, 33 Ronald Road, Lake Hiawatha, N, 07034-1121.

Please fill out the following forms and return them to Mita Chaki at mitachaki@gmail.com.

Form 1. Count me in.

My name is: _____

I am volunteering to work on: **Saturday, October 20** (Check appropriate box)

- 10:00am-11:30 am,
 11:30 am – 2:00 pm,
 10:00am-2:00pm

I can be reached at:
 (work phone number) _____

My complete address is: _____

I am an employee at: _____

The activities at my table will be: _____

In addition to a table, I also need: _____

I will be bringing handouts on activities that the students can do at home. Yes No

I will need more than one table. Yes No
 How many additional tables will you need?

Form 2. My company would like to support these efforts.

The following company/individuals are willing to help defray the costs of these events:

An acknowledgement letter for this contribution should be sent to (name and full address):

(See next page for Form 3)

CALL FOR VOLUNTEERS

(continued from page 11)

Form 3.

I will be joined at my table by the following volunteers.

Complete Name: _____ Institution: _____ Address (snail mail): _____

Activity _____ Time Volunteering _____

Complete Name: _____ Institution: _____ Address (snail mail): _____

Activity _____ Time Volunteering _____

Complete Name: _____ Institution: _____ Address (snail mail): _____

Activity _____ Time Volunteering _____

Acknowledge letters should be sent to: _____

Thanks very much for all of your help. The Section is most appreciative of your efforts. Mita Chaki and Valerie Kuck, American Chemical Society, North Jersey Section

Grants Available

Ocean Optics Offers R&D Funding with Blue Ocean Grants

Over a quarter of a million dollars available to explore ideas involving optical sensing

Dunedin, FL (July 5, 2012) – Ocean Optics has opened the application period for the second year of its highly successful Blue Ocean Grants program (www.blueoceangrants.com). The program seeks innovative and novel proposals that solve challenging problems and improve the world using optical sensing. Applicants from all disciplines are encouraged to apply before the September 1, 2012 deadline.

The program is designed to facilitate open innovation and spur the development of new optical sensing technologies with potential for market commercialization. The international program is open to applicants from academia and industry around the world. 2011 winners had a diverse range of ideas with extremely high quality proposals ranging from novel spectrometer and spectral imaging architectures to emerging applications as diverse as low cost surface enhanced Raman spectroscopy, early prostate cancer detection techniques, and new nano-liter microfluidic chip architectures.

The Blue Ocean grants are divided into two phases. Phase I grants are issued to fund initial evaluation and development of ideas and technologies to the proof of concept phase. Phase II grants will be issued to nurture a proposed technology through proof of concept in a way that enables the potential of market commercialization.

Last year the company originally planned to award up to 10 Phase I grants of up to \$10,000, but expanded that number to 13 grants when the grant committee, made up of Ocean Optics Chief Technology Officer Jason M. Eichenholz and independent photonics experts, felt strongly compelled to find funding for three additional worthy recipients. In addition, another seven strong submissions were awarded development grants. Development grant recipients were given or loaned Ocean Optics equipment to facilitate progression of their grant ideas, enabling them to be submitted to both last year's Phase II program as well as this year's Phase I process.

"The Blue Ocean Grants program is a unique combination of open innovation and crowd sourcing from all disciplines," explains Ocean Optics Chief Technology Officer Jason M. Eichenholz. "As 2011 was our first year, we didn't quite know what to expect and were elated by the quality and quantity of the applications from around the world. We're currently evaluating the strong proposals from last year's winners to determine who will move on to Phase II funding."

Grant awards will again be determined by Eichenholz and an expanded panel of independent photonics experts, based on technical merit, potential commercial viability, and the ability to change the world for the better via optical sensing. The simple application asks two fundamental questions: What is the idea and how will it be implemented or tested?

To learn more about the program and to apply, visit www.blueoceangrants.com, or call (727) 733-2447.

