

Photoacoustic, Light-speed, and Quantum Imaging/Physics

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Abstract—

Lihong Wang, the Andrew and Peggy Cherng Medical Engineering Leadership Chair and the Bren Professor of Medical Engineering and Electrical Engineering at Caltech, who is also the executive officer for medical engineering at Caltech, is a recognized leader in the field of biomedical imaging. His group has developed a variety of imaging techniques, including compressed ultrafast photography — a technique that enabled the world’s fastest camera, which can now capture 210 trillion frames per second. Prof. Wang is particularly well known for the development of 3D photoacoustic imaging that allows researchers to see into biological tissues noninvasively, and to peer deeper into the body by nearly two orders of magnitude compared to conventional optical microscopy. Prof. Wang is also pushing what is possible in the field of quantum imaging, gaining higher-resolution images of biological materials by taking advantage of the unique quantum properties of light.



Among his numerous honors, Wang has been the recipient of a National Science Foundation CAREER award; and, from the National Institutes of Health (NIH), the FIRST, Director’s Pioneer, Director’s Transformative Research, and NIH/National Cancer Institute Outstanding Investigator awards. He also received the C.E.K. Mees Medal from the Optical Society of America (OSA, now Optica), a Technical Achievement Award from the Institute of Electrical and Electronics Engineers (IEEE), an IEEE Biomedical Engineering Award, SPIE Britton Chance Biomedical Optics Award, a Senior Prize from the International Photoacoustic and Photothermal Association, and an OSA Michael S. Feld Biophotonics Award. He is a fellow of the American Association for the Advancement of Science, the American Institute for Medical and Biological Engineering, the Electromagnetics Academy, the International Academy of Medical and Biological Engineering, and the IEEE, OSA, and SPIE. He is a Foreign Fellow of the Chinese Optical Society. An honorary doctorate was conferred on him by Lund University, Sweden. In 2018, he was inducted into the National Academy of Engineering, and in 2020, he was named to the National Academy of Inventors. Wang was also honored in 2024 with a special issue of the Journal of Biomedical Optics. He was elected to the National Academy of Medicine (NAM) in 2025.