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2014 ACS Fellows of the NY and NoJ Sections

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NY

Hiroko I. Karan
NY

Stephen A. Koch
NY

Qinghuang Lin
NY

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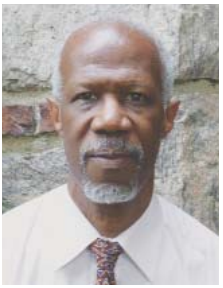
NY



Marc A. Walters
NY

Kathryn Uhrich
NoJ

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Indicator hardcopy mailing will cease 1/1/15

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THIS MONTH IN CHEMICAL HISTORY

Harold Goldwhite, California State University, Los Angeles
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This compound is widely used as a solvent and reagent by chemists; it is a crucial component of our country's energy program; and it is an equally crucial component of beverages that many of us consume. Not a tough quiz is it? I refer of course to ethanol. These musings were prompted by an entertaining and enlightening short book that I recently acquired: "The Quest for Aqua Vitae; The History and Chemistry of Alcohol from Antiquity to the Middle Ages" by Seth C. Rasmussen. Dr. Rasmussen has been a key figure in the Division of the History of Chemistry of the ACS as its Program Chair for many years. The book is another contribution to the Springer short books on history of chemistry. Its many appropriate and attractive illustrations are another virtue of this volume.

Aqua Vitae means water of life. It is the same term that gives rise through a Celtic phrase to the word whisky (or whiskey depending on your preferred libation). It was given to ethanol by some of its earliest users around the 12th. century by virtue of its almost miraculous powers to restore the spirits (excuse the pun) of its partakers. Rasmussen discusses the wide variety of fermented beverages that have been in use since pre-literate times including the obvious wine and beer, and the lesser known mead (honey), date wine, palm wine, and kefir and kumis (milk). The history of alcohol is also closely entwined with the history of distillation, and reasonably concentrated ethanol was probably first isolated by distillation from grape wine in the 12th. century, perhaps at the famous medical school in Salerno in Italy.

Fermented beverages containing ethanol have been used in medicine since ancient times. Hippocrates, he of the oath (ca. 400 BCE), recommended wine for strengthening the body, as a purgative, and a diuretic. The Sumerians (ca. 2100 BCE) washed wounds with beer. Later cultures often treated wounds with wine and other fermented beverages, which were probably mild antiseptics. Palm wine was used by ancient Egyptians in perfumes, ink, incense –and in preparing bodies for mummification.

As to the origin of the term alcohol, the path Rasmussen traces is long and unexpected. The prefix al- shows its Arabic origin (alchemy, algebra, algorithm etc.). Kohl is a finely powdered preparation of stibnite, antimony trisulfide, used as a black eye makeup in Egypt as early as 1500 BCE. The term al-kohl came into use in Arabic to describe not just the kohl preparation but any kind of very fine powder. Its use was gradually extended to mean the finest and subtlest part and so, by extension, to materials obtained by distillation. Paracelsus in the 16th. century referred to aqua vitae as alkohol vini, the most subtle part of wine. Eventually the vini was dropped, the k westernized to c , and so the term alcohol was born.

[I am a co-author with Cathy Cobb and Monty Fetterolf of a new book "The Chemistry of Alchemy: From Dragon's Blood to Donkey Dung; How Chemistry was Forged" published by Prometheus Books in July 2014; it is available both as a hardback and an ebook.]

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THE Indicator

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Address advertising correspondence to Advertising Manager. Other correspondence to the Editor.

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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 December 2014 issue of *The Indicator* is
October 20, 2014

Indicator hardcopy mailing will cease 1/1/15

Colleagues,

The New York and North Jersey Boards of Directors have decided to cease mailing hardcopies of *The Indicator* for financial reasons. The last mailed hardcopy will be the December 2014 issue. Our full-color edition of *The Indicator* will still appear monthly at **www.TheIndicator.org** and it can be downloaded and/or printed. *The Indicator* can be viewed on PC and Macintosh computers, laptops, tablets and smartphones. Our sections apologize for any inconvenience this change will have. For those without computers or the needed expertise, we have found that local libraries usually have computers and technical people who can help. Please feel free to access either section office with any comments or concerns.

Signed, Les McQuire and Neil Jespersen

2014 ACS Fellows of the NY and NoJ Sections

Sincere congratulations to John S. Blanchard, Hiroko I. Karan, Stephen A. Koch, Qinghan Lin, Edward N. Walsh, Marc A. Walters of the New York Section and Kathryn Uhrich of the North Jersey Section on the occasion of becoming ACS Fellows in 2014. ACS President Thomas J. Barton and ACS Immediate Past President Marina Li Wu presented the 2014 class of ACS Fellows at a ceremony held on August 11th at the 248th ACS National Meeting in San Francisco California. The ACS Fellows Program recognizes "Members of the ACS for Outstanding Achievements in and Contributions to Science, the Profession and the Society." Congratulations again on a highly deserved honor.

JOHN S. BLANCHARD
Albert Einstein College of Medicine

Contribution to the science/profession: Recognized for contributions to the mechanisms of enzymes, including those responsible for antibacterial drug resistance.

Contribution to the ACS community: Served as Vice Chair and Chair of the Division of Biological Chemistry.

HIROKO I. KARAN
Medgar Evers College,
The City University of New York

Contribution to the science/profession: Educated and mentored underrepresented minority undergraduate students to succeed in chemical science careers. As a senior faculty member and Dean, mentored younger faculty members to achieve their professional goals.

Contribution to the ACS community: Served the New York Local Section over the past 30 years as Chair, a Councilor, and in other capacities. Served on the Committee on Minority Affairs for the past ten years.

STEPHEN A. KOCH
Stony Brook University

Contribution to the science/profession: Recognized for synthesis and study of analogs for the active sites of iron-sulfur and zinc proteins and hydrogenase and nitrogenase enzymes. Contributed to the 300-year-old area of iron cyanide chemistry.

Contribution to the ACS community: Served as a Program Co-Chair of the Division of Inorganic Chemistry since 2011. Organized many ACS symposia.

QINGHUANG LIN
IBM Thomas J. Watson Research Center

Contribution to the science/profession: Recognized for contributions to invention, research, development, and implementation of functional materials in modern electronics.

Contribution to the ACS community: Served the Polymeric Materials: Science and Engineering Division in various roles, including Vice Chair, Secretary, and Webmaster. Led the Division's Web Presence Initiative and international engagements.

EDWARD N. WALSH
AstraZeneca (Retired)

Contribution to the science/profession: Recognized for new syntheses, products, and processes of organophosphorous compounds. Holds 68 U.S. patents, including one with T.M. Beck on Fyrol 6, which remains a most desired flame retardant for rigid polyurethane foam.

Contribution to the ACS community: Contributed as an active member of ACS for 64 years. Served in various capacities for the New York Local Section, including Chair and founder of the Section's Speakers Bureau and Safety Bureau.

