Future of Energy Symposium

The roots of the domestic coal, oil, and nuclear industries are in our region. We have national energy technology laboratory campuses in Pittsburgh, PA and Morgantown, WV. Several large energy companies are headquartered here. We are also home to medium-sized and early stage energy technology companies.

Because our region remains active in the energy arena, it seems fitting that the Future of Energy Symposium was held at Duquesne University on November 12, 2008. This all day event was attended by over 80 regional scientists and engineers. At the symposium’s opening, Dr. Jeffry Madura, chair of the Duquesne University Chemistry Department; Dr. Fu-Tyan Lin, Chair of the American Chemical Society Pittsburgh Section; and Mr. Christopher Steffy, chair of the American Institute of Chemical Engineers Pittsburgh Section described how their organizations are involved in the Future of Energy.

The symposiums main speakers included Dr. Dale Kearns, Mr. Thomas Hart, Dr. Charles Taylor, Dr. George Davis, Mr. Marc Portnoff, Dr. Jean Posbic, Dr. Edward Rubin and Dr. George Klinzing. During the morning session, Dr. Kearns provided an overview of energy opportunities, risks and trade-offs; Mr. Hart described the control of emissions from coal fired power plants; and Dr. Taylor talked about domestic energy use.

During the afternoon session, Dr. Davis presented an update on the nuclear option, Mr. Portnoff described next-generation biofuel opportunities, and Dr. Posbic talked about photo-voltaic power generation. Then, Dr. Rubin described the future of coal and during the round table discussion the speakers tackled challenging questions from the audience. Dr. Klinzing concluded the symposium with a realistic and sobering assessment of our energy options.

The symposium organizing committee included Paul Brezovec, Gary Hall, Joseph Jolson, Alfred Mann, Christina Mastromatteo, James Miller, Thomas Ruppel, Christopher Steffy, and Mordecai Treblow. Financial support was provided by American Electric Power, BP Solar, Concurrent Technologies, Sauereisen, and Westinghouse Electric Company.

Submitted by: Paul Brezovec and Joseph Jolson

Election Results

Results of the Pittsburgh Section election can be found on page 9.
You’ll find the whole laboratory science community here.

ACS/DAC Co-Programming at Pittcon 2009

**INVITED SYMPOSIA**

- Biological Applications of Capillary Electrophoresis
- Evolution of Modern Chromatography: Celebration of 25 years of the Subdivision on Chromatography and Separation Chemistry
- The Future of HPLC-Method Development: Quality by Design—Evaluating the Control Space of Robust HPLC Methods
- New Dimensions in Multidimensional Separations
- Young Investigator Award from Subdivision on Chromatography and Separation Chemistry
- Pressurized Fluids in Separations Technology

**ORGANIZED CONTRIBUTED SESSIONS**

- Validation of Bioanalytical Methods: Addressing matrix effects, ion suppression and ISR (incur sample reanalysis)
- New Concepts and Instruments for Electrochemical Sensors
- Multi-residue Pesticide Analysis for Food Testing
- Understanding Chromatography with Sub-2μm Particles
- Quality Assurance of Measurements and Proficiency Testing

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Welcome to Pittcon—your once-a-year opportunity to get together with just about everyone in the laboratory science community. There’s no better place to network with colleagues from all over the world, or to meet one-on-one with experts in every discipline.
Emerging Developments in Cellular MRI

Eric Ahrens, Ph.D.
Carnegie Mellon University

Abstract:
Imaging specific immune cell populations in vivo can play an important role in elucidating disease pathogenesis and accelerating therapeutic development. Recent advances in magnetic resonance imaging (MRI) technology enable immune cell tracking and quantification in vivo. These new methods rely on unique perfluorocarbon (PFC) nanoemulsion formulations. Immune cells are labeled with PFC either ex vivo following phenotypic selection or in vivo, and cell migration patterns are visualized non-invasively using 19F MRI. The key advantage of this method is that the images are extremely selective for the labeled cells, with no background signal from the host’s tissues. Data show that PFC nanoemulsions are highly biocompatible and nontoxic. Recent rodent applications using the PFC imaging platform will be described, as well as the potential for clinical translation.

