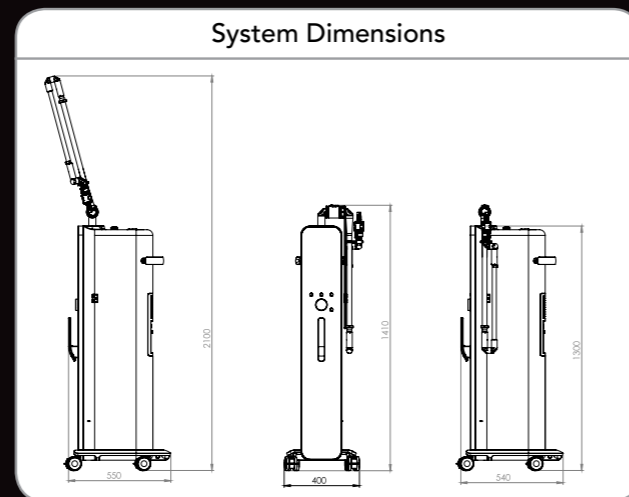
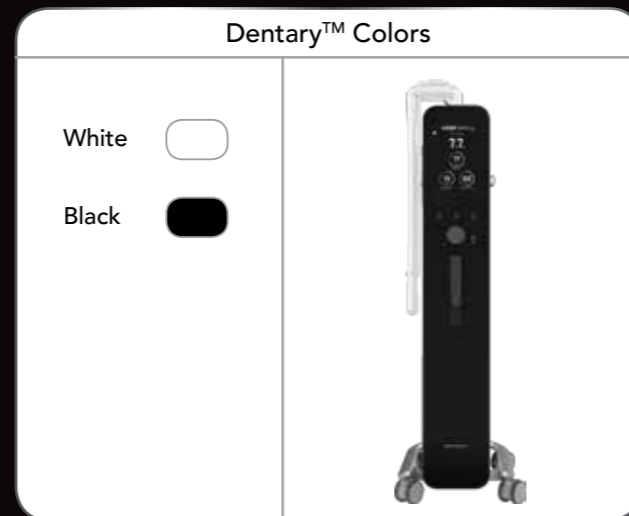


Technical Specifications	
Name Laser Classification	Dentaray™ Class IV
Output Laser Type Wavelength Pulse Energy Power Pulse Repetition Rate Spot Size	CO ₂ 9.6μm Up to 150 mJ/Pulse Up to 10 Watts on tissue 25-200 Hz 0.6 mm
Electrical Requirements Protection Against Electric Shock:	100-240 +-10% VAC, 7A 50-60 Hz, Single Phase Class I, Type BF Applied part
System Dimensions (W x L x H)	37x52x130 cm
System Cooling Method	Water Cooling (Built-In Refill Bottle)
System Weight	Approx. 154 lbs 70 Kg
Environmental Requirements Treatment room temperature Recommended room temperature Storage - cooling system filled Storage - cooling system drained Relative humidity	5-25°C (41-77°F) 20-25°C (68-77°F) 5-50°C (41-122°F) 2-55°C (35-131°F) Up to 80%



LIGHT INSTRUMENTS
RISE ABOVE TECHNOLOGY



Disclaimer: Investigational device. Limited by law to investigational use

DENTARAY Ltd.

Dentaray Ltd. is the world's first and only developer and manufacturer of the one-of-a-kind 9.6μm wavelength CO₂ dental laser. Dentaray's vision - the creation of the ideal dental laser technology for hard and soft tissue treatments. This vision materialized in its uniquely patented all-tissue dental laser system, based on the company's proprietary and innovative technology. High technology in an elegant design - Dentaray stands at the forefront of dental laser innovations worldwide.

Light Instruments Ltd.

Light Instruments Ltd. is the world's leading provider of next generation dental laser technology for hard and soft tissue treatments. In 2007, Light Instruments introduced its revolutionary and innovative Laser-in-Handpiece™ technology as part of its flagship LiteTouch™ product, the world's most versatile non-fiber, Er:YAG dental laser device. The Laser-in-Handpiece™ innovation has played a pivotal role in transforming the way practitioners perform dental treatments today.

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DENTARAY™
9.6μm CO₂ Dental Laser



DENTARAY™

The World's Only 9.6µm CO₂ Dental Laser



- Director of the Department of Operative Dentistry Periodontology, Pediatric Dentistry RWTH Aachen University.
- Director of the Aachen Dental Laser Center (AALZ).
- Scientific Director of the Postgraduate Master Program: "Lasers in Dentistry".

