



The Crucible

www.pittsburghacs.org

Volume: C No.5

January 2015

Pittsburgh Section ACS Welcomes 2015 Chair Mackenzie Speer



Mackenzie Speer is employed as the Laboratory Services Manager for Reaxis, Inc. in McDonald, PA. She received her B.S. in Chemistry at Gannon University and her M.S. in Analytical Chemistry under the advisement of Distinguished Professor Sanford Asher. Her research involved the understanding the volume phase transitions of thermo-responsive polymers using Raman Spectroscopy. During her time at The University of Pittsburgh, she served on executive boards for both Phi Lambda Upsilon and the Greater Pittsburgh Area Women Chemists Committee (WCC). She is currently serving as the Secretary of the PGHWCC as well as sitting on their Outreach and Social committees.

Mackenzie has been a member of the ACS for 7 years and was active in the Erie Section during her undergraduate work at Gannon. Along with organizing the awards portion of the Central Region Meeting, she received grant money from ACS National to celebrate the great work done by Project SEED in our region. Mackenzie is an active member of the SACP and SSP. Her committee work for the sister societies include being the current Chair of the SACP Publicity committee and serving on multiple other committees. She is also heading the Tripartite committee for the event this spring.

Mackenzie has been a member of the ACS for 7 years and was active in the Erie Section during her undergraduate work at Gannon. Along with organizing the awards portion of the Central Region Meeting, she received grant money from ACS National to celebrate the great work done by Project SEED in our region. Mackenzie is an active member of the SACP and SSP. Her committee work for the sister societies include being the current Chair of the SACP Publicity committee and serving on multiple other committees. She is also heading the Tripartite committee for the event this spring.

A Note from the Incoming Chair: I am excited for the honor to be able to work with the other local section leaders to represent the Pittsburgh Section and serve our members and community. The Pittsburgh Section has been developing and providing a lot of great programming that has caught the eye of the national organization, and we have plans to continue to create new opportunities. This coming year, I want to focus on the needs of all local section members and to better serve you. I am looking forward to working with the local section leadership to add to the legacy of the Pittsburgh Section.

Pittsburgh Section ACS Election Results

Thank you to those who participated in the nomination and voting process. We appreciate you taking the time to help the local section choose its leaders and representatives.

The election results are as follows, with over 10% of the section voting:

Chair-Elect: Evonne Baldauff
Secretary: Logan Miller
Treasurer-Elect: Kelley Colopietro
Director: Heather Juzwa
Councilor: Michelle Ward and Michael Mautino

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NCW 2014: Great Chemistry is Everywhere!

Submitted by V. Michael Mautino, NCW Coordinator

For the 16th consecutive year, the Pittsburgh Section's National Chemistry Week (NCW) celebration was held at the Carnegie Science Center. For 2014, the event was conducted on Friday and Saturday, October 24-25 and featured the theme "Great Chemistry is Everywhere!"

Major sponsors for the event included the Society for Analytical Chemists of Pittsburgh (SACP), the Spectroscopy

Society of Pittsburgh (SSP), the PPG Science Education Council (PPG SEC), and the PPG Industries Foundation. In-kind sponsors included the Carnegie Science Center and Bayer Corporation.

A total of 293 volunteers, from 34 groups and organizations, conducted hands-on experiments, activities, and demonstrations. In all, 42 organizations contributed to the Section's 2014 NCW program. Total attendance for the two-day event was 4,103 (2,344 on Friday and 1,759 on Saturday), an increase of approximately 4% from the 2013 NCW event attendance (3,953) and an increase of 9% over the 2012 attendance (3,760).

For the 2014 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 SACP, SSP, PPG Industries Foundation, and PPG SEC, 1,356 students from 22 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 2014-15 school year.

