



The Crucible www.pittsburghacs.org

Volume: C No.8 April 2015

89th American Chemical Society Colloid and Surface Science Symposium

June 14 – 17, 2015

Hosted by Carnegie Mellon University Pittsburgh, Pennsylvania

Symposium Website: http://colloids2015.org

The 89th annual technical meeting of the American Chemical Society Division of Colloid and Surface Chemistry will highlight the latest fundamental and applied advances in colloid and surface science, including its key roles in a diversity of related disciplines. Traditionally organized and hosted by a university that has a deep commitment to colloid and surface science, the Symposium thrives on strong international attendance by participants from academia, industry and national laboratories and has become established as a premier conference in this field. Approximately 500 oral and poster presentations are expected. Online abstract submissions will be accepted from January 5 – April 1, 2015.

In addition to 13 technical symposia and a poster session, this Symposium features two plenary lectures, the Unilever Award Lecture, the Victor K. LaMer Award Lecture, and an instrument exhibition. The social program includes the welcoming dinner reception on Sunday evening, June 14, the Monday afternoon poster session with refreshments, and the Tuesday evening Symposium Banquet at the Carnegie Museum of Natural History.

This year's plenary speakers are Professor Tejal Desai of the University of California at San Francisco and Professor David Pine of New York University. In addition, each of the technical symposia features two keynote speakers. The symposia, their organizers and keynote speakers can be found on *page 8*.

Please visit the Symposium website http://colloids2015.org for more information and to submit an abstract, or contact one of the Symposium Co-Chairs, Stephen Garoff (sg2e@andrew.cmu.edu), James Schneider (schneider@cmu.edu) or Robert Tilton (tilton@cmu.edu).

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Carnegie Mellon 2015 Pittsburgh Conference Lecture II

"Mass Spectrometry"

Thursday, April 2, 2015



Henry Bohn Hass Distinguished Professor

Dr. R. Graham Cooks

Department of Chemistry
Purdue University

This talk sketches recent rapid progress in mass spectrometry as an analytical method, focusing on its use in intrasurgical tissue analysis (tumor margins and tumor types) and in point-of-care diagnostics (therapeutic drug levels in blood). These two areas of endeavor form the basis for an enquiry into mass spectrometry as well as its relationship to analytical chemistry and to spectroscopy.

Pittsburgh Athletic Association 4215 Fifth Avenue, Oakland, PA

5:45 P.M. Bar Social Hour **6:45 P.M.** Dinner (must RSVP) **7:45 P.M.** Lecture (free to the public)

- -Parking is free in the PAA lot for the first 40 cars pick up token inside.
- -Dinner is complimentary for the first 60 pre-registered guests and **FREE for students who RSVP** until the max attendance is reached, otherwise dinner is \$20. Pay at the door with cash or check made out to SSP or SACP. -**RSVP by noon on Friday, March 27**th to Sara Wainer (swainer@andrew.cmu.edu) with dinner choice of crab cakes, chicken marsala, or grilled vegetables.

BIOGRAPHY

R. G. Cooks is a chemist who obtained his first Ph.D. in 1965 from the University of Natal, South Africa and his second Ph.D. from Cambridge University, United Kingdom in 1967 where he also did Post-doctoral research. He next joined Kansas State University from 1968-71 as an Assistant Professor and then went on to Purdue University where he has been a professor for 40 years. Prof. Cooks is a MS instrumentation and chemical methods developer and has made tremendous contributions in MS/MS, quadrupole ion trap MS, SID, soft landing MS, DESI and miniature mass spectrometers. He is the recipient of 40 patents, has started four companies at Purdue, and helped establish the *Center for Analytical Instrumentation* at Purdue. He received the Ferst Award for mentoring Graduate Students in 2012 and has advised over 128 graduate students.

Dr. Cooks will also present a free lecture titled "Chemical and Materials Synthesis Using the Mass Spectrometer" at Carnegie Mellon in the Mellon Institute Conference Rm. (4400 Fifth Ave.) at 4:30 P.M. on the same day.

Sponsored by: PittCon, SSP, SACP & Carnegie Mellon



Society for Analytical Chemists of Pittsburgh



April Meeting - Former Chair Night

Monday, April 6, 2015 - 8:00 PM Duquesne University

"Desalination: Needs, Current State of the Art, and a New Electrochemical Approach"

Richard M. Crooks, Ph.D.

