



Pittsburgh Section

# The Crucible



www.pittsburghacs.org

Volume: XCIX No.1

September 2013



## National Chemistry Week is Coming!!!

Join the Pittsburgh Section of the American Chemical Society as we celebrate National Chemistry Week 2013 with the theme

**"Energy: Now and Forever!"**

**Where:** Carnegie Science Center

**When:** Friday, October 25<sup>th</sup> (9 AM to 3 PM)

Saturday, October 26<sup>th</sup> (10 AM to 5 PM)

**What's Happening:** Over 20 tables of hands-on experiments, activities, and demonstrations, hourly raffle prizes, and special theater-style shows.

The Pittsburgh Section ACS could use your help to make this year's NCW celebration a success. Are you interested in volunteering to help with the event? Do you have an organization that would like to sponsor a hands-on activity at the event?

If you, or your organization, are interested in participating in this year's NCW event, please contact:

Michael Mautino

Phone: 412-777-4792

E-mail: michael.mautino@bayer.com

For more information about the NCW celebration in Pittsburgh, visit the Pittsburgh Section's website at <http://www.pittsburghacs.org/outreach/national-chemistry-week/> or look us up on Facebook at Pittsburgh ACS NCW.

You can also find additional information about NCW on the ACS's website at <http://chemistry.org/ncw>.

*The Pittsburgh Section's 2013 NCW activities are sponsored by The Society for Analytical Chemists of Pittsburgh, The Spectroscopy Society of Pittsburgh, PPG Industries Foundation, PPG Science Education Council, Carnegie Science Center, and Bayer Corporation.*

## ACS Pittsburgh Special Election Results

Amy Rupert was elected Chair-Elect in the ACS Pittsburgh special election. She will serve as Chair of the Section in 2014.

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## September Meeting

Monday, September 9, 2013

8:00 PM

Duquesne University

### *"How Do We Measure Scientific Impact?"*

#### **David R. Walt**

Robinson Professor of Chemistry  
Howard Hughes Medical Institute Professor  
Tufts University

#### **Abstract:**

Making scientific discoveries or developing new technologies are the goals of most academic laboratories. Publishing the results in a top journal and securing a big grant are traditional measures of how academic scientists measure impact. In this talk, I will discuss a different way to measure scientific impact—how have the results of the research changed things? I will use several examples in which technologies were translated to the commercial sector. We will examine multiple types of impact with an eye toward helping researchers (faculty and students) view their work in a broader perspective.

#### **Biography:**

David R. Walt is Robinson Professor of Chemistry, Professor of Biomedical Engineering, Professor of Genetics, and Professor of Oral Medicine at Tufts University and is a Howard Hughes Medical Institute Professor. Dr. Walt is the Founding Scientist of Illumina, Inc. and has been a Director and Chairman of its Scientific Advisory Board since 1998. Dr. Walt is also the Founding Scientist of Quanterix Corporation and is a Director and Chairman of its Scientific Advisory Board since 2007. He has received numerous national and international awards and honors for his fundamental and applied work in the field of optical sensors and arrays. Dr. Walt is a co-chair of the Board on Chemical Sciences and Technology of the U.S. National Academy of Sciences. He is a member of the U.S. National Academy of Engineering, American Academy of Arts and Sciences, a fellow of the American Institute for Medical and Biological Engineering, and a fellow of the American Association for the Advancement of Science. He received a B.S. in Chemistry from the University of Michigan and a Ph.D. in Chemical Biology from Stony Brook University.

#### **Dinner Reservations:**

Please email the SACP Administrative Assistant, Valarie Daugherty at [daugherty@pittcon.org](mailto:daugherty@pittcon.org) by Wednesday, September 4, 2013 to make dinner reservations. Should you not have email, please call 412-825-3220, ext. 204. Dinner will cost \$8 (\$4 for students) and checks are to be made out to the SACP. If you have any dietary restrictions, please let Valarie know when you leave a message.

