



# The Crucible

<http://www.chem.cmu.edu/acs-pgh/>

Volume: XCVI No. 3

November 2010

## Pittsburgh Section Wins ChemLuminary Award for its 2009 National Chemistry Week Program

This past August, during the American Chemical Society's (ACS) National Meeting held in Boston, MA, the Pittsburgh Section was the recipient of an ACS ChemLuminary Award for its 2009 National Chemistry Week (NCW) program. The Section received an award in the "Outstanding Community Involvement in NCW" category. Through the formation of partnerships with area professional societies, non-profit organizations, local corporations and businesses, universities and student affiliate chapters, secondary schools, and local media, the Pittsburgh Section continues to offer an NCW program with significant community involvement.

This was the Pittsburgh Section's 10<sup>th</sup> NCW-related ChemLuminary award in the past 11 years and its 14<sup>th</sup> since the ACS's NCW program began in 1987. Previously, the Pittsburgh Section has been recognized for its NCW community outreach efforts by the ACS's Committee on Community Activities and NCW Task Force with ChemLuminary Awards in the following categories; "Best Activity in High Schools" in 1991, 1992, 1995, and 1996; "Greatest Increase in Membership Involvement" in 1999; "Greatest Community Involvement" in 2000 and 2004; "Outstandingly Creative and/or Unique Event" in 2001; "Best Event with Underrepresented Minority Groups" in 2002 and 2003; "Outstanding Event for a Specific Audience" in 2005 and 2008; and

"Outstanding Event for the Public using the Yearly Theme" in 2006.

The Pittsburgh Section's 2009 National Chemistry Week (NCW) event was held



From left to right: Lynn Hogue, Chair - ACS Committee on Community Activities; Jim Manner, Chair - Pittsburgh Section; Rich Danchik, Councilor - Pittsburgh Section; Tom Lane, Past President ACS. Photo Credit: Peter Cutts Photography.

at the Carnegie Science Center on Friday and Saturday, October 23-24, 2009. The theme for the 2009 celebration was "Chemistry - It's Elemental!" There were 308 volunteers from 32 groups and organizations, conducting hands-on experiments, activities, and demonstrations. There were several theater-style shows presented in the various Science Center stages, including PPG Industries' demonstration titled "Reaction in Action." Total attendance for the two-day event was approximately 4,440.

The Pittsburgh Section would like to thank its sponsors including the Society For Analytical Chemists of Pittsburgh, The Spectroscopy Society, The PPG Industries Foundation, Bayer Corporation, and the Carnegie Science Center for their generous and on-going support of the Pittsburgh Section's NCW program. Thanks also go to the 300 volunteers who participated in the 2009 NCW celebration. Without the support and commitment by the sponsors, the many dedicated volunteers, and the community, the Pittsburgh Section's annual NCW activities would not be possible.

*Submitted by: V. Michael Mautino*

## Contents . . .

Pittsburgh Section Wins ChemLuminary for 2009 National Chemistry Week Program	1
2011 Candidates for Office	2
2011 Ballot	3
Spectroscopy Society of Pittsburgh November Meeting	5
Pittsburgh Section ACS Members Named as ACS Fellows	5
American Chemical Society Pittsburgh Award and Distinguished Service Award Dinner	6
Spectroscopy Society of Pittsburgh Technology Forum	7
ACS Pittsburgh Technology Group, ACS Pittsburgh Chemists Club, AICHe-Pittsburgh, and the Pittsburgh Energy Technology Group Joint Meeting	9
Pittsburgh Section ACS 1 <sup>st</sup> Annual Crossroads Conference - Call for Abstracts	9
Chemistry Olympics Winners	10
Society for Analytical Chemists of Pittsburgh November Meeting	11
Partner with a Science Teacher in Your Community	11
Upcoming Science Cafe and Science Festival Conference	12
ACS Careers Job Club	12
Webinar Series	12
Progress Toward First Commercial Repellent for East Coast's Stinker	13
Advertiser's Index	15
Calendar	16

# 2011 CANDIDATES FOR OFFICE

Pittsburgh Section  
American Chemical Society

The 2010 Nominating Committee of the Pittsburgh Section of the American Chemical Society submits the following slate of candidates for Section office for 2011. All persons nominated are members of the society and have agreed to serve if elected.

**Only members of the Pittsburgh section of the American Chemical Society are eligible to vote. Please note that all ballots must be received by Pittsburgh Section Secretary, Robert Mathers, by November 21, 2010. Please follow instructions printed on the ballot. Ballots received in any other manner than what is stated in the instructions will not be accepted.**

## Chair - Elect Michelle Muscatello

### **Michelle Muscatello**

Michelle Ward-Muscatello joined the Department of Chemistry at the University of Pittsburgh as a faculty member in the summer of 2009. Michelle is a lecturer and the coordinator for the Introductory Analytical Chemistry and Instrumental Analysis laboratory courses.

Michelle received a B.S. Chem. in 1994 and a B.S. Ed. with credentials in secondary education in 1996, both from the University of North Dakota. She taught high school chemistry locally, prior to enrolling in the graduate program at the University of Pittsburgh. Michelle received a M.S. in 2003 and completed her Ph.D. in 2008, under the direction of Professor Sanford Asher, working on the development of smart photonic crystal hydrogel materials.

Michelle joined both the Spectroscopy Society of Pittsburgh and the Society for Analytical Chemists of Pittsburgh during graduate school, and has become an active member serving on several committees for both groups since graduation. Committee assignments have included: Publicity, Summer Intern Program, Technical Program, ACS Graduate Fellowships, December Meeting, Web Coordinator, Elementary School Science Education Award, High School Equipment Grants, and Tripartite. Michelle served as conference week staff for the first time this year at Pittcon. Most people in these societies likely recognize Michelle as the person who created/maintains the group pages for the two societies on facebook and LinkedIn.

Michelle also joined Iota Sigma Pi National Honor Society for Women in Chemistry during graduate school and has been serv-

ing as the members-at-large web coordinator and newsletter coeditor for the last two years. She has initiated and is organizing a local chapter of this society in the greater Pittsburgh area.

