

Abstract Submitted
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Comparison of optical properties of cultured and excised ocular tissues as single- and multi-layered structures¹ BRIAN YUST, FRED BARRERA, L. CHRISTOPHER MIMUN, ANDREW TSIN, DHIRAJ SARDAR, The University of Texas at San Antonio — The near infrared (NIR) optical properties of the various ocular layers, including the retinal pigmented epithelium (RPE), sclera, and choroid, were studied using a double-integrating sphere setup. Inverse Adding-Doubling, Kubelka-Munk, and Inverse Monte Carlo techniques were applied to obtain absorption and scattering coefficients. Changes in polarization of transmitted and reflected light were measured using a polarizer and single integrating sphere. ARPE24 cell monolayers were cultured in viewing windows and optically characterized. Newly excised ocular tissues were bisected and characterized as a single- and multi-layer tissue structures. The results from excised and cultured tissues were compared to determine any significant differences in the NIR optical properties. A comparison was also made between the NIR optical properties of the multi-layer retinal structure and a model of the multi-layer structure constructed from the optical properties of the single tissue-type layers. This study will add to the understanding of how light propagates through turbid media, such as biological tissues consisting of multiple cell-type layers.

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