

Pittsburgh Section

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Volume CIV, No. 5

January 2019

# ACS Pittsburgh Section Welcomes 2019 Chair Dr. Bradley Davis



During this past year, the Pittsburgh Section of the American Chemical Society has continued its efforts to support chemical professionals

throughout the region. With the unwavering commitment of volunteers that include officers, directors, councilors, and group leaders, the Pittsburgh Section saw another successful year of promoting chemistry through a myriad of activities. The ACS has hosted, organized, and/or sponsored a variety of events aimed at audiences encompassing professional chemists, students, and the

general public. Several of these events have been able to provide career training and networking opportunities while others have been able to recognize the outstanding accomplishments made by local students and colleagues through various awards. These programs continue to benefit not only chemical professionals in both academia and industrial environments, but the general public as well through science education. I personally would like to thank all the volunteers who continue to make the Pittsburgh Section successful and wish all of us luck in the upcoming year.

#### **Continued on Page 17**

# Congratulations to our Newly Elected Officers for 2019

The votes are in, and we congratulate the following new officers and wish them all the best!

Chair-Elect: Matthew Price Secretary-Elect: Sara Smith Treasurer-Elect: Evonne Baldauff Director: David Gallaher Director: Fu-Tyan Lin Councilor: Edward Zovinka

Thank you for participating in our important election process!

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Society for Analytical Chemists of Pittsburgh Spectroscopy Society of Pittsburgh



# **January Meeting**

(PLEASE NOTE THE ROOM CHANGE: DUQUESNE UNION BLDG – AFRICA ROOM)

Wednesday, January 9, 2019



5:30 PM Social Hour — Africa Room (Duquesne Union) 5:30 PM SSP Technology Forum – Room 613 (Duquesne Union) 6:30 PM Dinner – Africa Room (Duquesne Union) Student Affiliate Meeting – Shepperson Suite 7:45 PM Business Meeting – Africa Room (Duquesne Union) 8:00 PM Technical Program – Africa Room (Duquesne Union)

# Deadline for Dinner Reservations: Wednesday, January 2, 2019



SACP TECHNICAL PROGRAM

Dr. Barbara Methe Department of Medicine, University of Pittsburgh "The Ecology Within – The Human Microbiome"

The human microbiome (microbial communities and their gene content) is composed of trillions of cells in multiple ecological niches that have evolved with their human host over evolutionary time. Despite their ubiquity, tremendous functional gene capacity and the array of biochemistry in which they participate, we are only now beginning to truly appreciate the importance of the microbiome in human health and disease. While traditional microbiology has emphasized the ability to culture and study microorganisms independently, advances in molecular biology, genomics and computational biology have revolutionized the manner in which scientists study microorganisms and their ecology, or relationships with one another and their environment. These advances, while challenging, are opening new opportunities to study the complex relationships between the human host and microbiome. This presentation will recap some of our current understanding of the microbiome and consider new directions of study as we begin to translate our knowledge of the microbiome to the realms of disease prevention, therapeutics and diagnostics in the 21<sup>st</sup> Century.

**BIOGRAPHY**: Dr. Methé is a Professor in the Department of Medicine at the University of Pittsburgh (U Pitt) and a Director of the U Pitt Center for Medicine and the Microbiome (CMM). She has extensive experience in microbial ecology, computational biology and the application of 'omics technologies to study whole microbial communities. Previously she has led studies of microbial communities in diverse environments including the terrestrial subsurface and the deep subseafloor and was a leader of the NIH supported Human Microbiome Project (HMP). Among current projects, she is studying the role of the microbiome in HIV-associated COPD to identify novel biomarkers of lung disease. She is also leading a project to develop methods to sort microbial communities based on their immunogenicity (ability to invoke an immune response) and methods applying metatranscriptomics and metabolomics to samples with low microbiome biomass. She is also involved in a personalized medicine and genomics initiative (University of Pittsburgh Medical Center MedBio Project) which seeks to generate and integrate microbiome and human genome data with medical electronic health records from individuals representing multiple health and disease phenotypes.



Society for Analytical Chemists of Pittsburgh Spectroscopy Society of Pittsburgh



January Meeting Wednesday, January 9, 2019

SSP TECHNOLOGY FORUM

Dr. Josef P. Werne Department of Geology & Environmental Science, University of Pittsburgh "Human Influence on Climate Change"

Warming of the climate system is now evident from observations of increases in surface air and ocean temperatures, widespread melting of glaciers and ice caps, and shrinking Arctic sea ice extent. Most of the observed increase in global average temperatures is due to the increase in at-

mospheric greenhouse gas concentrations associated with human activities (e.g., agriculture, industry, and land-use changes). Nonetheless, considerable debate surrounds the establishment of greenhouse gas emission limits, and informed government, corporate, and individual action to mitigate the extent and impact of warming has been limited. Improving our knowledge of the Earth's climate system is therefore a matter of urgency to better understand human impacts on the climate system. This presentation will examine the atmospheric and oceanic interactions that determine the nature of the global climate system, how humans have perturbed the system, and what likely impacts of these perturbations are and will be in the future.

**BIOGRAPHY**: Dr. Werne received his PhD in Geological Sciences at Northwestern University in 2000 with an emphasis in Biogeochemistry. He was a Postdoctoral Research Scientist at the Royal Netherlands Institute for Sea Research from 2000-2002 and on the faculty of the Large Lakes Observatory and Department of Chemistry & Biochemistry (Assistant/ Associate Professor) at the University of Minnesota Duluth before joining the Department in 2012. Dr. Werne spent a year in Perth, Australia as a Gledden Visiting Senior Fellow at the Institute for Advanced Studies of the University of Western Australia, as well as a visiting scientist in the Western Australia Organic and Isotope Geochemistry Centre at Curtin University (2009-2010). He joined the faculty in the Department of Geology & Environmental Science at the University of Pittsburgh in 2012 and was promoted to Full Professor in 2017. He was elected a Fellow of the Geological Society of America in 2018 for extraordinary accomplishments in developing and using molecular and isotopic paleolimnologic proxies to enable refined reconstructions of past continental climates and to improve understanding of the dynamics of climate, in publication of the results of this important research, and in nurturing and training of young scientists.

