

THE Indicator

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Dr. Monica Sekharan **2014 Chair** **North Jersey Section**



See Chair's Message on page 17.

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Call for Nominations

LOCAL SECTION OUTREACH VOLUNTEER OF THE YEAR

Dear Local Section Officers and Councilors,

In an effort to highlight the immeasurable outreach efforts made by local section volunteers, the Committee of Community Activities (CCA) sponsors a recognition program entitled Local Section Outreach Volunteers of the Year. This program is geared to recognize individuals who have demonstrated extraordinary outreach volunteer service to their local sections. We encourage you to take advantage of this program by identifying one volunteer within the section to receive this honor for 2014.

You may do so by completing the online form **by December 13, 2013**. ACS will provide you with a certificate to present to the awardee during a section meeting or other local section event in 2014. The awardees

will be announced by spring 2014 in *Chemical & Engineering News (C&EN)*, on the ACS Network, and on the Outreach Volunteers of the Year webpage. We also ask you to submit a photograph of the individual receiving the certificate to outreach@acs.org to be shared on the ACS Network.

Note: Each local section may recognize one volunteer each year. Individuals are only eligible to be recognized once every five years. Only local section Chairs may submit names of individuals to be recognized. Special provisions can be made in the event a section does not have a sitting Chair. Should you have any questions, please contact outreach@acs.org for more information.

Sincerely yours,
Christine Jaworek-Lopes and
Kim Morehouse

Co-Chairs of the Subcommittee on Volunteer Engagement & Recognition
Committee on Community Activities (CCA)
For more information, go to
www.agcchem.com

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Westchester Chemical Society
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Thursday, December 5, 2013

Long Island Subsection
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Chemical Marketing & Economics Topical Group
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Tuesday, December 10, 2013

Biochemical Topical Group
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Organic Topical Group
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High School Teachers Topical Group
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Wednesday, January 8, 2014

Chemical Marketing & Economics Topical Group
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NORTH JERSEY SECTION

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North Jersey Executive Planning Meeting
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Friday, December 12, 2013

Baekeland Symposium
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Monday, December 9, 2013

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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 January 2014 issue of
The Indicator is
November 20, 2013**



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THIS MONTH IN CHEMICAL HISTORY

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

When I started teaching general chemistry many decades ago publishers often produced, along with the main text, series of short monographs on particular subjects. A few that I still have on my campus bookshelves include Leonard Nash's "Stoichiometry" (1966); Glenn Seaborg's "Man-Made Transuranium Elements" (1963); William Jolly's "The Chemistry of the Non-Metals" (1966); and Gordon Barrow's "The Structure of Molecules"(1963). I was reminded of this when, browsing my home library bookshelves, I came across a slim volume in the Longmans, Green and Co. series "Text Books of Physical Chemistry", edited by the Nobel Laureate Sir William Ramsey, titled "The Theory of Valency" by J. Newton Friend D.Sc. (Birmingham); Ph.D. (Wurtzburg). My Second Edition was published in 1915, slightly revised from the 1908 First Edition.

The dates are significant and provide context. The electron was "discovered" by Thomson in 1897 and when Friend's first edition was published Lewis was sketching cubic octets of electrons in his notebook. Lewis doesn't warrant an entry in Friend's "Names" index. The Preface to Friend's First Edition notes that: "It seems rather remarkable that no treatise should be extant in our own language on such an important subject as valency". I would echo that since the concept of valency, though couched in somewhat different language, derives from the work of the English organometallic chemist Frankland.

I haven't so far found out much about J. Newton Friend, who describes himself as a Carnegie Gold Medallist, and Headmaster of the Victoria Institute Science and Technical Schools, Worcester. Friend was awarded a Carnegie Research Fellowship in 1907 for work on the metallurgy of iron and steel. This research led to the medal award in 1912. He wrote a number of other textbooks including a multi-volume work on inorganic chemistry; the corrosion of iron and steel; the chemistry of linseed oil; domestic chemistry; and the chemistry of paints. In 1920 he became head of the Birmingham Municipal Technical School.

Friend's textbook on valency covers the history of chemical combination and of the periodic table. His chapter on carbon pays attention to the fairly recent work of Gomberg on the triphenylmethyl radicle (Friend's spelling) and the apparent trivalent character of carbon in this species. The Chapter on Group 0, the noble gases, summarizes the interesting early work on failed attempts to produce their compounds by vigorous reactions including electric discharges. A discussion on Group I concludes that since hydrogen is exclusively monovalent the formula for the compound KHF₂ must involve the atomic arrangement KFFH.

Friend outlines Werner's comparatively new ideas (1905) on valency in inorganic complexes involving what we now call oxidation states and coordination numbers, theories that work admirably in coordination chemistry, but leave something to be desired in the chemistry of ammonia.

