



ISOTOPICS

The Cleveland Section of the American Chemical Society

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On Deck:

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Place and topic TBD

January Meeting Notice

Wednesday, January 20, 2016

Market Garden Brewery, Ohio City Room, 1947 West 25th
Street, Cleveland, Ohio 44113

4:30 – 5:30	Executive Committee Meeting
5:30 – 6:15	Social/Networking
6:15 – 7:00	Dinner
7:00 – 8:00	Presentation

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"Fueling Our Future Transportation Needs."

William B. Chamberlin

Abstract – Concerns are growing that conventional fuels have undesirable impacts on health, the environment, and geopolitics. Advances in fuels and power systems may offer attractive alternatives. The talk will summarize where we are and review past failures. Bill will draw on his 30+ years of professional involvement to assess some of the obstacles to overcome in pursuing several promising alternatives.

Speaker's Biography – Bill Chamberlin spent 34 years in R&D at The Lubrizol Corporation involved in advanced crankcase lubricant applications. He retired in 2004 and continues to consult. Advanced lubricant applications Bill has worked on include: rotary engines, direct injection two-strokes, and alternatively fueled engines (alcohols, gaseous fuels, biofuels, etc.). In 2003 he was recognized as the Outstanding Chemist of the Year by the Northeast Ohio American Chemical Society Section. Bill was elected a Society of Automotive Engineers (SAE) Fellow in 1995. Bill has also been active in the SAE including Chair of the SAE Emerging Technology Committee, Chair of the Cleveland Section, and member of the SAE Sections Board. He holds 15 patents and has authored or co-authored 19 papers. He holds BA (1966) and MS (1970) degrees in chemistry from Miami University (Ohio).

DINNER RESERVATIONS REQUIRED:

Please RSVP to Dr. David Orosz at dorosz@ndc.edu with the names and number of people in your party by 3:00 p.m. on Friday, January 15. A buffet style dinner will be offered with vegetarian options. We now can take credit card payments, checks made out to "Cleveland ACS," or cash. The cost is \$20 for members and guests, \$10 for retirees or unemployed, \$5 for students.

From the Desk of the Past Chair

By Theresa M. Nawalaniec

Past Chair of the ACS Cleveland Section

Looking back, 2015 was a very busy and productive year for the Cleveland Section. We applied for and were **awarded three grants from National ACS totaling \$4750**: the first was a **Leadership Development Grant (\$3000)**, the second a **Local Section Innovative Project Grant (\$1500)**, and the third a **Bridging the Gap Nano-Grant: Supporting K-12 Teachers of Chemistry (\$250)**. We've already used the \$3000 for our Strategic Planning Retreat (SPR), held in October, with 18 of our members participating in a day and a half of focused analysis of the current state of our section and what we want our section to become. The time at the retreat proved to be very well-spent in determining the goals and course of action we will take for 2016 and future years. One result of the SPR was the draft of a new vision statement: **"Energize and empower people to transform lives through chemistry in the Greater Cleveland area"**. In a similar vein, the Innovative Project Grant award, titled "Connecting Our Local Section with International Chemical Societies" is earmarked for a joint meeting via Skype with the chemical society members in our sister city of Lima, Peru tentatively scheduled for February. The goal of the meeting is to exchange information for the benefit of both societies. And, our Nano-Grant award will be used this year to reach out to high school chemistry teachers to promote greater involvement and collaboration between them and the ACS.

Our Executive Committee also experimented with some new meeting topics, venues, and formats to attract and involve more members and students. One example was our highly attended Education Night in April, where a presenter from the ACS Speakers Bureau discussed the chemistry of chocolate and distributed samples. Another highlight was the tour and presentation at BASF in October, which targeted students who were interested in local industry and seeking career information. We also continued our long-

standing tradition of presenting the Morley and Heller awards to professionals, as well as the NCW, NEOSEF, and Meeting in Miniature (MIM) awards to students. However, in 2015, we increased the MIM awards to \$400 for graduate students and \$350 for undergraduates.