The Pittsburgh Section wishes to thank its financial and in-kind sponsors, the organizations that sponsored hands-on experiments and activities at the NCW celebration, and the 293 volun-



teers who dedicated their time and efforts to make the event a success. Working together with these dedicated partners, the Pittsburgh Sec-

tion 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 2015

The Carnegie Science Center has been reserved for Friday and Saturday, October 23-24, 2015 for the Pittsburgh Section's NCW celebration. NCW 2015 will investigate color chemistry through the theme "Chemistry Colors Our World."

Pittsburgh Section ACS 2014 National Chemistry Week Illustrated Poem Contest Winners

The Pittsburgh Section of the American Chemical Society's (ACS) sponsored an illustrated poem contest for students in grades K-12 in support of the 2014 National Chemistry Week (NCW) program. Students could pick topics related to the 2014 NCW theme "The Sweet Side of Chemistry - Candy!" First and second place winners were selected from four grade categories: K-2nd, 3rd-5th, 6th-8th, and 9th-12th. Poems could be any style (free verse, limerick, haiku, etc.). Entries were judged based upon relevance to and incorporation of the theme, word choice and imagery, colorful artwork, adherence to poem style, originality and creativity, and overall presentation.

Each 1st place winner received a check for \$50 and their winning poems were entered into the national poem contest sponsored by the ACS's Committee on Community Activities. There were no local Pittsburgh Section winners in the national competition. Each 2nd place winner received a check for \$25.

Winning entries can be viewed on the Pittsburgh Section NCW Facebook page at "Pittsburgh ACS NCW." Congratulations to all our local winners!

Pittsburgh Section ACS's NCW 2014 Illustrated Poem Contest Winners:

K-2nd Grade

1st Place: Sophia D., Grandview Elementary School

3rd-5th Grade

1st Place: Grace C., Verna Montessori School

2nd Place: Justine E., O'Hara Elementary School

6th-8th Grade

1st Place: Alesandra S., Verna Montessori School

2nd Place: Zoe R., Central Valley Middle School

9th-12th Grade

1st Place: Amber M., Ringgold High School

2nd Place: Douglas G., Ringgold High School



Society for Analytical Chemists of Pittsburgh



January Meeting

Monday, January 5, 2015

8:00 PM

Duquesne University

“Applications of Mass Spectrometry in Occupational Safety and Health Research”

Justin M. Hettick, Ph.D.
NIOSH

Abstract: Advances in modern mass spectrometry have fueled the proteomics boom of the 21st century. At NIOSH, our research is harnessing the power of mass spectrometry and proteomics research to answer fundamental questions in Occupational Safety and Health, with the ultimate goal of reducing occupational illness. This presentation will review several recent research programs to highlight the impact of mass spectrometry on occupational disease research. Contributions of mass spectrometry in the areas of rapid microorganism identification, novel allergen characterization, and hapten-protein characterization will be discussed, with a special focus on diisocyanate allergy. Diisocyanates are industrially important chemicals that serve as polymerizing agents in a variety of polyurethane products. Although diisocyanates have been implicated as causative agents of occupational allergic respiratory disease, the specific mechanism(s) by which disease occurs remains unknown. To that end, experiments in our laboratory are utilizing the power of multiplexed mass spectrometry for the characterization of the chemistry of diisocyanate-protein conjugates *in vitro* as well as the identification of conjugated proteins exposed *in vivo*.

Biography: Justin M. Hettick is a Research Chemist and Acting Team Leader for Bio-Organic Chemistry in the Allergy and Clinical Immunology Branch, Health Effects Laboratory Division of the National Institute for Occupational Safety and Health. He received a B.S. degree from Truman State University and a Ph.D. from Texas A&M University. He joined the National Institute for Occupational Safety and Health in 2003, where he completed a post-doctoral appointment before joining the staff as Research Chemist in 2006. He is a member of the American Society for Mass Spectrometry, and was the recipient of the Centers for Disease Control and Prevention's Charles C. Shepard Award in 2005.

