

Laser Profilometry for the Characterization of Craters Produced in Hard Dental Tissues by Er:YAG and Er,Cr:YSGG Lasers

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ABSTRACT:

A new, highly accurate and repeatable methodology based on the principle of optical triangulation to measure ablation rates in hard dental tissues is introduced. Using this methodology, a comparison is made between the two leading laser wavelengths for hard tissue procedures in dentistry, Er:YAG (Fidelis Plus III, Fotona) and Er,Cr:YSGG (Waterlase MD, Biolase). In-vitro measurements of the maximum available drilling speeds (ablated volume per second) revealed ablation rates of the Er:YAG laser system to be 3.7 times higher in dentine, and 5.0 times higher in enamel compared to those achieved with the Er,Cr:YSGG laser system.

Key words: Er:YAG; Er,Cr:YSGG; optical triangulation principle, VSP technology, ablation speed; hard tissue procedures.