Biography:
Dr. Ahrens is currently an Associate Professor in the Department of Biological Sciences at Carnegie Mellon University. He received his B.S. and Ph.D. degrees in physics from the University of California at Los Angeles. As a graduate student Dr. Ahrens studied electronic properties of novel superconducting materials at low temperatures using nuclear magnetic resonance (NMR). After completing his Ph.D., Dr. Ahrens switched to biological research and joined the research faculty at the California Institute of Technology (Caltech) in the Division of Biology. While at Caltech, Dr. Ahrens focused on advancing the state-of-the-art of extremely high-resolution magnetic resonance imaging (MRI) in biological systems. Currently, Dr. Ahrens’ research focuses on developing new technologies to enable MRI to visualize specific cells and molecules in the body, thereby providing insight into disease processes.

Dinner Reservations: Please email Larry Senor, Arrangements Co-Chair at senor@pittcon.org, by Tuesday, December 30, 2008 to make dinner reservations. Should you not have email, please call Larry at 724-327-4428. Dinner will cost $8 ($4 for students) and checks can to be made out to the SACP. If you have any dietary restrictions, please let Larry know when you leave 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.
JOB SEARCHING FOR CHEMICAL TECHNICIANS

Presented by

The Society for Analytical Chemists of Pittsburgh
The American Institute of Chemical Engineers, Pittsburgh Section
The American Chemical Society, Pittsburgh Section
The Spectroscopy Society of Pittsburgh

Friday, February 6, 2009

Pre-Registration Required

Harbor Gardens, Student Services Area Conference Rooms
Bidwell Training Center, 1650 Metropolitan Street, Pittsburgh, PA 15233
412-323-4000

Free On Street Parking Is Available

PROGRAM

8:30 A.M.  Registration

9:00 A.M.  MANAGING AN EFFECTIVE JOB SEARCH
Daniel J. Eustace, Ph. D.
Career Consultant, American Chemical Society

11:30 A.M.  OVERVIEW OF THE LOCAL JOB MARKET
Joseph D. Jolson, Ph. D.
Career Consultant, American Chemical Society

12:00 Noon  CLOSE

Pre-Registration
Job Searching for Chemical Technicians Workshop

Send an email to:
Iesha Griffin (412-323-4000 Ext. 165)
at:  igriffin@mcg-btc.org

Your pre-registration must be received by Tuesday, February 3, 2009 and include your full name and complete contact information including address, phone number and email address.
JOB SEARCHING FOR CHEMICAL PROFESSIONALS

Presented by
The Society for Analytical Chemists of Pittsburgh
The American Institute of Chemical Engineers, Pittsburgh Section
The American Chemical Society, Pittsburgh Section
The Spectroscopy Society of Pittsburgh

Saturday, February 7, 2009

Ashe Auditorium University Of Pittsburgh
219 Parkman Ave. (off Bigelow Blvd.)

Lunch and Parking at Soldiers and Sailors Parking Garage Provided
Pre-Registration Required

PROGRAM

8:30 A.M.  Registration
9:00 A.M.  Welcome and Introduction
9:30 A.M.  MANAGING AN EFFECTIVE JOB SEARCH
Daniel J. Eustace, Ph.D.
Career Consultant, American Chemical Society
12:10 P.M.  OVERVIEW OF THE LOCAL JOB MARKET
Joseph D. Jolson, Ph. D
Career Consultant, American Chemical Society
12:30 P.M.  Networking Lunch
1:00 P.M.  Resume Review, Personal Consultation, and Local Job Opportunities
4:00 P.M.  Close

Bring your parking ticket for validation and your resume to participate in the afternoon program

Pre-Registration
Job Searching for Chemical Professionals Workshop
Send an email to Professor Toby Chapman
at: tchapman@pitt.edu

Your pre-registration must be received by Tuesday, February 3, 2009 and include your full name and complete contact information including address, phone number, email address and whether or not you expect to participate in the resume review. Academic registrants - please include university affiliation and university department. Let us know when you expect to complete your B.S., M.S., Ph.D., post-doc, or other assignment.
**Society for Analytical Chemists of Pittsburgh**

**February Meeting**

**Monday, February 2, 2009**

8:00 PM

Duquesne University, Laura Falk Hall

**“New Technologies for Biomolecular Analysis: Surfaces Meet Mass Spectrometers”**

Lloyd Smith, Ph.D.

