Precision Medicine via Engineered Waves: from Bond-selective Imaging to Non-genetic Neuromodulation

Ji-Xin Cheng, PhD
Moustakas Chair Professor in Photonics and Optoelectronics
Boston University

Co-sponsored by Morgridge Institute for Research and the UW SPIE/Optica Chapter

Professor Cheng has devoted his career to precision medicine through the manipulation of photons/waves. Over the past two decades, His team pioneered the development of bond-selective chemical microscopy, including the most recent invention of mid-infrared photothermal microscopy, which utilizes fingerprint signals to discover hidden signatures inside a biological system. More recently, his team invented a panel of tools that precisely stimulate or suppress neuronal activity via laser-induced ultrasound waves and electromagnetic waves. Cheng will present the latest advances in these two directions.

ABOUT the SPEAKER

Ji-Xin Cheng attended University of Science and Technology of China (USTC) from 1989 to 1994. From 1994 to 1998, he carried out his PhD study on bond-selective chemistry at USTC. As a graduate student, he worked as a research assistant at Universite Paris-sud (France) on vibrational spectroscopy and the Hong Kong University of Science and Technology (HKUST) on quantum dynamics theory. After postdoctoral training on ultrafast spectroscopy at HKUST, he joined Sunney Xie's group at Harvard University as a postdoc, where he spearheaded the development of CARS microscopy that allows high-speed vibrational imaging. Cheng joined Purdue University in 2003 as Assistant Professor in Weldon School of Biomedical Engineering and Department of Chemistry, promoted to Associate Professor in 2009 and Full Professor in 2013. He joined Boston University as the Inaugural Theodore Moustakas Chair Professor in Photonics and Optoelectronics in summer 2017. He was chosen as the Boston University Innovator of Year 2022.

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1003 Engineering Centers (Tong Auditorium)