Michelle has been a member of the American Chemical Society for the past five years. She is interested in serving as the local ACS Chair for the opportunity to further expand her service to the field of chemistry.

## Secretary - Elect Fu-Tyan Lin

### **Fu-Tyan Lin**

Fu-Tyan received his bachelor degree in 1962 in Physics and Teaching from the National Taiwan Normal University, Taipei, Taiwan. He enjoyed seven years of teaching in high schools and colleges in Taiwan. He came to the United States for his graduate study in August, 1969. Fu-Tyan received his MS in Physics in 1971 and Ph.D. in Polymer Science in 1979 from the University of Akron, Akron, OH. During his graduate study, he worked as a technician for the Physics Department from 1971 to 1973 and as an NMR (Nuclear Magnetic Resonance) Spectroscopist for the Institute of Polymer Science from 1973 to 1978 at the University of Akron. He was the Chemistry Instrumentation Manager at the University of Louisville, Louisville, KY in 1978-1980. He was the Director of the NMR Lab and a Research Assistant Professor in the Chemistry Department at the University of Pittsburgh from June, 1980. He was promoted to the Research Associate Professor in November, 1986. He retired from the University of Pittsburgh in January, 2005. He is the founder of the LIST NMR, an NMR services and consulting lab in 2005. His current research interest is the separation and characterization of nature products. He is the author and co-author for more than sixty papers. Fu-Tyan

presented more than twelve papers at the academic institutes and conferences. In October, 2005, he gave one plenary lecture for the Beijing Conference and Exhibition on Instrumental Analysis (BCEIA) in Beijing, China.

Fu-Tyan has been an active member of American Chemical Society (ACS) since 1978, a member of the Spectroscopy Society of Pittsburgh (SSP) since 1982, a member of the Society for the Analytical Chemists of Pittsburgh (SACP) since 1999, and a member of the Pittsburgh Conference (PITTCON) since 1993. He was assigned to serve various committee chairs last several years for PITTCON, SSP, SACP and ACS Pittsburgh Section. He was Chairman of the SSP in 2003-2004. He is current Chair-elect for SACP 2010-2011. He was the Chairman for the Pittsburgh Section of ACS in 2008. He served as a Chairman for Pittsburgh ACS Polymer Group in 1985-1986. He was President of The Monte Jade Science and Technology Association, Pittsburgh Chapter, in 1999.

Fu-Tyan enjoys sewing, cooking, reading and classical music.

## Director Toby Chapman Joe Jolson

### **Toby Chapman**

Toby Chapman is currently Associate Professor of chemistry at the University of Pittsburgh. He received his B.S. degree in chemistry in 1960 from the University of Illinois, and his Ph.D. in polymer chemistry from the Polytechnic University. He was then NSF postdoctoral fellow at Harvard University working in the field of protein/peptide chemistry. In 1967, Dr. Toby Chapman joined the Department of Chemistry at the University of Pittsburgh,

*Continued on Page 8*

**BALLOT**  
**For Offices of the**  
**2011**  
**Pittsburgh Section, American Chemical Society**

**Chair-Elect**

Michelle Muscatello.....

**Secretary-Elect**

Fu-Tyan Lin .....

**Director**

*(Vote for 1)*

Toby Chapman.....

Joseph Jolson .....

**Councilor**

*(Vote for 1)*

Michelle Coffman.....

Jim Manner .....

Robert Mathers .....

**INSTRUCTIONS**

Ballot must be placed and sealed in the enclosed blank envelope. Do not write on the blank envelope. Place the blank envelope in the enclosed printed envelope which is addressed to Pittsburgh Section Secretary, Robert Mathers. **Print your return address in the upper left hand corner and sign your name on the line provided. Ballots received in any other manner will be disqualified.**





# SPECTROSCOPY SOCIETY OF PITTSBURGH



Wednesday, November 17, 2010

Duquesne University - Pappert Hall (in the Bayer Learning Center)

8:15 PM - Technical Program

## *“Raman Spectroscopy Combined with Advanced Statistics for Biomedical Research and Forensic Applications”*

**Igor K. Lednev**

Associate Professor, Department of Chemistry, University at Albany, SUNY

Significant advancement in laser technology and the development of novel light detectors has dramatically improved spectroscopic methods for molecular characterization over the past decades. The amount of information hidden in digital data sets composed of hundreds and thousands points is increased radically. We utilize various statistical methods, 2D correlation analysis and chemometrics in particular, for extracting essential information from Raman spectra about the composition and evolution of biological systems. Most recently, a novel method combining deep ultraviolet Raman spectroscopy with post-mortem hydrogen-deuterium exchange and advanced statistics has been proven to be uniquely suitable for structural characterization of proteins at all stages of amyloid fibrillation, the process associated with many neurodegenerative diseases. In addition, a new type of protein folding-aggregation phenomenon, spontaneous refolding of amyloid fibrils, has been discovered. For forensic applications, we develop a novel approach based on multidimensional Raman spectroscopic signatures for the identification of body fluid traces at a crime scene.

**Bio:** 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 1983. Then Dr. Lednev worked at the Institute of Chemical Physics, Russian Academy of Sciences, as a group leader till 1994. Since Perestroika, Dr. Lednev had been a visiting researcher at the University of York, UK with Prof. Ronald Hester. He also worked as an academic visitor in Japan and Canada, and as a research professor at the University of Pittsburgh with Prof. Sanford Asher. Dr. Lednev joined the University at Albany faculty in 2002. His current research is focused on the development and application of novel laser spectroscopy for biomedical research and forensic applications. Dr. Lednev was selected recently to serve as an advisory member of the White House Subcommittee on Forensic Science, National Science and Technology Council. Dr. Lednev is a recipient of the Research Innovation Award; he has been interviewed for press coverage over dozen times during 2009-2010 by the leading science/news agencies including C&E News, the Royal Society of Chemistry and Times Union. He has co-authored over 110 publications in peer-reviewed journals.

**Dinner Reservations:** Please register on-line at <http://www.pittcon.org/misc/societies/ssprsvp.php> or call (412) 825-3220 ext 290 to make dinner reservations NO LATER THAN FRIDAY, November 12, 2010. This month's entrée is espresso crusted filet mignon with a gorgonzola sauce. Dinner will cost \$8 and checks can be made out to the SSP. If you have 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. Contact Duquesne University if any difficulties arise.

