Pittsburgh Section

The Crucible

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

Volume: XCVI No.7 March 2011

Chemists Celebrate Earth Day 2011:
"Energy - It's Everywhere!"
Illustrated Poem Contest

As part of their Chemists Celebrate Earth Day (CCED) and the International Year of Chemistry (IYC) celebration, the American Chemical Society (ACS) is sponsoring an illustrated poem contest for students in Kindergarten - 12th grade.

Write and illustrate a poem using the Chemists Celebrate Earth Day theme, **"Energy - It's Everywhere!"** or using the IYC theme of water. Your poem can be in any style as long as it is no more than 40 words. Some examples are:

Haiku
Limerick
Ode
ABC poem
Free Verse
End Rhyme
Blank Verse
Sonnet

Possible topics related to energy and chemistry include:
Nuclear Energy • Solar Energy • Wind Energy • Water

Winners will be selected in each of the following categories:
K - 2nd grade • 3rd - 5th grade
6th - 8th grade • 9th - 12th grade

Prizes:
1st Place in each grade category - $50
1st Place winners will be submitted for the national ACS's illustrated poem contest

For more information about the CCED 2011 contest, contact Michael Mautino at 412-777-4792 or michael.mautino@bayer.com (e-mail preferred)

A complete list of contest rules is available on page 8

The Society for Analytical Chemists of Pittsburgh and The Pittsburgh Section Spectroscopy Society

SACP and SSP will not hold meetings in March due to the Pittcon® 2011 Conference and Exposition. Pittcon 2011will be held in Atlanta, Georgia March 13 - March 18, 2011.

Contents . . .

50th Eastern Analytical Symposium & Exposition

November 14 - 17, 2011
Garden State Exhibit Center, Somerset, New Jersey

CALL FOR PAPERS
March 1 – April 15, 2011

International Year of
CHEMISTRY 2011

"Celebrating Innovation in Analysis"

The Eastern Analytical Symposium and Exposition is the second largest conference and exposition for laboratory science in the U.S. dedicated to the needs of analytical chemists and those in the allied sciences. We offer high quality cutting-edge technical sessions and state-of-the-art short courses, workshops and seminars. We invite you to be a part of the program by contributing a paper for oral or poster consideration. Please note that all abstracts must be submitted electronically via the EAS web site at **www.EAS.org/asubmit.** The submission deadline is April 15.

Please carefully review the following information:

- Invited speakers must **not** submit abstracts to EAS until requested
- All contributed abstracts must be submitted through our web site at www.EAS.org/asubmit. No faxed, e-mailed, or mailed abstracts will be accepted.
- **Please note that no one author may submit and present more than two posters.**
- All abstracts must be a **maximum of 250 words** or less.
- All abstracts will be acknowledged via e-mail.
- The title of the presentation and the list of authors that you submit are final, and may not be changed.
- The abstract that you submit will be considered to be your final abstract that will be printed in the abstract book for the 2011 Eastern Analytical Symposium.
- Presenting authors of contributed submissions will be notified in July 2011 of the status of the abstract and its session assignment.

AREAS OF INTEREST

Bioanalysis
Capillary Electrophoresis
Chemometrics
Chromatography
Conservation Science
Environmental Analysis
Forensic Analysis
Gas Chromatography
HPLC
Immunochemistry
Industrial Hygiene
Ion Chromatography
IR Spectroscopy
Laboratory Automation
Laboratory Management
LC/MS
Mass Spectrometry
Microchemistry
Microscopy
Near Infrared (NIR) Spectroscopy
NMR Spectroscopy
Pharmaceutical Analysis
Process Analytical Science
Quality by Design
Quality/Regulatory/Compliance
Raman Spectroscopy
Sample Preparation
Science Education
Sensors
Separation Sciences
Size Exclusion Chromatography
Solid State Analysis
Space Analytics
Supercritical Fluid Chromatography
Surface Science
Very High Pressure LC/Ultra High Pressure LC
Vibrational Spectroscopy

Contact information:

