

# CINTACS



Newsletter of the Cincinnati Section of the American Chemical Society

December, 2012  
Vol. 50 No. 3

## Section Calendar

- Dec 12 Dr. Ioana Pavel, Wright State @Xavier Univ.  
Jan 16 – Dr. Abbie Griffin: Attributes of Serial Innovators @Westin  
Feb 13 Chemist of the Year, MBC  
Feb 15 Deadline for 2012 ChemLuminary Nominations  
Mar 13 Joint meeting with Dayton, Marriott North  
Apr 7-11 National ACS meeting, New Orleans  
Apr 20 Chemists Celebrate Earth Day  
Apr 24 Dr. Ariel Fenster, & Teacher / Student Awards @NKU  
May 10 Party Night

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## December Monthly Meeting Wednesday, December 12, 2012 Conaton Board Room, Room 201 Schmidt Hall Xavier University

*Featured Speaker*

**Professor Ioana Pavel Sizemore, Wright State University**

### Program:

5:30 – 6:30

Applied Spectroscopy Discussion Group

**“Design and analysis of NMR relaxation measurements for understanding complex multi-phase mixtures”** Charles Eads, Carrie Furnish, Allison Talley The Procter & Gamble Co.

5:30 – 7:00  
Schmidt Hall

Registration, Conaton Board Room, 2nd Floor,

6:00 – 7:00

Social Hour, Conaton Board Room

7:00 – 8:00

Dinner, Conaton Board Room (\$20.00 or \$10.00 for students, emeritus, unemployed & new members). Menu: Pan Seared Chicken Breast with Hunter Sauce, Garden Greens Salad with Italian Vinaigrette, Wild Rice Pilaf, Fresh Seasonal Vegetable Medley, Fresh Baked Bread, Chocolate Mousse with Raspberry Sauce, Whipped Cream and Chocolate Shavings, Coffee, Tea. Vegetarian entrée available upon request when making reservations.

8:00 – 9:00

Featured Speaker, Prof. Ioana Sizemore:  
**“Engineering SERS-based nanosensors for chemical fingerprinting down to the single-molecule level”**

*(Continued on page 3)*

**THE CINTACS NEWSLETTER****Vol. 50, No. 3 December, 2012**Editor.....Adam Bange  
Advertising.....Dan Esterline

CINTACS is published eight times a year (September through May) by the Cincinnati Section of the American Chemical Society. The submission deadline will be approximately September 15 for the October 2012 issue. Electronic submission is strongly preferred. All materials should be sent to:

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Dear Cincinnati ACS Members,

Have you gone ACS electronic? We have! Our Webmaster, Michele Mangels, has rebuilt our local section website <http://www.acscincinnati.org/main/>. I encourage you to bookmark our site and use it as your "go to" source for Cincinnati Section! New items of interest are posted in real time, and much of the information shared in our Cintacs newsletter, like monthly meeting information, can be found on the website, along with pictures from past events, archived Cintacs, Committee Chairs, Discussion Group leaders, Bylaws, and links to other ACS sites.

The Section has moved to an electronic version of our Cintacs newsletter. Many were finding the bulk mailed hardcopy was not arriving at the proper address, or arriving late. The email version allows us to embed links to quickly take you to pertinent webpages, reduces paper, and saves the Section over \$8000 in printing costs! If you prefer a hardcopy mailed, please send your request to Cintacs Editor, Adam Bange, otherwise, we will send your copy of Cintacs to the email address you provided to the National ACS with your membership profile. And, finally, we are offering 2 forms of electronic payment for our dinner meetings: Online payment through Paypal at the time of registration (you do not need a Paypal account to use this service); and Electronic payment with a credit or debit card at the door. Keith Walters, our Treasurer, will be piloting a card reader at our December meeting. I welcome your comments or feedback on any of these electronic actions.

