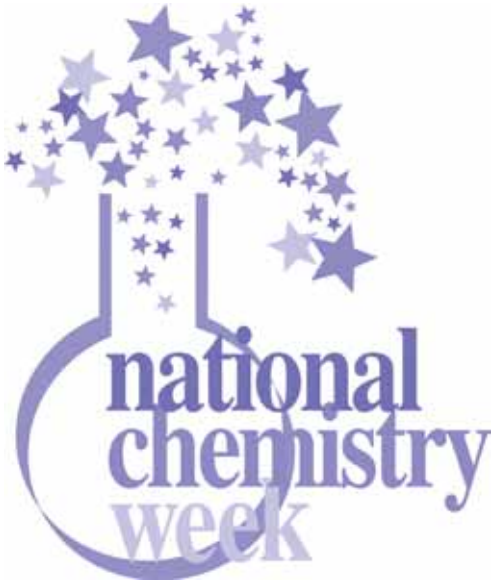
THE Indicator

OCTOBER 2008 Vol. 89 • No. 8 ISSN0019-6924



Saturday, October 25, 2008

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THE Indicator

CIRCULATION: 10,500

The monthly newsletter of the New York & North Jersey Sections of the American Chemical Society. Published jointly by the two sections.

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The Indicator (ISSN0019-6924) is published monthly except July and August by the New York and North Jersey Sections of the American Chemical Society, Office of Publication 10500 Horizon Drive, Spring Hill, FL 34608-5761. **Periodicals Postage Paid at Spring Hill, Florida and at additional mailing offices.**

POSTMASTER: **Send address changes to American Chemical Society, Department of Member and Subscriber Services, *THE INDICATOR*, P.O. Box 3337, Columbus, OH 43210, or e-mail: service@acs.org.**

All views expressed are those of the editor and contributors and do not necessarily represent the official position of the New York and North Jersey Sections of the American Chemical Society unless so stated. **Subscription price included in dues paid by New York and North Jersey Section members. Subscription price to non-members of either Section $20.00 per year. To subscribe, make checks payable to *The Indicator* and mail to the Manager/Editor (see top of left column on this page.**

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**

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Deadline for items to be included in the December 2008 issue of *The Indicator* is October 15, 2008.

Contribute to *The Indicator*

The Indicator is interested in adding new features to the publication. Your input would be appreciated. Please let us know which type of feature you would like to see in future issues; i.e., book reviews, member news, short articles about your research or other ideas. Would you be willing to assist in gathering or writing such material?

Contact the Editor at:
linatkins@tampabay.rr.com or Fax: (352) 200-5195

OCTOBER HISTORICAL EVENTS IN CHEMISTRY

by Leopold May, The Catholic University of America. Washington, DC

October 1, 1867
Wilder D. Bancroft, a researcher in electrochemistry; was the founder and Editor of the Journal of Physical Chemistry and served as Editor from 1896 to 1932 as well as President of ACS in 1910. He made the first systematic study of oxidation cells.

October 2, 1908
One hundred years ago, Walter Baird, an analytical instrument maker, was born. He founded the Baird Corporation.

October 4, 1957
Fifty years ago, the first artificial earth satellite, Sputnik, was launched by USSR.

October 5, 1861
The Chemical Society of Union College, the precursor of the American Chemical Society, was founded on this day.

October 6, 1807
Two hundred years ago, Humphry Davy at the Royal Institution isolated potassium.

October 6, 1783
Two-hundred and twenty-five years ago, François Magendie was born. He performed studies in nutrition and experimental pharmacology and did research on the importance of proteins and the effects of morphine, strychnine, and other chemical agents on human beings.

October 7, 1939
Harold W. Kroto, who researched carbon chain molecules by using combination of synthesis, spectroscopy, and radioastronomy, was born on this date. In 1996, he shared the Nobel Prize in Chemistry with R. F. Curl, Jr., and R. E. Smalley for their discovery of fullerenes.

October 8, 1883
One-hundred and twenty-five years ago, Otto H. Warburg was born. He was a researcher on respiration and cancer and received the Nobel Prize in Physiology or Medicine in 1931 for his discovery of the nature and mode of action of the respiratory enzyme.

October 15, 1608
Four-hundred years ago, Evangelista Torricelli, the first man to create a sustained vacuum, was born. He discovered the principle of the barometer

October 21, 1833
One-hundred and seventy-five years ago, Alfred Nobel, who invented dynamite, was born. On November 27, 1895, Nobel signed his last will providing for the establishment of the Nobel Prize. He later constructed companies and laboratories in more than 20 countries all over the world.

October 22, 1903
Fifty years ago, George Beadle received the Nobel Prize in Physiology or Medicine with Edward L. Tatum and Joshua Lederberg for their discovery that genes act by regulating definite chemical events researcher in chemical genetics. He was a researcher in chemical genetics.

October 23, Any Year
Mole Day, 6.02 a.m. through 6.02 p.m. (Mole time); Mole Moment: 50.453 s after 6.42 p.m.

October 29, 1923
Carl Djerassi, a researcher in structure elucidation of natural products, was born on this date. He synthesized medicinals, and applied computer artificial intelligence to chemical problems. In addition, he writes novels and plays.

October 30, 1895
Gerhard Domagk, who was born on this day, discovered the properties of prontosil, rangered dye containing sulfanilamide. In 1939, on instructions from German government, he refused the Nobel Prize in Chemistry. He also reported that isoniazid had anti-tubercular properties in 1952, which opened the age of chemotherapy.

For more historical facts on chemistry, visit Dr. May's website at **http://faculty.cua.edu/may/**.

THIS MONTH IN CHEMICAL HISTORY - I

Harold Goldwhite, California State University, Los Angeles
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The word “chemurgy” was not in my vocabulary until a couple of months ago. Perhaps that just shows my limitations. Let me flash back to the occasion when it was thrust upon my consciousness. I was browsing the 25 cent table at my local public library sale (last of the big-time spenders) and encountered a must-buy title: “Modern Chemists and their Work” by Christy Borth, published by the New Home Library, New York in 1943. It’s actually a “New Enlarged Edition” of an earlier book by this author; “Pioneers of Plenty” was first published in 1939 and the Publishers’ foreword refers to the events of 1939 through 1943 that make the book even more timely.

A Google search on Christy Borth yielded no direct biographical information, but plenty about the books he published. (His gender, even though Christy is ambiguous, is clarified by reference to him in the Publishers’ foreword). He seems to have been a successful author of popular books on technology and science. His titles include “True steel; the story of George Matthew Verity and his associates”; “Masters of mass production”; and “Mankind on the move; the story of highways”.

The introduction to “Modern Chemists and their work” is titled simply “Chemurgy” and the whole book, despite its title, reads as a propaganda piece for chemurgy. The word seems to have been coined by William J. Hale, a chemist, and was first publicized in his book “The Farm Chemurgic” published in 1934. It means applied chemistry aimed at making industrial products from agricultural raw materials derived from both animals and plants. Hale gets three full columns in Wyndham D. Miles “American Chemists and Chemical Engineers”, ACS, 1976. Born in 1876 he received bachelor’s and master’s degrees from Miami University of Ohio, and a Ph.D. in chemistry from Harvard in 1902. He traveled to Germany on a fellowship and returned to the University of Michigan, rising through the ranks to Associate Professor. Recruited by Dow in 1917 he headed their organic chemistry research division. He was awarded 45 patents while at Dow, including one for the Dow process of converting chlorobenzene to phenol.