In his final chapters Friend describes electrochemical theories beginning with Humphry Davy and Berzelius; moving through Helmholtz; to J.J.Thomson. He describes the complex way in which Thomson suggests that the corpuscles are arranged in atoms. Friend has his own theory of valency that includes three different types exhibited by various elements. It is interesting to read in this text how chemists and physicists of the early 20th. century are searching for theories that encompass the wide range of chemical combinations. Textbooks of this period make us aware of the ingenuity and imagination of our predecessors, qualities that we must endeavor to find in ourselves and inspire in our students.

CHEMISTRY RIDES THE RAILS

By Kevin Olsen, Montclair State University, olsenk@mail.montclair.edu

If any readers of *The Indicator* are going to be pulling out their old model trains to run under the Christmas tree, they may want to take a moment to reflect that chemistry has played, and continues to play, a vital role in running full sized trains.



The railroad was invented in Great Britain in the late 1700s and early 1800s because the owners of coal mines needed a better way of hauling coal from mines to tidewater. The owners of iron furnaces were instrumental in the invention of rails because they needed to reduce friction when hauling heavy loads of fuel and iron. By the 1860s, the British railways pioneered the use of chemistry to help make train travel safer and more efficient.

This practice crossed the Atlantic and by the end of the 1800s most American railroads had their own laboratories. In this era, the vast majority of locomotives were steam powered although a few cities were installing electrified streetcar and subway lines.

The reason why railroads established chemical testing laboratories was to insure that the products purchased by the company, lubricants, fuels, paints, and miscellaneous chemicals met specifications. Some railroads began testing the quality of their coal supplies during the 1870s. During the 1880s the Pennsylvania Railroad instituted a system of purchasing materials according to strict quality specifications. By 1889 the railroad's laboratory was performing 25,000 chemical determinations annually and was one of the country's busiest laboratories.

The typical steam locomotive had hundreds of moving parts and at least as many lubrication points. One of the first tasks of the chemist was to locate appropriate lubricants and then implement quality control testing protocols for them. Many of the routine determinations involved measuring viscosity. An early example of another potential problem was the presence of sulfur in greases that were manufactured from animal fats. Sulfur and steam would react at high temperatures to create sulfuric acid that would eat into metal parts.

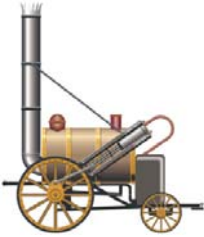
A steam locomotive also needs water and lots of it. A large railroad required water tanks every few miles and every one of them had to contain good quality water. Once again the testing laboratory was called in to perform routine water quality determinations. Water hardness, caused by calcium and magnesium salts, was among the first routine determinations. If the salts come into contact with hot surfaces, they can bake onto the surface and reduce heat conductivity. This of course reduces boiler efficiency and in extreme cases can lead to damage. Baked-on salts are commonly referred to as scale and the process of formation is known as scaling. Another source of scale is silica. Conversely, if the salts sink to the bottom of the boiler, they accumulate as sludge. Even carbon dioxide in water is undesirable because under heat and pressure it can release oxygen that can corrode the boiler components. In recent years museums and tourist railroads have discovered that nitrates in water can form nitric acid.



Although the problems caused by water hardness were well known, the first recorded effort to study the problem on a large scale was in 1870. A committee of the American Railway Master Mechanics Association met with a chemistry professor from the University of Illinois and discussed water softening technologies. However the state of the art was not sufficiently advanced and it was not until 1891 that the first large scale water softening plant was constructed by an American railroad. The Union Pacific Railroad had two full time chemists traveling around the system to inspect and supervise their water treatment plants. Where the installation of water softening equipment was not practical, blocks of water softening agents could be placed in the locomotive's water tank.

The formation of foam in the boiler water is another problem that can be caused by impure water. Foam is roughly the same density as steam so that it can be carried out of the boiler.

er and into components that are not designed to be exposed to liquid water. Water in the cylinders is pounded by the pistons and can cause severe damage. Foam also moves dissolved salts or particulates into these components. Foaming can be caused by high concentrations of dissolved and suspended solids, excessive alkalinity, and even organic materials.



One way to reduce foaming is to periodically "blow down" the boiler. Valves are opened at the bottom of the boiler and the high pressures force water and sludge out. The impurities contained in the sludge may contribute to foaming. Blowing down also helps to remove excess water from the boiler that also contribute to foaming.

But how did the locomotive engineer know when the boiler water was foaming? One solution was the Signal Foam Meter. This device was manufactured by the Electro-Chemical Engineering Corporation of Chicago and mounted in the locomotive's cab. The meter had red and green lights that indicated whether foam was forming or if conditions were good. The sensor consisted of a series of electrodes mounted in the boiler. As the water level rose because of foaming, it made contact with the electrodes. A circuit then automatically opened a valve that released the excess water. Other versions of this device opened the blow down valves at the bottom of the boiler.

