

THE OCTAGON



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Lehigh Valley Section of the American Chemical Society

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Meeting Announcement:

779th LVACS Meeting: Moravian University

~ Student Awards Night and Undergraduate Student Research Poster Session~

Date: Wednesday, April 27th, 2005

Location: Moravian College n North Campus

Reception & Poster Session:

5:00 n 6:15 pm, Lobby Collier Hall of Science

Dinner: 6:15 pm n UBC Room, Hauptert Union Building

Meeting & student Awards Presentation:

7:30 pm Dana Lecture Hall, Collier Hall of Science

Talk: At the conclusion of the meeting - Dana Lecture Hall, Collier Hall of Science

Menu: Buffet featuring Almond Crusted Chicken and Pasta Primavera

Cost: \$20, students \$10

Contact: LouAnn Vlahovic by Noon, Friday, April 22nd. Please include your name, affiliation, and for students whether an awardee, poster presenter or both. Registration can be made by phone (610-861-1300) or by email melnv01@moravian.edu (the last two digits are numbers). Please put LVACS Registration in the subject line. (Note: email registration will be confirmed by return email.)

Directions: Directions to Moravian can be found at <http://www.moravian.edu/admission/directions.htm>. Suggested parking is in Lots M, N, & O, along Locust Street. A campus map is available at <http://www.moravian.edu/campusMaps/north.htm>.

Speaker: Larry Murrell, Ph.D.

Larry Murrell received a BS in Chemistry from the Colorado School of Mines, and a Ph.D. in Inorganic Chemistry from the University of Illinois. This was followed by postdoctoral work in Organometallic Chemistry at the University of Wyoming. Larry's career has been spent as an industrial chemist first at Exxon Research & Engineering Co. Corporate Research -

Science Laboratories. Followed by serving as a Senior Research Chemist for Engelhard Incorporated. He is currently working as the Senior Principle Research Chemist at ABB Lummus Global, in Bloomfield NJ. During his career he has been the author of many publications and patents.

Talk: Sols and Mixtures of Sols as a Way to Prepare Unique Materials

Abstract: Gelation of colloids, or sols, has been employed in the past 15 years in an intensive way to make novel catalytic and sorbent materials [1-3]. It is intriguing just how little has been done employing mixtures of commercially available sol materials [1]. One of the barriers to prepare these systems is that many sol systems are incompatible due to the pH and the counter ions that are used to stabilize commercially available sols. The one major advantage of preparing materials from mixed sol precursors is simply that these materials can often not be made by any other procedure. The reality is that formation of crystals within a pre-formed support is a barrier to form certain size of crystalline materials within the void space provided by the support [1]. In this presentation the use of well characterized commercial colloidal materials provides useful examples where the starting sol, during the gelling process, is completely consumed in the formation of the final primary particles in the gelled material. In other cases, the starting sol size is maintained and becomes the size of the primary particle that

is the building block of the final dried and 500OC air treated catalyst or catalyst support. In the case of mixtures of sols, evidence will be presented for where crystallization processes are altered by having two sols present in the gelled state.

Recent work has shown that it is possible to manipulate the gelation behavior of single oxide and mixed oxide sols by use of acetone-water mixtures. In earlier work [4], catalysts were prepared using ruthenium chloride in acetone by addition to the pore spaces within magnesium oxide. What was intriguing about this earlier work is the fact that excellent catalysts were also obtained by having as high a water-acetone weight ratio as 70-30. It was this previous work that stimulated an investigation of mixed acetone-water mixed solution preparations where colloidal oxides were investigated. To the best of our knowledge this is the first time that inorganic oxide slurries and their mixture have been formed as meta-stable slurries, and then subsequently gelled by a number of procedures.

References:

1. Murrell, L.L., Catal. Today 35 (1997) 225
2. Ward, D.A. and Ko, E.I., Langmuir 11 (1995) 369
3. Balahrishnan, K. and Gonzalez, R.D., J. Catal. 19 (1993) 395
4. Tauster, S.J., Murrell, L.L., DeLuca, J.P., J. Catal., 48, 258, 1977

Meeting Announcement:

780th LVACS Meeting: DeSales University

~ High School Teacher's Night ~

Date: Friday, May 13, 2005

Location: Bishop McShea Student Center

Reception: 5:15 to 6:15 PM cheeses, strawberries, grapes, crackers, non-alcoholic champagne, and sodas