New York Meetings

www.newyorkacs.org

NEW YORK SECTION BOARD MEETING DATES FOR 2012

The dates for the Board Meetings of the ACS New York Section for 2012 were chosen and approved at the September 2011 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 or calling the office at (516) 883-7510.

The 2012 Board Meetings will be held on the following Fridays at 6:00 PM at St. Johns University, Writing Center, Jamaica, NY. Dr. JaimeLee lolani Rizzo will chair the meetings.

Friday, September 14

Friday, November 16

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



CHEMICAL MARKETING AND ECONOMICS GROUP

Luncheon/Webcast — “Personal Care: Trends in Renewable ingredients”

Hosted by: Charles Brumlik, Ph.D.
Nano-Biz LLC

Consumers are clamoring for natural and renewable ingredients without paying more. But that is just the simple overview. Their quest to be closer to nature is fueling the growth of green sourcing and processing. Natural ingredients now provide feedstock for an ever increasing range of ingredients. Algae, enzymes, fermentation, and other natural processes provide different routes. But which ingredients and process methods provide compelling cost, meet regulatory and certification hurdles, required properties, and perceived benefits? This session will review recent trends and commercial opportunities in personal care and cosmetics. Meet industry experts who will compare the market pull with the growing supply opportunities and routes to market.

Date: Thursday, September 6, 2012

Times: Registration and Networking
11:00 AM - 12:00 noon (EDT)

Luncheon 12:00 noon - 1:00 PM
Presentation & Webcast
1:00 PM - 2:15 PM

Place: Penn Club
30W 44th Street, NYC
Cost: Luncheon Fees: \$90 for non-members or 2011 CM&E members. \$70 for CM&E members who paid 2012 Dues.

Please REGISTER EARLY – seating is limited.

This event will be webcasted, so that if you cannot attend, you may watch it at your convenience. More information available on www.cmeacs.com

To keep up with the CME calendar and receive event articles, join the free CM&E LinkedIn Group: <http://www.linkedin.com/groups?home=&gid=2092067>



INORGANIC AND ORGANO-METALLIC TOPICAL GROUP

Frontiers of Inorganic and Organometallic Chemistry Lecture Series

Organizers: Dr. James Camara
Yeshiva University
Dr. Kathleen Kristian
Iona College
Chairs, Inorganic and Organometallic Topical Group

Keynote Speaker: Prof. Paul Chirik
Princeton University

Speakers: Prof. Stephen Koch
SUNY Stony Brook
Prof. Roberto Sanchez-Delgado
Brooklyn College
Prof. Jonathan Owen
Columbia University
and others

Please join us for the first event sponsored by the Inorganic and Organometallic Topical Group after its hiatus. Please register in advance at www.newyorkacs.org.

Date: Friday, September 14, 2012

Time: 1:30 PM

Place: Havemeyer Hall, Room 209
Columbia University
3000 Broadway (at 116th Street)
New York, NY

Cost: Free and open to members and non-members.

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



Autophagy as a Therapeutic Target in Multiple Diseases — From Molecular Mechanisms to Drug Discovery

Organizers: Zdenek Berger, PhD
Pfizer
Mercedes Beyna, MS
Pfizer
Warren Hirst, PhD
Pfizer
Jennifer Henry, PhD
The New York Academy of Sciences

Speakers: Daniel J. Klionsky, PhD
University of Michigan
Zhenyu Yue, PhD
Mount Sinai School of Medicine
Ralph A. Nixon, MD, PhD
Nathan Kline Institute
Eileen P. White, PhD
Rutgers University
Beth Levine, MD
University of Texas
Southwestern Medical Center
Richard J. Youle, PhD
NINDS
Zdenek Berger, PhD
Pfizer
Ana Maria Cuervo, MD, PhD

Autophagy is a route for degradation of aggregated cellular proteins and dysfunctional organelles. This symposium reviews molecular mechanisms of impairment, and discusses drug discovery strategies for modulating autophagy for therapeutic benefits.