In 1935 Hale retired to become a consultant, and devoted much of the rest of his career to chemurgy. In that year he founded the National Farm Chemurgic Council which involved such prominent figures as Henry Ford and Francis P. Garvan. The Council stimulated the U.S. Department of Agriculture to establish four regional agricultural research laboratories to explore industrial applications of farm crops.

While Hale was undoubtedly influential in reinvigorating chemurgy, we should not forget perhaps the greatest pioneer of this area, George Washington Carver. I have written previously about Carver, and I will just remind my readers that Carver used cotton, sawdust, peanuts, and sweet potatoes as far back as the first two decades of the twentieth century to make products as varied as insulating board, synthetic stone, washing powder, bleach, and glue.

Discussions of chemurgy have an interesting resonance in 2008. Hale, among others, back in 1935 saw the important potential of ethanol as an additive or substitute for gasoline in automobile fuel. In my next column I will examine the topics in the Borth book that may be significant in today’s economy.

THIS MONTH IN CHEMICAL HISTORY - II

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In my last column I introduced a book published in 1943 : “Modern Chemists and their Work” by Christy Borth which is devoted to chemurgy, the application through chemistry of agricultural products to industry. There are some striking passages in this book that seem relevant to current concerns with the lessening availability of oil, and the steadily increasing prices of oil-based products including gasoline.

In a reported discussion with Charles Franklin Kettering, Vice President for Research at General Motors, the following exchange occurs: Kettering (K): How do we run[automobiles] now? Respondent (R): With gasoline. K: Where do we get gasoline? R: We distil it from petroleum. K: What is petroleum? R: Oil that is in the earth. K: How did it get there? R:The chances are that it came from decaying plants and so forth. K: Where did the plants come from? R: They grew. K: How did they grow? R: The sun made them grow. K: So we’re running [automobiles] now by “radio” – by radiation of the sun, seasoned forty million years in the ground. Maybe we can learn how to pick up our sun-energy direct, instead of going along on that long-drawn-out process. … I’m sure we can grow all our fuel after a while, because all of the fuel that we have has been grown.

One of the first endeavors of the chemurgic movement was to introduce ethanol as a blending agent in gasoline (sound familiar?). They supported a pilot plant for Agrol, a gasoline-ethanol blend. The petroleum industry was not amused. By 1938, because of financial and administrative problems, the Agrol plant was closed.

Chemurgy was prominent during World War II; synthetic rubber ingredients were processed from corn, and other plants such as guayule were studied for rubber production. But after the war the surge in petrochemical production swept aside chemurgic products, and the National Farm Chemurgic Council, founded by William J. Hale in 1935, was wound up in 1977. And now we need it – or something like it.

Many current processes being researched by the chemical industry and academics are examples of what would have been termed chemurgic studies in the old days. One example is the quest for biodegradable packaging materials derived from natural products. These could beneficially replace polyethylene, an omnipresent nuisance which contaminates our waterways and the oceans and is a hazard to wildlife. Now that even the petroleum industry has (grudgingly?) embraced ethanol blends with gasoline, many studies are under way on processing materials that are relatively waste agricultural products (corn husks, sawdust) into ethanol. Borth’s book is visionary for many possible applications of chemurgy: plastics from soy beans that could replace many metal body-parts in automobiles, lightening the cars and improving their mileage standards; and fibers and fabrics from casein obtained from the whey in cheese manufacturing.

With current concerns about the increasing prices of foodstuffs around the world, perhaps it is time to call for the New Chemurgic Movement. This would have as its object making useful products from plant and animal materials that have no use as foodstuffs. That’s a challenge for chemistry in the 21st. century.

A SNAPSHOT OF CHEMISTRY FROM THE FALL OF 1908

It has often been observed that whiles times may change, people don't. While the tools we use and the methods we employ may be vastly different, society may create the same challenges to chemists 100 years from now that are present today. Indeed looking 100 years into the past shows that the issues of pure food, electric cars, and substance abuse were very much on the minds of chemists.

A quick look through the pages of the Journal of the American Chemical Society and the popular press shows that food safety and purity were clearly two of the hottest research topics of 1908.

Ordinary optical microscopy was emerging as a powerful new tool in the detection of impure or adulterated foods. The 1906 Pure Food and Drug Act had only been on the books for two years but unscrupulous manufactures had long experience in hiding adulterants. While the work of chemists was praised as being crucial to the success of the new act, many of the then current analytical methods were not sufficiently specific to distinguish the adulterant from the pure food. The federal government's Bureau of Chemistry (the agency charged with enforcing the Pure Food and Drug Act) established a new microscopy section under the direction of a one B.J. Howard. The section consisting of himself and his assistant W.J. Young.

Some common food adulterants such as sawdust, seeds, and sand were visible to the naked eye or under a magnifying glass. The Bureau of Chemistry's scientists expanded on this idea. Pepper for instance was commonly adulterated by the addition of ground peas or beans resulting in an excess of starch that was easily detected by a chemist. The dishonest producer counteracted this excess by adding ground olive pits or pepper shells to the pepper. But under the microscope the angular pepper grains were easily distinguished from the rounded grains of peas and beans. Expensive coffee was often diluted by adding inexpensive chicory but the two substances were so alike that they could not be distinguished by the available chemical tests. But coffee made from beans has a very different appearance under the microscope from chicory which is made from roots.

Today we are accustomed to using agars from seaweed or any number of different gums as thickening agents in food products. In 1908 however, the chemists were shocked to discover that these materials, along with corn starch, were present in jams, jellies, and ice cream. Their chemical analyses had not previously distinguished the thickeners from the fruit. As with other materials, microscopic examination revealed grains of cornstarch and distinctive microstructures formed by the agars.

Few of the adulterants discovered by the microscopists at the Bureau of Chemistry were particularly harmful. Lemon oil diluted by turpentine however was not so benign. Before 1908 the method to detecting this adulterant was to distill 10% of the oil and compare the optical rotation of the distillate and the original oil. If the lemon oil was pure, the difference in optical rotation would not be greater than 2 degrees, 57 minutes. This technique was shown to detect turpentine in concentrations down to about 3%. The method was highly dependent on the analyst's skill and it did not positively identify turpentine. Another problem was that turpentine's optical rotation was not well established, values ranging from 6 to 30 degrees had been published. H.M. Chase in the Bureau of Chemistry published a new method where the terpenes were converted to nitroso chlorines. When limonene and pinene underwent this reaction they formed distinctive crystals that could be identified under the microscope.

New methods were also introduced for other types of food analyses. Edward Gudeman published a procedure to detect the illegal colorants added to animal feeds for the purpose of disguising impurities. A paper about "reducing sugars" in meats was presented to the American Chemical Society at New Haven Connecticut, by A. Lowenstein and W.P. Dunne. (Reducing sugars contain a free aldehyde or ketone group. They undergo the Maillard Reaction with the amino-groups on proteins to cause browning and alter flavor.)