When the railroad chemists were not testing the quality of water or fuel, they were measuring the quality of the steel used in rails, railroad cars, and locomotives. The typical steam locomotive boiler operated at a pressure of approximately 200 to 300 pounds per square inch. Steel 9/16 of an inch thick was required for a boiler designed to operate at 240 psi but testing the quality of that steel was a critical task. The typical boiler required the tensile strength of the boiler plate to be 55,000 psi, the shear strength to be 45,000 psi, and to have a crush resistance of 50,000 psi. If wear and corrosion reduce the thickness of boiler plate, a catastrophic explosion may result so before a boiler is certified for service, it undergoes a hydrostatic test. Water under pressure is pumped into it and any leaks or weak spots will be revealed. Today modern operators of steam locomotives such as museums and tourist railroads have pioneered the use of ultrasound to measure the thickness of boiler plate without having to drill inspection holes. Hydrostatic tests are still routinely performed and successfully passing one is regarded as a major milestone in locomotive restoration.

Testing a steam locomotive was a very complex affair. The a carefully measured quantity of fuel (coal or wood) was loaded in the tender as was a known amount of water. The type of lubrication used was also recorded. The weight of the train, the gradients and curvature of the line, and the desired speeds were all carefully computed. After the test run, the amounts of fuel and water consumed were measured to determine the locomotive's efficiency.



In special cases the railroad might decide that testing the locomotive should include "taking diagrams." Almost every reader of *The Indicator* will remember plotting P/V graphs in P-Chem class when performing the adiabatic gas expansion experiment or from studying the Carnot and Rankin Cycles. If the pressure is plotted on the Y axis and the volume on the X axis, the resulting trace forms a closed loop. The area inside the loop indicates the work performed. (Incidentally, the resulting diagram does not look much like the Carnot Cycle. This led Rudolf Diesel to begin designing a new type of engine that would more closely approximate Carnot's vision of the ideal heat engine. But that is another essay)

Taking diagrams consisted of connecting a mechanical graphing apparatus to the locomotive's cylinders. These were housed in temporary wooded boxes mounted on the locomotive. A steam gauge connected to the chart recorder measured the pressure and the piston stroke gave the volume. Without the electronic sensors that would only become available after almost all steam locomotives were retired, this was an awkward and time consuming exercise so taking diagrams was a rare event. (I often wonder if modern students have so much trouble learning about the Carnot Cycle and indicator diagrams because they have never seen a steam locomotive at work. Any readers who want to donate a locomotive to

(continued on page 8)

CHEMISTRY RIDES THE RAILS

(continued from page 7)

Montclair State's Chemistry Department for our spring semester P-Chem lab should contact the author.)

The replacement of steam locomotives by diesels began in the 1930s and was momentarily slowed only by the Second World War. Most railroads made the complete transition to diesel power by the early 1960s. Diesels only replaced steam, not the need for chemistry. In the 1950s the New York Central Railroad pioneered the use of engine testing through oil analysis. As the moving parts wear out, minute fragments of metal become entrapped in the engine oil. The company installed the Baird Atomic Direct Reader at its Cleveland Technical Center. A small sample of oil was heated and the emission spectra of the metals was read automatically. Knowing the composition of the various metal parts allowed the company to determine which of them needed replacement just from analysing the spectra. This testing method was soon adopted by other industries and is still widely used. It was reported to have saved the railroad thousands of dollars in maintenance costs and delays caused by engine failures.

The Baird Atomic Direct Reader operated almost entirely automatically and has been regarded as a major milestone in the development of laboratory automation. The device had a very positive public relations value to the company. After the hard times of the Great Depression and World War Two, the new diesel locomotives were a promise of good things to come. That the railroad not only operated these machines but used a robotic system to help maintain them, was a powerful symbol of progress and modernity.

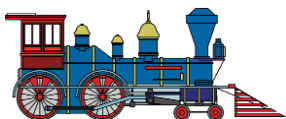
The railroad chemists were responsible for testing more than metals, lubricants, water, and fuels. In the early 1900s, the Union Pacific Railroad had its chemistry laboratory study weed growth so they could design the most effective weed control sprayers. Most of the laboratories employed microbiologists who performed analysis such as testing the purity of the drinking water SERVED TO PASSENGERS. The chemistry laboratories were also frequently involved in resolving damage claims. One of the more well-known cases took place in the early 1900s and involved a shipment of grass mats from Japan. The mats had arrived at their destination badly rotted. The shipper blamed the railroad and claimed that the roof of the box car must have leaked. The chemistry lab on the other hand, determined that the rot was caused by salt water and must have occurred during the ocean voyage.

Although testing laboratories continue to be important part of insuring railroad safety and efficiency, many chemist professionals are employed by the railroads as hazardous materials (Hazmat) specialists. They are responsible for the safe handling and movement of hazardous materials as well as compliance with the government regulations governing these movements.

Hazmats come in many forms. The recent expansion of petroleum production from the Alberta Tar sands and the Bakken Oil Field has resulted in a surge of petroleum shipments by rail. While pipelines are cheaper to operate, they take a long time to build and are not particularly flexible. Moving crude oil by rail allows shippers to select from multiple refineries depending on capacity and refining costs.

