



# ISOTOPICS

The Cleveland Section of the American Chemical Society

Volume 92 Issue 4

April 2016

## On Deck:

05/18/2016

Morley Lecture

Michelson and Morley  
Restaurant

## Cleveland ACS Officers

### Chair:

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

### Chair-Elect:

Lisa Ponton  
Baldwin Wallace University  
(440) 826-2314  
lponton@bw.edu

### Treasurer:

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

### Secretary:

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

---

## Isotopics

### Interim 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/](http://www.csuohio.edu/sciences/dept/cleveland_acs/)

## April Meeting Notice

Wednesday, April 20, 2016

Ohio Aerospace Institute (OAI)

4:30 – 5:25 pm	Executive Committee Meeting
5:25 – 6:00 pm	Social/Networking
6:00 – 7:00 pm	Dinner
7:00 – 8:30 pm	Awards and Presentation

### "Lessons from Columbia: A Decade Later"

Matt Melis, NASA Glenn Research Center

**Abstract:** On February 1, 2003, the Space Shuttle Columbia broke apart during reentry, resulting in loss of the vehicle and its seven crewmembers. For the next several months, an extensive investigation of the accident ensued involving a nationwide team of experts from NASA, industry, and academia, spanning dozens of technical disciplines. Following the accident investigation, NASA spent the next two years focused on returning the Shuttle safely to active service. Dozens of safety improvements were made and STS-114 returned the nations Shuttle program to flight in 2005. NASA would go on to fly the Shuttle more safely than ever before through the final mission, STS-135, in 2011.

Matt Melis provides a detailed look into the inner workings of the Space Shuttle and a behind the scenes perspective on the impact analysis and testing done for the Columbia Accident Investigation and NASA's Return to Flight programs. His presentation is full of rich, still and motion picture imagery, and, although technical, is easily understood by all audiences. In addition, highlights from recent Shuttle missions are presented demonstrating how NASA conducted its operations differently and more safely, post Columbia, through better imagery, better analysis, and enhanced best practices.

### DINNER RESERVATIONS REQUIRED:

Please RSVP to Theresa Nawalaniec at [t.nawalaniec@csuohio.edu](mailto:t.nawalaniec@csuohio.edu) with the names and citizenship of people in your party by 4:00 p.m. on Friday, April 8, 2016. A dinner will be offered with vegetarian options. We 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; and \$5 for students.

## Speaker's Biographical Sketch:

Matt Melis received both a BS in Civil Engineering and an MS in Engineering Mechanics from Michigan State University and has worked at the NASA Glenn Research Center for thirty two years. His primary area of focus is in advanced finite element modeling and analysis methods including nonlinear and dynamic impact loading. Trained in engineering mechanics, he has been recognized for expertise in actively cooled structures, stress analysis, ballistic impact research, and multiphysics analysis during his tenure at the Research Center. He has worked on numerous aeronautics and space programs for the agency including the International Space Station, the Space Shuttle and NASA's Exploration Program. In the four and one half years that followed the Columbia accident, Matt was assigned full time to working the Columbia Accident Investigation and the Shuttle Return to Flight Program as technical lead of the NASA Glenn Ballistic Impact team. Most recently Matt has worked on landing impact testing of various design concepts for the Orion crew module and is currently a program sub-element lead for a cryogenic fluid management program at NASA Glenn.



In addition to his technical commitments, Matt also devotes significant effort to public outreach and teaching for NASA at all levels of education as well as professional groups. Since 2003, he has delivered dozens of invited lectures and keynote presentations at conferences pertaining to Ballistic Impact Research, The Columbia Accident Investigation, NASA's Return to Flight and the Space Shuttle Program

### **Address, Directions and Map:**

Ohio Aerospace Institute (OAI)  
22800 Cedar Point Road  
Cleveland, Ohio 44142

<http://www.oai.org/about/contact/pdfs/AreaMap5-12-08.pdf>

## 2016 Meeting-in-Miniature

The annual Meeting-in-Miniature of the Cleveland Section of the American Chemical Society was held at Case Western Reserve University on Monday, March 7, 2016. The local chairs of the meeting were Michael Kenney and Mutha Merenna N. Gunasekera. Eight students received awards for excellent presentations.

