

## **New York, North Jersey and NoJ Younger Chemists Committee Get-Together at Liberty Science Center**



The joint section picnic was hosted by the NoJ Younger Chemists Committee. For pictures of the beautiful setting, see page 18.

*(Photos courtesy of JaimeLee Iolani Rizzo, Chair, New York Section)*

## **Eastern Analytical Symposium**

*sponsored by North Jersey and New York Sections*

November 12-15, 2012

## **ChemLuminaries**

North Jersey Section, pages 24-25.

North Jersey Section, page 25.

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

1 Milbark Court, Homosassa, FL 34446

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

[linatkins@tampabay.rr.com](mailto:linatkins@tampabay.rr.com)**Advertising Manager** - VINCENT GALE

MBO Services, PO Box 1150

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

[vincegale@mboseervices.net](mailto:vincegale@mboseervices.net)**INDICATOR COMMITTEE****Chair, DR. LES MCQUIRE**

17 Crown Drive, Warren, NJ 07059

908-334-5473, [Les@LesMcQuire.org](mailto: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

[jespersen@stjohns.edu](mailto:jespersen@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](mailto:abrandol@ramapo.edu)**Web Masters**

NY Section - DR. BRIAN GIBNEY

[postmaster@newyorkacs.org](mailto:postmaster@newyorkacs.org)

NoJ Section - PAUL TUKEY

[tukey@verizon.net](mailto: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](mailto:jrizzo@pace.edu)**Chair-Elect, DR. PHILIP H. MARK**

1522 Luddington Road, East Meadow, NY 11554

516-489-7920

[philip.mark@ncc.edu](mailto: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](mailto: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](mailto: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](mailto:charleb@fd.edu)**Chair-Elect, DR. JEFFERSON TILLEY**

19 Evergreen Drive, North Caldwell, NJ 07006

973-723-6330

[tilleyjk@optonline.net](mailto:tilleyjk@optonline.net) • [tilleyjk@FDU.edu](mailto:tilleyjk@FDU.edu)**Secretary, BETTYANN HOWSON**

49 Pippins Way, Morris Township, NJ 07960

973-822-2575

[chemphun@gmail.com](mailto:chemphun@gmail.com)**Section Office**

49 Pippins Way, Morris Township, NJ 07960

973-822-2575

[chemphun@gmail.com](mailto:chemphun@gmail.com)**THE Indicator** 

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**CONTENTS**

ACS News (ChemLuminary) . . . . .	24-25
Advertisers Index . . . . .	28
Call for Nominations . . . . .	26-27
New York Meetings . . . . .	19-22
North Jersey Meetings . . . . .	16-17
Others . . . . .	27
Press Release . . . . .	27
Professional/Product Directory . . . . .	28

**EDITORIAL DEADLINES**

December	October 20
January 2013	November 20
February	December 20, 2012
March	January 20, 2013
April	February 20
May	March 20
June	April 20
September	July 20
October	August 20
November	September 20

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## November Calendar

### NEW YORK SECTION

**Thursday, November 1, 2012**  
Chemical Marketing and Economics Group  
*See page 19.*

**Tuesday, November 6, 2012**  
Westchester Chemical Society  
*See page 19-20.*

**Wednesday, November 14, 2012**  
NY Organic Topical Group  
*See page 21.*

**Friday, November 16, 2012**  
New York Section Board Meeting  
*See page 21.*

**Friday, November 16, 2012**  
High School Teachers Topical Group  
*See page 22.*

### NORTH JERSEY SECTION

**Thursday, November 8, 2012**  
Mass Spectrometry Discussion Group  
*See page 16.*

**Monday, November 12, 2012**  
Careers in Transition Group  
*See page 16.*

**Monday, November 12, 2012**  
Chromatography Topical Group  
*See page 16.*

**Wednesday, November 14, 2012**  
NMR Topical Group  
*See page 16.*

**Wednesday, November 14, 2012**  
NoJ Organic Topical Group  
*See page 17.*

**Monday, November 19, 2012**  
NoJ Executive Committee Meeting  
*See page 16.*

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

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## THIS MONTH IN CHEMICAL HISTORY

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

In November 2011 the Southern California Section of the ACS celebrated its centenary, and I assembled from my library a book display showing aspects of the development of chemistry books from the 18th. to the 20th. century. This selection is idiosyncratic, but I believe it gives an idea of the range of chemistry books during this period of rapid development of the science.

I began with one of the most famous of all chemistry texts: "Elements of Chemistry" by Antoine Lavoisier, published in Paris in 1789 with rapid translation into English by Robert Kerr, first published in Edinburgh only a year later. I wish I owned a first edition, but I content myself with a Dover facsimile. This was arguably the first modern chemistry text, embodying Lavoisier's new oxygen theory of combustion. It contains a table of the elements (simple substances) that interestingly includes light and caloric (heat). Despite Lavoisier's rejection of phlogiston his caloric comes uncomfortably close to that hypothesis. The text also includes the first chemical equation – in words, not symbols- describing fermentation of sugar.

In the early part of the 19th. century there was a growing interest in science as witness, for example, the popular lectures at the Royal Institution by Humphry Davy and Michael Faraday. The next book: "The Cabinet Cyclopaedia: Chemistry" by Michael Donovan, published in London in 1832 is typical of texts aimed at the rising middle class of the time. It is compact in format (and in content) and was reasonably priced.

Another famous text, though it disappointed one of the best-known chemists of the period, namely the Swede Berzelius, was "A New System of Chemical Philosophy" by John Dalton, published in London in 1808. This famous book was republished many times; my copy is from New York in 1964. It contains Dalton's own exposition of his chemical ideas, including the atomic theory, which were first published, with his permission, in an 1806 text by Thomas Thompson. The book includes a table of relative atomic weights, and of chemical combinations using Dalton's graphic symbols. These are based primarily on Dalton's principle of simplicity. If only one combination of elements A and B is known then its formula must be AB. Hence water is HO, ammonia NH etc.

Very different is the next book on display: "The Boy's Playbook of Science in illustration of the elementary branches of chemistry and natural philosophy" by John Henry Pepper

Published in London, ca. 1865. This lavishly illustrated book, with a gorgeous cover in green and gold, was a popular work for children (especially boys!). It contains, in addition to quite a bit of serious science, the kind of content one still finds today in science "magic" works.

The next book I chose is a quite serious work on the art of organic synthesis by one of its early exponents. "La Synthese Chimique" was published by Marcellin Berthelot in Paris in 1876. It is the second in a series (the first was published in 1860) in which Berthelot systematized organic synthesis. One of his great achievements was his idea of synthesis from the elements. Passing hydrogen through a carbon arc generated acetylene, a building block for many more complex organic compounds. Berthelot, in addition to his organic synthetic work, was a pioneer of thermochemistry.

I close this column with a famous work of chemical theory: "Valence and the Structure of Atoms and Molecules" by Gilbert Newton Lewis, published in New York in 1923. Lewis, head of the U.C. Berkeley Chemistry Department, first sketched his electronic theory embodying the octet rule in 1908 – a rule we still teach to beginning chemistry students a century later. This book lays out Lewis's further development of electronic theory.

In a subsequent column I will discuss the rest of this display of significant chemistry books.

## **HAIL TO THE CHIEF (CHEMIST) WHO'S THE LEADER OF OTHER NATIONS**

In an earlier essay I had explored the question about members of the United States Congress who had been trained as chemists. At the time of this writing, the party conventions are over and the presidential election campaigns for 2012 are just beginning to ramp up. It seems like a good time to ask which heads of state were trained as scientists or engineers.

The names of two chemists that immediately come to mind are Margaret Thatcher, who served as Prime Minister of Great Britain between 1979 and 1990, and Angela Merkel PhD, the first female Chancellor of Germany who was elected to that position in 2005.

Alas, we have never had a chemist in the White House but we have had two engineers, one med school drop out, an astronomy buff, a lawyer who was known to have tinkered with steam boats, and one universal genius.

