Spectroscopy Society of Pittsburgh
Society for Analytical Chemists of Pittsburgh

JANUARY JOINT MEETING

MONDAY, January 9, 2012

The University Club
University of Pittsburgh
in Oakland

Technology Forum Speaker's Presentation *(Conference Room A, 3rd Floor)*: **5:30PM**
Social Hour *(Lobby B, Ivy and Gold Room, 2nd Floor)*: **5:30 – 6:30 PM**
Dinner *(Ballroom B, 2nd Floor)*: **6:30PM**
Business Meeting *(Ballroom A, 1st Floor)*: **8:00PM**
Student Affiliate Meeting *(Conference Room A, 3rd Floor)*: **8:00PM**
Technical Program Speaker's Presentation *(Ballroom A, 1st Floor)*: **8:15PM**

Deadline for Dinner Reservations: Thursday, December 29, 2011
ONLINE RESERVATION FORM

TECHNOLOGY FORUM - 5:30 PM
Ellen Show, Heinz History Center

"How Pittsburgh Changed the World"

Welcome to Pittsburgh - come with me and watch Andrew Masich, President of the History Center tell us about the impact Pittsburgh has had on the world which began as far back as 1758 with the "Clash of the Empires." The spirit of the people of this city has led to innovations including weapons, transportation, industry, medicine, culture, sports, robotics and the environment. Where would you and the world be without Pittsburgh?

Biography: Ellen Vasey Show was born and raised in McKeesport, Pennsylvania and retired in 2003 after many years as a nurse, health care administrator, and business owner of a hospital management consulting firm. For 13 years, from 1995 through 2008, she organized and trained volunteers at the McKeesport Heritage Center, and in 2010 was inducted into the McKeesport High School Hall of Fame. Ellen joined the Heinz History Center and Western Pennsylvania Sports Museum as a Volunteer Concierge and Ambassador in 2008. In addition to assisting with special events, Ellen is one of the History Center's busiest Ambassadors, researching, writing, and lecturing on the role of women in Western Pennsylvania to an ever-expanding wide variety of community organizations.

TECHNICAL PROGRAM – 8:15 PM
J. Fraser Stoddart, Ph.D., Northwestern University

"Nanoporous Carbohydrate Metal-Organic Frameworks"

The recent focus on developing green energy technology has created significant interest in using porous materials for the safe storage of clean, gaseous fuels, as well as carbon dioxide capture and sequestration. Porous materials that meet these criteria and can be derived from safe, renewable materials are of special interest. Recently, we have discovered a new class of microporous metal-organic frameworks (MOF), termed CD-MOFs, which are comprised of γ-cyclodextrin, a macrocycle comprised of eight α-D linked glucopyranosyl residues (γ-CD) and alkali metal salts which self-assemble to form porous crystals with surface areas of up to 1200 m^2/g. Our investigations of these materials have uncovered a number of interesting structural and reactive properties based on the type of CD used (i.e., α or γ, □□□□□□□β) and the choice of alkali metal salt. Crystals of this material have demonstrated permanent porosity as characterized by powder X-ray diffraction, and are persistent in organic solvents such as MeOH, EtOH, iPrOH, CH_2Cl_2, and Me_2CO. CD-MOFs can be synthesized in gram quantities using a variety of alkali metals under mild conditions in the laboratory.

The synthesis involves the precipitation of crystals from an aqueous solution containing the metal salt and γ–CD by vapor diffusion of an alkyl alcohol (e.g., MeOH). While these conditions could be considered mild for a typical laboratory setting, CD-MOF can also be made using entirely food-grade certified materials. By using food-grade γCD, potassium benzoate (a common preservative) and grain alcohol (95% EtOH), we can synthesize, to our knowledge, the first edible MOF. More recently, we have demonstrated the unusually strong and selective uptake of CO_2 gas by CD-MOF-2 (obtained from γ-CD and RbOH) by what is believed to be a reversible carbon fixation process involving carbonate formation and decomposition at room temperature. This reaction has been monitored by solid-state ^{13}C NMR spectroscopy, as well as colorimetrically, following the incorporation of a pH-indicator into CD-MOF-2 to signal the formation of carbonic acid functions within the confines of the nanoporous extended framework.

Biography: Fraser Stoddart received his BsC in 1964 and PhD in 1966 degrees from Edinburgh University in Scotland. In 1967, he received a Post doctorate from Queen's University in Canada and a Post doctorate from Sheffield University in England in 1970. He was awarded a DSc degree by Edinburgh in 1980 for his research into stereochemistry beyond the molecule.

In 2003, he was appointed the Director of the CNSI and assumed the Fred Kavli Chair of NanoSystems Sciences. He joined the faculty at Northwestern University as a Board of Trustees Professor of Chemistry in 2008. Dr. Stoddart was appointed an Emeritus Professor of Chemistry at UCLA in 2008. He is also Director of the Center for the Chemistry of Integrated Systems (CCIS) at Northwestern University.

Stoddart is one of the few chemists of the past quarter of a century to have created a new field of organic chemistry – namely one in which the mechanical band is a pre-eminent feature of molecular compounds.

Dr. Stoddard has received the following awards and honors: American Chemical Society Arthur C Cope Award (2008); Fellowship of the Royal Society of Edinburgh (2008); Davy Medal of the Royal Society of London (2008); University of Sheffield Honorary Doctor of Science Degree (2008); Trinity College Dublin Honorary Doctor of Science Degree (2009); ISNSCE Award at FNANO (2010); Honorary Doctor of Science Degree (St Andrews – 2010); Royal Medal of the Royal Society of Edinburgh (2010). He was appointed by her Majesty Queen Elizabeth II as a Knight Bachelor in her 2007 New Year's Honours List for his services to chemistry and molecular nanotechnology.

DINNER RESERVATIONS:

Please complete the **Online Dinner Reservation Form** NO LATER THAN Thursday, December 29, 2011. The form is also located under the Meeting Notice on both websites www.sacp.org and www.ssp-pgh.org. Should you not be able to access the form, please call 412-825-3220 for Valarie Daugherty, SACP Administrative Assistant at ext 204 or Jenna Sabot, SSP Administrative Assistant at ext 212 to make your dinner reservation. The entrée choices for January are Boursin Cheese crusted New York Strip Steak; Atlantic Salmon and Morels or Vegetable Napoleon. Please let us know if you have any dietary restrictions. Dinner will cost $8 ($4 for undergraduate students). Checks can be made payable to either the SACP or the SSP.

PARKING:

Parking will be in the Soldiers and Sailors parking lot. Please bring your parking ticket to the dinner or meeting for validation. Soldiers and Sailors Parking Lot Directions