### **Undergraduate Student Awards (\$350)**

*Brennan Ashwood* – Case Western Reserve University – “Transient Absorption Spectroscopy Reveals the Potential Light-Induced Risks Associated with Incorporating dNaM-d5SICS”

*Eric Bruckner* – Case Western Reserve University – “Integrated Synthetic and Computational Techniques For The Design of Poly[3]Rotaxanes”

*Casey Seol Kim* – Cleveland State University – “Pharmacological and Pre-Clinical Testing of 5-NiR as a New Therapeutic Agent Against Brain Cancer”

*Sarah Krul* – Baldwin Wallace University – “Expression and Purification of Human Peptidylarginine Deiminase II (hPADII)”

### **Graduate Student Awards (\$400)**

*Elvis Cudjoe* – Case Western Reserve University – “Biomimetic Dynamic Heat-Stiffening Polymer Nanocomposites”

*Brian Michal* – Case Western Reserve University – “Stimuli-Responsive Liquid Crystalline Elastomer Actuators”

*Sandra Pejic* – Case Western Reserve University – “Structure-Property Studies of Fluorinated Azadipyromethene Derivatives as n-Type Acceptors in Organic Photovoltaics”

*Heba Salim* – Cleveland State University – “DNA Films as Peroxynitrite Sensing Interfaces”

The awards were supported by Amalgamated Tuna, Dwight Chasar, the Department of Chemistry of Cleveland State University, the Department of Chemistry and Biochemistry of Oberlin College, Energizer, Lubrizol, and Sherwin-Williams.

### **ACS Special Award Winners at the 2016 NEOSEF**

The 2016 Northeastern Ohio Science and Engineering Fair (NEOSEF) was held at Cleveland State University, and approximately 600 students in grades 7-12 participated in the fair. During the judging session on March 15, 2016 volunteer judges for the Cleveland section of the ACS reviewed 124 projects entered into the Chemistry Category and selected the award winners:

**First Place** (\$150): *Omar Mansour* of Mentor High “A Volumetric Explanation for Observed Differences in Surfactant Effectiveness”

**Second Place** (\$100): *Dhweeja Dasarathy* of Hawken Upper “Soft thermoplastic Polyurethane Ionomo Antimicrobial Properties”

**Third Place** (\$75): *Jacob Queiser* of Hudson High “Biodiesel: Dream Fuel?”

**Honorable Mention** (\$50): *Juliana Rowane* of Beaumont High “Comparison of Chemical Composition in E-Liquid versus Vaporized Cigarettes”

**Honorable Mention** (\$50): *Chloe Becker* of Lakewood Catholic Academy “Which Color of Pepper is the Healthiest”

**Honorable Mention** (\$50): *Catherine Galla* of Incarnate Word Academy Elem “Swimsuit Soak: Saline vs. Chlorine Pools”

**Honorable Mention** (\$50): *Kileigh Zielinski* of North Olmsted Middle “Energy Nut: What Type of Nut Gives the Body the Most Energy?”

**Honorable Mention** (\$50): *Elizabeth Navratil* of Lake Ridge Academy Elem “The Effects of Liquid Chlorine Levels on the Growth of Chlorella”

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 awards.

### **Announcement: Microscopy Society Northeastern Ohio 60th annual may conference**

This year’s 60th annual conference (SAS/MSNO/ACS/AVS) will be May 19, 2016 at John Carroll University in the Dolan Science Center. Posters are still being accepted! Abstract submission deadline is April 18, 2016. Please visit the web site for online submission and for more information about the conference.

<http://www.msneo.org/2016-may-meeting.html>