MARC A. WALTERS
New York University

Contribution to the science/profession: Developed synthetic methods to study ligand hydrogen bonding and its influence on electronic structure and redox potentials in metal complexes.

Contribution to the ACS community: Chaired the New York Local Section and its Government Affairs Committee. Provided ongoing commitment to mentor students in Project SEED.

KATHRYN UHRICH
Rutgers University

Contribution to the science/profession: Recognized for her scholarship, entrepreneurship, and leadership in the polymer community. Her research in the design, synthesis, and characterization of biocompatible, biodegradable polymers serves a critical need in therapeutics/drug delivery.

Contribution to the ACS community: Served the ACS community through national committees, Division of Polymer Chemistry programming, and organizing North Jersey Local Section events. Recognized as an exceptional mentor who encourages her graduate students and postdoctoral associates to engage even younger scientists.

CHEMISTRY LIGHTS UP THE BEACH

Martha Coston and the Signal Flare, Part 1.

By Kevin Olson, Montclair State University • **<olsenk@mail.montclair.edu>**

With the coming of the cold weather most readers of *The Indicator* are probably not thinking about the shore. Winter can be cold and brutal on the Atlantic coast. Between the 1600s and the early 1900s navigating a ship along the coastline in the winter was dangerous and difficult. Shipwrecks were so frequent that in 1848 congress established the US Lifesaving Service.

Despite its humanitarian mission, the service was underfunded and undermanned until 1871 when a $200,000 congressional appropriation was used to enough hire full-time rescue crews to establish regularly spaced stations along both coasts. Most of the stations now preserved as museums or historic landmarks date to this period. Each station had a six-man crew under the command of a keeper. The stations were all equipped with surfboats, lifesaving equipment, meteorological instruments, cork-filled life preservers, and enough books to last through a long winter.

Prior to the service being established, shipwrecked mariners relied the thinly distributed coastal populations for assistance. There are a number of documented cases of fisherman and other coastal dwellers risking their lives to reach ships stranded off shore and even wading into the winter surf to pull survivors through undertows and to the safety of the beach. Contrary to popular mythology, the use of false lights to lure ships close to the shore so they would be wrecked was extremely rare and is not recorded happening in New Jersey. The one reported instance of a party "dancing with glee" on the beach as a ship broke apart just offshore turned out to be a group of volunteer rescuers stamping their feet to keep warm. However years of irregular assistance by communities with no experienced rescue personnel, limited first aid supplies, and no specialized lifesaving equipment finally convinced the federal government that there was a need for a permanent lifesaving service.

A Lifesaving Service surfman is shown in his foul weather gear in the early 1900s. The lantern was used by the surfman when patrolling the beach looking for shipwrecks. Signal flares were used to communicate with ships in distress.

(Photograph from the United States Coast Guard)

New Jersey's coastline is characterized by a shallow and sandy costal plane. For example, just off shore at Sandy Hook there is a deep channel close to the shore with depths from 18 to 27 feet but within only a few hundred yards off the beach there is a large sand bar where depths can be as low as 6 feet. Off of Beach Haven water depths can be as low as 13 feet even hundreds of yards offshore. The Coast Guard still warns mariners that there are dangerous sand bars between 300 and 800 yards offshore on both coasts. In New Jersey, the shore town of Shipbottom is named after a particularly notorious 1817 shipwreck.

In an era before GPS or other electronic aids to navigation such as LORAN (LOng RAnge Navigation) a ship sailing along the Jersey Shore at night had to rely on visual contact with the various lighthouses and frequent use of a sounding line. This simple device consisted of a lead weight attached to a rope with knots tied into it at regular intervals. The lead was tossed ahead of the ship and the knots were counted as it was pulled up from the bottom. This type of navigation worked well on clear nights but not when storms reduced visibility.

When a storm drove a ship into the shallow waters off a beach, the first priority of the lifesaving service was to get the crew ashore. The constant pounding of the waves drove ships deeper into the sand and this action could break even the largest ships apart. The crews most often climbed the masts and clung to the rigging while awaiting rescue. Launching a lifeboat and attempting to row ashore was not a good option. It is very difficult to judge the breaking waves when looking from seaward and it took special skill to guide an oar-powered open boat through crashing surf.

Lifesaving Service surfmen are shown practicing with Coston Signal flares in the undated photograph.

(Photograph from the United States Naval Institute)

The rescue usually began when a surfman patrolling the beach at night spotted a ship aground, or in cases of poor visibility, heard the cries of crew. It was critical that the surfman lit a Coston Signal Flare that would let the crew know that help was coming. He returned to the station to alert the others. The safest way to take the crew off was to use a small cannon, named a Lyle Gun after its inventor, to shoot a heavy ball with a line attached over the ship's rigging. The crew would then use the line to pull two rescue ropes out to the ship, the first was the hawser and the second was the whip line.

Suspended from the hawser was one of two possible rescue devices. The first to be developed was the sheet-iron life car. This looked like a small covered boat and was hung from the hawser by rings at the front and back. About four people could be shut inside. The lifesavers on the beach used the whip line to pull the car ashore. When the passengers were safely on the beach the remaining crew on the stranded ship used the other end of the whip line to bring it back to the ship. The breeches buoy worked on the same principle and it consisted of a large pair of heavy canvas pants suspended from a life ring. The breeches buoy left the stranded sailor exposed to the elements but it was lighter, easier to get in and out of, and therefore faster.

In extreme cases the lifesaving crew would usually wait for daylight before launching a surfboat and rowing out to the stranded ship. They could ferry the crew back to shore relying on the skill of the crew and the steersman to bring survivors through the surf. (During the summer months the surfboat crews practiced their skills including steering through the surf and righting an overturned boat.)

One of the fundamental problems of the lifesaving operations was communicating with the ships. Marconi would not demonstrate wireless telegraphy until 1895 and radios that could transmit voices commands would not be available for another two decades. The windy conditions on the winter coast would quickly extinguish any kind of lantern and so the preferred method was to use a hand-held, brightly burning, signal flare.

This brings us to the story of a rather remarkable woman inventor and entrepreneur, Martha Coston (1826-1904).

Martha Coston was not an unusual woman for the mid-1800s in that she established a business that provided for herself and her children, many widows were forced to do the same. She did however bring a new technology into being, founded a company that continued to make flares until the 1980s, and even wrote an autobiography titled *A Signal Success. The work and travels of Mrs. Martha J. Coston* (J.B. Lippencourt, 1886).

The story begins with Benjamin Franklin Coston receiving funds from Congress to establish a pyrotechnics laboratory at the Navy Yard. Martha and Benjamin married quite young, she was about 16 and he was 21. Coston, his wife, and the couple's four children settled comfortably into government housing at the navy yard.

