Lasers in Dentistry XXIII

Peter Rechmann
Daniel Fried
Editors

29 January 2017
San Francisco, California, United States

Sponsored and Published by
SPIE
Contents

<table>
<thead>
<tr>
<th>Authors</th>
<th>v</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conference Committee</td>
<td>vii</td>
</tr>
</tbody>
</table>

**OCT IN ORAL TISSUES AND BIOFILM, NIR IMAGING**

- **10044 06** Characterization of human oral tissues based on quantitative analysis of optical coherence tomography images [10044-5]
- **10044 07** Assessment of cavitation in artificial approximal dental lesions with near-IR imaging [10044-6]
- **10044 08** Near-infrared imaging of enamel hypomineralization due to developmental defects [10044-7]
- **10044 09** Assessing the dynamic biofilm removal of sulfonated phenolics using CP-OCT [10044-8]

**LASERS IN DISINFECTION, HARD TISSUE ABLATION AND CLINICAL CARIES MONITORING**

- **10044 0A** Compact Nd:YAG laser operating at 1.06, 1.32, and 1.44 μm for dental caries effective disinfection [10044-9]
- **10044 0B** Investigations on the potential of a novel diode pumped Er:YAG laser system at high mean laser power for hard tissue preparation in dentistry [10044-10]
- **10044 0C** Selective laser ablation of carious lesions using simultaneous scanned near-IR diode and CO₂ lasers [10044-11]
- **10044 0D** Developing laser-based therapy monitoring of early caries in pediatric dental settings [10044-12]

**LASERS IN COMPOSITE REMOVAL, PULP VITALITY MEASUREMENTS, BOND STRENGTH AND ACID RESISTANCE**

- **10044 0E** Automated ablation of dental composite using an IR pulsed laser coupled to a plume emission spectral feedback system [10044-13]
- **10044 0F** Laser Doppler pulp vitality measurements: simulation and measurement [10044-14]
- **10044 0H** Influence of multi-wavelength laser irradiation of enamel and dentin surfaces on surface morphology and permeability [10044-16]
<table>
<thead>
<tr>
<th>Title</th>
<th>Abstract</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selective removal of natural caries lesions from dentin and tooth occlusal surfaces using a diode-pumped Er:YAG laser</td>
<td>[10044-17]</td>
</tr>
<tr>
<td>High-contrast reflectance imaging of composite restorations color-matched to tooth structure at 1000-2300-nm</td>
<td>[10044-18]</td>
</tr>
<tr>
<td>Assessment of radicular dentin permeability after irradiation with CO\textsubscript{2} laser and endodontic irrigation treatments with thermal imaging</td>
<td>[10044-19]</td>
</tr>
<tr>
<td>Synergistic effect of fluoride and laser irradiation for the inhibition of the demineralization of dental enamel</td>
<td>[10044-20]</td>
</tr>
<tr>
<td>Optical changes of dentin in the near-IR as a function of mineral content</td>
<td>[10044-21]</td>
</tr>
</tbody>
</table>
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.

Alnajjar, Hisham, 06
Berg, Joel H., 0D
Berg, Rhet A., 0M
Chan, Kenneth H., 0C, 0E, 0H, 0I, 0K, 0L
Chang, Nai-Yuan N., 0H
Cho, HeaJun, 0H, 0K
Darling, Cynthia L., 07, 0H, 0I, 0J, 0M
Dostálová, Tat'jana, 0A
Englund, K., 09
Ertl, T., 0F
Fibrich, Martin, 0A
Fried, Daniel, 07, 08, 0C, 0E, 0H, 0I, 0J, 0K, 0L, 0M
Fried, William A., 0H, 0J
Haasloden, Florian, 0B
Hibst, Raimund, 0B
Jang, Andrew T., 08, 0E
Jelinková, Helena, 0A
Jew, Jamison, 0H, 0I, 0L
Jiang, Yang, 0D
Jones, R., 09
Kadlecová, Martina, 0A
Kapitch, Nickalai, 0A
Kim, Amy S., 0D
Kosa, Ali, 06
Le, Oanh, 0J
Lee, Raymond, 0L
Lee, Robert C., 08, 0H, 0K
Mahdian, Mina, 06
Moslehpour, Saeid, 06
Nejzchleb, Karel, 0A
Němec, Michal, 0A
Nikrad, J., 09
Salehi, Hassan S., 06
Seibel, Eric J., 0D
Simon, Jacob C., 07, 0H, 0J, 0L, 0M
Škoda, Václav, 0A
Štok, Karl, 0B
Šulc, Jan, 0A
Tadinada, Aditya, 06
Wurm, Holger, 0B
Xu, Zheng, 0D
Zhou, Yaxuan, 0D
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 School of Medicine (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, Palomar Medical Technologies, Inc. (United States)
Tatjana Dostalova, 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. OCT in Dental Tissues and Early Caries Detection
   Peter Rechmann, University of California, San Francisco (United States)

2. OCT in Oral Tissues and Biofilm, NIR Imaging
   Daniel Fried, University of California, San Francisco (United States)

3. Lasers in Disinfection, Hard Tissue Ablation and Clinical Caries Monitoring
   Peter Rechmann, University of California, San Francisco (United States)
Lasers in Composite Removal, Pulp Vitality Measurements, Bond Strength and Acid Resistance

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