According to the American Chemistry Council, one-quarter of all chemical shipments in the United States travel by rail at a cost of \$3.9 billion. One modern railcar has the capacity of four trucks and the volume of chemical shipments are impressive. Taking just one common chemical as an example, it has been estimated that between 1965 and 2007, there were at least 2.2 million tank car shipments of chlorine.

If any readers want to be working at a really big laboratory, the Federal Railroad Administration operates a testing center in Pueblo, Colorado. The facility has 50 miles of track where new types of equipment can be tested before deployment on the larger railroad network. There is also a special 13.5 high speed test track where trains can operate at up to 168 miles per hour. Since 1985 the facility has been providing Hazmat training to first responders with full-sized rail cars. Sounds like a fun place to be playing with trains.



New York Meetings

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 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, February 28
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.

Saturday, January 18, Annual Section-wide Conference.

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>.

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. Presentations will be focused on discussion of recent work, although speakers will place the work in a context understandable to a broad audience.

Mark Your Calendars:

Dates: Tuesdays, December 3,
February 11 and April 8

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

Place: NYU Silver Center
31 Washington Place (between
Washington Square East and
Greene Street
Room 1003 (10th floor)
New York, NY

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

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

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WESTCHESTER CHEMICAL SOCIETY

Special Seminar – “DNA: Not Merely the Secret of Life”

Speaker: Nadrian C. (Ned) Seeman, PhD
New York University
New York, NY

We build branched DNA species that can be joined using Watson-Crick base pairing to produce multiply-connected objects and lattices. We have used ligation to construct DNA topological targets, such as knots, polyhedral catenanes, Borromean rings and a Solomon's knot. Branched junctions with up to 12 arms have been made.

Nanorobotics is a key area of application. We have made robust 2-state and 3-state sequence-dependent devices and bipedal walkers. We have constructed a molecular assembly line using a DNA origami layer and three 2-state devices, so that there are eight different states represented by their arrangements. We have demonstrated that all eight products can be built from this system.

A central goal of DNA nanotechnology is the self-assembly of periodic matter. We have constructed 2-dimensional DNA arrays with designed patterns from many different motifs. We have used DNA scaffolding to organize active DNA components. We have used pairs of 2-state devices to capture a variety of different DNA targets.

One of the key aims of DNA-based materials research is to construct complex material patterns that can be reproduced. We have built such a system from bent TX molecules (which have three DNA double helices whose helix axes are not coplanar). These can reach 2 generations of replication. This system represents a first step in self-reproducing materials.

Recently, we have self-assembled a 3D crystalline array and have solved its crystal structure to 4 Å resolution, using unbiased crystallographic methods. We can use crystals with two molecules in the crystallographic repeat to control the color of the crystals. Thus, structural DNA nanotechnology has fulfilled its initial goal of controlling the structure of DNA in three dimensions. A new era in nanoscale control awaits us.

This research has been supported by the NIGMS, NSF, ARO, ONR and DOE.

Nadrian C. Seeman was born in Chicago in 1945. Following a BS in biochemistry from the University of Chicago, he received his Ph.D. in biological crystallography from the

University of Pittsburgh in 1970. His post-doctoral training, at Columbia and MIT, emphasized nucleic acid crystallography. He obtained his first independent position at SUNY/Albany, where his frustrations with macromolecular crystallization experiments led him to the campus pub one day in the fall of 1980. There, he realized that the similarity between 6-arm DNA branched junctions and the flying fish in the periodic array of Escher's 'Depth' might lead to a rational approach to the organization of matter on the nanometer scale, particularly crystallization. Ever since, he has been trying to implement this approach and its spin-offs, such as nanorobotics and the organization of nanoelectronics. Since 1988 he has worked at New York University, where he is the Margaret and Herman Sokol Professor of Chemistry. When told in the mid-1980s that he was doing nanotechnology, his response was similar to that of M. Jourdain, the title character of Moliere's *Bourgeois Gentilhomme*, who was delighted to discover that he had been speaking prose all his life. He was the founding president of the International Society for Nanoscale Science, Computation and Engineering (ISNSCE). He has published over 270 papers, and has won the Sidhu Award, the Feynman Prize, the Emerging Technologies Award, the Rozenberg Tulip Award in DNA Computing, the World Technology Network Award in Biotechnology, the NYACS Nichols Medal, the SCC Frontiers of Science Award, the ISNSCE Nanoscience Prize, the Kavli Prize in Nanoscience, the Einstein Professorship of the Chinese Academy of Sciences and a Distinguished Alumnus Award from the University of Pittsburgh.

Date: Wednesday, December 4, 2013

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

(914) 393-6940

Next Meeting:

Special Seminar – “VETI-GEL: A Novel and Biocompatible Hemostatic Agent that Stops Bleeding in Seconds”

Speaker: Joseph Landolina
Suneris

Date: Wednesday, February 12, 2014

Times, Place, Cost same as December.

