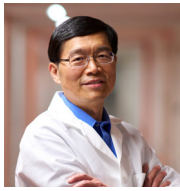


LOPS 2023

3rd Edition of Annual Conference

LASERS, OPTICS, PHOTONICS, SENSORS, BIO PHOTONICS & ULTRAFAST NONLINEAR OPTICS

JUNE 02-05, 2023 | DoubleTree Resort by Hilton Hollywood Beach,
Fort Lauderdale, FL, USA



We developed photoacoustic tomography (PAT) to peer deep into biological tissue. PAT provides in vivo omniscale functional, metabolic, molecular, and histologic imaging across the scales of organelles through organisms. We also developed compressed ultrafast photography (CUP) to record 70 trillion frames per second, orders of magnitude faster than commercially available camera technologies. CUP can record in real time the fastest phenomenon in nature, namely, light propagation, and can be slowed down for slower phenomena such as neural conduction.

PAT physically combines optical and ultrasonic waves. Conventional high-resolution optical imaging of scattering tissue is restricted to depths within the optical diffusion limit (~1 mm). PAT beats this limit and provides deep penetration at high ultrasonic resolution and high optical contrast by sensing molecules. Broad applications include early-cancer detection and brain imaging. The annual conference on PAT has become the largest in SPIE's 20,000-attendee Photonics West since 2010.

CUP can image with a single exposure transient events occurring on a time scale down to 10s of femtoseconds. Akin to traditional photography, CUP is receive-only—avoiding specialized active illumination required by other single-shot ultrafast imagers. CUP can be coupled with front optics ranging from microscopes to telescopes for widespread applications in both fundamental and applied sciences, ranging from biology to cosmophysics.

Biography

Lihong V. Wang, Ph.D.

Lihong Wang is Bren Professor of Medical and Electrical Engineering at Caltech. His book entitled "Biomedical Optics: Principles and Imaging" won the Goodman Book Writing Award. Published 560 journal articles (h-index = 149, citations = 94,000). Delivered 570 keynote/plenary/invited talks. Published the first functional/in vivo photoacoustic tomography, 3D photoacoustic microscopy, photoacoustic endoscopy, photoacoustic reporter gene imaging, and compressed ultrafast photography (world's

PHOTOACOUSTIC TOMOGRAPHY AND COMPRESSED ULTRAFAST PHOTOGRAPHY

Lihong V. Wang, Ph.D., Bren Professor

Andrew and Peggy Cherng Department of Medical Engineering,
Department of Electrical Engineering, California Institute of
Technology

fastest camera). Served as Editor-in-Chief of J. Biomed. Optics. Received NIH Director's Pioneer Award, NIH Director's Transformative Research Award, NIH/NCI Outstanding Investigator Award, OSA Mees Medal, IEEE Technical Achievement and Biomedical Engineering Awards, SPIE Chance Award, IPPA Senior Prize, OSA Feld Biophotonics Award, and an honorary doctorate from Lund Univ., Sweden. Fellow of AAAS, AIMBE, COS, IEEE, NAI, OSA, and SPIE. Inducted into the National Academy of Engineering.