

# laser

the international C.E. magazine of laser dentistry

1 2011

## earn C.E. credit

Laser  
phototherapy  
(LPT) in  
dentistry

## clinical report

The antibacterial  
effects of lasers  
in endodontics

## case report

Technology-  
enhanced caries  
detection and  
treatment options



# #1 Lasers in the World

THEIR VOTE  
THEIR LASER



YOUR VOTE  
YOUR LASER



May 12-14, 2011  
Anaheim, CA

cda<sup>®</sup>

BOOTH#  
2524



Scan with your smart phone to  
go to AMD LASERS website



Dr. Glenn van As



Dr. Ron Kammer



Dr. James Jesse



A USA COMPANY

AMD LASERS<sup>®</sup>, LLC  
www.amdlasers.com

7405 Westfield Blvd.  
Indianapolis, IN 46240, USA

866.WWW.AMDL  
866.999.2635

TEL: +1.317.202.9530  
FAX: +1.678.868.4108  
sales@amdlasers.com

FDA CE  
0197  
ISO 13485





# EDUCATION SOLUTIONS

## MASTERS OF LASER DENTISTRY

**ICLE** International Center  
for Laser Education

### DVD INCLUDED IPAD APP ON-LINE COURSES HANDS-ON SEMINARS, LECTURES WORLD WIDE SUPPORT

Masters of Laser Dentistry courses will educate, enlighten, and empower you on AMD LASER technology theory, function, and usage. You will learn the fundamentals of laser technology, laser physics and laser assisted soft tissue management through lecture, and hands-on training using the Picasso line of dental lasers. These courses are designed for dentists and hygienists who are new to, or unfamiliar with the Picasso diode lasers. Friday courses will be focused more on surgical procedures, whereas Saturday courses will be focused on the use of lasers in dental hygiene.



townie  
choice  
awards.2010



### Masters of Laser Dentistry Hands-on Training Courses Now Available!



Dr. Louis Chmura



Dr. David Hornbrook



Dr. Gerald Bittner

# Welcome to *laser*



**Torsten Oemus**  
Publisher, DTI

The goal of this quarterly magazine is twofold. First, it seeks to share practical dental knowledge that can be put to use in your day-to-day practice. Second, it is a vehicle to help you chip away at your continuing education (C.E.) requirements.

The amount of new information available in the dental field about new products, techniques and research data is astounding. Running a practice and seeing patients leaves little time for catching up on the latest clinical news and product information. Thus, we hope *laser* will not only be a welcome respite for those rare chunks of time you can devote to leisurely reading, but one that provides a practical return on your investment by providing information that you can actually put to immediate use.

In addition, we know that taking time away from the practice to pursue C.E. credits is costly in terms of lost revenue and time. As a quarterly magazine, *laser* is here to help you chisel at least four C.E. credits per year out of your already busy life without any lost revenue or time away from your practice. To that end, every edition of *laser* will include at least one article that provides ADA CERP-certified C.E. credit. In order to earn this credit, readers simply answer questions about the materials at [www.DTStudyClub.com](http://www.DTStudyClub.com). Annual subscribers to the magazine (\$50) need only register at the Dental Tribune Study Club website to access these C.E. quizzes free of charge.

In fact, even non-subscribers may take the C.E. quiz after registering on the DT Study Club website and paying a nominal fee. If you are a practitioner with a penchant for words, it might also interest you to know that authors of the C.E.-accredited articles receive 15 percent of the fees collected from the non-subscribers who take the C.E. quiz online. The C.E. quiz for the articles in this edition will be available online on May 11.

Dental Tribune America is part of the largest dental publishing network in the world, Dental Tribune International (DTI), which consists of 23 DTI license partners around the globe. The DTI network publishes a variety of dental publications that are distributed in more than 90 countries. Please visit us online at [www.dental-tribune.com](http://www.dental-tribune.com) to see the variety of publications we offer, and at [www.DTStudyClub.com](http://www.DTStudyClub.com) to see the complete list of online and offline C.E. opportunities available. In the meantime, we hope you enjoy the first edition and welcome your feedback.

Sincerely,

A handwritten signature in black ink, appearing to read 'Torsten Oemus'.

Torsten Oemus  
Publisher



# We search for the best worldwide!

The GLOBAL DENTAL TRIBUNE AWARDS will celebrate excellence in dentistry. We will recognise outstanding individuals and teams that have made a unique and substantial contribution to improving dental care, whether in clinical practice, health policy, dental education, dental research or the dental industry.

Nominees will be chosen by a global audience of over 650,000 dental professionals, all readers of the Dental Tribune newspapers, which are published in more than 25 languages worldwide.

