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# THE OCTAGON

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Volume 88, No. 1, January 2005

Lehigh Valley Section of the American Chemical Society

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### *776<sup>th</sup> LVACS Meeting: Northampton Community College*

**Date:** Tuesday, January 18, 2005

**Social Hour:** 5:30 P.M.

**Dinner:** 6:15 P.M.

**Menu:** *Prepared by the Hampton Winds gourmet restaurant-* soup, bread plate, house salad with raspberry vinaigrette dressing, entrée (vegetable and starch), dessert, coffee, tea, or beverage. Entrée choices: (1) NY Strip Steak with Wild Mushroom Sauce Chicken Franciase, Salmon Montarde, Vegetarian

**Cost:** \$26.00

**Meeting and Talk:** 8:00 P.M.

**Location:** Northampton Community College, North Campus, Room 130 Alumni Hall

**Directions:** Available at [www.Northampton.edu](http://www.Northampton.edu) Click "About us;" then choose "maps and directions."

**Contact:** Joan Bender by 4:00 P.M. on Tuesday, January 11<sup>th</sup> at 610-861-5533 or [jbender@northampton.edu](mailto:jbender@northampton.edu). Please indicate your name, affiliation, and choice of entrée at the time of your call.

**Speaker:** Scott Hanton, Air Products and Chemicals, Inc

**Title:** Polymer MALDI: Innovating with Mass Spectrometry

**Abstract:** Matrix-Assisted Laser Desorption/Ionization (MALDI) mass spectrometry has become a very important technique to characterize the chemical

structure of industrial polymer materials. MALDI methods have been developed to address a broad variety of different polymer materials containing different chemistries.

MALDI data can determine the polymer repeat unit, provide information about the end groups, measure impurities, additives, and surfactants in formulations and calculate average molecular weights. MALDI is a powerful and relatively easy tool to use, with a variety of sample preparation methods that can be applied. The incredible diversity of synthetic polymers generates a significant challenge in efficiently developing effective sample preparation methods. Understanding the role of the matrix provides the keys in developing new sample preparation methods. This presentation will provide an introduction to polymers and mass spectrometry, cover some of the underlying roles of the matrix, examine new sample preparation methods, combine MALDI with chromatography and use post-source decay to gain increased chemical structure information.

### *2004-2005 Meeting Schedule*

**February 8** - Cedar Crest College  
(Spouses Night)

**March** - East Stroudsburg University

**April** - Moravian University -  
(Student Poster Session)

**May** - DeSales University -  
(High School Teacher's Night)

## ***Election Results***

### ***LVACS Officers - 2005***

**Chair:** Tara Baney  
Merck & Co., Inc. West Point, PA 19486  
[tara\\_baney@merck.com](mailto:tara_baney@merck.com) 215-652-7486

**Chair Elect:** T. Michelle Jones-Wilson  
East Stroudsburg University  
East Stroudsburg, PA 18301  
[mjwilson@po-box.esu.edu](mailto:mjwilson@po-box.esu.edu) 570-422-3703

**Immediate Past Chair:** Steve Weiner  
Chemistry Department, Muhlenberg College  
2400 Chew Street, Allentown, PA 18104  
[sweiner@muhlenberg.edu](mailto:sweiner@muhlenberg.edu) 484-664-3665

**Secretary:** Paul Bouis  
Mallinckrodt Baker Inc., Phillipsburg, NJ 08865  
[paul.bouis@tycohealthcare.com](mailto:paul.bouis@tycohealthcare.com) 908-859-9443

**Treasurer:** Roger Egolf  
Penn State LV Campus, Allentown, PA 18051  
[rae4@psu.edu](mailto:rae4@psu.edu) 610-285-5110

**Councilor:** Carol Baker Libby  
Moravian College, Allentown, PA 18018  
[cblibby@cs.moravian.edu](mailto:cblibby@cs.moravian.edu) 610-861-1629

**Councilor:** Pamela D. Kistler  
Cedar Crest College, Allentown, PA 18104  
[pdkistler@cedarcrest.edu](mailto:pdkistler@cedarcrest.edu) 610-437-4471 x 3507