The 25<sup>th</sup> Year of celebrating National Chemistry Week is in the books! What an amazing effort of many ACS volunteers to show chemistry at its best. We even managed to stretch out the fun over 3 weekends. I have seen pictures and summaries of the early library events, and love seeing the expressions on the faces as they watch a chemical reaction unfold. I want to acknowledge what a great job Jackie Thomas did as our NCW Coordinator! A special thank-you to Miami U. students, Tessa Woodruff and Casey Connell, who volunteered to appear on TV, and Ed VonBargen who was off camera, to promote NCW on the Fox 19 morning show. Tessa and Casey performed a couple of chemistry demos on Oct 23 during NCW (which also coincided with Mole Day). You can see pics and even the video clip on our website. Or check out the Fox19 site directly - <http://www.fox19.com/category/240225/video-landing-page?clipId=7872130&autostart=true>. More pictures and info of NCW to come.

Our October and November section meetings were outstanding. In October, the Ralph and Helen Oesper Symposium, Award and Banquet had 185 attendees to honor Dr. Hieftje. As always, the UC Chemistry Department was an exemplary host. Thank-you to Dr. Bill Heineman, Kim Carey, and the rest of the faculty and staff for nurturing a strong and vibrant Oesper legacy. The recognition and prestige of this Award is growing within the ACS, and we are truly fortunate to have it as a Section event. Our section is also home to the second largest EPA research facility, and it was great to have scientists from the EPA highlight their work at our first November meeting in over 10 years. Dr. Stephen Musson, Safety, Health and Environmental Program Manager of the National Risk Management lab, US EPA, shared the latest discoveries of how nano particles are behaving in our environment, and provided good

(Continued on page 3)

**Directions to Meeting Venue:**

The Xavier University Conaton Presidential Board Room is located on the second floor of Schmidt Hall. Parking is provided free **with the parking pass on the section website** at the F&W Alumni Center on Dana Avenue across the street from Schmidt Hall.

**I-71:** Exit at Dana Avenue exit. Proceed west on Dana Avenue past Ledgewood Drive. As the road begins a slight turn, the F&W parking area will be on the left before you reach Victory Parkway.

**I-75:** Exit at Mitchell Avenue. Proceed east on Mitchell Avenue, crossing over Reading Road. Continue to Dana Avenue and turn left. Just after crossing Victory Parkway, the entrance to F&W parking area will be on the right.

**Rt. 562:** Exit the Norwood Lateral at Reading Road. Continue in the left lane of Reading Road to Victory Parkway. Merge left onto Victory Parkway at the light. Continue to Dana Avenue. Turn left onto Dana Avenue. The entrance to F&W parking area will be on the right in about half a block.

“food for thought” on safely working with nanoparticles. I know I will be changing my cotton lab coat for a non-woven next time I play with nano TiO<sub>2</sub>! His presentation is available on our website. And, Dr. Tao Li, US EPA, graciously led an organic discussion group on the biocatalytic reaction of a Boceprevir intermediate to improve process sustainability. 12-12-12 – Does this seem auspicious to you? I think it is perfect for our December Cincinnati ACS gathering. Once again, we will be meeting in the lovely Conaton Board Room in Schmidt Hall, at Xavier University. Dr. Ioana (Pavel) Sizemore, Wright State University, will be our featured speaker with her presentation on engineering surface-enhanced Raman spectroscopy (SERS) based bio-sensors. And keeping the spectroscopy thread going, Dr. Charlie Eads, P&G, will lead a discussion group on NMR relaxation measurements. More details at [http://www.acscincinnati.org/meetings/meetings.php#schedule\\_dec12](http://www.acscincinnati.org/meetings/meetings.php#schedule_dec12). Other surprises are in store to make this a special night for our section. And, I am so excited about our January speaker that I just have to give you an early peak! Dr. Abbie Griffin, University of Utah, will share a presentation on the attributes of serial innovators. You won't want to miss her insightful research on how individuals create and deliver breakthrough innovation, especially in mature firms. Reserve January 16, 2013 in your calendars now!

