



ISOTOPICS

The Cleveland Section of the American Chemical Society

Volume 94 Issue 4

April 2018

On Deck:

Morley Lecture
May 16 2018
T.B.A.

Cleveland ACS Officers

Chair:

Michael Levy
Envantage, Inc.
mlevy@envantage.com

Chair-Elect:

W. Chris Boyd
Cleveland State U.
w.c.boyd59@csuohio.edu

Treasurer:

Regina DiScipio
Case Western Reserve U.
reginadiscipio@gmail.com

Secretary:

Drew A. Meyer
Case Western Reserve U.
dam135@case.edu

Isotopics

Editor:

Geneviève Sauvé
Case Western Reserve U.
(216) 368-3665
genevieve.sauve@case.edu

Cleveland Section Web Site:

http://www.csuohio.edu/sciences/dept/cleveland_acs/

April Meeting Notice

Education Night

Wednesday, April 18, 2018

Cleveland State University Student Center
2121 Euclid Ave., Cleveland, OH 44115

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

"Colors of the Past: Archaeological Chemistry of Natural Dyes"

by Prof. Ruth Ann Armitage, Eastern Michigan University

Abstract: Color fascinates us, and has for millennia. From the vibrant mineral colors of Paleolithic rock art to the development of mauvine, chemistry and color are inseparable. Archaeological evidence indicates that humans may have used plants as much as 30,000 years ago to give color to fibers. Ancient dyers were the earliest experimental chemists, preparing natural dyes from plants, shellfish, and insects. These dye sources can often be identified by their telltale molecules. The Armitage group at Eastern Michigan University works in collaboration with museums and archaeologists to identify these molecules today in textiles, lake pigments, and manuscripts using mass spectrometry methods.

DINNER RESERVATIONS

Please RSVP to Michael Levy by email at mlevy@envantage.com with the names and number of people in your party by *Wednesday, April 11, 2018*. Dinner will include Chicken Parmesan, Tuscan Pasta Bake, Garlic Green Beans, Italian Salad, Dinner Rolls, Beverages, and Chocolate Layer Cake for dessert. The ACS accepts credit cards, cash, and/or checks made out to "Cleveland ACS." Cost: \$20 for members & guests; \$10 for retirees & unemployed; \$5 for students.

Parking and Directions:

Parking will be available in the Central Garage (CG) 1900 E. 21st Street, Cleveland, OH 44115.

A parking lot attendant will be available for assistance. Guests are asked to enter the E. 21st St. entrance of the Central Garage using the 'right most lane' that opens into the permitted section of the garage. As guests arrive, please notify the attendant that they are attending the 'ACS Education Night'. The attendant will issue an OTM validation and allow the guests to enter. Upon entry, guests are able to park in any available (non-reserved) space. Upon the conclusion of the event, guests will use the OTM validation that was previously issued by the attendant to exit the garage.

The CG is adjacent to the Cleveland State Student Center. The dinner and presentation will be held in SC311A/B --located on the 3rd floor of the Student Center.



Speaker Bio:

While still a chemistry student at Thiel College in Pennsylvania, Ruth Ann Armitage, now Professor of Chemistry at Eastern Michigan University, participated in an archaeological field school that confirmed her desire to combine

these seemingly disparate disciplines. She completed a Ph.D. in Analytical Chemistry at Texas A&M University on radiocarbon dating of charcoal-pigmented rock paintings. She has since worked with archaeologists at historic and prehistoric sites around the world. Dr. Armitage and her students develop mass spectrometry methods to characterize archaeological materials, including rock paintings, dyes in ancient textiles, and ceramic residues to help archaeologists understand our ancient past.

Meeting-in-Miniature (MIM) 2018 Awards

On March 28th, 2018, Oberlin College hosted the MIM of the Cleveland Section. This year's plenary speaker was Dr. Emily Pentzer, assistant professor in Chemistry at Case Western Reserve University. As in previous years, the Cleveland ACS section recognized the best graduate and undergraduate student oral presentation with monetary awards.

The Graduate Awards (\$400) were sponsored by Amalgamated Tuna Co., Dwight Chasar and Lubrizol Corporation. The Winners are:

Ashraf Duzan, Cleveland State University: Modulating the activity of trimethylamine lyase CutC/D, a gut microbial enzyme.

Kevin Pachuta, Case Western Reserve University: Compositional changes associated with the exfoliation of lithium cobalt oxide into atomically thin CoO₂ nanosheets.

Jerod M. Kieser, Case Western Reserve University: Metallophosphaalkene synthesis via insertion chemistry of Na[OCp] with benzyne complexes.

The Undergraduate Awards (\$350) were sponsored by: Amalgamated Tuna Co., Energizer Battery Inc., and Oberlin College Department of Chemistry. The winners are:

Leéna Boone, Lorain County Community College: HIV Infectivity Counteracted by the CCR5-delta32 Mutation Effect on CXCR4 Gene

Huan Kyle Nguyen, College of Wooster: Porous Organosilica Adsorbents Tailored for the

Extraction and Analysis of Perfluoroalkyl Substances from Water

P. A. Advincula, Case Western Reserve University: Accommodating volume change and imparting thermal conductivity by encapsulation of phase change materials in carbon nanoparticles.

Congratulations to all and we look forward to a great MIM meeting next year!