The purity and freshness of meats was very much on the minds of the editors of the Journal of the American Chemical Society who devoted much of the October 1908 issue to the problems of the "Deterioration and Commercial Preservation of Flesh Foods." W.D. Richardson and Erwin Scherubel began their paper on frozen beef by observing that the complexity of modern life increased the distance between consumers and the sources of their food. The authors identified the corn growing region between Illinois and Kansas as the nation's primary meat producing region and noted that preservation of meats in transit was now a major concern.

The purity of food and drugs was very much an international issue. In 1907 the International White Cross was founded for the purpose of coordinating international efforts at eradicating cancer, tuberculosis, epidemic diseases, drug addiction, alcohol abuse, and food adulteration. Its first congress was held in Geneva in September 1908. The 700 delegates from around the world attempted to create an universally applicable definition of pure food. This was seen as the first step in creating uniform international legislation against adulteration.

The producers of impure foods were not idle at this time. In December of 1908 a letter to the editor appeared in the New York Times in which an unidentified woman castigated the efforts of food producers to have Dr. Harvey W. Wiley removed from his position as head of the Bureau of Chemistry. Since becoming chief chemist at the department of agriculture in 1883, Wiley has been one of the leaders in the campaign for a pure food act and a tireless crusader against food adulteration. The efforts to remove him from the bureau were ultimately unsuccessful and he remained at there until 1912.

In other science news the first successful production of artificial sapphires was announced to the French Academy of Sciences at its meeting in November. Chemists had been trying to develop sapphires from melted alumina but the coloring agent always separated during crystallization. Louis Paris developed a formulation where the blue colorant was mixed with lime and magnesium hydroxide producing a "beautiful blue sapphires crystal."

George I. Kemmerer published a portion of his PhD thesis from the University of Pennsylvania in which he determined the atomic weight of palladium. Palladium had originally been discovered in the early 1800s. No fewer than a dozen previous attempts to establish its atomic weight were made when Kemmerer started work on the problem. He began with the pure metal and prepared chlorine and cyanide salts which were then reduced. Multiple gravimetric determinations with a precision of 0.02 milligrams resulted in a mean value of 106.434 grams per mole. Kemmerer did not have the last word on the subject as other scientists further refined the value. The modern atomic weight is given by the National Institute of Standards and Technology as 106.42.

In November Oliver P. Fritchie a chemist, electrician, and president of the Fritchie Automobile and Battery Company of Denver Colorado, completed an 1,800 mile electric automobile trip from Lincoln, Nebraska to New York City. Fritchie made the trip in twenty-eight days, averaging 90 miles per day. The inventor said that he would have completed the trip sooner had he not stopped for sight seeing in Chicago, Pittsburgh, and Gettysburg. An assistant traveled ahead of Fritchie to arrange locations where the car's batteries could be recharged. Electric car dealerships maintained charging stations but these were few and far between. When asked if an ordinary motorist might make a similar trip, Fritchie was not encouraging. In most towns, he had to do all of the battery recharging himself, often at the nearest electrical generating station. In one small coal mining town east of Pittsburgh he found a movie theater with a broken projector. In exchange for repairing it, the theater owner provided electricity for a battery charge.

The 1908 Nobel Prize for Medicine was shared by the German chemist and bacteriologist, Paul Ehrlick and Chemist Iyla Metchnikoff of the Pasteur Institute. The prize was awarded for research into the chemical binding of antigen to antibody. At the time Metchnikoff was better known among the general public for his then unorthodox idea that with healthy habits, it might be possible to live to the age of 140.

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COUNCILOR TALKING POINTS
SUMMARY OF GOVERNANCE ACTIONS/REPORTS

AMERICAN CHEMICAL SOCIETY
236th ACS NATIONAL MEETING
PHILADELPHIA, PA
AUGUST 17-21, 2008

The following summary is provided to help Councilors report to their local sections and divisions on key actions and discussions of the ACS Council and Board of Directors at the 2008 fall national meeting.

ACTIONS OF THE COUNCIL

Election Results

- The Committee on Nominations and Elections presented to the Council the following slate of nominees for membership on the Committee on Committees beginning in 2009: George M. Bodner, Cherlynlavaughn Bradley, Rigoberto Hernandez, Roland F. Hirsch, Ann H. Hunt, James M. Landis, Carol B. Libby, Roger A. Parker, Howard M. Peters, and Sara J. Risch. By written ballot, the Council elected Cherlynlavaughn Bradley, Rigoberto Hernandez, James M. Landis, Howard M. Peters, and Sara J. Risch for the 2009-2011 term.
- The Committee on Nominations and Elections presented to the Council the following slate of nominees for membership on the Council Policy Committee beginning in 2009: R. Gerald Bass, Ray A. Dickie, Alan M. Ehrlich, Joseph A. Heppert, Pamela D. Kistler, Bonnie A. Lawlor, Mamie W. Moy and Eleanor D. Siebert. By written ballot, the Council elected Ray A. Dickie, Bonnie A. Lawlor, Mamie W. Moy, and Eleanor D. Siebert for the 2009-2011 term.
- The Council Policy Committee presented to the Council the following slate of nominees for membership on the Committee on Nominations and Elections: V. Dean Adams, Roger F. Bartholomew, W. H. (Jack) Breazeale, Jr., Donald J. Burton, Kenneth G. Caulton, Dwight W. Chasar, Peter K. Dorhout, Catherine C. Fenselau, Morton Z. Hoffman, Peter C. Jurs, William R. Oliver, Robert A. Pribush, Andrea B. Twiss-Brooks, and Angela K. Wilson. By written ballot, the Council elected W. H. (Jack) Breazeale, Jr., Peter K. Dorhout, Catherine C. Fenselau, Peter C. Jurs, and Andrea B. Twiss-Brooks for the 2009-2011 term; Angela K. Wilson for the 2009-2010 term; and Dwight W. Chasar for the remainder of a 2007-2009 term.

Candidates for President-Elect and Board of Directors

- The candidates for the fall 2008 ACS national election were announced as follows:

President-Elect 2009
Joseph S. Francisco, Purdue University, West Lafayette, IN
Josef Michl, University of Colorado-Boulder, Boulder, CO

Directors-at-Large – 2009-2011
William F. Carroll, Jr., Occidental Chemical Corporation, Dallas, TX
Richard L. Deming, California State University- Fullerton, Fullerton, CA
Thomas R. Gilbert, Northeastern University, Boston, MA
Marinda Li Wu, Science is Fun! Orinda, CA

Director, District III 2009-2011
Pat N. Confalone, DuPont, Wilmington, DE
Alan B. Cooper, Schering-Plough Research Institute, Kenilworth, NJ

Director, District VI 2009-2011
Bonnie A. Charpentier, Metabolex, Inc., Hayward, CA
Gary D. Christian, University of Washington, Seattle, WA

Petition

- The Council VOTED to accept the Petition on Society Affiliate Dues. The petition raises Society Affiliate dues to be equal to the (full) membership dues, while specifying that Society Affiliates are not subject to any of the discounts otherwise applicable to membership dues. To be valid, the petition next must be confirmed by the Board of Directors within 90 days, and will become effective five months following confirmation.

