

PHOTONIC ABLATION VIA QUANTUM TUNNELING

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ABSTRACT

Contemporary laser delivery techniques utilized in clinical dermatology allow for a dangerous amount of high-intensity laser light to reflect off a multitude of surfaces, including the patient's skin. Seeing as this stray light poses a consistent threat to the safety of both patients and practitioners alike, the intention of this work was to develop a technique to mitigate the potential for adverse reflections by delivering the light directly into the tissue through physical contact with an optical waveguide. It is also anticipated that delivering the light directly into the tissue will aid in the mitigation of negative tissue effects by replacing the tissue-air interface with a tissue-waveguide interface, thereby encouraging thermal conductivity through the use of contact cooling modalities. The technique demonstrated herein represents a controlled method of laser delivery utilizing metal thin films to regulate energy delivery into the tissue.