In researching this essay it became clear that scientists and engineers who have entered politics are still comparatively rare and many of those who did enter the field remained essentially outsiders in a world dominated by lawyers and business people. The two presidential candidates in the 2012 election are classic insiders although both would vehemently deny this. Mitt Romney attended Harvard Law School and Harvard Business School. He received both a law degree and a Master of Business Administration degree in 1975 before going on to found Bain Capital. He led the Salt Lake Organizing Committee for the 2002 Winter Olympics and was elected Governor of Massachusetts in 2002. Barack Obama graduated magna cum laude from Harvard Law School in 1991. He practiced as a civil rights lawyer, taught at the University of Chicago Law School, and helped organize voter registration drives. He ran for the Illinois State Senate as a Democrat and won election in 1996.

### **The Presidential Polymath, Thomas Jefferson (1743 – 1826) President from 1801 to 1809**

The third president of the United States, Thomas Jefferson, lived at a time when there were few scientists in the modern sense. There were a few full-time astronomers, a handful of university professors of chemistry or geology but many of these were also physicians or clergymen. There were no full-time agronomists, biologists, or physicists but a great many amateurs working diligently in those fields. Thomas Jefferson trained as a lawyer, preferred to think of himself as a farmer, and is today regarded as a true polymath. Jefferson was a native of Virginia and the son of a planter. He attended the College of William and Mary, then practiced law and served in local government. In 1776 while serving as representative of Virginia to the Continental Congress, he was selected to draft the Declaration of Independence. Between leaving the Continental Congress and being elected president in 1800, Jefferson served as Virginia's governor from 1779 to 1781, he was also minister to France, and this was followed by an appointment to serve as Secretary of State under President George Washington.

Jefferson made many important contributions to science in the early days of the United States. While minister to France he collected books, scientific instruments, seeds, and other specimens that were sent back to the United States. Jefferson later sold his collection of books to the government and they made up the nucleus of the Library of Congress. At age 76, he helped establish the University of Virginia. Not only was he the political organizer behind the university's founding, he designed the buildings, planned its curriculum, oversaw faculty recruitment, and served as the university's first rector.

Jefferson the scientist emerged during the American Revolution. While working full-time in politics, Jefferson became a part-time geographer. France had recently entered the American Revolution against Great Britain and began systematically collecting data about its new ally. A series of questionnaires was sent to various state governments. France's government wanted to know about population, climate, natural resources, agricultural production, political systems, and physical geography. Jefferson answered the questionnaire for the state of Virginia and his notes on the subjects were later expanded into his most important scientific book, *Notes on the State of Virginia*.

Jefferson's writings about North American mammals published in *Notes on the State of Virginia* addressed one of the most important zoological questions of the period: just what were American mammals? During the first half of the 1700s only a few white Europeans had

any real experience of North American animals. A number of noted zoologists hypothesized that the animals of the new world were simply “degenerate” forms of old world species.

Jefferson was ideally placed to refute this idea. At the time the first Mastodon skeletons were being discovered in bogs and lake beds. These large animals had been extinct since the last ice age but were nevertheless definitive proof that North America did indeed have *big* animals. Jefferson collected Mastodon bones and corresponded with leading scientists about the latest fossil discoveries.

In addition to his interests in botany, ethnography, geology, fossils, and zoology, Jefferson was also capable of reading and writing Greek, Latin, French, Spanish and Italian. He had also enough mathematical ability to calculate the timing of an eclipse in 1788 as well as making suggestions about revising almanacs using more accurate astronomical calculations.

Jefferson was elected to the American Philosophical Society in 1780 and served on many of its committees. He would later be elected president of the society and would hold that office for eighteen years. In 1797 he was a member of the Antiquarian committee (or the more descriptive “Bone” committee). In 1807, Jefferson financed William Clark to excavate a Mammoth skeleton at Big Bone Lick, Kentucky. The excavation recovered more than 300 bones which Jefferson then offered to the society.

Jefferson was also the chairman of a committee that studied the Hessian fly. *Mayetiola destructor* is one of the most serious threats to wheat. It is believed to have originated in the southern Caucasus region of Russia. The name comes from the Hessian mercenaries employed by the British during the American Revolution. The fly appears to have been brought to this country in the straw bedding used by the troops.

Jefferson also used his position in the American Philosophical Society to encourage the exploration of the western states. When sending out the Lewis and Clark expedition of 1804 to 1806, he turned to the society’s members for advice on botany, ethnography, medicine, zoology, mathematics, and astronomy. When the Lewis and Clark expedition returned, the society became the repository for many of its specimens and the official expedition journals.

Perhaps the greatest tribute to Jefferson’s contributions to science came from President John F. Kennedy. In hosting a White House dinner for a group of Nobel Laureates, he remarked that such a collection of brainpower had not been gathered for a White House dinner since, “Thomas Jefferson dined alone.”

### **American Science Looks Up, John Quincy Adams and Astronomy. (1767 – 1848) President from 1825 to 1829**

John Quincy Adams was the son of John Adams, the second president of the United States. John Quincy was born in 1767 and when only ten years old, accompanied his father to Europe. During the American Revolution John Adams represented the Continental Congress in the courts of Paris, Amsterdam, and St. Petersburg. John Quincy mastered several European languages and grew to maturity in the diplomatic service. After serving in a number of diplomatic posts, including assistant to his father in the negotiations that ended the American Revolution, he returned home to complete his law degree at Harvard.

President George Washington appointed John Quincy minister to The Netherlands and this was followed by an appointment as minister to Prussia. He returned home and was elected to the Massachusetts legislature. He later served in the United States Senate. But further diplomatic appointments took him back to Europe. He was the first U.S. minister to Russia and then served as a member of the delegation that negotiated the treaty ending the War of 1812. His last posting was to the English court for two years.

Adams was elected President in 1824 but lost his reelection bid to Andrew Jackson. He was soon back in Washington having been elected to Congress from his home state of Massachusetts in 1830. It was during this time that he made his greatest contribution to American science.

James Smithson was a wealthy Englishman who had the misfortune to be the illegitimate son of the Duke of Northumberland. He graduated from Oxford in 1786 and quickly became a recognized leader in the fields of chemistry and mineralogy. He was elected to the Royal Society in 1787 and published a number of papers before his death in 1829. His will was somewhat curious, he left everything to his nephew, Henry James Hungerford. If however the nephew died without an heir, the money would be given “to the United States of America,

*(continued on page 8)*

## **HAIL TO THE CHIEF (CHEMIST)**

*(continued from page 7)*

to found at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge ....” Despite his very aristocratic birth, Smithson made it a point never to use his family connections to advance his scientific career. Perhaps he felt that science in the more democratic United States was more of a meritocracy. Perhaps he felt that his money would help unlock the mineral and geological resources of the new nation. Perhaps as the illegitimate son of a Duke, he would never get his name on any British institution. Whatever the reason, Henry James Hungerford died childless and the United States Congress soon found itself holding \$515,000 in gold with only some vague instructions about how to spend it.

Congressman John Quincy Adams soon emerged as the conscience of the Congress and made it his mission to see that the money was spent wisely. As might be imagined, there were a number of proposals. One senator from Rhode Island proposed a national university, with himself as president. Others believed that the bequest should be used to create a national library. Adams and others noted that libraries were excellent ways to increase the diffusion of knowledge, but not very helpful for increasing it. Princeton University Professor Joseph Henry made several crucial discoveries in the field of electromagnetism and his contributions to the invention of the telegraph made Henry the most respected scientist in America. Henry argued that only a research institution could increase knowledge by making new discoveries, and that he, Joseph Henry, should be the one who made the discoveries. (Henry later served as Secretary of the Smithsonian.) Other members of Congress called for the establishment of a teacher training college with an experimental farm and a few chemistry laboratories. However an institution that focused on education would not have time for the increase of knowledge among the larger society. It was perhaps the first time in American history when the distinction was made between a college devoted to teaching and an institution devoted to research.

Adams advocated looking skyward, he believed that the money should be spent on an observatory. Although astronomy had practical applications in celestial navigation, creating tide tables, and creating calendars, Americans generally regarded it as too theoretical. Having a world-class observatory however would create interest in the sciences and encourage American astronomers. He spoke passionately on the subject of a national observatory on a number of occasions. The US Naval observatory was founded during the Smithsonian debate and Adams seems to have been content that the need for such an institution was satisfied. However he did not relinquish his role as the conscience of the Smithsonian bequest.

Adams and his allies in congress noted that the original bequest did not limit the new institution to any one branch of knowledge. Adams was instrumental in assuring that the Smithsonian was founded not as a library, or teachers college, or even as an observatory, it would become an institution devoted to all branches of knowledge. Sadly, Adams died of a stroke just as the Smithsonian Institution was being established.

