



Pittsburgh Section

The Crucible



<http://membership.acs.org/P/Pitt>

Volume: LXXXX No.4

December 2004



2004 Pittsburgh Award

Honoring
Terrence J. Collins

Thursday, December 9, 2004

The Fountainview Room
Sheraton Station Square Hotel
Seven Station Square Drive
Pittsburgh, PA 15219
412-803-3870

Social	6:00 PM
Dinner	7:00 PM
Award Presentations	8:00 PM

Cost: \$25 Members and Guests \$10 Students/Student Affiliates

Professor Collins is presently Lord Professor of Chemistry at Carnegie Mellon University. He is an international leader in the field of Green Chemistry. He received his Ph.D. from the University of Auckland (New Zealand) in 1978 before assuming faculty positions at Caltech and subsequently Carnegie Mellon.

The Pittsburgh Award was established in 1932 by the Pittsburgh Section of the ACS to recognize outstanding leadership in chemical affairs in the local and larger professional community. This award symbolizes the honor and appreciation accorded to those who have rendered distinguished service to the field of chemistry.

RSVP by noon on December 9th by contacting Neil Donahue. E-mail preferred (nmd@andrew.cmu.edu), or phone 412-268-4415. Menu choices include meat, fish and vegetarian. Dinner selections can be made at the time of reservation.

*Please pay at the door. Those who make reservations
and do not attend will be charged.*

Happy
Holidays!



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Pittsburgh Section Celebrates NCW 2004

The Pittsburgh Section's 2004 National Chemistry Week (NCW) event was held at the Carnegie Science Center on Friday and Saturday, October 22-23, 2004. The theme for the 2004 celebration was "Health and Wellness." A total of 259 volunteers from thirty-two organizations conducted hands-on experiments, activities, and demonstrations. There were four theater-style shows, presented nineteen times over the two-day period, in the various Science Center stages. Of the 259 volunteers, ninety-eight (38%) were ACS members or affiliates (students, teachers, technicians, etc.). Attendance for the two-day event was approximately 4,400.

For the 2004 NCW celebration, the Pittsburgh Section reached out to underrepresented "at-risk" minorities in the Southwestern Pennsylvania area to promote science education and literacy. Through financial support provided by the Society for Analytical Chemists of Pittsburgh (SACP) and the Spectroscopy Society of Pittsburgh (SSP), approximately 1,100 students and their

chaperones from seventeen economically disadvantaged schools were provided an opportunity to participate in the NCW celebration at the Carnegie Science Center. Without the generous support from the SACP and SSP, these students would not have participated in a science-related school field trip during the 2004-05 school year, due to the financial hardship each of the school districts currently face. In all, 1,500 students and their chaperones, representing twenty-eight schools, attended the event.

The NCW program reached out to women and minorities through a partnership with the Southwestern Pennsylvania Girl Scouts - Trillium Council. Financial support was provided for admissions and transportation for approximately 200 Girls Scouts from underrepresented "inner-city" minority areas, to participate in a special "NCW/Girl Scout Overnighter." In all, approximately 300 Girl Scouts participated in the NCW celebrations and earned a NCW "Health and Well-

ness" activity patch, by completing activities in three component areas (education, career, and service).

The Pittsburgh Section wishes to extend its gratitude to the 2004 NCW sponsors, including the Society for Analytical Chemists of Pittsburgh, the Spectroscopy Society of Pittsburgh, Bayer Corporation and the Carnegie Science Center. Without the continued support from these organizations, the Pittsburgh Section would not be able to reach so many in our communities with a positive message about science and chemistry, while promoting science education and literacy. The Pittsburgh Section also wishes to thank the 259 dedicated volunteers!

NCW 2005

The Carnegie Science Center has been reserved Friday and Saturday, October 21-22, 2005 for the Pittsburgh Section's 2005 NCW event. The 2005 NCW theme is "The Joy of Toys."

Submitted by V. Michael Mautino

Thank You!

Thank you to the following organizations for participating in and supporting the 2004 NCW event.