Date: Tuesday, September 25, 2012
Time: 8:30 AM – 6:00 PM
Place: New York Academy of Sciences
7 World Trade Center
250 Greenwich Street – 40th Floor
New York, NY 10007
Cost: This event has reduced-rate registration for ACS and NYAS members, at \$30 or \$15 (for students and post-docs). Please select the appropriate non-member Registration Category and use the Priority Code ACS. Non-members may attend for a fee of \$85 (corporate), \$65 (non-profit or academic) or \$45 (students and post-docs).

For more information and to register for the event, go to: www.nyas.org/autophagy

To become a Member of the Academy, visit www.nyas.org/benefits



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

To Human Resources Departments in Industry and Academia

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

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



**Learn more about the
New York Section at
www.NewYorkACS.org**

NEW YORK CHEMISTRY STUDENTS' ASSOCIATION 60TH UNDERGRADUATE RESEARCH SYMPOSIUM

The New York Chemistry Students' Association of the New York Section held its 60th URS on Saturday, May 5, 2012, at SUNY at Old Westbury in Old Westbury, NY. Around one hundred and forty papers from 33 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.

A leadership workshop was also held 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 URS co-chair Justyna Widera to begin the program. Provost Patrick O'Sullivan then welcomed the students, mentors, moderators and guests to the SUNY Old Westbury Campus, followed by JaimeLee Rizzo who welcomed the attendees on behalf of the NY ACS. Neil Jespersen gave a short historical overview of the undergraduate research symposium to commemorate the 60th anniversary.

Luis Brus of Columbia University then presented a captivating keynote address, "Nanoscience: Semiconductor Quantum Dots and Carbon Nanotubes." The talk was aimed for a broad audience. He described the chemistry and physics of semiconductor nanocrystals and carbon nanotubes. Both materials are intermediate between molecules and crystalline solids in their electronic properties. Simple molecular orbital ideas help us to understand the size dependence of their properties. Novel synthesis is the key to scientific progress in both materials. Rigorous understanding and characterization requires that the properties of single nanocrystals and tubes be observed.

After several questions from the audience, Barbara Hillery directed the students to their presentation locations. At the conclusion of the day, URS co-chairs Yolanda Small and Joe Serafin distributed participation certificates and commemorative gifts to the students, moderators and sponsors. In addition, a birthday cake was shared by all to commemorate the 60th anniversary.

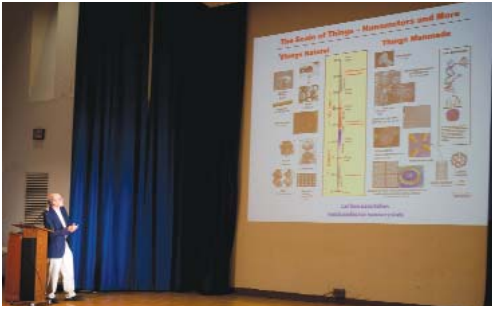
Pictures of the event can be seen at (and ordered from) www.URSpictures.com

Video footage of the keynote address can be seen at <http://www.ustream.tv/recorded/22370783> and <http://www.ustream.tv/recorded/22371918>

(More pictures on next page)



2012 Undergraduate Research Symposium participants.



Keynote Speaker Louis Brus, Columbia University, discusses science on the nanoscale.



Student presenters and Faculty from Adelphi University.



Student presenters and Faculty from Vassar College.



Student presenter from John Jay College of Criminal Justice.



Student presenters and Faculty from St. John's University.

(All photos courtesy of Arpi Pap)

Student presenters and Faculty from CUNY York College.



WESTCHESTER CHEMICAL SOCIETY DISTINGUISHED SCIENTIST AWARD

On Wednesday, May 2, 2012, at Pace University in Pleasantville, NY, the Westchester Chemical Society presented its Distinguished Scientist Award to Zbigniew Darzynkiewicz, M.D., Ph.D.