#### **Parking:**

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## ACS Energy Technology Group

Tuesday, September 17, 2013

### *"Pd<sub>1-x</sub>Cu<sub>x</sub> Membranes for Recovery of H<sub>2</sub> from Mixed Gas Streams"*

**Professor James B. Miller**

**Department of Chemical Engineering, Carnegie Mellon University  
National Energy Technology Laboratory-Regional University Alliance**

**Social Hour 6:00 PM, Dinner 6:30 PM, Talk 7:30 PM**

**Spaghetti Warehouse**

**26<sup>th</sup> & Smallman Streets, Strip District, Pittsburgh PA**

**Free parking behind the restaurant**

Separation of hydrogen from mixed gas streams is a key unit operation in the generation of carbon-neutral fuels and electricity from fossil- and bio-derived feedstocks. Dense Pd membranes have received significant attention for the separation application in advanced gasification processes. Pd's near-perfect selectivity reflects its unique interactions with H<sub>2</sub>: molecular H<sub>2</sub> dissociates on the catalytic Pd surface to create H-atoms, which dissolve into and diffuse through the Pd lattice to eventually recombine on the downstream side of the membrane. In practice, Pd suffers from several limitations, including deactivation by minor components of the mixed gas, most notably H<sub>2</sub>S. Alloying with minor components, such as Cu, can be an effective strategy for improving membrane performance.

In this work, we use H<sub>2</sub>-D<sub>2</sub> exchange to probe the H<sub>2</sub> dissociation activities of Pd<sub>1-x</sub>Cu<sub>x</sub> surfaces, both in "clean" H<sub>2</sub>-D<sub>2</sub> reactant mixtures and in reaction mixtures that contain H<sub>2</sub>S. We fit a microkinetic model to experimental exchange data to estimate activation barriers and pre-exponential factors for dissociative adsorption of H<sub>2</sub> and recombinative desorption of HD. We illustrate that surface activity depends on both alloy composition and structure, and that H<sub>2</sub>S suppresses exchange rates both by changing the inherent activity of the alloy surface (i.e., different kinetic parameters) and by site blocking. Our results contribute to a basis for rational design of sulfur-tolerant separation alloys.

Jim Miller is Associate Research Professor of Chemical Engineering at Carnegie Mellon University, where he studies advanced materials for energy-related applications in separations, catalysis and chemical sensing. Jim earned BS, MS and PhD degrees in Chemical Engineering at Carnegie Mellon and an MS in Chemistry at the University of Pittsburgh. Before joining the faculty in 2006, he worked in industry for over 25 years as a developer of catalysts, catalytic processes and chemical sensors. Jim is treasurer of the Energy Technology group; he is also a two-time past president of the Pittsburgh-Cleveland Catalysis Society. Jim received AIChE's 2010 "Shining Star" award in recognition of his volunteer work in the Pittsburgh Local Section; he was elected Fellow of the AIChE in 2013.

**For reservations, please contact Elliott Bergman at [elliott.acstechnology@gmail.com](mailto:elliott.acstechnology@gmail.com) by 1:00 on Sept. 16<sup>th</sup>. Walk-ins are welcome. Our meetings are open to all. Cash or check payable to: Energy Tech Pgh Section ACS.**

The cost of the dinner is \$20 including tax and gratuity. Alcoholic drinks cost extra. Please specify your preference from the following menu choices: Spaghetti with meatballs, 15-layer lasagna, Four-cheese manicotti, Fettuccini Alfredo, Pesto Pasta, or Grilled chicken Caesar salad. Please indicate special needs such as vegetarian, gluten-free, etc.

## CERM 2014 Call for Technical Session Organizers CERM

Program planning has begun for the ACS Central Regional Meeting that will be held in Pittsburgh in October 2014. Although this seems a long way off at this point, it is important that session topics are organized to ensure the participation of leading chemists in our technical sessions. Please use the form located at the link available on our website ([www.pittsburghACS.org](http://www.pittsburghACS.org)) to suggest session topics and/or volunteer to be a session organizer.

Contact Program Co-Chairs Adrian Michael ([amichael@pitt.edu](mailto:amichael@pitt.edu)) or Michelle Ward ([muscat@pitt.edu](mailto:muscat@pitt.edu)) with any questions.