Allegheny College Chemii Club, American Institute of Chemical Engineers, Bayer Corporation, Bidwell Training Center, Blackhawk High School, Carlow University, ACS Student Affiliate Group, Carnegie Mellon University Chemical Engineering, Carnegie Mellon University CPS Program, Carnegie Science Center, Chatham College Chemistry Society, Children's Hospital of Pittsburgh, The Children's Institute - Amazing Kids Station, Clarion University ACS Student Affiliate Group, Communities in Schools, Duquesne University ACS Student Affiliate Group, The Electrochemical Society, Fisher Science Education, Geneva College Chemistry Society, Girl Scouts Trillium Council, LANXESS Corporation, Life Fit Rx, McGuffey High School, Northside Urban Pathways Charter School, Pittsburgh ACS Chemical Education Group, Pittsburgh Passion Women's Football, SACP Student Affiliates, Seton Hill University Chemistry Club, The Society for Analytical Chemists of Pittsburgh, The Spectroscopy Society of Pittsburgh, University of Pittsburgh ACS Student Affiliate Group, The Western Pennsylvania Hospital Burn Trauma Center, Western Pennsylvania Technician Affiliate Group.



N
C
W



2004



“Health and
Wellness”





Society for Analytical Chemists of Pittsburgh



January Meeting
Monday, January 3, 2005

Duquesne University, Maurice Falk Hall

Social Hour 5:30 P.M./Student Affiliates Meeting, Duquesne Room (Student Union) 5:45 P.M.

Dinner - Student Union, City View Café (6th Floor) 6:30 P.M.

Business Meeting - 7:40 P.M.

Technical Presentation 8:00 P.M.

“Bioanalytical Microsystems and Simple Biosensors for Pathogen Detection”

Antje J. Bauemner, PhD
Assistant Professor
Cornell University

Abstract:

Food safety, biosecurity, clinical diagnostics, environmental monitoring, are areas in which the rapid, inexpensive and highly sensitive detection of pathogenic organisms is important. Still today, there is no analytical device available that can rapidly, at low cost and with sufficiently low detection limits detect on-site pathogens such as *B. anthracis*, *C. parvum*, *E. coli* and Dengue virus.

The research in our lab, the Bioanalytical Microsystems and Biosensors Lab at Cornell University, focuses on this set of problems. We develop simple lateral-flow assays for a 10-minute detection of nM concentrations of nucleic acids derived from pathogenic organisms, and bioanalytical microsystems detecting pM concentrations. The biosensors and bioanalytical microsystems in our lab use liposome amplification, interdigitated ultramicroelectrode arrays, microfluidic devices fabricated using photolithography and soft lithography, micropotentiostats, microheaters, laser-induced cell lysis and other sample preparation procedures.

Viable pathogenic organisms are detected very specifically via their mRNA sequences and no false positive signals are obtained from dead or closely related organisms. Detection limits obtained are at the single cell level, when the isothermal gene amplification method Nucleic Acid Sequence-Based Amplification (NASBA) is integrated into the analytical process. For example, using the lateral-flow assay we can detect 5 *C. parvum* oocysts (1), 40 *E. coli* cells (2), 10 *B. anthracis* spores (3) in a 4 hour procedure. In the case of the bioanalytical microsystem, we focus on decreasing the overall process time to less than 1 hour. Also under investigation is the development of a universal biosensor for nucleic acid detection.

Bio:

Assistant Professor in the Dept. of Biological and Environmental Engineering at Cornell University, Ithaca, NY, USA (1999). M.S. in Biotechnology, Technical University of Braunschweig, Germany (1994); Dr. Bauemner carried out her M.S. research at the Institute of Biotechnology at Cambridge University, UK; Ph.D. in Technical Biochemistry, University of Stuttgart, Germany (1997); Postdoc, Dept. of Food Science & Technology, Cornell University, Geneva, USA (1997).

Dr. Bauemner's research is focused on the development of biosensors and bioanalytical microsystems for the detection of pathogenic organisms in food, the environment, biosecurity, and for medical diagnostics. Molecular biological, microbiological, and electrochemical techniques are combined with nanofabrication and engineering for the development of highly sensitive, rapid, portable and yet inexpensive micro-biosensors for the detection of pathogens such as *B. anthracis*, *C. parvum*, Dengue virus, and *E. coli*. In her research group 20 undergraduates, graduate students and postdocs carry out the development of the biosensors. Dr. Bauemner receives federal funding for her research and collaborates with companies.

She received the College of Agriculture and Life Sciences Inaugural Award for Excellence in Mentoring Undergraduate Students in Independent Research in 2001. She also received the Cornell College of Engineering Excellence in Teaching Award in 2002.

