Abstract Submitted
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Modeling Laser-Tissue Interactions: Implementing the Heat Diffusion Equation and Wave Equation to Simulate Thermal Interactions of Absorber Distributions in Biological Tissues[1] FREDERICK BARRERA, ELHARITH AHMED, PATRICK NASH, DHIRAJ SARDAR — The tracking of photons through turbid media (e.g. tissues) has been studied extensively from an experimental vantage point. These turbid media are difficult to characterize- since their components are exceedingly variegated- and thus present many challenges to clinicians who require models which precisely predict the location and time evolution of energy deposition. Furthermore, the interaction of the turbid media sample with the source of radiation typically involves many dynamic mechanisms (e.g. photothermal etc.) Using diffuse light transport, and an electromagnetic wave approach (e.g. Maxwell's equations), an analysis of thermal energy distribution in tissues is performed. Assuming a highly absorbing chromophore model of melanocytes in tissues, a comparison of the variation of thermal energy is determined for different collections of melanocyte spatial distributions.

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