## CERM 2014 Save the Date!

The Central Regional Meeting of the ACS will be held October 1-4, 2014 at the Doubletree by Hilton Green Tree Hotel, Pittsburgh.

For more information, visit the CERM website at [www.acscerm2014.org](http://www.acscerm2014.org).



# The Spectroscopy Society of Pittsburgh



## September Meeting

Wednesday, September 18, 2013

Duquesne University – Bayer Learning Center (Wolfe Lecture Hall)

Technology Forum Speaker's Presentation 5:30 PM

Social Hour 5:30 PM • Dinner in the City View Café (6th Floor) 6:30 PM

Business Meeting 8:00 PM • Technical Program Speaker's Presentation 8:15 PM

### TECHNICAL PROGRAM - 8:15 PM

#### *"REFLECTIONS ON THE PITTSBURGH SPECTROSCOPY AWARD AND VIBRATIONAL OPTICAL ACTIVITY"*

Dr. Laurence Nafie, Syracuse University  
2013 Pittsburgh Spectroscopy Award Winner

**Abstract:** Not only was it an honor to receive the Pittsburgh Spectroscopy Award at Pittcon 2103 in Philadelphia, it is equally an honor and a pleasure to be able to thank in person the Spectroscopic Society of Pittsburgh for this award at its home in Pittsburgh. In this talk, I will present highlights and other observations of my Pittcon award address. Both IR and Raman forms of vibrational optical activity (VOA) were discovered experimentally nearly 40 years ago [1]. The IR form is vibrational circular dichroism (VCD) and the Raman form is Raman optical activity (ROA). For the first 20 years of VOA, VCD and ROA passed through a period of gradual growth spearheaded by a few academic laboratories. Then in mid-1990s two developments occurred for VCD, followed a few years later for ROA. These were the commercial availability of instrumentation for measurements and software for calculations. The comparison of measured and calculated VOA yields new insights into the absolute structure and conformation of chiral molecules. In the past 15 to 20 years VOA has undergone a period of rapid growth and maturation. Hundreds of scientists in both academic laboratories and pharmaceutical companies now use VOA on a regular basis to explore its depth of molecular information and to solve stereochemistry problems of practical importance. Academic labs use VOA primarily to determine the conformation of biological molecules and to explore the effects of solvents and anharmonicity using computed VOA. Pharmaceutical companies use VOA to determine the absolute configuration of new chiral drug substances and to probe the higher order structure of biopharmaceutical molecules. In this presentation, the extent of the routine use of VCD to determine absolute configuration of pharmaceutical and natural product molecules will be described as well as the use of VCD to reveal the underlying supramolecular chiral structure of amyloid fibrils of interest in relation to the incidence of neurological diseases. The talk will close with my personal view of the impact that VOA will likely have in the years ahead.

**Bio:** Laurence A. Nafie received his Ph.D. from the University of Oregon in 1973 and was then a postdoctoral associate at the University of Southern California, where he confirmed the discovery of infrared vibrational circular dichroism (VCD). In 1975 he joined the Chemistry faculty at Syracuse University and pursued a research program in VCD and Raman optical activity (ROA) until his retirement in 2010. He has over 290 publications and several patents. Currently he is Emeritus Distinguished Professor at Syracuse University and Editor-in-Chief of the Journal of Raman Spectroscopy. In 2011 he published a comprehensive book on VOA entitled *Vibrational Optical Activity: Principles and Applications*.

### TECHNOLOGY FORUM - 5:30 PM

#### *"Understanding Fragrance - Its Origin and History"*

Roger A. Howell, Vice President/ Chief Perfumer, Alpha Aromatics

**Bio** Roger Howell graduated from NYU with a B.S. in Chemistry. He has been in the fragrance industry for over 30 years, working as a perfumer, for 20 years. Howell has created fragrances for celebrities, and numerous cosmetic, and candle companies.