LONG ISLAND SUBSECTION

Research, Educational, and Cultural Experiences in China: Chemistry on the Other Side of the World.

Speaker: Dr. Victor Cesare
St. John's University.

During the fall 2011 semester, I was granted a sabbatical at the University of Jinan in China. During this time, I had the opportunity to do research, experience the Chinese educational system, and enjoy the Chinese culture and hospitality. This seminar will present some of the research done during my four month visit, which involved the synthesis of various heterocyclic compounds that could potentially be used to purify water by chelating and removing heavy metals. I will also share some of my cultural and educational experiences in China, including some observations that I thought were interesting while at the University of Jinan.

Date: Thursday, December 5, 2013

Times: Seminar 6:00 PM

Place: Nassau Community College



CHEMICAL MARKETING & ECONOMICS GROUP

2nd ACS NY CM&E Leadership Awards

Keynote Speaker: Rajiv Gupta
Senior Advisor
New Mountain Capital
and former Chairman
and CEO
Rohm & Haas

On December 5, 2013, CM&E, the business and technology group of ACS New York Section, will celebrate a most exciting days in its 59-year history by presenting its 2nd Annual Awards for Leadership at the New York Yale Club. The honorees are:



Award for a Lifetime of Achievement: Jon Huntsman, Founder and Executive Chairman of Huntsman Corporation, a company with revenues of over \$11 billion in 2012 and has in excess of 10,000 employees world-

wide. He is also among the world's top philanthropists.



Award for Outstanding Global Growth: Marcelo Odebrecht, CEO of Odebrecht, Chairman of Braskem. Odebrecht is South America's premier builder. Braskem is the 6th largest petrochemical company and the world's leading bioplastics producer.

Award for Distinction in Private Equity: Peter and David DeLeeuw, Managing Directors at Lion Chemical Capital with a remarkable performance.



The Keynote Speaker, Rajiv Gupta, will speak on the topic "Chemical Industry—Are we ready for the next 50 years?" offering a provocative perspective on the future of the industry.

Last Year the Awards was oversubscribed with over 200 Registrants! Attendees included executives from BASF, Dow Chemical, DuPont, Ashland, Air Products, DSM, Evonik, Catalent, Deutsche Bank, UBS, Morgan Stanley, Rothschild, Citibank, Deloitte, Accenture and McKinsey, among others.

The inaugural Leadership Awards won the ACS ChemLuminary Award for Global Engagement. Don't miss this event. Please go to www.cmeacs.org to get information and register.

Date: Thursday, December 5, 2013

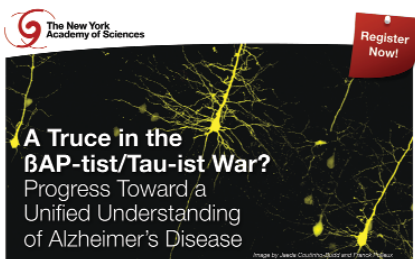
Times: 11:00 AM – 3:00 PM

Place: Yale Club
New York, NY

Merry Christmas,
Happy Holidays,
Season's Greetings
to Everyone
from
The Indicator



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



**A Truce in the β AP-tist/Tau-ist War?
Progress Toward A Unified
Understanding of Alzheimer's Disease**

Organizers: Ken Jones, PhD
Forest Research Institute

Robert Martone
Covance Biomarker Center
of Excellence

Robert B. Nelson, PhD
Lundbeck Research USA

Jennifer Henry, PhD
The New York Academy
of Sciences

Speakers: Terrence Town, PhD
University of Southern California

Lennart Mucke, MD
Gladstone Institute of
Neurological Disease

Bingwei Lu, PhD
Stanford University School
of Medicine

Franck Polleux, PhD
The Scripps Research Institute

Sylvain E. Lesné, PhD, MSc
University of Minnesota

Frank LaFerla, PhD
University of California
Irvine

Ralph A. Nixon, MD, PhD
Nathan Kline Institute

Tony Wyss-Coray, PhD
Stanford University School
of Medicine

This symposium explores how efforts to better integrate our understanding of neuritic plaques and neurofibrillary tangles—the two hallmark pathologies of Alzheimer's disease—are leading to a 'truce' between former rivals in the quest for therapies.

Date: Tuesday, December 10, 2013

Times: 8:30 AM – 4:30 PM
(reception to follow)

Place: The New York Academy of Sciences
7 World Trade Center
250 Greenwich Street – 40th Floor
New York, NY 10007

Cost: 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/BAPvsTau

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

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ORGANIC TOPICAL GROUP — JOINT MEETING WITH THE NEW YORK ACADEMY of SCI- ENCES CHEMICAL BIOLOGY DISCUSSION GROUP

Bioorthogonal Chemistry in Biology and Medicine

Organizers: Howard C. Hang, PhD
The Rockefeller University

Jennifer Henry, PhD
The New York Academy of Sciences

Speakers: Joseph M. Fox, PhD
University of Delaware

Howard C. Hang, PhD
The Rockefeller University

Minkui Luo, PhD
Memorial Sloan-Kettering
Cancer Center

Innovations in chemistry often lead to breakthroughs in biology and medicine. This symposium highlights advances in bioorth-

ogonal chemistry, affording opportunities to explore biology and facilitating the synthesis of diagnostics and therapeutics.