Work on The Castle, the oldest building of the Smithsonian began in 1847. The Castle’s architect, James Renwick, Jr., would later design Saint Patrick’s Cathedral in New York City.

Today the Smithsonian is one of the world’s premier museums and research institutions. It has grown into a system of 19 museums, 9 research centers, and more than 140 affiliate museums around the world.

### **Med School Drop Out, William Henry Harrison (1773 – 1841) President from January 1841 to April 1841**

Harrison was born into the Virginia slave-holder aristocracy. He studied classics and history at Hampden-Sydney College, then switched to the study of medicine in Richmond. Then in 1791 he discontinued his medical studies and sought a commission with the First Infantry of the Regular Army.

Harrison served in what was then known as the Old Northwest, the states of Ohio, Michigan, and Illinois. After several campaigns against the Indians he became Secretary of the Northwest Territory and was its first delegate to Congress.

He was elected president in 1840 but in one of history’s great ironies, the one-time medical



student insisted on remaining in the cold rain that fell during his inauguration ceremony. He caught a cold, it turned to pneumonia, and within four months William Henry Harrison became the first president to die while in office. He also holds the record for the shortest term in office.

**Holder of US Patent Number 6,469, Abraham Lincoln (1809 – 1865)  
President from 1861 to 1865.**

The 16th president, Abraham Lincoln remains the only president to have a patent in his name. As a young lawyer and rising politician in Illinois, Lincoln was keenly interested in the nation's transportation infrastructure, turnpikes, steamboats, canals, and railroads. He made numerous speeches promoting what were then referred to as internal improvements and would later count the Illinois Central Railroad as one of his law clients.

Lincoln was also fascinated by machinery and things mechanical so it is not surprising that he would turn his attention to the problems that steamboats encountered on the inland rivers. One of these was getting stuck on the constantly shifting sandbars. In 1848 Lincoln was a passenger aboard a steamboat that stuck on a sandbar. He watched the crew shove planks and force empty barrels under the hull until the boat became buoyant enough to float off the sandbar.

US Patent number 6,469 was granted on May 22, 1849. It describes a mechanism for "Buoying Vessels Over Shoals" that consisted of huge bellows made of "india-rubber cloth, or other suitable water-proof fabric." When deflated, these bellows would ride on outriggers positioned very close to the main hull of the steamboat. If the boat became stuck, they would be inflated and pushed under the hull with long poles.

Like all inventors in that time period, Lincoln was obliged to submit a model to the Patent Office along with his paperwork. The model survives and is now in the collection of the Smithsonian Institution.

**Mining Engineer, Scholar, and Humanitarian, Herbert Hoover. (1864 – 1974)  
President from 1929 to 1931**

Hoover was born in Iowa, the son of a Quaker blacksmith. After the death of both parents, he was adopted by an uncle in Oregon where he grew up. In 1891 he entered newly established Stanford University as a member of its first freshman class. He graduated in 1895 with a degree in geology.

While in Stamford, Hoover worked in the office of Professor John Casper Branner, his mentor in the geology department. He also ran a laundry service, had a newspaper route, and spent his summers doing field work with the United States Geological Survey. In a foreshadowing of his future career as an administrator, he was elected treasurer of the junior class, and he managed both the football and baseball teams.

After graduation Hoover worked at a number of mines in California, New Mexico, and Colorado. Fortunately for him, his new bride Lou Henry was also a geologist who enjoyed the outdoors as much as he did. While traveling and working in mining areas around the globe, Herbert and Lou Henry began the monumental task of translating *De Re Metallica* (On Metals) from Latin to English.

*De Re Metallica* was written entirely in Latin by Georg Bauer (1494-1555) under the pen name of Georgius Agricola. Published a year after his death, *De Re Metallica* was the first scientific book in the west to discuss mining and metallurgy. There are more than 600 pages the text that are illustrated with over 200 woodcuts. Bauer wrote only about those things with which he had personal experience or observation. He covered stratigraphy, occupational diseases of miners, assay techniques, ore processing, and smelting. *De Re Metallica* would be the standard work on mining for the next 200 years.

After Lou Henry saw a copy in a London bookshop, she rather innocently inquired if an English translation was available. No, if the Hoovers wanted one, they would have to do that themselves. Between 1907 and 1912 the Hoovers spent almost all of their spare time working on the translation. They did receive help from other scholars who could translate Latin. Bauer however had to translate 16th century mining terminology into Latin, and the Hoovers relied on Herbert's specialized knowledge to translate them correctly into modern English. While living in distant mining camps they even conducted experiments to replicate the assay

(continued on page 10)

## HAIL TO THE CHIEF (CHEMIST)

(continued from page 9)

techniques and converted the unstandardized medieval measurements into modern units.

The Hoovers' translation of *De Re Metallica* was first published in 1912 and remains a classic text in the history of science. Almost every president has written at least one book, Jimmy Carter has written 27, but Hoover remains the only president to have produced an enduring piece of scholarship.

The First World War broke out in 1914 and Hoover was appointed head of the Food Administration. His job was to cut domestic food consumption so that food supplies could be sent overseas to the war zones. In this he was successful and after the war, Hoover was involved in the American Relief Administration. The Relief Administration shipped millions of tons of food to central Europe and a famine-stricken Soviet Russia. Hoover's success in these efforts made him one of the world's leading humanitarians and led to his appointment as Secretary of Commerce. He received the Republican nomination for president in the 1928 election.

History remembers Hoover as a not particularly effective president during the onset of the Great Depression and many people deride Hoover's attempts to cope with the crisis as being half-hearted and too reliant on market forces. Hoover had the great misfortune to be elected in 1928 when the national economy was still strong. The stock market crash of 1929 shook the economy to its core but was a only one of the triggers of the Great Depression, not its cause.

The causes of the depression are many and are still keenly debated by economists. However the human toll was severe and the worst years coincided with Hoover's presidency. By 1932, unemployment was between 25 and 30% and industrial production had fallen 54% from its 1929 levels. At the start of the depression, there were the 25,000 banks in the United States and by 1933, 11,000 had failed. Hoover's response was that of an engineer, he saw a problem and proposed solutions.

Many of the most successful depression-era New Deal programs originated with Hoover's presidency. These included the Agricultural Adjustment Act, the Reconstruction Finance Corporation, and the Federal Emergency Relief Administration. Although a conservative, Hoover freely called for government regulations where he saw the need for them. He would also call for voluntary responsibility and individual initiative where he saw those as appropriate.

According the book *Herbert Hoover: A Public Life*, it was the engineering ethos and a related political naïveté that were at the core of Hoover's political failures. His engineering background taught him how to find solutions to very complex problems but left him unprepared for selling them to a skeptical public or a recalcitrant congress. He was never able to construct a grand synthesis of his competing ideas and then articulate it as the basis for clear policy.

For more information see: Hannaway, O., Herbert Hoover and Georgius Agricola: The Distorting Mirror of History, *Bulletin of the History of Chemistry*, 12: 3-10, 1992

### **The Nuclear Engineer, Jimmy Carter. (1924 - ) President from 1977 to 1981.**

James Earl Carter, or "Jimmy" Carter served as President from 1977 to 1981. He was born in Plains, Georgia in 1924. After graduating from public school, he entered Georgia Southwestern College and the Georgia Institute of Technology. With the Second World War raging, the transferred to the US Naval academy at Annapolis. Like many wartime graduates, Carter did not have a formal major at the Naval academy. He was enrolled in an accelerated program that included mathematics, engineering, navigation, and seamanship. He was awarded a bachelor of science degree in 1946 and after two years on surface ships, entered the submarine service in 1948.

Carter's career as a nuclear engineer began when he was selected by Admiral (then Captain) Hyman Rickover for the Navy's fledgling nuclear submarine program. In 1952 he was sent to the Atomic Energy Commission's Division of Reactor Development which was located at Union College in Schenectady, New York. Carter began graduate work in reactor technology and nuclear physics. He was not however, an ordinary graduate student.

At the time the US Navy was building its second nuclear submarine, the *USS Seawolf*. Carter's formal classes lasted only one semester and his principle responsibility was to train both himself and the future crew of the *Seawolf* in the operation of the submarine's reactors. Like many graduate students, Carter taught classes but his pupils were members of the *Seawolf's* crew, not undergraduates. These classes included mathematics, physics, and reactor technology. The Navy officers assigned to the Division of Reactor Development were expected to take a hands-on role in reactor development as well as qualifying themselves to operate the reactors as engineering officers while at sea.