**Dinner Reservations:** Please register on-line at <http://www.pittcon.org/misc/societies/ssprsvp.php> to make dinner reservations NO LATER THAN FRIDAY, September 13, 2013. Dinner will cost \$8 and checks can be made payable to the SSP. If you have any dietary restrictions, please indicate them when you RSVP. **Parking Instructions:** The Duquesne University Parking Garage is located on Forbes Avenue. Upon entering the garage, receive parking ticket and drive to upper floors. Pick up a parking chit at the dinner or meeting.



## UPCOMING WCC EVENTS MARK YOUR CALENDARS NOW!

More information, including RSVP links, can be found on the Upcoming Events page of the WCC website ([www.pitt.edu/~pghwcc](http://www.pitt.edu/~pghwcc)).

### Pirate Game and Tailgate

- September 14<sup>th</sup> / Cost: \$22
- Tailgate 4pm / Game 7:05pm
- The WCC has reserved a block of tickets for the game on September 14<sup>th</sup> in Section 314 as the Pirates take on the Cubs. It's a fireworks night (we will have a great view from there) and "Everyone's a Winner on Scratch'n Win Saturdays"! Come tailgate with us beforehand ... we will provide hamburgers, hotdogs, and water. Please bring a side dish or dessert to share. The deadline to order tickets has passed, but we have a few extra available.

### YCC Family Science Carnival

- September 28<sup>th</sup> / 12pm-4pm
- The WCC will host a booth at the YCC Chemistry Carnival. We will be doing a demonstration, and we need volunteers to man the booth. The activity we will be doing is the same as for National Chemistry Week at the Carnegie Science Museum - making edible self assembled capsules containing juice. Visit our website to sign up for a two hour slot or the whole timeframe.

### Breast Cancer Awareness Fundraising

- October 2013
- The WCC will once again sell t-shirts (some are already available for \$10 each) and host several events to raise money for the Young Women's Breast Cancer Awareness Foundation at Magee Hospital. Last year we were able to donate \$1200 ... which we are hoping to top this year! Watch the website for details.

### National Chemistry Week at the Carnegie Science Center

- October 26<sup>th</sup> / all day
- The WCC will host a table for the celebration of National Chemistry Week at the Carnegie Science Center. Check out our website for more information, including how to sign up for a two hours shift.

### Adopt-a-Vet Holiday Gift Drive

- December 1<sup>st</sup> - 17<sup>th</sup>
- The WCC, along with the YCC and local Student Affiliates, will organize a gift drive for the patients of the VA Hospital in Oakland. We will be collecting stockings or gift bags and filling them with items listed on a wish list obtained from the Hospital. We hope to bring a little holiday spirit to the men and women who have given so much of themselves. Watch the website for details.



### YCC Chemistry Carnival 2013

September 28<sup>th</sup>, 2013

10am – 2pm

Mellon Institute

4400 Fifth Ave

Pittsburgh, PA, 15213

YCC Chemistry Carnival 2013 will take place on September 28<sup>th</sup> in the Mellon Institute. The goal of this carnival is to provide local community outreach and education in a fun, family-friendly atmosphere. We will have booths for exhibits that demonstrate the impact of chemistry on society at large with hands-on experiments, poster competitions for both undergraduate and graduate research, and more.

Come join us in this outreach event that will show the important role that chemistry plays in the world around us! We hope to see you and your family there. You can find more information at <http://pghycc.org/chemistry-carnival/>

Volunteers needed and welcome! If you would like to volunteer before and/or during the Chemistry Carnival, sign up at <http://goo.gl/IZOza>.

# National Chemistry Week

## 2013 Illustrated Poem Contest:

### “Energy: Now and Forever!”

The Pittsburgh Section of the American Chemical Society (ACS) is sponsoring an illustrated poem contest for students in Kindergarten - 12th grade.