**DINNER RESERVATIONS:** Please complete the <u>Online Dinner Reservation Form</u> NO LATER THAN Wednesday, January 2, 2019. The form is also located under the Meeting Notice on website <u>www.sacp.org</u>. Should you not be able to access the form, please call 412-825-3220, ext 212 the SACP & SSP Administrative Assistant to make your dinner reservations. The entrée choices for January are **Meat Lasagna** or **Vegetable Lasagna**. Please let us know if you have any dietary restrictions. Dinner will cost \$10 (\$5 for undergraduate students). Checks can be made payable to the SACP or the SSP, depending on membership.

**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. Should any difficulties arise, please contact Duquesne University



Photo: Sanford Riemer

# ACS-Energy Technology Group Thursday, January 17, 2019 "Shale Gas Extraction & Public Health"

Heather Harr League of Women Voters of Pennsylvania

#### Abstract

The introduction and spread of unconventional shale gas development in the first decade of the 21st century has led to studies of its environmental impacts. Research studies of human health impacts have taken place more recently, with over 90% of the existing studies published since 2013 and about 25% published in 2017 alone. Of 31 peer-reviewed original health studies between 2009 and 2015, "84% contain findings that indicate public health hazards, elevated risks, or adverse health outcomes" (Hays & Shonkoff, 2016). Studies have found relationships between proximity to unconventional natural gas wells and low birth weight, asthma exacerbations, hospitalizations for various conditions, stress, and more; as well as occupational hazards. There is a need for more research. Research methodology is improving. Personal monitoring technology to track exposure is spreading. Health registries have been initiated by the PA Dept. of Health, and the SWPA Environmental Health Project which has also developed materials to help make physicians aware of possible toxins and recognize symptoms of exposure.

#### Background

In addition to its non-partisan work educating the public about voting procedures and candidates, the League of Women Voters takes on studies of current issues. The LWV of Indiana County began examining issues around shale gas fracturing ("fracking") in 2007, which led to a statewide League study of those issues. In 2011, the League of Women Voters of Pennsylvania received a grant to initiate the "Straight Scoop on Shale" public education project which Heather Harr directs. LWVPA created a "Shale & Public Health" committee in 2012 to look at the public health implications of shale gas development, and began holding an annual "Shale & Public Health" conference in 2013, at which time LWVPA initiated its "Shale Gas Extraction & Public Health Resource Guide". Copies of the 2018 update of this guide will be distributed at the January 17 meeting at Lombardozzi's.

#### Biography

Heather Harr is the Project Director of the League of Women Voters of Pennsylvania's "Straight Scoop on Shale" project. She got to know the League of Women Voters while launching the Student Voices civics engagement initiative in western PA, and then managing a federal Mock Elections grant for the Pittsburgh chapter of the League. Previously, she worked as a contractor with the New Mexico Department of Health; before that, in the private sector as a Director of Primary Research at ABC Television Network. She has a BA in Psychology from the University of Pennsylvania and a Master's from Penn's Annenberg School of Communication.

#### Cost is \$26 (cash or check), walk-ins are welcome but reservations with dinner selection are preferred.

**Dinner Menu:** Soup, salad and choice of: Lasagna, Chicken Romano, Spaghetti w/meatball, Manicotti. Coffee, tea, and soft drinks, included.

**RSVP to ACS.ETG@gmail.com** by **Mon. January 14,** with names of those planning to attend, and, your dinner choice.

Check In: 6:00-6:30 PM, Dinner: 6:30-7:30 PM, Technical Presentation 7:30-8:30 PM Location: Lombardozzi's Restaurant - Bloomfield, 4786 Liberty Ave, Pittsburgh, PA 15224



Society for Analytical Chemists of Pittsburgh Spectroscopy Society of Pittsburgh



# **February Meeting**

Wednesday, February 13, 2019



5:30 PM Social Hour — Power Center Ballroom 5:30 PM SSP Technology Forum – Power Center Ballroom 6:30 PM Dinner – Power Center Ballroom Student Affiliate Meeting – Shepperson Suite 7:45 PM Business Meeting – Power Center Ballroom 8:00 PM Technical Program – Power Center Ballroom

# SSP TECHNOLOGY FORUM



Dr. Kerri Pratt, University of Michigan "Novel Applications of Mass Spectrometry to Atmospheric Chemistry"

Recent developments in the field of mass spectrometry are leading to molecular-level understanding of environmental chemistry issues, particularly for air quality and climate change. Our efforts are focused on three main techniques: 1) chemical ionization mass spectrometry, for real-time

identification and quantitation of trace atmospheric gases at ppt to ppq levels, 2) nano-desorption electrospray ionization mass spectrometry, for the determination of the molecular composition of atmospheric organic particles, and 3) aerosol time-of-flight mass spectrometry, for the measurement of the size and chemical composition of individual atmospheric nanoparticles in real-time using laser desorption/ionization coupled with dual-polarity reflectron time-of-flight mass spectrometry. I will discuss recent research findings, showing how my research group is applying these novel techniques to advance the field of atmospheric chemistry, particularly with respect to our understanding of the atmospheric compositions and reactions in the rapidly changing Arctic.