The *USS Seawolf* was built with a reactor that was cooled with liquid sodium. It was fueled with uranium dioxide (uranium (IV) oxide) clad in stainless steel with beryllium serving as moderator and reflector. Liquid sodium cooled reactors have higher operating temperatures (about 1,700 F. or 927 C.) and greater thermal efficiency than water-cooled reactors. But they also had serious drawbacks. The sodium tends to become radioactive when exposed to the nuclear fuel. Although the half life on the sodium is only about 15 hours this does make additional shielding necessary. Sodium will also ignite on contact with air or water so the *Seawolf* class submarines had to have the reactors housed in special compartments that would contain a sodium fire. The sodium cooled reactors were removed from the *Seawolf* in 1959 when the decision was made to standardize the fleet on pressured water reactors.

Carter was also a member of a team that helped decommission a civilian nuclear power plant at Chalk River, Canada. The plant had gone out of control and suffered a melt down. The reactor core was so radioactive that a person could only spend about 90 seconds working on it. The team created a mock-up of the damaged reactor and divided the decommissioning tasks into 90-second blocks. They practiced the task on the mock-up and then were suited up for descent into the contaminated area. They worked frantically until it was time to be pulled back out.

Carter was awarded a graduate degree from Union College but he was forced to leave active duty with the Navy when his father died in 1953. He returned home to Georgia to help manage the family interests. When not active in politics, he was a peanut farmer in his hometown of Plains, Georgia. Carter was elected governor of Georgia in 1970 and won the presidential election of 1976.

Carter was elected president at a time that the nation was reeling from its loss in the Vietnam War and the Watergate scandal that had forced President Richard Nixon to resign from office. His engineering background and governorship of Georgia made him appear an attractive outsider after the scandals of the Nixon Presidency. However the economy was in a severe recession with interest rates and inflation both at high levels. Unemployment was up and hope was down. There were also serious problems in foreign affairs. In 1979 the American embassy in Tehran was taken over by militants following the Iranian Revolution and the embassy staff was held hostage for 444 days. In 1980 the Soviet Union invaded Afghanistan creating another crisis for an increasingly beleaguered administration.

Carter's response to all of these problems was, like Hoover's, that of a highly intelligent engineer. He saw problems and proposed solutions but to many people his leadership seemed to lack passion. Passionless leadership can be tolerated but to many observers Carter's real weakness seemed to be an inability to prioritize his goals. When operating a nuclear reactor, every detail is important and as long any one item is on the engineer's checklist, it gets done. Politics does not work that way.

Critics claim that he had an engineer's faith in organizational efficiency but lacked the politician's ability to construct a simple, unified narrative describing what needed to be done.

Carter did have a number of significant foreign policy accomplishments. The Camp David Accords (1978) was a treaty of peace between Egypt and Israel. The SALT II arms limitation treaty with the Soviet Union was signed in 1979. His administration was the first to establish diplomatic relations with the People's Republic of China. Carter's championing of human rights throughout the world is credited with helping create the conditions that eventually led to the collapse of communism in the Soviet Union and eastern Europe. For the Camp David Accords and his commitment to human rights, Carter was awarded the Nobel Prize in 2002.

For more information: Carter as Scientist or Engineer: What Are His Credentials? *Science* 6 August 1976: 462-463.

(continued on page 12)

## HAIL TO THE CHIEF (CHEMIST)

(continued from page 11)

### The Conservative Outsider, Margaret Thatcher (1925 - ) Prime Minister of Great Britain 1979 to 1990

In the 1950s when Thatcher first entered politics, she was an outsider in a number of ways. She grew up as the daughter of a grocer in a provincial Lincolnshire town. Most Conservatives were denizens of London. Thatcher was the daughter of a middle class parents, while most leading conservatives were wealthy, or at least upper middle class. There were no women among the party leadership, indeed the demographics of the Conservative Party leadership had scarcely changed since the 1800s. Thatcher never served in the armed forces, never traveled outside of England, and in a group made up entirely of graduates in the arts and literature, Thatcher had been trained as a chemist.

As a student in the local grammar school, Margaret focused on biology, chemistry, and mathematics during her sixth form (after age 16). Her decision seemed to have been influenced by a variety of factors, science appealed to a practical-minded young woman, the employment prospects were very good, and she had the influence of her school's excellent chemistry teacher.

She arrived at Oxford's Somerville College in 1943. At the time chemistry was Oxford's largest undergraduate school and its students had the benefits of new laboratory facilities constructed in 1941. Thatcher did not particularly impress her first faculty mentor, Dame Janet Vaughan, who described her as being a "perfectly adequate chemist." However Thatcher's biographers point out that Vaughan was more left-leaning and would have found herself at odds with any student who was a member of the Oxford University Conservative Association. Thatcher's second faculty mentor was Dorothy Hodgkin. Hodgkin was an X-ray crystallographer who was noted for her work on the structure of penicillin and related drugs. During Thatcher's senior year Hodgkin had obtained samples of *gramicidin S*, a potent antibiotic compound first identified by Russian chemists. An investigation of the compound's structure became the topic of Thatcher's undergraduate research.

In 1947 the young graduate was selected for an administrative post with British Xylonite Plastics but this did not materialize and Thatcher "found myself donning the white coat again." She worked on projects related to binding polyvinyl chloride to metal substrates.

Thatcher had remained active in conservative politics throughout her undergraduate days and in 1949 was selected as the Parliamentary candidate for the constituency of Dartford. Unfortunately Dartford was too far from the British Xylonite plant for her to be a chemist by day and campaigner at night. She obtained a more convenient position as a food chemistry researcher at J. Lyons and Company in London. There she worked testing the quality of pie fillings, cake fillings, and ice cream. This fact has often lead to a much-repeated tale that Thatcher was a member of the team that developed soft-serve ice cream. J. Lyons did develop soft-serve ice cream at the time, but there is no evidence that Thatcher was active in that project. She did perform original research on saponification.

Thatcher never actively used her scientific background to promote herself as a politician although she was photographed wearing a white lab coat and working at a laboratory bench for her 1951 election campaign. That year, Thatcher married her husband Dennis and left chemistry to study law. Most chemists who made this career change went into patent law but Thatcher felt that tax law was a better field for an aspiring politician. She was admitted to the bar in 1953. In 1959, she entered Parliament as a member of the Conservative Party representing Finchley, in North London.

In 1970 she was appointed Secretary of State of Education and Science by Prime Minister Edward Heath. Within a year, a former industrial chemist with fewer than five years experience at the bench would find herself at the very center of a debate over Great Britain's entire approach to science policy.

At the time, there was a minor debate in the government over the organization of government sponsored agricultural research. The ARC or Agricultural Research Council was responsible for basic research into agronomy and the various experimental farms operated by the Ministry of Agriculture worked on the applied research. The problem faced by the government was to find better ways of integrating the two types of research. The issues surrounding the ARC and the experimental farms were only the most visible manifestation of a

deeper problem concerning the ways that basic and applied research were, and were not, being integrated by British scientists. Meanwhile, Lord Rothschild was leading a special government commission studying the ways and means by which Great Britain organized scientific research. Although born into a very wealthy family Rothschild, like Smithson, tried to advance solely by his considerable scientific talents and not his family connections. He was appointed a fellow at King's College on the strength of his work with frog eggs, worked during the Second World War as a bomb disposal expert, and later served as the Director of UK Research for Royal Dutch Shell.

Rothschild released his commission's report in 1971. It called for sweeping changes in the way research was viewed by the government. In his view, researchers were essentially providing a "service" to "customers." The customers could be government agencies or industrial concerns but the essential model was that there would be an open marketplace for research services and that any institution was free to compete within it. Not surprisingly the Royal Society, comprised of Britain's leading scientists, had other ideas. In their view, any change to the way that research was structured would require their "consultation." While they did not use the word, what they really meant was that changes should not occur without their consent.

