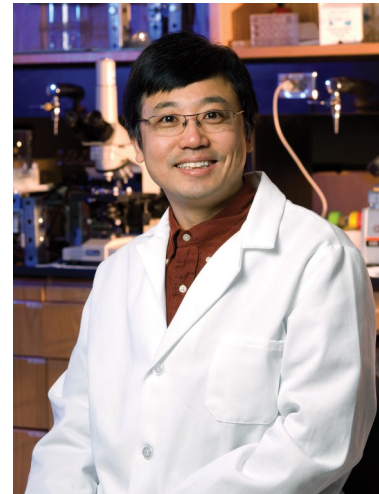


## **Intrinsic optical signal imaging: concurrent assessment of retinal structure and physiological function**

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**LECTURE: 9:00 AM - 10:00 AM**

**ENGINEERING CENTER**  
**ROOM EC 2300**  
**10555 WEST FLAGLER STREET**  
**MIAMI, FL 33174**



**Abstract:** Many eye diseases, such as age-related macular degeneration (AMD), diabetic retinopathy (DR) and glaucoma, involve pathological changes of photoreceptors and/or inner retinal neurons. Given complex structure and delicate function of the retina, both structural and functional measurements are important for retinal diagnosis and treatment evaluation. Since 2004, we have established several imaging approaches, including functional optical coherence tomography (OCT) and confocal microscopy, to investigate transient intrinsic optical signal (IOS) changes in stimulus activated animal (frog and mouse) retinas. High-spatial ( $\mu\text{m}$ ) and high-temporal (ms) resolution imaging revealed fast IOSs with time courses comparable to retinal electrophysiological kinetics. Fast IOS imaging promises a noninvasive method for concurrent assessment of retinal structure and physiological function. Using mutant mouse retinas and laser-injured frog eyes, we have recently demonstrated the feasibility of IOS mapping of localized retinal dysfunctions.

**Biography:** Xincheng Yao, PhD is an Associate Professor of Biomedical Engineering and Vision Sciences, University of Alabama at Birmingham (UAB). Dr. Yao received his PhD in Optics from the Institute of Physics, Chinese Academy of Sciences in 2001. He worked at Los Alamos National Laboratory as a Postdoctoral Researcher (2001-2004) and Technical Staff Member (2004-2006), and served CFD Research Corporation as a Senior Research Scientist (2006-2007). He joined UAB as an Assistant Professor in 2007, and was appointed as an Associate Professor in 2012. His research interests include biomedical optics instrumentation, functional imaging of the retina, experimental biophysics of neural systems and pancreatic islets.

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**Map:** <http://campusmaps.fiu.edu/Engineering Center>