**BIOGRAPHY:** Kerri Pratt is the Seyhan N. Eğe Assistant Professor of the Department of Chemistry and Department of Earth & Environmental Sciences at the University of Michigan in Ann Arbor, MI. She is recognized as a rising leader at the intersection of analytical and environmental chemistry, particularly the development and application of novel, field-based mass spectrometry to the critical study of Arctic change. Dr. Pratt received her B.S. in Chemistry from the Penn-sylvania State University in 2004, having performed solid-state NMR and MALDI studies with Dr. A. Daniel Jones and Prof. Karl Mueller. She received her Ph.D. in Chemistry from the University of California, San Diego in 2009 with Prof. Kimberly Prather as a NSF Graduate Research Fellow and EPA STAR Graduate Fellow, studying atmospheric aerosols



Society for Analytical Chemists of Pittsburgh Spectroscopy Society of Pittsburgh

# **February Meeting**



# Wednesday, February 13, 2019

# **SACP Technical Program**

Dr. David A. Hounshell

David Roderick Professor, Emeritus, of Technology & Social Change, Carnegie Mellon University



# "Pittsburgh's Industrial History Through the Lenses of Geography, Materials and Knowledge Production"

Almost from its founding in the late 18th century, Pittsburgh has occupied an important place in the USA's industrial landscape. Pittsburgh's location west of the Appalachian Mountains shaped its early patterns of industrialization, and with America's western migration and innovations in transportation, the region came to rely more and more on its rich mix of natural resources, growing capital, and human capital to rise to national—and international—recognition as an industrial juggernaut. Fueled by its rich deposits of coal, Pittsburgh innovated in energy-intensive materials manufacture such as iron and steel, non-ferrous metals, and glass. Product and system innovations followed, and institutions of knowledge production were created to drive further the development of the region. Inventors, engineers, and entrepreneurs populated the region and became truly legendary figures in the larger story of American industrialization. Although Pittsburgh became known by such phrases as "Hell with the lid off" and "the Smokey City," business cycles and structural changes in the national economy led to some tough times in the region. But continued investments in and growth of institutions of knowledge production and effective civic leadership proved to be key in the second half of the 20th century in transforming the region from its heavy dependence on "big steel" into a more diverse knowledge-based economy of specialty materials, science-based industries and services, and start-ups and young entrepreneurial firms. This illustrated lecture will end by arguing that geography, materials, and knowledge production remain key factors in the region's evolving economy.

**BIOGRAPHY**: A native of New Mexico, David A. Hounshell received an undergraduate degree in electrical engineering in 1972 from Southern Methodist University in Dallas, Texas, and M.A. (1975) and Ph.D. (1978) degrees in history from

## Continued on Page 19

**DINNER RESERVATIONS:** Please complete the **Online Dinner Reservation Form** NO LATER THAN Monday, February 4, 2019. The form is also located under the Meeting Notice on website www.sacp.org. & www.ssp-pgh.org. Should you not be able to access the form, please call 412-825-3220, ext. 212 the SACP & SSP Administrative Assistant to make your dinner reservation. The entrée choices for February are TBD.

Please let us know if you have any dietary restrictions. Dinner will cost \$10 (\$5 for undergraduate students). Checks can be made payable to the SACP or the SSP, depending on membership.

**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. Should any difficulties arise, please contact Duquesne University.

# Pittsburgh Section ACS Pittsburgh Award and Distinguished Service Award Banquet

The Pittsburgh Section of the American Chemical Society honors the recipients of the Pittsburgh Award and Distinguished Service Award at the annual Awards Banquet. This year the event was held on Thursday, December 6<sup>th</sup>, 2018 at the Grand Concourse in Station Square. Dr. Steven Little was presented with the 2018 Pittsburgh Award in recognition of his significant accomplishments. Dr. Guy Berry was the recipient of the Distinguished Service Award for his past contributions to the local section.

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. Dr. Gerald Holder, Dean Emeritus and Distinguished Service Professor at the University of Pittsburgh, introduced his colleague, Dr. Steven Little, who is currently the William Kepler Whiteford Endowed Professor of Chemical and Petroleum Engineering, Bioengineering, Pharmaceutical Sciences, Immunology, Ophthalmology and The McGowan Institute for Regenerative Medicine. Dr. Little presented an overview of his recent work and accomplishments to the audience before being presented with the Pittsburgh Award. To celebrate the event, several previous Pittsburgh Award winners were present including Debra Singer King (2017), David Waldeck (2013), and Kurt Olson (2011).

The Distinguished Service Award was established in 2007 to recognize outstanding volunteer service to the section. Dr. Mark Bier, Professor and Director of the Center for Molecular Analysis at Carnegie Mellon University, introduced his colleague, Dr. Guy Berry, who is Professor Emeritus of Chemistry and Polymer Science. Dr. Berry provided a summary of several notable accomplishments when he was active in the local section. To celebrate the Distinguished Service Award presentation, several past winners were in attendance including Fu-Tyan Lin (2017), Paul Johnson (2015), Heather Juzwa (2014), and Richard Danchik (2012).



2018 Pittsburgh Award winner Dr. Steven Little with past winners. From left to right: Debra Singer King, Kurt Olson, Steven Little, Guy Berry, David Waldeck.



2018 Distinguished Service Award winner Dr. Guy Berry with past winners. From left to right: Heather Juzwa, Guy Berry, Fu-Tyan Lin, Richard Danchik.

# Saint Francis University's ROCK Program Promotes Science Throughout Community

By Katherine (Katie) Augustine- Class of 2020

For the past 23 years, the Saint Francis University (SFU) ROCK program -Rural Outreach Chemistry for Kids has aimed to inspire children to explore the field of science. This year, ROCK extended its efforts to reach teachers in the Pittsburgh area. It also continued the DONUTS (Donating to Underfunded Teachers of Science) grant program, which

aims to help K-12 science teachers and their students.

SFU's ROCK student leaders and faculty travel to schools to conduct science experiments with students in their classrooms. Teachers select an activity that either fits their curriculum or that they are interested in sharing with their students. Each ROCK leader is required to have their clearances, including the Pennsylvania State Police Criminal Record

Check, Pennsylvania Child Abuse History Certification and F.B.I. fingerprint-based record checking.

Training to coordinate events, as well as practice is also required of students who participate in the ROCK program. Chemistry professors Edward P. Zovinka and Rose Clark lead the organization's outreach efforts. Student leaders include SFU seniors Grace McKernan, Bryant Onkst and Paul Kasunic and sophomore Devon Tozer. New leaders in training include junior Josie Gabler and freshmen Anthony Vassalotti, Kayla Rosas and Madison Palmer. "I do ROCK because I think it's important to get kids excited about science," said McKernan. "Sometimes kids don't get how important science can be in their daily lives. They get a hands-on experience in the classroom that they might not have otherwise, which is beneficial and conducive to learning." "ROCK has been impacting K-12 students through individual classroom visits over the years," said Zovinka. "By expanding our efforts by working with teachers in our area and Pittsburgh, our positive impact will grow."

