

Public Abstract

First Name:Hisham

Middle Name:

Last Name:Abdussamad Abbas

Adviser's First Name:Gregory

Adviser's Last Name:Triplett

Co-Adviser's First Name:

Co-Adviser's Last Name:

Graduation Term:SP 2013

Department:Electrical Engineering

Degree:MS

Title:An Optics Study of Mammal Skin and its Transmission properties

A detailed study is performed to understand infrared photonic transmission through skin and the factors that influences transmission at room temperature. Pigskin is the test vehicle of this study since its structure most closely resembles that of human skin. The skin is irradiated using an infrared pulsed source because it can penetrate through thick, fleshy skin more easily and generates light/skin that produces interesting transmission properties. Furthermore, the pulsed beam offers more precise control of thermal generation in the skin. Skin samples of varying thicknesses are also used in this study to emulate multiple skin types. The main objective of this research is to observe the correlated parameters that influence transmission through the layers of skin and to determine a method of effectively improving the associated transmission by minimizing internal losses. The pulse frequency and duty cycle are varied to maximize propagation transmission through the skin layers. The temporal, thermal, spatial and spectral response of the beam spot on the skin's spot are then evaluated.