At first Thatcher was content merely to convey the concerns of the Royal Society to her cabinet colleagues and the Prime Minister. She also expressed concerns that the changes called for in Rothschild's report would compromise Britain's ability to do basic research. But Heath's government wanted market-based reforms and the Secretary of State of Education and Science would have to decide if she was going to support them. It has never been entirely clear if Thatcher eventually endorsed the report because it conformed with her conservative principles or if she had to be convinced by more senior members of the cabinet. It is certain that having experienced scientific work first hand, Thatcher was not awed by visions of pure research occurring in ivory towers. She knew that good research could be done at universities, by governments, or by industry. A market-based model became the basis of the government's science policy.

The next major scientific issue with which Thatcher was identified came in the 1980s when climatologists first began warning of the dangers associated with anthropogenic greenhouse gasses. After Thatcher made a speech about the issue, Sir Crispin Tickell, who was British Ambassador to the United Nations, remembered Thatcher's training as a scientist and gave her a paper about the chemistry of greenhouse gasses in the upper atmosphere. This incident helped formulate Thatcher's approach to climate change. She was, alone among western heads of state, convinced that the accumulation of anthropogenic greenhouse gasses was a threat to human survival. She was also among the first heads of state to call for their reduction.

In November of 1989 Thatcher made a speech to the United Nations General Assembly. In it she differentiated between natural climate variations and human-caused climate changes. She spoke about the increase in carbon dioxide and the loss of tropical forests, but also how fluorocarbons had been phased out once the damage they could do to the ozone layer was discovered. Thatcher cited the latest scientific observations from the Polar Institute in Cambridge and The British Antarctic Survey. She also cited the studies conducted by the British Meteorological Office on the possible effects of depleting the Amazon rainforests.

Thatcher said that "...It is no good squabbling over who is responsible or who should pay. Whole areas of our planet could be subject to drought and starvation if the pattern of rains and monsoons were to change as a result of the destruction of forests and the accumulation of greenhouse gases.

"We have to look forward not backward and we shall only succeed in dealing with the problems through a vast international, co-operative effort.

"Before we act, we need the best possible scientific assessment: otherwise we risk making matters worse. We must use science to cast a light ahead, so that we can move step by step in the right direction..."

Thatcher reminded her listeners that a World Conference on Environment and Development would meet in 1992 and called for greenhouse gas reduction targets to be negotiated at the conference. She concluded by saying:

*(continued on page 14)*

## HAIL TO THE CHIEF (CHEMIST)

(continued from page 13)

"...I began with Charles Darwin and his work on the theory of evolution and the origin of species. Darwin's voyages were among the high-points of scientific discovery. They were undertaken at a time when men and women felt growing confidence that we could not only understand the natural world but we could master it, too...Today, we have learned rather more humility and respect for the balance of nature. But another of the beliefs of Darwin's era should help to see us through—the belief in reason and the scientific method...Reason is humanity's special gift. It allows us to understand the structure of the nucleus. It enables us to explore the heavens. It helps us to conquer disease. Now we must use our reason to find a way in which we can live with nature, and not dominate nature..."

However like a scientist she sounded, her actions were not without some political motivations. During the 1980s a series of coal strikes were threatening Britain's economy and casting doubt on the ability of the government to deal with the more militant industrial unions. Calling for a reduction in carbon dioxide emissions would not only save the planet, it would help reduce the power of the miners' unions.

Hugo Young, author of *One of Us: a Biography of Margaret Thatcher*, would ask Dorothy Hodgkin about her former student:

"...The blueprint of a practical mind, the marriage between the speculative and the empirical habits, is one which Mrs. Thatcher the politician consistently made much use of. She retained a genuine interest in science, which Dorothy Hodgkin concedes. It equipped her, says the professor. To take serious decisions on scientific matters and 'to see what scientists are doing'. In the politician, her lack of any outstanding scientific talent was less significant than her rare capacity to understand the scientific mind at all..."

For more information see: Agar, Jon, Thatcher, Scientist, *Notes and Records of the Royal Society*, 2011, Volume 65, 215-232.

### The Most Powerful Woman (and Chemist) in the World, Angela Merkel (1954 - ) Chancellor of Germany 2005 -

German Chancellor Angela Merkel is regularly described as being the most powerful woman in the world. She twice led the Forbes magazine list of the world's most influential women.

Angel Merkel was born in Hamburg in 1954. Her father was a Lutheran pastor who took the unusual step of moving the family into East Germany, to the town of Templin about 80 miles north of Berlin. Her father took up his pastoral duties in the town, went on to found a seminary, and eventually managed a home for handicapped persons. Her father held what were described as "sympathetic" views towards East Germany's communist regime. This meant he was granted the privilege of traveling freely between East and West Germany. The young Angela therefore had first hand experience of the difference between the two Germanys and perhaps much earlier than many of her peers, was forced to consider what would happen when they were reunited.

After being educated in Templin, she enrolled in the University of Leipzig, where she studied physics from 1973 to 1978. Her diploma thesis was titled, *The Influence of Spatial Correlation on the Reaction Rates of Bimolecular Reactions in Dense Media*. While an undergraduate, she also received recognition for her Russian language and mathematics skills.

After completing her degree, she applied to the Ilmenau University of Technology but was not accepted. She had married physicist Ulrich Merkel in 1977 but they divorced in 1982. In 1998, Merkel married Joachim Sauer, a professor of inorganic chemistry from Berlin.

Merkel worked in the Division of Theoretical Chemistry at the Central Institute for Physical Chemistry of the Academy of Sciences in Berlin from 1978 to 1990. She submitted her PhD thesis in 1986 on the "mechanism of simple bond breaking reactions and calculation of the rates based on quantum chemical and statistical methods". At the time, she also had to submit a second thesis demonstrating her knowledge of the theory of Marxism-Leninism. Sadly, this thesis has not been made public but we do know that her grade for this work was "sufficient." Merkel then transferred to the institute's Division of Analytical Chemistry. Unfortunately most of her papers were published in German and the author has been unable to obtain translations as this article goes to press.

German reunification began in 1989 and Merkel soon left chemistry for politics. She was

elected to the German Parliament in 1990 and was appointed Minister for the Environment, Nature Conservation, and Nuclear Safety in 1994. In 2000 Merkel was elected head of the Christian Democratic Union of Germany, a national political party with 17 state affiliates and more than 300 local chapters. Merkel was both the first woman and the first non-Catholic to lead the party. She was the party's nominee for the 2005 election and thanks to a coalition with other parties, was elected Chancellor in 2005. She won reelection in September of 2009.

Like Thatcher, Merkel was involved in structuring her nation's future science policy but this process has been complicated by the current European economic problems. Like Thatcher, she was also unafraid to address the issue of climate change. While serving as the environment minister, she participated in the negotiations leading up to the Kyoto Protocol. She also made sustainable development a major policy goal as well as insuring that Germany would become a world leader in reducing greenhouse gas emissions. (see Merkel, A., The Role of Science in Sustainable Development, *Science*, 17 July 1998: 281 (5375), 336-337) However in recent years, Germany has backpedaled on its previous commitments to meet greenhouse gas emissions targets.

Because Germany has the strongest economy in Europe during the current economic crisis, Merkel is considered by some to be the *de facto* head of the European Union. What special insights a scientist might bring to this challenge remain to be seen but we can only wish her well.

### **And In the Confederate States...**

There is one more engineer-president who deserves mention.

Jefferson Davis (1808 – 1889) was the president of the Confederate States of America during the Civil War (1861–1865). He was elected president before the outbreak of the war and was captured by Union soldiers shortly after the end of the conflict.

Davis was born in Kentucky to a family of modest means. He studied at a number of institutions including Jefferson College in Mississippi and Transylvania University in Kentucky. He was eventually appointed to the U.S. Military Academy at West Point. He graduated in 1828 and was assigned to the 1st Infantry Regiment in Wisconsin. He was elected to Congress in 1845 but resigned to serve in the Mexican War as the commander of the 1st Mississippi Regiment. He returned to Congress as a US Senator and then Secretary of War under President Franklin Pierce. When the southern states seceded from the union, Davis resigned from the senate and returned to Mississippi. Although he would have preferred to serve as an officer in the Confederate Army, Davis was elected president of the Confederate States and accepted the office in February of 1861.