Dinner: 6:15 PM

Meeting: 7:30 PM Lecture Hall of Priscilla Payne Hurd Science Center

Talk: Following meeting

Menu: Buffet featuring salad, baked ham, fish with fresh tomatoes and spinach garnish, chicken medallions, pasta, rice pilaf, fresh green beans, baby carrots with cinnamon butter, tiramisu chocolate cheese cake, strawberry shortcake, coffee and tea

Cost: \$20.00 members; \$10.00 students

Contact: Mrs. Renee Fair (610) 282-1100, Ext. 1386 or Renee.Fair@desales.edu by Tuesday, May 10 at 4:00 PM

Directions: Directions to DeSales can be found on the web

at <http://www.desales.edu/>

Speaker: Dr. J. David Lawson, Senior Computational Chemist, Vitae Pharmaceuticals

Talk: Better Living Through (Computational) Chemistry

Abstract: Computational chemistry is a relatively new field within the molecular biosciences. Drawing from biology, chemistry, physics, and computer science, computational chemistry uses computers to understand biologically important processes at the atomic level. Two case studies will be presented. The first describes the role of computational chemistry in elucidating how muscles work at a molecular level. The second describes how computational chemistry is revolutionizing the discovery of new human therapeutics in the pharmaceutical industry. Also presented will be an overview of the potential uses for computational chemistry in primary and secondary education.

Councilors' Report

229TH ACS National Meeting

San Diego, CA, March 13-17, 2005

submitted by Carol Libby.

Pam Kistler and I represented the Lehigh Valley Section of the ACS at the recent national meeting. Our main duty was to participate in the Council meeting, which in my experience is similar to a large and formally run college faculty meeting. The Council is a representative body, with the vast majority of councilors representing either local sections or technical divisions. The business of Council involves hearing committee reports, voting on matters that have passed through the society's committee structure, and hearing about ACS matters from the ACS President, Executive Director, and Board of Directors.

Here are some selected highlights from the Council meeting:

◆ We voted that Catherine T. Hunt (Director of Rohm and Haas Technical Partnerships) and John W. Kozarich (President/CEO of ActivX Biosciences) will be the candidates for 2006 President-Elect. They join George E. Heinze (business consultant and retired J&J Vice President), who was certified as a petition candidate.

◆ We voted to establish a Committee on Ethics. The charge of this committee would be as follows: to coordinate the ethics-related activities of the Society, serve as an educational resource and clearinghouse, but not as an adjudication body, for ACS members seeking guidance on ethics issues; raise awareness of ethics issues through meeting programming and columns/editorials; review recognition opportunities for

acknowledging ethical behavior; and to develop and oversee such other ethics-related activities as will serve ACS members and promote the Society's standards of ethical conduct within the profession of chemistry and its related disciplines.

◆We voted to continue the Committee on Project SEED. The Committee on Project SEED oversees the Society's summer educational experience program for disadvantaged youth.

◆There were about 15,400 registrants for the San Diego meeting, including 4,200 students.

◆Membership in the American Chemical Society was 158,127 as of year-end 2004. Compared to the previous year, this represents less than a 1% decrease. In 2004, more than 13,000 new members were added to the rolls.

◆ACS President William F. Carroll presented an overview of Chemistry Enterprise 2015, posing the question, "Where will our students come from in the next ten years, and where will they go?" Councilors then participated in a lively discussion of this issue. The issue was framed as follows: currently the U.S. has a strong university system and U.S. graduate education in science is widely recognized as the best in the world, but problems loom on the horizon. In addition, a variety of factors in the nation's academic infrastructure are likely to produce change in the training and careers of new chemists. The discussion at Council intensified awareness of this issue and possibilities for solutions.

◆We learned from the Board of Directors that the Society ended 2004 in a good financial position, having \$5.1 million gain above expenses of \$415 million

◆A new Society journal, *ACS Chemical Biology*, is scheduled to debut in 2006.

In addition to attending the Council meeting both Pam and I spent many hours in committee work. I am a member of the Local Section Activities Committee whose mission is to promote the success of local sections and the spirit of volunteerism among section members. I also participate on the Committee of Minority Affairs, working to link the interests of minority chemists with ACS resources in their communities. Pam is a member of the Membership Affairs Committee and also serves on the Board of Trustees for Group Insurance Plans for ACS Members.



Look For LVACS on the web
at www.esu.edu/lvacs

Question of the Month

What "fictional" material was invented by Dr. Nichols of Plexicorp, a 20th century San Francisco manufacturing company. Of course, Dr. Nichols had help from 23rd century, time-traveling members of the crew of the U.S.S. Enterprise NCC-1701.