Prof. Dr. Norbert Gutknecht

Why am I so excited about the new CO₂ 9.6µm wavelength laser? Because the 9.6µm wavelength is the only wavelength optimally absorbed in hydroxyapatite which appears in all types of hard tissues such as enamel, dentin and bone. When the CO₂ 9.6µm wavelength laser is absorbed in the hydroxyapatite it causes an explosive vaporization effect which changes the morphology of the hard tissue surface by vaporizing it instantaneously. Although cutting through hard tissue, it may feel like you are cutting through soft tissue.



- Associated Professor at the Department of Oral Pathology, Director of the Dental Laser Center at Faculty of Dental Medicine, Plovdiv Medical University, Bulgaria.
- President of the Bulgarian Society for Laser Dentistry (BDLS)

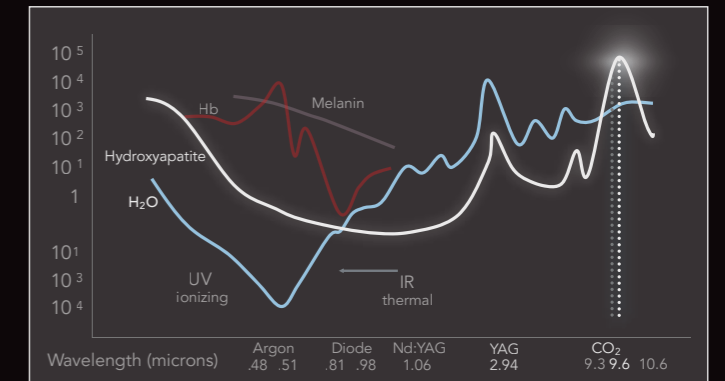
Prof. Dr. Georgi Tomov

"The penetration depth control combined with very precise ablation of hard dental tissues, are the most impressive characteristics of the new 9.6µm CO₂ laser. Its highest absorption in hydroxylapatite concentrates the energy in a very small area and changes the mineralized structures. The observed morphological effects are particularly beneficial in the field of caries prevention and dentinal hypersensitivity. Our researches have confirmed that 9.6µm wavelength can be used successfully both for hard and for soft tissue treatments and further clinical studies will support our pilot findings. The new wavelength challenges the traditional role of CO₂ as soft tissue laser only and opens a new page in the laser dentistry."



Laser Absorption Spectrometry:

The effects of laser light on the biological structures are dependent on the laser energy absorbed by different tissue chromophores. The target chromophores of the CO₂ lasers are hydroxyapatite and water. Amongst all CO₂ lasers, the Dentaray™ 9.6µm wavelength has the highest absorption in hydroxyapatite which is presented in hard tissues such as enamel, dentin and bone.



Cutting Edge Dentistry

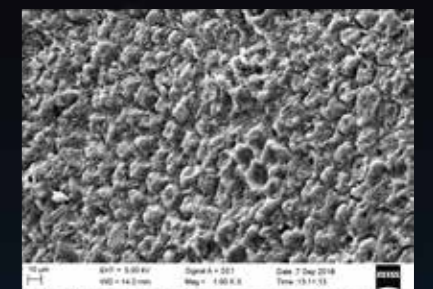
Dentaray™ all-tissue CO₂ Dental laser is specially designed for both hard and soft tissue procedures. The optimal combination of 9.6µm wavelength, high repetition rate, super short pulses and water cooling results in a fast, precise and minimally invasive hard tissue ablation without carbonization. The treated surfaces appear clean, free of smear layer, retentive and appropriate for adhesive restorations (Images on the right). For better control and safety during the treatment, the special Dentaray™ scanner automatically irradiates the target area in a constant motion mode to prevent overheating and damage of the dentin-pulp complex.

In the field of preventive dentistry, preliminary studies suggest that the 9.6µm wavelength markedly inhibits caries progression in pits and fissures in comparison to fluoride varnish¹ and successfully inhibits demineralization of tooth enamel².

For soft tissue treatments Dentaray™ 9.6µm CO₂ Laser is designed to cover all the advantages of the conventional CO₂ lasers. The soft tissue procedures can be performed quickly, minimal-invasively, with less bleeding, resulting in minimum trauma to the treated tissue and less post-operative complications.



SEM microphotography of cavity prepared by 9.6µm CO₂ laser (magnification X44)



SEM microphotography of enamel ablated by 9.6µm CO₂ laser (magnification X1000)

Images courtesy of Prof. G. Tomov, Medical University of Plovdiv, Bulgaria

Footnotes:

1. Rechmann et al, In-vivo occlusal caries prevention by pulsed CO₂ -laser and fluoride varnish treatment—a clinical pilot study. Lasers Surg Med. 2013 Jul;45(5):302-10.
2. Rechmann et al, Caries inhibition in vital teeth using 9.6-µm CO₂-laser irradiation. J Biomed Opt. 2011 Jul;16(7):071405