University of Utah

"Pittsburgh Analytical Chemistry Award Recipient"

Abstract: Fresh water is required to sustain life. However, the world is facing a global challenge to reliably supply its population with safe water due to shortages stemming from population growth, climate change, contamination of available fresh water supplies, and public policy. Presently, the United Nations estimates one-third of the world's population (~2.4 billion people) is living in water stressed regions, meaning the annual water supply is <1,700 m3 per person. Even more alarming, this number is expected to approach two-thirds of the world's population by 2025. Water shortages are not just limited to those living in arid or developing regions; the effects are now being acutely felt by those living in fresh water-rich environments.

Increasing the availability of fresh water is a complex problem that does not have one simple solution. Consequently, technological developments providing a synergy of solutions will likely be required to address the world's water challenges. The first step toward ensuring water for all is the efficient use and conservation of currently available fresh water supplies. Encouragingly, there are examples in the developed world of per-capita water use decreasing due to more efficient agricultural, industrial, and personal practices. Nevertheless, similar to petroleum reserves, continued economic development of populous countries like China and India will exert new stresses on world-wide water resources.

In this presentation I will discuss many of the underlying concepts guiding the development of desalination technologies, while highlighting a new electrochemical approach, electrochemically mediated desalination (EMD), that our group is currently developing. Although not comprehensive, this talk will provide an introduction to the broad field of desalination, including modern thermal, membrane, and electrochemical technologies.

Biograhy: Richard M. Crooks received a B.S. degree in Chemistry from the University of Illinois at Urbana-Champaign in 1981. During his undergraduate studies he was a member of Prof. Larry Faulkner's research group and studied adsorption of organic molecules onto mercury electrodes. His doctoral studies with Prof. Allen J. Bard at the University of Texas at Austin focused on the examination of electrochemical processes in supercritical fluids. He studied chemical sensors in the group of Prof. Mark S. Wrighton at MIT from 1987-1989. Prof. Crooks started his independent career in 1989 as an assistant professor of chemistry at the University of New Mexico and then moved to Texas A&M University in 1993. In 2005 he returned to the UT-Austin where he is presently the Robert A. Welch Chair in Materials Chemistry. His interests include synthesis, characterization, and electrocatalytic properties of nanoparticles, microelectrochemical sensors, and bioelectrochemistry. He has published ~260 peer-reviewed research papers and is the recipient of several awards including the Carl Wagner Memorial Award of the Electrochemical Society, the American Chemical Society Electrochemistry Award, the Society for Electroanalytical Chemistry C. N. Reilley Award, and the Pittsburg Award in Analytical Chemistry. In addition to his scientific and pedagogical interests, he enjoys detective fiction, distance running, and ranching (on a very small scale).

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



The Spectroscopy Society of Pittsburgh



April Meeting Wednesday, April 15, 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

"Smoke, Mirrors and Black Boxes Expanding our Understanding of Mars"

Rohit Bhartia, Ph.D., Planetary Chemistry and Astrobiology, JPL/NASA/Caltech

The next Mars mission is scheduled to launch in 2020. This mission includes a roving platform with a suite of spectroscopic and imaging instruments that will be used to explore the surface and near subsurface of Mars with the expressed goal to search for potential biosignatures. One of the instruments, SHERLOC, is an arm-mounted deep UV fluorescence and Raman spectrometer that enables non-contact, spatially resolved, high sensitivity detection and characterization of organics and minerals. This talk will discuss the overall mission, the development of SHERLOC, and how we will utilize deep UV spectroscopic methods to assess past aqueous history, detect the presence and preservation potential of biosignatures, and support the selection of samples for caching and potential return to Earth.

Rohit Bhartia is Research Scientist at the Jet Propulsion Laboratory where he has been leading research instrument development for deep UV fluorescence and Raman based instruments for both astrobiological science interests and defense related hazard/threat analysis since 1998. He holds a BS in Bacteriology from the University of Wisconsin-Madison, and an MS in Biomedical Engineering & Image Informatics and a Ph.D in Geological Sciences from the University of Southern California. He currently leads efforts in field deployable deep UV fluorescence/Raman instruments for subsurface organics and microbial analysis and research efforts in in-situ correlative microscopy for mineral, organic, and biological analyses and is the Deputy-PI on the Mars 2020 flight instrument SHERLOC.