LVACS Officers - 2005:

Chair: Tara Baney
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Chair Elect: T. Michelle Jones-Wilson
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Immediate Past Chair: Steve Weiner
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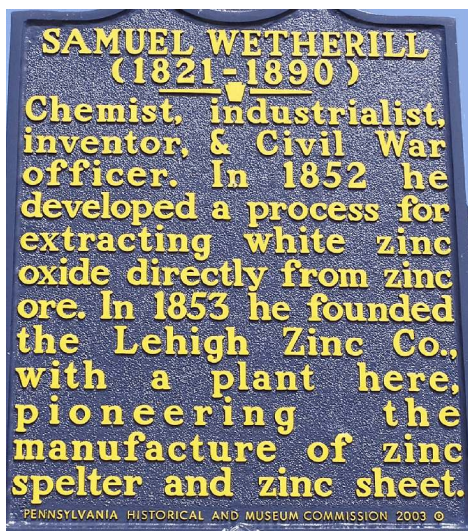
Councilor: Carol Baker Libby
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Councilor: Pamela D. Kistler
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Alternate-Councilors: Roger Egolf & T. Michelle Jones-Wilson (see above)

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

*History of the LVACS -
Chemist Honored on State Historical Marker
Submitted by James J. Bohning*



(Photograph courtesy Roger Egolf)

Samuel Wetherill (1821–1890) has been honored with an historical marker by the Commonwealth of Pennsylvania. Erected within the past year, the plaque is located on the north side of Columbia Street, between Webster Street and Technology Drive in Bethlehem, very close to the original site of the Lehigh Zinc Company along the south side of the Lehigh River. That land is now occupied by several high tech industries.

Samuel Wetherill's ancestors were Quakers who settled in New Jersey in 1682 when they came from England. His great-grandfather, Samuel P. Wetherill (1736–1816), was "excommunicated" by his Quaker brethren for helping in the defense of Philadelphia during the Revolutionary War. He subsequently founded the Society of Free Quakers, a group who believed in defensive war and became known as the "Fighting Quakers."

Born in Philadelphia, the younger Samuel Wetherill was educated at the University of Pennsylvania, where he graduated in 1845. He went to work for his grandfather's firm in Philadelphia that manufactured paint pigments, especially white lead, the basic lead carbonate. Wetherill became interested in the possible substitution of zinc oxide for the lead pigment, and started to explore ways of making it directly from zinc ores. During the two years he was at the New Jersey Zinc Company in Newark, Wetherill developed a furnace that could make the desired product from the zinc ores unique to northern New Jersey.

In 1845 mineralogist William Roepper confirmed that a

strange mineral found many years earlier in Friedensville, Pennsylvania did indeed contain zinc. When New Jersey Zinc turned down Roepper's offer of his lease on the land where the zinc ore was discovered, Wetherill and Charles Gilbert decided to take advantage of the opportunity and came to South Bethlehem to start what became known within a few years as the Lehigh Zinc Company. The first zinc oxide was produced using Wetherill's furnaces on October 13, 1853. It was the second commercial production of zinc oxide in the United States, as New Jersey Zinc had started its manufacturing two years earlier.

Wetherill then turned his attention to making zinc metal, or spelter, which he did successfully in 1854. A small ingot from the first casting still exists at Lehigh University. By 1857 zinc sheet was being made in South Bethlehem from Pennsylvania ores. In 1859 Joseph Wharton leased the Wetherill furnaces and introduced a Belgian method that made zinc spelter more economically. It was the first commercial production of the metal in the United States.

In August of 1861 Wetherill was commissioned a captain of the 11th Pennsylvania Cavalry, in charge of two companies that he had recruited in Bethlehem. He was discharged in 1864 as a major, and a year later was made lieutenant-colonel for his services during the war. Wetherill came back to his business, but there would be no more inventions or patents. In 1881 two sons and two others bought the company and managed it until it was purchased by New Jersey Zinc in 1897.

Wetherill's first cousin, Charles Mayer Wetherill, was the first chemistry professor at Lehigh, recruited to be one of the first five faculty at Lehigh when it opened its doors in 1866. Charles was the first chemist at the U.S. Department of Agriculture and later a chemist at the Smithsonian Institute. He designed the ventilation system for the U.S. Capitol and was a special agent for Abraham Lincoln during the Civil War. There is a strong possibility that the Wetherill business in South Bethlehem was in part responsible for Charles leaving his position in Washington and come to a brand new university with an unknown future.

