The Chinese University of Hong Kong
Department of Biomedical Engineering

Deep dive into OCT and OCT Angiography Imaging

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Abstract

Optical coherence tomography (OCT) represents a cutting-edge medical imaging modality wherein the coherent interference of a broad-spectrum light source is harnessed to generate high-resolution (micron-scale) subsurface images of tissue microstructure. More recently, microstructural OCT imaging has been complemented with additional contrast mechanisms, leading to the development of OCT angiography (OCTA). OCTA leverages the motion signal induced by moving particles to facilitate label-free imaging of microcirculatory tissue beds. The capacity to visualize tissue blood flow at the microcirculation level holds significant relevance across various biomedical applications, several of which, alongside foundational OCT principles and enabling technologies, will be elucidated in this discussion. Specific examples will demonstrate OCTA's efficacy in delineating dynamic blood perfusion at resolutions down to the capillary level within living tissue, with particular emphasis on its applications in retinal imaging within ophthalmology.

Biography

Dr Wang is a professor of bioengineering and ophthalmology at the University of Washington. He also holds the prestigious positions of George and Martina Kren Endowed Chair In Ophthalmology Research and WRF/David and Nancy Auth Endowed Innovator of Bioengineering. His current research interests include biophotonics and imaging, optical coherence tomography and their applications in ophthalmology, neuroscience, dermatology and cancer. Dr Wang has published over 500 peer reviewed SCI journal articles with an h-index of 89 (sourced from google scholar). He is a fellow of Optica, SPIE and AIMBE. He is elected to Washington Academy of Science in 2024. He is also the Editor in Chief for Biomedical Optics Express, an Optica Publishing Group journal, and a Board Editorial Member for American Journal of Ophthalmology.

***** ALL ARE WELCOME *****

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