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## Polarization Sensitive Imaging in Precision Ophthalmology

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Polarization-sensitive optical coherence tomography (PS-OCT) detects not only the structural information but also the sample birefringence property thereby providing specific contrasts to fibular tissues in the eye. A high detection sensitivity of birefringence is needed to reliably measure relevant tissue parameters. In this talk, I will introduce the development of triple-input PS-OCT (TRIPS-OCT), a technique that significantly improves the sensitivity of traditional dual-input PS-OCT devices. Furthermore, I'll share insights from our studies of leveraging TRIPS-OCT to measure various ocular structures, including retinal nerve fiber layer, sub-retinal fibrosis, and posterior sclera. I'll show evidence about how these measurements can serve as critical biomarkers for diagnosis and evaluation of eye conditions such as myopia, glaucoma, and age-related macular degeneration. Overall, this talk discusses the potential application of TRIPS-OCT in clinical management of various eye diseases.

### **Short Bio:**



Liu Xinyu, PhD, is now a Senior Research Fellow at the Singapore Eye Research Institute and an adjunct Assistant Professor at the Duke-NUS Medical School. He graduated with a bachelor's degree from Tianjin University, China, in 2012 and obtained his PhD from Nanyang Technological University, Singapore, in 2018. He also spent two years as a visiting scholar at Harvard Medical School and Massachusetts General Hospital in the US. His main research areas include polarization-sensitive optical imaging, the mechanisms and prevention of myopia, and the preclinical and clinical translation of medical technologies. He holds three international patents, and his developed polarization imaging technology has been licensed to and applied in cardiovascular imaging equipment by the Japanese medical device company Terumo Corporation. He has published over 40 papers, with his first-authored papers published in high-impact journals such as Nature Biomedical Engineering. He also serves as a topic editor for ocular imaging technology in Frontiers in Medicine.