



**Ji-Xin Cheng, Boston University**

**Title: Harnessing and Manipulating Photons for Signature Discovery and Precision Medicine**

**Abstract:** Photons are unique in that they can directly interact with molecules, the foundation of life. I will give an overview of our biophotonics research at three levels of interactions. At the weak interaction regime, I will present label-free chemical microscopy utilizing spectroscopic signals for discovery of molecular signatures related to cancer aggressiveness and antimicrobial resistance. At the moderate interaction regime, I will present optoacoustic stimulation of single neurons in a transfection-free manner. At the strong interaction regime, I will show that photolysis of intrinsic chromophores could effectively sensitize resistant pathogens to antibiotics and anti-fungal drugs.

**Bio:** Professor Cheng is the Inaugural Moustakas Chair Professor in Photonics and Optoelectronics at Boston University. For his pioneering work in chemical imaging, Cheng is the recipient of 2020 Pittsburg Spectroscopy Award. He also received the Ellis R. Lippinon award from Optical Society of America in 2019 and the Craver Award from Coblenz Society in 2015. Cheng is authored in over 240 peer-reviewed articles with an h-index of 74 (Google Scholar). His research has been supported by over 25 million (\$) fund from federal agencies and private foundations including the Keck Foundation. In 2014, He co-founded Vibronix Inc which has the mission of saving lives through medical device innovations. Cheng is a Fellow of Optical Society of America and a Fellow of American Institute of Medicine and Biological Engineering.