Coston supervised the construction of the facility that included a loosely-attached roof that would blow upwards in case of explosion. He also supervised the installation of the laboratory equipment. One of the first tasks for the new laboratory came in December of 1846 when Congress purchased the rights to the Hale Rocket. Coston was directed to adapt the rocket for use by the US military. The Hale Rocket was a solid-fuel rocket propelled by a charge of gunpowder and was named for its British inventor, William Hale, who introduced the rocket in 1844. The Hale Rocket was stabilized in flight by a spinning motion. It replaced the earlier and less reliable Congreve Rocket that was used by the Royal Navy at the Battle of Baltimore. In this battle, the "rockets' red glare" inspired a line in the Star Spangled Banner. (The Battle of Baltimore took place between September 12 and 15, 1814 and this

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article is being written on the 200th anniversary of the battle.) Coston's American version of the Hale Rocket was ready in time for use in the Mexican War.

Readers of *The Indicator* who are used to elaborate agreements regarding intellectual property will be shocked by the somewhat more informal arrangements that existed between Coston and the government during the months before his resignation. In late 1845 and early 1846 Coston developed a percussion cap that could be used to ignite the charge in a muzzle-loading cannon. This type of cannon was fired by stuffing a bag of gunpowder down the muzzle and then ramming a cannon ball against the powder bag. The gunner then turned his attention to the "touch hole" located at the back of the barrel. Priming the cannon consisted of reaching down through the touch hole and pricking a small hole in the bag of gunpowder. This was of course done with a non-sparking metal rod. Then the touch hole was filled with gunpowder. Firing the cannon required igniting the gunpowder in the touch hole, and then hoping that it burned all the way down to the bag of gunpowder where, hopefully, it would ignite the gunpowder and fire the gun. It took a great deal of skill to perform these steps so the cannon would reliably fire. Aboard a rolling ship the time delay between igniting the primer and exploding the main charge had to be accounted for. Igniting the primer on a downward roll sent the cannon ball into the sea while igniting it on an upward roll would send the cannon ball sailing harmlessly over the enemy's heads.

The crew of a lifesaving station pose on a snowy beach. The lifesaving station is in the background and their surf boat is on the left of the picture. The crewmen are wearing foul weather gear and cork-filled life preservers.

(Photograph from the United States Coast Guard)

Percussion caps solved this problem. These are small copper or brass cylinders that are filled with a small amount of a shock-sensitive explosive material. Mercury fulminate was the most common choice. Striking the cap ignited the mercury fulminate and allowed the main charge to ignite without a delay.

Coston's percussion primer vastly improved a cannon's accuracy but there was only one problem. Coston never told the government how to manufacture them and kept the formulation of the explosive material a secret. In February of 1846 the commander of the Navy Yard wrote Coston a letter politely requesting this information. Coston wrote back the same day pointing out that he considered this information to be his "private property" and he "respectfully" declined to furnish it. He did offer to supply the Navy with the caps at a cost of $9.81 each.

It should come as no surprise to modern readers that anyone working in Washington makes enemies and Coston was no exception. Rival scientists persuaded Congress to formalize the Navy's Office of Pyrotechnics and set the director's (*i.e.,* Coston's) annual salary at $1500. The director would not hold naval rank and would not be provided with government housing. Coston held the rank of Master and refused to relinquish his commission or give up his housing. Not wanting to lose Coston's services the Secretary of the Navy paid his salary until the matter could be resolved during the next session of Congress. The percussion primer was developed while his exact status was uncertain and therefore it was not clear whether the percussion cap formula was owned by Coston or the Navy. *(see note)*

It was largely a moot point. Coston's health had been badly damaged by exposure to chemicals and he would not live much longer. At the time he had also been experimenting with generating methane for use in gas lighting and resigned from the Navy to work for a gas lighting company in Boston.

Coston died in Boston after a lingering illness leaving Martha and their children without a means of support. On a rainy November afternoon she recalled searching through a box of her late husband's papers hoping to find some useful invention that could be the means of

"retrieving my fallen fortunes."

Most the papers related to unfinished inventions or pyrotechnic chemistry. But there was one idea that was ready for practical development. Coston had worked out a system of flares that burned first with one color and then another. The number of colors was only limited by the size of the flare and the availability of pyrotechnic material.

Martha remembered that a test batch of these flares had been made up and a box of them was in storage at the Navy Yard. She wrote to the superintendent asking for them back but the yard was now commanded by one of Coston's enemies. He refused to return the flares or allow them to be tested. Coston's friends, however, were soon back in control and they agreed to test the signals. The tests were a failure but the idea appealed to the Navy. Thanks to the support of sympathetic naval officers and officials, Martha received funding to carry on her husband's work.

The support of the Navy was critical during this period. Living in Washington had given Martha access to high-ranking military and government officials many of whom she counted as friends. In her study of woman patent holders, Lisa Marovich concluded that social and business connections on a personal level were often crucial for successfully commercializing and marketing a woman's invention. (*Business & Economic History*. Fall, 1998)

Unfortunately for historians of science Martha chose not to describe the series of experiments that lead to her first successful flare. She felt that the readers of her autobiography would have been interested. However this omission leaves open the question of how much of the work was personally done by Martha. She made no secret of the fact that much of the experimental work was done by collaborators recruited from the community of pyrotechnics chemists. Martha is never clear about how much of the experimental work she did herself. She hints about conducting experiments but these may have been confined to igniting and observing the pyrotechnic mixtures. Even if she relied almost exclusively on collaborators or hired chemists, it is difficult to believe that she would have had no input on technical matters. She knew enough to dismiss chemists who were uncooperative, unproductive, or dismissive of her as a woman. According to the *Columbia World of Quotations*, Martha later observed that:

> "We hear much of chivalry of men towards women; but...it vanishes like dew before the summer sun when one of us comes into competition with the manly sex. Let a woman sit, weep, wring her hands, and exult in her own helplessness, and the modern knight buckles on his imaginary breastplate and draws his sword in her behalf; but when the woman girds up her loins for the battle of life, ready to fight like a lioness, if need be, to put food in the mouths of her children, let her select for her field the living-room or the cooking range."

When Coston received her first patent in 1859 her late husband's name was on it, probably because patents granted to women were extremely rare. She claimed originality of the idea for a flare that would burn sequentially in two or more colors. Coston's preference was for a flare that would burn first in red, then in white, and finally in blue. Neither Coston or her collaborators were able to produce an intense blue color and so rather than the country's national colors, the flares were commonly red, white, and green. The great two advantages of her signals was that a burning flare that predictably changed color could not be mistaken for anything else and that the color changes could be part of a signaling code.