Like most West Point graduates of the era Davis was required to take civil engineering classes. During his Army career, He worked on a number of projects including building Army forts on the frontier. He briefly considered resigning from the military to accept an engineering position with the West Feliciana Railroad but decided against it because he considered the railroad's prospects were poor. While Secretary of War he would have been involved in the reconstruction of the US Capitol building. During his years in the Senate, Davis served as a trustee of the Smithsonian Institution. As Secretary of War he initiated the various surveys that were conducted prior to the construction of the transcontinental railroad.

### **Our First Chemist President?**

At this time the best qualified scientist-politician for the 2020 presidential campaign is Congressman Rush Holt, D-NJ, 12th district. Holt was born in West Virginia where his father was the youngest person ever elected to the Senate. He holds a B.A. in Physics from Carleton College in Minnesota. His Master's and Ph.D. were earned at New York University. While teaching, he also served as a Congressional Science Fellow, and arms control expert. Holt was Assistant Director of the Princeton Plasma Physics Laboratory but resigned that position after being elected to congress. He is also a five-time winner of "Jeopardy." Bumper stickers in his home district read: "My Congressman IS a Rocket Scientist." For Holt's running mate, a good choice would be Nancy Boyda, former Democratic congresswoman from the 2nd district, Kansas. Boyda graduated with honors from William Jewell College in Liberty, Missouri, with dual degrees in chemistry and education. She began her career in 1978 working as an analytical chemist and field inspector. After serving one term in Congress, Boyda was appointed deputy assistant secretary of defense for manpower and personnel at The Pentagon.

## North Jersey Meetings

<http://www.njacs.org>

### NORTH JERSEY EXECUTIVE COMMITTEE MEETING

Section officers, councilors, committee chairs, topical group chairs, and section event organizers meet regularly at the Executive Committee Meeting to discuss topics of importance to running the section and representing the membership. All ACS members are welcome to attend this meeting and to become more involved in section activities.

**Date:** Monday, November 19, 2012

**Time:** 6:00 PM

**Place:** Fairleigh Dickinson University  
Hartman Lounge, The Mansion  
285 Madison Ave  
Madison, NJ

**Cost:** \$10.00 - buffet dinner

Directions can be found using map quest and the address above. A map of the campus can be found at

<http://www.fdu.edu/fm.html>.

Parking is available in the Mansion Lot.

Reservations: call (732) 463-7271 or email [njacsoffice@aol.com](mailto:njacsoffice@aol.com) prior to **Wednesday, November 14, 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.**



### MASS SPECTROMETRY DISCUSSION GROUP

**AB Sciex Night**

*Sponsored by AB Sciex*

Speaker and seminar topic TBA

**Date:** Thursday, November 8, 2012

**Times:** 6:30 - 9:00 PM

**Place:** Holiday Inn  
Somerset, NJ

**Cost:** Free of charge, compliments of our sponsor!

### 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, November 12, 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:** [www.njacs.org/careers.html](http://www.njacs.org/careers.html)

A job board and networking assistance is offered at most topical group meetings. Appointments with Bill can be arranged for personal assistance at 908-875-9069 or [billsuits@earthlink.net](mailto:billsuits@earthlink.net).

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



### NORTH JERSEY CHROMATOGRAPHY GROUP

*Sponsored by Perkin Elmer*

**Date:** Monday November 12, 2012

**Times:** Social 5:15 PM

Dinner 6:00 PM

Seminar 7:00 PM

**Place:** Somerset-Bridgewater Hotel  
110 Davidson Ave  
Somerset, NJ



### NMR SPECTROSCOPY TOPICAL GROUP

Speaker and title TBA

**Date:** Wednesday, November 14, 2012

**Times:** Dinner 6:00 PM

Seminar 7:00 PM

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



## **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)**



## **LABORATORY ROBOTICS INTEREST GROUP – MID ATLANTIC CHAPTER**

The Mid Atlantic Chapter is once again holding a winter meeting the theme of which will be **Lab Automation - The View From the Bench**. Working scientists and automation end-users are encouraged to discuss their work and ongoing projects. The meeting is tentatively scheduled for late January 2013. Persons interested in presenting at this meeting should contact Kevin Olsen at [OlsenK@Mail.Montclair.Edu](mailto:OlsenK@Mail.Montclair.Edu)

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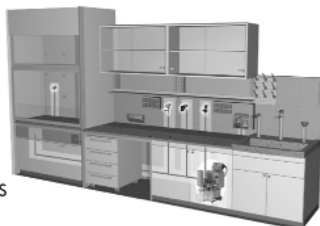
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## **NEW YORK AND NORTH JERSEY SECTIONS, AND NJACS YOUNGER CHEMISTS COMMITTEE – JOINT GET-TOGETHER.**

The New York Section and the North Jersey Section together with the NJACS Younger Chemist Committee joined together to celebrate summer one last time at Liberty State Park on September 16th. It was a wonderful and windy event where we enjoyed great food, wonderful company and awesome views of both the Statue of Liberty and the Freedom Towers beginning to take over the Manhattan skyline. A special thank you goes out to all who made the event possible. A good time was had by all!



*(Photos courtesy of JaimeLee Iolani Rizzo, Chair, New York Section)*

## New York Meetings

[www.newyorkacs.org](http://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](mailto: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, November 16, 2012

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 (CM&E)

#### Japan: Life Science Innovation

*Speaker:* Alexander Scott  
Vice President  
Corporate Development  
Eisai Pharmaceuticals

*Moderator:* George Rodriguez  
Director at ARGENI and  
Board Member ACS NY

#### Date: Thursday, November 1, 2012

Times: Registration and Networking  
11:00 AM - Noon  
Luncheon Noon - 1:00 PM  
Presentation, Webcast; Q&A  
1:00 - 2:00 PM

Place: The Penn Club  
30 West 44th Street  
New York, NY

Cost: \$90 for non-members and 2011 CM&E members; \$70 for current CM&E, SCC and SOCMA members. Early-bird discount of \$20 applicable if you register by **Thursday, October 25, 2012**  
Webcast fees: \$20. No charge for ACS members (enter member number next to your title). This

event will be available as a Webcast for those not able to attend and for post-event viewing. No webcast registrations the day of the event.



### WESTCHESTER CHEMICAL SOCIETY

#### Fall, 2012 Schedule — Special Seminars

##### The Value Chain – From Basic Chemicals To Commercial Products

*Speaker:* Anthony Durante, Ph.D.  
Assistant Professor  
Department of Chemistry  
Bronx Community College  
Bronx, NY

This talk will discuss the value added to basic chemicals that elevates them to commercially important products. This value-added concept, known as the “value chain”, is often used by consultants to understand and discuss the materials, businesses and industries involved in manufacturing these commercial products. Although a value chain attempts to illustrate multiple processes in a simple manner, the underlying science and technology is often rather complex. The beautiful part of a value chain is that it reveals the many links among the scientific, manufacturing and marketing communities needed to successfully bring products to market and value to consumers. I believe this aspect of chemistry is often overlooked in educational and research institutions. I hope to introduce the group to the practical side of the work we are all involved in.

Dr. Durante received a BS in Chemistry from Iona College, a PhD in Organic Chemistry from Fordham University, and an MBA in Business Management from Pace University. He is now an Assistant Professor in the Department of Chemistry at the Bronx Community College of the City University of New York. He brings to the classroom over 30 years of chemical industry background in fundamental research, new product development, R&D leadership, team development, and technical training, along with additional experience in business development, international business, and marketing management. He worked for Chem Systems

(continued on page 20)

## WESTCHESTER CHEMICAL SOCIETY

(continued from page 19)

(a division of Nexant, Inc.), White Plains, NY as Director of Specialty Chemical Consulting; The Turnaround Team, Westfield, NJ as Director of Consulting Services; International Specialty Products, Wayne, NJ as Business Manager of the Solvents and Intermediates Unit; and Union Carbide Corporation, Danbury, CT as Researcher, Group Leader, and Marketing Manager. Dr. Durante has taught environmental science, and general and organic chemistry, among other chemistry courses at Marist College, Mercy College, and Fordham University, and has taught marketing and marketing management courses at Pace University.

**Date:** Tuesday, November 6, 2012

**Times:** Refreshments 5:30 PM

Lecture 6:00 p.m.

**Place:** Westchester Community College

75 Grasslands Road

Gateway Building Room 110

Valhalla, NY

**Cost:** Free and open to the public

\* \* \* \* \*

### Vitamin D: Understanding the Technical Challenges in Testing

**Speaker:** James Freeman

Director, Assay Development

Siemens Healthcare Diagnostics

Tarrytown, NY

James Freeman, Director, Assay Development, in Tarrytown, NY, is responsible for the development of Infectious Disease, Endocrinology and Bone Metabolism assays on the ADVIA Centaur systems.