## **Pittsburgh Section ACS Members Named as ACS Fellows**

192 distinguished scientists have been selected as 2010 Fellows of the American Chemical Society. These ACS members were selected based on their outstanding achievements in and contributions to the science, the profession, and their excellent service to the Society. Similar to the inaugural class of 2009, the Fellows represent a wide range of disciplines and geographic locations, representing 33 technical divisions and 79 local sections. The 2010 class also includes distinguished scientists and engineers from industry, academia, and government.

The following Pittsburgh Section ACS members were selected as Fellows: Kay M. Brummond, Dennis P. Curran, Kenneth D. Jordan, Krzysztof Matyjaszewski, V. Michael Mautino, Robert D. Tilton, Peter Wipf.

A complete list of the Fellows can be found in the August 2, 2010 issue of C&EN. For additional information on the ACS Fellows Program, go to [www.acs.org/fellows](http://www.acs.org/fellows) or send an email to [fellows@acs.org](mailto:fellows@acs.org).

### **BOOST OUR RAVINGS**

When you tell our advertisers that you saw their ads here they have more confidence in our newsletter's viability as an advertising medium. They advertise more. This supports our many activities.

### **‘Friend Us’**

The ACS Local Pittsburgh Section now has its own Facebook and LinkedIn Pages. Be sure to join to stay current with section happenings!

**Facebook Page:**  
ACS Pittsburgh

**LinkedIn:**  
Pittsburgh Local Section ACS



**AMERICAN CHEMICAL SOCIETY**  
**Pittsburgh Section**  
**PITTSBURGH AWARD**



*Honoring 2010 Pittsburgh Award Recipient*  
**Alan J. Russell**  
*and*  
**2010 Distinguished Service Award Winner**  
**Mordecai D. Treblow**

**Tuesday, November 16, 2010**

Pittsburgh Athletic Association - Pennsylvania Room  
 4215 Fifth Avenue, Pittsburgh, PA 15213

Social Hour: 6:00 PM  
 Cash Bar Dinner: 6:45 PM  
 Award Presentations: 7:45 PM

**Cost:** \$45.00  
 Student or Postdoc \$22.50

The awards ceremony is free and open to the public

Parking at Soldiers and Sailors

**Registration Form: Make Checks payable to Pittsburgh Section ACS**  
**To be registered for the dinner, you must include payment**

Name \_\_\_\_\_

Address \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

E-mail \_\_\_\_\_

Affiliation: \_\_\_\_\_

Please Indicate Meal Choice: \_\_\_\_\_ Herb Grilled Chicken Breast \_\_\_\_\_ Roasted Vegetable Ravioli \_\_\_\_\_ Roast Prime Rib of Beef

**Mail To :**  
 Heather Juzwa  
 321 Winners Circle  
 Canonsburg, PA 15317

Spectroscopy Society of  
Pittsburgh

Technology forum

Wednesday, November 17, 2010

Duquesne University  
Pappert Hall in the Bayer Learning Center  
5:30 p.m.

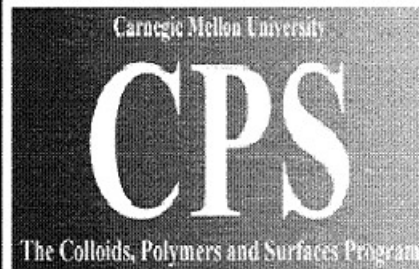
**“Bug Therapy: Discovering How Insects  
Make Our World Better”**

**Dr. John E. Rawlins**  
Carnegie Museum of Natural History

In diverse ways, insects and related arthropods are increasingly playing an important role in improving the quality of life for human beings. Innovating new ways to use old bugs is part of the mission of curators in the Section of Invertebrate Zoology at Carnegie Museum of Natural History. In this short talk Dr. Rawlins provides a glimpse into the daily life and challenges of a curator in a world-class insect collection, clarifies how the resource of specimens, data, and staff expertise are harnessed to address traditional challenges, and through technological innovation, to answer new questions and needs for our future. Rawlins discusses his involvement with bugs aided by current technology: scanning electron microscopy, auto-montage imaging, x-ray analytical methods, and forensics and identification procedures, as well as aspirations for future notions (bugs-to-drugs, entomological inspiration for robot development, and more).

**Bio:** Rawlins grew up on a sheep ranch in eastern Oregon, received a Bachelor of Science degree from Oregon State University in vertebrate zoology and a doctorate from Cornell University in systematic entomology, worked as an Assistant Professor of Zoology at University of Texas, Austin, and for the last 25 years as been at Carnegie Museum of Natural History as the curator in charge of the Section of Invertebrate Zoology. Research interests emphasize natural history and phylogeny of Lepidoptera with special emphasis on the immature stages of moths, biotic inventory involving insects, and use of insects as indicator systems for environmental change, conservation, and resource management. He is interested in topics integrating technology with insects and their kin (e.g., using arthropod structure and function as biomodels in robotics). Current projects include NSF-sponsored biotic inventory of invertebrates and plants on Hispaniola, NSF-sponsored inventory of butterflies in Ghana, molecular and morphological studies on phylogeny of world cutworm moths and their relatives, federally funded State Wildlife Project for Invertebrate Species of Special Concern in Pennsylvania, and collaborative work on Neotropical ghost moths and Pennsylvania fireflies.

Carnegie Mellon



**PART-TIME STUDY**

This interdisciplinary program of part-time study (currently in its 37th year) can lead to a Master of Science degree in Colloids, Polymers and Surfaces (CPS) offered by Carnegie Mellon University or can be taken for enrichment only. Course work is relevant to many industries that involve the application of nanoparticles, macromolecules and interfaces to product manufacturing and development such as:

- nanotechnology
- coatings and pigments
- pharmaceuticals
- surfactant-based products
- food science
- environmental science
- polymers/advanced materials and biomaterials.

Participating faculty are drawn mainly from the Departments of Chemical Engineering and Chemistry.