Coston did not list the chemical composition of the pyrotechnic material on the patent. Perhaps this was because the basic chemistry of burning metal salts to create pyrotechnic displays was already common knowledge. Formulas for producing red, white, green, and blue flames do appear in the chemical literature of the period. Strontium nitrate's ability to produce a red flame was first reported in 1793. In pyrotechnic formulations dating between 1807 and 1843 it was often combined with black powder, coal dust, charcoal, shellac, sulfur, or potassium chlorate. Strontium nitrate decomposes to strontium oxide (SrO) but the red color is emitted by strontium monohydroxide (SrOH+). This means that the pyrotechnic formulation must contain a source of hydrogen. Coal and charcoal do not contain enough hydrogen to produce an intense color and it was only with the use of shellac in 1843 that the formulation contained sufficient hydrogen to produce the desired red.

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In 1843, tetraamine copper (II) chlorate was been mentioned in the literature as a means of producing blue pyrotechnics but it was too expensive for widespread use. There was also speculation that because of its instability, the compound would make an excellent high explosive. This is one reason that modern pyrotechnic chemists do not use it.

A more practical approach was to use fine zinc metal mixed with potassium nitrate and charcoal. In 1843 this was described as being a source of green but the addition of lead (II) oxide produced pale blue color that was described as “uncertain” and “almost as green as blue.”

Zinc was also used to produce white. In 1830 a pyrotechnic formulas using black powder, potassium nitrate, zinc and sulfur were published. When used in fireworks, the rate of burning appears to have been controlled by the proportions of oxidizer and sulfur. White-colored signal lights needed to be slow burning so zinc, potassium nitrate, and sulfur were used without the addition of black powder.

The typical modern flare contains a metallic salt that forms the colorant, a combustible material, and an oxidizer. According to the journal *Chemistry* (Vol. 19, issue 38) for many years perchlorate salts were the oxidizer of choice. They are cheap, stable, and release a large amount of oxygen. But in ground water they can cause a number of health problem and the US EPA has placed a limit of 15 ppb in potable water. Recent research has suggested that 5-Aminotetrazole, the same material used to inflate air bags, might be a good, and non-hazardous, replacement.

Martha Coston's patented multi-colored flares were evaluated by a special board of Naval Examiners in 1859. The board declared them to be “decidedly superior” and recommended immediate purchase. During the Civil War, the Union Navy bought hundreds of flares for use as night signals and creative officers worked out elaborate codes that exploited their multiple colors.

The Union Navy established a blockade of the southern states. It would have been impossible to station ships along the entire coastline from Virginia to the Texas-Mexico border. Warships were be stationed off all eight major southern ports. Most of the smaller ports had at least a few blockading ships, and the many of the larger coastal islands had at least some union ground troops. The many minor inlets and small estuaries were too shallow for ocean-going ships and were therefore unnecessary to blockade.

Southern blockade runners were low-slung, fast steamships that were hard to see at night and able to outrun the heavier union warships. These ships operated at night and catching them required cooperation among the slower union ships. This cooperation required reliable signals and the Coston Signal Flares were widely used. What happened in March of 1863 provides a good example.

On March 19, the southern blockade runner *Georgiana* attempted to bring a $1,000,000 cargo of munitions, medicine, and general merchandise into Charleston, South Carolina. She was spotted by the lightly-armed schooner *America.* The America’s speed under sail was legendary but she was too light to be of much use as a warship. Her crew lit signal flares alerting the warships *USS Housatonic* and *USS Wissahickon*. They chased the *Georgiana* ashore on Long Island, South Carolina. While the loss of the cargo was a blow to the Confederacy, *Georgiana*’s iron hulled made her a prime candidate for conversion to a warship.

Next month, we will examine what happened to Martha’s company in the years after the Civil War. Readers interested in learning more about pyrotechnic chemistry should consult the *Encyclopedic Dictionary of Pyrotechnics*, published by the *Journal of Pyrotechnics*, 2012.

Note: It would not be until 1873 that Congress authorized the Court of Claims to determine if Coston’s estate would be entitled to compensation for the invention. Between 1847 and 1873 the Navy manufactured 2,66,360 percussion primers. Eventually Coston’s estate was awarded $13,000 for use of the invention.

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 17, 2014**
Times: 7:00 - 9:00 PM
Place: Doubletree Hotel
Somerset, NJ

Reservations: Please make your reservation at our website, **www.njacs.org** prior to **Tuesday, November 11, 2014.**

LABORATORY ROBOTICS INTEREST GROUP

A View From the Bench

Technical Program:

"Automation of Bioanalytical Ligand-Binding Assays Using Modular Robotic Scripts as a Generic Template in Support of Discovery Biotherapeutic Programs"

Speaker: Jia Duo
Analytical and Bioanalytical Development
Bristol-Myers Squibb

"Automation of Sample Preparation for Quantitative Liquid Chromatography Mass Spectrometry"

Speaker: Bernard K. Choi
Bioanalytical Research Group
Merck

"Computational Approaches to Accelerate Drug Discovery"

Speaker: William J. Welsh
Robert Wood Johnson Medical School

Dinner will be served buffet style:

Penne & Rigatoni with your choice of two of Marinara, or Pesto

Broiled Salmon- Served in a Lemon & Dill Sauce

Prime Rib with Red Wine Sauce

Chocolate Chip Cookies, Chocolate Fudge Brownies, Chocolate Candy Bars and Kisses

Soft Drinks, Coffee, Tea, Decaffeinated Coffee & Bottled Water

Date: **Wednesday, November 5, 2014**
Times: 3:30 to 8:30 PM
Dinner 4:00 - 6:00 PM
Technical Program 6:00 PM
Coffee and desserts 8:00 PM
Place: Holiday Inn Somerset
195 Davidson Avenue
Somerset, NJ 08873
Cost: Attendance is free but pre-registration is requested. A buffet dinner and vendor exhibition will be held.

To register for the meeting, use the meeting link on the LRIG Mid-Atlantic Chapter's web site: **http://my.lrig.org/LRIGChapterMidAtlantic/Home/**

Site registration is required to access the meeting page. For questions about the meeting to become a sponsor, or present at a future meeting, please contact Kevin Olsen at: **OlsenK@Mail.Montclair.Edu**

CAREERS IN TRANSITION MEETINGS

Job Hunting??

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

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

Date: **Monday, November 10, 2014**
New from now on is a second CIT meeting in East Windsor on the third Monday. Contact Bill for details.
Times: Meeting 5:30 - 9:00 PM
Pizza snack and soda 6:30 PM
Place: Students 2 Science, Inc.
66 Deforest Avenue
East Hanover, NJ
Cost: $5.00 for pizza and soda

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

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

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

NORTH JERSEY MASS SPECTROMETRY DISCUSSION GROUP

The evening is free for attendees, courtesy of our sponsor, AB Sciex.

Date: **Tuesday, November 11, 2014**
Times: 5:30 - 9:00 PM
Place: Holiday Inn Somerset-Bridgewater
195 Davison Avenue
Somerset, NJ
Cost: Free — courtesy of our sponsor, AB Sciex

Additional details and a full schedule of events will be posted on our website at **http://www.njacs.org/topical-groups/mass-spectrometry**.