In 1986 Jim graduated from San Jose State University with a BS in Biochemistry. Prior to graduation Jim began his career in diagnostics in 1984 at Syntex Medical Diagnostics Division, a subsidiary of Syva Co. At SMDD he helped develop dipstick immunoassays for therapeutic drugs. In 1988 he developed the monoclonal antibody based EMIT Amphetamine/Methamphetamine assay.

In 1989 he moved from Syva Co. to Miles Labs (Bayer Corporation) in Elkhart, Indiana to create a finger-stick assay for cholesterol

and HDL cholesterol. After the merger of Technicon and Miles Labs he developed several immunoassays for the Technicon Immuno 1 Immunoassay analyzer including: Carbamazepine, Valproic Acid, Toxoplasma IgG, Toxoplasma IgM, and H. pylori. From 1998 to 2000 he managed the monoclonal and polyclonal antibody development group at Bayer Corporation in Elkhart. He developed several monoclonal and polyclonal antibodies used in commercialized products.

In January, 2000 Jim joined the Tarrytown, New York Assay Development group to work on the Infectious Disease Immunoassays for the ADVIA Centaur systems. He developed both the ADVIA Centaur EHIV and CHIV assays. In addition to Infectious Disease assays he has been responsible for the development of the ADVIA Centaur Procalcitonin, Estradiol, Toxo IgM II and several assays currently in development. The ADVIA Centaur Vitamin D Total assay is the latest addition to his over twenty-five years of immunoassay development. Jim has several publications and holds 4 patents with four more pending approval. Jim has three children and enjoys woodworking, outdoor sports, and gardening.

Please note that, because of circumstances beyond our control, the November and December lectures have been switched from their order presented in the October issue of The Indicator.

**Date:** Wednesday, December 5, 2012

**Times:** Refreshments 5:30 PM

Lecture 6:00 p.m.

**Place:** Westchester Community College

75 Grasslands Road

Gateway Building Room 110

Valhalla, NY

**Cost:** Free and open to the public

For more information, contact Paul Dillon:

E-Mail [PaulWDillon2@hotmail.com](mailto:PaulWDillon2@hotmail.com)

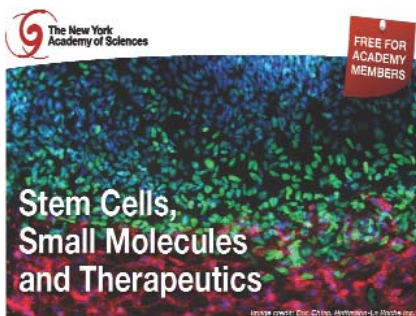
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**ORGANIC TOPICAL GROUP —  
JOINT MEETING WITH THE NEW  
YORK ACADEMY of SCIENCES  
CHEMICAL BIOLOGY DISCUS-  
SION GROUP**



**Stem Cells, Small Molecules and  
Therapeutics**

**Organizers:** Eric Chiao, PhD  
Hoffmann-La Roche Inc.  
Michael Soth, PhD  
Hoffmann-La Roche Inc.  
Brent R. Stockwell, PhD  
Columbia University  
Jennifer Henry, PhD  
The New York Academy of  
Sciences

**Speakers:** Eric Chiao, PhD  
Hoffmann-La Roche Inc.  
Kevin Egan, PhD  
Harvard University  
Laura Kiessling, PhD  
University of Wisconsin,  
Madison

Stem cells are of increasing importance as a research tool and as a therapeutic option for degenerative diseases. Small molecules have the potential to impact stem cell research in numerous ways. First, stem cells can be used to generate otherwise rare cell types for high-throughput screening of small molecules. Second, small molecules can be used to induce differentiation of stem cells down specific lineages. Third, small molecules can be used to create scaffolding materials that regulate stem cell function and increase the facility of culturing stem cells. Finally, it may be possible to create small molecules that regulate the endogenous stem cells in humans as a therapeutic option. This symposium will explore the intersection of small molecules and stem cells.

**Date:** Wednesday, November 14, 2012

**Time:** 6:00 – 8:30 PM

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

**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/SmallMolecules](http://www.nyas.org/SmallMolecules)

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

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## HIGH SCHOOL TEACHERS TOPICAL GROUP

### You Can Run, But You Can't Hide – From Science

*Speaker:* Walter Mugdan  
Environmental Protection  
Administration

This talk will be about how the speaker assiduously tried to avoid taking science and math courses in high school and college but now finds himself totally immersed in problems demanding technical solutions. This talk provides powerful ammunition for high school science teachers who are trying to convince their students that science may one day be very important to them. Mugdan is the only one at the NY Regional EPA office who has been the director of three different divisions and can lead an intelligent discussion of virtually any environmental problem you can think of.

**Date:** Friday, November 16, 2012

**Time:** Social and Dinner — 5:45 PM

**Place:** M&G Pub (Murphy and Gonzales)  
21 Waverly Place  
(at Green St., North-east corner)  
New York, NY

No reservations required

**Time:** 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 AM and 2 PM to verify that meeting is still on; (914) 961-8882 for other info.

Note: Street parking is free after 6:00 PM.

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 walk from the garage to the restaurant or meeting room.



## NOMINATING COMMITTEE MEETS IN DECEMBER

The New York Section's Nominating Committee will meet in December to nominate candidates for the 2013 elections.

Positions available are:

Chair-elect for 2014

Treasurer for 2014 - 2015

Directors-at-Large for 2014

Councilors and Alternate Councilors for  
2014 – 2016

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., Department of Chemistry, St. John's University, 8000 Utopia Parkway, Jamaica, NY 11439 or send an e-mail to the New York Section office at [njesper1@optonline.net](mailto:njesper1@optonline.net) by **November 25th**.

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



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

### **To Human Resources Departments in Industry and Academia**

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

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



## **CHEMICAL MARKETING AND ECONOMICS GROUP (CM&E)**

### **Business Group of the American Chemical Society NY Section Celebrated 58 Years of Service Giving Awards to Brilliant Leaders**

The Chemical Marketing and Economics Group (CM&E) recently announced that on **December 6, 2012**, it will present its inaugural Awards for Leadership at the New York Yale Club. The honorees are:

- Juan Pablo del Valle, Chairman of Mexichem, for outstanding global growth
- Peter McCausland, Chairman and CEO of Airgas, for a lifetime of achievement
- John Televantos, Partner at Arsenal Capital, for distinction in private equity

See the October 2012 issue of The Indicator for full details.



## **INORGANIC AND ORGANO-METALLIC TOPICAL GROUP**

The Inorganic and Organometallic Topical Group hosted the first installment of the Frontiers of Inorganic and Organometallic Chemistry Lecture Series on Friday, September 14, 2012 on the campus of Columbia University. This first event after a long hiatus attracted more than 70 academic and industrial chemists to experience the diverse and exciting research in inorganic chemistry taking place in the NY metro area. The symposium featured the work of James Canary (NYU), Roberto Sanchez-Delgado (Brooklyn College), Steve Koch (Stony Brook University), and Jonathan Owen (Columbia University). Paul Chirik (Princeton University) delivered the keynote address entitled "Modern Alchemy for Sustainable Catalysis and Organic Synthesis". The Topical Group co-chairs James Camara and Kathleen Kristian served as session chairs for the symposium.

The Inorganic and Organometallic Topical Group is committed to supporting the mission of NY-ACS by providing programming that encourages the formation of a strong scientific community through lectures, symposia and other events on all topics related to Inorganic and Organometallic Chemistry. If you would like get involved, or have questions, comments or suggestions, please visit the NY ACS web site and contact the chairs.

*(See photos on following page.)*



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The invited speakers of the 2012 Frontiers of Inorganic and Organometallic Chemistry Lecture Series. Left to right: Jim Canary, Roberto Sanchez-Delgado, Steve Koch, Paul Chirik, Jonathan Owen.

Keynote speaker Paul Chirik addresses attendees at the 2012 Frontiers of Inorganic and Organometallic Chemistry Lecture Series.