EAS Hotline	732-449-2280	Eastern Analytical Symposium & Exposition, Inc.
EAS Faxline	732-612-1123	P.O. Box 185
EAS E-mail	askeas@eas.org	Spring Lake, NJ 07762

www.EAS.org

Mass Spectrometry Discussion Group of Pittsburgh

Thursday, April 14, 2010

ROUNDTABLE DISCUSSION: CURRENT ISSUES & OPPORTUNITIES IN MS BASED BIOMARKER DISCOVERY

Sponsored by the Spectroscopy Society of Pittsburgh and Open to the Public

Grand Concourse – Ladies' Waiting Room
100 West Station Square Drive, Pittsburgh PA 15219
*Must park in Station Square East Lot for free parking

PROGRAM

5:30 P.M. Social Hour (Cash Bar) and Registration

6:00 P.M. Dinner

7:00 P.M. **Roundtable Discussion**
Experts: William L. Bigbee, University of Pittsburgh Cancer Institute
Russell Grant, Lab Corps
Fred Regnier, Purdue University
Haleem Issaq, National Cancer Institute
Moderator: Scott Kuzdzal, Shimadzu Scientific Instruments

9:00 P.M. Conclusion

Registration Fee: $15 ($5 for Student and Retiree) – Dinner & Parking Included
Please make check payable to SSP and mail the form below by April 7 to:

Heather Juzwa
SSP – Continuing Education Symposium
321 Winners Circle

Canonsburg, PA 15317
For more information, visit the MSDG website at http://chemed.chem.pitt.edu/ssp-msdg/
or contact Heather Juzwa by email at hljuzwa@shimadzu.com.

Please tell Heather if you want a vegetarian meal.

SSP Continuing Education Registration Form – April 14, 2010

Name: _____ Affiliation: _____

Mailing Address: _____

Email: _____ Phone: _____

Society for Analytical Chemists of Pittsburgh

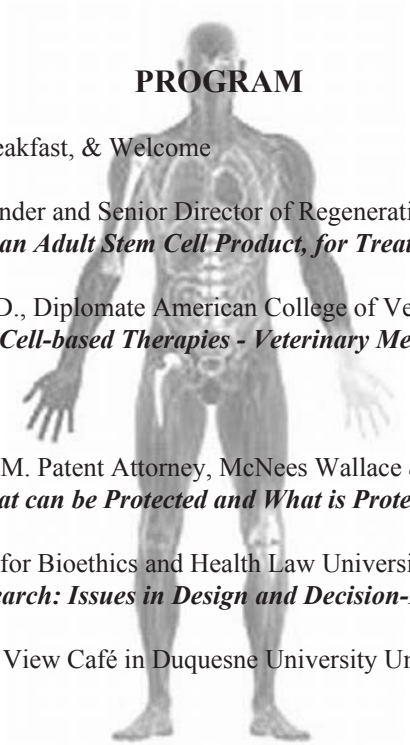
Presents a Continuing Education Symposium:

"Regenerative Medicine and Stem Cell Research"

Saturday, April 2, 2011

8:30 a.m - 2:00 p.m.

Laura Falk Auditorium - Mellon Hall of Sciences
600 Forbes Avenue, Pittsburgh, PA 15282



PROGRAM

8:00 Registration, Continental Breakfast, & Welcome

8:30 Dr. Robert W. Mays, Co-founder and Senior Director of Regenerative Medicine, Athersys, Inc.
Development of MultiStem, an Adult Stem Cell Product, for Treatment of CNS Injury and Disease

9:15 Alicia L Bertone, DVM, Ph.D., Diplomate American College of Veterinary Surgery, Ohio State University
Regenerative Medicine and Cell-based Therapies - Veterinary Medicine

10:00 Break

10:30 Geoffrey K. White, J.D., LL.M. Patent Attorney, McNees Wallace & Nurick
Stem Cells and Patents: What can be Protected and What is Protected

11:15 Lisa S. Parker, Ph.D. Center for Bioethics and Health Law University of Pittsburgh
Regenerative Medicine Research: Issues in Design and Decision-Making

12:00 Lunch and Discussion - City View Café in Duquesne University Union 6th Floor