Happy Holidays,  
Beth

### ***NOVEMBER MEETING RECAP***

Our November Section Meeting was held November, 8, 2012 at the Cooper Creek Event Center, Blue Ash. The Featured Speaker was Dr. Stephen Musson, US EPA, Safety, Health, and Environmental Management Program Manager, National Risk Management Research Lab. Stephen's talk was titled “Nanomaterials: Are These Small Particles a Large Health & Safety Issue?”, with the following abstract:

*'Nanomaterials have promised to revolutionize chemistry, materials, medicine, and many other industries. However, little was known about their health and environmental impacts before their commercial use began. This presentation will explore the latest research and information available on the health and safety hazards related to these small wonders.'*

***December Featured Speaker***  
***Dr. Ioana Pavel Sizemore, Department of Chemistry, Wright State University,***  
**“Engineering SERS-based nanosensors for chemical fingerprinting down to the single molecule level”**



**Abstract:**

Because surface-enhanced Raman spectroscopy (SERS) has all molecular fingerprint capabilities of Raman spectroscopy and extremely high sensitivity, it is predicted to have a huge impact on both the research and industrial sectors. The SERS effect occurs when analyte molecules reside near nanostructured systems composed of certain metals, such as silver or gold. Theory predicted and experiments confirmed that exceptionally large increases in Raman cross-sections are associated with molecules located at the nanogap of aggregates of silver nanoparticles (AgNPs) or silver nanorods (AgNRs), where the electromagnetic fields experience enormous enhancements. To further boost the SERS-based sensing capabilities of unfunctionalized AgNPs, a tangential flow filtration was implemented for the “green” size-selection and concentration of Creighton colloidal AgNPs with minimal aggregation. The Creighton synthesis is widely-used due to its simplicity and relative low cost. AgNP concentrates of an average diameter of ~60 nm were found to give the best SERS signal in resonant conditions and to facilitate the observation of single-molecule events. Significant improvements in the SERS spatial performance and the overall intensity of the SERS signal were also attained when AgNR thin films were grown at cryogenic temperatures (100 K) instead of room temperatures (300 K). Several SERS applications involving the label free, real-time detection of proteins and warfare agents will be presented.

**About the Speaker:**

Ioana Sizemore, is an Assistant Professor of Chemistry at Wright State University. She earned her Ph.D. at the University of Würzburg, Germany in 2003 in Physical Chemistry, and served a postdoctoral fellowship studying SERS based biosensing at the University of California, Santa Barbara 2004-2006. She then went on to hold Assistant Professor positions at the University of Arkansas and Marist College, New York, before joining the faculty at Wright State in 2008. Dr. Sizemore holds an M.S. degree in Biophysics and Medical Physics from Babeş-Bolyai University, Romania and an M.S. degree in Atomic Physics from University of Würzburg. Her undergraduate studies were in Physics at Babeş-Bolyai University, Romania. Dr. Sizemore has authored several publications on surface enhanced Raman spectroscopy, and has a patent application for chemical and biological sensing using the SERS technique. She has an overall interest in Nanotechnology: a) studying the environmental transport and fate of nanomaterials, b) developing SERS-based nanosensors for the detection of water pollutants, chemical and warfare agents, c) engineering nanostructures for chemical imaging of cells and biological markers; and d) synthesis of environmentally friendly nanomaterials using microwave techniques and/or non-toxic, non-hazardous, renewable reagents. Toxicology – monitoring the bioaccumulation and toxicological effects of nanomaterials and platinum group metals on cells, plants, and animals. Dr. Sizemore is the recipient of 2012 WSU College of Science and Mathematics Outstanding Faculty Teaching Award, is a Faculty Advisor for the Women in Pursuit of Science student organization at WSU, and currently directs a research group of eight graduate students and seven undergraduate research assistants.

## Design and analysis of NMR relaxation measurements for understanding complex multiphase mixtures

Charles Eads, Carrie Furnish, Allison Talley  
The Procter & Gamble Co.