TECHNOLOGY FORUM - 5:30 PM

Duquesne University - Laura Falk Hall located in Mellon Hall

"Broccoli and Your Health: Why It Might Be a Superfood"

Thomas Kensler, University of Pittsburgh

Health reflects the ability of an organism to adapt to stress. Stresses — metabolic, proteotoxic, mitotic, oxidative and DNA-damage stresses — contribute to the etiology of cancer and other chronic degenerative diseases. Our work demonstrates that activation of the Kelch-like ECH-associated protein 1 (KEAP1)—NF-E2-related factor 2 (NRF2)-signaling pathway is an adaptive response to environmental and endogenous stresses and serves to render animals resistant to chemical carcinogenesis, other forms of toxicity, and inflammation whilst disruption of the pathway exacerbates these outcomes. The Keap1-Nrf2 pathway can be induced by thiol-reactive small molecules including dithiolethiones (e.g., oltipraz), isothiocyanates (e.g., sulforaphane) and triterpenoids (e.g., CDDO-Im) that demonstrate protective efficacy in preclinical chemoprevention models and in clinical trials. Thus, targeting the pathway may provide important opportunities for disease prevention. Recent trials have focused on interventions with broccoli sprout-derived beverages (rich in sulforaphane) as modulators of environmental exposures to food contaminants such as aflatoxin and air pollutants.

Continued on Page 9

Please register on-line at http://www.ssp-pgh.org/monthly-meeting-rsvp/ to make dinner reservations NO LATER THAN Thursday, April 9, 2015 at noon. 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



SSP presents:

Continuing Education Facility tour to Pittsburgh Water & Sewer Authority



Date: Saturday, April 18, 2015 Time: 10:00 AM – 1:30 PM

Location: 900 Freeport Road, Pittsburgh, PA 15238

(Detail instruction to get into the location may be sent to the registered participants later)

Agenda

10:00 am Registration open

10:15 am Tour to Pittsburgh Water & Sewer Authority

Noon Lunch at Walnut Grill, Fox Chapel

(Waterworks Mall, 911 Freeport Rd, Pittsburgh, PA 15238)

1:30 pm Closing

- Open to public but need advanced registration.
- > Registration Fee is \$10.00 required in advance.
- Registration Deadline: April 3, 2015.

To register, complete the form below, and send it and a check for \$10.00, payable to SSP, to Ms. Shana Tokarski, c/o SSP, 300 Penn Center Blvd., Suite 332, Pittsburgh, PA 15235, no later than April 3, 2015.

Lunch menu (choices for sandwiches, including a vegan option) will be available on side.

## Lunch menu (choices)	or sunuwiches, including a vegan option) will be available on side.			
	detach here			
SSP Continuing Education PWSA Tour - Saturday April 18, 2015. Please do not forget to mark the box if you can attend the lunch.				
Name	Need lunch: E-mail address			
Open to public but pleaso	mark your affiliation if you are a member of: SSP SACP ACS			
Phone:	Affiliation			
Guest Name	Need lunch:			
Cuast Nama	Need lunch:			



Chemists Celebrate Earth Day 2015 Illustrated Poem Contest



The Pittsburgh Section of the American Chemical Society (ACS) is sponsoring an illustrated poem contest for students in Kindergarten - 12th grade.

Contest Deadline: Entries must be received by Wednesday, April 22, 2015.

First Prize of \$50 will be award in each of 4 grade categories: K-2nd, 3rd-5th, 6th-8th and 9th-12th grades.

Mail entries to: Michael Mautino, 3485 Frye Ave., Finleyville, PA 15332

Include on back of entry: student name, grade, school name, teacher name, teacher phone number and teacher e-mail address. For home school students please use parent/quardian information in place of teacher.