OPEN TO THE PUBLIC

Registration Deadline: March 25, 2011

SACP Continuing Education Registration Form - April 2, 2011

Name: _____ Affiliation: _____

Mailing Address: _____

Email: _____ Phone: _____

Society for Analytical Chemists of Pittsburgh

April Meeting

Monday, April 4, 2011
8:00 PM

Duquesne University, Laura Faulk Hall

"New Analytical Chemistry and the Fight Against Performance-Enhancing Drugs in Sports"

Larry Bowers, Ph.D.
Chief Science Officer, The US Anti-Doping Agency

The use of performance-enhancing substances in sport is believed to date back to the Greeks and the original Olympic Games. Beginning in the early 1900's, stimulants such as amphetamine, cocaine, heroin, and strychnine were widely used in multi-day endurance running, cycling, and swimming events. Deaths among athletes prompted initial bans on the use of stimulants in 1928. Anabolic steroids were introduced to sport in the 1950's through 1980's. Recombinant DNA-based protein pharmaceutical agents like erythropoietin (EPO) and growth hormone (GH) emerged in the 1980's and 1990's, as did their abuse.

In 2000, responsibility for overseeing the global fight against the use of performance-enhancing drugs was transferred to the World Anti-Doping Agency (WADA; www.wada-ama.org), a joint effort of sport bodies and governments. WADA is responsible for determining the List of Prohibited Substances, accreditation of 34 testing laboratories around the world, and evaluating signatory compliance with the World Anti-Doping Code. The purpose of anti-doping programs is to achieve "perceived deterrence". The perceived deterrence model requires that the individual be more concerned about the consequences of being caught and sanctioned than they are with the benefits of violating the rules of sport. This places significant emphasis on the collection of appropriately timed samples and the capabilities of the analytical methods available for the detection of prohibited substances.

Chromatographic methods with mass spectrometric detection (GC-MS; LC-MS-MS) have always been the core analytical techniques used because of the need to identify substances (and their metabolites) that should not be present in the athlete's urine or blood. The detection of substances that occur naturally in the body (e.g., testosterone, growth hormone) presents an even greater challenge. It is well known that most substances appearing in urine vary widely in concentrations, so measurement of concentration alone cannot be relied upon. The first means of detecting the use of testosterone was achieved by measuring the testosterone-to-epitestosterone ratio (T/E ratio). Initially the T/E ratio was compared to population reference ranges, but more recently intra-individual reference range assessment methods such as the personal reference range and "predictive" models have been used. Gas chromatography-combustion-isotope ratio mass spectrometry (GC-C-IRMS) has also been used to identify non-physiological sources of testosterone and other steroids.

It is clear from interviews with athletes who have confessed to their drug abuse and from other "intelligence" that athletes change their behaviors in response to changes in anti-doping strategies. Thus vigilance and continued analytical research funded by the anti-doping agencies such as the Partnership for Clean Competition (www.cleancompetition.org) are key to maintaining deterrence.

Biography: Larry Donald Bowers received his Bachelor of Arts degree in Chemistry from Franklin and Marshall College, Lancaster, Pennsylvania. He completed his graduate work at the University of Georgia. His thesis work, under the direction of Professor Peter Carr, involved the preparation and application of immobilized enzymes to problems in bioanalysis. He was awarded a Ph.D. degree in Chemistry. Dr. Bowers then joined the Clinical Chemistry and Toxicology Division of the Department of Clinical Pathology at the University of Oregon Health Sciences Center in Portland, Oregon as a postdoctoral fellow. In September, 2000, Dr. Bowers joined the United States Anti-Doping Agency (USADA). He currently serves as Chief Science Officer.

Dinner Reservations: Please email the SACP Administrative Assistant, Valarie Daugherty at daugherty@pittcon.org by Wednesday, March 30, 2011 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.