"in recognition of his seminal scholarly contributions in cancer research and development of biomarkers of tumor diagnosis and prognosis." Dr. Darzynkiewicz is the Director of the Brander Cancer Research Institute and Professor of Pathology, Medicine and Microbiology/Immunology at the New York Medical College in Valhalla, New York. His research in cell biology focuses on molecular mechanisms associated with cell proliferation, apoptosis, and sensitivity to anti-cancer drugs and he has developed analytical methods with world-wide application. He is the Editor or Co-editor of 5 scientific journals, has published over 680 peer-reviewed articles, with 28,000 citations, and has authored and/or edited 15 books.

Dr. Darzynkiewicz gave a very interesting and informative awards lecture "Biomarkers of Cell Proliferation and Death Applicable for Multiparameter Cytometry" that described his research using sophisticated flow cytometry/biomarker techniques to study cell proliferation, cell death (apoptosis) and fertility.

In addition to the Distinguished Scientist Award, the Westchester Chemical Society also presented the following eleven undergraduate Student Awards:

- Ramya Bharathi, College of New Rochelle (Faculty: Lee Warren)
- Tecshana Blackwood, Mercy College (Faculty: Carl Embola)
- Rosemarie Bracciodieta, Manhattanville College (Faculty: Darlene D'Alliessi)
- Brian Herbst, Purchase College, SUNY (Faculty: Elizabeth Middleton)
- Evan Leas, Fordham University (Faculty: Diana Bray)
- Michelle Muzzio, Iona College (Faculty: Lou Campisi)
- Fredy Perez, Westchester Community College (Faculty: Jody Reifenberg)
- Dwaine Pryce, College of Mount St. Vincent (Faculty: Andrea Minei)
- Rafael Santos, Bronx Community College (Faculty: Anthony Durante)
- Gabrielle Trombetta, Manhattan College (Faculty: Dr. Minglang Wu)
- Nicholas Vitucci, Pace University, Pleasantville (Faculty: Ellen Weiser)

Approximately 50 attendees enjoyed the awards presentations, Dr. Darzynkiewicz's lecture, a delicious dinner, and socializing with each other.



The Student Awardees: (back row left to right) Dwaine Pryce, Nicholas Vitucci, Brian Herbst, Rafael Santos, Evan Leas, Fredy Perez. (Front row left to right) Ramya Bharathi, Michelle Muzzio, Gabriella Trombetta, Rosemarie Bracciodieta.

(More photos on next two pages.)



Peter Corfield, Tecshana Blackwood, and Rolande Hodel.



Peter Corfield, Ramya Bharathi, and Rolande Hodel.



Peter Corfield, Rosemarie Braccioldieta, and Rolande Hodel.



Peter Corfield, Nicholas Vitucci, and Rolande Hodel.



Peter Corfield, Rafael Santos, and Rolande Hodel.



Peter Corfield, Michelle Muzzio, and Rolande Hodel.



Peter Corfield, Gabrielle Trombetta, and Rolande Hodel.



Peter Corfield, Evan Leas, and Rolande Hodel.



Peter Corfield, Fredy Perez, and Rolande Hodel.



Peter Corfield, Brian Herbst, and Rolande Hodel.



Peter Corfield and Dwaine Pryce.



Rolande Hodel and Zbigniew Darzynkiewicz.



Zbigniew Darzynkiewicz at the Westchester Chemical Society Awards Dinner, Pace University, May 2, 2012.



The Distinguished Scientist and the Board of the Westchester Chemical Society: (back row, left to right) Joan Laredo-Liddell, Jody Reifenberg, Ellen Weiser, Zbigniew Darzynkiewicz, Rolande Hodel, Paul Dillon. (Front row) Jean Delfiner and Peter Corfield.

