



# Spectroscopy Society of Pittsburgh

## February Meeting

Wednesday – February 15, 2017

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: Friday, February 10, 2017 at 12:00 noon

### Dinner Reservations:

Please register on-line at <http://www.ssp-pgh.org> to make dinner reservations **NO LATER THAN Friday, February 10, 2017 at noon**. Dinner will cost \$10 (\$5 for students) and checks must be made payable to the SSP. This month's Entrées: Meat Lasagna, Vegetarian Entrée: Cavatappi. 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

**Jessie Schell**  
**Schell Games, CEO**

### “Virtual Reality and the Future of Chemistry Education”



Chemistry, the most concrete of all sciences, can ironically be difficult for students because its concepts are so abstract. And while the idea of lab work in chemistry classes is incredibly inspiring to students, but the realities of lab work are often confusing, dull, and dangerous. In this talk, Jesse Schell will show how Schell Games is making use of Augmented and Virtual Reality to turn molecular structure and chemistry lab work into safe, fun, concrete hands-on activities that can lead students to the magic of chemistry and the mindset of a true scientist.

### Biography

Jesse is the CEO of Schell Games, a team of one hundred people who strive to make the world's greatest educational and transformational games, including Yale Medical's *PlayForward: Elm City Stories*, *Water Bears VR*, the *Daniel Tiger's Neighborhood* games, and *Happy Atoms*. Schell Games also creates pure entertainment content, such as the award-winning VR game, *I Expect You To Die*, and the comedy space game *Orion Trail*. Jesse also serves as Distinguished Professor of the Practice of Entertainment Technology at Carnegie Mellon University. Jesse has worked on a wide variety of innovative game and simulation projects for both entertainment and education, but he is best known for his award-winning book *The Art of Game Design: A Book of Lenses* and his predictions about the future of gaming technology. He is a previous chair of the International Game Developers Association, and former Creative Director of the Disney Virtual Reality Studio.



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### TECHNICAL PROGRAM – 8:15 PM

**Bo Zhang**  
Chemistry Department, University of Washington

#### “Neuronal Imaging and Single Molecule Electrochemistry with Fluorescence - Enabled Electrochemical Microscopy”

In this talk, I will present a new electrochemical technique developed in my laboratory at the University of Washington and its use in the study of neuronal activity and fundamental electrochemistry of single redox molecules. My group has developed Fluorescence-Enabled Electrochemical Microscopy (FEEM) as a powerful technique to study highly dynamic redox events. The central idea of FEEM is the use of a bipolar electrode to couple a redox reaction of interest, such as oxidation of dopamine, to a fluorogenic redox reaction so that one can use fluorescence microscopy to monitor electrochemical kinetics. Here, the oxidation or the reduction of a redox molecule on one pole of the bipolar electrode results in the generation of a fluorescent product on the other pole of the same electrode. The development and use of very large and uniform electrochemical arrays containing  $>10^6$  ultramicroelectrodes and nanoelectrodes allows one to image complex, dynamic redox events with exceedingly high spatial and temporal resolution. FEEM has been used for several applications including the study of dynamic formation of a diffusion layer, electrocatalysis screening, single nanoparticle collision, and the study of single redox events. A key application of FEEM is the study of single-cell exocytosis and neuronal communication in a functional neuronal network.



#### Biography

Bo is an Associate Professor of Chemistry at the University of Washington. His group is best known for the development and use of new analytical methods for studying heterogeneous electron transfer processes of single redox molecules and electrocatalytic nanoparticles. In addition, his group develops ultramicroelectrodes and nanoelectrodes and their massive arrays to study neuronal activity. His B.S. and M.S. degrees were obtained from Shandong University and Peking University, respectively. He worked with Henry White at the University of Utah and was awarded a Ph.D. in 2006. He joined the UW in 2008 after working in Andrew Ewing's lab at Penn State.