ACS Energy Technology Group
Pittsburgh Section
&
The Pittsburgh Section AIChE

Wednesday, March 16, 2011

"Palladium Alloy Membranes for Hydrogen Separation"

James B. Miller
Assistant Research Professor, Chemical Engineering Department
and NETL Faculty Fellow, Carnegie Mellon University

Spaghetti Warehouse
26th & Smallman Streets, Strip District, Free parking behind the restaurant

Social Hour: 6:00 pm Dinner: 6:30 pm
Presentation: 7:30 pm

Separation of hydrogen from mixed gas streams is a key unit operation in the generation of carbon-neutral fuels and electricity from fossil- and bio-derived feedstocks. Dense Pd membranes have received significant attention for the separation application in advanced gasification processes. Pd's near-perfect selectivity for hydrogen separation results from its unique ability to dissociatively adsorb H2 on its surface, absorb H atoms, and then allow rapid diffusive transport of H atoms through its bulk. In practice, Pd suffers from several limitations, including high cost, marginal mechanical strength and deactivation by S-compounds commonly encountered in fossil fuel processing. To overcome these problems, we are, in collaboration with partners at DOE's National Energy Technology Laboratory (NETL), studying alloys of Pd for the separation application.

We have combined membrane performance testing, advanced materials characterization, and computational modeling to provide a basic understanding of how Pd and Pd1-xCux membrane materials respond to exposure to H2S, a common contaminant of fossil-derived gas streams. Our most recent work includes development of new and unique high-throughput tools and methodol-ogies that enable rapid characterization and optimization of hydrogen separation alloys over wide portions of multidimensional composition space.

Jim Miller's research interests include characterization of surfaces and surface processes for applications in separations, catalysis and chemical sensors. Before joining the CMU faculty in 2006, Jim worked in industry as a developer of catalysts, catalytic processes and chemical sensors.

For reservations, please contact Al Mann by Tuesday, March 15, 2011 at alfred.mann@verizon.net. 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.

ACS-Hach High School Chemistry Grant Now Accepting Applications for 2011-2012!

The ACS-Hach High School Chemistry Grant is awarded to high school chemistry teachers seeking funds to support ideas that transform classroom learning, foster student development, and reveal the wonders of chemistry. Teachers can request up to $1,500 for their ideas.

Applications are accepted annually February 1 – April 1. Applicants for the 2011-2012 award cycle will be notified of their status by June 30, 2011.

What We FundSince 2006, more than 300 ACS-Hach High School Chemistry grants have been awarded to teachers with innovative and exciting ideas. We offer grants for:

- Laboratory Equipment & Supplies
- Instructional Materials
- Professional Development
- Field Study
- Science Outreach Events

Recent awards were given for the following: Real-world consumer and environmental studies projects; 21st century laboratories; "cool chemistry" demonstration shows; 3-D modeling; electronic, real-time student portfolios; interactive technologies for immediate results and assessment; podcasts for learning on-the-go; and professional development courses.

Apply for the ACS-Hach High School Chemistry Grant today at www.acs.org/hach. Application's are due on April 1, 2011.

ACS Cut and Paste January 2011

ACS Pittsburgh Chemists Club

Pittsburgh Section, American Chemical Society

March Meeting
Tuesday, March 29, 2011

Spaghetti Warehouse
26th & Smallman Streets, Strip District, Free parking behind the restaurant

Social Hour: 6:00 pm
Dinner: 6:40 pm
Presentation: 7:45 pm

"Exploring the Chemical Properties of Carbon Nanotubes"

Alexander Star
University of Pittsburgh

Because of their unique properties, such as high tensile strength, chemical stability, and electrical conductivity, carbon nanotubes are an ideal material for many applications. Our research group is involved in synthesis, chemical functionalization, and characterization of carbon nanotubes. Our chemical functionalization methods include covalent modifications, decoration with metal nanoparticles, wrapping with polymers, and noncovalent attachment of biological molecules. In this lecture, I will discuss how these chemical approaches enable selective and ultrasensitive chemical detection of many important analytes (left figure).