Dinner Reservations: Please email the SACP Administrative Assistant, Valarie Daugherty at daugherty@pittcon.org by Monday, December 29, 2014 to make dinner reservations. Should you not have email, please call 412-825-3220, ext 204. Dinner will cost \$10 (\$5 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. Please contact Duquesne University, if any difficulties should arise.

Applications for Student Travel Awards Now Being Accepted

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

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

Each year, the Pittsburgh Section of the ACS will award up to four \$500 grants to aid our undergraduate/graduate student members in presenting papers or posters at ACS Meetings. Awards will be made based on the scientific merit of the paper/poster to be presented and financial need. The deadlines for receipt of applications are 06/01/2015 (for travel to be completed by 12/31/2015) and 12/01/2015 (for travel to be completed by 06/30/2016.)

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



The Spectroscopy Society of Pittsburgh



January Meeting

Wednesday, January 21, 2015

Duquesne University – Laura Falk Hall located in Mellon Hall

Technology Forum Speaker's Presentation 5:30 PM

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

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

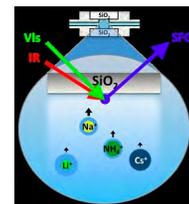
TECHNICAL PROGRAM - 8:15 PM

"Surface Specific Spectroscopy"

Paul Cremer – Pennsylvania State University

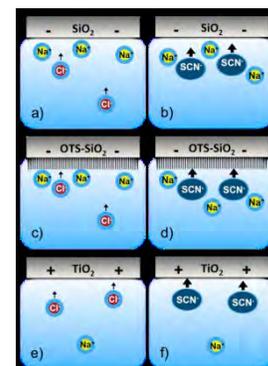
Abstract: We have employed surface specific vibrational spectroscopies to interrogate the interactions of ions with self-assembled monolayers and proteins at aqueous interfaces. The results provide direct insight into ion-surface interactions. In particular, I will discuss the behavior of cations and anions as they relate to the Hofmeister series, which is a rank ordering of the efficacy of these species to influence the physical behavior of colloidal and interfacial systems in solution (Figure 1).

Figure 1. Schematic diagram of the VSFS (vibrational sum frequency spectroscopy) setup for quartz/water interface studies. Analogous experiments were also conducted at other solid/liquid and liquid/vapor interfaces.



Experiments consisted of a combination of sum frequency generation and thermodynamic measurements. Ion specific effects at these interfaces were found to be determined by several factors. These include the sign and magnitude of the surface potential, ion pairing effects in the double layer, as well as the presence of polar and nonpolar interfacial moieties. At negatively charged, hydrophilic surfaces, we found that Na⁺ adsorption and double layer formation was modulated by the nature of the counterion in solution (Figure 2).

Figure 2. Schematic illustration of the partitioning of ions to positively/negatively charged and hydrophilic/hydrophobic interfaces in aqueous solutions.



For the anions, it was found that SCN⁻ was less depleted at the interface compared with better hydrated anions such as Cl⁻. The same ordering was observed for the anions whether this interface was relatively hydrophobic or hydrophilic. Changing the sign of the charge at the interface also led to a similar Hofmeister ordering. Curiously, the ordering for cations at these aqueous interfaces was found to be more sensitive to the specific surface chemistry. Moreover, at negatively charged hydrophilic surfaces, the smallest and best hydrated cations were mostly favored over more poorly hydrated cations. By contrast, well hydrated cations were repelled from more apolar surfaces. Li⁺ displayed somewhat anomalous behavior. All of these results will be described in relation to behavior at the polymer/aqueous and protein/aqueous interfaces.

