



# ISOTOPICS

The Cleveland Section of the American Chemical Society

Volume 85 Issue 1

January 2009

## On Deck:

Wednesday, February 18

Speaker: TBD

Joint Meeting with the Society  
of Technical Communication

Rockwell Automation, Mayfield  
Heights

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## January Meeting Notice

Past Chair's Night

Wednesday, January 21, 2008

Bier Markt and the Glass Bubble Project, Ohio City

4:30 pm Executive Committee Meeting

5:30 pm Social Time

6:00 pm Tours

### Past Chair's Night

Come join us for Belgian bier and heavy appetizers at the Bier Markt, where we will express our appreciation to the new past chair for her efforts over the past year. Also, we have arranged for tours of the Glass Bubble Project (GBP) on nearby Bridge Street. The GBP is a glassblowing studio open to the public for lessons and as a working studio. One of the founders of the GBP, Mike Kaplan, will be giving demonstrations of real glassblowing for small groups. From their website ([www.glassbubbleproject.com](http://www.glassbubbleproject.com)):

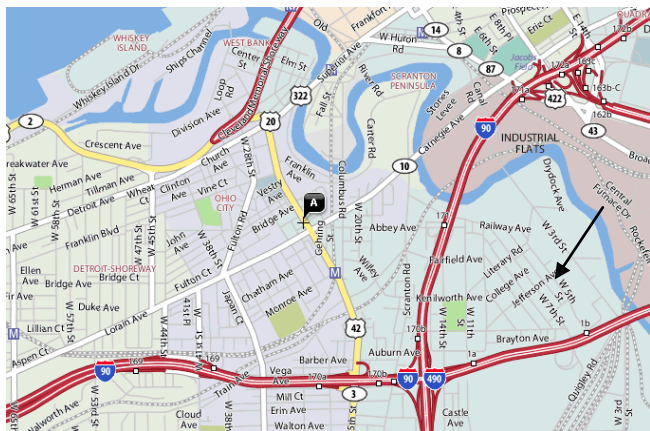
The Glass Bubble Project (GBP) was founded in 1998 by Michael Kaplan and Chris McGillicutty using their own hard work and equity. The studio is located in Ohio City, Cleveland Ohio, on the corner of Bridge and West 24th Street near the world famous West Side Market. Today GBP is a working studio and classroom for artists and students who need a creative atmosphere to practice and create blown glass works of art. The studio is a space where students learn the craft of glass blowing while working together with other local artists. Come join us for a unique experience of bier and molten glass!

Also, with the changing of the guard that occurs every January, we honor those who have served the Cleveland Section ACS as chair of the section. As a small thank you for their efforts, past chairs get in for half price.

**DINNER RESERVATIONS REQUIRED:** Please RSVP by contacting David Ball, by phone at 216-687-2456 or by e-mail at [d.ball@csuohio.edu](mailto:d.ball@csuohio.edu) by **5 pm on Friday, January 16.** (For phone reservations, please clearly spell your last name and leave a return phone number). Cost of the dinner is \$20 for members & guests and \$10 for students and past chairs. Checks made out to "Cleveland ACS" are greatly appreciated. Dinner will be heavy appetizers (mostly a variety of pizzas) and one bier ticket will be supplied for each attendee. Soft drinks will also be available.

## Directions to Bier Markt

1948 West 25<sup>th</sup> Street, Ohio City



The Bier Markt is located at 1948 West 25<sup>th</sup> Street in Ohio City, across the street from West Side Market. The area can be reached from Carnegie Avenue through downtown Cleveland, from Highway 2 from the west, or from I-71 from the south. Free parking is available next to the West Side Market. **Park in the northwestern-most corner of the lot** (right across from the Glass Bubble Project, as it turns out), and walk down Bridge Ave to West 25<sup>th</sup> St. The Bier Markt is on the left on the other side of the street.