In the past 22 years, ROCK has reached over 62,000 K-12 students

through hands-on learning activities. When ROCK was established in 1995, the group participated in six events were held and reached 105 students. In the 2017-2018 academic year, the group conducted 216 events and reached 5,662 students.

ROCK leaders led workshops for teachers at the Pittsburgh Conference Science Week on October 20. While visiting the David L. Lawrence Convention Center for

Pittcon's Science Week, student leaders Grace McKernan, Bryant Onkst, and Paul Kasunic teamed up with SFU Chemistry Club members Perez Youmbi and Kayla Grasso to lead events to help teachers find interactive teaching methods to use in their classroom.

The workshops conducted at this conference reached 40 K-12 teachers. Some of the highlights from the workshops included a super soakers activity with osmosis and disposable diapers, dropping water on pennies

#### Continued on Page 18



Seniors Bryant Onkst and Grace McKernan (left) and sophomore Devon Tozer (right) educate high school students at SFU's annual Science Day.

> During the Fall 2018 semester, the ROCK program visited Bishop Guilfoyle Catholic High School, Holy Trinity Catholic School. Hollidaysburg Area Elementary and High Schools, North Star Area High School, Tyrone Area High School, Divine Mercy Catholic Academy, St. Michael School and St. Patrick Catholic School. ROCK also expanded its efforts this fall by working in the Yough Area School District, as well as the Mount Pleasant Area School District. One of the program's primary goals is to reach more schools in the greater-Pittsburgh area.



# Practical Problem Solving with LC/MS – The Real World A Pittcon Quality Course in our Backyard

# Tuesday, March 5, 2019 Duquesne University – Power Center (8<sup>th</sup> Floor)

600 Forbes Ave, Pittsburgh PA 15282

## Prerequisite and Target Audience

Recommended for Analysts who have used LCMS previously or who want to see real world problems solved with the use of LCMS. Anyone using HPLC now and considering adding an LCMS detector to see what it will add to their lab, anyone doing chemical research, pharmaceutical analysis, food chemistry, organic synthesis, environmental analysis, QC, structural analysis, etc. will benefit from this course.

## **Questions Answered**

- $\sqrt{}$  What sensitivity is possible/expected? What causes sensitivity loss? What can be done to improve sensitivity?
- $\sqrt{10}$  Which is the better mobile phase for LCMS, Methanol or Acetonitrile? How long can a mobile phase be used?
- $\sqrt{}$  What additives can I use and what are the best? How much does concentration of additives/buffers matter?
- $\sqrt{}$  What is the best HPLC column for LCMS?
- $\sqrt{10}$  How can I make more ions? How can I minimize multiply charged ions?
- $\sqrt{10}$  How can I determine the best settings for collision energy or voltages?
- $\sqrt{}$  How can I improve quantitation reproducibility?
- $\sqrt{1}$  Is it better to have more resolution or more mass accuracy? What is spectral accuracy?
- $\sqrt{}$  Does nitrogen purity matter?
- $\sqrt{}$  What are the limitations of my current hardware?
- $\sqrt{}$  What software can I use to mine my data more effectively? How do I incorporate data-dependent experiments into my projects?

## Cost

Professionals: \$25.00	Students: \$15.00	Parking not included. Coffee and buffet lunch included.			
	Registration is limited	to the first 50 people.			
Please RSVP by Tuesday, February 26, 2019.					
Make check payable to SSP and mail the registration form below to:					
2	Heather Juzwa, Chair 2018-2019 SSP MSDG,	Chair 2018-2019 SSP MSDG, 321 Winners Circle, Canonsburg, PA 15317			
₩					
Name:	Affiliation:				
Mailing Address:					
Phone:	Email:				
MS Instrumentation a	nd software currently utilized:				
Please indicate dietary rest	rictions.				

www.pittsburghsectionacs.org

# Practical Problem Solving with LC/MS – The Real World A Pittcon Quality Course in our Backyard

# Tuesday, March 5, 2019 Duquesne University – Power Center (8<sup>th</sup> Floor)

600 Forbes Ave, Pittsburgh PA 15282 9:00 AM – 4:00 PM

# Abstract

This is a course in LCMS for people who have done some LCMS previously. It focuses on the practical aspects of LCMS. The key understanding will be the 'what, where, why and how' of LCMS including real world examples at each step. The course will pose various problems that people have and then show ways to solve each question. For example, one of the questions will be 'Why are my results changing when I haven't changed anything?' or 'How much can I improve my sensitivity without having to buy new hardware?'

Numerous practical applications will be used to illustrate key points such as how different classes of molecules ionize or how simple changes in chemistry affects sensitivity. It thoroughly explores how to avoid the pitfalls and problems most common for users of LCMS such as how to prepare a sample for LCMS analysis and how to develop LCMS friendly methods. The course will show how to deal with complex samples, improve sensitivity, and speed up analyses. Identification of common impurities and artifacts will also be covered. It will also explore specific application areas including data mining software.

# **About our Trainers**

The presenters have more than 50 years combined expertise with mass spectrometry. They teach these very course concepts at Pittcon and other conferences.

Bob Classon has several decades of experience with applications for both HPLC and LCMS, having worked at Waters Corporation and Shimadzu Scientific Instruments, Inc.. His focus is on getting better results from your existing instrumentation and improving sensitivity. He has delivered numerous talks, short courses and publications on chromatography and mass spectrometry.

Ross Willoughby has Pittsburgh roots and did his undergrad at the University of Pittsburgh. He was formerly the Vice President of R&D for Extrel, and is a pioneer in hardware design for mass spec. He is co-inventor of Particle Beam LC/MS, and has built LC/MS instruments. Ross has over 50 patents issued on mass spectrometer technology, and is also co-author of the popular book "A Global View of LC/MS."

