



Spectroscopy Society of Pittsburgh February Meeting

Duquesne University – Mellon Hall of Science (Laura Falk Hall)

Wednesday – February 18, 2009

Technology Forum Speaker's Presentation **5:30PM**

Social Hour **6:00PM**

Dinner in the City View Café (6th Floor) **6:30PM**

Business Meeting **8:00PM**

Technical Program Speaker's Presentation **8:15PM**

Deadline for Dinner Reservations **2/13/09**

Carolyn Benga crbssp@yahoo.com or (412) 487-0915



TECHNOLOGY FORUM - 5:30 PM

Gregg S. Smith- American Pyrotechnics Association

“Fireworks: Principals and Practices”

Gregg S. Smith of the American Pyrotechnics Association will discuss how history, physics and chemistry come together to produce some of the world's greatest and most captivating entertainment using energetic and explosive materials.

Bio

Gregg S. Smith has been involved in the Fireworks display industry for over 30 years. Smith has been the Safety Program Manager for the American Pyrotechnics Association since October 2003. Previously, Smith worked for Vitale Fireworks and Manufacturing of New Castle, PA from 1975 to 1990 as lead technician and plant manager, overseeing manufacturing, safety and training programs. From 1991 to 1995 Smith worked as the lead technician for various other fireworks display companies. Mr. Smith also acted as the Safety Manager for Pyrotecnico, S. Vitale Pyrotechnic Industries, Inc. from 1996 to 2003.

In October of 2003, Smith left Pyrotecnico to serve as Safety Program Manager for the American Pyrotechnics Association in Bethesda, MD where he works closely with Executive Director Julie L. Heckman, APA member companies and committees, ATF, DOT, OSHA, EPA, and Homeland Security. This position requires Smith to travel to Washington, DC at least 2 times a month to handle issues that affect the fireworks industry in North America. Smith continues to serve as an alternate to Julie Heckman on the NFPA Technical Committee on Pyrotechnics as he has since 2005.

Smith travels all over the USA training and supporting APA member display and consumer companies as well as local, state and federal regulatory officials about fireworks safety procedures and regulations. Over 30 years of experience working in the professional fireworks industry and firing over 800 fireworks displays in over 30 states and internationally has given Smith the wealth of experience, knowledge and expertise to effectively train the APA's membership of over 275 companies, the fire service and all federal regulating agencies.

TECHNICAL PROGRAM - 8:15PM

Dr. Sanford Asher- University of Pittsburgh

"Development of UV Raman Spectroscopy for Incisive Investigations of Simple Questions in Complex Systems: Can We Study the Reaction Coordinate in Protein Folding"

We developed a powerful method to follow the evolution of secondary structure in the amide peptide bonds of peptides and proteins. UV Raman excitation into these ~200 nm electronic transitions results in the enhancement of the amide vibrations of the peptide backbone. In our most recent studies we reassigned the amide III region and found a particular band (the amide III₃ band) which reports selectively on the Ramachandran Ψ angle and the state of peptide bond hydrogen bonding. We demonstrate that this band is Raman scattered independently by each peptide bond with insignificant coupling between peptide bonds. We also show that isotope editing of a peptide bond (by replacing the $\text{C}\alpha$ - H with $\text{C}\alpha$ - D) allows us to



determine the frequency of an individual peptide bond within a peptide or protein which gives us its Ψ angle. Consideration of the Boltzmann equilibria allows us to determine the Ψ angle energy landscape which connects secondary structure conformations. The Ψ angle coordinate is the most important reaction coordinate required to enable the understanding of the mechanism(s) of protein folding.

Bio

Sanford A. Asher, Distinguished Professor of Chemistry at the University of Pittsburgh received his B.A. in chemistry at the University of Missouri, St. Louis in 1971 and completed his Ph.D. in chemistry at the University of California, Berkeley in 1977. Dr. Asher was a Research Fellow in Applied Physics at Harvard University between 1977 and 1980. In 1980 he became Assistant Professor of Chemistry at the University of Pittsburgh. Dr. Asher's research program at Pitt has involved development of new materials and the development of new spectroscopic techniques. His group developed UV resonance Raman spectroscopy as a new technique for fundamental and applied structural and trace studies of molecules in complex matrices. His group is using UV resonance Raman to examine the first stages in protein folding. In addition, Dr. Asher's research group develops new photonic crystal optical devices and chemical sensing devices from self-assembling colloidal particles.

Dr. Asher has received numerous awards. He is the recipient of the Pittsburgh Spectroscopy Award which will be awarded at the 2008 PittCon meeting in New Orleans. He also became a Fellow of the Society of Applied Spectroscopy in 2007, received the Sigi Ziering Award from the American Society of Clinical Chemistry (2005), The University of Missouri – St. Louis Distinguished Alumni Award (2004), the ACS Pittsburgh Award (2002), the Ellis R. Lippincott Award from the Optical Society of America (2002), the Pittsburgh Technology Council EnterPrize Award (2000), the Coblenz Society's Bomem-Michelson Award (1999), the Society for Applied Spectroscopy's Lester W. Strock Award (1998), the University of Pittsburgh's Chancellor's Distinguished Research Award (1996), the American Chemical Society Award in Spectrochemical Analysis (1994), the American Heart Association Established Investigator Award (1984) and an NIH Career Development Award (1984).

Professor Asher served as the Co-Director of the Materials Research Center of the University of Pittsburgh. He was the Chairman of the XV International Conference on Raman Spectroscopy held in Pittsburgh in 1996. He is Scientific Founder and Chairman of the Scientific Advisory Board of the startup company, Glucose Sensing Technologies, LLC., and is on the Scientific Advisory Boards of BioTools Inc. and Crystalplex Co. He consults for companies such as PPG Industries, ChemImage Corporation and Glucose Sensing Technologies, LLC. He is the author of greater than 200 publications and has authored over twenty patents in the area of photonic crystals.

Dinner Reservations:

Please email Carolyn Benga at crbssp@yahoo.com or call (412) 487-0915 to make dinner reservations NO LATER THAN FRIDAY, February 13, 2009. This month's entrée will be Grilled Sea Bass with an Orange-honey Tomato Sauce served with Long Grain and Wild Rice Pilaf and Glazed Baby Carrots. Baby Spinach Salad with Bacon and Red Onion will start the meal, and Key Lime Pie will be served for dessert. Dinner will cost \$8 and checks can be made out to the SSP. If you have dietary restrictions, please let Carolyn know 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. If any difficulties arise, contact Dr. Mitch Johnson at Duquesne University.