Abstract:
Optical coherence tomography (OCT) is a powerful tool for assessing tissue architectural morphology. It enables three-dimensional (3D) imaging with micron-scale resolutions, and can be performed in vivo and in real-time without the need to remove and process specimens. OCT has gradually become the standard-of-care to evaluate retinal pathology in ophthalmology clinics non-invasively. Improving imaging speed has been a major driving force for OCT development. In this talk, recent technical advances to achieve ultrahigh imaging speed for OCT (e.g., space-division multiplexing OCT) will be presented. Furthermore, applications of OCT have started to grow in other clinical and scientific areas. Novel applications using OCT for imaging and optogenetic pacing of the beating *Drosophila* heart, high-throughput drug screening with tumor spheroids, and label-free cancer diagnosis will be discussed.

Biography:
Dr. Chao Zhou obtained his B.S. degree in 2001 from Peking University and his Ph.D. degree in 2007 from the University of Pennsylvania under the guidance of Prof. Arjun G. Yodh. After graduation, Dr. Zhou joined Professor James G. Fujimoto’s Laser Medicine and Medical Imaging Group at the Massachusetts Institute of Technology (MIT) as a postdoctoral associate. Since then, he has been working on the development of optical coherence tomography (OCT) technologies and their various applications. In 2012, Dr. Zhou joined the faculty at Lehigh University as an assistant professor in Electrical Engineering and Bioengineering. In 2017, he was promoted to the rank of Associate Professor with tenure. Dr. Zhou has extensive experience in the field of biomedical optical imaging and has contributed to the development and validation of novel modalities for imaging of humans and animals with various applications ranging from measuring the brain function to monitoring cancer treatments. Dr. Zhou has published over 60 peer-reviewed journal articles, with a total citation of over 4400 times (h-index, 35). Dr. Zhou is a senior member of Institute of Electrical and Electronics Engineers (IEEE), the Optical Society of America (OSA) and the International Society for Optical Engineering (SPIE). He is a recipient of numerous honors and awards, including the National Institute of Health (NIH) K99/R00 Pathway to Independence Award (2011), the Libsch Early Career Research Award (2016) and the Alfred Noble Robinson Faculty Award (2018) from Lehigh University, and the National Innovation Award (2017) from TechConnect World Innovation Conference and National Innovation Summit.