Oral Presentation and Poster Opportunities: Call for Abstracts

Abstract submissions are invited from early career investigators for a poster session. All abstracts will be reviewed, and two will be selected to give oral presentations. For complete submission instructions, email CBDG@nyas.org with 'Abstract Information' in the subject line. There is no need to type a message, as full instructions will be forwarded automatically. **The deadline for abstract submission is November 15**, and selected poster and oral presenters will be notified by **November 22**.

Date: Wednesday December 11, 2013

Time: 12:00 – 5:00 PM

Place: The 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/BioorthogonalChemistry

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



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HIGH SCHOOL TEACHERS TOPICAL GROUP

Environmental Remediation: Purification of Water with Designed Polymers

Speaker: Spiro Alexandratos
Department of Chemistry
Hunter College

Water is arguably our most precious resource but it is often contaminated with toxic metal ions from industrial processes. The removal of toxic metal ions from water can be accomplished by passing the water through a column packed with beads to which are bound ligands capable of attracting targeted ions. The preparation of these ion-selective polymer-supported reagents will be described from our research through two polymers that we designed and are now commercially available and a case study involving the design and development of an arsenic-selective polymer.

Date: Friday, December 13, 2013
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.

Jean Delfiner, Co-chair,
jadelfiner@verizon.net

Joan Laredo Liddell, Co-chair,
jlaredoliddell@aol.com

CHEMICAL MARKETING & ECONOMICS GROUP

Annual Economic Outlook Luncheon

Speaker: Dr. T. Kevin Swift

Date: Wednesday, January 8, 2014
Place: Yale Club
New York, NY

We are looking forward to having you join us again. We'll do our best to reserve fair weather for your travels!



NOMINATING COMMITTEE MEETS IN DECEMBER

The Nominating Committee of the New York Section will meet in December to select candidates for the 2014 elections.

Positions available are:

Chair-elect for 2015

Secretary for 2015 - 2016

Directors-at-Large for 2015

Councilors and Alternate Councilors for 2015 - 2017

If a member of the New York Section wishes to run for office or to suggest a member for consideration by the Nominating Committee, please write to the American Chemical Society, New York Section, Inc., St. John's University, Department of Chemistry, 8000 Utopia Parkway, Jamaica, NY 11439 or send an e-mail to the New York Section office at njesper1@optonline.net by **November 30**. Thank you.



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.

WESTCHESTER CHEMICAL SOCIETY

On October 1, 2013 Dr. Kenrick Lewis, Corporate Research Fellow at Momentive Performance Materials in Tarrytown, NY, gave a most interesting and informative presentation to the Westchester Chemical Society on direct reactions of silicon metal to generate intermediates, such as dimethyl dichlorosilane $[(CH_3)_2SiCl_2]$, in the production of silicones, organofunctional silanes and silane/silicone coupling agents. Ken's talk demonstrated the complexity of industrial-scale processing. For example, he discussed metallic catalysis and promotion of these reactions, the differences between the two, and their mechanisms. The yields and specificities of these reactions depend critically on the ratios of the various catalysts and promoters. In addition, they often work well only in narrow temperature ranges. Dr. Lewis, originally from Granada earned his B.S. and Ph.D from the University of Alberta (Edmonton) and from the University of Massachusetts (Amherst), respectively. He joined the Linde Research Department of Union Carbide in 1977 and has worked at the Tarrytown Technical Center for various successor companies (including Momentive) since. His research has focused generally on silicon chemistry and he is co-editor *Catalyzed Direct Reactions of Silicon* (Elsevier, 1993). Following Dr. Lewis' talk, which was held at the Westchester Community College in Valhalla, N.Y., the group engaged in a lively question and answer, and discussion, session. All of us had an enjoyable, interesting and informative evening. The photo below is of Dr. Lewis and the WCS board members attending the meet-

NY SECTION AND ST. JOSEPH'S COLLEGE – 19TH ANNUAL HS POSTER SESSION

The annual poster session provides an opportunity for talented high school students from the metropolitan area to compete and be recognized for their research accomplishments.

The program includes:

- Judging of posters by scientists working in industry and academia.
- Guest speaker: Cindie Kehlet, Ph.D., Associate Professor of Math and Science, Pratt Institute
- Certificates to all participants
- Prizes to the four winning presenters.