Applications for Spring, 2011 enrollment are now being taken. Classes begin January 10, 2011, and new students may enroll in the entry-level course, Physical Chemistry of Colloids and Surfaces.

For additional information, contact:  
Dr. Annette M. Jacobson, Director  
CPS Program

Carnegie Mellon University

Email: [jacobson@andrew.cmu.edu](mailto:jacobson@andrew.cmu.edu)

Website: [www.cheme.cmu.edu/education/mscpscatalog.htm](http://www.cheme.cmu.edu/education/mscpscatalog.htm)

## **Chapman Continued from Page 2**

where he was Assistant Professor (1967-1974), and from 1974 - Associate Professor. His research has changed over the years. Early on his group did studies of peptide and nucleic acid synthesis. In later years he has concentrated on more traditional polymer chemistry. This has included the synthesis of low surface energy polyurethanes and a variety of polymeric amphiphiles of non-traditional structure, such as dendritic polymers and other amine polymers. Dr. Chapman has been an officer in the Polymer Group (Pittsburgh section of ACS), has organized a Tripartite meeting. Additionally, he has co-chaired a program for a regional ACS meeting, and has served several times on the Pittsburgh Award Committee.

### **Joseph Jolson**

In 2004, Dr. Joseph D. Jolson founded Custom Client Solutions (CCS). CCS provides product support, investment, intellectual property, and litigation support services to clients in the battery, gas detection, and respiratory protection areas. More information on CCS can be found at [www.customclientsolutions.net](http://www.customclientsolutions.net).

From 2000 - 2004, as technical director of CSE Corporation, Dr. Jolson oversaw the development of emergency-breathing devices & air quality monitors. Dr. Jolson improved product quality, solved manufacturing problems, and reduced costs; enabling CSE's sales to grow from \$6.8 to \$13 million/year.

From 1996 - 2000, as trace gas analysis marketing and applications laboratory manager of the Mine Safety Appliances Company, Inc., Dr. Jolson was responsible for business development and product management. He analyzed detection technologies for anesthetic agents, chemical warfare agents, explosives, illicit drugs, pesticides, and VOCs. He oversaw qualification testing and applications support for a \$100 million/year division.

From 1989 - 1996, Dr. Jolson held several R&D management positions. His teams developed over a dozen commercially successful catalytic combustible and electrochemical gas sensors, and several proto-

type gas detection instruments. Dr. Jolson invented the lithium-silver oxide battery and commercialized improved lithium-iodine and thermally activated batteries. He developed an OSHA compliant laboratory safety program and MSDSs.

From 1985 - 1988, Dr. Jolson set up and operated a facility to produce specialty batteries for the U.S. Government. Dr. Jolson has 11 U.S. Patents, 13 publications, and 21 presentations. He earned a Ph.D. in Analytical Chemistry from the State University of New York at Buffalo.

Dr. Jolson became active in the ACS - Pittsburgh Section professional relations committee in 2000 and has chaired the committee since 2004. He coordinated changes to the Job Searching for Chemical Professionals workshop that increased attendance from 15 to 73 job seekers. In 2007, he became active in the ACS - Pittsburgh Section Energy Technology Group and championed the formation of the Pittsburgh Energy Technology Group. In 2008, he helped organize and was morning session chair of the Future of Energy Symposium. In 2009, he served as ACS - Pittsburgh Section secretary.

**Councilor**  
Michelle Coffman  
Jim Manner  
Robert Mathers

### **Michelle Coffman**

Michelle Coffman received her B.S. in Chemistry from Gannon University, her M.S. in Chemistry from the University of Pittsburgh, and her M.Ed. in Secondary Education from Slippery Rock University. Michelle was the Program Director of the Chemical Laboratory Technician Program at Bidwell Training Center, Inc., from 2000 until 2008. This program trains entry-level technicians in a variety of fields within the chemical industry. While at Bidwell, Michelle and her students were involved and belonged to the Western Pennsylvania Technician Affiliate Group of the ACS and volunteered during National Chemistry Week and National Engineers Week at Carnegie Science Center. She has also volunteered as a judge and has been Chair of the Senior Chemistry division

at the Pittsburgh Regional Science and Engineering Fair. Michelle has been a member of ACS for over years 15 and serves on the Committee of Technician Affairs and is an Alternate Councilor for the Pittsburgh Local Section of the ACS. Michelle has previously worked as an Environmental Scientist at Baker Environmental, Inc., and currently works for Tetra Tech NUS, Inc., an environmental consulting firm where she works on a variety of Military Munitions Response Program projects.

### **Jim Manner**

Jim retired from PPG Industries in 2000 after 37 ½ years as a Senior Research Associate. Jim's work resulted in 13 US and 12 foreign patents and he was the recipient of the Barberton Technical Center Outstanding Professional Accomplishments in 1979. Jim was transferred to the PPG Industries Monroeville Technical Center in 1989.

He joined both SSP and SACP in 2000 and served over the years as a member of several committees in both of the societies. In SACP he has been chairman of Starter Grant's in 2003, 2004 and 2005 and Continuing Education in 2005. Jim was secretary for SACP in 2007. He was chair of SSP's continuing Education in 2009-2010. Jim has served on various CWS committees and as a Presider at Pittcon meetings since 2001. At the 2008 and 2009 Pittcon meeting in New Orleans and Orlando, he did a Science Week workshop on "Gas Behavior" for 4-8 grades. Jim is also scheduled for this program in 2011.

Jim has been a member of the American Chemical Society for 46 years. He was a past meetings chairman of the Akron Section and Chair in 1989. Jim was treasurer of the Pittsburgh Section of ACS in 2004, chair elect in 2005, chair in 2006, and current chair in 2010 and is currently serving a three year term as a councilor. In addition to the above volunteer work, Jim has been the director of Cross Roads Food Pantry in Monroeville since 2000.