For synthesis of nanotubes, we employ chemical vapor deposition (CVD) using a variety of carbon sources and catalysts systems. Utilizing this versatile technique, we have synthesized nitrogen-containing carbon nanotube cups (NCNCs) that can be manipulated into very intriguing nanostructures. In particular, we demonstrated that two cups can be assembled into a closed nanocapsule (center figure) thus encapsulating a variety of cargo. Such materials hold great promise for drug-delivery and diagnostic imaging applications. As nanotube applications progress in number and variety, their manufacturing volume continues to grow to hundreds of ton scale. Yet, no consensus regarding the environmental and human toxicity affects of these materials exists. We are currently investigating the enzymatic degradation of single-walled carbon nanotubes (SWNTs) with horseradish peroxidase (a common plant enzyme) and human myeloperoxidase (secreted by physiological neutrophils). Both enzymes have shown oxidative capabilities to degrade carboxylated SWNTs (right figure) indicating that SWNTs might have limited persistence in the environment and that there may exist physiological mechanisms for their biodegradation.

Biography:
Alex Star joined the Chemistry faculty at University of Pittsburgh in September 2005 as an Assistant Professor. He received his B.Sc. and Ph.D. degrees in chemistry from Tel-Aviv University in 1994 and 2000, respectively. He then spent two years as a postdoctoral fellow in J. Fraser Stoddart group at California NanoSystems Institute at University of California, Los Angeles. Alex was a Senior Scientist and Manager of Applications Development at Nanomix, Inc.- a nanotechnology startup company - from 2002 to 2005, where he worked on development and commercialization of carbon nanotube based sensors.

For Reservations, please call Ed Martin by noon Friday, March 25, 2011 at (724) -335 -0904 or by e-mail at edwardmartin1046@verizon.net

Night Games in Sports Stadiums and Street Lighting Can Cause Spike in Daytime Ozone Air Pollution

"Monitoring the Skies"
Chemical & Engineering News
Advance texts of the story are available from m_bernstein@acs.org.

Brightly-lit Cowboys Stadium during Sunday's Super Bowl XLV may symbolize one of the hottest new pieces of scientific intelligence about air pollution: Researchers have discovered — in a classic case of scientific serendipity — that the bright light from sports stadiums and urban street lights may boost daytime levels of ozone, a key air pollutant in many heavily populated areas. That's among the topics included in a broader article about the chemistry of air pollution in the current edition of Chemical & Engineering News (C&EN), ACS' weekly newsmagazine.

In the article, C&EN Associate Editor Jyllian Kemsley describes a so-called "field campaign" that took place in southern California and Mexico last year. It was a far-ranging effort by land, sea, and air to gain a deeper scientific understanding of all the factors involved in air quality and climate change. One of experiments involved use of detectors to measure the intensity of sunlight from an airplane.

As the plane flew over a brightly lit sports stadium, one of the crew suggested, perhaps only half seriously, turning the device on, even though it was the dead of night. Much to the scientists' surprise, they found there was enough light to drive certain chemical reactions in the atmosphere that would boost daytime levels of ozone, one of the most prevalent and difficult-to-control air pollutants in urban areas. One of the scientists in the experiment notes in the article that cities and states, struggling to meet ever-stricter government air pollution limits, may want to consider the unexpected effects of night-time lighting of streets, sports stadiums, and other sources of bright light

Chemists Celebrate Earth Day
Illustrated Poem Contest Rules

Contest Rules

-Poems must conform to a particular style.

-No poem may be longer than 40 words.

-The topic of the poem and the illustration must be related to the CCED theme, "Energy - It's Everywhere!" or the IYC theme of water.

-All entries must be original works without aid from others.

-Each poem must be submitted and illustrated on an unlined sheet of paper (of any type) not larger than 11" x 14". The illustration must be created by hand using crayons, watercolors, other types of paint, colored pencils or markers. The text of the poem should be easy to read and may be printed with a computer, before the hand-drawn illustration is added, or the poem may be written on lined paper which is cut out and pasted onto the unlined paper with the illustration.

-Only one entry per student will be accepted.

-All entries must have the following information included with the entry: student's name, grade, home telephone number and/or parent/guardian e-mail address (used only for notifying winning entries), school name, school address, teacher's full name, email, school telephone number and style of the poem below the title. For school districts with "privacy" policies regarding the sharing of student's home contact information, please use school telephone number and teacher's e-mail address for the student's contact information. For home schooled students, write "Home Schooled" for school name, and note any home school association you may be affiliated with.

-All illustrated poems of the poems become the property of the American Chemical Society.