# Practical Problem Solving with LC/MS – The Real World A Pittcon Quality Course in our Backyard

# **Tuesday, March 5, 2019** Duquesne University – Power Center (8<sup>th</sup> Floor)

600 Forbes Ave, Pittsburgh PA 15282

9:00 AM - 4:00 PM

# **Finding the Power Center**

The Power Center is located at 600 Forbes Avenue, Pittsburgh, PA 15282. There is a parking garage adjacent to the Power Center, also at 600 Forbes Avenue.

From the parking garage, take the elevator to the 8<sup>th</sup> floor level. At this level, go to the right and walk through the enclosed Skywalk to the Power Center Ballroom.

Once in the Power Center, you will be on the 5<sup>th</sup> floor where the Ballroom is located.

For driving directions to Duquesne University, please go to their website: <u>www.duq.edu</u>, under "About DU" then under Campus Map.







# The Visible Difference In Laboratory Science Expositions

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Pennsylvania Convention Center | Philadelphia, PA | March 18 - 21 | www.pittcon.org





321 Winners Circle, Canonsburg, PA 15317

# **TRIPARTITE 2019 REGISTRATION FORM**

Name:	Affiliation:	:	
Mailing Address:			
Email:		_ Phone:	
I am attending the luncheon.	Dietary Restrictions:		



Tripartite Symposium May 18, 2019



# **Dr. Bego Gerber**

• Chemists Without Borders: Past, Present and Future



# Dr. Ronda Grosse

• Applying Chemistry to Solve Problems in the Developing World



# Dr. Bakarr Kanu

 Studying Abroad in Chemistry: An Opportunity for Undergraduate Chemistry Researchers to have an International Impact in Chemical Education



# **Dr. Steven Chambreau**

• Chemists Without Borders Arsenic Project Development: Confronting the largest mass poisoning of a population in history by providing clean water in Bangladesh

## Chemists Without Borders: Past, Present and Future

#### **Bego Gerber**



Hear the remarkable story of some remarkable people making a remarkable difference. What are the foundations of Chemists Without Borders? Why does it exist? How does it work? Why does it matter? Who is affected? What have we learned? Where do we all fit in? What is possible?

Bego Gerber is Managing Director of Business Development International, a lifestyle marketing company, and is an Executive Associate accredited by the Institute for Independent Business. Dr Gerber's expertise ranges from academic medical research to patented new product development in a no-walls start-up and in Fortune 100 R&D; and from idea processing and information management to entrepreneurial lifestyle marketing and the development of B-Quadrant business-

es on the Internet. He also spent many years as a passionate court appointed special advocate for abused and neglected children. Bego was educated at Heriot-Watt University in Scotland, has Master's and Doctoral degrees from the University of California, Santa Barbara, and was a postdoctoral fellow at the Johns Hopkins University.

Bego is Chairman and Co-Founder of Chemists Without Borders, and focuses on board development, fundraising, public relations and partnerships.

## Applying Chemistry to Solve Problems in the Developing World



Ronda Grosse\*, Rolande Hodel, Marya Lieberman, Julian Tyson

Chemists Without Borders is a non-profit organization, comprised primarily of volunteer chemists, with the mission of solving humanitarian problems by mobilizing the resources and expertise of the global chemistry community and its networks. Work to date has involved clean water initiatives, science education in developing countries, and inexpensive tests for analysis of medicines. This presentation will review projects aimed at improving living conditions in South Asia, including measuring heavy metal concentrations in the Bangladesh food supply and renewable energy options for affordable housing in India. Projects in Africa include development of paper analytical devices to provide high quality chemical analysis of

pharmaceutical samples and prevent falsified or substandard medications. Recent work in Kenya will be shared. Additionally, AIDSfreeAFRICA has set up a laboratory in Cameroon for drug testing. The status of these initiatives, technical progress, and ongoing opportunities and challenges will be discussed.

Ronda Grosse received her Ph.D. in analytical chemistry from the Ohio State University and her B.S. in chemistry from Bethel University in St. Paul, Minnesota. She has worked as an industrial chemist for 25 years in laboratory and managerial roles at Dow Corning Corporation. Her primary expertise is in molecular spectroscopy, chromatography, and mass spectrometry for materials characterization. Ronda is an active member of the American Chemical Society. She is an advocate for science education and conducts chemistry demonstrations in local schools, as well as other outreach activities.

Ronda is on the Board of Directors at Chemists Without Borders. She serves as the organization's liaison with the ACS. Ronda actively supports Chemists Without Borders' projects by providing technical guidance and assisting with grant writing and other communications.

Ronda's international experience includes scientific research in Japan and an affordable housing project in India. She is passionate about improving quality of lives by combining science and service, and exploring sustainable ways that we can collectively create positive change in our global community. Originally from New Castle, Pennsylvania, she resides in Saginaw, Michigan, with her husband and two daughters.

## <u>Studying Abroad in Chemistry: An Opportunity for Undergraduate Chemistry Researchers to</u> <u>have an International Impact in Chemical Education</u> Bakarr Kanu



Developing undergraduate research through service learning is a high impact practice that can greatly influence student engagement and success. In this project, a team of scientists has been working to develop inexpensive microchemistry kits to facilitate Chemistry Education in West Africa. Since 2015, several undergraduate STEM majors have engaged in research with the nonprofit organization, Chemists Without Borders, to enhance chemistry education in Sierra Leone. The ultimate goal has been to provide chemistry laboratory kits to high school and first- year university students' in Sierra Leone by training teachers to use the kits in their classrooms. In addition to standard labs that will help students understand basic chemical concepts, most of the STEM experiments developed for this project will focus on the application of chemistry towards practical knowledge relevant to the lives of ordinary Sierra Leoneans. Currently, we have assembled 15-lab activity kits ready for use in Sierra Leone. To implement this project, we developed a study abroad class at Winston-Salem

State University (WSSU) and we expect to offer this class in spring 2019. Students enrolled in this course will have the opportunity to travel to Sierra Leone and conduct a workshop to train teachers who will in turn use the kits in their classrooms. In addition, they will have an opportunity to learn about the politics, history, and culture of Sierra Leone. Upon implementation of this project, we anticipate the kits to service between 200-500 teachers and students, covering approximately 50 schools in Sierra Leone annually. Our hope is that once this project is executed successfully, it will be expanded to other English-speaking countries. We anticipate this service learning research project will attract students from underrepresented groups and influence their engagement in STEM activities at WSSU and the broader community of scientists.

