Society for Analytical Chemists of Pittsburgh
Spectroscopy Society of Pittsburgh

October Joint Meeting With the AAAP

(Amateur Astronomers Association of Pittsburgh)

Wednesday, October 10, 2018

5:30 PM Social Hour —- Power Center Ballroom
5:30 -6 PM SSP Technology Forum – Power Center Ballroom
6:30 PM Dinner – Power Center Ballroom
Student Affiliate Meeting – Shepperson Suite
7:45 PM Business Meeting – Power Center Ballroom
8:00 PM Technical Program – Power Center Ballroom

Deadline for Dinner Reservations: Monday, October 1, 2018

SSP TECHNOLOGY FORUM

Dr. Joshua E. Schlieder, NASA Goddard Space Flight Center

"Kepler, TESS, and the Exoplanet Revolution"

Over the last two decades, our knowledge of planetary systems has expanded beyond our solar system to thousands of planets orbiting thousands of stars. NASA's Kepler mission was the workhorse of this revolution and has led to breakthroughs in our understanding of the frequency and diversity of exoplanets. With the loss of critical hardware, the Kepler mission ended and was reborn as K2, an ecliptic plane survey that continues to operate today. Thanks to Kepler/K2, we now know that planets are common and nearly every star in the Galaxy hosts at least one. However, some of the most pressing questions remain: What are their physical properties?, Where are the closest planets?, and What is the potential for habitability beyond the Earth? NASA's latest exoplanet hunting mission, the Transiting Exoplanet Survey Satellite (TESS), is now in science operations and aims to tackle these difficult questions . TESS will observe 400x more sky than Kepler and provide high precision photometric measurements for millions of stars. I will describe how the unique capabilities of TESS will deliver the best targets for detailed follow-up with current and future facilities and provide a deep understanding of the exoplanet population in the local solar neighborhood.
medicine.'

BIOGRAPHY: Dr. Joshua Schlieder is a Research Astrophysicist at NASA's Goddard Space Flight Center in Greenbelt Maryland. His primary role at Goddard is as a support scientist in the TESS Guest Investigator Program Office. Josh is a Pennsylvania native and received a B.S. in Physics from Bloomsburg University in 2005. He then earned a PhD in Physics from Stony Brook University in 2011. Josh's previous professional appointments include fellowships at the Max-Planck-Institute for Astronomy in Heidelberg, Germany and the NASA Ames Research Center in Mountain View, California, and a staff scientist position at the NASA Exoplanet Science Institute in Pasadena, California. Josh's research focuses on low-mass stars near the Sun and the planets they host. These stars, the M dwarfs, comprise about 75% of the Galactic stellar content and provide unique opportunities for planet detection and characterization. Josh identifies M dwarf targets for

planet searches, develops target lists, and pursues observations to identify, confirm, and characterize exoplanets. His most recent work involves transiting planets from NASA's K2 mission and he is now transitioning to work on data from TESS
Dan has done extensive traveling and research on medicinal plants in the rain forests of Belize, Peru, Costa Rica, Ecuador, Cuba and Western Africa, and has incorporated his knowledge and experience into his natural medicine practice. In 1995, he first traveled to Nigeria to participate in medical mission work with the World Health Mission.

In 2006, he took over leadership of this NGO and altered the name to The World Health Vision. Dr. Dan has been to Nigeria 14 times since 1995 leading a health team to treat diabetes, cataracts/blindness and hypertension. He has published over 80 articles in leading pharmacy journals and alternative media.

SSP TECHNICAL PROGRAM

Dana D. Dlott, School of Chemical Sciences & Frederick Seitz Materials Research Laboratory, University of Illinois

"Shock Compression Science and Spectroscopic Investigations of Highly Energetic Materials"

We have developed a microscope that looks into materials and liquids as they are subjected to controlled high velocity impacts. These impacts generate shock waves that propagate a few kilometers per second, creating intense mechanical and thermal effects that can trigger new kinds of chemistry. One of these impacts can create pressures of 200,000 atm and temperatures of 4000K while compressing matter to half its density. In this talk, I will describe the shock compression microscope and the peripheral high-speed optical diagnostics that measure pressure, temperature, density and composition in real time. I will briefly visit a couple of application such a studying the chemistry of extreme water and shock compression of molecular architectures designed to dissipate shock energy, and then I will discuss shock initiation and detonation of high explosives, including liquid explosives and plastic-bonded explosives, where we fabricate arrays of tiny bombs and push them to detonation while we watch.

BIOGRAPHY: Dana Dlott is the William H. and Janet G. Lycan Professor of Chemistry and a Professor of Materials Research at the University of Illinois. He received a bachelor's degree from Columbia University and a Ph.D. from Stanford University under the supervision of Prof. Michael Fayer, using ultrafast laser spectroscopy to study electronic energy transfer in molecular materials. After he joined the Chemistry Department at the University of Illinois (in 1979) he began a research program to study vibrational relaxation in solids. About 30 years ago he began to study shock waves in solids. Dlott is a Fellow of the American Physical Society, the Optical Society of America and the American Association for the Advancement of Science. He has been recognized with the ACS award in Experimental Physical Chemistry and the Lippincott prize of the OSA for his work in ultrafast vibrational spectroscopy.

DINNER RESERVATIONS: Please complete the **Online Dinner Reservation Form** NO LATER THAN Monday, October 1, 2018. The form is also located under the Meeting Notice on websites www.sacp.org. & www.ssp-pgh.org. Should you not be able to access the form, please call 412-825-3220, ext 212 the SACP & SSP Administrative Assistant to make your dinner reservation. The entrée choices for October are **Wiener Schnitzel** or **Grilled Vegetable Stack**. Please let us know if you have any dietary restrictions. Dinner will cost $10 ($5 for undergraduate students). Checks can be made payable to the SACP or the SSP, depending on membership.

PARKING: Duquesne University Parking Garage entrance is on Forbes Avenue. Upon entering the garage, you will need to get a parking ticket and drive to upper floors. Bring your parking ticket to the dinner or meeting for a validation sticker. Should any difficulties arise, please contact Duquesne University.