Committee Review

- As part of a regular review, the Council VOTED to continue the Committee on Chemistry and Public Affairs, and the Committee on Patents and Related Matters. The Committee on Chemistry and Public Affairs is responsible for advice and recommendations for ACS action on public policy matters involving the chemical sciences and technologies. The Committee on Patents and Related Matters considers patents and other related items insofar as such consideration and possible action are appropriate under the Society's Charter.

Registration Report and 2009 National Meeting Registration Fee

- As of August 20, 2008, the ACS fall national meeting had attracted 13,800 registrants. Totals in select categories are as follows: Regular attendees 8,196; Students 3,087; Guests 481; Exhibit Only 546; and Exhibitors 1,490. In keeping with the objective of the National Meeting Long Range Financial Plan, previously approved by the Board of Directors and Council, the Meetings and Expositions Committee voted to support an increase of $10 for the 2009 national meetings advance registration fee.

Membership Activity

- In 2007, the number of paid new members nominated by current ACS members was 1,559. Currently, there are 988 paid new member applications. The Society's Member-Get-a-Member program is on track to have its best year ever.

Professional Employment Guidelines

- The Committee on Economic and Professional Affairs submitted its latest version of the Professional Employment Guidelines for consideration. These guidelines offer a broad spectrum of recommended practices in employment for professional scientists and their employers. The Council will vote on the Professional Employment Guidelines at the 2009 spring meeting in Salt Lake City.

Revision of the Division Funding Formula and Formation of a New Division

- After a motion to recommit failed, the Council VOTED, as recommended by the Divisional Activities Committee (DAC), to accept a revised division funding (allocation) formula. DAC reported that the formula improves clarity, offers simplicity, and rewards collaborative programming between divisions. The change will take effect in 2009 for 2008 activities.
- The Council also VOTED to approve the formation of the Probationary Division of Catalysis Science and Technology. The primary objective of this probationary division is to provide a "home" for the chemical science of catalysis within the ACS in a way that will also insure a continual connection between this science and the essential chemical technology of catalysis.

Special Discussion Item

- A special discussion item was put on the Council agenda by President Bruce Bursten. The discussion focused on Achieving Sustainability (e.g., Energy, Water, Food): What can/should ACS do to address this key global scientific challenge? To kick off the discussion, ACS Board Chair Judy Benham invited Council to participate in identifying the challenges and developing solutions. She highlighted new and ongoing activities, such as the Global Challenges/Chemistry Solutions podcasts and related information, available online at www.acs.org/globalchallenges. She also sought Council input on member involvement and ACS programming in support of Goal #3 of the Strategic Plan: "ACS will be a global leader in enlisting the world's scientific professionals to address, through chemistry, the challenges facing our world." Councilors engaged in a robust exchange, offering several useful comments and suggestions to address how the Society might

(continued on page 12)

COUNCILOR TALKING POINTS

(continued from page 11)

develop initiatives to address sustainability of the world's resources, including energy, water, and food. Thirty-five councilors offered a wide variety of suggestions, which will be studied. Councilors and others who have ideas should send them to strategicplan@acs.org.

ACTIONS OF THE BOARD OF DIRECTORS

The Board's Standing and Special Committees

- The Board of Directors received reports from its Executive Committee, and the Committees on Grants and Awards, Public Affairs and Public Relations, Professional and Member Relations, and Budget and Finance. On the recommendation of the Committee on Grants and Awards, the Board VOTED to approve nominees for the 2009 Perkin Medal and the 2009 Othmer Gold Medal. On the recommendation of the Committee on Professional and Member Relations, the Board VOTED to approve in principle a proposed alliance between the ACS and the RSC titled *Research in Chemistry for Society/ Sustainability* (RICHES). On the recommendation of the Committee on Budget and Finance, the Board VOTED to include funding requests for the ACS Leadership Development System and ACS Green Chemistry Institute ® in the 2009 budget, and to accept the 2008 report from Program Review Advisory Group, as amended. The Board also accepted the recommendations from the 2008 Financial Planning Conference with one modification.
- The Board received a status report from its International Strategy Implementation Task Force and an update on plans for a Board-Presidential Task Force on Education. The International Strategy Implementation Task Force is charged with implementing the recently approved Society international strategy, and the Board-Presidential Task Force on Education will attempt to answer the question: "What can a Society with 160,000 members uniquely do that can have a transformative effect on education in the United States?"

Strategic Issue

- The Board of Directors continued its deliberations of the global scientific challenge Sustainability (e.g., energy, food, and water) and considered a proposed set of principles from the Committee on Environmental Improvement in this area. Addressing global scientific challenges is fundamental to strategic goal #3: ACS will be a global leader in enlisting the world's scientific professionals to address, through chemistry, the challenges facing our world.

The Executive Director/CEO Report

- The Executive Director/CEO, along with several of her direct reports, updated the Board on the following items: the ACS Green Chemistry Institute ® Strategic Plan; the Web Presence Initiative; emerging issues affecting the Society; recommendations resulting from the new IRS Form 990 filing requirements; and the activities of Chemical Abstracts Service, the Publications Division, and the Society's General Counsel. The emerging issues discussion was particularly vibrant as the ACS Board considered many of the key factors and trends that affect Society membership. As a follow-up to these reports the Board took several actions. The Board VOTED to amend its Regulations to conform with the new IRS Form 990 filing requirements; and on the recommendation of the Joint Board-Council Committee on Publications, the Board VOTED to approve the reappointment of several Society journal editors.

Other Society Issues

- The Board received an update on its substantial progress toward achieving its 2008 goals, and discussed a draft of proposed 2009 goals. The Board concluded its session with introductions and briefings from several international dignitaries representing the Royal Society of Chemistry, the German Chemical Society, the European Association for Chemical and Molecular Sciences, the Canadian Chemical Society, the Mexican Chemical Society, and IUPAC.