Dr. Kanu received his Ph.D. in Instrumentation and Analytical Chemistry from the University of Manchester, Manchester, United Kingdom in 2003. His Ph.D. work developed a novel sampling device with "active membranes" that reduced sampling time by 60% and increased sensitivity by 25%. His sampling device, interfaced to several separation-typed instruments was used to characterize environmental pollutants. One of his papers, published in the Journal of Environmental Monitoring, January 2007 issue, was selected to appear on the front cover of the journal as a current cutting-edge research development on environmental processes and impact. In 2008, a second paper he published in the Journal of Mass Spectrometry, January 2008 issue, appeared on the front cover of the journal. Dr. Kanu is an expert in separation-type instrumentation techniques including gas and liquid chromatography, mass spectrometry, capillary electrophoresis, ion mobility mass spectrometry, to name a few. Dr. Kanu currently has over thirty-two peer-reviewed scientific publications in top -rated reputable journals, over fifty presentations and two patents (related to sample introduction interfaces). Dr. Kanu has mentored several undergraduate and graduate students in research and is very interested in developing activities to increase number of minority students enrolled and retained in STEM disciplines. Since joining WSSU, he has mentored over thirty undergraduate students in research and many have presented their results at regional and national conferences. One of Dr. Kanu's mentees won the Best Poster in Chemistry award at the 2016 Annual Biomedical Research Conference for Minority Students (ABRCMS).

His current research is modifying separation-type instrumental techniques to achieve rapid analysis of chemical and biological compounds. He is interested in investigating the fate of compounds like environmental soil-gas and water contaminants, drugs, explosives, chemical warfare agents, total suspended particles, nucleotides, nucleosides, peptides, proteins, forensic, and biological samples in complex matrices. Dr. Kanu has been studying the ingredients from plant sources to identify chemical compounds that may be useful for promoting health and/or fighting diseases. Additionally, he is interested in the chemical synthesis of novel polymers that may be useful in alternate energy and military type applications.

Dr. Kanu is the American Chemical Society Student Chapter Faculty Advisor (WSSU Chapter). His responsibility is to provide guidance and mentorship to the executive members and foster their smooth operation. Since 2012, the organization has volunteered in a number of community events. Dr. Kanu has membership is eight professional organizations and he is the current WSSU representative to National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCChE) Collaborative Institutional. Dr. Kanu has developed curricular materials and pedagogical methods for instrumental analysis, quantitative analysis, and forensic chemistry. He has also developed and implemented guided inquiry projects in the laboratory portions of quantitative and instrumental analysis.

## Chemists Without Borders Arsenic Project Development: Confronting the largest mass poisoning

#### of a population in history by providing clean water in Bangladesh

#### **Steven Chambreau**



Dr Chambreau demonstrating the Hach arsenic test kit to students at Palmdale High School, Palmdale, CA

Back in the 1970s, in an attempt to provide hygienic drinking water in Bangladesh, the United Nations International Children's Emergency Fund (UNICEF) and other aid agencies began installing millions of tube wells in Bangladesh villages as an alternative source of drinking water to contaminated surface water supplies. The program, which continued through the 1980s, was an early success. Instances of cholera, microbe-caused diarrhea, and other diseases dropped dramatically. But no one thought to analyze water for trace and ultra-trace impurities, and soon the good news turned bad. By the early 1990s, villagers began breaking out with skin disorders and experiencing fatigue symptoms of arsenicosis from drinking the water. Arsenic poisoning in drinking water in Bangladesh has been identified as one of the world's greatest humanitarian disasters, with the World Health Organization characterizing the situation as "largest mass poi-

soning of a population in history." Out of 150 million people in Bangladesh, 35-77 million people are at risk from arsenic contamination of water. It is estimated that between 1-5 million children are at risk of death by arsenicosis, or arsenic poisoning, by 2030. Many countries with arsenic-contaminated groundwater do not face the same catastrophic outcomes as in Bangladesh, in part due to inaction on the part of the Bangladesh government. Clearly there are no simple, easily implemented solutions that would provide "arsenic-free" water in sufficient quantities to meet the requirements of communities in rural Bangladesh for drinking, cooking and irrigation of crops (particularly rice). Chemists Without Borders works to remedy this. The Arsenic Project in Bangladesh will be described from its inception and how the project has evolved into the work that is currently underway today, involving arsenic education, arsenic testing of wells and the development of alternative drinking sources in Bangladesh.

Steve Chambreau is a Co-founder of Chemists Without Borders, and has served the organization previously as Vice President, President and Director. Dr. Chambreau is a Research Scientist in the Propellants Branch at the Air Force Research Laboratory at Edwards Air Force Base, where he studies chemical dynamics. Steve grew up in California, attended school at UC Berkeley (BS 1993), San Diego State University (MS 1997), and UC Riverside (PhD 2002). He spent 2 years working as an NRC Associate at the Air Force Research Laboratory at Hanscom AFB near Boston, and 2 years as a postdoc with Professor Arthur Suits at Wayne State University investigating the H-atom roaming mechanism. Dr. Chambreau's primary interest in Chemists Without Borders involves water quality issues, and he initiated the Arsenic Project in Bangladesh. In his various roles, Dr. Chambreau assisted Chemists Without Borders development in many ways including development of the mission and vision statements, incorporating the organization and obtaining 501(c)(3) nonprofit status, fundraising, project development, and membership management.

#### Parking

Enter parking lot at the corner of Craft and Fifth Avenues. The AJ Palumbo Center is directly across the street from the parking lot.



