



Spectroscopy Society of Pittsburgh

November Meeting

Wednesday – November 18, 2015
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: Wednesday, 11 November 2015 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 Wednesday, November 11, 2015 at noon**. Dinner will cost **\$10** (\$5 for students) and checks must be made payable to the SSP. This month's entrées will be **Eggplant Roulade- Spaghetti with Meat Sauce OR Eggplant Roulade – Spaghetti with Marinara Sauce**. 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.

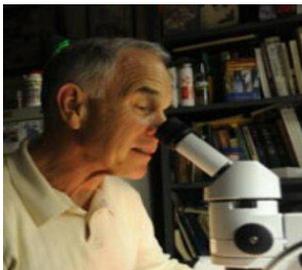
TECHNOLOGY FORUM - 5:30 PM

William Todaro

Medical Entomologist, Allegheny County Health Department

“How to Understand & Manage Your Risk of Lyme Disease”

What is a tick? Which ticks are carrying Lyme disease? What is Lyme disease? Do ticks carry other diseases as well? What is your risk of catching a tick borne pathogen? What can you do to make sure that you do not suffer from a tick borne illness? All this and more.



Biography

William Todaro is a BS and MS graduate of the SUNY of New York College of Environmental Science and Forestry at Syracuse University in Syracuse, NY. He served as Medical Entomologist in Buffalo, NY for 11 months with the Onondaga County Health Department. Since then, he has served over 38 years with the Allegheny County Health Department in the Greater Pittsburgh Area. He is involved in many areas, and monitors the abundance and distribution of public health pests and pest borne disease; flies, fleas, mosquitoes, ticks, etc. He also is involved in research on public health pests; cockroaches, scabies mites, dog heartworm. Additionally he interfaces to the public and the news media on pests, in addition to involvement with local police on forensic studies.



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TECHNICAL PROGRAM - 8:15 PM

Shiv Sharma

Hawaii Institute of Geophysics and Planetology

"A Combined Time-Resolved Raman, Laser-Induced Fluorescence and Laser Induced Breakdown Spectroscopy System for Mars Exploration"

There is currently great interest in standoff detection of surface minerals and biomarkers for NASA's exploration programs, particularly as applied to Mars, Venus, and icy satellite Europa. Recent scientific observations have steadily advanced our understanding of the nature and abundance of water on Mars, and there is growing recognition of the abundant hydrous alteration that has taken place on its surface. Stand-off active spectroscopic techniques such as Raman, laser-induced native fluorescence (LINF) and laser-induced breakdown spectroscopy (LIBS) are highly synergistic analytical techniques and are well suited for planetary missions. Raman spectroscopy is sensitive to the molecular structure of the sample from which one can definitively determine mineralogy, and identify organic and biogenic materials. In the time-resolved (TR) mode LINF spectra allow measurement of fluorescence from trace rare-earths and transition-metal ions in minerals with high sensitivity, and also assist in differentiating between abiogenic minerals from organic and biogenic materials based on their fluorescence lifetime. Time-resolved LIBS allows measurements of chemical compositions from standoff distances. At the University of Hawaii, we have developed a combined TR Raman, LINF and LIBS spectroscopic instrument suitable for remotely exploring planetary surfaces during daytime and nighttime. The fluorescence spectrograph is capable of measuring TR- laser-induced fluorescence excited with 355 nm laser in the spectral range 380-800 nm spectral range. Biological materials are also identified from their characteristic short-lived (<10 ns) laser-induced fluorescence lifetime. Biomarkers such as chlorophyll-*a*, and carotenes can be identified from their characteristic fluorescence and resonance Raman spectra, respectively. The combined TR Raman-LIBS spectrograph allows measurements of LIBS spectra for elemental analysis of surface minerals. The role of these combined active spectroscopic instruments in the upcoming NASA's Mars 2020 rover mission, and in future planetary exploration will be discussed.



Biography

Shiv K. Sharma is Professor and Associate Director in Hawaii Institute of Geophysics and Planetology, School of Ocean and Earth Science and Technology. He is also on the graduate faculty of Geology and Geophysics, and Electrical Engineering in the College of Engineering at the University of Hawaii.

He joined the University of Hawaii in 1980 (July) after spending two and a half years as Carnegie Post-doctoral Fellow working in the field of Experimental Petrology & Geochemistry at the Geophysical Laboratory in Washington, D. C.

In 1973, Shiv earned his Ph. D. degree in Physics from the Indian Institute of Technology (IIT), Delhi, India. During 1974-75, he worked as Research Associate in the Department of Chemistry at the University of Leicester, Leicester, England. During 1973-1974, he worked as Post-Doctoral Fellow in the Thin Film Laboratory, Department of Physics, IIT Delhi, India.