University of Wisconsin-Madison

**Abstract:** Two of the most powerful platforms in modern bioanalytical chemistry are surfaces (as in DNA, protein, carbohydrate, cell, and small molecule arrays) and mass spectrometry. Although both platforms routinely provide invaluable molecular information not accessible by any other means, both are also characterized by significant limitations. In this presentation recent work from our laboratory will be presented, in which we seek to address these issues, extend the performance and versatility of the platforms, and to develop the synergies between them. Topics to be addressed include: the development of carbon-based substrates and attachment chemistries for greatly increased surface stability, permitting novel applications such as combinatorial chemistry with label-free detection on surfaces; studies using acoustically levitated microdroplets as MS ion sources; and new approaches to address the chronic problem of ionization suppression in mass spectrometry.

**Biography:** Lloyd M. Smith is Professor of Chemistry and Director of the Genome Center at the University of Wisconsin-Madison, where he has been since 1988. He received an A.B. degree in Biochemistry from the University of California at Berkeley (1977) and a Ph.D. in Biophysics from Stanford University (1981). In 1982 he moved to the California Institute of Technology, where he developed the first fluorescence-based automated DNA sequencing instrument. He has been named one of Science Digest’s Top 100 Innovators and has received the Presidential Young Investigator Award, Eli Lilly Analytical Chemistry Award, Association of Biomolecular Resource Facilities Award for the development of automated DNA sequencing, American Chemical Society Award in Chemical Instrumentation, and is the John D. MacArthur Professor of Chemistry. He has served in the past on the NIH National Human Genome Research Institute Advisory Council and the NIH Human Genome study section, and currently serves on the NIH Instrumentation and Systems Development study section. He is an author of 193 scientific papers and inventor on 23 issued U.S. patents. He is a cofounder of three biotechnology companies, Third Wave Technologies, GenTel BioSciences, and Apartia Pharmaceuticals. Third Wave Technologies was recently acquired by Hologic for $580M. He served for many years on the Board of Directors of two public companies (Visible Genetics and Third Wave Technologies) and presently serves on the Board of Directors of three private companies, GWC Technologies, GenTel BioSciences, and Apartia Pharmaceuticals. He also serves as chair of the Scientific Advisory Board for GenTel BioSciences. His primary area of research is in the development of new technologies for the analysis and manipulation of biomolecules.

**Dinner Reservations:** Please email Larry Senor, Arrangements Co-Chair at senor@pittcon.org, by Thursday, January 29, 2009 to make dinner reservations. Should you not have email, please call Larry at 724-327-4428. Dinner will cost $8 ($4 for students) and checks can be made out to the SACP. If you have any dietary restrictions, please let Larry know when you leave 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. Please contact Dr. Mitch Johnson at Duquesne University if any difficulties arise.
January Meeting
Wednesday
January 21, 2009

“Dark Energy”
Dr. Jeffrey B. Peterson

Not only is the Universe expanding, but there is mounting evidence that the expansion is speeding up. This acceleration is the opposite of the expected effect due to ordinary gravity. The anti-gravity agent of the acceleration has been given the name “Dark Energy”. The evidence for the acceleration will be presented, along with plans to build a telescope to study dark energy.

Bio
Professor Peterson received his BS at University of Illinois, and PhD at the University of California at Berkeley. He has served on the faculty of the Department of Physics at Princeton and at Carnegie Mellon. His research group has built telescopes at the South Pole, in China and in India. These radio-telescopes have been used to weigh the Universe, and to study Dark Energy, the anti-gravity agent that seems to be accelerating the expansion of the Universe.

SPECTROSCOPY SOCIETY OF PITTSBURGH

January Meeting
Wednesday, January 21, 2009
Duquesne University, Mellon Hall of Science
(Laura Falk Hall)

6:00 PM - Social Hour, 6:30 PM - Dinner
(City View Cafe - 6th Floor)
8:15 PM - Technical Program

Joint Meeting with the Optical Society of America

“Recent Progress of Broadband THz Wave Sensing and Imaging”
Dr. Xi-Cheng Zhang
Rensselaer Polytechnic Institute

Terahertz (THz) radiation, which occupies a large portion of the electromagnetic spectrum between the infrared and microwave bands, offers innovative imaging and sensing technologies that can provide information not available through conventional methods (i.e. microwave and X-ray techniques.) Historically, THz technologies were mainly used within the astronomy community for searching far-infrared radiation (cosmic background), and the laser fusion community for the diagnostics of plasmas. Since the first demonstration of THz wave time-domain spectroscopy in the late 80’s, there has been a series of significant advances (particularly in recent years) as intense THz sources and more sensitive detectors provide new opportunities for understanding the basic science within the THz frequency range.