Materials important to companies like P&G are often multi-component, multi-phase mixtures containing surfactants, polymers, colloids, and small molecules. Finding and applying new and better ways to study and understand such materials is a challenge to experts in physical chemistry, soft matter sciences, and measurement sciences. NMR relaxation is powerful and promising in this regard because it reports on the structure and dynamics of all of the components and phases that make up the material samples. Unfortunately, the multicomponent nature of the samples leads to multi-exponential decay curves whose analysis is famously problematic. This talk will describe some new and existing tools to deal with these types of systems, including two-dimensional relaxometry, field cycling relaxometry, and new data parameterization methods. Together, these tools help us to extract the rich information present in the raw NMR data while living with the limitations inherent in multi-exponential datasets.



### The Speaker:

Dr. Charles Eads received his B.S. in Biophysics from Penn State University in 1980 and his Ph.D. in Physical Chemistry from Penn State University in 1985. After postdoctoral training at MIT and UCSF, Charlie joined P&G in 1990. In 2011, he was appointed a Research Fellow in P&G's Analytical Global Capability Organization.

**American Chemical Society**

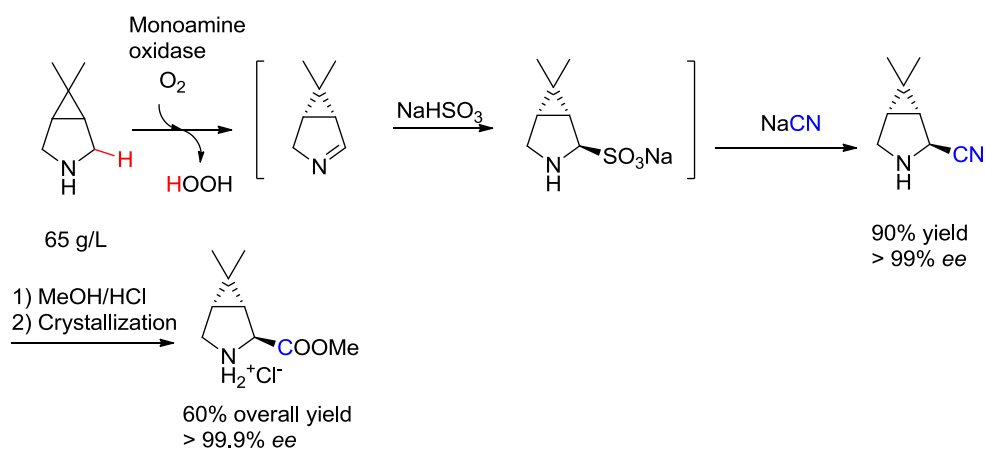
Cincinnati Section  
Discussion Group  
Cooper Creek Event Center  
Augusta Room  
5:30-6:30 PM

November 8, 2012

"Improving process sustainability with biocatalytic reaction,  
a case study based on the proline intermediate of Boceprevir"

Tao Li Ph.D.

US Environmental Protection Agency  
National Risk Management Research Laboratory  
Cincinnati, OH



The development of commercial process for the proline intermediate for Boceprevir underwent three generations of synthesis. Process productivity has been improved through systematic innovations ranging from synthetic route design to engineer solutions for practical implementation. Process development research is discussed to showcase applying cutting edge technology to meet challenges in advancing sustainability.

**Discussion Organizer/Coordinator:** John Glaser Ph.D., [glaser.john@epa.gov](mailto:glaser.john@epa.gov), 513-569-7568

## Dr. Diane Grob Schmidt Receives The Henry Hill Award for Professional Excellence at San Diego National ACS Meeting, March 2012



Diane G. Schmidt received The Henry Hill Award from the Division of Professional Relations at the San Diego national American Chemical Society meeting, March 2012. The award recognizes outstanding efforts and accomplishments to advance chemistry as a profession.

Dr. Schmidt is pictured receiving the award from Dr. George Heinz, Chair of the Division of Professional Relations. The Henry Hill Award is named for former ACS President Henry Hill, who was an industrial chemist.