NEOSEF ACS Awards

The 2018 Northeastern Ohio Science and Engineering Fair (NEOSEF) was held at Cleveland State University March 13th, 2018. Approximately 500 students in grades 7-12 participated in the fair. During the judging session, volunteer judges for the Cleveland section of ACS reviewed projects entered into the Chemistry Category and selected the best projects for each grade categories. The number of awards was ~ proportional to the number of students presenting in each category. In recognition of their achievements, the award winners and their families have been invited to attend the April ACS meeting, display their posters at the social hour, and receive their award and \$150. The 8 winners are:

Grade 11-12:

Molly Haines, St. Vincent St. Mary High
“Poly(ester urea)s for Soft Tissue Repair”

Grade 9-10:

Edward Dan, Solon High
A Novel Hot-Melt Pressure-Sensitive-Adhesive for Reusable Mail Envelopes and Packages”

Audrey Zorman, Beaumont
“Investigating the Stretchable Properties of Electrically Conductive Polymers for Wearable Electronics”

Grade 7-8:

Julia Carter, St. Helen Elem. “How to Get Away With Murder”

Maria Langal, St. Mary of the Assumption “Algae Growth in the Great Lakes”

Katie Lavelle, St. Raphael Elem.
“Bromelain Breaking it Down”

Rachel O'Reilly, St. Helen Elem.
“Smoking Hot”

Alyssa Wiemels, Lewis F Mayer Middle
“Making Plastic With the pH Scale”

Congratulations to all!

Announcement: 2018 Morley Award

Congratulations to the newly selected 2018 Edward W. Morley award winner, Dr. Dennis J. Stuehr, Professor, Dept. Molecular Medicine, Cleveland Clinic, Lerner Case Western Reserve University School of Medicine. The award presentation and address is tentatively scheduled for Wed. May 16. Details will be on the section web page when available, and in the May Isotopics.

Announcement: Visiting Assistant Professor (Inorganic Chemistry)

OBERLIN COLLEGE invites applications for a non-continuing appointment (one year with possible one-year renewal) beginning July 2018 in the area of Inorganic Chemistry. The appointee will teach five courses—general chemistry, inorganic chemistry, and an advanced course in their specialization—and have the opportunity to direct student research. Submit cover letter, curriculum vitae, graduate and undergraduate transcripts, and arrange to have three letters of recommendation submitted to <https://jobs.oberlin.edu>. By providing letters you agree that we may contact your references. Review of completed applications will begin April 2, 2018. Candidates experienced working with diverse student populations are encouraged to apply.

Full information on the position and application procedures are available at: <https://jobs.oberlin.edu/postings/6220>

Announcement: CERM meeting Cancelled

The Central Regional Meeting, CERM, scheduled for June 13-16, 2018 in Toledo has

been cancelled. An alternative event targeted to graduate and undergraduate students is being planned. Interested individuals can reach out to Mike Kenney for more info or help on this. mkenney40@gmail.com

Call for Papers: The 62nd Annual May Conference

The 62nd Annual May Conference will be held on Wednesday, May 23, 2018 at John Carroll University. The conference typically has 180+ attendees and 30 or more vendors and is a joint meeting that includes participation/sponsorship from a number of societies including SAS, MSNO, ACS, AVS/Ohio, and SPE. There are 30+ oral presentations from a mix of invited speakers, vendors, and students. The cost for students to attend is minimal and students are encouraged to present both papers and posters. There are monetary awards for the best papers/posters and two MSNO awards that include a trip to the national conference. The conference includes the joint SAS/ACS Yeager Award and presentation. Topics are varied and include microscopy, surface science, and spectroscopy. We also recognize the John Bell Award winners from the NEO Science & Engineering fair at the reception. The keynote speaker is Dr. Ka-Pi Hoh, Lubrizol Corporation presenting: "Want to Live and Work Overseas? Lessons Learned During Four Years of Building Labs in China." Additional information can be found at <http://www.msneo.org/2018-sasmsnoacsavs-may-conference.html>

From ACS Discoveries: Mind-controlling molecules from wasp venom could someday help Parkinson's patients

Biochemistry

After being stung by a parasitic wasp, the American cockroach loses control of its behavior, becoming host to the wasp's egg. Days later, the hatchling consumes the cockroach alive. While this is a gruesome process for the cockroach, scientists now report in ACS' journal

Biochemistry the discovery of a new family of peptides in the wasp's venom that could be key to controlling roach minds, and might even help researchers develop better Parkinson's disease treatments.

Scientists have long studied venoms, such as that of the wasp, seeking out novel and potent molecules to treat disease, among other applications. In the case of the enigmatic wasp *Ampulex compressa*, it uses its venom in a two-pronged approach against the cockroach, with an initial sting to the thorax to paralyze the front legs and a subsequent sting directly to the brain. This second sting causes the roach first to vigorously groom itself, then to fall into a state of lethargy, allowing the wasp to do whatever it wants. This immobile state resembles symptoms of Parkinson's disease, and both may be related to dysfunction in the dopamine pathway. In this study, Michael E. Adams and colleagues wanted to identify the ingredients in wasp venom that dictate this behavior.

The researchers milked wasps for their venom and then analyzed the components using liquid chromatography and mass spectrometry. They identified a new family of alpha-helical peptides and named them ampulexins. To test their function, the team injected the most abundant venom peptide into cockroaches. Afterward, the bugs needed, on average, a 13-volt electric shock to the foot to get them moving, while an average of 9 volts sufficed prior to the injection, suggesting the peptides help the wasp immobilize its prey. Future work will focus on identifying cellular targets of ampulexins, and potentially generating a useful animal model for the study of Parkinson's disease treatments.

The authors acknowledge funding from the United States-Israel Binational Science Foundation, the University of California, Riverside Office of Research and Economic Development and the University of California Agricultural Experiment Station.