A progress report on THz wave sensing and imaging science, technology and its applications, with an emphasis on spectroscopic capability, will be provided. The most recent results of using air (and selected gases) as the emitter and sensor material for both generation and detection of broadband THz waves will also be reported. Air, especially ionized air (plasma), has been used to generate intense THz waves (>300 kV/cm) with a broadband spectrum (0.1 THz to 30 THz). As THz wave (T-ray) technology improves, we believe new THz wave sensing and imaging capabilities will impact a range of interdisciplinary fields, including: communications, imaging, medical diagnosis, health monitoring, environmental control, and chemical and biological identification. Continued advances are pivotal for the protracted use of THz technology for non-destructive evaluation (immediate application), for homeland security (three to five years), and for medical diagnosis or even clinical treatment in biomedical applications (five to ten years).

Bio
Dr. Xi-Cheng Zhang - Eric Jonsson Professor of Science, Professor of Physics and Professor of Electrical Engineering at Rensselaer. Dr. Zhang has received 20 US patents, published 14 books and book chapters, and has authored or co-authored over 300 refereed journal papers. He is a Fellow of IEEE, the Optical Society of America, and the American Physics Society.

Dinner Reservations: Please email Carolyn Benga at crbssp@yahoo.com or call (412) 487-0915 to make dinner reservations NO LATER THAN FRIDAY, January 16, 2009. Dinner will cost $8 and checks can be made out to the SSP. If you have dietary restrictions, please let Carolyn know 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. If any difficulties arise, contact Dr. Mitch Johnson at Duquesne University.
For the 10th consecutive year, the Pittsburgh Section’s National Chemistry Week (NCW) celebration was held at the Carnegie Science Center. For 2008, the event was conducted on Friday and Saturday, October 24-25 and featured the theme “Having a Ball With Chemistry.” Major sponsors for the event included the Society for Analytical Chemists of Pittsburgh, the Spectroscopy Society of Pittsburgh, the PPG Industries Foundation, the PPG Science Education Council, Bayer Corporation, and the Carnegie Science Center.

A total of 283 volunteers, from 30 groups and organizations, conducted hands-on experiments, activities, and demonstrations that focused on the chemistry and science of sports. Once again, PPG Industries presented their “Reactions in Action” theater-style show, with two performances on Friday, October 24th. Of the 283 volunteers, 151 (53%) were ACS members or affiliates (students, teachers, technicians, etc.). Total attendance for the two-day event was 4441 (2538 on Friday, 1903 on Saturday).

For the 2008 NCW celebration, the Pittsburgh Section reached out to underrepresented minorities in the Southwestern Pennsylvania area to promote science education and literacy. Through financial support provided by the Society for Analytical Chemists of Pittsburgh, the Spectroscopy Society of Pittsburgh, the PPG Industries Foundation, and the PPG Science Education Council, 1491 students and 141 chaperones from 25 schools were provided an opportunity to participate in the NCW celebration. Without the generous support from the above mentioned financial sponsors, these students would not have participated in a science-related school field trip during the 2008-09 school year. In all, over 1724 students attended the NCW event.

The Pittsburgh Section wishes to thank its NCW sponsors, the organizations that sponsored hands-on experiments and activities at the NCW celebration, and the 283 volunteers who dedicated their time and efforts to make the event a success. Working together with these dedicated partners, the Pittsburgh Section is able to accomplish the mission of the NCW program; to communicate to the public positive messages about the contributions of chemistry to our quality of life.

Mark Your Calendar:
NCW 2009
The Carnegie Science Center has been reserved for Friday and Saturday, October 23-24, 2009 for the Pittsburgh Section’s 2009 NCW celebration. The 2009 NCW theme is “Chemistry - It’s Elemental!”

Submitted by
V. Michael Mautino
NCW Coordinator
2008 NCW Poster Contest Winners

As part of the 2008 National Chemistry Week (NCW) celebration, the Pittsburgh Section ACS sponsored a poster contest for students in grades K-12. Students were invited to create a poster that celebrated the theme “Having a Ball With Chemistry.” Posters were judged on artistic merit (use of color, quality of drawing, poster design & layout), poster message (should be fun, motivational and promote chemistry’s important role in the field of athletics), originality and creativity (unique, clever and/or creative design), and neatness.