**Alternate-Councilors:** Roger Egolf & T. Michelle Jones-Wilson (see above)

**Octagon Editor & Webmaster:**  
T. Michelle Jones-Wilson (see above)

will excite you about becoming more involved in LVACS. The positions we have are Chair-Elect, Secretary, Treasurer, Councilors, and Alternate-Councilors. The by-laws describe on a high level what each position entails; however, the best way to find out is to ask those of us who have done it. How do we fit this into "life"? Do we like it? Why did we do this? Etc, etc, etc. I encourage anyone, from a first year member to a 50-year member, to consider running for an office.

This year we have a number of goals and plans, and we won't be nearly as successful without your help and support. If you want to have a fulfilling year at ACS, then get involved!! We are working towards a local Women Chemist's Committee, and we would like to rev-up our Education Committee. If anyone is interested in heading these or any committee listed in the by-laws, please contact me or one of my colleagues. As tradition, we will have our student poster session and High School Teacher's Night, plus our ACS awards. We will also choose the Foundation in Chemistry and Organic awardees, and acknowledge our 50-year members. We'll need to think about National Chemistry Week, and Chemistry Olympiad events. Plus so many more activities since YOU will let me know what YOU want from this section, right? ☺

We will hear from Scott Hanton in January, where he will teach us the best of MALDI. In February we will switch gears a bit and have Spouses/Guests Night – feel free to bring a friend!! Sharon Gerdes from IFT will discuss how dairy ingredients measure up to the latest nutritional fads. During our social hour we will provide a sampling of cheeses and wine for your enjoyment. We are looking at our second annual Summer Picnic for July/Aug, and hope to have additional volunteers and attendees.

As always, we are here and will listen to your thoughts, ideas, and action plans for our section. We have a truly great group of people, and we can learn and grow from one another. Think about what you want from this section, and how it can happen. Let's plan and do it, okay?

I look forward to seeing you, meeting you, and interacting with you.

Cheers,

Tara S. Baney, Chair

Email: [tara\\_baney@merck.com](mailto:tara_baney@merck.com) Phone: 215-652-7486



Look For LVACS on the  
web at [www.esu.edu/lvacs](http://www.esu.edu/lvacs)

### ***Message from the Chair***

#### **Greetings Fellow LVACS Members!**

Welcome to a new year of the Lehigh Valley Section of the American Chemical Society. I, as well as your other officers, hope you had a peaceful and joyous Holiday Season. At our January meeting you will meet your officers, as we are at your service. Please feel free to introduce yourself to us and ask us what we do. You see, we are going to search and ask for volunteers to run for 2006. Already thinking about 2006?!! YES We

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## November 2004 Minutes

The 775<sup>th</sup> meeting of the LVACS was called to order by Chair Steve Weiner at 7:00 PM on Thursday, November 18, 2004. Penn State University – Lehigh Valley Campus, hosted the meeting on their campus. John Freeman was presented with a plaque acknowledging his detailed and dedicated efforts as our Treasurer. John will be leaving for Arizona and Roger Egolf will transition as Treasure for the '05 term. A request was made for anyone in the section interested in providing guidance for investing monies in the section budget to please see Roger for more information. Also a reminder that the Octagon runs employment ads for free; please utilize this resource.

Roger Egolf introduced our speaker for the evening, Dr. Jim Bohning. The title of Dr. Bohning's talk was "Life on the other side of the Hudson: The nineteenth-century battle for control of the American Chemical Society." Dr. Bohning enlightened us with his extensive knowledge on the history of the ACS, and the battle of the minds that created the Society as it exists today. We were told of the original Continental Chemistry Society from the early 1890s, and the first ACS meeting April 6<sup>th</sup>, 1876 at the University of the City of New York (now NYU). Dr. Bohning introduced us to the many men who debated and argued for separate societies and those who wanted to have one National Society.