Statement of Ownership, Management and Circulation

1. Title of Publication: THE INDICATOR
2. Publication No. 0581-240
3. Date of Filing: September 11, 2008
4. Frequency of Issue. Monthly except July and August
5. No. of Issues Published Annually: 10
6. Annual Subscription Price: $20.00
7. Complete Mailing Address of Known Office of Publication *(Street, City, County, State and ZIP+4 Code) (Not printers)*: P.O. Box 3301, Spring Hill, Hernando County, FL 34611-3301 (Editorial and Business); MBO Services, Inc., P.O. Box 1150, Marshfield, MA 02050-1150 (Advertising).
8. Complete Mailing Address of the Headquarters of General Business Offices of the Publisher *(Not printer)*: New York Sect. Inc. of the Am. Chem. Soc., St. John's University Chem. Dept., 8000 Utopia Parkway, Jamaica, NY 11439; North Jersey Sect., Inc. of the ACS, 4 Cameron Road, Piscataway, NJ 08854.
9. Full Names and Complete Mailing Address of Publisher, Editor and Managing Editor *(This item MUST NOT be blank)*: Publisher *Name and Complete Mailing Address)*: New York Section Inc. of the ACS, St. John's University, Chem. Dept., 8000 Utopia Parkway, Jamaica, NY 11439. North Jersey Section Inc. of the ACS, 4 Cameron Road, Piscataway, NJ 08854. Editor *(Name and Complete Mailing Address)*: Linda R. Atkins, P.O. Box 3301, Spring Hill, FL 34611-3301. Managing Editor *(Name and Complete Mailing Address)*: Linda R. Atkins, P.O. Box 3301, Spring Hill, FL 34611-3301.
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11. Known Bondholders, Mortgagees, and Other Security Holders Owning or Holding 1 Percent or More of Total Amount of Bonds, Mortgages or Other Securities. *(If there are none, so state)*: NONE.
12. Tax Status *(For completion by nonprofit organizations authorized to mail at nonprofitl rates) (Check one)*: The purpose, function, and nonprofit status of this organization and the exempt status for federal income tax purposes ✔ Has Not Changed During Preceding 12 Months.
13. Publication Title: THE INDICATOR
14. Issue Date for Circulation Data Below: June 2008.
15A. Total No. Copies *(Net Press Run)*: Average No. Copies Each Issue During Preceding 12 Months 7,620. No. Copies of Single Issue Published Nearest to Filing Date 7,500.
15B. Paid and/or Requested Circulation: 1. Paid/Requested Outside-County Mail Subscriptions Stated on Form 3541. *(Include advertiser's proof and exchange copies):* Average No. Copies Each Issue During Preceding 12 Months 7,358. No. Copies of Single Issue Published Nearest to Filing Date 7,227. 2. Paid In-County Subscriptions *(Include advertiser's proof and exchange copies):* Average No. Copies Each Issue During Preceding 12 Months 205. No. Copies of Single Issue Published Nearest to Filing Date 198. 3. Sales Through Dealers and Carriers, Street Vendors, Counter Sales, and Other Non-USPS Paid Distribution: Average No. Copies Each Issue During Preceding 12 Months N/A. No. Copies of Single Issue Published Nearest to Filing Date N/A 4. Other Classes Mailed Through the USPS: Average No. Copies Each Issue During Preceding 12 Months 0. No. Copies of Single Issue Published Nearest to Filing Date 0.
15C. Total Paid and/or Requested Circulation (*Sum of 15B1, B2, B3 and B4*): Average No. Copies Each Issue During Preceding 12 Months 7,563. No. Copies of Single Issue Published Nearest to Filing Date 7,425.
15D. Free or Nominal Rate Distribution *(By Mail and Outside the Mail):* 1. Outside-County as Stated on Form 3541. Average No. Copies Each Issue During Preceding 12 Months 0. No. Copies of Single Issue Published Nearest to Filing Date 0. 2. In-County as Stated on Form 3541. Average No. Copies Each Issue During Preceding 12 Months 0. No. Copies of Single Issue Published Nearest to Filing Date 0. 3. Other Classes Mailed Through the USPS. Average No. Copies Each Issue During Preceding 12 Months 20. No. Copies of Single Issue Published Nearest to Filing Date 20.
15E. Total Free Distribution *(Sum of 15D(1), (2), (3) and (4)):* Average No. Copies Each Issue During Preceding 12 Months 20. No. Copies of Single Issue Published Nearest to Filing Date 20.
15F. Total Distribution *(Sum of 15C and 15E):* Average No. Copies Each Issue During Preceding 12 Months 7,583. No. Copies of Single Issue Published Nearest to Filing Date 7,445.
15G. Copies not Distributed: Average No. Copies Each Issue During Preceding 12 Months 37. No. Copies of Single Issue Published Nearest to Filing Date 55.
15H. Total *(Sum of 15F and G):* Average No. Copies Each Issue During Preceding 12 Months 7,520. No. Copies of Single Issue Published Nearest to Filing Date 7,500.
15I. Percent Paid and/or Requested Circulation *(15C divided by 15F times 100):* Average No. Copies Each Issue During Preceding 12 Months 99.74%. No. Copies of Single Issue Published Nearest to Filing Date 99.73%.
16. Publication of Statement of Ownership. ✔ Publication required. Will be printed in the October 2008 issue of this publication.
17. Signature and Title of Editor, Publisher, Business Manager, or Owner
Linda R. Atkins, Editor
I certify that the statements made by me above are correct and complete.
PS Form 3526, September 2007

New York Meetings

www.newyorkacs.org

CHEMICAL MARKETING & ECONOMICS GROUP

Brookhaven National Laboratory – Research & Industrial Collaboration

Speaker: Dr. Patrick Looney
Director of Policy and
Strategic Planning
Brookhaven National Laboratory

Date: Thursday, October 2, 2008
Times: Cocktails 11:30 AM
Luncheon 12 noon
Presentation 1:15 PM
Place: Club Quarters
40 West 45th Street
New York, NY
Cost: $45 discount price for Members who reserve by **Tuesday, September 30** (12 noon).
$55 for Guests and Members
(at the door without reservations)

To reserve: Please reserve early to be eligible for discount price. Call Vista Marketing at (917) 684-1659 or via e-mail to: **cmegroup@yahoo.com**. You can also pay online (via PayPal): go to our Website: **http://www.nyacs-cme.org/** and click the proper "Buy Now" button ($45 for Members; $55 for Non-Members), which is below the credit card logos.

* * * * *

Next Meetings:

Improving Crop Yields to Feed the World

Speaker: Chris Beumelburg
Director of Investor Relations
BASF Corp.

Date: Thursday, November 6, 2008

* * * * *

Water: The Next "Oil"
(full-day conference)

(Co-Founding Sponsors: AIChE, Metro NY & the Chemical Marketing & Economics Group)

Date: Thursday, December 4, 2008
Place: Con Edison Building
4 Irving Place (14th-15th Streets)
New York, NY

SAVE THE DATE: Details will be forthcoming in due course.

Updated details at:
http://homepage.mac.com/daviddee/page1/Water%20Conference.html

* * * * *

2009 Economic Outlook

Speaker: T. Kevin Swift
Senior Director
Policy, Economics & Risk Analysis
American Chemistry Council
Arlington, VA

Date: Thursday, January 8, 2009
[Note date is second Thursday]

Education

LONG ISLAND SUBSECTION

Constructing Chemical Thinking: A Constructive Approach to Teaching Laboratory Courses

Speaker: Dr. Luis Avila
Columbia University
Department of Chemistry

A cognitive model for teaching experimental courses in chemistry will be presented. Concrete prototypes of courses currently taught at Columbia University will be analyzed with emphasis on the design, implementation and evaluation of the courses.

Date: Thursday, October 2, 2008
Times: Coffee 5:30 PM
Seminar 6:00 PM
Place: Hofstra University
Chemistry Building
Lister Auditorium
Dinner: 7:00 PM
Place: Neighboring restaurant
Cost: $20.00

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HIGH SCHOOL TEACHERS TOPICAL GROUP

Using Video Interactively in the Classroom

Speaker: Christopher Ward
Hommocks School
Mamaroneck, NY

Overview of strategies to use with clips from Channel Thirteen's website in biology, chemistry, physics and Earth science. Learn how to access this site; what the site offers; other services offered by **<http://www.thirteen.org/edonline/educators.html>**.