Contest Deadline: **Entries must be received at the address below by Friday, October 25, 2013.**

Prizes: **\$50 1st place and \$25 2nd place in each of 4 grade categories: K-2nd, 3rd-5th, 6th-8th and 9th-12th grades.**

**Mail entries to: Michael Mautino, 3485 Frye Ave, Finleyville, PA 15332. On back of entry include student name, grade, school name, teacher name, teacher phone number, and teacher e-mail address.**

Winners of the Pittsburgh illustrated poem contest will advance to the ACS National Illustrated Poem Contest!

Write and illustrate a poem using the NCW theme, “**Energy: Now and Forever!**”. Your poem must be **no more** than 40 words, and in the following styles to be considered:

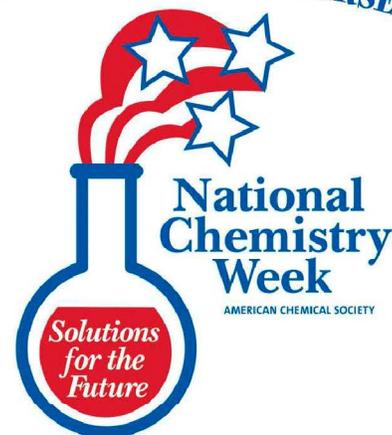
**HAIKU • LIMERICK • ODE • ABC POEM • FREE VERSE • END RHYME • BLANK VERSE**

**Participants are encouraged to explore topics related to:**

- Sustainable energy
- Chemical change into energy
- Sources of power
- Any other relevant topics

**Entries will be judged based upon:**

- Relevance to and incorporation of the theme
- Adherence to poem style
- Word choice and imagery
- Originality and creativity
- Colorful artwork
- Overall presentation



**Contest Rules:**

- Poems must conform to a particular style. No poem may be longer than 40 words.
- The topic of the poem and the illustration must be related to the NCW 2013 theme, “**Energy: Now and Forever!**”.
- All entries must be original works without aid from others.
- Each poem must be submitted and illustrated on an unlined sheet of paper (of any type) not larger than 11” x 14”. The illustration must be created by hand using crayons, watercolors, other types of paint,

colored pencils or markers. The text of the poem should be easy to read and may be printed with a computer, before the hand-drawn illustration is added, or the poem may be written on lined paper which is cut out and pasted onto the unlined paper with the illustration.

- Only one entry per student will be accepted.
- All illustrated poems and/or digital representations of the poems become the property of the American Chemical Society.
- Acceptance of prizes constitutes consent to use winners’ names, likenesses and entries for editorial, advertising and publicity purposes.



## Washington and Jefferson College Department of Chemistry

Presents  
**ACS "ON THE ROAD" MEETING  
MILDRED PERRY MEMORIAL LECTURE**

**Tuesday, October 8, 2013**



**Speaker:**

Dr. Jay F. Whitacre  
Founder and CTO - Aquion Energy

Please see the Pittsburgh Section website at  
[www.pittsburghacs.org](http://www.pittsburghacs.org) for more details.

## Applications for Student Travel Awards Now Being Accepted

The Pittsburgh Section of the American Chemical Society has budgeted funds to help encourage undergraduate/graduate student participation in national and regional ACS meetings. The awards are intended to help defray meeting registration and travel-related expenses (lodging, transportation, per diem) for eligible students. To apply for the funds, one should simply complete the application (available on our web site at [www.pittsburghacs.org](http://www.pittsburghacs.org)) and return it by the relevant deadline to:

Pittsburgh Section ACS  
Travel Grants  
Attn: Dr. Michelle Ward  
Room 107 / Chevron Science  
Center  
219 Parkman Avenue  
Pittsburgh, PA 15260

Each year, the Pittsburgh Section of the ACS will award up to four \$500 grants to aid our undergraduate/graduate student members in presenting papers or posters at ACS Meetings. Awards will be made based on the scientific merit of the paper/poster to be presented and financial need. The deadlines for receipt of applications are 12/01/2013 (for travel to be completed by 06/30/2014 and 06/01/2014 (for travel to be completed by 12/31/2014).

Our Section is looking forward to helping increase the participation of local students in ACS conferences. If you have any questions, please do not hesitate to contact Dr. Michelle Ward, [muscat@pitt.edu](mailto:muscat@pitt.edu) or 412-624-8064.