All dental professionals are invited to submit their applications, which will be taken to an online voting by their peers. Shortlisted candidates will be judged by a jury of the most renowned opinion leaders in their respective categories. The awards ceremony will be held in New York City at the end of this year, filled with all the glitz and glamour of a red carpet event.

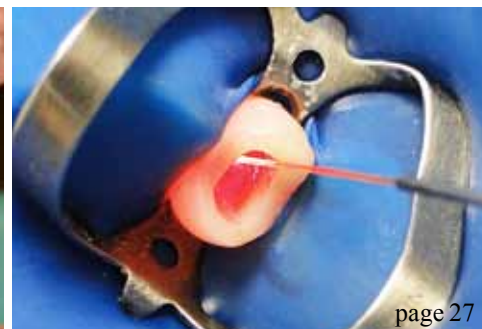
For preregistrations and more information please go to:

[awards.dental-tribune.com](http://awards.dental-tribune.com)



## DENTAL TRIBUNE

— The World's Dental Newspaper —



## I C.E. articles

- 08 **Laser phototherapy** in dentistry  
\_Jan Tunér, DDS
- 18 Lasers in **dental traumatology**  
\_Claudia Caprioglio, DDS
- 27 The antibacterial effects of **lasers in endodontics**  
\_Selma Cristina Cury Camargo, PhD

## I about the publisher

- 49 \_submissions
- 50 \_imprint

## I case reports

- 35 Technology-enhanced **caries detection** and **treatment options**  
\_Dr. Michele Baffi Diniz, Dr. Jonas Almeida Rodrigues and Dr. Adrian Lussi

## I research

- 40 Surface analysis of **Erbium:YAG laser etching** vs. **acid-etched surface**  
\_Dr. Roheet Khataavkar and Dr. Vivek Hegde

## I industry

- 45 An inside look at **AMD LASERS**
- 47 Soft-tissue dental lasers: an **engineering perspective** on choosing wisely



## I on the cover

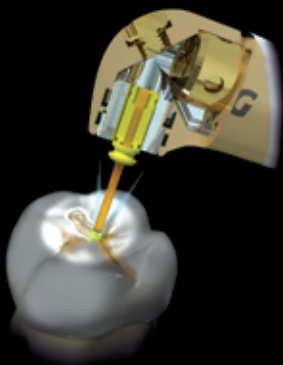
Cover image provided by AMD LASERS.



# The Dual Wavelength *waterlase*\**iPlus*<sup>™</sup>

## Advancing Laser Technology to Its Ultimate

### *i*NCOMPARABLE ACCESS & FIELD OF VISION



- ⊕ No Pain, Therefore No Shot Necessary
- ⊕ No Micro-fractures or Thermal Damage
- ⊕ No Cross Contamination as with Burr
- ⊕ Best Ergonomic & Smallest Design

### *i*NCREDIBLE POWER



- ⊕ Cutting Speed that Surpasses the High Speed Handpiece and Any Other Dental Laser on the Market
- ⊕ Cuts Faster and More Efficiently than Lasers with More Power Watts
- ⊕ Combines 0.5-10 Watts Power with 100 Hz & Short Pulse for 600 mJ of Laser Energy
- ⊕ Patented Laser Technology

### *i*NTUITIVE GRAPHICAL USER INTERFACE



⊕ Step 1: Application



⊕ Step 2: Procedure



⊕ Step 3: No Shot/No Drill

### *i*LASE 940nm DIODE LASER



- ⊕ 5 Watts of Power with ComfortPulse
- ⊕ Handheld & Ergonomic
- ⊕ Battery Operated with Finger Switch Activation
- ⊕ Proprietary Multi-diameter/Length Bendable Tips
- ⊕ Single Use for NO Cross Contamination



# Laser phototherapy (LPT) in dentistry

Author\_Jan Tunér, DDS

## \_c.e. credit part 1

This article qualifies for C.E. credit. To take the C.E. quiz, log on to [www.dtstudyclub.com](http://www.dtstudyclub.com). The quiz will be available on May 11.

**Fig. 1** \_A theoretical description of the effects of a strong laser beam.  
(Photo/Provided by Edson Nagib)

**Fig. 2** \_Red laser light penetration through dry bone.

Although laser phototherapy has been practiced for more than 40 years, there is still some remaining controversy regarding its scientific standard. During recent years, about 250 scientific papers are published annually on PubMed, and the knowledge about the basic mechanisms and the optimal clinical parameters are gradually better known.