# Pittscburgh Section ACS Welcomes New Chair Continued from Page 1

While the Section has continued to prosper, there is always room for improvements. Many of our successful programs rely on the continued involvement of a core group of dedicated volunteers. While we have seen some new involvement this past year, I encourage all our local members to consider becoming more active within the Section. I believe you would find it worth your time to dedicate an evening to join us for a monthly business meeting, an afternoon to volunteer for a local outreach event, or a few hours of your time to judge one of our various chemistry programs. The Pittsburgh Section provides wonderful opportunities to give back to the community, programs you may have been able to take advantage of yourself throughout your education and/or career.

This year I will work to foster more involvement from our membership by emphasizing more participation with our student chapters, many of which are annually recognized by the national ACS for their programs. For the Section to remain successful, we must begin to lay the foundation for our future leaders in the community. Many of our regional students are very active in their student chapters but we allow them to slip through our fingers upon graduation, despite many of them remaining in the Pittsburgh area. Perhaps this describes you? Whether you are a student, recent graduate, seasoned chemist, or retiree, there are many opportunities within ACS to give back to the chemical community of which you have already been a member.

To stay current with all of our ongoing activities, please visit our webpage at <u>www.pittsburghacs.org</u>, join our Facebook group at <u>www.facebook.com/group/PittsburghACS</u>, or download our Pittsburgh ACS Section mobile app. Please feel free to contact me with any questions, comments, or ideas at <u>bdavis@waynesburg.edu</u>.

## St. Francis University ROCK Program Continued from page 15

to show surface tension and hydrogen bonding, and studying the chemical reaction that occurs when a glow stick is snapped.

By teaming up with SFU's Chemistry Club, ROCK has continued the "DONUTS" initiative for a third year in 2018. DONUTS has raised up to \$750 annually and sold a minimum of 200 dozen doughnuts each year. The money raised is used to fund grants for science teachers at local schools.

This semester, ROCK and the Chemistry Club raised \$681 through doughnut sales. All the doughnuts were sold in 24 hours or less. Chemistry majors helped advertise the doughnuts by creating a message in the chemistry room out of sticky notes that said, "Buy Donuts Here". ROCK members and chemistry majors collected order forms and helped organize orders.

Saint Francis University's ROCK program continues to expand its outreach efforts. ROCK hopes to reach more students and pique their interest in the world of science. For more information about the program, contact Edward P. Zovinka at <u>ezovinka@francis.edu</u> or check out the ROCK program's website at <u>francis.edu/ROCK/.</u>



Chemistry club and ROCK members found a creative way to advertise doughnut sales in the chemistry lounge.

# **SACP/SSP February Meeting**

#### **Continued from Page 5**

#### Pratt Bio

Dr. Pratt's research group is already making noteworthy contributions to atmospheric chemistry that are enabled by advancements in analytical chemistry, allowing her to tackle critical scientific questions in the Arctic where low analyte concentrations and logistically difficult conditions challenge traditional methods. For her innovative research, she has received numerous awards, including the American Society for Mass Spectrometry Research Award (2014), Society for Analytical Chemists of Pittsburgh Starter Grant Award (2014), National Academy of Sciences Gulf Research Program Early Career Fellowship (2016), Sloan Research Fellowship in Chemistry (2017), American Chemical Society James J. Morgan Environmental Science & Technology Early Career Lectureship (2018), Department of Energy Early Career (2018), Analytical Scientist Top 40 under 40 Power List (2018), and Eastern Analytical Symposium Young Investigator Award (2018). She is a working group co-chair of the International Global Atmospheric Chemistry (IGAC) Project activity "air Pollution in the Arctic: Climate, Environment, and Societies" (PACES) and is the liaison between PACES and the IGAC activity "Cryosphere and Atmospheric Chemistry" (CATCH). In addition, she is on the National Center for Atmospheric Research Atmospheric Chemistry Observations & Modeling Laboratory Advisory Panel for Instrumentation and ACS Earth & Space Chemistry Editorial Advisory Board. She has also made significant contributions to teaching through her development of a novel introductory chemistry laboratory course involving a semester-long authentic research experience in snow chemistry, for which she was awarded the University of Michigan Chemistry Seyhan N. Ege Junior Faculty Award (2016) and College of Literature, Science, and the Arts Individual Award for Outstanding Contributions to Undergraduate Education (2017).

#### Hounshell Bio

the University of Delaware in Newark, Delaware. His research focuses at the intersection of science, technology, business, and government policy. He began his teaching career at Harvey Mudd College in Claremont, California, in 1977 and later taught at the University of Delaware for twelve years. Carnegie Mellon University named him Henry R. Luce Professor of Technology and Social Change in 1991. In 1999, he became the David Roderick Professor of Technology and Social Change at CMU and held this professorship until his "retirement" in 2017. Hounshell has also taught as a visiting professor at the Technical University of Munich (Germany) and Chalmers Technological University in Gothenburg, Sweden. In 1978, Hounshell won the Browder J. Thompson Prize of the Institute of Electrical and Electronics Engineers, of which he is now a Life Member. His 1984 book, From the American System to Mass Production, 1800-1932 (Johns Hopkins University Press) received the Dexter Prize of the Society for the History of Technology in 1987. His 1988 book (with John Kenly Smith, Jr.), Science and Corporate Strategy: DuPont R&D, 1902-1980, (Cambridge University Press) received the Newcomen Book Award of the Business History Conference in 1992. Hounshell is the recipient of the Business History Conference's Harold Williamson Medal (1992) and the Society for the History of Technology's Leonardo da Vinci Medal (2007). He was named a Fellow of the American Association for the Advancement of Science in 2001 and served as President of the Society for the History of Technology, 2003-2004. Hounshell has also served as a Research Fellow at the Smithsonian Institution and was Marvin Bower Fellow at the Harvard Business School. Most recently, Hounshell chaired a panel of the National Academy of Sciences/National Research Council that commemorated the 100th anniversary of the NAS's/NRC's participation in World War I. Hounshell is currently at work on a history of industrial research, 1875-2015.