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## October Meeting

Monday, October 7, 2013

8:00 PM

Duquesne University

### “Raman Microspectroscopy and Advanced Statistics for Forensic Applications”

**Igor Lednev, Ph.D.**

University at Albany, State University of New York

#### **Abstract:**

The identification of biological stains recovered at a crime scene is a key part of forensic investigation. Biochemical presumptive and confirmatory tests are destructive, require hazardous and expensive reagents and/or suffer from cross-reactivity with other biological fluids. Each of these problems has significant negative impacts on efficiency, cost, lead-time, and quality of the forensic investigation. There is no a single test which can be used for several body fluids. We have demonstrated that Raman microspectroscopy combined with advanced statistics has a great potential as easy-to-use, automatic, on-field method for rapid, nondestructive, confirmatory identification of body fluid traces at a crime scene. We have developed a Raman spectroscopic library for identification of all major body fluids including blood, semen, saliva, vaginal fluid and sweat. In addition, the ability of the method to differentiate between animal and human blood traces, as well as between venous and menstrual blood has been shown. The method has been expanded to body fluid mixtures, contaminated traces and stains on various substrates. Preliminary exciting results on the genetic profiling based on Raman signature of blood and semen will be also discussed.

Near-infrared (NIR) Raman microspectroscopy and attenuated total reflectance (ATR) Fourier transform infrared spectroscopy (FTIR) combined with advanced statistics was also utilized for detection, characterization and identification of gunshot residue (GSR). The firearm discharge process is analogous to a complex chemical reaction. The reagents of this process are represented by the chemical composition of the ammunition, firearm and cartridge case. The specific firearm parameters determine the conditions of the reaction and thus the subsequent product, GSR. We found that Raman and IR spectra collected from these products are characteristic for different caliber ammunition. This study demonstrates for the first time that vibrational spectroscopy has the potential for the differentiation of GSR based upon forensically relevant parameters, such as caliber size.

A new concept of multidimensional spectroscopic signature and adequate software have been introduced and developed to take into account the intrinsic sample heterogeneity. This concept improves the identification and differentiation power of the method and could be applied for a variety of practical problems involving heterogeneous sample.

#### **Biography:**

D: Igor K. Lednev is an associate professor at the University at Albany, State University of New York. He graduated from the Moscow Institute of Physics and Technology, Russian Federation, receiving his Ph.D. degree in

**Continued on next page**

1983. Then Dr. Lednev worked at the Institute of Chemical Physics, Russian Academy of Sciences, as a group leader. As an academic visitor, he worked in several leading laboratories around the world including the United Kingdom, Japan, Canada and Germany. In 1997, Dr. Lednev came to the US and joined Prof. Sanford Asher laboratory at the University of Pittsburgh until he accepted a faculty position at the University at Albany in 2002. Dr. Lednev research is focused on the development and application of novel laser spectroscopy for biomedical research and forensic purposes. He has secured federal funding from the National Institutes of Health, National Science Foundation, National Institute of Justice and Air Force Office of Scientific Research. Dr. Lednev served as an advisory member for the White House Subcommittee on Forensic Science. He is on editorial boards of four scientific journals including Journal of Raman Spectroscopy, the top journal in the field, and Biochimica et Biophysica Acta, a high-ranking international journal. Dr. Lednev is a recipient of the Research Innovation Award. He has co-authored over 140 publications in peer-reviewed journals, including 2009 article in Forensics Science International, which is the most downloaded and one of the most cited paper from this top journal in the field.

#### **Dinner Reservations:**

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## **Become a GPC Champion**

### **Attend the Tosoh Bioscience GPC Training Course**

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King of Prussia, PA**



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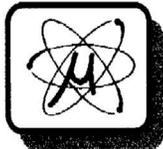


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- Monthly Symposia by Prominent Researchers
- Promoting Science Education



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## Services

### Volunteers Needed!

There are a number of volunteer opportunities in the Pittsburgh ACS section! If you are interested in volunteering, please contact Heather Juzwa at [hljuzwa@shimadzu.com](mailto:hljuzwa@shimadzu.com)!