### **Robert Mathers**

Robert Mathers graduated from North Carolina State University with a B.S. in

*Continued on Page 11*



ACS Pittsburgh Section Chemists Club  
ACS Pittsburgh Section Energy Technology Group  
AIChE-Pittsburgh  
Pittsburgh Energy Technology Group

## “Water Management During Hydraulic Fracturing of Marcellus Shale for Natural Gas Production”

Wednesday, November 17, 2010

Speakers: Dr. K.B. Gregory and Dr. R.D. Vidic

### Spaghetti Warehouse

26<sup>th</sup> & Smallman Streets, Strip District, Free parking behind the restaurant

Social Hour: 6:00 pm    Dinner: 6:30 pm

Presentation: 7:30 pm

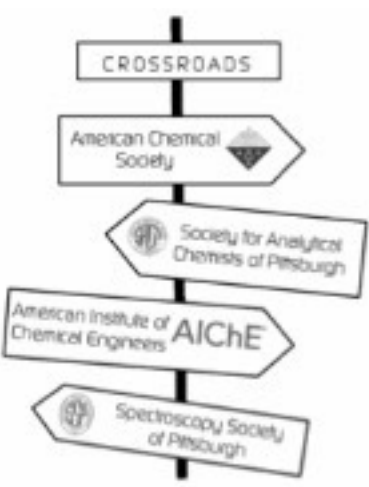
The process of hydraulic fracturing which liberates natural gas from shale produces large volumes of high-strength wastewater known as “flowback.” Flowback water is commonly a brine solution, laden with metals and hydrocarbons which originated in the shale formation. The economical management of flowback water for energy production and environmental stewardship is challenging. A variety of conventional desalination and disposal technologies have been suggested for flowback water management but their application is often limited by environmental regulations, regional topography, or a lack of sufficient infrastructure. However, novel approaches toward water management during hydraulic fracturing enable economical recovery of shale gas while greatly minimizing waste volumes and their associated environmental risk. The challenges and emergent water treatment and management strategies for produced water from hydraulic fracturing will be described from recent data collected during natural gas production from the Marcellus shale in the U.S.

**Kelvin B. Gregory, Ph.D.** is an Assistant Professor of Civil and Environmental Engineering at Carnegie Mellon University. Dr. Gregory’s research is focused on advancing environmental bio-technology for water treatment through an enhanced understanding of the underlying principles of biogeochemistry and microbial ecology. Current projects aim to enhance our understanding of biological and geochemical processes occurring during treatment of produced water from oil and natural gas development, develop contaminated sediment applications for electrode-based biotechnology, and enhance the understanding of how microbes and nanomaterials interact in the environment.

**Radisav D. Vidic, Ph.D., P.E.** is William Kepler Whiteford Professor of Environmental Engineering and Chairman of the Department of Civil and Environmental Engineering at the Swanson School of Engineering, University of Pittsburgh. His research efforts focus on advancing the applications of surface science by providing fundamental understanding of molecular-level interactions at interfaces, development of novel physical/chemical water treatment technologies, water management for Marcellus shale development, and reuse of impaired waters for cooling systems in coal-fired power plants. Dr. Vidic was elected by the Pittsburgh section of the American Society of Civil Engineers as 2008 Professor of the Year.

For reservations, please call Connie Zaremsky by Monday, November 15 at 724-554-3691 or by email at [connie.zaremsky@netl.doe.gov](mailto:connie.zaremsky@netl.doe.gov). Our meetings are open to all.

The cost of the dinner is \$16 including tax and gratuity. Please specify your preference from the following menu choices: •Spaghetti with meatballs •15-layer lasagne •Four-cheese manicotti •Fettuccini Alfredo •Grilled chicken Caesar salad •Also indicate special needs such as vegetarian, gluten-free, etc.



**Pittsburgh Section  
ACS**

**1<sup>st</sup> Annual  
Crossroads  
Conference**

**November 22, 2010**

**Call for Abstracts**

**Deadline:  
November 8, 2010**

The First Annual Crossroads Conference is now accepting abstracts for posters and 25 minute oral presentations in the following categories:

- Astronomy and Geology
- Biology
- Chemistry
- Energy and the Environment
- Engineering -Chemical, Civil, Mechanical and Materials, etc.
- Human Health
- Informatics

Cash awards will be given to the three best high school, undergraduate, and graduate posters.

## Chemistry Olympics Winners

The annual Chemistry Olympics were held on Wednesday, May 5, 2010, at the University of Pittsburgh. Twenty-five schools participated in the event. The Chemistry Olympics are sponsored by the Department of Chemistry at the University of Pittsburgh and the ACS Pittsburgh Education Group and supported by grants from the SACP and SSP. Fisher Scientific and V.W.R. donated prizes for this year's event. Congratulations to the following winners!

	School	Teacher	Students
<b><i>Category I</i></b>			
<b>First Prize</b>	Hampton High School	Mr. Ceccarelli	Evan M. Wilson, Connor Disco, Adam J. Van Gorder
<b>Second Prize</b>	Mt. Lebanon H.S.	Susan G. Meer	Rohan Basu, Stephen Snow, Katelyn Walsh
<b>Third Prize</b>	Penn-Trafford H.S.	Helen Loughner	Jordan Ellis, Andrew Ritter, Neal Petro
<b>Fourth Prize</b>	Taylor Allderdice H.S.	Sally Martin	Mike Durovic, Tess Putinsky, Brian Stack
<b>Fifth Prize</b>	Moon Area H.S.	Lana Groer	Sarah Hendersen, Jenna Murray, Vidisha Sharma
<b>Honorable Mention</b>	Quaker Valley H.S.	Julie Lattanzio	Lauren Newell Ferris, William Newell Ferris, Mericka Brooke McCabe
<b><i>Category II</i></b>			
<b>First Place</b>	Mt. Lebanon H.S.	Susan G. Meer	Nick Brown, Eric Hoffman, Michael Moody
<b>Second Place</b>	Gateway H.S.	Timothy Lattanzio	Nicole Marron, Michael Richards, Samuel Rosko
<b>Third Place</b>	Mars Area H.S.	Rebecca Winek	Robert G. Nichols, Camille N. Plesniak, Kevin M. Shebak
<b>Fourth Place</b>	North Allegheny Senior H.S.	Matt Davis	Andrew Adam, Christy Cotter, Cindy Yuan
<b>Fifth Place</b>	South Park H.S.	John Pastorius	Matt Conley, Aaron Crain, Matt Miller
<b>Honorable Mention</b>	Montour H.S.	Jamie Stephans	Jesse Murphy, Vinnie Rugani, Nick Zukowski
<b><i>Category III</i></b>			
<b>First Place</b>	North Allegheny Senior H.S.	Matt Davis	Adrianna Jensen, Aidan MacDonagh, Matt Poole
<b>Second Place</b>	Taylor Allderdice H.S.	Sally Martin	David Clemens-Sewall, Helen Kim, Eva Petzinger
<b>Third Place</b>	Gateway H.S.	Tim Lattanzio	Melissa Bastacky, James Castiglione, Bharani Rajaram
<b>Fourth Place</b>	Penn Trafford H.S.	Helen Loughner	Devon Albert, Michael Hartz, Michelle Yakubisin



