



ISOTOPICS

The Cleveland Section of the American Chemical Society

Volume 86 Issue 2

February 2010

On Deck:

March 17, 2010

Meeting-in-Miniature

Prof. Gary Wnek, CWRU

Location: CSU, Urban Building

February Meeting Notice

Wednesday, February 17, 2010

Cleveland Museum of Art

4:15 pm	Guests Arrival – Self Park (CMA Garage)
4:30 pm	Executive Committee Meeting (Recital Hall)
5:30 pm	Social Hour (Old Gallery 101)
6:30 pm	Dinner (Old Gallery 101)
7:30 pm	Presentation (Recital Hall)

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Cleveland Section Web Site:

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

Energy from Chemistry through the Ages: A Demo Presentation

Dr. John Fortman, Wright State University

Man's first and greatest chemical invention – fire – began a parade of uses of combustion reactions to produce heat, light, mechanical energy, and electricity, as well as to cook food, refine metals, and produce materials. Voltaic cells and batteries gave man other ways to use chemical reactions to produce other forms of energy and do work. Chemiluminescence now gives man a way to produce light without fire, heat, or electricity. Chemical demonstrations will be done which illustrate the principles and applications of fires and explosions, voltaic cells, and luminescence. Analogies will be made to the internal combustion engine. Short video clips may be shown of applications and bloopers.

DINNER RESERVATIONS REQUIRED: Please RSVP by contacting Mekki Bayachou, by phone at 216-875-9716 or by e-mail at m.bayachou@csuohio.edu by **5 pm on Monday, February 15**. (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/retirees/unemployed. Checks made out to "Cleveland ACS" are greatly appreciated. Dinner will include Salad of Baby Green with Seasonal Garnishes, Marinated Grilled Chicken Breast, Cous-Cous, Roasted Tomato, Red Onion, Fresh Herbs, Steamed Lemon Asparagus, Rolls and Butter, Iced Tea, and Water.

Directions to the Cleveland Museum of Art

11150 East Blvd.
Cleveland, OH 44106
www.clemusart.com

Just five miles east of downtown Cleveland, the Cleveland Museum of Art is located in University Circle—the largest concentration of cultural, medical and education institutions in the United States.

From Downtown Cleveland, Lorain, Toledo, Detroit: Take I-90 East to the University Circle/Martin Luther King Jr. Blvd exit (#177) and turn right (south) on to MLK Blvd. Follow the maroon University Circle signs to the traffic circle, approximately 3 miles. Continue on MLK through the rotary, and then take an almost immediate left turn just behind the military statue onto Jephtha Drive. Take the first right, which is the entrance to the parking garage.

From Akron, Canton, Massillon: Take I-77 North to downtown Cleveland and follow route sign to I-90 East. Take I-90 East to the University Circle/Martin Luther King Jr. Blvd exit (#177) and turn right (south) on to MLK Blvd. Follow the maroon University Circle signs to the traffic circle, approximately 3 miles. Continue on MLK through the rotary, and then take an almost immediate left turn just behind the military statue onto Jephtha Drive. Take the first right, which is the entrance to the parking garage.

Speaker Bio



John Fortman received the 2007 Helen M. Free Award for Public Outreach. He is Professor Emeritus of Chemistry at Wright State University where he retired in 2001 after 36 years of teaching freshman and inorganic chemistry. In 1998 he was

appointed the Robert J. Kegerreis Distinguished Professor of Teaching and won seven different teaching awards over the years at Wright State. In

1998 he received the CMA Catalyst Award for Outstanding Teaching of College Chemistry. Dr. Fortman received his B.S. from the University of Dayton in 1961 and his Ph.D. in physical inorganic chemistry from the University of Notre Dame in 1965. He has published over 50 papers in chemical education in addition to his research publications. With Ruben Battino he has produced a seven DVD set, which contains ten hours of chemical demonstrations for use at middle school through college levels plus a live show and blooper outtakes. For over 30 years he has done chem. demo outreach shows for middle and high school students in the Dayton area and continues to inspire and fascinate over 8000 students each year with at least 17 shows. He has done workshops on teaching and demonstrations around the country. He has designed alternative courses for general chemistry, elementary chemistry and chemistry for elementary education majors. His course for non-science students was cited as a model in the 1990 AAAS report on "The Liberal Art of Science: Agenda for Action". The alternative general chemistry course was developed while he was a member of the General Chemistry Task Force of the ACS Division of Chemical Education and starts with organic and biochemistry moving through materials and finishing with energy while empathizing applications and bringing in only those principles that are needed as they are necessary. The course has been characterized as being taught inside-out, upside-down, and backwards. His interests in addition to demonstrations and course content and organization include the use of analogies and videotaped material. John has been an ACS member since 1962 and was Councilor for the Dayton Local Section from 1996 to 2004. Since he became an ACS Tour Speaker in 1991 he has given over 329 section talks, visiting 167 of the 190 different local sections while doing 68 tours including all 29 different tours at least once. He has presented in all 50 states and Puerto Rico.