Sponsored by The New York Section of the American Chemical Society and St. Joseph's College 245 Clinton Avenue, Brooklyn, NY

Portable Nuclear Magnetic Resonance for the Investigation of Artist Materials

Speaker: Cindie Kehlet, PhD
Associate Professor of Math
and Science
Pratt Institute
Brooklyn, NY

Pratt's Laboratory for Scientific Study of Art investigates artist materials and their degradation to enhance our ability to preserve art and cultural heritage. The laboratory specializes in non-invasive analysis and works primarily with unilateral Nuclear Magnetic Resonance (NMR). Conventional NMR has so far had limited use in analyzing works of art since it

(continued on page 16)



Paul Dillon, Joan Laredo-Liddell, Kenrick Lewis, Rolande Hodel and Jean Delfiner.

(Photo courtesy of Paul Dillon)

19TH ANNUAL HS POSTER SESSION

(continued from page 15)

requires that samples to be placed inside the magnet. However, with the development of portable single-sided NMR instruments, measurements can now be performed in a non-invasive and non-destructive manner. With the Profile NMR MOUSE®, it is possible to obtain depth profiles of materials and thereby obtain information on, e.g., material composition and molecular mobility at different depths from the surface of the object.

Biography

Dr. Kehlet was awarded the 2006 Danish Young NMR Researcher Prize for her work in biological solid-state Nuclear Magnetic Resonance spectroscopy. Also a studio-trained fine artist, she explores the applications of NMR techniques to the science of art conservation.

Date: Saturday, February 1, 2014

Times: 9:00 AM - 1:00 PM

Place: St. Joseph's College, Brooklyn NY

For more information or to register visit:

www.sjcnyc.edu/postersession or contact

Rhomesia Ramkellowan at

rramkellowan@sjcnyc.edu or

sjchighschoolpostersession@gmail.com

(Include HS Poster Session in the subject line).



ANTI COUNTERFEITING OF MEDICATIONS IN AFRICA

Dr. Rolande Hodel, Chair of the Westchester Chemical Society, spoke at a panel on Countering Counterfeit Medication in Africa October 3, 2013. This panel was organized by the Drug Information Association Tri-State Consortium (DIA TSC) and the Rutgers Center for Global Advancement and

International Affairs (CGAIA).

The goal of this symposium was to raise awareness and identify how the pharmaceutical industry, health authorities, and non-governmental organizations share information related to existing and future anti-counterfeiting initiatives by bringing together academia, the pharmaceutical industry, health authorities, and non-governmental organizations.

Dr. Hodel focused her 10 minute slide presentation (available upon request) on her experience working in West Africa for the past eight years. In summary, the main issues are:

- 490 million Africans depend on imports.
- Supply chain management is insufficient, especially in rural areas. Proper handling of drugs during transit and at storage contributes significantly to deterioration of drug potency.
- Anti-counterfeit activities often mis-categorize these drugs as counterfeit.
- A black market flourishes where drugs are either not available (~40%) or too expensive (~40%). Thus up to 80% go to black market dealers to purchase their drugs. It is a fact, that, in Cameroon, reputable private hospitals go to the same black market dealers because they have no choice.

A possible solution: invest in Sub-Saharan Africa and support Africans to build their own local Pharmaceutical industry, based on international qualitative manufacturing standards. Production of drugs on the continent breaks the dependency on imports, will increase availability, and allow for tighter supply chain management and control. This will make Africa less attractive to counterfeiters. Advocating for establishing pharmaceutical production in Africa happens to be Dr. Hodel's life goal. For more information contact Dr. Hodel at RRHodel@aol.com or go to www.AIDSfreeAFRICA.org



From left: Lynn Anyaele, PharmD, Rutgers; Ekopimo Ibia, MD, Merck; Rubie Mages, JD, Pfizer; Rolande Hodel, PhD, AIDSfreeAFRICA; Noel Ilogu, MD, Physician NJ, and behind podium: organizer Michèle Pernice, PhD, DIA Tri-State Consortium.

(Photo courtesy of Dr. Rolande Hodel)

North Jersey Chair's Message

Dear North Jersey Section Members:

I would like to welcome new members, and thank all continuing members for your ongoing involvement with our section. Because of your dedication and enthusiasm, we are heading into 2014 with a great deal of positive momentum.

Our section's new vision statement is "The North Jersey community of chemistry professionals will improve people's lives." For 88 years, our section has built a legacy of providing value to its members and giving back to our local communities. NJ-ACS provides opportunities to stay involved and advance in our profession, networks of members that share similar interests, and services to chemists and the community at large. Visit www.njacs.org to learn about section resources and upcoming events.

The NJ Section has an exciting program planned for 2014:

- Our nationally recognized Careers in Transition group will continue to help those in transition and others seeking to enhance their careers.
- Our award-winning outreach activities like the Project SEED program and the National Chemistry Week event at Liberty Science Center will be expanded as we collaborate with Turtleback Zoo for a new Earth Day event.
- Leading edge speakers bring the latest developments and work saving ideas to the section's vibrant topical group meetings.
- Our next ACS Leadership Development session provides training for professional development with communication skills.
- NJ-ACS will present the Award for Creativity in Molecular Design and Synthesis.
- The section is planning a celebration to commemorate the Thomas Edison Laboratory as a National Historic Chemical Landmark.