The effects exerted on cells and tissue are well-documented and, to a certain degree, also in animal models. Large clinical studies are still scarce. The safety of the treatment is well-documented. Some controversy remains for several indications in spite of enthusiastic clinical observations for a great variety of conditions.

The problem of finding consensus in this area of dental laser applications is greater than for "hard laser" applications due to the fact that so many parameters are involved. Different wavelengths, power densities, energy densities and application modes have been used and there is no current consensus about optimal standards. The reporting of actual laser parameters and dosimetry in studies is too often substandard<sup>1</sup> and control studies are then difficult to perform. Consequently, the evaluation of the various applications becomes problematic. The optical properties and performance of commercially available lasers vary a

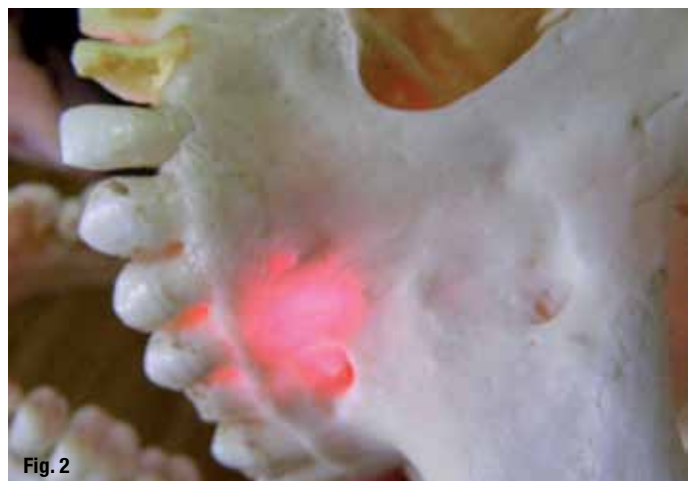
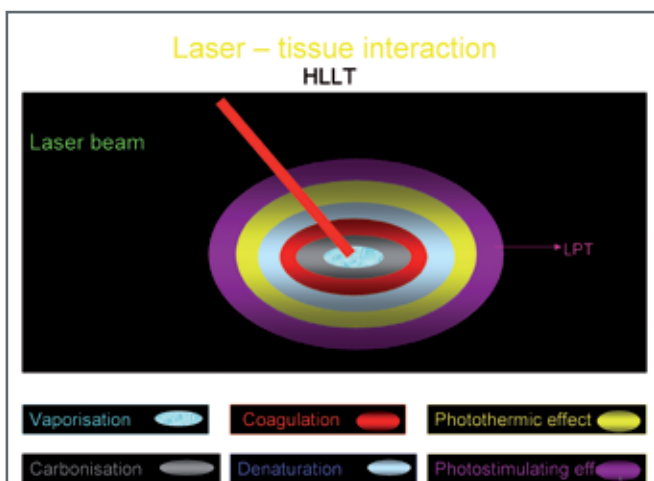
lot, adding problems in the evaluation process.<sup>2</sup>

Surgical lasers are rather precise in their indications and the results are easier to verify by the naked eye. Therapeutic lasers work on the cellular level, enhancing the fundamental functions of the cells. This means that any pathological condition can theoretically be improved if the suitable wavelength and energy of light is applied. This is the beauty of laser phototherapy, but also the problem: how can one single therapy be used in so many situations? There is supposedly no "take-it-all" method in the history of medicine and a skeptical attitude from dentists is basically a sound reaction.

## \_Two sides of the same coin

For decades, efforts have been made to separate "soft" and "hard" lasers and the plethora of suggested names partly stems out of these efforts. "Low-power laser," "low-level laser" and "low-energy laser" are examples of this confusing nomenclature. The modern name of the tool is therapeutic laser and the therapy itself is more frequently called laser phototherapy (LPT).

It is becoming increasingly clear that the strict division between the two types of lasers cannot be



**Fig. 2**



# PROMETHEY-Mini

fits every practice  
and every pocket

An innovative soft tissue dental laser  
equipped with all you need  
but without a huge price tag

**PROMETHEY-Mini: \$2,650**

Includes FREE certification training and 8 CE credits  
(value of \$695)



## **Why PROMETHEY-Mini?**

- 3 Watts of 980 nm CW or pulsed power
- Plug and play, ready to use in minutes
- Length and angle adjustable tip
- Lowest cost disposable tip, \$3.50 per procedure
- Handpiece and cable autoclave safe
- 3 year warranty
- Designed and manufactured in the USA



**LASER DENTAL INNOVATIONS - laser dentistry is what we do**

[www.LAZERDENTAL.net](http://www.LAZERDENTAL.net)  
tel. 1-877-753-5054