(All photos courtesy of Paul Dillon)

WESTCHESTER CHEMICAL SOCIETY

Tentative Fall, 2012 Schedule

Special Seminar — “Arsenic and Human Health”

Speaker: Toby Rossman, Ph.D.
Professor of Environmental
Medicine
NYU Langone School of
Medicine

Arsenic (As) is a ubiquitous element found in the atmosphere, in water, in soils and sediments, and in organisms. Humans are exposed to As compounds coming from both natural and man-made sources. While there is still some concern about acute As toxicity, particularly as a result of occupational exposure to arsines, the major human health concern today is that of chronic low-level exposure to (mainly) inorganic As compounds, especially arsenite [As(III)]. Recently the world has become aware of the enormous disaster in the Bengal Delta Plain, where millions have been exposed to high levels of inorganic As in water from tube wells. High drinking water As levels are also seen in some U.S. communities. High As levels in drinking water are associated with skin, lung, and bladder cancers, as well as some other diseases. Exposure of mice to As(III) alone in drinking water does not cause skin cancers, but enhances the skin tumorigenicity of solar UV irradiation. As compounds do not react with DNA and are not directly mutagenic, but As is a comutagen and causes genomic instability (delayed mutagenesis). Cocarcinogenic mechanisms are probably via effects on DNA repair, DNA methylation, aneuploidy, and signaling changes. As and selenium (Se) are mutually antagonistic. Low (Se) levels may exacerbate effects of As in some parts of the world. Se enhances the biliary excretion of As through formation of a diglutathione compound [(GS)₂AsSe]-. A synthetic selenium compound prevented the cocarcinogenesis by As(III). Se may protect via the antioxidant action of selenoproteins, increasing biliary excretion of As, or other effects on As metabolism.

Toby G. Rossman, Ph.D. was tenured Professor of Environmental Medicine at New York University School of Medicine (NYUSOM) until 2009 and is now a part-time Professor and a Toxicology consultant. She got her bachelor's in Biology and Chemistry at Washington Square College (NYU), start-

ed graduate studies in Biochemistry at Brandeis University and completed a Ph.D. degree in Basic Medical Science (Microbiology/Biochemistry) from NYUSOM (1968). After a Pathology postdoc at NYUSOM, and a position as Associate Research Scientist at the Nelson Institute of Environmental Medicine, she was appointed Assistant (1974), Associate (1978) and Full (1985) Professor of Environmental Medicine. Her research has been continuously funded, mainly by NIH, but also USEPA and non-federal sources. She has published 120 articles, most on metal (particularly arsenic) carcinogenesis and toxicology, was first to report on the comutagenicity of arsenic, and developed the only animal model of arsenic-induced skin cancer. She has served on the Chemical Pathology Study Section (NIH), the National Toxicology Program (NTP) Study Section, the American Cancer Society Study Section (Genetics), the Environmental Health Sciences Review Committee (NIEHS), the NIH Small Business Grants (Genetics) study section, and the Metabolic Pathology Study Section (NIH). She was on the editorial boards of *Environmental and Molecular Mutagenesis*, *Mutation Research*, *Molecular Toxicology*, and *Teratogenesis, Carcinogenesis and Mutagenesis*, and is a reviewer for many other journals and Federal documents. She is a member of the American Chemical Society, Environmental Mutagen Society, Society of Toxicology, and American Association for Cancer Research, serving on many committees and elected positions. She participated in the Workshop “Environmental restoration: Significant basic research needs”, U.S. Department of Energy, 1990 and the International Agency for Research in Cancer review of the carcinogenicity of metals, Lyon, France, 1993, 2004, and 2009. She organized and chaired the session on mechanisms of carcinogenesis at the NIH/EPA meeting “Arsenic: Health Effects, Mechanisms of Action, and Research Issues”, Baltimore, Sept. 22-24, 1997. She was co-organizer of the First, Second, and Third International Meetings on Molecular Mechanisms of Metal Toxicity and Carcinogenicity. In 2003, she edited a Special Issue of *Mutation Research* devoted to Metals and Carcinogenesis. She was on the Program committee for the 9th Symposium of Metals in Biology and Medicine, Lisbon, 2006 and the Scientific Advisory Board (arsenic) for the USEPA.