Dinner Reservations: Please call Julie Theys at 412-823-3077 or email theysj@pittcon.org, by December 29, 2004 to make dinner reservations. The entrée for January is Chicken Kiev (herb and dijon encrusted boneless chicken breast w/creamy fennel caper sauce). Dinner will cost \$8 (\$4 for students) and checks can be made out to the SACP. If you have any dietary restrictions, let Julie know when you leave a message.

Parking: Duquesne University Parking Garage entrance is on Forbes Avenue. Upon entering the garage receive parking ticket and drive to upper floors. Pick up a parking sticker at the dinner or meeting. Contact Dr. Mitch Johnson at Duquesne University if any difficulties arise.

ENERGY TECHNOLOGY GROUP

Pittsburgh Section

American Chemical Society

Thursday, December 9, 2004

“Back to the Future: Taking Another Gander at Coal-Water Slurries”

by

Mark Woods, Parsons Corporation

More Restaurant

214 N. Craig St., Pittsburgh, PA, 412-621-2700

11:30 am Networking-Cash Bar

12:00 noon Luncheon

1:00 pm Presentation

For reservations, please call Christina at 412-386-4484 (for Tom Sarkus) by noon on Friday, December 2, 2004.

Much R&D was performed on coal-water slurries in the wake of the 1970s oil shocks, both domestically and internationally (e.g., Japan, Russia, China, Italy, Sweden). Coal-water slurries mimic the physical handling characteristics of petroleum fuels, and thus can facilitate fuel switching at industrial & commercial facilities without incurring the added expense of a new fuel handling system. In that way, petroleum imports could potentially be offset through the use of America's indigenous coal reserves, which are sufficient to last 250 years at the present rate of consumption. However, coal-water slurries are sensitive to energy economics, most specifically the price of oil. By the mid-1990s, low oil prices had taken their toll, and little if any meaningful technology development has been done in this field since that time.

With oil prices above \$50 per barrel recently, some energy experts are wondering whether coal-water slurries might now be feasible economically as well as technically. Toward that end, Parsons Corporation recently performed a state-of-the-art assessment of coal-water slurry technology. The assessment 1) summarizes the technology and its technical hurdles, 2) reviews the R&D efforts of the 1980s and 1990s and updates them into a current 'state-of-the-art', and 3) identifies and compiles market opportunities based on today's situational energy needs. This presentation will describe the recent technology assessment, discuss 'target markets' showing the greatest potential, and recommend paths toward technology advancement and possible commercialization.

Biography

Mark Woods is a Project Manager for Parsons Corporation where his primary responsibilities include providing support for NETL's major coal demonstration project programs and maintaining the content of the Clean Coal Technology Compendium web site. Mr. Woods has nearly 20 years of experience in energy related fields including four years at Research Triangle Institute, nine years at NOXSO Corporation, three years at Process Combustion Corporation and nearly four years with Parsons Corporation. Mr. Woods has an M.S. degree in chemical engineering from Clemson University and a B.S. degree in chemical engineering from The Pennsylvania State University. He is also a registered professional engineer in Pennsylvania, and has been a member of the American Institute of Chemical Engineers since 1983.

January Meeting: January Meeting: A speaker from Siemens Westinghouse is tentatively scheduled to discuss fuel cells on Thursday, January 13, 2005 at More Restaurant. 11:30 am Networking; 12 noon Lunch; 1 pm Presentation. Mark your calendar!

Simelis Named Bidwell “Outstanding Student”

In conjunction with the Bidwell Training Center, the Western Pennsylvania Technician Affiliate Group (WPTAG) presented Anthony Simelis with the 2004 WPTAG/Bidwell “Outstanding Student” award. One commendable individual from each graduating class of the Bidwell Chemical Laboratory Technician program is selected for this award.

Anthony was a member of the October 2004 graduating class from the Bidwell Chemical Laboratory Technician program. The Bidwell program offers an Occupational Associate Degree in Specialized Technology. Anthony was chosen for the award based on votes from his classmates and the Bidwell faculty. He also received an excellent evaluation from his externship at Calgon Carbon Corporation and achieved excellent grades while attending Bidwell.

Anthony has also had two brothers that have completed programs at Bidwell, including one in the Chemical Laboratory Technician program and one in the Culinary Arts program.