## Call For Papers – 2009 Meeting-In-Miniature

By David Ball

The 2009 Cleveland ACS Meeting-In-Miniature will be held at the Ohio Aerospace Institute on March 18, 2009. It will consist of several topical sessions and will feature cash prizes for outstanding undergraduate and graduate student presentations. Abstracts for oral presentations must be submitted prior to the Meeting. Abstracts should conform to normal ACS guidelines, be less than 200 words total, and submitted as an MS Word document only. Undergraduate presenters should be labeled with an asterisk (\*); graduate presenters should be labeled with a double asterisk (\*\*). Submit abstracts electronically as a Word attachment to David Ball at [d.ball@csuohio.edu](mailto:d.ball@csuohio.edu). Deadline for abstract submission is February 28, 2009.

## Chemistry is for the Birds - 4

By Dwight Chasar

In this continuing series of articles on how the central science of chemistry has permeated the avian biology world, I address some topics of organohalogen compounds and birds.

No doubt, through Carson's *Silent Spring* (1962), newspapers, journals, and many other venues, almost everyone is aware of the controversy on the use of DDT as an insecticide and some role in the precipitous loss in populations of North American (NA) raptors, e.g., bald eagle, peregrine falcon, osprey, and the like. While I don't intend to address any controversy ([www.junkscience.com/ddtfaq.html](http://www.junkscience.com/ddtfaq.html)) here, I just want to bring to the readers' attention a few elements of work that involve organohalogen compounds associated with birds.

Dichlorodiphenyltrichloroethane (DDT) (<http://en.wikipedia.org/wiki/DDT>) was synthesized in 1874 but it was the Swiss scientist Paul Muller who found in 1939 that DDT is a potent insecticide and he subsequently received the Nobel Prize in Physiology and Medicine in 1948 for that discovery. With DDT's widespread use in North America as an insecticide, it was discovered that DDT bio-accumulates in birds at the top of the food chain and it was implicated in the population drop of raptors through the 1960s into the 70s. When DDT was banned in 1972, NA saw an improvement in raptor populations in the decades following. Seeing bald eagles or peregrine falcons here in NE Ohio has become somewhat of a common occurrence more recently.

Scientists found that it was not really DDT that was so detrimental to the birds but its degradation product DDE, (dichlorodiphenyldichloroethylene) (<http://en.wikipedia.org/wiki/Dichlorodiphenyldichloroethylene>), that resulted from dehydrochlorination of the DDT during metabolism. DDE is fat soluble and accumulates in the bird's fatty tissues. The DDE was detrimental not so much as poisoning the birds but contributed to shell thinning of the eggs that the birds laid. The thin eggshells could not support the weight of these larger birds and consequently

broke. One finding was that anything less than 1-3 ppm in the eggs has no effect on thinning.

Eggshells consist of about 95% calcium carbonate crystals with a protein matrix for stabilization. A 2001 report proposed that DDE is released into the bird's bloodstream and while in the uterus, DDE inhibits the enzymes carbonic anhydrase and calcium ATP-ase. This disruption causes partial blockage of the layering of calcium and carbonate on the eggshell, resulting in thinning

Polychlorinated biphenyls (PCBs), used in electrical transformers as well as many other applications, have also received bad press for any number of reasons. A bird study in Canada has shown that since the reduction in use of PCBs since the early 1970s, Herring Gulls around Lake Erie have experienced a decrease in PCBs in their eggs by up to 75%. This might help explain the huge population increase in these gulls in the last 30 years, as witnessed during the winter at East 72<sup>nd</sup> Street in Cleveland.

In a more recent report (Chemical and Engineering News, October 20, page 52, 2008), scientists have now found that perfluorooctane sulfonate (PFOS) is a dominant pollutant of 11 perfluorinated compounds (PFCs) tested in waterbird (egrets and night herons) eggs of South China. PFCs are widely used in consumer products and are known to be toxic to birds.

Viewing halogenated compounds from a different perspective, it has been reported that more than 3200 naturally occurring organohalogen compounds are known. Many are produced by marine organisms, bacteria, fungi and plants. Several of these have been found in the eggs of ocean seabirds like albatross, puffin, gull, petrel and auklets and the structures subsequently identified by independent synthesis <http://www.rsc.org/Publishing/Journals/CC/article.asp?doi=a906655a> (Chemical Communications, November 7, 1999). Two of these were brominated and chlorinated 1,1'-dimethyl-2,2'-bipyroles.