A piece of the time line is as follows:

January 1884 – meeting of the Chemical Society of Washington (Washington, DC)

January 1889 – AAAS develops a new chemistry section among their many divisions

November 1889 – the American Chemical Society of New York begins to consider changes to it's organization

June 1890 – ACS of NY revised constitution, allowing local sections outside of NY

July 1890 – First ACS local section is Rhode Island

In 1891, a meeting was held with 10 distinct chemical societies present to determine if and how to merge into one cohesive organization. The outcome of this meeting was to have the ACS of NY become a local section, and the Chemical Society of Washington morph into the National ACS. After many series of meetings, the constitution was revised again, and a president was elected for the entire National ACS (Harvey Washington Wiley, who served in 1893 & 1894). New York became the second local section, Cincinnati became third, Washington fourth, and our own Lehigh Valley section became the fifth local section in 1893. Our section also has the distinction of having the oldest student-run organization, conceived in 1871.

Dr. Bohning concluded by acknowledging that we need to preserve our ACS history, and anyone who can contribute to this should do so. We are in the midst of finding a permanent house for all of our local section memorabilia and historical documents. Currently, all of our items are housed at the Linderman Library at Lehigh University. Dr. Bohning also thanked Robert D. Billinger (1899 – 1980) who was an Associate Professor of Chemistry at Lehigh, for organizing and instigating this much-needed part of our history.

After his talk, Dr. Bohning answers many questions, and was presented with a small token of our appreciation. The meeting was adjourned at approximately 8:30 PM.

Post-meeting note: Officers for 2004 are as follows:

|                      |                             |
|----------------------|-----------------------------|
| Immediate Past-Chair | Steven Weiner               |
| Chair                | Tara S. Baney               |
| Chair-Elect          | Michelle Jones-Wilson       |
| Secretary            | Paul A. Bouis               |
| Treasurer            | Roger Egolf                 |
| Councilors           | Pamela Kister & Carol Libby |

Respectfully Submitted,

Tara S. Baney

Chair, LVACS, 22-December-2004

**Councilor's Report:**  
**ACS National Meeting,**  
**Philadelphia, PA**  
**September 2004**

The ACS Board of Directors continues to pursue a partnering effort with the AIChE. Several task forces have been formed to investigate various aspects of the partnership, including cooperative advocacies for funding, membership, and programming. Both Societies are meeting at the same time in San Diego in Spring, 2005. In a broader sense, the Board is using the discussions concerning this partner\*ship effort to establish a "decision-tree" system to evaluate future strategic alliances.

The Board of Directors has also established a task force on Multi-disciplinarity. This task force is reviewing the diversity of Chemistry as a discipline and it's impact on the ACS and its members. For example, to address the needs of multi-disciplinary chemists, the ACS has new journals in Nanoscience, Molecular Pharmaceuticals, Chemical Computation (2005), and Chemical Biology (2006).

The new Executive Director of the ACS reported that the financial condition of the Society is sound. She has implemented many re-organizational changes to streamline the administration. One such effort is the sale of the Belmont Conference Center. The main point of concern here is to ensure that the new owner will respect the historic nature of the property. The perspective buyer is Howard Community College Education Foundation who intends to run Belmont as a conference center and culinary school.

Council took action on three petitions, adopting all three. The first petition recommends a bylaw change concerning elections. This change removes the specifications on "how" elections are carried out and replaces them with "standards" which any election process must meet. This change will allow, but not mandate, electronic balloting. The Committee on Constitution and Bylaws will make language available which the local section can use to update its own bylaws.

The second petition modifies the membership requirements to include pre-college chemistry teachers.

To qualify for membership, the pre-college teacher must fulfill the following two requirements: (1) be fully certified to teach chemistry by whatever procedure applies in their state (2) have three years of employment as a teacher of chemical science. This change will allow the ACS to reach out to career chemistry teachers who might not otherwise qualify for membership.

The third petition changes the deadline date for the annual reports from Divisions to coincide with that from Local Sections.