A total of fifty six posters were received for the competition and evaluated by a panel of 13 judges. The Section awarded 1st and 2nd place in each of four grade categories, with $50 and $25 prizes respectively. In addition, each winner and their families were offered free admission to the Carnegie Science Center on October 25th to celebrate National Chemistry Week, where the winning posters were on display. All 1st place winners of the Pittsburgh contest were entered into a national poster contest sponsored by the ACS’s Office of Community Activities and Committee on Community Activities. The Pittsburgh Section was well represented in this national contest with two 2nd place winners.

And the winners of the Pittsburgh Section’s 2008 NCW poster contest:

**K - 2nd Grade Category**

1st Place
**Morgan Meer**, Grade 2
Jubilee Christian School

2nd Place
Everitt Meer, Grade K
Jubilee Christian School

**3rd - 5th Grade Category**

1st Place
**Dante Cecere**, Grade 3
South Fayette Elementary

2nd Place
David Salinetro, Grade 5
Propel - Montour

**6th - 8th Grade Category**

1st Place
Desiree Anderson, Grade 8
Propel - Homestead

2nd Place
Jenna Ponticello, Grade 7
St. James, Sewickley

9th - 12th Grade Category

1st Place
Alexandra Beresford, Grade 11
Penn-Trafford High School

2nd Place
Michelle Yakubisin, Grade 11
Penn-Trafford High School

**CONGRATULATIONS** to Morgan Meer for winning 2nd place in the national ACS’s poster competition in the K-2nd grade category and Dante Cecere for winning 2nd place in the 3rd-5th grade category!!! Their winning posters are highlighted on the ACS’s NCW website and can be accessed by visiting www.acs.org/ncw and clicking “NCW Poster Contest.”

The national poster contest winning entries can be viewed on-line at: http://www.flickr.com/photos/ncwposters/sets/72157608963367174/detail/

Congratulations to all the 2008 poster contest winners! The Pittsburgh Section ACS wishes to thank all of the schools and students who participated in this year’s contest. Special thanks also go to Susan Meer for organizing the contest.

Submitted by V. Michael Mautino, NCW Coordinator

Winning entries from the Pittsburgh Section’s NCW poster contest on display at the Carnegie Science Center.
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http://membership.acs.org/P/Pitt
Happy New Year!
Best wishes to you and your family in 2009!

Crucible Deadline

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

For example, all items for the March 2009 issue must be to the editor by February 1, 2009.

The Crucible

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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January

Mon.  5  Society for Analytical Chemists of Pittsburgh (SACP)
Duquesne University, Laura Falk Hall
“Emerging Developments in Cellular MRI”
Eric Ahrens, Ph.D., Carnegie Mellon University

Wed.  21  Spectroscopy Society of Pittsburgh Technology Forum
Duquesne University, Mellon Hall of Science, Laura Falk Hall
“Dark Energy”
Dr. Jeffrey B. Peterson

Wed.  21  Spectroscopy Society of Pittsburgh
Duquesne University, Laura Falk Hall
“Recent Progress of Broadband THz Wave Sensing and Imaging”
Dr. Xi-Cheng Zhang, Rensselaer Polytechnic Institute

Wed.  21  Energy Technology Group
Duranti’s Restaurant
“Biofuels: An Emerging Energy Source”
Bob Wallace, Director, BioEnergy Bridge, Penn State University

Sat.  31  Spectroscopy Society of Pittsburgh and Society for Analytical Chemist of Pittsburgh
Continuing Education Committees, Joint Symposium
Duquesne University
“Shedding Light on the Chemistry in Photochromics”

February

Mon.  2  Society for Analytical Chemists of Pittsburgh (SACP)
Duquesne University, Laura Falk Hall
Lloyd Smith, Ph.D., University of Wisconsin-Madison

Fri.  6  Job searching for Chemical Technicians
Harbor Gardens, Student Services Area Conference Rooms, Bidwell Training Center

Sat.  7  Job searching for Chemical Professionals
Ashe Auditorium, University of Pittsburgh

Additional chemistry related seminars and events in the Pittsburgh area can be found on the Pittsburgh Section’s website at http://membership.acs.org/P/Pitt