Date: Friday, October 17, 2008
Times: Social and Dinner — 5:45 PM
Place: No reservations required
Caffe Pane e Cioccolato
10 Waverly Place at Mercer Street
(South-west corner)
New York, NY
(You eat, you pay cash only, no credit cards.)
Times: Meeting — 7:15 PM
Place: New York University
Silver Center Room 207
32 Waverly Place (South-east corner Washington Sq. East)
New York, NY

Security at NYU requires that you show a picture ID to enter the building. In case of unexpected severe weather, call John Roeder, 212-497-6500, between 9 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, easy walk from the garage to the restaurant or meeting room.

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

The Class PET: Accelerating CNS Drug Development with Molecular Imaging

Organizers: Silke Miller
Lundbeck Research USA

Donna Maier
AstraZeneca Pharmaceuticals

Speakers: Dean F. Wong
Johns Hopkins University

Svante Nyberg
AstraZeneca Pharmaceuticals

Stephen L. Dewey
Brookhaven National Laboratory

Robert H. Rubin
Harvard Medical School

Molecular imaging techniques especially positron emission tomography (PET) have been increasingly applied in contemporary CNS drug discovery and development. Such techniques allow in the living animal or human subjects the assessment of compound exposure in the CNS, binding to the designated target(s), and the relationship of occupancy and pharmacodynamic effects, as well as the development of biomarkers. Speakers will address advantages and pitfalls, and current methods of molecular imaging for CNS drug discovery and/or development, and provide a range of examples of successful PET tracer development for novel therapeutics.

Date: **Tuesday, October 21, 2008**
Time: 1:00 – 5:00 PM
Place: New York Academy of Sciences
7 World Trade Center
250 Greenwich Street – 40th Floor
New York, NY

Reserve a seat on-line at:
http://www.nyas.org/events

NYAS Members and BPDG Affiliates may attend BPDG meetings free of charge.

Non-members may attend for a fee of $20 per event; Student Non-members for $10.

To become a Member of the Academy, visit **http://www.nyas.org/landing.html**

NATIONAL CHEMISTRY WEEK IS COMING SOON

National Chemistry Week is a community based program developed by the American Chemical Society (ACS). This annual event unites ACS local sections, businesses, schools, and individuals in communicating the importance of chemistry to our quality of life.

The theme is **"Having a Ball with Chemistry. The Science of Sports".** This year's ACS New York Section event is at the New York Hall of Science (**www.nyhallsci.org**) on **Saturday, October 25, 2008** from 10:00 AM to 4:00 PM. Admission price is $11.00 for adults and $8.00 for kids.

Please come with your students, families, and friends to support the ACS volunteers presenting chemistry related demonstrations. Most of the demonstrations are interactive. You'll also have a great time at a world class science center!!

We are also very interested in hearing from High Schools, Colleges, and Universities that want to participate in the event by preparing a demonstration!!

Demonstrations to include:

- "The Science of Making Gatorade" – Pick the flavor and color combination of your Gatorade creation and give it a name. Then Gatorade scientists will manufacture your Gatorade and give you a special gift with your creation.
- Gatorade Sports and Science Institute (GSSI) – The GSSI scientists will discuss hydration science and demonstrate how sweat is collected from athletes for analysis.
- PepsiCo Sports Marketing – Will demonstrate the "in car hydration system" developed for NASCAR drivers.
- Adidas – Will discuss the process and materials used to make a fire suit. They will also have Dale Earnhardt Jr.'s fire suit on display.
- PepsiCo Nutrition Group – Will demonstrate the best foods to eat for optimal athletic performance and explain why nutrition is so important to maintain good health.
- "Slime" – Who doesn't like to play with a ball of goo!
- "Ooblek" – This demo turns from gooey mess to a semi-solid and then back to a gooey mess right in your hands
- "Gluep" – This must be some sort of sticky gooey fantasy world!
- Participants include some of New York's most prestigious Colleges, Universities, and Industries

Dave Sherman
david.sherman@pepsi.com
ACS NY Section National Chemistry Week Project Coordinator
Principal Research Specialist
Pepsi-Cola Company
Research and Technical Support
100 Stevens Ave.
Valhalla, N.Y. 10595

NY SECTION — 2008 ELECTION RESULTS

The results of the ACS New York Section's 2008 elections, held in May, were announced at the Board of Directors meeting in June. The New York Section extends a sincere thank you to all of the candidates and expresses its appreciation for their time and efforts in preparing for the elections. Congratulations to all.

Chair-elect for 2009
Mr. Frank R. Romano
Agilent Techologies

Secretary for 2009 and 2010
Dr. Margaret Mandziuk
Manhattan College

Director-at-Large for 2009
Dr. Alison G. Hyslop
St. John's University

Dr. Karen E. Pavese
The New York Academy of Sciences

Dr. Lori Zakowski
Dowling College

Dr. Ronald P. D'Amelia
Hofstra University

Dr. Neil D. Jespersen
St. John's University

Mrs. Joan A. Laredo-Liddell
Retired – St. Barnabas High School

Alternate Councilors for 2008-2010
Dr. Donald D. Clarke
Fordham University

Dr. Richard M. Goodman
Richard M. Goodman Consulting LLC

Dr. Ralph Stephani
St. John's University

North Jersey Meetings

http://www.njacs.org

SPECIAL ANNOUNCEMENT

Starting with the January 2009 issue of *The Indicator*, paper copies will be mailed only to individuals who have notified John Penna **before October 1, 2008**, at 4 Cameron Road, Piscataway, NJ 08854 (732-463-7271) or at **njacsoffice@aol.com**.

The January *Indicator* will be posted on the North Jersey web-site. Go to **http://theindicator.org** and see how easy it is to access *The Indicator.*

Other advantages of posting *The Indicator* include: the ability to access previous issues quickly, the capability of enlarging the print size to increase readability, and knowing that you have helped save a tree.

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, October 27, 2008**
Time: 6:30 PM
Place: Fairleigh Dickinson University
College at Florham
Hartman Lounge, the Mansion
Madison, NJ
Cost: $5.00 - pizza dinner

Directions: can be found at **view.fdu.edu/default.aspx?id=238**.

Reservations: call (732) 463-7271 or email **njacsoffice@aol.com** prior to **Wednesday, October 22, 2008.**

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.

CAREERS IN TRANSITION GROUP

Job Hunting??

Are you aware that the North Jersey Section holds monthly meetings at Fairleigh Dickinson University in Madison to help ACS members? Topics covered at these cost-free workshops are:

- The latest techniques in resume preparation
- Ways for improving a resume
- Answers to frequently asked interview question and
- Conducting an effective job search

The next meeting for the Careers In Transition Group will be held **Thursday, October 2, 2008**, in the Rice Lounge on the first floor of the New Academic Building. The meeting will start at 5:30 PM and end at 9:00. There will be a Dutch-treat dinner. To get the most from the meeting, be sure to bring transparencies of your resume.

Please contact **vjkuck@yahoo.com**, if you plan on attending this meeting.