Prepared 9/29/04 by:  
Dr. Pamela D. Kistler

***In Memory***



Nancy E. Bouis, 58, of Bethlehem Township, passed away November 24, 2004 in her home. She was the wife of Paul A. Bouis. Nancy and Paul celebrated 37 years of marriage in June. Paul is currently serving the LVACS as secretary and has been chairperson of the section. His dedicated service has kept the section active and vibrant.

The officers of the LVACS would like to extend their sincere sympathies to Paul and his family. Those of us who were privileged to know Nancy appreciated her energy, humor and wit. She was a truly special person. Nancy is survived by her husband and daughters, Suzette B. Lopane of Poughqway, N.Y. and Karine Bouis Towe of Washington, D.C.; son, Matthew Bouis and Christine Culver of Bethlehem and five grandchildren.

Contributions in Nancy's memory should be directed to Doctors Without Borders, P.O. Box 1856 Merrifield, Va. 21116-8056.

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*The best and most beautiful things in the world  
cannot be seen, not touched,  
but are felt in the heart.*

◆◆◆  
Helen Keller

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## Reflections on the Past:

### Origin of the Name Octagon

Contributed by James J. Bohning

Lehigh University, [jjba@lehigh.edu](mailto:jjba@lehigh.edu)

At the November 2004 meeting of the LVACS, Professor James Sturm of Lehigh University asked about the origin of the name *Octagon* that is used for the Section's publication. Professor Sturm recalled that the name was derived from the Bessemer converter. The following is quoted from the very first issue of the *Octagon*, December 1918. "In seeking a name for our bulletin, we naturally think of the hexagon and retorts of the Chemical Warfare Service, but when these were selected for our insignia we must have been infected with the germ *teutonicus*, because the hexagon formula of benzene was first suggested by the German [August] Kekulé, and by the derivatives of benzene the Germans made their boasted progress in the great dye industry. As to the retorts, they are made in Germany, but not elsewhere, and even under the pressure of war demands, this form of apparatus is not being made in America. The retort is therefore a symbol of our former dependence upon Germany.

"If we are to choose a name significant of America's contribution to Chemistry we might take the octagon, as having roughly the outline of the section of a Bessemer converter. The process was discovered by an American – Kelly – in 1852. The underlying theories of metallography were also made by an American – [J. Willard] Gibbs. These discoveries in chemistry were fundamental and far-reaching in their practical results and they have contributed far more to the world's progress than have benzene and the aniline dye industry. Finally, the converter is particularly suggestive of those industries of the Lehigh Valley which are most typical of its life."



*Chemical Warfare Service Insignia uniform pin,  
from the author's collection*

## MARM Announcement

The 37<sup>th</sup> Middle Atlantic Regional Meeting (MARM 2005), hosted by the North Jersey Section, will be held at Rutgers University, Busch Campus, Piscataway, NJ, May 22-25, 2005. The theme of the meeting is "*Chemistry at the Crossroads of Science*" and will feature the most popular technical programming combined with the best features of a National ACS meeting tailored to the needs and interests of area scientists. Abstract submissions are sought from undergraduate and graduate students, and from professional industrial and academic chemists in all areas of chemistry.

The meeting will feature invited speakers at major symposia including "Bench to Pilot Plant", "Visions in Chemistry" (sponsored by Aventis), "Environmental & Green Chemistry", "Pharmaceutical Profiling", "Protein Family-Targeted Medicinal Chemistry- The Practice of Medicinal Chemistry in the Age of Chemogenomics", "Advances in Organic Chemistry", "Organometallic Catalysis", "Novel Instrumentation and Applications of Mass Spectrometry in ADME Studies", "Functional Proteomics and Cell Signaling", "Biomarkers: Quantification, PK/PD Correlation and Bioanalytical Issues", "Applications of LC-MS in Drug Discovery/Development", "Solid State and Materials Chemistry", "Nanoscience and Technology and Solid State & Materials Chemistry/Surface Chemistry", "Materials Chemistry/Inorganic & Organic Polymers" and "ADMET at the Crossroads of Drug Discovery". There will also be a special symposium, sponsored by the Organic Chemistry Division, honoring a Cope Scholar Awardee. Several chemical engineering mini-courses will also be offered by ACS & AIChE. The Waksman Antibiotic Drug Discovery Process will receive an ACS National Landmark Award for developing the cure for TB and many other infectious diseases. The Waksman National Chemical Landmark Symposium will mix history with modern antibiotic discoveries. The Regional Innovation awards will also feature a related symposium.