Date: EARLY OCTOBER, 2012
Times: Refreshments 5:30 PM
 Lecture 6:00 PM
Place: To be announced
Cost: Free and Open to the Public

Additional Fall, 2012 Topics

Early November, 2012

Vitamin D: Understanding the Technical Challenges in Testing

James Freeman

Director, Assay Development,
 Siemens Healthcare Diagnostics
 Tarrytown, NY

Early December, 2012

The Value Chain – From Basic Chemicals To Commercial Products

Anthony Durante, Ph.D.

Assistant Professor
 Department of Chemistry,
 Bronx Community College
 Bronx, New York

Exact dates and locations to be announced. For more information, contact Paul Dillon:

E-Mail PaulWDillon@hotmail.com

Phone 1-914-393-6940

http://www.newyorkacs.org/sub_west.php

Call for Nominations

EDWARD J. MERRILL AWARD FOR OUTSTANDING HIGH SCHOOL CHEMISTRY TEACHER FOR 2013

Now is the time to begin thinking about nominations for the Edward J. Merrill Award, North Jersey Section, for Outstanding High School Chemistry Teacher for the year 2012.

Go to the web site, njacs.org under education and obtain your preliminary nomination

form and guidelines. The full packet takes time to do a good job!

We all know an outstanding high school chemistry teacher. Perhaps one from your town, your son's or daughter's teacher or just one that you have heard about or worked with at some point. The award carries \$500 for the teacher, \$500 in supplies for the teacher's classroom and a plaque to display at home or in the classroom.

Any questions or help needed contact Bettyann Howson,
chemphun@gmail.com.



2013 ESSELEN AWARD FOR CHEMISTRY IN THE PUBLIC INTEREST

The Northeastern Section of the American Chemical Society is pleased to invite nominations of worthy candidates for the Gustavus John Esselen Award for Chemistry in the Public Interest. This award recognizes a chemist for outstanding achievement in scientific and technical work that contributes to the public well-being. The award consists of a \$5000 prize and a medal of recognition. The presentation takes place at an award ceremony in April at Harvard University, followed by a formal address by the awardee. The tentative date for this ceremony is April 4, 2013.

The award was established in 1987 to honor the memory of Gustavus John Esselen, a distinguished member of the Northeastern Section. The first awardees were F. Sherwood Rowland and Mario J. Molina, who subsequently received the Nobel Prize. For further information go to www.nesacs.org/awards_esselen.html.

The deadline for nominations is **October 15, 2012**.



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ACS WEBINAR

Dear Local Section Officer/Councilor,

The Local Section Leaders Webinar, held on **May 9, 2012**, has been posted online and is now available for viewing.

This webinar was focused on assisting local sections with all upcoming preparations, the transition to a new Executive Committee and leadership development within the section.



ACS FELLOWS OVERSIGHT COMMITTEE

The Fellows Oversight Committee, is very pleased to provide you with the attached list of the 2012 ACS Fellows who represent your Local Sections.

North Jersey:

Michael Jaffe
Joseph Anthony Potenza
William H Suits

New York:

Vijaya L Korlipara

We hope that you will use this information to recognize your members who are being honored for their outstanding achievements in and contributions to the science/profession and service to the ACS community.

An official announcement with the complete list of 2012 ACS Fellows appears in the July 23, 2012 issue of *C&EN*. For your convenience, here is a direct link to the list <http://cenm.ag/acsfellows>. You will also find information about the Fellows Program and lists of ACS Fellows named in previous years on the ACS website at <http://www.acs.org/fellows>

Please do not hesitate to contact us by sending an email to fellows@acs.org.

Thank you for your support of the ACS Fellows Program

Best regards,

Fellows Oversight Committee

John E. Adams, Chair, Fellows Oversight Committee; 2009 ACS Fellow
Frank D. Blum, 2009 ACS Fellow
Neil D. Jespersen, Board Member
Mitchell R. M. Bruce, Local Section Activities Committee

Les W. McQuire, Committee on Committees
Mary K. Moore, 2009 ACS Fellow, Divisional Activities Committee

Others

TRI-STATE CHINESE AMERICAN CHEMICAL SOCIETY (CACS)

Annual Symposium

The Tri-State CACS held its 2012 annual symposium at Rutgers University on June 16, 2012. More than 300 professionals and students from NJ, NY, PA, CT, and DE attended the one-day event.

