High resolution Spectral Optical Coherence Tomography for clinical imaging of the anterior segment of the eye

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ABSTRACT

The aim of this article is to demonstrate an application of Spectral Optical Coherence Tomography SOCT for visualization of the anterior segment of the human eye. A SOCT system with an axial resolution of 4-6 µm and a lateral one of 10 µm provides tomograms composed of 3000 - 5000 A-scans when a total acquisition time of 100-250 ms is used to acquire tomograms. The quality of the images is adequate for detailed evaluation of the corneal structure and contact lens fit. Erosion of the epithelium, scars and lesions may be precisely localized. The design, shape and edge position of the contact lens, as well as other fitting relationships between the lens and the ocular surface, may be accurately assessed. The information provided by SOCT may be helpful in diagnosis, evaluation and documentation of corneal pathologies and contact lens complications.

Keywords: Optical coherence Tomography, Medical and biological imaging, Contactology

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