### Crucible Deadline

The deadline for items submitted to The Crucible is the 1<sup>st</sup> of the month prior to publication.

For example, all items for the October 2013 issue must be to the editor by September 1, 2013.

### The Crucible

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## Career Opportunities

### SEARCHING FOR THAT SPECIAL JOB?

There are many companies and organizations searching for chemical and biochemical personnel to fill important jobs in their organizations.

- Companies for laboratory and management positions
- Universities & Colleges for teaching positions and laboratory personnel
- Hospitals for technical and research personnel

There are several web sites that may help you search for these open positions.

- [www.mboseervices.net/recr\\_disp.php](http://www.mboseervices.net/recr_disp.php)
- <http://pubs.acs.org/chemjobs/>

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# The Crucible

A newsletter of the Pittsburgh Section of the American Chemical Society

124 Moffett Run Rd.  
Aliquippa, PA 15001

## Change of Address

If you move, notify the American Chemical Society, 1155 Sixteenth Street, N.W., Washington, D.C. 20036.

To avoid interruption in delivery of your CRUCIBLE, please send your new address to Traci Johnsen, 124 Moffett Run Rd., Aliquippa, PA 15001. Allow two months for the change to become effective.

## Pittsburgh Area Calendar

### Monday, September 9

#### Society for Analytical Chemists of Pittsburgh

##### *"How Do We Measure Scientific Impact"*

David R. Walt, Robinson Professor of Chemistry, Howard Hughes Medical Institute Professor, Tufts University  
Duquesne University, Pittsburgh, PA

### Saturday, September 14

#### Women Chemists Committee

##### *Pirate Game and Tailgate*

PNC Park - Limited Tickets Available. See WCC website for details.

### Tuesday, September 17

#### ACS Energy Technology Group

##### *"Pd<sub>1-x</sub>Cu<sub>x</sub> Membranes for Recover of H<sub>2</sub> from Mixed Gas Streams"*

Professor James B. Miller, Department of Chemical Energy, Carnegie Mellon University, National Energy Technology Laboratory-Regional University Alliance  
Spaghetti Warehouse, 26<sup>th</sup> & Smallman Streets, Strip District, Pittsburgh, PA

### Wednesday, September 18

#### The Spectroscopy Society of Pittsburgh

##### *"Reflections on the Pittsburgh Spectroscopy Award and Vibrational Optical Activity"*

Dr. Laurence Nafie, Syracuse University, 2013 Pittsburgh Spectroscopy Award Winner  
Duquesne University - Bayer Learning Center (Wolfe Lecture Hall), Pittsburgh, PA

### Wednesday, September 18

#### The Spectroscopy Society of Pittsburgh Technology Forum

##### *"Understanding Fragrance - Its Origin and History"*

Roger A. Howell, Vice President/Chief Perfumer, Alpha Aromatics  
Duquesne University, Pittsburgh, PA

### Saturday, September 28

#### Greater Pittsburgh Younger Chemists Committee

##### *Chemistry Carnival 2013*

Mellon Institute, Carnegie Mellon University, Pittsburgh, PA

### Tuesday, October 8

#### Washington and Jefferson College Department of Chemistry

##### *ACS "On The Road" Meeting, Mildred Perry Memorial Lecture*

Dr. Jay Whitacre, Founder and CTO - Aquion Energy

### Monday, October 7

#### Society for Analytical Chemists of Pittsburgh

##### *"Raman Microspectroscopy and Advanced Statistics for Forensic Applications"*

Igor Lednev, Ph.D., University at Albany, State University of New York  
Duquesne University, Pittsburgh, PA

### Friday, October 25 & Saturday, October 26

#### National Chemistry Week Event

##### *"Energy: Now and Forever"*

Carnegie Science Center, Pittsburgh, PA

Additional chemistry related seminars and events in the Pittsburgh area can be found on the Pittsburgh Section's website at [www.pittsburghacs.org](http://www.pittsburghacs.org)