NORTH JERSEY CHROMATOGRAPHY GROUP

Advance of Large Molecule Separation and Characterization

Sponsored by: Wyatt Technology and Waters. Corp.

Date: **Monday, November 17, 2014**
Times: 6:30 - 9:00 PM
Place: DoubleTree Hotel, Somerset
200 Atrium Drive, Somerset, NJ
Cost: $10.00

Additional details and a full schedule of event will be posted on our website at **http://www.njcg.org/**

NORTH JERSEY CANDIDATES

The Nominating Committee of the North Jersey ACS Section is pleased to present the slate of candidates listed below in alphabetical order by category for election to offices to begin in 2015.

Ballots will be distributed to members in the fall.

Candidates for Chair-Elect
Luciano Mueller
Matthew Mongelli

Candidates for Councilor
Amy Balija
Alan Cooper
Ronald Doll
Jacqueline Erickson
Jonathan Ho
Matthew Mongelli
Donald Truss

CONGRATULATIONS TO THE 2014 CREATIVITY IN MOLECULAR DESIGN AND SYNTHESIS AWARD RECIPIENT, DAVID W.C. MAC MILLAN!

Dave MacMillan was born in Bellshill, Scotland and received his undergraduate degree in chemistry at the University of Glasgow, where he worked with Dr. Ernie Colvin. In 1990, he left the UK to begin his doctoral studies under the direction of Professor Larry Overman at the University of California, Irvine. In 1996, he moved to a postdoctoral position with Professor Dave Evans at Harvard University where his studies centered on enantioselective catalysis. He began his independent career at University of California, Berkeley in July of 1998 before moving to the California Institute of Technology in June of 2000. In 2003, he was promoted to Full Professor at Caltech, before being appointed the Earle C. Anthony Chair of Organic Chemistry in 2004. In 2006, Dave moved to the east coast of the US to take up a position at Princeton University as the A. Barton Hepburn Chair of Chemistry and Director of the Merck Center for Catalysis at Princeton University. Dave became the Princeton Chemistry Department Chair in July of 2010, and in July of 2011 became the James S. McDonnell Distinguished University Chair.

The MacMillan research program is centered on chemical synthesis with specific interests in new reaction development, enantioselective organocatalysis and the rapid construction of molecular complexity. The MacMillan group currently consists of approximately 40 coworkers. Dave was recently inducted into the Fellowship of the Royal Society (2012) and elected to the American Academy of Arts and Sciences (2012). He has received several awards including the Aldrich ACS Award for Creativity in Organic Synthesis (2011), the UC Irvine Distinguished Alumni Award (2011), the Mitsui Catalysis Award (2011), Mukaiyama Award (2007), ISHC Award in Heterocyclic Chemistry (2007), ACS Cope Scholar Award (2007), Thieme-IUPAC Prize in Organic Synthesis (2006), Elias J. Corey Award for Outstanding Original Contribution in Organic Synthesis by a Young Investigator (2005), the Tetrahderon Young Investigator Award (2005), the Corday-Morgan Medal (2005), and a Woodward Scholarship Award from Harvard University (2001).

Dave is currently editor-in-chief of the new RSC journal “Chemical Sciences” and is a member of the Chemical Communications, Tetrahedron, Tetrahedron Letters, Chemistry-an Asian Journal, Advances in Catalysis and Synthesis editorial advisory boards.

Date: **Friday, December 5, 2014**
Place: Rutgers University
Busch Campus
Piscataway, NJ
Cost: Dinner $20.00;
Students $10.00

More information will be posted on the North Jersey website at **www.njacs.org**.

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, Benedicts (Founder's Hall), Riverdale, NY. Dr. Pamela K. Kerrigan will chair the meetings.

Friday, November 21

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

GLOBAL CLIMATE CHANGE SYMPOSIUM AND WORKSHOP

Tentative Schedule

9:00 – 9:45 AM — Lead Speaker to stress and excitement of this issue

9:45 – 10:30 AM — Dr Jerry Bell "The Global Climate Change Toolbox and its Importance for Education Strategies"

10:30 – 10:40 AM — First Breakout leader (Grades K-6)

10:40 – 10:50 AM — Second Breakout leader (Grades 7 – 12)

10:50 –11:00 AM — Third Breakout leader (College Level)

11:00 – 11:15 AM — Coffee Break

11:15 AM — Breakout sessions in St John's Labs

12:00 PM — Regroup and reports on breakout sessions

12:30 PM — Panel Discussion

1:00 PM — Adjourn

Optional Group Lunch at Local Restaurant

Date: **Saturday, November 1, 2014**
Time: 8:30 AM – 1:00 PM
Place: St. John's University
8000 Utopia Parkway
Jamaica, NY
Rooms: TBA
Cost: $25 for Teachers and ACS Members; $10 for Students, Unemployed, Retired; $35 for Other Interested People. (Teachers can obtain Professional Development Credit)

Please register online at
www.newyorkacs.org/meetings/Global.php

Credit cards can be accepted through paypal.

LONG ISLAND SUBSECTION

Surface Crystal Growth and Stabilization of Amorphous Pharmaceutical Solids

Speaker: Daniele Musumeci
York College - CUNY.

Glasses are amorphous materials that combine the mechanical stability of solids with the microscopic spatial uniformity of liquids, making them ideal for many applications, including electronics, bio-preservation and drug delivery. Amorphous solids, however, are inherently unstable, and can crystallize over time, sometimes surprisingly fast. Recent studies have discovered that as organic liquids are cooled to become glasses, crystal growth at the free surface can be substantially faster than in the interior. This phenomenon is uncommon for inorganic materials and it is generally terminated as the glasses are heated to become liquids. We have applied scanning electron microscopy (SEM) and real-time atomic force microscopy (AFM) to investigate the surface crystal growth on glassy indomethacin (IMC), an anti-inflammatory drug, in the alpha and gamma polymorphs. The high-resolution microscopies provided complete micro-structural details of surface crystal growth. We observed that surface crystals rise hundreds of nano-meters above the amorphous surface as they grow laterally, and are surrounded by depletion zones. Upon heating above the glass transition temperature, the onset of liquid flow embeds upward-growing surface crystals and terminates their growth, but this effect is remarkably mild for the gamma polymorph

of IMC. This effect arises because the velocity of liquid flow exceeds the growth front velocity, causing the wetting and embedding of upward-growing surface crystals. These findings are important for understanding and predicting the stability of amorphous drugs.

During the seminar, we will discuss the educational pathways and the career opportunities provided by the B.S. degree program in Pharmaceutical Science at York College.