Winners of the Pittsburgh Section ACS illustrated poem contest will advance to the ACS National Illustrated Poem Contest! Questions: contact michael.mautino@bayer.com

Write and illustrate a poem using the CCED theme, "Climate Science-More Than Just A Weather Report!". Your poem must be **no more** than 40 words, and in the following styles to be considered:

· ABC POEM · FREE VERSE · END RHYME BLANK YERSE HAIKU . LIMERICK

Possible topics related to water and chemistry include:

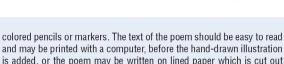
- · Seasons and weather
- · Particulate matter
- · Greenhouse Gases

- Ultraviolet light
- · Atmospheric changes

Entries will be judged based upon:

- Relevance to and incorporation of the theme
 Various physical properties of water
- Word choice and imagery
- · Colorful artwork

- Any other relevant topics



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 2015 theme, "Climate Science-More Than Just A Weather Report!".
- · 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,
- 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 illustrated poems and/or digital representations 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.

American Chemical Society

Earth Day



SSP Continuing Education presents:

Visit The Parent Education & Advocacy Leadership Center (PEAL Center)

The PEAL Center is an organization of parents of children with special health care needs and disabilities reaching out to assist:

- Families of children with disabilities or special health care needs.
- Professionals and others who assist children with disabilities or special health care needs.
- Children, youth and young adults with disabilities or special health care needs ages 0-26. (http://www.pealcenter.org).

We will learn the history and services provided by The PEAL Center and how science impacts diagnosis, treatment and the future of children with disabilities.

Date: Saturday, May 2, 2015 Time: 10:00 AM – 11:30 AM

Location: 1119 Penn Avenue Suite 400, Pittsburgh, PA 15222

Agenda

10:00 am Registration (Coffee and Bagels)
 10:15 am Overview of the Services the PEAL Center Provides (presented by Cindy Duch, Director of Parent Advising)
 11:00 am Questions and Discussion
 11:30 am Adjourn

- > Open to the public but advanced registration is required. Space is limited.
- ➤ Parking available in the Grant Transportation Center Blue Lot. The parking fee will be paid by the SSP.
- Registration Deadline: April 15, 2015.

To register, complete the form below, and send it to the SSP Administrative Assistant, c/o SSP, 300 Penn Center Blvd., Suite 332, Pittsburgh, PA 15235, no later than April 15, 2015.

89th American Chemical Society Colloid and Surface Science Symposium

Symposium, Organizers and Keynote Speakers

Continued from Page 1

- Electrokinetics and Microfluidics: Aditya Khair (Carnegie Mellon) and Martin Bazant (MIT) oKeynotes: Sumita Pennathur (UC Santa Barbara) and David Saintillan (UC San Diego)
- •Self- and Directed Assembly of Molecules and Particles: Eric Furst (University of Delaware) and Ilona Kretzschmar (City College of New York)
 - oKeynotes: Emanuela Bianchi (TU Vienna) and Anand Yethiraj (Memorial University)
- Capillarity, Wetting and Particles at Fluid Interfaces: Sachin Velankar (University of Pittsburgh) and Alidad Amirfazli (York University)
 - oKeynotes: Heinrich Jaeger (University of Chicago) and Glen McHale (Northumbria University)
- •Structure and Dynamics of Suspensions, Emulsions and Foams: Lynn Walker (Carnegie Mellon) and Jan Vermant (ETH Zurich) oKeynotes: Dominique Langevin (CNRS and Université Paris Sud) and Michael Solomon (University of Michigan)
- Friction, Adhesion and Surface Forces: Orlando Rojas (Aalto University and North Carolina State University) and Noshir Pesika (Tulane University)
 - oKeynotes: Jacob Israelachvili (UC Santa Barbara) and Suzanne Giasson (University of Montreal)
- Colloidal Phenomena in Atypical Liquids: From Ionic Liquids to Low Dielectric Liquids: Paul Sides (Carnegie Mellon) and Dennis Prieve (Carnegie Mellon)
 - oKeynotes: Ian Morrison (Harvard University) and Norman Wagner (University of Delaware)
- •Nanomedicine: Kathryn Whitehead (Carnegie Mellon) and Ashutosh Chilkoti (Duke University) oKeynotes: Suzie Pun (University of Washington) and Warren Chan (University of Toronto)
- •Biomembranes and Cellular Mechanics: Kris Noel Dahl (Carnegie Mellon) and Markus Deserno (Carnegie Mellon) oKeynotes: Jay Groves (UC Berkeley) and Peter Butler (Pennsylvania State University)
- •Colloidal Principles in Environmental Systems: Gregory Lowry (Carnegie Mellon) and Mark Wiesner (Duke University) oKeynotes: Navid Saleh (University of Texas) and Vijay John (Tulane University)
- Proteins and Polymers under Confinement or at Interfaces: Deborah Leckband (University of Illinois) and Per Claesson (Royal Institute of Technology)
 - oKeynotes: Wuge Briscoe (University of Bristol) and Christine Keating (Pennsylvania State University)
- •Nanoscale Imaging and Spectroscopy of Interfaces: Miguel Salmeron (Lawrence Berkeley National Laboratory) and Eric Tyrode (Royal Institute of Technology)
 - oKeynotes: Franz J. Giessibl (University of Regensburg) and Colin Bain (University of Durham)
- Colloidal Properties of Graphene, Nanotubes and Low Dimensional Materials: Jeffrey Fagan (NIST) and Matteo Pasquali (Rice University)
 - oKeynotes: Ivan Smalyukh (University of Colorado) and Ming Zheng (NIST)
- •General Papers: Todd Przybycien (Carnegie Mellon) and Nicolas Alvarez (Drexel University) oKeynotes: Huda Jerri (Firmenich) and Matthew Lynch (Procter and Gamble)
- Poster Session: Teresa Kirschling (NIST) and Christopher Wirth (Cleveland State University)