## Society for Analytical Chemists of Pittsburgh



### November Meeting

Monday, November 1, 2010  
8:00 PM

Duquesne University  
Pappert Hall in the Bayer Learning Center

### “Nanomaterial Strategies for Immunodetection”

Marc D. Porter, Ph.D.  
University of Utah

The explosion of innovations across biotechnology underscores the importance of ultra sensitive, high-speed diagnostic tests. This presentation will describe efforts to develop a readout methodology that potentially addresses these needs by coupling gold nanoparticle (i.e., spheres and rods) labeling concepts with surface enhanced Raman scattering (SERS) or superparamagnetic nanoparticle labeling concepts with giant magnetoresistors (GMRs). Strategies will be detailed for both the fabrication and readout of chip-scale platforms by examining fundamental dictates for optimal performance. Results from experiments that focus on the use of immunoassays for the ultralow level detection of viral and microbial pathogens, along with challenges central to analytical sensitivity, speed, non-specific adsorption, and fluidics manipulation, will be discussed.

**Biography:** Porter, USTAR Professor of Chemistry, Chemical Engineering, Bioengineering, and Pathology, is the Director of the Nano Institute of Utah. He has been the director of the Microanalytical Instrumentation Center at Iowa State University (1993-2003); the Institute for Combinatorial Science at Iowa State University (2002-2006); and the Center for Combinatorial Sciences, Biodesign Institute at Arizona State University (2006-2007). He has been involved in several entrepreneurial endeavors: Advanced Analytical Technologies, Inc. (Ames, IA); CombiSep, Inc. (Ames, IA); and Concurrent Analytical, Inc. (Honolulu, HI), which has two subsidiaries - Nanopartz, Inc., a world leader in the innovation and manufacturing of spherical gold nanoparticles and gold nanorods, and Directed Bioflux, Inc., which focuses on newly patented or proprietary technologies that reduce incubation times in heterogeneous immunoassays. Research in his laboratory is focused on fundamental and technological issues in the movement of nanotechnology to clinical diagnostics.

**Notable Awards:** 1987, Society of Analytical Chemists of Pittsburgh New Faculty Award, 2010 Anachem Award

**Dinner Reservations:** Please email the SACP Administrative Assistant, Valarie Daugherty at [daugherty@pittcon.org](mailto:daugherty@pittcon.org) by Wednesday, October 27, 2010 to make a dinner reservation. 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 message.

**Parking:** Duquesne University Parking Garage entrance is on Forbes Avenue. Upon entering the garage, you will need to get a parking ticket and drive to upper floors. Bring your parking ticket to the dinner or meeting for a validation sticker. Contact Duquesne University if any difficulties arise.

## Mathers' Bio Continued from Page 8

chemistry in 1996. He worked for a year in industry as a chemist before entering graduate school. After obtaining a PhD in Polymer Science at The University of Akron in 2002, he spent two years as a post-doctoral researcher at Cornell University in the Department of Chemistry and Chemical Biology. Currently, Robert is an associate professor of chemistry at Pennsylvania State University in New Kensington. He regularly attends and presents at ACS National meetings. His research interests include utilizing renewable resources for polymer chemistry. Robert has served as secretary for the Pittsburgh ACS section in 2008 and 2010.

### Partner with a Science Teacher in Your Community

Who inspired you to be a scientist? Be the inspiration for the next generation by partnering with a middle or high school science teacher this school year.

Assist a teacher in simple ways like answering questions from students, cleaning out the chemical cabinet, or assisting students as they conduct a lab. ACS will reimburse you up to \$500 for science materials and equipment purchased for your work with the teacher and students.

Find out more and enroll in the program by contacting ACS staff at [ScienceCoaches@acs.org](mailto:ScienceCoaches@acs.org).

*ACS Cut and Paste September 2010*

## ACS Careers Job Club Webinar Series

Whether you are looking for your first job or seeking to advance or transition in your career, ACS Career resources give you a competitive advantage in your job search. ACS Careers offers members like you invaluable resources from one-on-one career consulting, wage and salary information, and dynamic webinars to hone your job search skills. ACS Careers is the job search resource for chemists and scientists at all levels of experience and education. Please join us for the follow informative webinar and Get a Jump on Your Career!

### **Title:**

Aligning Your Unique Capabilities with the Goals and Strategies of Companies

Learn how companies are using Competency Models in their Workforce Planning

### **Date/Time:**

November 16<sup>th</sup>  
1:00 to 2:00 pm ET.

### **Register Here:**

<https://www2.gotomeeting.com/register/761716626>

### **Guest speaker:**

Randi Schoenfelder, Managing Partner  
Theodolite Human Capital, LLC

Human Resource professionals have increasingly used the competency based approach in all aspects of HR Management, from recruitment and selection, training and development, succession planning and performance management. Using competency models in selection goes beyond basic knowledge, skills and abilities and incorporates business environment and company strategy. The use of competency models in the selection process enables companies to not only hire good people, but hire the people that will most likely be successful in their company.

Come find out how high performing companies use competency models, and learn how you can best identify competencies in your own background, and convey them to hiring managers and HR professionals.

*ACS Cut and Paste September 2010*

## Upcoming Science Café and Science Festival Conference

Curious about getting more from your science café experience? Want to learn more about a science festival near you? Interested in taking your science cafés and festivals to the next level? Join us for the International Public Science Events Conference [IPSEC], co-sponsored by Science Cafes and the Science Festival Alliance.

