DUAL-BAND ULTRAHIGH-RESOLUTION FULL-FIELD OPTICAL COHERENCE TOMOGRAPHY

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KEY WORDS: optical coherence tomography, white-light interferometry, three-dimensional microscopy, spectroscopy.

Full-field optical coherence tomography (FF-OCT) was introduced a few years ago as an alternative method to conventional OCT using an interference microscope and a camera as an array detector combined with a low coherence illumination source for parallel acquisition of *en-face* oriented tomographic images [1,2]. To take advantage of the spectroscopic response of the sample, conventional OCT has been developed recently at two distinct wavelengths using supercontinuum generation in non-linear crystal fibers and two single detectors at 800 nm and 1300 nm [3]. We present an ultrahigh-resolution FF-OCT system operating in the 800 nm and 1200 nm wavelength regions simultaneously using a Silicon-based (Si) CCD camera and an Indium Gallium Arsenide (InGaAs) camera as area detectors and a halogen lamp as illumination source. The FF-OCT setup is optimized to support the two broad spectral bands in parallel, achieving a detection sensitivity of ~ 90 dB and a micrometer-scale resolution in the three directions. Images of *ex vivo* biological tissues are presented (rabbit trachea and *Xenopus laevis* tadpole) with an increase in penetration depth at 1200 nm. A color image representation is applied to enhance spectroscopic property visualization.

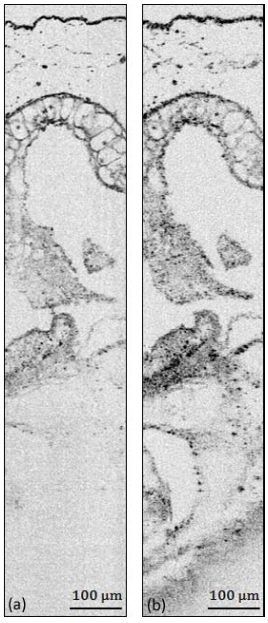

Figure : Vertically-oriented (XZ) reconstructed tomographic image inside the head of the African frog tadpole *Xenopus Laevis*, obtained with dual-band full-field optical coherence microscopy at 800 nm (a) and 1200 nm (b).

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