Lasers in Dentistry XXIV

Peter Rechmann
Daniel Fried
Editors

28 January 2018
San Francisco, California, United States

Sponsored and Published by
SPIE
# Contents

<table>
<thead>
<tr>
<th>SESSION 1</th>
<th>CARIES LESION DETECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>10473 02</td>
<td>Effect of bioglass on artificially induced enamel lesion around orthodontic brackets: OCT study [10473-1]</td>
</tr>
<tr>
<td>10473 04</td>
<td>Deep learning classifier with optical coherence tomography images for early dental caries detection [10473-3]</td>
</tr>
<tr>
<td>10473 05</td>
<td>Multispectral near-infrared reflectance and transillumination imaging of occlusal carious lesions: variations in lesion contrast with lesion depth [10473-4]</td>
</tr>
<tr>
<td>10473 06</td>
<td>Laser speckle imaging for lesion detection on tooth [10473-5]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SESSION 2</th>
<th>IMAGING OF HARD, SOFT TISSUE AND MICROBIAL PLAQUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>10473 08</td>
<td>Near-infrared dental imaging using scanning fiber endoscope [10473-7]</td>
</tr>
<tr>
<td>10473 09</td>
<td>Photoacoustic imaging of teeth for dentine imaging and enamel characterization [10473-8]</td>
</tr>
<tr>
<td>10473 0A</td>
<td>Optical measurement of acidification of human dental plaque in vitro [10473-9]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SESSION 3</th>
<th>CARIES PREVENTION, REMINERALIZATION, ABLATION AND CERAMICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>10473 0C</td>
<td>Temperature variations in sintering ovens for metal ceramic dental prostheses: non-destructive assessment using OCT [10473-11]</td>
</tr>
<tr>
<td>10473 0D</td>
<td>Lesion dehydration rate changes with the surface layer thickness during enamel remineralization [10473-12]</td>
</tr>
<tr>
<td>10473 0E</td>
<td>Selective ablation of carious lesions using an integrated near-IR imaging system and a novel 9.3-μm CO₂ laser [10473-13]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SESSION 4</th>
<th>BONE ABLATION, SOFT TISSUE TREATMENT AND MICROANGIOGRAPHY</th>
</tr>
</thead>
<tbody>
<tr>
<td>10473 0G</td>
<td>Three-frequency Nd:YAG laser for dental treatment [10473-15]</td>
</tr>
<tr>
<td>10473 0I</td>
<td>Ex vivo evaluation of super pulse diode laser system with smart temperature feedback for contact soft-tissue surgery [10473-17]</td>
</tr>
</tbody>
</table>
In vivo and ex vivo characterization of a novel Er fiber laser system for fractional treatment of soft oral tissues [10473-18]

POSTER SESSION

Wavelength comparison for laser induced breakdown spectroscopy caries detection [10473-19]

Evaluation of enamel mineral loss around cavities prepared by the Er,Cr:YSGG laser and restored with different materials [10473-24]

Temperature increasing in titanium implants using a high-intensity diode laser for peri-implantitis decontamination [10473-25]

Image-guided removal of interproximal lesions with a CO₂ laser [10473-29]

SWIR reflectance imaging of demineralization on the occlusal surfaces of teeth beyond 1700 nm [10473-30]
Authors

Numbers in the index correspond to the last two digits of the seven-digit citation identifier (CID) article numbering system used in Proceedings of SPIE. The first five digits reflect the volume number. Base 36 numbering is employed for the last two digits and indicates the order of articles within the volume. Numbers start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B...0Z, followed by 10-1Z, 20-2Z, etc.