Dr. Schmidt served in many local section offices including Cincinnati Section Chair in 1986-1987. As a Director on the national ACS Board of Directors 2002-2010, Diane served as Chair of the Board Committee on Professional and Member Relations, Chair of the Public Affairs and Public Relations Committee and Chair of the Task Force on International Strategy and Implementation of International Strategy.

She is a current member of the ACS Board Budget & Finance Committee and PRAG [Program Review Advisory Group]. In 2012 she is serving as Chair-Elect of the Division of Chemical Health & Safety and will serve as Chair of the Division in 2013. She is currently a Division Councilor.

Among her other honors, Dr. Schmidt was inducted as a Fellow of the American Chemical Society in 2011 and a Fellow of the ACS Division of Chemical Health & Safety in 2004. She was selected the Distinguished Scientist of Cincinnati by the Engineers and Scientists of Cincinnati in 1994.

Dr. Schmidt's scientific publications are in, for example, the Journal of the American Chemical Society, Journal of Organic Chemistry and Journal of Heterocyclic Chemistry, as well as U.S. and international patents.

The Cincinnati Section congratulates Diane on this fantastic accomplishment, and thank you for keeping the Cincinnati Section on the news!

**Nominations for Cincinnati Chemist of the Year  
And  
Research Associate of the Year**

Recognize your colleagues and co-workers for their outstanding contributions to our field. Please submit a nomination for Cincinnati Chemist of the Year or Research Associate of the Year. The nomination deadline is **Friday, December 14, 2012**. The Chemist of the Year should hold a terminal degree and must be a member of the Cincinnati Section. Nomination requires two letters of recommendation and the nominee's CV. The Research Associate of the Year must be or have been a practitioner within the chemical discipline. ACS membership is not a requirement. Nomination requires a letter of recommendation. CV and additional documentation are optional, but appreciated.

Nomination materials should be sent to:

Philip A. Christenson  
12020 Antietam Dr.  
Loveland, OH 45140  
Electronic submission is encouraged.  
e:mail: Phil.christenson01@gmail.com

## **ACS Project SEED Program**

### **Summer Research Internship Program for Economically Disadvantaged High School Students**

The ACS Project SEED summer research program opens new doors for economically disadvantaged students to experience what it's like to be a chemist. Students entering their junior or senior year in high school are given a rare chance to work alongside scientist-mentors on research projects in industrial, academic, and federal laboratories, discovering new career paths as they approach critical turning points in their lives. [More about Project SEED](#)

### **Summer Programs**

#### **Summer I**

For first-time participants, students conduct research in chemistry or a related field supervised by a scientist mentor and receive a fellowship award of \$2,500.

#### **Summer II**

Summer I students get a second opportunity to continue working on their Summer I project or beginning a new one. Students receive a \$3,000 fellowship award and may be eligible for a travel grant to present research at an ACS or other scientific meeting.

Contact Hairong Guan, [Hairong.guan@uc.edu](mailto:Hairong.guan@uc.edu) for further info on the local section SEED activities



It has been a busy year so far for the local section. Here is a collection of pictures showing some of the things that have been going on.



Picture of Cinci ACS Miami University Student Affiliates on Fox 19 TV, highlighting NCW and Mole Day



Fall picnic



Chemistry Demonstration

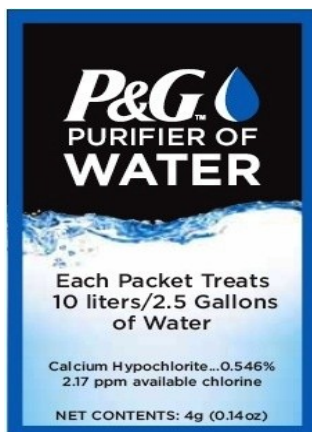


Chemistry Demonstration

## More Pictures from the Oesper Symposium



## Coins for Cleaner Water Project



ACS has continued to partner with Procter & Gamble to launch *Coins for Cleaner Water*. Every day, several billion people around the world live without clean water. More than 4,000 children die every day from diseases caused by drinking unsafe water. ACS will raise funds to purchase water purification packets that can be used in areas of the world that do not have readily available clean and potable water.