Dear Academic ACS Pittsburgh Section Members,

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. Awards will be made based on the scientific merit of the paper/poster to

be presented, financial need, and preference will be given to ACS members.

To apply for the funds, applicants should complete the attached application and return it by the relevant deadline. The deadlines for receipt of applications are as follows:

- 06/01 (for travel to be completed by 12/31)
- 12/01 (for travel to be completed by 06/30)

As noted on the application, students should include an abstract and confirmation (if received) of the paper/poster being accepted for the Meeting. In addition to the application form, applicants should include a recommendation letter from the PI of the project being presented and/or a recommendation letter from another and a personal statement as to the anticipated benefits of meeting attendance.

Applications can be made electronically (preferred) by emailing the application to Heather Juzwa

(<u>hljuzwa@shimadzu.com</u> or <u>heather\_sapko@hotmail.com</u>) or by mailing a hard-copy application (Pittsburgh Section ACS Travel Grants / Heather Juzwa / Center / 321 Winners Circle / Canonsburg, PA 15317).

Since 2013, the Pittsburgh Section of the ACS has awarded up to four \$500 grants each year to aid

our undergraduate/graduate student members in presenting papers or posters at ACS Meetings.

This is an ongoing program in our Section, and details will be updated on our website, (<u>www.pittsburghACS.org</u>, as necessary.

Applicants will be notified via email that their application was received. All efforts will be made to announce awards within two weeks of the application deadline, and all applicants will be notified of the final committee decisions. 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 me.

#### Sincerely,

Heather Juzwa, ACS Pittsburgh Section Student Travel Grants, Chair

Senior Field Sales Engineer, Shimadzu Scientific Instruments, Inc.



# www.pittsburghacs.org

	Application Deadline	Travel Completion Date
	December 1 <sup>st</sup>	June 30 <sup>th</sup> (subsequent year)
	June 1 <sup>st</sup>	December 31 <sup>st</sup> (same year)
Name of App	icant:	
Name of Insti	tution:	
	Undergraduate Student / Year	
	Graduate Student / Year	
Mailing Addr	ess to Receive Payment if Awarded	
Email:		Phone:
PI:		
	ahin Na *.	
ACS Member	snip 1\0.*:	
*If you do no	t know your ACS number, please email <u>h</u>	<u>ljuzwa@shimadzu.com</u> to receive it by email.
Meeting Loca	tion:	Meeting Date:
Drainat Titla		
Project Thie:_		
Paper	Presentation Poster Present	ation
*Please attack	h a copy of your project abstract to the app	plication.
Has your proj	ect been accepted? Yes No	
*Attach docu	mentation regarding acceptance if receiv	red at point of application.
Will this be ye	our first presentation at an ACS national or	regional meeting? Yes No
If no, please l	st conferences at which you have presente	d:
www.pittsburg	hsectionacs.org	

Pur	nose	of	orant:
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Other funding sources (if any):

Personal Statement of anticipated benefits of meeting attendance

Has the applicant received a travel grant from the ACS Pittsburgh Section in the past? Yes No

If your application was selected, the Pittsburgh Section of the ACS would like you to write a short (one page) description of your activity upon completion of the conference for publication in our monthly newsletter, The Crucible, and on our website. The description is due within 30 days of the meeting attended.

I am willing to complete this report: Yes No

Signature:

Date: \_\_\_\_\_

Send completed hard-copy applications and supporting documentation to:

Pittsburgh Section ACS Travel Grants Heather Juzwa 321 Winners Circle Canonsburg, PA 15317

# **Business Directory**

# Services

# Services

# Services

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Amy Rupert 350 Sunset Rd. Pittsburgh, PA 15237 <u>treasurer@pittsburghacs.org</u>

# **Crucible Deadline**

The deadline for items submitted to The Crucible is the 15<sup>th</sup> of the month prior to publication. For example, all items for the February 2019 issue must be to the editor by January 15, 2019.

# 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!

**Volunteers Needed!** 



Society for Analytical

# **Chemists of Pittsburgh**

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# 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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# The Crucible

A newsletter of the Pittsburgh Section of the American Chemical Society

124 Moffett Run Rd. Aliquippa, PA 15001

#### **Change of Address**

If you move, notify the American Chemical Society, 1155 Sixteenth Street, N.W., Washington, D.C. 20036. To avoid interruption in delivery of your CRUCIBLE, please send your new address to Traci Johnsen, 124 Moffett Run Rd., Aliquippa, PA 15001. Allow two months for the change to become effective.

# Pittsburgh Area Calendar

#### Wednesday, January 9

#### **SACP Technical Meeting**

#### "The Ecology Within – The Human Microbiome"

Dr. Barbara Methe, Department of Medicine, University of Pittsburgh

Duquesne University, Pittsburgh, PA

#### **SSP Technology Forum**

#### "Human Influence on Climate Change"

Dr. Josef P. Werne, Department of Geology and Environmental Science, University of Pittsburgh Duquesne University, Pittsburgh, PA

#### Thursday, January 17

#### **ACS Energy Technology Group**

#### "Shale Gas Extraction and Public Health"

Heather Harr, League of Women Voters of Pennsylvania Lombardozzi's Restaurant - Bloomfield, 4786 Liberty Ave, Pittsburgh, PA 15224

#### Wednesday, February 13

## SSP Technology Forum "Novel Applications of Mass Spectrometry to

## Atmospheric Chemistry"

Dr. Kerri Pratt, University of Michigan Duquesne University, Pittsburgh, PA

#### Wednesday, February 13

#### **SACP Technical Meeting**

"Pittsburgh's Industrial History Through the

## Lenses of Geography, Materials and Knowledge Production"

Dr. David A. Hounshell, David Roderick Professor, Emeritus, of Technology and Social Change, Carnegie Mellon University Duquesne University, Pittsburgh, PA

#### Tuesday, March 5

Pittsburgh Mass Spec Discussion Group "Practical Problem Solving with LC/MS—The Real World" Duquesne University Power Center 600 Forbes Ave, Pittsburgh, PA

#### March 18-21

Pittcon Pennsylvania Convention Center, Philadelphia, PA