Submitted by V. Michael Mautino

Revision of ACS Guidelines for Undergraduate Chemistry Programs

Maintaining high standards of excellence in undergraduate and graduate education is an important part of the mission of the American Chemical Society, and the Committee on Professional Training (CPT) plays a major role in this effort. Most chemists are aware of CPT because it develops and administers the ACS approval program for undergraduate chemistry programs.

The guidelines for ACS approval are regularly reviewed by CPT to ensure that they reflect the current state of chemistry and of education. Chemistry is a rapidly evolving science, particularly in interdisciplinary areas. Major changes have also been taking place in the delivery of undergraduate education, with increasing emphasis on applications, active learning, and group experiences.

Although the most recent edition of the guidelines was released in 2003, CPT is already considering possible major revisions for the next edition. As part of this process, it is essential to obtain broad input from the chemistry community regarding the undergraduate chemistry curriculum.

CPT invites the chemistry community to comment on new directions for the next edition of the guidelines for ACS approval of undergraduate chemistry programs. In particular, CPT seeks responses to the following questions:

* What should an ACS certified chemistry graduate know and be able to do?

* Are there any major impediments for an undergraduate student pursuing an ACS certified chemistry degree?

* How should a chemistry curriculum balance the breadth of required core courses with the flexibility of elective advanced courses?

* What ancillary skills should be required of ACS certified chemistry graduates?

* What should be the relative roles of traditional chemical disciplines (e.g., analytical, inorganic, organic, physical chemistry) and more recently developed interdisciplinary areas (e.g., biochemistry, environmental science, green chemistry, material science) in chemistry education?

* Given increasing public demand for program assessment and improvement, should approved departments be required to regularly assess the effectiveness of their curriculum and use the results to continually improve their program?

* What is the value of ACS approval to your program and of an ACS certified chemistry degree to your graduates?

Please send your views on these issues, or on any other issue relating to the guidelines for ACS approval, to CPT by email at cpt@acs.org with a subject of Guidelines Revision.

ACS Cut and Paste September 2004

Past Chair, Barbara Johnson, Receives Alumni Achievement Award

Former Pittsburgh Section Chair, Barbara E. Johnson, is a 2004 recipient of the Jack Kennedy Memorial Alumni Achievement Award in the field of law. The award is presented annually by the Grove City College Alumni Association to graduates who have achieved exemplary levels of success.

Johnson graduated from Grove City College in 1979 with a bachelor of science in biology. She earned her Doctorate of Jurisprudence at the College of William and Mary in 1984 and then joined the Pittsburgh firm of Webb Ziesenheim Logsdon Orkin & Hanson.

She is currently a director and shareholder of the firm and has become one of the most experienced biotechnology patent attorneys in the United States. Johnson also serves on the board of directors of Metro Family Practice, a full-service clinic in Wilkinsburg, Pa.

Johnson served as Pittsburgh Section Chair in 1995.

ACS Pittsburgh Chemists Club

Pittsburgh Section
American Chemical Society

The Chemists Club will not meet in December. Look for details regarding the January meeting in the January issue of *The Crucible*.

**The Western Pennsylvania Technician Affiliate Group is
Pleased to Announce
Patricia M. Wilson
as the Recipient of the 2004
“TECHNICIAN OF THE YEAR” AWARD**

Ms. Wilson is a 1996 graduate of the Bidwell Training Center's Chemical Technology Program with an Occupational Associate Degree in Specialized Technology.

Patricia joined Bayer Corporation in September 1996 as an intern in the Polyurethane Research Group and was hired by the Polyurethane Insulation Construction Group in April of 1997. She was responsible for performing laboratory experiments to support and assist both Bayer Corporation Marketing and Sales and Technical Service Departments.

Recently, she began work in the laboratory for the Bayer MaterialScience LLC, Coatings and Sealant department, where she assists with customer and marketing needs for coatings related to the flooring market. Patricia also performs laboratory experiments assisting various departments within Bayer MaterialScience contributing to the development of new products and processes to support business and technical objectives.

In her time as a Chemical Technician, she has obtained a 40 hour Hazardous Operations Certification and has received training in Emergency Response Team procedures and fire fighting. She is an active member of the Western Pennsylvania Technician Affiliate Group (WPTAG) of the American Chemical Society (ACS), The ACS Division of Chemical Technicians and is an Alternate Councilor for the Pittsburgh Section of the ACS.

