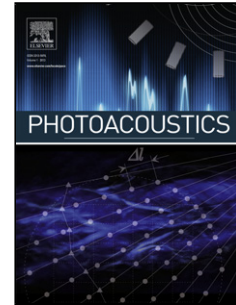


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All-optical dual photoacoustic and optical coherence tomography intravascular probe

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Abstract:

Intravascular imaging in percutaneous coronary interventions can be an invaluable tool in the treatment of coronary artery disease. It is of significant interest to provide molecular imaging contrast that is complementary to structural contrast provided by optical coherence tomography (OCT) and intravascular ultrasound imaging (IVUS). In this study, we developed a dual-modality intravascular imaging probe comprising a commercial OCT catheter and a high sensitivity fiber optic ultrasound sensor, to provide both photoacoustic (PA) and OCT imaging. With PA imaging, the lateral resolution varied from 18 μm to 40 μm ; the axial resolution was consistently in the vicinity of 45 μm . We demonstrated the clinical potential of the probe with 2-D circumferential PA and OCT imaging, and with multispectral PA imaging.

Keywords: Endoscopic imaging

Intravascular photoacoustic imaging

Optical coherence tomography

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