Bio: Paul Cremer is from Milwaukee, WI and received his B.A. from the University of Wisconsin-Madison in 1990 and his Ph.D. in chemistry at the University of California-Berkeley in 1996. He was the American Chemical Society, Irving S. Sigal Postdoctoral Fellow at Stanford University from 1996-1998. Following this, he was a professor of chemistry at Texas A&M University for 14 years where he most recently held the Arthur E. Martell Chair in chemistry. In January, 2013 his laboratory moved to the Penn State University where he currently serves as the J. Lloyd Huck Chair in Natural Sciences. He is a Fellow of the American Chemical Society as well as the American Association for the Advancement of Science. He also serves as an associate editor for the Journal of the American Chemical Society. The Cremer group works in the intersection of physical chemistry, biological chemistry, sensor design, and nanomaterial science. This involves the development of high throughput microfluidic devices, which allows his group to investigate protein folding, protein-membrane binding

Continued on Page 5

The Spectroscopy Society of Pittsburgh Continued from Page 4

interactions, and the properties of lipid bilayers in lab-on-a-chip formats. These microfluidic experiments are complemented by spectroscopies and microscopies such as sum frequency generation (SFG), **Bio and Technology Forum Information**

ATR-FTIR, surface enhanced Raman spectroscopy, fluorescence quenching, and NMR to elucidate the molecule level details of biointerfacial processes. This has provided new insights into ion interactions with lipid membranes and proteins in aqueous solutions.

TECHNOLOGY FORUM - 5:30 PM

Duquesne University – Laura Falk Hall located in Mellon Hall
“African Penguins: The Other Penguins in Pittsburgh”

Teri Grendzinski, National Aviary

Teri Grendzinski will be discussing some of the common misconceptions about penguins. She will be accompanied by an African Penguin from the National Aviary.



Teri Grendzinski is the Supervisor of Animal Collections at the National Aviary where she has worked for 21 years. She has experience caring for birds from hummingbirds to condors. She oversees the staff that provides care for the animals that live on exhibit and in the off exhibit breeding areas. She also helps to hand raise baby birds and takes care of the new birds coming into the collection.

Dinner Reservations: Please register on-line at <http://www.ssp-pgh.org/monthly-meeting-rsvp/> to make dinner reservations NO LATER THAN Thursday, January 15, 2015 at noon. This month's entrée will be Chicken Saltimbocca or a vegetarian option. Dinner will cost \$10 (\$5 for students) and checks can be made out to the SSP. If you have any dietary restrictions, please indicate them when you RSVP. **Parking Instructions:** The Duquesne University Parking Garage is located on Forbes Avenue. Upon entering the garage, receive parking ticket and drive to upper floors. Pick up a parking chit at the dinner or meeting.



YCC Career Talk Series presents

Speaker: Dr. Cindy Chepanoske

When: Wednesday, January 21st, 6-8 pm

Where: Mellon Institute, Social Room

Event free for YCC members, \$5 for nonmembers. Food will be provided.



Dr. Cindy Chepanoske joined The Center for Technology Transfer and Enterprise Creation (CTTEC) at Carnegie Mellon University in 2012 as a Manager, Business Development and Licensing.

Dr. Chepanoske has most recently been at the forefront of software development in molecular profiling and translational research fields as a Senior Application Scientist at Rosetta Biosoftware and as a Program Manager and Director of Informatics Services at Ceiba Solutions.

With over 10 years of experience in the Pharmaceutical and Life Sciences Software industry, Dr. Chepanoske brings her perspective to many processes integral to CTTEC including technology and market evaluation, license creation, and marketing of novel technologies created at CMU. Her primary focus includes working with faculty, staff and students from the Mellon College of Science in addition to assisting the interdisciplinary members of the Quality of Life Technology Center.

Dr. Cindy Chepanoske received her B.S. in Chemistry from Carnegie Mellon University and her Ph.D. in Chemistry from the University of Utah. In addition to spending time with her family, she enjoys mountain biking and snowboarding, and moving heavy things with her gym colleagues.