Sunday, May 22, 2005, designated "Science Education and Career Day," will celebrate the 100<sup>th</sup> anniversary of the New Jersey Science Teachers Association. High-school students, their parents and

their teachers from throughout the region are encouraged to attend. Events will include chemistry and physics demonstrations, showings of the IMAX film "Volcanoes of the Deep" with commentary by the science advisor for the film, student and industrial panels to discuss college and career opportunities in several areas, symposia in several disciplines centered about the theme "100 Years Then and Now," workshops for teachers, poster presentations and lunch with a scientist. The program will provide unique opportunities for students, teachers, and scientists from diverse disciplines to mix with each other in an informal, informative atmosphere.

In addition to technical symposia there will be a number of special events including an awards banquet on Wednesday evening where 50-year members will be honored along with the winners of a number of ACS regional awards. Special lunches will be held for Senior Chemists and the Women Chemists Committees. There will also be a "Roving Feast" Monday & Tuesday evenings, May 23<sup>rd</sup> & 24<sup>th</sup>, in conjunction with special programming, vendor exhibits and posters. Student Affiliates will have a full program for sharing their research, outreach programs, eminent scientist lecture and life in their chapter.

The online abstract program and advance registration opens November 16<sup>th</sup>. Abstracts will be accepted until March 15<sup>th</sup>. Submit online through the MARM 2005 website at [www.marmacs.org](http://www.marmacs.org), and visit the website for periodic program updates. For more information, please contact the Technical Program Co-Chairs, Les McQuire at [leslie.mcquire@pharma.novartis.com](mailto:leslie.mcquire@pharma.novartis.com) or Joseph Potenza at [jpotenza@rutchem.rutgers.edu](mailto:jpotenza@rutchem.rutgers.edu).

### *Question of the Month:*

What are "noiseless Congreves"?

*Come to the January Meeting for the Answer*

### *This Month in Chemical History*

by Harold Goldwhite,

California State University, Los Angeles

Prepared for SCALACS, the Journal of the Southern California, Orange County, and San Gorgonio Sections of the American Chemical Society

On December 9, 1742 Carl Wilhelm Scheele was born in Stralsund, a town in Swedish Pomerania. This year, 2004, is the 200th anniversary of the death of Joseph Priestley and has been the occasion for many celebratory events. Without in any way trying to diminish Priestley's achievements it seems only fair to devote one short column to the life and discoveries of the chemist who isolated oxygen before Priestley did.

Scheele's father was a merchant and Carl Wilhelm was one of eleven children. In 1757, at the age of 14, he was apprenticed to a local pharmacist and immediately showed great aptitude in his given profession. He read a wide assortment of chemical texts available to him at his workplace, including those by Lemery and Boerhaave, and began research in his free time. By 1768 Scheele was in his third position, now in Stockholm, and observed the differential effects of different wavelengths of light on the photo-reduction of silver chloride, work that was not published until much later. Scheele's first publication, jointly with his friend Retzius (later a Professor at Stockholm University) was on the isolation of pure tartaric acid from cream of tartar (potassium hydrogen tartrate). By the time this article was published Scheele was energetically pursuing pneumatic chemistry - the chemistry of gases - the liveliest research field in chemistry at that time.

In Scheele's first significant work on gases he prepared and collected, devising ingenious apparatus to do so, a gas from the action of water or acids on iron or zinc. At first identified simply as inflammable air (hydrogen, of course) Scheele later called it phlogiston elasticum. It was, you may recall, a part of accepted chemical theory at that time that all metals contained phlogiston, the principle of flammability.

