



Spectroscopy Society of Pittsburgh September Meeting

Tuesday – September 27, 2016

held at Duquesne University



- 5:30 PM** Technology Forum Speaker's Presentation – **Power Center Ballroom Section C**
- 5:30 PM** Social Hour – **Power Center Fides Shepperson Suite**
- 6:45 PM** Dinner – **Power Center Ballroom Section C**
- 8:00 PM** Business Meeting – **Power Center Ballroom Section C**
- 8:15 PM** Technical Program Speaker's Presentation – **Power Center Ballroom Section C**

Deadline for Dinner Reservations: Tuesday, September 20 at 12:00 noon

<http://www.ssp-pgh.org/> and click on SSP Monthly Meeting "More Info" link

Dinner Reservations:

Please register on-line at <http://www.ssp-pgh.org/> to make dinner reservations **NO LATER THAN Tuesday, September 20, 2016 at noon**. Dinner will cost **\$10** (\$5 for students) and checks must be made payable to the SSP. This month's Main Entrée: **Meatloaf (will not contain pork)**. Vegetarian Entrée: **Stuffed Peppers**. If you have any dietary restrictions, please indicate them when you RSVP.

Parking:

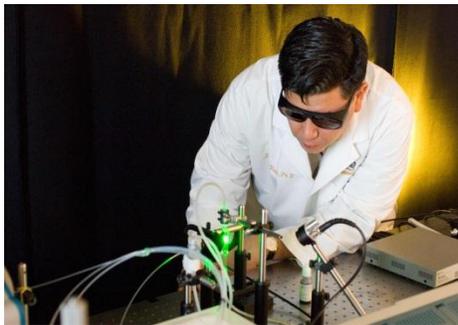
The Duquesne University Parking Garage is located on Forbes Avenue. Upon entering the garage, receive parking ticket and drive to upper floors. Pick up a parking chit at the dinner or meeting.

TECHNOLOGY FORUM - 5:30 PM

Dr. John Viator

Program Director and Professor of Biomedical Engineering, Duquesne University

Photoacoustic Flow Cytometry: Detection of Pathological Analytes in Blood



Photoacoustic flow cytometry is a method to detect and capture pathological analytes in body fluids by exploiting optical absorption in cells of interest while ignoring other cells. For instance, natural pigment in melanoma cells provides the optical discrimination necessary against a background of normal blood cells so that these cancer cells can be monitored in blood samples of patients. Photoacoustic flow cytometry uses an excitation laser to induce pressure waves in pigmented cells under flow, so that the generated signals can be counted and tracked for downstream capture and further analysis of these cells. We have used this system for detection and capture of melanoma, breast cancer, and prostate cancer cells in blood, as well as in detection of malaria parasites. Most recently, we have engineered bacteriophages to provide pigment to bacterial cells in order to develop a rapid means for detecting bacteria in blood.

Biography

John A. Viator is Professor and Director of the Biomedical Engineering Program at Duquesne University, the first engineering program at the university. He is also Adjunct Professor of Bioengineering at the University of Pittsburgh. He conducts research in biomedical optics, the area of science and engineering that covers the use of lasers and light to improve human health. He is particularly interested in using *photoacoustics*, or laser induced ultrasound, to diagnose medical problems. He is using photoacoustics to detect the early spread of cancer in human blood in order to improve the management of cancer therapy. He also uses optics to study skin cancer, burn injury, and other diseases and injuries in the fields of dermatology, surgery, and oncology.

Dr. Viator has a BS in physics from the University of Washington in Seattle, an MS in mathematics from the University of Oregon in Eugene, an MS in applied physics from the Oregon Graduate Institute, and a PhD in electrical engineering from Oregon Health & Science University. He retired as a Lieutenant Commander in the U.S.

Naval Reserve in 2007, having been commissioned from the Naval R.O.T.C. unit at the University of Washington. He has served on a guided missile destroyer, with the Military Sealift Command in Operation Desert Shield, and with the Office of Naval Research, among other positions. Dr. Viator has conducted research in a nuclear physics laboratory at the University of Oregon, at the Oregon Medical Laser Center, the Beckman Laser Institute, the Department of Dermatology at Oregon Health & Science University, at the Christopher S. Bond Life Sciences Center at the University of Missouri, as well as his current position at Duquesne University.

Dr. Viator has over eighty technical publications in the areas of optics, acoustics, and human health. He is Chief Scientific Officer and Founder of Acousys Biodevices Inc, a company formed to commercialize his cancer detection technology. He has been issued eleven patents and has several others pending.

Dr. Viator's research has been supported by awards totaling almost \$4 million from the National Institutes of Health, Wallace H. Coulter Foundation, the Missouri Life Sciences Research Board, the American Society for Laser Medicine and Surgery, and other agencies.

TECHNICAL PROGRAM - 8:15 PM

Charles W. Gardner, Ph.D., PMP

ChemImage Sensor Systems

Chemical Imaging: Sensors That Make Our World Healthier and Safer



Chemical or Hyperspectral Imaging is the combination of spectroscopy with the power of digital imaging to reveal chemical-based details of the world. This talk will provide examples of how ChemImage Sensor Systems has developed hyperspectral imaging systems for the detection of chemicals in the environment, ingredient-specific particle sizing for pharmaceuticals and standoff detection of explosives at entry control points. In addition, this talk will discuss how one standoff hyperspectral mode can be used to target another in order to dramatically improve the area search rate for the detection of chemicals and explosives. Details of the instrumentation and software that enable these applications of hyperspectral imaging will be presented.

Biography

Chuck Gardner received both a BS in chemistry and a Ph.D. in analytical chemistry from the University of Pittsburgh. His graduate work was in the field of non-aqueous solvent effects under the direction of Professor Johannes Coetsee. Chuck also holds a Project Management Professional certification from the Project Management Institute.

Chuck is currently the Director of Product Management at ChemImage Sensor Systems (CISS), an operating unit of ChemImage Corporation. At CISS, he is responsible for early stage product development for hyperspectral imaging systems and in particular, the product transition of chemical, drug and explosive detection systems developed under US Government sponsored research and development programs.

His work involves proposal and opportunity development, management of the product hardware, software and applications development teams as well as providing customer support. Chuck has led projects sponsored by the US Army, the US Navy and the Technical Support Working Group for Counter-terrorism.

Prior to joining ChemImage, Chuck held positions at Mine Safety Appliances, Bacharach, Inc. and ABB/Extrel.

Chuck has been a member of the SSP and SACP since 1979 and has served on a number of committees during his years of service. He is also a member of the organizing committee of Pittcon and has the honor of being named by the 2015-16 SSP Executive Council as the President of Pittcon 2019.

Chuck lives in Hampton Twp. with his wife Penny and son Bryan.