At WPTAG's December 2004 general meeting, Ms. Wilson will be presented a plaque in her honor for the 2004 Technician of the Year Award, along with a \$250 honorarium. In addition, she has been nominated for the ACS's 2005 National Chemical Technician of the Year award, administered by ACS's Division of Chemical Technicians and sponsored by S.C. Johnson Company.

Submitted by V. Michael Mautino

**Reconnecting With Old
Friends:
ACS Welcomes Back
Former Members And
New Graduates!**

Another key initiative of the ACS Membership Division in 2004 has been focused on converting graduating students to full ACS members and reinstating lapsed members.

As you know, undergraduate students can be a part of ACS as “student affiliates” for a lower fee with a corresponding package of reduced member benefits. In the past, it has been difficult converting these affiliates into full members once they have graduated, simply because this is a time when money can be tight for many of these job-seeking chemists. (Of course, some have also decided to pursue careers in medicine, law, or pharmaceuticals and no longer feel the need to be a part of the Society.)

Therefore, the Membership Division gives special consideration to these up-and-coming members, by offering them 50 percent off the full membership dues for their first year, to help them get on their feet in a chemically-related profession. We believe the ACS employment services and programs are ideally beneficial to them as they enter the professional marketplace. Our strategy seems to work: Applications come in steadily, and new graduates can take advantage of the various ACS career services including, the job counseling services and interviewing opportunities at our twice-yearly national meetings. It's a win-win situation for everyone involved!

Our other targeted group is made up of former members who, for whatever reason, let their ACS membership lapse in the past 3-4 years. We lost touch with many of them through relocations, changing jobs, or other unforeseen events. Having made an effort to acquire their new addresses, we have sent them special mailings, asking them to reenlist in the Society and reconnect with friends and colleagues at the next national meeting. We hope that you might chance upon one of these old friends the next time you attend an ACS meeting - please be sure to tell them “welcome back!”

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Councilors' Corner

Report on: ACS Fall 2004 NATIONAL MEETING Philadelphia, PA

All four of our ACS Pittsburgh Section Councilors were in attendance in Philadelphia.

The meeting attracted nearly 14,000 attendees and featured more than 7,000 scientific presentations and an exposition of 538 booths. The Committee on Meetings & Expositions reported that the total meeting registration was 13,805. Of these, 10,660 were regular registrations, and 1,929 were exhibitors. The exposition had 347 companies represented in 538 booths. The NECH registered 1,556 job seekers and 107 employers, who conducted 1,639 interviews.

The Board approved funding for Chem-Census 2005, the all-member employment survey conducted every five years and reported that mutual cooperation between the American Institute of Chemical Engineers and ACS is under development. The board also approved a proposal for continuing the ACS PROGRESS Plan through 2007. The PROGRESS plan is a three-year pilot project to test, develop, and evaluate programs that promote the full participation and advancement of women chemists and chemical engineers. A lengthy discussion was held concerning the N&E's decision to reduce the maximum number of words in ACS candidates' statements from 1,000 to 750 words.

Councilors selected various nominees for three committees: Committee on Committees, Committee on Nominations and Elections, and Council Policy Committee. The Council also approved changes in the constitution and bylaws that would remove the requirements for balloting for ACS national elections only by mail and to allow, but not require, electronic ballots and voted to revise the society's constitution and bylaws to offer full membership to chemistry teachers who may not otherwise (by major degree) qualify for membership in the society.

The Pittsburgh Section was recognized at the 6th Annual ChemLuminary Awards ceremony with three awards:

- Committee on Community Activities National Chemistry Week --Best Event with Underrepresented Minority Groups.
- Women Chemists Committee- National Chemistry Week --Best Single Event in a Local Section Promoting Women in Chemistry Award
- ACS's Division of Chemical Technicians - WPTAG of the Pittsburgh Section --Most Innovative Technician Affiliate Group Award

Budget & Finance reported that ACS is expected to end 2004 with a net contribution from operations of \$1,531,000, which is \$60,000 favorable to the approved budget. After including results of the Member Insurance Program and the sale of the Belmont Conference Center, which is expected to be finalized before the year's end, the society's overall projected contribution for 2004 is \$1,278,000 -- \$42,000 favorable to the approved budget and in compliance with all board-established guidelines.

