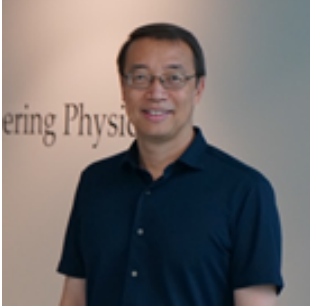


*Stephenson School of Biomedical Engineering
Seminar Series Presents*

**MULTIPHOTON MICROSCOPY FOR IMAGING
DEEPER, WIDER, AND FASTER**



Chris Xu, Ph.D.

School of Applied and Engineering Physics
Cornell University, Ithaca, NY

Friday, April 23, 2021 | 9:30 a.m.



zoom

Meeting ID: 976 2716 6265
Passcode: 30655560

ABSTRACT

Multiphoton microscopy has changed how we visualize neurons by providing high-resolution, non-invasive imaging capability deep within intact brain tissue. Multiphoton imaging will likely play a major role in understanding how the brain works at the level of neural circuits. In this talk, *in vivo* structural and functional imaging of mouse brain using long wavelength excitation and three-photon microscopy will be presented. By quantitative comparison to two-photon microscopy, the application space where 3-photon microscopy outperforms conventional 2-photon microscopy will be defined. In addition, a number of interesting directions, including new laser sources, new spectral windows, optimum illumination schemes, etc., will be presented, and their impact on further improving the imaging depth, volume, or speed in biological tissues will be quantified.

BIO

Chris Xu is the IBM Chair Professor of Engineering, the Director of School of Applied and Engineering Physics at Cornell University, the founding co-director of Cornell Neurotech, and the director of Cornell NeuroNex Hub, an NSF funded center for developing and disseminating neurotechnology. Prior to Cornell, he was a member of technical staff at Bell Laboratories and pioneered breakthrough development of fiber optic communication systems based on differential phase-shift keying. He received his Ph.D. in Applied Physics, Cornell University, and his B.S. in Physics from Fudan University. His current research areas are fiber optics and biomedical imaging, with major thrusts in multiphoton microscopy for deep brain imaging, multiphoton microendoscopy for clinical applications, and fiber-based devices and systems for telecommunications and optical imaging. Dr. Xu has chaired or served on numerous conference organization committees and NSF/NIH review panels. In addition to journal and conference papers, he has 32 patents granted or pending. He has delivered > 300 plenary/keynote/invited conference presentations, research seminars, and outreach talks. He has won the NSF CAREER award, Bell Labs team research award, the Tau Beta Pi Professor of the Year Award, and two teaching excellence awards from Cornell Engineering College. He received the 2017 Cornell Engineering Research Excellence Award. He is a fellow of the Optical Society of America, and a fellow of the National Academy of Inventors.