Chemistry is for the Birds - 7

By Dwight Chasar

When one thinks of birds, two visions immediately come to mind—bird flight and bird coloration. It is the latter topic that I will address in this and subsequent continuing articles related to the title. Compared to many other vertebrates, birds tend to exist in many more color variations—reds, yellows, oranges, blues, black, greens, and combinations and variations thereof. There can be any number of reasons for this but camouflage and mate attraction are considered to be near the top of the list. The female, who generally incubates the eggs, needs to be as inconspicuous as possible to potential predators and thus female birds are generally less colorful than males. More and more research suggests that males attract a mate by displays of external colored body parts, such as wing epaulets, throats, crests, air sacs, general overall color intensity, etc. How are the colors of feathers, feet, legs, skin, eyes, beaks, mouths, and even egg color produced?

There are two basic ways that color is generated in birds: pigmentation and physical interaction of feathers with light. Many times the combination of the two is at work. In the physical effect, color is produced by light interacting physically with the nanometer scale variation in the structure of feathers or other tissue. The microstructure of feathers is like tiny compartments, similar to honeycombs, often consisting of keratin. The compartments can be empty except for air or may contain variable concentrations of materials like pigments, e.g., melanin. When light impinges on these structures, it is scattered depending on the refractive indices of air and the feather structural material. There can be coherent scattering where the phases of light waves are non-random. Other words used to describe this effect are Rayleigh scattering, Tyndall scattering and interference. The typical color results are blues and iridescence. So the blue of Eastern Bluebird, Blue Jay, Indigo Bunting, and Blue Grosbeak are not the result of isolable chemical pigments but a physical effect of light scattering. The iridescence of a Ruby-throated Hummingbird's throat or the purple head

feathers of the Common Grackle depends on how the feather structure is oriented toward light as to what color is observed. In the latter example, melanin still comes into play as well. Photos of these birds can be found on a Google Images search of the bird names.

In subsequent articles the structures of the chemical pigments responsible for the multitude of colors in other birds will be discussed.

OFFICERS NEEDED!

By David Ball

The slate for 2011 officers is currently being constructed. The section is looking to elect a chair-elect, a treasurer, a councilor, an alternate councilor, a director, and a trustee. Job descriptions are available from the Cleveland Section ACS Job Manual, available on the web at http://www.csuohio.edu/sciences/dept/cleveland_acs/documents.htm. If you're interested in volunteering, contact David Ball at d.ball@csuohio.edu or 216-687-2456.

Volunteering to serve your local section is fulfilling, resume-enhancing, and professionally positive - and not a whole lot of work! Please consider volunteering as an officer of the award-winning Cleveland Section ACS!

Meeting in Miniature - March 17, 2010

By Mekki Bayachou

Call for Papers: The ACS-Cleveland annual Meeting-in-Miniature (MIM) will be held on Wednesday, March 17, 2010 in the Urban Building of Cleveland State University. The program will start at 2:30 pm with brief welcoming remarks followed by parallel sessions of oral presentations. A brief break will precede the usual plenary lecture of the day. The award ceremony will take place immediately after dinner.

The plenary lecture will be presented by Professor Gary. E. Wnek, Professor of Chemical Engineering, and Chair, Department of Macromolecular Science and Engineering at Case Western Reserve University. Professor Wnek's research interests encompass an array of exciting

and hot topics including: 1-Macromolecular constructs with biological cell-like properties, 2-Polymer product design, 3-Electroactive polymers in medicine and biotechnology, 4-Biomaterials for tissue engineering and regenerative medicine, to cite a few. An abstract for the plenary talk will follow in the March Isotopics Newsletter.

As usual we invite abstracts for presentations at our MIM meeting from graduate students, undergraduate students, as well as principal investigators. Abstracts are to be submitted by email only as Microsoft Word documents to Prof. John Protasiewicz at the following email address: protasiewicz@case.edu. Please include a succinct title, name of authors and affiliation (the name of the presenter should be underlined). Please write MIM-Undergrad in the subject line of the email for undergraduate student presenters, MIM-Grad for graduate student presenters, and MIM-PI for principal investigators. Abstracts must be submitted no later than Monday March 8, 2010. Monetary awards for best undergraduate and graduate student oral presentations will be

given, so please urge your students to participate. In addition, top graduate student winners may also receive additional award money to attend the Central Regional ACS meeting in Dayton, OH. Questions about paper submissions can be directed to John Protasiewicz.

ACS-Cleveland is now on Facebook!

By Mekki Bayachou



ON

facebook

Cleveland

Visit the Wall of ACS-Cleveland on facebook; very basic for now. Members are welcome and can sign up as "Fans." More updates/pictures from meetings- Future agenda and action items will be posted (search/query: acs.cleveland1).

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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.