Date: Thursday, November 6, 2014
Times: Social 5:30 PM
(Light refreshments)
Seminar Start 6:00 PM
Place: Queensborough Community College
Science Building, Room S-112

NEW YORK NANOSCIENCE DISCUSSION GROUP

2014-2015 Sessions

Speakers to be announced

Hosted by: New York University
Department of Chemistry

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: Tuesday, November 11, 2014
Tuesday, February 3, 2015
Tuesday, April 7, 2015
Times: Refreshments at 7:00 PM
Science at 7:30 p.m.
Place: NYU Silver Center
Room 1003 (10th floor)
31 Washington Place
(between Washington Square East and Greene Street)
New York, NY

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

Topical Group History: h**ttp://www.nyu.edu/projects/nanoscience**

HUDSON-BERGEN CHEMICAL SOCIETY — JOINT MEETING WITH SIGMA XI CHAPTER OF RAMAPO COLLEGE, AMERICAN SOCIETY FOR BIOCHEMISTRY AND MOLECULAR BIOLOGY, AND PHI LAMBDA UPSILON

Organocascade Reactions

Speaker: Stacey Brenner-Moyer, PhD
Rutgers University, Newark, NJ

Organocascade reactions are efficient green chemical methods for rapidly building molecular complexity, because they utilize an organic compound to catalyze the formation of multiple new bonds and stereocenters in a single transformation. Cascade reactions using diphenylprolinol silyl ether organocatalysts typically involve the combination of iminium- and enamine-catalyzed reactions. Using this class of organocatalysts, the Brenner-Moyer research group has been investigating the development of synthetically useful cascade reactions, and our progress in this area in recent years will be discussed.

Stacey obtained her PhD from Stanford University, working with Prof. Paul Wender, and was a postdoctoral research associate in the laboratory of Prof. Steve Ley at the University of Cambridge in England. She began her independent career at the City University of New York at Brooklyn College, where she earned the NSF CAREER award in recognition of her achievements, and potential for future achievements, in the field of organocatalysis research. She is presently an Associate Professor at Rutgers University — Newark.

Date: Friday, November 14, 2014
Times: 5:00 p.m. Social
5:30 p.m. Dinner
6:30 p.m. Lecture
Place: Alumni Lounge, SC-138
Ramapo College of New Jersey
Mahwah, NJ

Reservations: Dr. Jay R. Carreon (201) 684-7710, e-mail: **jcarreon@ramapo.edu** **by November 10, 2014 by 1:00 PM**,

HIGH SCHOOL TEACHERS TOPICAL GROUP

Engineering Shape: The Novel Geometries of Colloidal Self-Assembly

Speaker: Stefano Sacanna
New York University

Shape and chemical anisotropy play fundamental roles at the colloidal scale, as they can govern the autonomous organization of particles into precise hierarchical structures and ultimately into a desired new material. In this talk, I will present an emulsion-based methodology to design and mass-produce building blocks featuring anisotropic shapes and interactions. The method is based on chemically reactive emulsion droplets that can be polymerized, reshaped and functionalized in bulk. I will further highlight how we use these building blocks to develop heuristic rules to create self-assembling colloidal systems.

Date: Friday, November 14, 2014
Times: Social and Dinner — 5:45 PM
Meeting — 7:15 PM
Place: Social and Dinner — TBD
Meeting — 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: On street parking is free after 6:00 PM.

WESTCHESTER CHEMICAL SOCIETY

Special Seminar "Efficient Biomass Pretreatment Using Ionic Liquids Derived from Lignin and Hemicellulose"

Speaker: Aaron M. Socha, PhD
Assistant Professor
Department of Chemistry
Director
Center for Sustainable Energy
Bronx Community College
Bronx, NY

Ionic liquids (ILs), solvents composed entirely of paired ions, have been used in a variety of process chemistry and renewable energy applications. Imidazolium-based ILs effectively dissolve biomass and represent a remarkable platform for biomass pretreatment. Although efficient, imidazolium cations are expensive and thus limited in their large-scale industrial deployment. To replace imidazolium-based ILs with those derived from renewable sources, a series of tertiary amine-based ILs were synthesized from aromatic aldehydes derived from lignin and hemicellulose, the major byproducts of lignocellulosic biofuel production. Compositional analysis of switchgrass pretreated with ILs derived from vanillin, p-anisaldehyde, and furfural confirmed their efficacy. Enzymatic hydrolysis of pretreated switchgrass allowed for direct comparison of sugar yields and lignin removal between biomass-derived ILs and 1-ethyl-3-methylimidazolium acetate. Although the rate of cellulose hydrolysis for switchgrass pretreated with biomass-derived ILs was slightly slower than that of 1-ethyl-3-methylimidazolium acetate, 90–95% glucose and 70–75% xylose yields were obtained for these samples after 72-h incubation. Molecular modeling was used to compare IL solvent parameters with experimentally obtained compositional analysis data. Effective pretreatment of lignocellulose was further investigated by powder X-ray diffraction and glycome profiling of switchgrass cell walls. These studies showed different cellulose structural changes and differences in hemicellulose epitopes between switchgrass pretreatments with the aforementioned ILs. The concept of deriving ILs from lignocellulosic biomass shows significant potential for the realization of a "closed-loop" process for future lignocellulosic biorefineries and has far-reaching economic impacts for other IL-based process technology currently using ILs synthesized from petroleum sources.

Aaron Socha has been at Bronx CC since 2011, and began at Center for Sustainable Energy in 2013. His early career focused on drug discovery from marine microbes where he performed structure elucidations and syntheses of bisanthraquinone and peptide antibiotics. As a postdoc at Brown University Dept. of Chemistry, he researched microbial lipid production and developed a fascination with renewable fuels. He now works closely with Lawrence Berkeley National Lab's Joint BioEnergy Institute to prepare and evaluate biomass-derived ionic liquids. He holds patents in these areas and is currently participating in

the NSF ICorps program. With a recent award through the CUNY 2020 program, the Center for Sustainable Energy will be building a $4M biofuel and green chemistry lab over the next 24-36 months. Aaron received his BS from Fordham University and his PhD from University of Rhode Island College of Pharmacy.

Date: Wednesday, November 19, 2014
Times: Refreshments 5:30 PM
Lecture 6:00 PM
Place: Westchester Community College
Gateway Building, Room 110
75 Grasslands Road
Valhalla, NY
Cost: Free and Open to the Public

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

WESTCHESTER CHEMICAL SOCIETY

***** Additional Lectures *****

Special Seminar – "What's Beyond the Lithium-Ion Battery"

Speaker: Lin-Feng Li, PhD
Bettergy Corp.
Peekskill, NY

Since its introduction in 1990, the lithium ion battery has gained tremendous market share in the rechargeable battery market place due to its superior energy density. The battery has found widespread applications in portable electronics, mobile communication devices as well as Hybridized Electric Vehicles (HEVs), Plug-in Hybridized Electric Vehicles (PHEVs) and Electric Vehicles (EVs). The specific energy of the lithium ion battery has nonetheless reached the plateau – room for improvement is now limited. Nonetheless, there is a constant driving force to develop the higher energy density (Wh/kg), low cost battery that can greatly extend the range of electric vehicles. Researchers are now focusing more and more on the chemistry beyond the lithium ion battery. In this presentation, the state-of-the art R&D work in the field will be reviewed and discussed.

