



— ATHANASSIOS KALIUDIS

Pulsing instead of drilling: Laser in dentistry

US company Access Laser is hoping to revolutionize dentistry with its DL-500 dental laser. Engineer Mike Adams explains why we won't have to be afraid of going to the dentist any more if this revolution takes hold.

— **Mr. Adams, most of us associate the idea of a trip to the dentist with a sense of trepidation and, worst of all, a nasty drilling noise. Could that really be replaced by the gentle pulsing sound of a laser in the future?**

Well, if the dentist was using our laser, the sound would be more pleasant for sure – and you certainly wouldn't have to be afraid of drilling. That's because our DL-500 is the first commercially available laser that is capable of replacing traditional drills and making treatment completely painless. Our aim is to trigger a new trend that could change the entire face of dentistry. Imagine a future in which kids could really say goodbye to toothache and never have to suffer from it again!

— **Before you tell us how you hope to achieve that, what's the current situation with lasers in dentistry?**

Lasers have been used in dentistry since the 1990s. At first they were mostly Nd:YAG lasers, and they tended to be very large and expensive. Operating at a wavelength of 1.064 microns, they were totally unsuitable for dental hard tissue – in other words, for the tooth itself – and only provided limited soft tissue capabilities because there was simply too much heat build-up. The CO2 laser with a wavelength of 10.6 microns was also introduced early on but had similar difficulties. Since then several companies have introduced Er:YAGs at 2.94 microns which is primarily absorbed by water and thus ablates hard tissue via a secondary absorption where the water rapidly expands from liquid to gaseous steam. This micro-explosion of rapid expansion is what causes removal of enamel. However, this technique is slow, can still be painful for patients, and has limited efficacy for soft-tissue interaction as it does not provide hemostasis.