**When:** February 16-17, 2011 [prior to the AAAS Meeting]

**Where:** Washington, DC

**Website:** <http://sciencefestivals.org/conference.html>

This February the first ever International Public Science Events Conference [IPSEC] convenes for two days in Washington DC. From multi-million dollar citywide festivals, to intimate café meetings at the corner pub, public science events are popping up across the globe. Join professionals from around the world to trade ideas and inspiration, forge new collaborations, and consider what is next for this rapidly growing field. And it is all timed to lead into the annual meeting of the world's largest general scientific society: the AAAS. Save your spot now with the Science Festival Alliance. The 2011 meeting will have a strong focus on two strands: science cafes and science festivals.

Science cafes are spreading across the globe, with well over 300 cafe series worldwide. These intimate dialogue events are making a big impact on nearly every continent. With a low cost of entry, anyone can start a science café tailored to their audience and community. This has led to a wide range of approaches for fostering lively interaction between the public and science professionals. What tricks and tips have folks come up with to bring out conversation in tough audiences? Are there new resources available to help you keep your café fresh? What are the latest great examples of how a café series complements other outreach efforts? Join us at IPSEC as we discuss the future of this emerging movement.

Science festivals are large, inspiring celebrations of the fascinating world of science and technology that reach people where they live, work, and play. Festivals present science in unusual venues and innovative ways, making each celebration an incubator for new outreach formats. Want to make the most of a festival's big main event? Looking for a new way to reach a target audience? Wondering if your evaluation captured all of the impacts? Join us at IPSEC and learn about creative approaches other festivals have come up with. Other topics will include festival collaborations, unique fundraising approaches, festival benchmarking...and the best of what you suggest!

Please contact Jennifer Larese at [getinvolved@wgbh.org](mailto:getinvolved@wgbh.org), with any questions.

*ACS Cut and Paste August 2010*

## Progress toward first commercial repellent for East Coast's stinker

WASHINGTON, Oct. 9, 2010 - Help may be on the way for millions of people on the East Coast bugged out about the invasion of stink bugs. Scientists have reported a key advance in efforts to develop the first commercial repellent for stinkbugs, which are emerging as a major nuisance to homeowners and a devastating pest to some farm crops. They identified a natural substance in a fungus that infects a common weed and found that it shows potential as the first stinkbug repellent. Their study appeared in ACS' bi-weekly Journal of Agricultural and Food Chemistry.

Hiromitsu Nakajima and colleagues note that stinkbugs are no strangers to Japan. Indeed, they long have ranked as major pests of rice crops there and in some other countries. In contrast, the brown marmorated stinkbug seems to have gotten a foothold in the United States around 1998, and since then has spread, especially in the Mid-Atlantic states, invading homes and damaging fruit and vegetable crops. The nuisance bugs get their name from the skunk-like odor they emit when crushed or annoyed. Farmers are trying to control the pests using a variety of commercial insecticides, which kill the bugs. A stinkbug repellent could be just as effective in keeping the bugs at bay, but no reports on development of such materials have appeared in scientific journals, they say.

The scientists isolated a fungus from the green foxtail plant, a common weed found in Japan as well as the United States and other countries. The fungus lives inside the plant and appears to help protect the foxtail from insect pests and disease. In laboratory tests, extracts of the fungus strongly repelled the white-spotted stinkbug, which they used as a test subject because it is easy to collect, maintain, and handle under laboratory conditions. The scientists identified an ingredient in the extract that is capable of repelling up to 90 percent of stinkbugs and suggest that this chemical could be part of the first repellent for controlling stinkbugs. The substance repelled the stinkbugs as effectively as naphthalene, an ingredient in mothballs and a gold-standard for measuring the effects of insect repellents. A chemically modified version of the substance was almost twice as effective naphthalene.

### A good vacuum system

needs a great vacuum trap:

**Posi-Trap** positive flow  
vacuum inlet traps!

- No "blow-by". . . **ever!**
- Filter elements matched to **your** application.
- **Easy** cleaning and changing.

When you want the best, you want MV Products.



**PRODUCTS**

A Division of Mass-Vac, Inc.

247 Rangeway Road ■ PO Box 359 ■ North Billerica, MA 01862  
978 667 2393 Fax 978 671 0014 sales@massvac.com www.massvac.com

## Countdown to International Year of Chemistry (IYC) 2011: Get Involved Now!

Through the IYC-2011 initiative "365: Chemistry for Life," a different aspect of chemistry will be highlighted every day on [www.acs.org](http://www.acs.org).

Categories include:

- o Energy
- o Environment
- o Materials
- o Health

**IYC 2011 toolkits are now available!**

Visit our website to view and download templates, guidelines and ideas for planning and celebrating IYC 2011. Don't see what you need? Let us know at [iy2011@acs.org](mailto:iy2011@acs.org).

**Subscribe to the International Year of Chemistry (IYC) Bulletin Now!**

Sign-up to receive the monthly IYC Bulletin intended for those individuals involved in grassroots promotion, planning and execution of IYC programs, events and initiatives.

Visit our website to learn more about our many activities and initiatives celebrating IYC-2011.

*ACS Cut and Paste August 2010*

# Business Directory

## Services

## Services

## Services



### Micron Analytical Services

COMPLETE MATERIALS CHARACTERIZATION  
MORPHOLOGY CHEMISTRY STRUCTURE

SEM/EDXA • EPA/WDXA • XRD XRF • ESCA • AUGER • FTIR • DSC/TGA

Registered with FDA • DEA GMP/GLP Compliant

3815 Lancaster Pike Wilmington DE. 19805

Voice 302-998-1184, Fax 302-998-1836

E-Mail [micronanalytical@compuserve.com](mailto:micronanalytical@compuserve.com)

Web Page: [www.micronanalytical.com](http://www.micronanalytical.com)

### WANT MORE ARTICLES

When you tell our advertisers that you saw their ads here they have more confidence in our newsletter's viability as an advertising medium. They advertise more. This supports our many activities.