-Acceptance of prizes constitutes consent to use winners' names, likenesses and entries for editorial, advertising and publicity purposes.

-ACS is not responsible for lost, damaged, or delayed postal shipments.

-Contest entries must be received at the address listed below by Friday April 1, 2011.

-NO LATE ENTRIES WILL BE ACCPETED.

-Judging will take place Saturday, April 2, 2011.

-Winning entries will be announced Monday, April 4, 2011.

BOOST OUR RATINGS

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.

Entries will be judged based upon:

-Relevance to and incorporation of Energy - It's Everywhere!" or water theme

-Word choice and imagery

-Colorful artwork

-Adherence to poem style

-Originality and creativity

-Overall presentation

Please send entries by Friday, April 1, 2011 to:
Michael Mautino
3485 Frye Ave.
Finleyville, PA 15332

Greener Process for Key Ingredient for Everything from Paint to Diapers

"Efficient Acrylic Acid Production through Bio Lactic Acid Dehydration over NaY Zeolite Modified by Alkali Phosphates"
ACS Catalysis

Scientists are reporting discovery of an environmentally friendly way to make a key industrial material — used in products ranging from paints to diapers — from a renewable raw material without touching the traditional pricey and increasingly scarce petroleum-based starting material. Their report on a new catalyst for making acrylic acid appears in ACS Catalysis, the newest in the American Chemical Society's suite of 39 peer-reviewed scientific journals.

Weijie Ji, Chak-Tong Au, and colleagues note that acrylic acid is essential for making paints, adhesives, textiles, leather treatments, and hundreds of other products. Global demand for the colorless liquid totals about 4 million tons annually. Acrylic acid is typically made from propylene obtained from petroleum. With prices rising, manufacturers have been seeking alternative ways of making acrylic acid without buying propylene. One possibility involves making it from lactic acid. But current processes for using lactic acid are inefficient, less selective, and require higher temperatures and the accompanying high inputs of energy.

The scientists' potential solution is a new catalyst that can convert lactic acid into acrylic acid more efficiently. Lactic acid is a classic renewable starting material, produced by bacteria growing in vats of biomass such as glucose and starch from plants. In laboratory studies, the scientists showed that the new catalyst can convert lactic acid to acrylic acid more selectively at lower temperatures. This could mean better use of lactic acid, lower fuel consumption, and less impact on the environment, the scientists suggest.

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

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Services

Volunteers Needed!

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

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 April 2011 issue must be to the editor by March 1, 2011.

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.

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Career Opportunities

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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

Wednesday, March 16, 2011

ACS Pittsburgh Energy Technology Group
Pittsburgh Section AIChE
"Palladium Alloy Membranes for Hydrogen Separation"
James B. Miller, Assistant Research Professor, Chemical Engineering Department and NETL Faculty Fellow, Carnegie Mellon University
Spaghetti Warehouse, 26th & Smallman Streets, Strip District

Tuesday, March 29, 2011

ACS Pittsburgh Chemists Club
"Exploring the Chemical Properties of Carbon Nanotubes"
Alexander Star, University of Pittsburgh
Spaghetti Warehouse, 26th & Smallman Streets, Strip District

Saturday, April 2

Society for Analytical Chemists of Pittsburgh
Continuing Education Symposium
"Regenerative Medicine and Stem Cell Research"
Duquesne University, Laura Falk Auditorium - Mellon Hall of Sciences, 600 Forbes Ave., Pittsburgh, PA

Monday, April 4

Society for Analytical Chemists of Pittsburgh
"New Analytical Chemistry and the Fight Against Performance-Enhancing Drugs in Sports"
Larry Bowers, Ph.D., Chief Science Officer, the US Anti-Doping Agency
Duquesne University, Laura Faulk Hall

Thursday, April 14

Mass Spectrometry Discussion Group of Pittsburgh
Roundtable Discussion: Current Issues & Opportunities in MS Based Biomarker Discovery
Grand Concourse - Ladies' Waiting Room, 100 West Station Square Drive, Pittsburgh, PA

Additional chemistry related seminars and events in the Pittsburgh area can be found on the Pittsburgh Section's website at http://www.chem.cmu.edu/acs-pgh/