Lin-Feng Li has had extensive and successful experience in managing multiple million dollar DoD (US Navy, Army and DARPA), DOE, NASA, NSF and NYSERDA SBIR (Small Business Innovation Research) and non-SBIR programs as the principle investigator. Some of these projects have been successfully commercialized in batteries and battery-related products. Dr. Li has gotten BS and MS degrees in chemistry and in applied physics from Tsinghua University, Beijing, China and his PhD in chemistry from Case Western Reserve University, Cleveland, Ohio. He has been a research associate at The National Key Laboratory of Coordination Chemistry in Nanjing, China. After completing his PhD, Dr. Li rose from a position as a research staff member to Vice-President and Chief Technology Officer of eVionyx, Inc. (a subsidiary of Reveo, Inc.). He has been Vice-President of Product Development for Zinc Matrix Power Inc. (now Zpower) in Camarillo, CA and is founder, President and CTO of Bettergy Corp. He has more than fifteen patents, either granted or pending, and more than thirty publications and presentations.

Date: Tuesday, December 9, 2014
Times: Refreshments 5:30 PM
Lecture 6:00 PM
Place: Westchester Community College
Gateway Building, Room 110
75 Grasslands Road
Valhalla, NY
Cost: Free and Open to the Public

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

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.

HUDSON-BERGEN CHEMICAL SOCIETY AND THE SCHOOL OF NATURAL SCIENCES OF FAIRLEIGH DICKINSON UNIVERSITY

16th Student Research Symposium and Award Night

Students from colleges in our area presented their research at the 16th Student Research Symposium and Award Night, held on April 25 on the Metropolitan Campus of Fairleigh Dickinson University and organized by the Hudson-Bergen Chemical Society and the School of Natural Sciences of FDU.

Trupti Patel (left) and Iwon Sato (right) presented their research work done under the guidance of Dr. Ish Kumar (not in the photo). Iwon Sato was also the recipient of the Student Award (chemistry major with highest GPA).

Niharika Bollu (left) and Manasa Peddineni (right) presented their research. Mentors were Dr. M. Leonida (center), and. Dr. A. Benzecry (not in the photo).

Thong Vo (senior, FDU) presenting his poster to a group of participants.

(Photos courtesy of Mihaela Leonida)

NEW YORK INORGANIC TOPICAL GROUP

2014 Frontiers of Inorganic and Organometallic Chemistry Lecture Symposium and 1st Annual ION Poster Session

The Inorganic and Organometallic Topical Group hosted the third annual Frontiers of Inorganic and Organometallic Chemistry lecture symposium and the 1st annual ION (Inorganic, Organometallic, Nanoscience) Poster Session on Friday, September 19, 2014 on the campus of Columbia University. The event attracted a record audience of more than 100 academic and industrial chemists, including graduate and undergraduate students, to hear about new developments in inorganic chemistry from chemists in the NY metro area.

The symposium featured presentations by NY section members Ged Parkin (Columbia University), Jianfeng Jiang (Yeshiva University), Adam Fischmann (Cytec Industries), and Daniela Buccella (NYU). Geoffrey Coates (Cornell University) delivered the keynote address entitled "Bimetallic Catalysis – Are Two Metals Better Than One? Applications in the Synthesis of Natural Products, Fine Chemicals, Pharmaceuticals, and Polymers". The Topical Group co-chairs James Camara and Kathleen Kristian served as session chairs for the symposium.

The first annual ION Poster Session, immediately following the symposium, featured informal poster presentations by graduate and undergraduate students from Sarah Lawrence College, Long Island University, Brooklyn College, College of Staten Island, John Jay College, and Columbia University.

The Inorganic and Organometallic Topical Group is committed to supporting the mission of NY-ACS by providing programming to encourage 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.

Prof. Geoffrey Coates of Cornell University delivers the keynote address to a crowd of more than 100 NY Local Section chemists at the 2014 Frontiers of Inorganic and Organometallic Chemistry Lecture Symposium.

Speakers and NY Local Section chemists enjoy poster presentations at the 2014 ION Poster Session. Left: Presenters Gang Li of Columbia University and Guoqi Zhang of John Jay College. Right: Presenters Olivia Kool of Long Island University and Shejla Pollozi of Sarah Lawrence College.

(Photos courtesy of Kathleen Kristian)

NOMINATING COMMITTEE MEETS IN DECEMBER

The Nominating Committee of the New York Section will meet in December to select candidates for the 2015 elections.

Positions available are:

Chair-elect for 2016
Treasurer for 2016 - 2017
Directors-at-Large for 2016
Councilors and Alternate Councilors for 2016 - 2018

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 15**. Thank you.

Call for Presentations

LABORATORY ROBOTICS INTEREST GROUP — MID ATLANTIC CHAPTER

The View From the Bench

The Mid Atlantic Chapter of the Laboratory Robotics Interest Group is seeking presentations for their November meeting. Presentations about new and innovative laboratory technologies are being sought especially those involving some aspect of automation or robotics. Other topics of interest include informatics, nanomaterials, pharmaceutical dosage form testing, autonomous data collection using, and novel analytical procedures. We expect approximately 100 persons to attend the November meeting and a student poster event will be held in conjunction with the technical program.

Date: **Wednesday, November 5, 2014**
Times: Technical Program 7:30 PM
Place: Holiday Inn
Somerset, NJ

To submit a presentation abstract, please contact Kevin Olsen at Montclair State University, **OlsenK@Mail.Montclair.Edu**

The chapter web site is: **http://my.lrig.org/LRIGChapterMidAtlantic/home/**

Call for Nominations

2015 LEO HENDRIK BAEKELAND AWARD

The North Jersey Section of the American Chemical Society is soliciting nominations for the 2015 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, 2015.

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, 2014**, to:

Dr. Les McQuire
ACS North Jersey Section Awards Chair
17 Crown Drive, Warren NJ 07059

SPI TO HONOR 2015 INNOVATION IN BIOPLASTICS AWARD WINNER AT NPE2015

For the first time, SPI: The Plastics Industry Trade Association and the SPI Bioplastics Council will announce the winner of the Innovation in Bioplastics Award at NPE2015 in Orlando, FL

WASHINGTON — SPI: The Plastics Industry Trade Association and the SPI Bioplastics Council recently announced that NPE2015, in addition to being the premier event of the entire plastics industry, will also host, for the first time, the winner of the 2015 Innovation in Bioplastics Award.

SPI and its Bioplastics Council have been receiving submissions for the 2015 Innovation in Bioplastics Award since officially opening the competition earlier in September. Announcing next year's winner at NPE2015 gives the award an additional layer of prestige and signifies the important role that the bioplastics sector will play in the future of the plastics industry as a whole.