CAREERS IN CHEMISTRY SYMPOSIUM

Saturday, January 31st
9am-11:30am



WWW.PGHWCC.ORG

Department of Chemistry ♦ University of Pittsburgh
219 Parkman Avenue ♦ Pittsburgh, PA 15260



*COST: \$5 / FREE to high school students
with advanced registration*

Join us as our panel explores different types of positions available in industrial and academic settings. Hear from those at various stages in their careers. Q&A time will be available during each session.

Schedule of Events:

8:30am Registration & Refreshments

9:00am **Session I:** Industry Panel

10:00am **Session II:** Academic Panel

11:00am **Session III:** Chemistry as a Major?

REGISTRATION DEADLINE: JANUARY 26th

To register, please fill out the required information on the form on the Upcoming Events page of our website: www.pghWCC.org. Alternatively, you can send the form below and a check made out to "WCC" to: Dr. Michelle Ward / 219 Parkman Ave / Room 107 / Pittsburgh, PA 15260.

CAREERS IN CHEMISTRY SYMPOSIUM

Name: _____

Affiliation/School: _____

Email: _____

PROFESSIONAL DEVELOPMENT FOR UNDERGRADUATES

Saturday, January 31st
1:30 pm – 4 pm



WWW.PGHWCC.ORG



Department of Chemistry ♦ University of Pittsburgh
219 Parkman Avenue ♦ Pittsburgh, PA 15260

*COST: \$5 / FREE to members
with advance registration*

Join us as we explore topics to help make your internship / job search more successful. We will cover topics such as constructing cover letters, what makes a good vs. a bad resume, proper post-interview communications, the importance of networking, and individual resume reviews.

Schedule of Events:

- 1:00pm Registration
- 1:30pm **Session I:** Application Logistics
- 2:15pm **Session II:** Interview Etiquette
- 3:00pm **Breakout Session:** Individual Resume Review and Networking

REGISTRATION DEADLINE: JANUARY 24th

To register, please use the link available on the Upcoming Events page of our website: www.pghWCC.org. Alternatively, you can send the form below and a check made out to "WCC" to: Dr. Michelle Ward / 219 Parkman Ave / Room 107 / Pittsburgh, PA 15260.

CAREERS IN CHEMISTRY SYMPOSIUM

Name: _____

Institution: _____ Year: _____

Email: _____



Society for Analytical Chemists of Pittsburgh



February Meeting

Monday, February 2, 2015

8:00 PM

Duquesne University

“The Ultimate Limits of Miniaturization in Science, Engineering, and Medicine”

Paul S. Weiss, Ph.D.,

University of California, Los Angeles

Abstract: The great promise of single-molecule/assembly measurements is to understand how critical variations in structure, conformation, and environment relate to and control function [1]. New approaches to imaging and analysis are keys to elucidating these associations. I will discuss current and upcoming advances and will pose the challenges that lie ahead in creating, developing, and applying new tools for biology and medicine. These advances include fusing spectroscopic imaging modalities and freeing up bandwidth in measurements to record simultaneous data streams and to expand our dynamic range. Recent advances in sparsity and compressive sensing can be applied both to new analysis methods and to directing measurements so as to assemble and to converge structural and functional information. Early examples will be discussed.

[1] Electrons, Photons, and Force: Quantitative Single-Molecule Measurements from Physics to Biology, S. A. Claridge, J. J. Schwartz, and P. S. Weiss, ACS Nano 5, 693 (2011).