*(Photos courtesy of Kathleen Kristian)*




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## ACS News

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### LOCAL CHEMISTS HONORED BY WORLD'S LARGEST SCIENTIFIC SOCIETY

Local chemists were honored for outstanding community outreach by the national office of the American Chemical Society (ACS), the world's largest scientific society. The 14th annual ChemLuminary Awards celebration was held in conjunction with the ACS National Meeting in Philadelphia, PA on August 21, 2012.

Approximately 400 chemists came together to applaud the local sections, regional meetings, committees, and divisions for their work in promoting chemistry and the chemical sciences during 2011.

ACS President Bassam Shakhshiri opened

the event with welcoming remarks and recognized each of the 42 award recipients. Prior to the awards presentation, 50 posters were presented by the finalists that reflected the activities and efforts being honored.

More information on this year's ChemLuminary awards is available at [www.acs.org/ChemLuminary](http://www.acs.org/ChemLuminary).

### North Jersey Local Section

#### Outstanding High School Student Program Award

North Jersey and its Teacher Affiliates offered programming for high school students and teachers with over 135 volunteers. Approximately 2,592 students and their teachers participated in the National Chemistry Olympiad, the Chemistry Olympics, Merck State Science Day, Project SEED, various teacher professional development activities and more.





(From left to right, Andy Jorgensen, Bettyann Howson, Diane Krone, and Marinda Wu. Bettyann and Diane are from the North Jersey Section and are accepting the award for the Outstanding High School Student Program Award at the ChemLuminary Awards event in Philadelphia.

*(Photos courtesy of Linda Wang, C&EN)*

## New York Local Section

### *Outstanding Project SEED Program Award*

The New York Section had a very successful Project SEED program with over sixty students participating in SEED I and SEED II. Eight students won Project SEED College Scholarships, six were ACS Scholars, and two students were named as Bill Gates Millennium Scholars. Three Project SEED alumni mentored students.



These pictures represent the New York/North Jersey delegations. We had 34 Project SEED students who presented the results of their projects at Sci-Mix on Monday, August 20th. In the pictures also are coordinators of Project SEED as well as chaperones.

*(Photos courtesy of Linda Wang, C&EN)*

## 2013 LEADERSHIP INSTITUTE

The 2013 Leadership Institute, which will include local section and division officer training, is planned for **January 25-27, 2013** in Dallas, Texas. The goal of the Leadership Institute is to provide vital training to lead with great success. This jam-packed weekend includes track time where the participant will gain an understanding of the essential elements of being an effective leader and an opportunity to interact and exchange ideas with other local section and division officers and ACS governance.

The Institute will be held at the Dallas Hotel InterContinental and begin on Friday afternoon and end by Noon on Sunday. Participants will have the opportunity to take ACS Leadership Development System courses that will help to develop core leadership skills important in ACS leadership roles as well as in the workplace. To get a preview of the courses that will be offered, visit the ACS Leadership Development System website.

We invite all 2014 local section and division chairs (2013 Chair-elects) to attend. If the chair-elect is unavailable, consider sending another officer from your group to join us for this powerful Leadership Institute. Details about registration and costs will follow in the upcoming weeks. For additional information, please contact Cheryl Brown at [c\\_brown@acs.org](mailto:c_brown@acs.org).



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

## 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 2013.

Go to the web site, [njacs.org](http://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](mailto:chemphun@gmail.com).



### 2013 BAEKELAND AWARD

<http://www.njacs.org/baekeland.html>

The North Jersey Section of the American Chemical Society is soliciting nominations for the 2013 Leo Hendrik Baekeland Award. The Award consists of a gold medal and a \$5,000 honorarium. The Section presents the Award biannually to commemorate the technical and industrial achievements of Leo Hendrik Baekeland and to encourage younger chemists to emulate his example. The Award is given in recognition of accomplishments in pure or applied chemistry to an American chemist as characterized by the initiative, creativeness, leadership, and perseverance of the individual (indicated by published or unpublished evidence) and who will be under the age of 40 as of January 1, 2013.

Nominations for the Award should include a letter describing the nominee's achievements, a brief biography, and a list of the nominee's more important publications. Successful nomination packets include two to three recommendation letters supporting the candidate. Re-nominations are encouraged, provided the age requirement is still met.

Please submit materials by **December 31, 2012**, to:

Dr. Michael M. Miller  
 NJ ACS Section Awards Chair  
 Baekeland Award Committee  
 Bristol-Myers Squibb Company  
 Route 206 & Province Line Road  
 Princeton, NJ 08543

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## Others

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### NJIT – OTTO H. YORK DEPARTMENT OF CHEMICAL, BIOLOGICAL AND PHARMA- CEUTICAL ENGINEERING

#### Graduate Seminar Series – Fall 2012

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#### Friday, November 2

“Functional Nanoparticles by the Colloidal Route Experiments, Mechanism, and Modeling”

*Professor Rajdip Bandyopadhyaya*  
 Department of Chemical Engineering  
 Indian Institute of Technology (IIT)  
 Bombay

#### Monday, November 5

“Small Scale Rheology for Screening Scarce Material’s”

*Professor Eric M. Furst*  
 Director, Center for Molecular and Engineering Thermodynamics  
 University of Delaware  
 Newark, Delaware

#### Monday, November 19

TBA

*Dr. David Calabro*  
 Advanced Scientific Associate  
 Corporate Strategic Research Laboratory  
 Exxon Mobil Research & Engineering Company  
 Annandale, NJ

#### Monday, November 26

“Multifunctional Biopolymer Scaffolds for Tissue Engineering and Drug Delivery”

*Professor Cheul H. Cho*  
 Department of Biomedical Engineering  
 NJIT

#### Monday, December 3

TBA

*Professor Paul Takhistov*  
 Rutgers University  
 New Brunswick

#### Monday, December 10

“Towards Sustainable Energy: Carbon Capture, Utilization & Storage”

*Professor Ah-Hyung Alissa Parks*  
 Lenfest Junior Professor in Applied Climate Science & Associate Director  
 Lenfest Center for Sustainable Energy  
 Columbia University NY

OPEN TO PUBLIC

Times: Refreshments @ 2:30 PM

Seminars 2:45 PM ---

Place: NJIT

Room 210, Kupfrian Hall

Seminar Coordinator: Professor Reginald P.T. Tomkins, 973-596-5656,  
[tomkinsr@njit.edu](mailto:tomkinsr@njit.edu)

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## PressRelease

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### **Sartomer Releases SR523 Dual-Functional Coagent for Rubber and Plastics**

EXTON, PA – Global specialty chemicals manufacturer Sartomer USA, LLC now offers SR523, a liquid coagent that shortens cure times and improves processability of peroxide-cured elastomers compared to conventional coagents like triallyl cyanurate (TAC). SR523 improves the properties of rubber and plastics used for building profiles, injection molded goods, radiator hoses, wire and cable insulation, as well as o-rings, gaskets and sealants.

It is an advanced coagent that has a unique structure encompassing both Type I and Type II classifications. This coagent exhibits an improved rate and state of cure in elastomer compounds. In addition, SR523 aids in the treatment of such compounds by reducing mixing torque and improving processability.

Other elastomeric properties were also shown to increase with SR523, including the tensile modulus. Higher concentrations of this coagent during testing resulted in slightly greater increases to a compound's modulus compared to other coagents, including trimethylolpropane triacrylate (TMPTA) and triallyl cyanurate (TAC). In fact, SR523 provides a significant advantage over TAC because it remains a clear liquid at ambient temperature while TAC solidifies. The SR523 coagent also demonstrates a high scorch resistance.

Technical documentation is available for download at: [www.sartomer.com/newsletter/SR523](http://www.sartomer.com/newsletter/SR523).

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- [www.mboservices.net](http://www.mboservices.net)
- <http://newyorkacs.org/jobs.html>
- <http://njacs.org/jobs.html>

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## Ad Index

### ANALYTICAL

EuTech Scientific Servies	21
Huffman Laboratories, Inc.	28
Micron Inc.	23
New Jersey Institute of Technology	28
NuMega Resonance Labs.	28
Pittcon	2
Robertson Microlit Labs	22

### EQUIPMENT

Eastern Scientific Co.	28
Mass Vac, Inc.	4
Vacuubrand, Inc.	17

### GENERAL

ACS-NY/NoJ Sections	20
ACS-NY/NoJ Sections	28
ACS-NY/NoJ Sections	28