Readers interested in more information on the history of the local zinc industry may wish to consult one of Lehigh's [digital projects at http://digital.lib.lehigh.edu/lvgeology/index.html](http://digital.lib.lehigh.edu/lvgeology/index.html). Here one can find the entire contents of a two-volume work on the local geology of Lehigh and Northampton counties. Use the browse command to explore the table of contents and look for mineral resources.

See also "Early zinc works in the Lehigh Valley" by Robert D. Billinger, *Journal of Chemical Education* **1936**, *13*, 60 ff.

Reminder: There is still time!

Undergraduate Research Poster Session

April 27, 2005

Moravian College - preceding the April LVACS meeting

5:00-6:15 PM

(Details will be published in the April Octagon)

Who may participate?

Undergraduates attending a college or university within the Lehigh Valley section of the ACS. Research may have been done at the student's home institution with a chemistry or chemical engineering faculty member or during a summer research experience elsewhere.

To participate . . .

Submit an abstract by April 18, 2005, as a Microsoft Word attachment to an email to cblibby@cs.moravian.edu. Please indicate "LVACS Poster Session" in the subject line of your email header.

Travel Award . . .

One poster session participant will be chosen to receive a \$250 award to support travel to present research at a national or regional ACS meeting.

(Travel Award Details)

<http://www.esu.edu/lvacs/notices/2005postersession.htm>

LVACS Organic Chemistry Scholarship

The Lehigh Valley Section of the American Chemical Society's Scholarship for Organic Chemistry Competition takes place on Saturday April 30, at Cedar Crest College, 100 College Drive, Allentown, PA, 18104, 9:00 AM-10:30 AM in Alumni Hall, room 212. The competition entails taking the ACS Organic Chemistry Examination (50%), a letter of recommendation from the student's organic chemistry professor (10%), and an essay on a topic in organic chemistry (40%). The value of the scholarship is \$1000. Additionally the top essay will receive \$100. Details for the letter and the essay follow below. The student should be below the junior level currently enrolled in organic chemistry attending college at an institution in the section. The student also must be a chemistry biochemistry or chemical engineering major. Students should indicate their interest in the scholarship in advance to Julie B. Ealy or Carol Libby at the addresses below. Please see www.esu.edu/lvacs click on scholarship

Julie B. Ealy

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Spring/Summer ACS Regional Meetings Update

Middle Atlantic Regional Meeting May 22 - 25

The North Jersey Local Section is hosting one of the most ambitious regional meetings to date at the Rutgers Busch Campus, Piscataway, NJ. The opening day of MARM is for educators from K-12 and college level. There will also be community activities with chemical demonstrations for the public. Monday through Wednesday is heavily scheduled with extensive programming by well-known chemists in pharmaceutical, medicinal, industrial and academic research. Dieter Seebach (ETH) will deliver a keynote talk on - and - Peptides: Syntheses, Structures, and Biomedical Potential.

There will be extensive programming tailored to the interests of undergraduates and graduates, and several days of workshops on career and employment opportunities. Visit their website at www.marmacs.org for details on a meeting that is a must to attend in 2005.

The Alaska Local Section plays host to this year's **Northwest Regional Meeting (NORM)** June 15- 18 in Fairbanks, Alaska—and what a meeting it promises to be! There will be joint programming with the Small Chemical Businesses Conference, symposia on the latest technology to address terrorism, and homeland security.

ACS President William Carroll will give a plenary address on second careers teaching high school chemistry. Dr. Oliver Sacks, neurologist and well-known author (*Awakenings*, *The Man Who Mistook His Wife for a Hat*) will speak June 16. For attendees who can stay a day or two after the meeting, NORM is offering a trip to the Arctic Circle during the Summer Solstice. Abstracts and registration are open. Visit their website at www.NORM-SCHB-2005.org for details.

The **Northeast Regional Meeting (NERM)**, hosted by the Western Connecticut Local Section takes place July 14 – 17 at Sacred Heart University in Fairfield, Connecticut—only 50 miles from New York City. Both abstracts and advance registration are open online and may be reached via their website at <http://www.nerm2005.org>.

Some symposia topics include biochemistry, computational, environmental, inorganic, and physical chemistry. Other topics include chemical consulting, cosmetic chemistry, and flavors and fragrances. A strong educational component is planned with a Dr. Babu George Memorial Chemical Education Symposium, a look at applications-based teaching and project-based learning, and teaching as a second career