



Spectroscopy Society of Pittsburgh October Meeting Wednesday – October 16, 2013 - Duquesne University

5:30 PM - Technology Forum Speaker's Presentation **Wolfe Lecture Hall located in Bayer Hall**

5:30 to 6:30PM - Social Hour- **City View Café (6th Floor of Union)**

6:30PM - Dinner **City View Café (6th Floor of Union)**

8:00PM - Business Meeting– **Laura Falk Hall located in Mellon Hall**

8:15PM - Technical Program Speaker's Presentation– **Laura Falk Hall**

Deadline for Dinner Reservations **10/10/13**

[On-line Reservations](#)

TECHNICAL PROGRAM - 8:15 PM

Professor Ralph Milliken, Brown University

“The Mars Curiosity Rover: A Year of Exploration and Evidence of Habitable Environments Beyond Earth”



NASA's Curiosity rover has been exploring the red planet for the past year and has made a number of amazing discoveries.

From flowing streams to muddy lake beds, the ancient rocks that have been examined so far have revealed that Mars was possibly much more hospitable to life several billions of years ago than previously imagined. The Curiosity rover is truly a laboratory on wheels and its payload is comprised of the most technically sophisticated instruments ever flown to Mars, allowing for these discoveries to be made. In addition to numerous cameras that measure light at visible and near-infrared wavelengths, the rover also utilizes laser induced breakdown spectroscopy, X-ray diffraction, alpha particle

X-ray spectroscopy, and gas chromatograph mass spectroscopy. This presentation will describe the scope of the mission, what the rover team has learned over the past year by using these instruments, and what we expect in the coming months as Curiosity approaches its ultimate goal, the >3 mile tall Mt. Sharp.

Dr. Ralph Milliken, currently Assistant Professor of Geological Sciences at Brown University, received his B.S. in Geology from Indiana University and M.S./Ph.D. in Geology from Brown University (2006). After receiving his doctorate, he spent four years at NASA's Jet Propulsion Lab and the California Institute of Technology as a postdoctoral researcher and research scientist, where he first became involved in the Mars Science Laboratory rover project. Dr. Milliken joined the faculty in the Dept. of Civil Engineering and Geological Sciences at the University of Notre Dame in 2010 and then the faculty at Brown in 2012. His research interests include reflectance and emittance spectroscopy as applied to natural materials and linking lab, field, and airborne/satellite data to address geological problems. Studies focus on quantitative modeling of reflectance spectra, the formation, stability, and behavior of hydrous minerals, and, at a broader scale, the use of remote sensing techniques for determining the composition and geologic history of planetary bodies. In his spare time, Dr. Milliken enjoys music and spending time outdoors with his family.

TECHNOLOGY FORUM - 5:30 PM

Robert Marshall, Program Development Coordinator, Buhl Planetarium & Observatory at Carnegie Science Center

"Potentially Hazardous Objects: Earth's Great Equalizer"



On February 15 of this year, Russian citizens of Chelyabinsk were surprised when a meteor blew up in the atmosphere, 14 miles high, injuring over one thousand people-the exact day astronomers were monitoring a 150ft near-Earth asteroid pass under geosynchronous satellites. How did we know about the one, but not the other? There are trillions of comets and asteroids orbiting our sun, but how do scientists determine which of these are near or on a collision course with Earth? More importantly, which of these should worry humankind if large enough to cause the destruction of a city, or worse? Learn what NASA researchers are uncovering about these relics of our solar system and the future engineering humanity must invest in if we are to protect ourselves from the inevitable.

Robert J. Marshall is a graduate of the University of Pittsburgh with a B.S. in the field of astronomy, math, and the natural sciences. As program development coordinator and educator for the Buhl Planetarium and Observatory, he is employed at Carnegie Science Center where he presents real astronomical data to the public, develops curriculum for both University of Pittsburgh and Carnegie Mellon Osher programs, and travels the country for Fisher Science Education inspiring the teaching community. Furthermore, Robert has participated in research at Allegheny Observatory and is currently participating with NASA research through the Infrared Processing and Analysis Center (IPAC) home to the Spitzer Space Telescope

Dinner Reservations:

Please register on-line at <http://www.ssp-pgh.org/monthly-meeting-rsvp/> to make dinner reservations NO LATER THAN Thursday, October 10, 2013 at noon. Dinner will cost \$10 (\$5 for students) and checks can be made out to the SSP. This month's entrée will be Montreal Flank Steak. 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.