TEACHER AFFILIATES SPONSORS SPEAKER AT NEW JERSEY SCIENCE CONVENTION

"The Science of Flight" and **"America's Funniest Chemical Videos"**

Speaker: John Fortman

The Teacher Affiliates of the North Jersey Section of the American Chemical Society, are sponsoring a special guest speaker, John Fortman, to present two programs on October 14th and 15th as part of the NJ Science Convention. John is a very engaging speaker, having presented hundreds of programs throughout the US and Canada. John is a retired college professor who received numerous teaching awards and brings with him a wonderful sense of humor.

On Tuesday he will present "The Science of Flight" and on Wednesday, "America's Funniest Chemical Videos".

Date: **Tuesday and Wednesday, October 14 and 15, 2008**

Register at **www.njsc-online.com/** and plan to attend these programs.

TEACHER AFFILIATES

Executive Committee Meeting

Date: **Monday October 20, 2008**
Time: 4:30 PM
Place: Chatham High School
255 Lafayette Avenue
Chatham, NJ

Contact: Cheryl Litman at, 1-732-289-3700 Ex 4034, **clitman@mail.nbtschools.org**

ChemTAG MEETING

Participate in National Chemistry Week

Date: **Saturday, October 25, 2008**
Times: 10 AM – 2 PM
Place: Liberty Science Center
Jersey City NJ

Directions: **www.lsc.org**

To provide a science activity or to help: Bobbi Gorman, **rosellerams@yahoo.com**.

NATIONAL CHEMISTRY WEEK AND EXPO '08

We Are Back at the Liberty Science Center

Last year it was great being back at the Liberty Science Center. We are hoping that this year we will have more volunteers come and join us. On **Saturday, October 25**, the North Jersey Section will be celebrating National Chemistry Week with Expo'08. As usual we will have many tables with all kinds of hands-on activities for budding scientists to learn that chemistry is important and fun to do. Why not join us this year?

Going along with the spirit of this year's summer Olympics, the theme for this year is **"Having a Ball with Chemistry"**. This will give you a chance to show the general public the tremendous advances sports have made because of the efforts of chemists. As you know materials have improved greatly and allowed athletes to set new records and our knowledge of nutrition and hydration has let them perform at higher levels than in the past. Let your imagine soar, as you plan your hands-on activities.

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

If you are out of ideas for safe activities for a table, you can look at the NCW page at **acs.org**. To minimize duplication of the presentations, we will need to know by October 3 the activity you would like to conduct at your table. Individuals contacting us first with their idea(s) will be given priority, so let us hear from you as soon as possible. Please contact Bobbi Gorman at **rosellerams@yahoo.com**. and let her know what activities you will be doing at your table or if you want to volunteer at the Expo.

As usual we are looking for financial support to cover the many expenses associated with our activities and would be most appreciative, if you would contact the appropriate individuals at your company and let them know about our activities. Please send any contributions to Valerie Kuck, 45 Warfield St., Montclair, NJ 07043.

Thanks very much for all of your help and support through the years. The Section has reached thousands of individuals and shared with them that chemistry is fun to do and chemists are cool. The Section couldn't have done it without hundreds of volunteers reaching out to the general public.

Bobbi Gorman and Valerie Kuck

POLYMER TOPICAL GROUP

Functional Packaging Through Chemistry

Organizer: Dr. Tamal Ghosh (**tamal@alumni.stevens-tech.edu**)

Co-Organizers: Dr. Bin Wei (ICI National Starch and Chemical **bwei01@gmail.com**) and Dr. Ankur S. Kulshrestha (BD Medical, **Ankur_Kulshrestha@bd.com**)

TENTATIVE PROGRAM

Keynote Talk: Challenges in Sustainable Packaging

Speaker: Dr. Bob Kimmel
Clemson University

Oxygen and Moisture Vapor Barrier Coatings

Speaker: Dr. Derek Illsley
Sun Chemical

Expanding the World of Packaging Applications for Ingeo™ Biopolymers

Speaker: Mr. Jim Nangeroni
NatureWorks

The Polymer Supply Chain and the Impact on Extractables and Leachables in Pharmaceutical Container Closure Systems

Speaker: Dr. Michael Ruberto
Ciba

Temperature Monitoring in Pharmaceutical Cold-Chain

Speaker: Mr. Oumer Salim
Wyeth Biotech

Evolution of Electronic Packaging and Its Demands to Materials

Speaker: Dr. Allison Xiao
ICI National Starch

This symposium is presented by the Polymer Topical Group of the North Jersey Section of the American Chemical Society. It features presentations contributed by leading scientists from both academia and industry. The event is intended to bring the local polymer science community up-to-date on the advancements in the chemistry relating to packaging, in a range of applications such as pharmaceuticals and vaccines, food packaging, electronic devices, and many other exciting areas.

This event also features presentations, posters and networking opportunities of interest to diverse professionals involved in the functional packaging industry. Whether you are from academia or industry, this is a good opportunity for you to showcase your research, network with other people and contact possible employers and clients.

In addition to posters focusing on packaging, general polymer posters are being solicited. We are looking for poster submissions relating to polymer research in diverse areas such as green polymers, advanced polymeric materials, polymer characterization, etc. Any registered conference attendee may sign up to present a poster on any polymer-related topic.

We look forward to seeing you at this symposium and hope that you would take advantage of the scientific and networking opportunities it offers. Updated information will be available in late August at the PTG website [**http://www.njacs.org/ptg.html**].

Date: **Wednesday, October 29, 2008**
Time: 1:00 PM to 6:30 PM
Place: NJIT Campus Center, Grand Ballroom, Newark, NJ
Cost: With early registration (**by October 15, 2008**): Members: $40; Non-members: $50; Students: $25; free for NJIT students and staff with ID.
After October 15, 2008: Member, $45; Non-member; $55; Student, $30.

Early registration and poster submission deadline is **October, 15, 2008**. Online registration will start in late August at **http://www.njacs.org/ptg.html** OR send your full contact information along with a check made payable to NJACS-Polymer Group to Dr. Willis B. Hammond, Treasurer, NJACS-PTG, 128 Center Ave., Chatham, NJ 07928, with the appropriate amount.

Directions:
Can be found at the NJIT website (**http://www.njit.edu/about/visit/gettingtonjit.php**)

SCENES FROM MAY 10 POLYMER TOPICAL GROUP SYMPOSIUM

Biomaterials in Medicine and Personal Care

Held at Rutgers University Douglass College Student Center.

Opening remarks from Joe Albanese (Elementis Specialties, Chair-elect of the NY Chapter of the Society of Cosmetics Chemists.

Symposium organizer Dr. Hongbo Liu (Ethicon) with Dr. Burt Ensley (DermaPlus) and Dr. Rao Bezwada (Bezwada Biomedical).

Symposium organizer Dr. Hongbo Liu (Ethicon) with Professor Kathryn Uhrich (Rutgers University), Dr. Richard Hutchinson (Ethicon) and Professor David Kaplan (Tufts University).

Poster Session and Commercial Exhibits: There were 17 contributed scientific posters; two commercial posters by Chemspeed Technologies and Q-Sense, and two company exhibits by Dionex and Q-Sense.

