A Comparative Study of a New Computational Technique for Determining Optical Properties of Biological Samples Utilizing the Discontinuity Theory Described by the Dahm equation[1] BRIAN YUST, LAWRENCE MIMUN, DHIRAJ SARDAR, The University of Texas at San Antonio — Due to inhomogeneities inherent in biological samples, such as tissues, the current theories which are used to determine their optical properties can only result in an estimate whose accuracy is dependent on how well the approximation applies to the geometry and specific details of each sample. Specifically, in the regime of extremely thin biological samples, the usually techniques for determining optical properties, such as Kubelka-Munk, Inverse Adding-Doubling, and Inverse Monte Carlo, are no longer valid. A new computational technique utilizing the Dahm equation has been developed to determine the optical properties of samples which can be described under the representative layer theory. The main differences, strengths, weaknesses between this new technique and conventional ones will be discussed. A statistical comparison will also be made using experimental data sets previously obtained.

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