In 1770 Scheele moved again to Uppsala, becoming the laboratory assistant of a pharmacist named Lök. The next three years were amazingly productive, providing the experiments described in Scheele's magnum opus "On Air and Fire". His investigations of manganese dioxide, suggested to him by Torbern Bergman, Professor of Chemistry at Uppsala and one

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of the best analysts of his day, led to the preparation of chlorine and the recognition of manganese as a new metal. He isolated pure arsenic and characterized silica, magnesium oxide, barium oxide, and oxalic acid. But, central to this story, he isolated oxygen as a product of several different reactions: by heating silver carbonate, mercuric carbonate, mercuric oxide, potassium nitrate, or magnesium nitrate; and by strong heating of a mixture of arsenic (V) oxide and manganese dioxide. All this before the end of 1773, as we know from Scheele's notebooks, whereas August 1, 1774 marks Priestley's first preparation of oxygen by heating mercuric oxide.

Though Scheele's manuscript was sent to a publisher near the end of 1775 (and remember that he was a working pharmacist all this time) it was not published until mid-1777. Priestley was much quicker to publish, and news of his "new" gas was rapidly spread in England, France, and Germany. Scheele, relatively isolated in Sweden, and unable to travel because of the demands of his daily work, only received belated recognition for his work on oxygen.

Scheele's subsequent work was no less distinguished. In gaseous chemistry he isolated cyanogen, hydrogen cyanide, and cyanogen chloride. By his calcium salt technique he purified many organic acids including citric, lactic, benzoic, and gallic. He isolated glycerin from fats, and devised an efficient preparation of Prussian Blue and of a new pigment containing arsenic now named Scheele's Green. Throughout his career Scheele was a supporter of the phlogiston theory (as was Priestley) but it was not destined to be a long career. Plagued with a variety of ailments from the age of 35, Scheele finally succumbed on May 26, 1786, at the age of 43.

I cannot resist a final note. In late 1774 Scheele wrote to the great French chemist Lavoisier to thank him for the gift of a copy of one of Lavoisier's books. In the letter he suggests an experiment for Lavoisier to try. Heat some dry silver carbonate with a burning glass and treat the resulting gases with lime water (to remove the carbon dioxide). "You will see how much air is produced in which a candle will burn and an animal will live". So who first discovered oxygen?

### ***Stipend Increase Impacts Project SEED Filling Beakers wins over Flipping Burgers***

High school students who participate in the Project SEED program <http://chemistry.org/education/seed.html> will now have a more financially rewarding summer in addition to their 8-week lab experience. The Committee on Project SEED approved a significant increase in the student stipends, after examining high school student summer employment wage options at fast food restaurants and retail stores. Starting in 2005, Summer I students will receive \$2,275 and Summer II students \$2,600 which represents a 30 percent increase over last year's stipend.

Project SEED is designed to ensure that students from economically disadvantaged backgrounds have opportunities to experience the challenges and rewards of the chemical sciences. The program now sponsors nearly 400 students annually in summer hands-on lab research guided by scientist-mentors all over the country, from labs at Memorial Sloan-Kettering in New York City to ChevronTexaco in Richmond, California.

Committee Chair, Mitchell Bruce, states "This outstanding program has impacted more than 7,000 students and their families over the past 36 years. The decision to raise SEED stipends has a significant effect on the program's ability to reach students with demanding financial imperatives. Our challenge in the years ahead is to continue to grow the program while remaining competitive with other options students may have for summer employment. I know we will be able to meet the challenge with the ongoing and increased support of our loyal ACS SEED Donors."

You can make a gift to Project SEED today. Add a Project SEED voluntary contribution to your ACS membership renewal [http://chemistry.org/portal/a/c/s/1/acdisplay.html?DOC=siteinfo\renewal\\_information.html](http://chemistry.org/portal/a/c/s/1/acdisplay.html?DOC=siteinfo\renewal_information.html) visit ACS Giving <http://acs.org/gifts> or call Mary Bet Dobson at 1-800-227-5558, x4094 for more information on how to make a gift or pledge.