ORGANIC CHEMISTRY TOPICAL GROUP

The Award for Creativity in Molecular Design and Synthesis

2008 Award Recipient:
Dr. Malcolm MacCoss

Speakers: Professor David Evans
Harvard University

Professor David MacMillan
Princeton University

Dr. Sandy Mills
Merck & Co., Inc.

Professor Dean Toste
University of California, Berkeley

Professor Barry Trost
Stanford University

Keynote Award Presentation

Speaker: Dr. Malcolm MacCoss
Schering-Plough Research Institute

Date: **Thursday, November 13, 2008**
Times: Registration will begin at 12:00 noon
Symposium 1:00 PM
Dinner 6:30 PM
Award address 7:30 PM
Reception 5:45 PM
Place: The Palace at Somerset Park
333 Davidson Avenue
Somerset NJ
Cost: Registration fee: Symposium, Reception, and Dinner $125.00.
Students or Post-docs: Symposium, Reception, and Dinner $100.00

Due to limited seating, registration and payment are required **by November 1, 2008**.

For directions, information and on-line registration please visit our website: **www.njacs.org/organic.html**

Organizing Committee: Lawrence Williams, (Chair), Rutgers University, Dong Xiao (Schering), Joe Kozlowski (Schering), Amjad Ali (Merck), Albert DelMonte (BMS), Binh Vu (Roche), Eric Metz (Roche).

Others

RUTGERS UNIVERSITY GRADUATE SEMINAR SERIES — FALL 2008

Materials Science & Engineering

October 14
"Carbon nanotubes grown by chemical vapour deposition:a catalyst activation study"
Dr. Cecilia Mattevi
Rutgers MS&E/University of Padua, Italy
cmattevi@rci.rutgers.edu

October 21
"Setting up a materials business*"
Dr. Faruq Marikar
Nanobiz, LLC, Scotch Plains, NJ,
faruq.marikar@comcast.net

October 28
"Chemometrics Approaches for Decomposition of X-ray Scattering Signatures from Polymers"
Prof. Yvonne A. Akpalu
Chemistry & Chemical Biology
Rensselaer Polytechnic Institute, Troy, NY,
akpaly@gmail.com or akpaly@rpi.edu

Date: **Tuesdays**
Times: Refreshments 11:45 AM
Seminar 12:10 PM
Place: Center for Ceramic Research
Room 201, 607 Taylor Road
Busch Campus
Piscataway, NJ

*Note, titles are tentative at this time.
Questions: contact Lisa C. Klein, **licklein@rci.rutgers.edu** or 732 445-2096

CHEM SHORTS FOR KIDS

The Elementary Education Committee of the ACS Chicago Section presents this column. They hope that it will reach young children and help increase their science literacy. Please share with children and local teachers.

Please note: *All chemicals and experiments can entail an element of risk and no experiments should be performed without proper adult supervision.*

Heat-Activated Invisible Inks

(continued on page 24)

CHEM SHORTS FOR KIDS

(continued from page 23)

Kids, how can you send an invisible message? Some science projects don't require any chemicals that you don't already have around the house, and a great example is invisible ink.

You use the ink by writing your message with it using a cotton swab, dampened finger, or toothpick. Let the message dry. To be extra sneaky, you may want to write a normal message on the paper so that it doesn't appear to be blank and meaningless. If you do write a cover message, use a ballpoint pen, pencil, or crayon (fountain pen ink could run into your invisible ink). Don't use lined paper for the same reason.

Most invisible inks are made visible by heating the paper. Some messages are developed by spraying or wiping the paper with a second chemical; others are revealed by ultraviolet light.

Examples of common invisible inks are: any acidic fruit juice (e.g., lemon, apple, or orange juice), onion juice, baking soda (sodium bicarbonate), vinegar (acetic acid), white wine, dilute cola, dilute honey, milk, soapy water, and sucrose (table sugar) solution. Here is just one example:

1 Mix equal parts water and baking soda.
2 Use a cotton swab, toothpick, or paintbrush to write a message onto white paper.
3 Allow the "ink" to dry.
4 One way to read the message is to have your adult partner hold the paper up to a heat source, such as a light bulb. The baking soda will cause the writing in the paper to turn brown.
5 A second method to read the message is to paint over the paper with purple grape juice. The message will appear in a different color.

Tips:

1 If you are using the heating method, avoid igniting the paper - don't use a halogen bulb.
2 A cotton swab makes an excellent disposable 'paintbrush'.
3 Baking soda and grape juice react with each other in an acid-base reaction, producing a color change in the paper.
4 The writing turns brown because the weakened paper burns before the rest of the paper. Be careful not to overdo your heating and ignite the paper!

Reference: Anne Marie Helmenstine on her April 27, 2008 blog at **http://chemistry.about.com/**.

See these links for baking soda and lemon juice "inks": **http://chemistry.about.com/cs/howtos/ht/invisibleink2.htm** and **http://chemistry.about.com/cs/howtos/ht/invisibleink3.htm**

Reprinted with permission from Dr. Kathleen A. Carrado, Chicago Local Section. An archive of all previously published ChemShorts is available online at **http://membership.acs.org/C/Chicago/home.html.**

JOIN THE ACS MEMBER NETWORK

Want to connect with members in your local section? Join the ACS Member Network! The ACS Member Network is an online networking tool that facilitates more effective collaboration among ACS members and scientific professionals. You can:

- Build your own personal scientific network.
- Share research and publications information.
- Find friends and colleagues faster and easier than ever before!

It's safe. It's searchable. It's FREE. And it's a great way to stay connected with the best and brightest. Visit **www.acs.org/MemberNetwork** to sign up today!

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VOTE

on November 4

Call for Papers/Posters

THIRD ANNUAL ENERGY & RESOURCES CONFERENCE

Water: The Next "Oil"

Third Annual Energy & Resources Conference will take place this year on Thursday, December 4, 2008, at the historic Con Edison Building, 4 Irving Place (at 14th Street), New York, NY.

Co-sponsors for this meeting now include the Metro New York Section of the American Institute of Chemical Engineers and the Bronx Chapter of the New York State Society of Professional Engineers.

Interested in presenting a paper on this topic: Please send an abstract (200-300 words) of your proposed paper, the implications of the material being discussed, and your qualifications to present the material to: **aicheny@mac.com**

Call for Nominations

THE 2009 LIFETIME ACHIEVEMENT AWARD OF THE NORTH JERSEY SECTION

The biennial award consists of a recognition plaque and $1,000 prize. It recognizes a North Jersey chemist or chemical engineer over fifty years of age, for conspicuous achievements in chemistry, not heretofore recognized by any major scientific awards.

Please submit nominations and supporting letters to Jiwen Chen, Awards Committee Chair, c/o NJ ACS, 4 Cameron Road, Piscataway, NJ 08854. Tel: 609-818-6319, email: **jchen@njacs.org**. Nominations must be received **by Feb 16, 2009**. Visit **http://www.njacs.org/awards.html** for the nomination form and a list of past recipients.

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

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

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

- www.mboservices.net/recr_disp.php
- http://newyorkacs.org/jobs.html
- http://njacs.org/jobs.html

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