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Spectroscopy Society of PittsburghTechnology Forum - Continued from Page 4

Thomas Kensler received his Ph.D. in toxicology from M.I.T. Following postdoctoral fellowships at the McArdle Laboratory for Cancer Research, University of Wisconsin and at the National Cancer Institute in Bethesda, MD, he joined the faculty of the Johns Hopkins Bloomberg School of Public Health, Baltimore MD in 1980. In 1992 he was promoted to the rank of Professor. From 2000 to 2006 he served as director of the Division of Toxicology. In 2010 he moved his primary appointment to the University of Pittsburgh and hold appointments as Professor in the Department of Pharmacology & Chemical Biology and the Department of Environmental and Occupational Health. He also holds several Visiting Professorships in China. His research interests are in environmental carcinogenesis and cancer prevention. He is a past chairman of the NIH Chemo/Dietary Study Section, served as the Cancer Prevention editor for the journal Carcinogenesis and is currently a Senior Editor for Cancer Prevention Research. He has received several honors including the 2007 AACR-American Cancer Society Award for Research Excellence in Cancer Epidemiology and Prevention, the 2009 Society of Toxicology Translational Impact Award and the 2011 Friendship Award from the People's Republic of China, their highest award for foreign civilians. He is a 2014 Thomson Reuters Highly Cited Researcher.

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- Professional Networking within the Spectroscopy Community
- Monthly Symposia by Prominent Researchers
- Promoting Science Education

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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 May 2015 issue must be to the editor by April 1, 2015.

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The Crucible

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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

Thursday, April 2

Carnegie Mellon 2015 Pittsburgh Conference Lecture II

"Mass Spectrometry"

Dr. R. Graham Cooks, Department of Chemistry, Purdue University Pittsburgh Athletic Association, 4215 Fifth Ave., Oakland, PA

Monday, April 6

Society for Analytical Chemists of Pittsburgh

"Desalination: Needs, Current State of the Art, and a New Electrochemical Approach"

Richard M. Crooks, Ph.D., University of Utah, Pittsburgh Analytical Chemistry Award Recipient Duquesne University, Pittsburgh, PA

Wednesday, April 15

The Spectroscopy Society of Pittsburgh

"Smoke, Mirrors and Black Boxes Expanding our Understanding of Mars"

Rohit Bhartia, Ph.D., Planetary Chemistry and Astrobiology, JPL/NASA/Caltech Duquesne University – Laura Falk Hall located in Mellon Hall, Pittsburgh, PA

The Spectroscopy Society of Pittsburgh - Technology Forum

"Broccoli and Your Health: Why it Might be a Superfood"

Thomas Kensler, University of Pittsburgh

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

Saturday, April 18

SSP Continuing Education Facility Tour to Pittsburgh Water and Sewer Authority

Pittsburgh Water & Sewer Authority, Lunch at Walnut Grill, Fox Chapel

Saturday, May 2

SSP Continuing Education Facility Visit the Parent Education & Advocacy Leadership Center (PEAL) Center 1119 Penn Ave, Suite 400, Pittsburgh, PA