Biography: Paul S. Weiss holds the Fred Kavli Chair in NanoSystems Sciences, and is a distinguished professor of chemistry & biochemistry and of materials science & engineering at the University of California, Los Angeles. He received his S.B. and S.M. degrees in chemistry from MIT in 1980 and his Ph.D. in chemistry from the University of California at Berkeley in 1986. He was a postdoctoral member of technical staff at Bell Laboratories from 1986-88 and a visiting scientist at IBM Almaden Research Center from 1988-89. Before coming to UCLA in 2009, he was a distinguished professor of chemistry and physics at the Pennsylvania State University, where he began his academic career in 1989. His interdisciplinary research group includes chemists, physicists, biologists, materials scientists, mathematicians, electrical and mechanical engineers, and computer scientists. Their work focuses on the ultimate limits of miniaturization, exploring the atomic-scale chemical, physical, optical, mechanical, and electronic properties of surfaces and supramolecular assemblies. He and his students have developed new techniques to expand the applicability and chemical specificity of scanning probe microscopies. They have applied these and other tools to the study of catalysis, self- and directed assembly, and molecular and nanoscale devices. They work to advance nanofabrication down to ever smaller scales and greater chemical specificity in order to operate and to test functional molecular assemblies, and to connect these to the biological and chemical worlds. Two current major themes in his laboratory are cooperativity in functional molecules and single-molecule biological structural and functional measurements. He has over 300 publications, holds over 20 patents, and has given over 500 invited, plenary, keynote, and named lectures.

Dinner Reservations: Please email the SACP Administrative Assistant, Valarie Daugherty at daugherty@pittcon.org by Monday, January 26, 2015 to make dinner reservations. Should you not have email, please call 412-825-3220, ext 204. Dinner will cost \$10 (\$5 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. Please contact Duquesne University, if any difficulties should arise.



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Attention: Speakers Wanted



The Pittsburgh Section of the American Chemical Society is establishing a local speakers bureau and we would like for you to consider joining.

The speakers bureau will be available on our web site and will facilitate the connection between those organizing symposia and speakers from our area.

If you would like to be listed in the Bureau, please provide the following information:

- Name
- Affiliation
- Contact Information:
 - Mailing Address
 - Website (if applicable)
 - Email address
 - Phone
- Keywords/categories related to expertise (up to 5)
- Current CV/Resume (in pdf format)

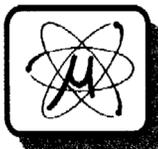
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(muscat@pitt.edu or
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Pittsburgh, PA 15202
412-420-7705
angelica@borons.com

Services

Volunteers Needed!

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

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 February 2015 issue must be to the editor by January 1, 2015.

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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- www.mboseervices.net/recr_disp.php
- <http://pubs.acs.org/chemjobs/>

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The Crucible

A newsletter of the Pittsburgh Section of the American Chemical Society

124 Moffett Run Rd.
Aliquippa, PA 15001

Change of Address

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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

Monday, January 5

Society for Analytical Chemists of Pittsburgh

"Application of Mass Spectrometry in Occupational Safety and Health Research"

Justin M. Hettick, Ph.D., NIOSH

Duquesne University, Pittsburgh, PA

Wednesday, January 21

The Spectroscopy Society of Pittsburgh

"Surface Specific Spectroscopy"

Paul Cremer – Pennsylvania State University

Duquesne University – Laura Falk Hall located in Mellon Hall, Pittsburgh, PA

The Spectroscopy Society of Pittsburgh - Technology Forum

"African Penguins: The Other Penguins in Pittsburgh"

Teri Grendzinski, National Aviary

Duquesne University – Laura Falk Hall located in Mellon Hall, Pittsburgh, PA

Wednesday, January 21

YCC Career Talk Series

Dr. Cindy Chepanoske

Mellon Institute, Pittsburgh, PA

Saturday, January 31

WCC Careers in Chemistry Symposium

Department of Chemistry, University of Pittsburgh, 219 Parkman Ave., Pittsburgh, PA 15260

Saturday, January 31

WCC Professional Development for Undergraduates

Department of Chemistry, University of Pittsburgh, 219 Parkman Ave., Pittsburgh, PA 15260

Monday, February 2

Society for Analytical Chemists of Pittsburgh

"The Ultimate Limits of Miniaturization in Science, Engineering, and Medicine"

Paul S. Weiss, Ph.D., University of California, Los Angeles

Duquesne University, Pittsburgh, PA