P&G's water purification packets are being distributed through Children's Safe Drinking Water (CSDW), a foundation the company created in 2004. Since CSDW's creation, P&G has distributed over 500 million packets to 63 countries and has partnered with several global relief organizations including AmeriCares, CARE, IFRC, PSI, Save the Children and World Vision. Through these efforts, over 5 billion liters of clean water have been made available to people around the globe. The program has saved more than 22,000 lives and prevented over 165 million days of disease. Each packet costs only 3.5 cents and safely treats 2.5 gallons of water. ACS is proud to partner with P&G's Children's Safe Drinking Water program. Our goal is to raise enough funds to be able to provide over 2 million gallons of clean water.

Beginning this fall during National Chemistry Week, ACS local sections will work in their communities throughout the country to raise money and awareness of this important initiative. All donations are tax deductible, and receipts will be issued to donors who pay by check or money order. Dr. Greg Allgood demonstrated how quickly the contents of the sachet are able to 'clean' water at our April 2012 meeting. A limited number of sachets are available from National ACS so similar demos can be provided to other groups. Our Cincinnati section will collect "coins" at our local meetings and events – look for the "Purifier of Water" sign!

*New "Ask and ACS Chemist" Outreach Program from the ACS!*

The ACS is launching a new program called "Ask an ACS Chemist". Our Publications Division technical support for ACS journals receives roughly 10-15 science-related inquiries each week, typically from high school and undergraduate students. The questions are usually along the lines of:

*How does the microscopic method determine particle size?*

*Which enzyme is inhibited by zinc in Alzheimer's?*

*What is chemical equilibrium?*

Currently when we receive these questions, one of our staff members will direct them to a host of journals where the student may or may not find an answer. We would like to offer the students a more personal touch by funneling those questions to a collective of scientific professionals, such as yourself, and allowing you to share your expertise on the subject matter.

We anticipate this initiative will require very little commitment on your end; you may contribute as often as you choose. The format will be a forum of threaded posts in an ACS Network group to which you would be invited to join. You would then begin receiving the notifications as new questions are posted and can log in to view and/or comment where you feel comfortable.

If you are interested in participating in this outreach program, please send an email to Mikal Ankrah at [outreach@acs.org](mailto:outreach@acs.org) and you will be invited to join the Network group.



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## **SPONSORS SOUGHT FOR 8 SECTION MEETINGS IN THE 2012-2013 PROGRAM YEAR**

We continually seek sponsors for each of our 8 monthly Section Meetings in the new program year. Sponsorship entails a commitment of sponsorship (cash or cash equivalent) of \$1000 to essentially pay for the many expenses associated with a quality meeting to be presented to the membership. These expenses include retiree and student meal discounts, speaker's expenses, travel, housing, food, A/V, room rental for the meeting, and a Social Hour where attendees can meet others and build networks and contacts for career growth and enhancement.

Sponsors are recognized in all of the eight yearly issues of CINTACS, and by introduction at the sponsored meeting. This "advertisement" is of great value, especially to new companies in the Cincinnati area. In several instances this has led to participation in governance activities in the Section.

Over the past seven years of this successful program, companies, academic departments, retirees, and faculty have been sponsors of monthly meetings. We are always striving to broaden the base of sponsors as this leads to better representation in Section programs and services to the membership.

If you or your employer has an interest in being a sponsor, please contact the undersigned for more details. Beyond these volunteers, we will be making phone calls and letter contacts to reach our goal of eight sponsors. Every effort will be made to align the Sponsor's areas of interest with our monthly topics.

Please contact Ed Hunter at:  
[edhunter@fuse.net](mailto:edhunter@fuse.net)





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