Abbassy, Mona, 02
Al-batati, Mohammed, 02
Alnajar, Hisham, 04
Al-Najjar, Mohammed, 02
Aloian, Georgii, 0J
Altshuler, Gregory, 0I, 0J
Amaral, Marcello M., 0K
Ana, Patrícia A., 0K, 0P
Araujo, Sidnei A., 06
Bachman, L., 0P
Bakhsh, Abdulsalam, 02
Bakhsh, Saud, 02
Bakhsh, Turki, 02
Bakry, Ahmad, 02
Baptista, Alessandra, 0O
Bonifácio, Clarissa Calil, 0O
Boutoussov, Dmitri, 0I
Brandão, Pavel, 0G
Bradu, A., 0C
Bussadori, Sandra K., 06
Chan, Kenneth H., 0E, 0T
Chang, Nai-Yuan N., 0D
Curtis, Donald A., 05
Damazio, João H., 06
Darling, Cynthia L., 05, 0U
Deana, Alessandro M., 06
de Freitas, Patrícia Moreira, 0O
Dostálová, Tat’jana, 0G
Duma, V.-F., 0C
Faustina, C., N., 0P
Fibrich, Martin, 0G
Fried, Daniel, 05, 0D, 0E, 0T, 0U
Fried, Nathaniel M., 0E
Gavinho, Luciano G., 06
Graham, Jasmine Y., 0A
Imparato, José Carlos P., 0O
Jelinková, Helena, 0G
Jew, Jamison M., 0D
Kadlecová, Martina, 0G
Kapitch, Nicholas, 0G
Karabut, Maria, 0J
Karimian, Nima, 04
Lago, Andréa Dias Neves, 0O
Le, Oanh, 0T
Lee, Robert, 08
Mahdian, Mina, 04
Mandurah, Mona, 02
Matos, Adriana Bona, 0O
Meleshkevich, Val, 0I

Mendes, Fausto Medeiros, 0O
Mukhtaf, Mona, 02
Navarro, Ricardo Scarpato, 0O
Negruțiu, M. L., 0C
Nejezchleb, Karel, 0G
Nelson, Leonard Y., 0A
Némec, Michal, 0G
Ng, Chung, 0U
Ngo, Albert, 0T
Núñez, Silvia Cristina, 0K, 0O
Olivan, Silvia R., 0G
Olechuk, Igor, 0I
Periyasamy, Vijitha, 09
Pinto, Marcelo M., 06
Podoleanu, A. Gh., 0C
Pramanik, Manojit, 09
Prates, Renato A., 06
Raele, Marcus P., 0K
Rangaraj, Mani, 09
Ryabova, Valentina, 0J
Sadr, Allireza, 0B
Salehi, Hassan S., 04
Seibel, Eric J., 08, 0A
Sfalcin, Ravana A., 06
Shatilova, Ksenia, 0J
Silva, João V. P., 06
Simon, Jacob C., 05, 0T, 0U
Sinescu, C., 0C
Škoda, Václav, 0G
Šulc, Jan, 0G
Tadinada, Aditya, 04
Topala, F. L., 0C
Vybornov, Alexander, 0I
Yaroslavsky, Ilya, 0I, 0J
Zamataro, Claudia B., 0K
Zezell, Denise M., 0K
Zhou, Yaxuan, 08

Proc. of SPIE Vol. 10473 1047301-5
Conference Committee

Symposium Chairs

James G. Fujimoto, Massachusetts Institute of Technology (United States)

R. Rox Anderson, Wellman Center for Photomedicine, Massachusetts General Hospital (United States) and Harvard Medical School (United States)

Program Track Chair

Brian Jet-Fei Wong, Beckman Laser Institute and Medical Clinic (United States)

Conference Chairs

Peter Rechmann, University of California, San Francisco (United States)

Daniel Fried, University of California, San Francisco (United States)

Conference Program Committee

Gregory B. Altshuler, IPG Medical Corporation (United States)

Tatjána Dostálková, Charles University in Prague (Czech Republic)

Thomas Ertl, Universität Stuttgart (Germany)

David M. Harris, Bio-Medical Consultants, Inc. (United States)

Jörg Meister, Universitätsklinikum Bonn (Germany)

Eric J. Seibel, University of Washington (United States)

Session Chairs

1. Caries Lesion Detection

   Peter Rechmann, University of California, San Francisco (United States)

2. Imaging of Hard, Soft Tissue and Microbial Plaque

   Daniel Fried, University of California, San Francisco (United States)
3 Caries Prevention, Remineralization, Ablation and Ceramics
Peter Rechmann, University of California, San Francisco (United States)

4 Bone Ablation, Soft Tissue Treatment and Microangiography
Daniel Fried, University of California, San Francisco (United States)