Go to <http://images.google.com> to search for photos of the birds discussed in this article.

## **Call for Nominations: Heller Award**

By Kenneth W. Street

The Cleveland Section of the American Chemical Society annually sponsors an award to recognize an outstanding high school chemistry teacher in the Cleveland Section. The award consists of an honorarium of \$1,000 and a framed certificate. The award is named for Irene Heller of North Olmsted High School in recognition of her contributions as an outstanding high school chemistry teacher and her service to the Cleveland Section. For more details regarding the award please visit: [http://www.csuohio.edu/sciences/dept/cleveland\\_acs/Heller.htm](http://www.csuohio.edu/sciences/dept/cleveland_acs/Heller.htm)

Nominations for the award should be presented to Kenneth Street, NASA-GRC, MS- 23-2, 21000 Brookpark Road, Cleveland, Ohio 44135 by close of business Friday, March 13, 2008. The nominations should consist of information on the candidate's education, professional experience and activities, awards and honors, offices held and specifics on significant contributions. The letter of nomination should highlight these significant contributions. Seconding letters are suggested. Nominations should be sponsored by at least one member of the Cleveland Section. If you do not know a local section ACS member willing to serve as Champion for your candidate, contact Ken Street and he will provide one for you. The Cleveland Section is geographically confined to the counties of Cuyahoga, Geauga, Lorain, Medina, Huron, and Erie. Nominators of candidates who work outside of these counties may contact the Cleveland Section of the American Chemical Society for more information about High School Chemistry Teacher Awards. A detailed curriculum vita of the candidate may also be included. Electronic nominations using Word or PDF Files mailed to [kenneth.w.street@nasa.gov](mailto:kenneth.w.street@nasa.gov) will be greatly appreciated. Ken Street may be contacted at 216-433-5032 during business hours for assistance with submissions.

The award will be presented at the April 15, 2008 meeting of the Cleveland Section.

## **2009 Central Regional Meeting of the ACS Announces Call for Papers**

The Cleveland Section of the American Chemical Society invites you to the 2009 Central Regional Meeting of the American Chemical Society, CERMACS 2009, at the historic Renaissance Cleveland Hotel, Cleveland, Ohio, May 20-23, 2009. This event is being co-sponsored by the Electrochemical Society, the Society for Applied Spectroscopy, the American Vacuum Society, the Yeager Center for Electrochemical Sciences, and Case Western Reserve University. Abstracts will be accepted from **January 17, 2009** through **March 16, 2009** (see information below).

The theme for CERMACS 2009 is *Meeting Energy & Environmental Challenges Through Functional Materials*. In addition to the traditional symposia on Analytical, Inorganic, Organic, and Physical Chemistry, the meeting organizers are planning symposia on:

- Energy Storage and Energy Conversion
- Functional Materials
- General Catalysis
- Chemical Education
- Chemical Biology
- Medicinal Chemistry
- Art and Science
- Forensic Science
- Computational Chemistry
- Environmental Chemistry
- Health Impact of Nanomaterials
- Lunar Regolith and Simulants
- 100 Years of Chemistry in Cleveland

CERMACS 2009 is pleased to announce three keynote speakers for the technical program, Professor Charles M. Lieber of Harvard University, Professor Daniel G. Nocera of the Massachusetts Institute of Technology, and Dr. Linda Abraham-Silver of the Great Lakes Science Center. The Cleveland Section will continue four decades of tradition by presenting the Morley Medal for 2009 at the Morley Award Symposium. The Morley Medal recognizes significant contributions to chemistry through achievements in research, teaching, engineering, research administration and public service, outstanding service to humanity or to industrial progress. Workshops and short courses are planned. The undergraduate program will include an undergraduate research poster session as well as networking opportunities. Contact information for symposia chairs and details regarding this event can be found at the CERMACS 2009 website, [www.cermacs2009.org](http://www.cermacs2009.org).