Past winners of the Innovation in Bioplastics Award include Avantium, which won the first award in 2013 for its development of polyethylene furanoate (PEF), a packaging material with superior barrier qualities that offered new opportunities to beverage makers. Teknor Apex won the 2014 Award for the development of Terraloy® PLA compounds that exhibit both high-impact and heat-resistant properties. Entries to the contest are judged on innovation, sustainability measures as well as marketplace impact.

Companies can submit multiple entries for different bioplastics materials, products or processes, provided that they complete and submit a separate entry form for each innovation they submit. The award application can be found on the SPI Bioplastics Council's website and entries will be accepted **until November 14, 2014**.

Learn more about the Bioplastics Council at **http://www.bioplasticscouncil.org/**. Award program inquiries should be directed to Tania Farries, manager, regulatory and technical affairs at SPI, at **tfarries@plasticsindustry.org**.

WANT MORE ARTICLES

When you tell our advertisers that you saw their ads here they have more confidence in our newsletter's viability as an advertising medium. They advertise more. This supports our many activities.

Call for Volunteers

MARM 2016

The New York Section will be hosting MARM 2016, June 9-12, 2016 at the College of Mount Saint Vincent, Riverdale, NY 10471. The section will be celebrating its 125th Anniversary during its event. The theme has yet to be determined. The General Chairs for this meeting are Dr. Pamela Kerrigan and Dr. Daniel Amarante from the College of Mount Saint Vincent's Division of Natural Sciences. To volunteer in planning and/or for further information, please contact them at the following emails:

Pamela.kerrigan@mountsaintvincent.edu
or
Daniel.amarante@mountsaintvincent.edu

Others

EAS SHORT COURSES

Short Courses for Professional Development

Check out the preliminary list of EAS 2014 short courses. EAS half-day, one-day and two-day short courses emphasize a wide range of topics and include:

Interactive Discussions

Case Studies for Illustration

Practical and Problem Solving Tips

For complete information, go to **http://easinc.org/wordpress/?page_id=4810902** Please register **by October 20**.

(continued on page 22)

OTHERS

(continued from page 21)

NEW JERSEY INSTITUTE OF TECHNOLOGY

Otto H. York, Department of Chemical, Biological and Pharmaceutical Engineering — Graduate Seminar Series — Fall 2014

November 3
"Utilizing Twin Screw Extrusion Technologies to Enable Valuable Pharmaceutical Products"
Dr. Chad D. Brown
Principal Scientist
Merck Research Laboratories.

November 10
"Catalytic Emission Control Technologies for Diesel Vehicles"
Dr. Yuejin Li
BASF.

OPEN TO PUBLIC

Times: Refreshments @2:30PM
Seminars @2:45PM
Place: NJIT
Room 210, Kupfrian Hall

Seminar Coordinator: Professor Roman Voronov, 973 642-4762,
rvoronov@njit.edu

Press Releases

CHEMICAL HERITAGE FOUNDATION

The Chemical Heritage Foundation (CHF) has achieved global success with its first digital game. ChemCrafter, an app for the iPad, has been downloaded by more than 360,000 gamers in 126 countries in just five months.

"We could not be more pleased, or more surprised," said Shelley Wilks Geehr, director of CHF's Roy Eddleman Institute. "We designed ChemCrafter to make the experience of the 20th-century chemistry set accessible to 21st-century kids. We would have been delighted with a tenth as many downloads as we have had so far. Our current and continuing success is beyond all expectations."

CHF boasts the largest public collection of chemistry sets in the world. And in CHF's archives are hundreds of oral histories of leading scientists who grew up in the mid-20th century. Many of them credit their childhood chemistry set with sparking their interest in science. With ChemCrafter, CHF hoped to make the experience of the chemistry set widely available in the 21st century.

The top country by far is Russia with 181,000 downloads. Russian users also created instructional videos for other users, which are available on YouTube. Five other countries have more than 10,000 downloads, led by Thailand with 35,000; China with 31,000; the United States with 25,000; Ukraine with 12,000; and Malaysia with 11,000. Sixteen other countries have more than a thousand downloads: eight countries in Asia and six in Europe plus Canada and Saudi Arabia. The top 22 countries have more than 320,000 downloads. With 40,000 other downloads in 104 countries, ChemCrafter has a truly global base of users.

"We wish we knew why ChemCrafter is popular where it is popular," Geehr said. "Our best guess is that countries that have a strong science education program for students ages 10 to 16 who have limited disposable income are the best places for a free science app. But there could be many other factors at work."

As funding becomes available, CHF hopes to add an Android version of ChemCrafter and to begin development of ChemCrafter 2.

The Alfred P. Sloan Foundation provided major funding for ChemCrafter, with additional support from Roy Eddleman. The app was developed by Blue Cadet Interactive.

ALERT 14-17: CONSIDERATIONS FOR STORING FLAMMABLE AND COMBUSTIBLE LIQUID

Recently, the storage of combustible and flammable liquids in industrial occupancies has gained increased attention. This is due to a number of large fires caused or complicated by the storage of flammable and combustible liquids in inappropriate packaging types.

Among the most reliable and safest storage containers for all classes of flammable and combustible liquids are "relieving-style" steel drums. Relieving-style steel drums are equipped with plastic plugs. When fire-exposed, these fittings can melt, allowing the pressure within the drum to vent in a

safer manner. The Industrial Steel Drum Institute (ISDI) has led the way in ensuring that this container type provides exceptional protection against fires and other hazards. In fact, extensive fire testing at the Southwest Research Institute in San Antonio, Texas has shown that, when protected by an adequate fire sprinkler system, relieving-style 55-gallon steel drums are much safer than other, less fire-resistant packaging when filled with flammable liquids, reducing risks especially for first responders.

Additionally, steel drums retain their structural integrity when exposed to flame, making packaging failure unlikely and reducing the risk of a large volume chemical spill.

The National Fire Protection Association (NFPA) has been especially vigilant in setting out guidelines regarding the proper storage of combustible and flammable liquids. Its code, NFPA 30, details the types of containers suitable for storing these liquids and the rules that must be followed for those that are used. When choosing the appropriate packaging, it is important to follow NFPA 30 and select a product that will provide protection from a catastrophe.

In an educational effort, NFPA recently released a press kit describing the proper use of intermediate bulk containers (IBCs) for storage of combustible and flammable liquids. This important NFPA release was followed by an article in Sprinkler Age magazine. Links to both resources can be found below.

Links for More Information

Read a **recent article** in *Sprinkler Age* magazine, written by Mike Snyder of Dow Corning Corporation and David Nugent of Global Risk Consultants, on the risks associated with unlisted composite IBCs.

Download the **NFPA's tool kit** on IBC fire risk.

Read **ISDI's Alert 14-08 for mo**re information about choosing the most appropriate packing type for your product.

NEW POLYURETHANE SPRAY ELASTOMER INCREASES DURABILITY FOR INFRASTRUCTURE PROTECTION

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