The symposium discussed the theme of "A New Paradigm for Innovation and Reinvention in Chemistry". A diverse group of leaders from academia, industries, and government spoke at the symposium. They addressed the trend in innovation and employment as well as the strategies for individuals to adapt to the changing paradigm. In addition, this year the symposium also focused on career development of chemists. For the first time, a panel discussion on strategies of career development, networking, and job hunting was conducted to serve specifically the needs of Chinese American chemists.

Their programs are open to all and always feature great speakers and networking opportunities. A Dow HR team discussed several open positions as did government officials.

For more information about the Tri-state CACS, please visit www.tristatecacs.org.



FIFTH PASSAIC RIVER SYMPOSIUM AT MONTCLAIR STATE UNIVERSITY

Today's Status, Tomorrow's Perspective

Organized by: The Passaic River Institute of Montclair State University

If you live or work in, on, near, or about the Passaic River and its watershed, this conference is for you.

The fifth Passaic River Symposium will be a day-long event and will include invited keynote speakers and sessions on all aspects of environmental management that

are relevant to the Passaic River Basin. This is an unique conference because it brings together scientists, public officials, activists, planners, writers, and historians. This conference year will also have special sessions on the sediment remediation technologies used in the Lower Passaic Interim Remediation Project. Another important development that will be discussed at the conference is the recent release of the Focused Feasibility Study by the The Lower Passaic River Restoration Project. This document will provide guidance for ecosystem restoration, environmental advocacy, and public outreach efforts.

The symposium registration fees (regular \$115, student \$40) includes continental breakfast, lunch and book of abstracts. Registration information is available on the symposium web site.

Readers of THE INDICATOR are invited to submit abstracts for presentations. Abstracts are sought for platform (oral) presentations and posters on any environmental, recreational, and governance issues relevant to the Passaic River Basin and nearby watershed environments. Platform presentation length will be 15 minutes, including questions. A book of abstracts will be distributed at the conference and placed on the conference website following the conference. All symposium presenters are required to register for the conference. Please contact Dr. Meiyin Wu at the address below to submit an abstract.

Direct any inquires or questions to Dr. Meiyin Wu, Director of the Passaic River Institute and chair of the Symposium at pri@mail.montclair.edu or 973-655-5423.

Date: Friday, October 19, 2012
Times: 8:00 AM - 5:00 PM
Place: Montclair State University
 Conference Center
 1 Normal Avenue
 Montclair, NJ
Cost: Regular \$115, Student \$40

Symposium web site:
www.montclair.edu/csam/passaic-river-institute/conferences-symposiums/

Learn more about the
 American Chemical Society at
www.acs.org

Award Opportunity

HAROLD HAMM DIABETES CENTER ESTABLISHES INTERNATIONAL RESEARCH PRIZE

Center Aims to Spur Global Research to Find Cure for Diabetes in This Generation

PHILADELPHIA, PA. AND OKLAHOMA CITY, OKLA. – With a goal of stimulating innovative scientific research to find a cure for diabetes, the Harold Hamm Diabetes Center (HHDC) at the University of Oklahoma today announced the establishment of the Harold Hamm International Prize for Biomedical Research in Diabetes. HHDC, a comprehensive center of excellence integrating novel research, world-class patient care, and large-scale prevention programs, will award and administer the \$250,000 Prize, one of the largest of its kind in the world, to recognize and promote lasting achievements in diabetes research.

To learn more about the Prize and its selection process, please visit www.HaroldHammPrize.org.

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SEARCHING FOR THAT SPECIAL JOB?

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

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

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

- www.mboservices.net
- <http://newyorkacs.org/jobs.html>
- <http://njacs.org/jobs.html>

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