In addition to the technical program, CERMACS 2009 will include an opening mixer and an awards banquet where the following awards will be presented:

- The Stanley C. Israel Regional Award For Advancing Diversity in the Chemical Sciences
- The ACS Division of Chem. Ed. Central Regional Award for Excellence in High School Teaching
- The E. Ann Nalley Central Regional Award for Volunteer Service to the American Chem. Society
- The Regional Industrial Innovation Award

Special meeting rates have been arranged at the Renaissance Cleveland Hotel, 24 Public Square, Cleveland, Ohio 44106. For reservations, call (216) 696-5600 and ask for the ACS rate. Program Chair: Dr. Kenneth Street, [Kenneth.W.Street@nasa.gov](mailto:Kenneth.W.Street@nasa.gov), (216) 433-5032. Exposition: Amir Zaman, [sponsorship@electrochem.org](mailto:sponsorship@electrochem.org), (609) 737-1902 x103.

## **Entrepreneurial Activity Then and Now**

### **A Symposium and Dedication of Two Plaques Honoring Charles M. Hall's Principal Patent**

**Oberlin College, February 23, 2009  
Craig Lecture Hall, Science Center**

4:45 p.m.

*His Eye Fixed on Securing a Patent, Charles Hall Pursued an Economical Method for Refining Aluminum Metal*, Norman C. Craig

8:00 p.m.

Presentation of the Plaques to  
Sean Decatur, Dean of Arts and Sciences, Oberlin College  
and  
Patricia Murphy, Executive Director, Oberlin Heritage Center

8:10 p.m.

*The Scientist as Entrepreneur – Miscible or Immiscible; Lessons Learned from Real Life*,  
Dennis Flood

On February 23, 2009, the 123<sup>rd</sup> anniversary of the discovery, we will celebrate the presentation of two plaques recognizing Charles M. Hall's principal patent for refining aluminum metal by electrolysis. Plaques are being presented to Oberlin College and the Oberlin Heritage Center under the Chemical Breakthroughs Program of the Division of the History of Chemistry of the American Chemical Society.

The afternoon talk by Norman C. Craig, Professor of Chemistry emeritus will be an historical account of Charles Hall's development of the electrolysis process for extracting aluminum metal, of the five patents awarded for this work, and of the environment for entrepreneurial activity in the last quarter of the nineteenth century.

The evening talk by Dennis Flood will focus on technical entrepreneurial and patent activity in the twenty-first century. Dr. Flood, a physicist, retired early from the NASA Glenn Center to pursue the commercialization of patentable ideas developed by scientists at NASA and elsewhere.

*This event is free and open to the public. It is sponsored by the Oberlin College Department of Chemistry and Biochemistry in cooperation with the Oberlin Heritage Center.*

*For further information contact Norman C. Craig, Norm.Craig@oberlin.edu or (440-775-8664).*

## December/January Historical Events in Chemistry

By Leopold May

The Catholic University of America, Washington, DC

- December 9, 1868 Fritz Haber, who was born on this date, synthesized ammonia from hydrogen and nitrogen under high pressures (Haber Process). In 1918, he received the Nobel Prize for the synthesis of ammonia from its elements.
- December 17, 1908 One hundred years ago, Willard F. Libby was born. He developed carbon dating and received the Nobel Prize in Chemistry in 1960, for his method to use carbon 14 for age determination in archaeology, geology, geophysics, and other branches of science.
- December 23, 1912 Twenty-five years ago, Anna J. Harrison served as president of the American Association for the Advancement of Science. She was the first woman to be the president of the ACS in 1978 and was born on this date.
- January 12, 1916 Ruth R. Benerito, who was the first woman to win the Southern Chemist Award for research in cotton chemistry, was born on this day.
- January 21, 1845 The founder of the Mallinckrodt Chemical Works, Edward Mallinckrodt, was born on this day
- January 31, 1963 The first manuscript on the solid phase synthesis of peptides by R. B. Merrifield was received on this date by the Journal of the American Chemical Society [85, 2149 (1963)]

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*Isotopics* is looking to highlight local chemistry professionals, companies, teachers, research groups, students, events, and more. If you have an idea for an *Isotopics* article, please contact the editor. *Isotopics* is also looking for local members to join our staff. Time commitments for staff members are minimal (a few hours a year!) and your contributions will be invaluable to our local section. If you are interested in joining *Isotopics*, please contact the editor.