



ISOTOPICS

The Cleveland Section of the American Chemical Society

Volume 91 Issue 1

January 2015

On Deck:

February 18, 2015

Dr. Melanie Cooper
Michigan State University

Case Western Reserve
University

January Meeting Notice

Wednesday, January 21, 2015

Past Chairs Night and Joint Chemistry Librarians Meeting
Stancato's, Parma, OH

4:30 pm	Executive Committee Meeting
5:30 pm	Social/Networking
6:00 pm	Dinner
7:00 pm	Presentation

Cleveland ACS Officers

Chair:

Theresa Nawalaniec
Cleveland State University
(216) 687-3504
t.nawalaniec@csuohio.edu

Chair-Elect:

David Orosz
Notre Dame College
(216) 373-5322
dorosz@ndc.edu

Treasurer:

John Moran
Notre Dame College
(216) 373-6380
jmoran@ndc.edu

Secretary:

Anna Cronin
Great Lakes Science Center
(216) 696-4286
cronina@glsc.org

Isotopics

Interim Editor:

Anna Cronin
(see contact info above)

Cleveland Section Web Site:
http://www.csuohio.edu/sciences/dept/cleveland_acs/

Behind the Scenes of ACS Publications

Ms. Terri Lewandowski, Director of Journal Production and Manufacturing Services, ACS Publications Division

The American Chemical Society is the world's largest scientific society and one of the world's leading sources of authoritative scientific information. The ACS publishes numerous scientific journals and databases, convenes major research conferences, and provides educational, science policy and career programs in Chemistry. The ACS gives more than \$22M each year in grants for basic research in petroleum and related fields. Ms. Lewandowski will touch lightly on the non-Publications areas of the ACS before speaking about Publications. Perhaps the "hottest topic" in STEM publications today is Open Access. She will discuss the forces that are encouraging open access, and how the ACS is responding to these forces. Ms. Lewandowski will also talk about the authoring, submission, peer review and publication process for ACS journals, with a few tips on getting your paper published. Time will be reserved for questions, answers and discussion.

DINNER RESERVATIONS REQUIRED:

Please RSVP to Theresa Nawalaniec by email at t.nawalaniec@csuohio.edu by 5:00 p.m. on Wednesday, January 14 with your name, total number of guests in your party, and a phone number.

Dinner will be an Italian buffet including: Sicilian Pizza, Garden Salad with House Italian Dressing, Ciabatta Rolls, Sirloin Beef Tips, Italian Marinated Baked Chicken, Parsley Potatoes, California Mix, and beverages. Dessert will also be served.

We now can take credit card payments, checks made out to "Cleveland ACS," or cash. \$20 for members and guests, \$10 for retirees or unemployed, \$5 for students.

Directions to Stancato's Italian Restaurant

Address: 7380 State Road, Parma, OH 44134

Phone: (440) 886-6242

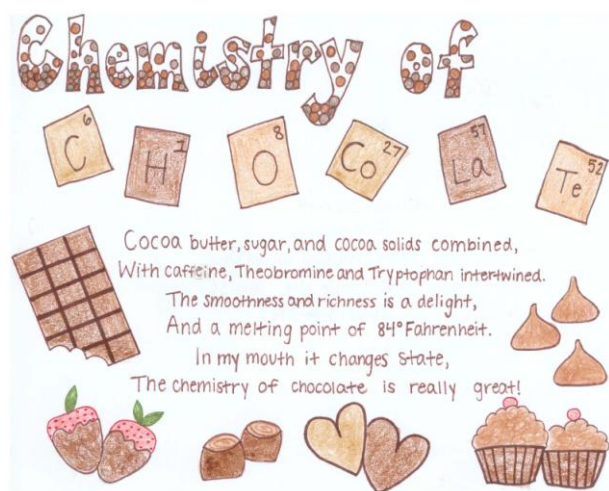
www.stancatos.com

NCW 2014 Illustrated Poem Contest

The Cleveland local section has a national winner of the NCW 2014 Illustrated Poem Contest! Congratulations to Rachel Barrett, a 10th grade student at Lutheran High School West, who won first place in the 9th-12th grade category.

