



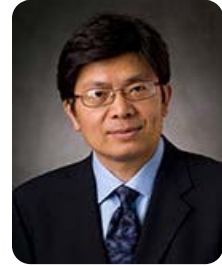
# Washington University in St. Louis

## SCHOOL OF ENGINEERING & APPLIED SCIENCE

Preston M. Green Department of Electrical & Systems Engineering

### Seminar Announcement

**Zhiwen Liu**  
**Professor of Electrical Engineering**  
**Penn State University**



Monday, April 24, 2017  
Green Hall, Room 0120  
2:00 P.M.

### Nonlinear Optical Imaging and Spectroscopy

**Abstract:** Merging the capabilities of vibrational spectroscopy and holography can lead to new opportunities for bio-imaging. The vibrational response of target molecules provides a means for chemical contrast, while holographic detection captures both the amplitude and the phase of a complex signal field to enable label-free three-dimensional imaging. Vibrational spectroscopic holography, including holographic coherent anti-Stokes Raman scattering imaging and holographic sum frequency generation imaging, will be discussed. The underlying principles, digital reconstruction methods, and instrumentation will be presented. In addition, our recent progress on smartphone based optical spectroscopy and its applications will also be discussed.

**Bio:** Dr. Zhiwen Liu is a professor of Electrical Engineering at the Penn State University. He received his Ph. D. degree in Electrical Engineering from the California Institute of Technology in 2002. After staying at Caltech for a year as a postdoctoral researcher, he joined the Penn State University in 2003. His current research at Penn State is focused on optical imaging and spectroscopy, ultrafast nonlinear optics, and nano-photonics. Dr. Liu is an associate editor for the IEEE Journal of Quantum Electronics. He is the chair of the SPIE conference on Ultrafast Nonlinear Imaging and Spectroscopy as part of the SPIE Optics and Photonics, annually held in San Diego. Dr. Liu is also a co-founder of Atoptix, a start-up company based in State College to develop novel optical spectroscopy and imaging technologies

Host: Dr. Lan Yang