Specialized Analytical Testing

### INDSPEC Chemical Corporation

- Chromatography
- Absorption Spectroscopy
- Chemical Analysis
- Physical Measurement
- Thermal Analysis

For further information, please contact the Manager  
Analytical Testing Services Harmarville Technical Center  
412-826-3666, E: [Barbara\\_Buchner@oxy.com](mailto:Barbara_Buchner@oxy.com)

### TELL OUR ADVERTISERS

Membership surveys show that you want more articles in our newsletter. If you tell our advertisers that you saw their ad here, they will provide more financial support and this will allow us to add more articles.



SOCIETY FOR  
ANALYTICAL CHEMISTS  
OF PITTSBURGH

Calling New Members

Dues Only \$5.00/year, Call Valarie Daugherty  
412-825-3220 Ext. 204 Right Now!

## NMR Service 500MHz

\*Mass

\*Elemental Analysis

## NuMega Resonance Labs

[numegalabs.com](http://numegalabs.com) P-858-793-6057

### Spectroscopy Society of Pittsburgh

- Professional Networking within the Spectroscopy Community
- Monthly Symposia by Prominent Researchers
- Promoting Science Education



To join call Jenna: 412-825-3220 ext 212

Stay up-to-date on all the happenings of the Pittsburgh Section ACS

Section's Website:  
<http://www.chem.cmu.edu/acs-pgh/>

Facebook Page:  
ACS Pittsburgh

Linked In:  
Pittsburgh Local Section ACS



## Robertson Microlit Laboratories

Where speed and accuracy are elemental

Elemental CHN, S, X, Analysis (same day service)

Metals by ICP-OES, ICP-MS, A/A

FTIR, UV/VIS Spectroscopy

Ion Chromatography

Bioavailability

Polarimetry

DSC, melting point

KF Aquametry, Titrimetry

P.O. Box 927 • 29 Samson Ave. • Madison, NJ 07940 • 973.966.6668 • F 973.966.0136  
[www.robertson-microlit.com](http://www.robertson-microlit.com) • email: [results@robertson-microlit.com](mailto:results@robertson-microlit.com)

Rapid Results • Quality • Accuracy • Competitive Pricing

# Business Directory

## Services

### PITTSBURGH SECTION OFFICERS

#### **Chair:**

James Manner  
PPG Industries-Retired  
125 Oak Pointe Dr  
Monroeville, Pa. 15146  
412-372-6390  
manner1@comcast.net

#### **Chair-Elect**

Heather Juzwa  
321 Winners Circle  
Canonsburg, PA 15317  
724-745-2662  
hljuzwa@shimadzu.com

#### **Secretary**

Robert Mathers  
Penn State University  
3550 Seventh Street  
New Kensington, PA 15068  
724-334-6741  
rtm11@psu.edu

#### **Treasurer**

Simion Coca  
PPG Industries Inc.  
Research Center  
4325 Rosanna Drive  
Allison Park, PA 15101  
412-492-5558  
coca@ppg.com

## Services

### Volunteers Needed!

There are a number of volunteer opportunities in the Pittsburgh ACS section! If you are interested in volunteering, please contact Jim Manner at manner1@comcast.net!

### 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 December 2010 issue must be to the editor by November 1, 2010.

### The Crucible

The Crucible is published monthly, August through May. Circulation, 2,500 copies per month. Subscription price, six dollars per year. All statements and opinions expressed herein are those of the editors or contributors and do not necessarily reflect the position of the Pittsburgh Section.

**Editor: Traci Johnsen**  
124 Moffett Run Rd.  
Aliquippa, PA 15001  
Phone: 724-378-9334  
tracijohnsen@comcast.net

**Advertising Editor: Vince Gale**  
MBO Services  
P.O. Box 1150  
Marshfield, MA 02050  
Phone: 781-837-0424  
cust-svc@mbosevices.net

## 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.mbosevices.net](http://www.mbosevices.net)
- <http://www.acs.org>

### ADVERTISERS INDEX

Carnegie Mellon University	7
INDSPEC Chemical Corporation	14
MASS VAC, Inc.	13
Micron inc.	14
NuMega Resonance Labs	14
Robertson Microlit Laboratories	14
Society for Analytical Chemists of Pittsburgh	14
Spectroscopy Society of Pittsburgh	14

# The Crucible

A newsletter of the Pittsburgh Section of the American Chemical Society

124 Moffett Run Rd.  
Aliquippa, PA 15001

NON-PROFIT ORG.  
U. S. POSTAGE

PAID

PITTSBURGH, PA  
Permit No. 196

## 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, November 1

#### Society for Analytical Chemists of Pittsburgh

##### *"Nanomaterial Strategies for Immunodetection"*

Marc D. Porter, Ph.D., University of Utah

Duquesne University, Pappert Hall in the Bayer Learning Center

### Wednesday, November 17

#### Spectroscopy Society of Pittsburgh Technology Forum

##### *"Raman Spectroscopy Combined with Advanced Statistics for Biomedical Research and Forensic Applications"*

Igor K. Lednev, Associate Professor, Department of Chemistry, University at Albany, SUNY

Duquesne University, Pappert Hall in the Bayer Learning Center

#### Spectroscopy Society of Pittsburgh

##### *"Bug Therapy: Discovering How Insects Make Our World Better"*

Dr. John E. Rawlins, Carnegie Museum of Natural History

Duquesne University, Pappert Hall in the Bayer Learning Center

#### ACS Pittsburgh Energy Technology Group ACS Pittsburgh Chemists Club, AIChE Pittsburgh, Pittsburgh Energy Technology Group

##### *"Water Management During Hydraulic Fracturing of Marcellus Shale for Natural Gas Production"*

Dr. K.B. Gregory and Dr. R.D. Vidic

Spaghetti Warehouse, 26<sup>th</sup> & Smallman Streets, Strip District

### Tuesday, November 16

#### Pittsburgh Section ACS Pittsburgh Award Dinner

Honoring Pittsburgh Award Winner and Pittsburgh ACS

Distinguished Service Award Winner

Pittsburgh Athletic Association

### Friday, November 22

#### 1<sup>st</sup> Annual Crossroads Conference