I am excited to be a part of our new strategic planning committee, which is dedicated to identifying section interests and addressing members' evolving needs. As Chair, I will focus on the following strategic priorities and initiatives:

- Broaden our value to meet a wider range of interests among scientists and attract new members with a focus on increasing younger membership.
- Become a key resource for career information and guidance to help members with their professional growth.
- Increase North Jersey Section member participation and community involvement to help promote the sciences.
- Enhance NJ-ACS visibility by promoting the public recognition and appreciation of chemists and chemistry.

Thank you for the opportunity, honor, and privilege of serving the section as the 2014 Chair. I look forward to seeing you at upcoming NJACS events. Your ideas are welcome, feel free to contact me at monicasekharan@njacs.org

Monica Sekharan, Ph.D.

2014 Chair, North Jersey Section ACS

North Jersey Meetings

<http://www.njacs.org>

NORTH JERSEY EXECUTIVE COMMITTEE PLANNING MEETING

Section officers, councilors, committee chairs, topical group chairs, and section event organizers will meet at the Executive Committee Planning Meeting to discuss topics of importance to running the section and representing the membership.

The December 2013 meeting will be held:

Date: Saturday, December 7, 2013

Times: 9:00 AM - 12:00 PM

Place: Fairleigh Dickinson University
Madison, NJ

More information will follow shortly.

2013 LEO HENDRIK BAEKELAND AWARD AND SYMPOSIUM

The Baekeland Award will be presented on **Friday, December 6, 2013** at the Baekeland Symposium, to be held at Rutgers University, Busch Campus, The Center for Integrative Proteomics Research, Room 120 A/B, 174 Frelinghuysen Road, Piscataway, NJ 08854-8087. More information is posted below and on the North Jersey website at www.njacs.org.

SURPRISE

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

2013 LEO HENDRIK BAEKELAND AWARD WINNER

Congratulations to the 2013 Leo Hendrik Baekeland Award Winner!

*Professor Christopher Chang
University of California, Berkeley*



2013 Baekeland Symposium

Date: Friday, December 6, 2013

Times: 12:00 noon

Place: Center for Integrative Proteomics Research • Room 120
Rutgers, The State University of New Jersey
174 Frelinghuysen Rd • Piscataway, NJ 08854

Speakers



Prof. Michelle Chang
University of
California, Berkeley



Prof. David MacMillan
Princeton University



Prof. Ken Raymond
University of
California, Berkeley



Prof. JoAnne Stubbs
Massachusetts
Institute of
Technology

The North Jersey Section of the American Chemical Society established the Baekeland Award in 1944 to commemorate the technical and industrial achievements of Leo Hendrik Baekeland and to encourage younger chemists to emulate his example. The award consists of a gold medal and a \$5,000 honorarium.

The North Jersey Section presents the Award biennially to a US-based chemist under 40 years of age in recognition of accomplishments in pure or industrial chemistry, as characterized by the initiative, creativity, leadership, and perseverance of the individual and indicated by published or unpublished evidence.



Registration

Registration fee: \$10 professionals
\$5 students, retirees, unemployed

Pre-Registration required by November 25, 2013
Register at www.njacs.org



Questions? Contact Dr. Monica Sekharan (monicasekharan@njacs.org), Chair of the Baekeland Award Committee.

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

Date: Monday, December 9, 2013

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 billherits@earthlink.net.

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

Call for Nominations

LTHE SOCIETY FOR APPLIED SPECTROSCOPY – NY SECTION

2014 Gold Medal Award

Nominations are being sought for the 2014 Gold Medal Award of the New York Section of the Society for Applied Spectroscopy. This coveted award was established in 1952 to recognize outstanding contributions to the field of Applied Spectroscopy. The Gold Medal will be presented at a special award symposium, arranged in honor of the awardee, at the 2014 Eastern Analytical Symposium. A nominating letter describing the nominee's specific accomplishments should be submitted along with a biographical sketch and list of publications **by January 3, 2014**. Please email all materials to Debbie_Peru@colpal.com or mail to Deborah A. Peru, Colgate Palmolive Co., 909 River Road, Piscataway, NJ 08855.

If you have any questions or require more information, you may contact me at (732) 878-7295.

Deborah Peru, NYSAS Secretary
Website: <http://www.nysas.org/>



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
January 21, 2014	CAPA and Investigations	Speaker: Karen McCullough
February 18, 2014	ICH Q3D Elemental Impurities (lunchtime meeting)	Speaker: Janeen Skutnik-Wilkinson
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

Call for Volunteers

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; experience 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: January 22, 2014, February 19, 2014, March 19, 2014, April 30, 2014, May 21, 2014

To Volunteer or if you have questions contact Miriam Gulotta mirjet2@yahoo.com or Jeannette Brown Jebrown@infionline.net.

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

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