Pittsburgh Section Councilors: Richard S. Danchik (Author), Michael Mautino, Brian Strohmeier, Theodore Weismann

ALASKA ... MEXICO ... FRANCE ... GREECE - Take Your Pick! Recruitment Sweepstakes Tops ACS Membership Efforts

Well into its 2004 Member-Get-A-Member Campaign, the American Chemical Society Membership Division reports that new members have been joining our prestigious ranks at an unprecedented rate, thanks to the special efforts of many dedicated members. But Assistant Director Dee Valencia is not resting on the Division's laurels: "This fall should be an especially fruitful time for our NEW expanded efforts. Our goal is two-fold ... to increase member participation and to increase the number of new members who join the Society through this successful campaign."

This year the Member-Get-A-Member Campaign challenges existing members to recruit their colleagues, co-workers, mentors, and students - anyone who might benefit from the Society's programs, publications, meetings, and other professional offerings. In return for recruiting prospective members, established ACS members are automatically entered in our vacation sweepstakes and can win an all-expenses-paid trip for two to the destination of their choice: Alaska, Mexico, France, or Greece.

Continued on page 9

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JOINT DECEMBER MEETING



Society for Analytical Chemists of Pittsburgh (SACP) and The Spectroscopy Society of Pittsburgh (SSP)

CARNEGIE MUSEUMS
4400 Forbes Avenue
Pittsburgh PA (OAKLAND)

Monday, December 6, 2004

Business Meeting - 7:00 PM (Founders Room)
Doors open from 6:00 PM - 9:00 PM
Cookies and Punch starting at 6:30 PM.

TICKETS ARE NEEDED FOR THIS MEETING!!

Recruitment Sweepstakes

Continued from page 8

For each candidate you recruit, your name is entered in the drawing. So the more recruits you bring in, the greater your chances of winning. But all it takes to enter - and win - is just one new member, and we provide you with all the information, forms, and persuasion points to make recruitment a snap.

If you are interested in participating in the Member-Get-A-Member Campaign and Sweepstakes, please contact Jennie Graham in the ACS Membership Division (202-872-6368, or Jennie Graham) so she can send you the entry kit. The campaign ends at midnight on December 31, 2004, and the winner of the sweepstakes drawing will be notified on February 11, 2005. Don't miss out on this golden opportunity to serve the Society and win a free trip for two to an exciting destination of your choice!

ACS Cut and Paste September 2004



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Chemist that developed commercially successful gas sensors, gas detection instrumentation, emergency breathing products, medical equipment, and specialty batteries seeks full-time, part-time, or consulting work. Contact Joseph D. Jolson, Ph.D. at 412-480-3049 or joejolson@verizon.net for additional information.

2004 Directory of Pittsburgh Section Officers and Committee Chairs Available Online

A complete directory of names, phone numbers, and addresses for Pittsburgh Section officers and committee chairs can be found on the section's website.

[http://membership.acs.org/
P/Pitt](http://membership.acs.org/P/Pitt)

Paper copies are also available. Please contact Pittsburgh Section Chair, Kay Bilal, at 304-723-2358 if you would prefer a paper copy of the directory.

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The Crucible

Material must be received by the 1st of the month prior to publication for inclusion in The Crucible. This rule will be enforced in order to distribute The Crucible to readers in a timely manner (before the 1st day of every publication month). The Crucible is published monthly, August through May. Circulation, 3,000 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.

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Pittsburgh Area Calendar

December

- Mon. 6 **Society for Analytical Chemists of Pittsburgh (SACP)**
The Spectroscopy Society of Pittsburgh
Carnegie Museums, 4400 Forbes Ave., Pittsburgh, PA (Oakland)
Tickets Are Needed for This Meeting
- Thurs. 9 **Energy Technology Group**
More Restaurant
“Back to the Future: Taking Another Gander at Coal-Water Slurries”
Mark Woods of Parsons Corporation

January

- Mon. 3 **Society for Analytical Chemists of Pittsburgh (SACP)**
Duquesne University, Maurice Falk Hall
“Bioanalytical Microsystems and Simple Biosensors for Pathogen Detection”
Antje J. Bauemner, PhD, Assistant Professor, Cornell University

*The
Crucible*

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A newsletter of the Pittsburgh Section of the American Chemical Society

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