Rachel's poem, illustrated below, reads-

*Cocoa butter, sugar and cocoa solids combined,
With caffeine, theobromine and tryptophan intertwined
The smoothness and richness is a delight,
And a melting point of 84°Fahrenheit.
In my mouth it changes state,
The chemistry of chocolate is really great!*



Call for Science Fair Judges

The Academy of St. Adalbert, Berea, OH hosts a school-wide science fair annually, but several of the prior-years' judges are not available for the fair this year. They are looking for local ACS members to help judge the science fair on Wednesday, January 21st, from 8:30 am to noon. If you are interested please contact Dr. Laura

Eizember, Volunteer Science Fair Coordinator, at laurasta@wowway.com.

Breaking down BPA and similar pollutants with sunlight, nanoparticles and graphene

ACS Applied Materials & Interfaces

Many pollutants with the potential to meddle with hormones — with bisphenol A (BPA) as a prime example — are already common in the environment. In an effort to clean up these pollutants found in the soil and waterways, scientists are now reporting a novel way to break them down by recruiting help from nanoparticles and light.

Nikhil R. Jana and Susanta Kumar Bhunia explain that the class of pollutants known as endocrine disruptors has been shown to either mimic or block hormones in animals, including humans. That interference can cause reproductive and other health problems. The compounds are used to make many household and industrial products, and have been detected in soil, water and even human breast milk. Scientists have been working on ways to harness sunlight to break down endocrine disruptors to make them less of a health threat. But the approaches so far only work with ultraviolet light, which at a mere 6 percent of sunlight, means these methods are not very efficient. Jana and Bhunia wanted to find a simple way to take advantage of visible light, which comprises 52 percent of sunlight.

For inspiration, the researchers turned to an already-developed graphene composite that uses visible light to degrade dyes. They tweaked the composite and loaded it with silver nanoparticles that serve as an antenna for visible light. When they tested it, the new material successfully degraded three different kinds of endocrine disruptors: phenol, BPA and atrazine. They conclude that their composite is a promising way to harness visible light to break down these potentially harmful compounds and other organic pollutants.

The authors acknowledge funding from India's Department of Science & Technology.

Toward a low-cost 'artificial leaf' that produces clean hydrogen fuel

ACS Nano

For years, scientists have been pursuing "artificial leaf" technology, a green approach to making hydrogen fuel that copies plants' ability to convert sunlight into a form of energy they can use. Now, one team reports progress toward a stand-alone system that lends itself to large-scale, low-cost production. They describe their nanowire mesh design in the journal *ACS Nano*.

Peidong Yang, Bin Liu and colleagues note that harnessing sunlight to split water and harvest hydrogen is one of the most intriguing ways to achieve clean energy. Automakers have started introducing hydrogen fuel cell vehicles, which only emit water when driven. But making hydrogen, which mostly comes from natural gas, requires electricity from conventional carbon dioxide-emitting power plants. Producing hydrogen at low cost from water using the clean energy from the sun would make this form of energy, which could also power homes and businesses, far more environmentally friendly. Building on a decade of work in this area, Yang's team has taken one more step toward this goal.

The researchers took a page from the paper industry, using one of its processes to make a flat mesh out of light-absorbing semiconductor

nanowires that, when immersed in water and exposed to sunlight, produces hydrogen gas. The scientists say that the technique could allow their technology to be scaled up at low cost. Although boosting efficiency remains a challenge, their approach — unlike other artificial leaf systems — is free-standing and doesn't require any additional wires or other external devices that would add to the environmental footprint.

The authors acknowledge funding from the U.S. Department of Energy and the Singapore-Berkeley Research Initiative for Sustainable Energy.

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.