

Photoacoustic tomography: Ultrasonically beating optical diffusion and diffraction (Presentation Video)

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A decade of research has pushed photoacoustic computed tomography to the forefront of molecular-level imaging, notes SPIE Fellow Lihong Wang (Washington University, St. Louis) in his plenary talk, "Photoacoustic Tomography: Ultrasonically Beating Optical Diffusion and Diffraction."

Modern optical microscopy has resolution and diffraction limitations. But noninvasive functional photoacoustic computed tomography has overcome this limit, offering deep penetration with optical contrast and ultrasonic resolution of 1 cm depth or more -- up to 7 cm of penetration in some cases, such as evaluating sentinel lymph nodes for breast cancer staging. This opens up applications in whole body imaging, brain function, oxygen saturation, label-free cell analysis, and noninvasive cancer biopsies.

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