I am surprised at how quickly my time as chair has passed and that we are already beginning a new year. Thank you for the opportunity to serve as chair and chair-elect these past two years. I am also grateful to my very talented and industrious colleagues who worked with me to achieve our accomplishments in 2015. I look forward to serving as past chair this year and continuing to work toward the strategic goals we established at our planning retreat with our recently elected officers:

Chair-Elect - Lisa Ponton

Secretary - Drew Meyer

Councilor - David Ball (6th term)

Alternative Councilor - Michael Kenney

Trustee - Elizabeth Dabrowski (3rd term)

Director - Jeff Mathys (2nd term)

MIM Call for Abstracts

This year's Meeting-in-Miniature (MIM) of the Cleveland ACS Section will be held Mon. March 7 at Case Western Reserve University, with talks beginning in the early afternoon. Oral presentations (10-15 min in length) will be given by students, both graduate and undergraduate, from area schools. Presentations will be judged and the top presenters will receive cash awards - \$350 for undergraduates and \$400 for graduate students. (Chemistry professionals may also participate as presenters but are not eligible for cash awards.)

Abstracts, 250 words in length, are due before February 28. Abstracts may be submitted online at <http://goo.gl/forms/EQCo7TRkXC>.

All participants are invited to attend the Plenary Presentation by Prof. David E. Lewis, University

of Wisconsin - Eau Claire, titled "Everybody learns Russian organic chemistry!"

Questions regarding the 2016 MIM, including interest in sponsoring an award or facilitating a session, may be addressed to eigensolutions@gmail.com.

Announcement: Chemistry Teaching Symposium and Education Exhibition

Held at Cleveland State University

Grand Ballroom of the New Student Center

March 17th and 18th, 2006

The Chemistry Teaching Symposium at Cleveland State University offers an informal and relaxed forum for teachers from both large lecture halls and small classrooms to meet, listen, and discuss both the successes and challenges of their experiences. The symposium is open to teachers and students from high schools, community colleges, liberal art colleges and universities to attend and advance the teaching of introductory and advanced levels of chemical concepts and applications. All are welcome.

The keynote speakers are:

Dr. Norbert Pienta, Professor of Chemistry and Director of General Chemistry Instruction at University of Georgia and Editor-in-Chief Journal of Chemical Education. The title of his talk is "Studying Student Problem Solving Using Technology" and

Dr. John Hutchinson, Dean of Undergraduates, Professor of Chemistry and Director of Education for the Center for Biological and Environmental Nanotechnology at Rice University. The title of his talk is "Teaching General Chemistry as one of the Liberal Arts: Constructivism and Active Learning"

The Special breakfast speaker is **Dr. Adrew Jorgensen**, Associate Professor and Director of General Chemistry at University of Toledo. The title of his talk is "The Challenging Transition from High School Chemistry to College

Chemistry"

For more information about the symposium, please visit the web site:

<http://www.pathwaystochemistry.com/events/new-sletter-2/2015-annual-chemistry-teaching-symposium-and-education-exhibition/>

Registration is open (deadline March 6, 2016) and fees will cover daily continental breakfast, lunch, and a Thursday evening win social. Abstract submission deadline was December 11, 2015.

From ACS Discoveries: A step toward understanding how hibernation protects hearts

Journal of Proteome Research

Wintry weather means hats and scarves for some mammals, and hibernation for others. Hibernation dramatically lowers body temperatures, heart rates and oxygen consumption — things that would be fatal to other animals. A team reports in ACS' *Journal of Proteome Research* a study of the proteins and genes that allow squirrels' hearts to stay healthy during the winter. A better understanding of this phenomenon could help researchers develop better treatments for people with cardiac disease.

The thirteen-lined ground squirrel hibernates all winter, but it regularly awakens about once a week. Each time the squirrels go back into slumber, they lower their body temperatures to nearly zero degrees Celsius and reduce their oxygen usage to 2 percent of the aroused state. But they do not develop ischemia, ventricular fibrillation and other dangerous circulatory problems that would occur in most mammals, including humans. These cycles mean their body temperature and metabolism fluctuate substantially, putting their hearts through the wringer over and over. Studying the molecular mechanisms behind how hibernators avoid this physiological roller coaster could one day help researchers understand the biology behind human heart failure, stroke and obesity. So, how do the squirrels survive such

extremes? To answer this question, Matthew Andrews and his colleagues at the University of Minnesota used advanced proteogenomic techniques.

The researchers monitored changes in the ground squirrels' protein expression during different stages of hibernation. They compared these results against the squirrel's recently sequenced genome using a data analysis platform the team developed, called Galaxy-P. This proteogenomic analysis found dozens of proteins and protein signaling pathways that are expressed differently during hibernation. For example, the PPAR signaling pathway was upregulated during hibernation and highlights some of the proteins required to maintain heart function during that process. The team notes that these insights may be translated into therapies to prevent and treat cardiovascular disease in humans in the future.

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