PROGRESS IN BIOMEDICAL OPTICS AND IMAGING Vol. 21 No. 7

Lasers in Dentistry XXVI

Peter Rechmann Daniel Fried Editors

2 February 2020 San Francisco, California, United States

Sponsored and Published by SPIE

Volume 11217

Proceedings of SPIE, 1605-7422, V. 11217

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

The papers in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. Some conference presentations may not be available for publication. Additional papers and presentation recordings may be available online in the SPIE Digital Library at SPIEDigitalLibrary.org.

The papers reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from these proceedings: Author(s), "Title of Paper," in Lasers in Dentistry XXVI, edited by Peter Rechmann, Daniel Fried, Proceedings of SPIE Vol. 11217 (SPIE, Bellingham, WA, 2020) Seven-digit Article CID Number.

ISSN: 1605-7422 ISSN: 2410-9045 (electronic)

ISBN: 9781510631977 ISBN: 9781510631984 (electronic)

Published by **SPIE** P.O. Box 10, Bellingham, Washington 98227-0010 USA Telephone +1 360 676 3290 (Pacific Time)· Fax +1 360 647 1445 SPIE.org Copyright © 2020, Society of Photo-Optical Instrumentation Engineers.

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE subject to payment of copying fees. The Transactional Reporting Service base fee for this volume is \$21.00 per article (or portion thereof), which should be paid directly to the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923. Payment may also be made electronically through CCC Online at copyright.com. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher. The CCC fee code is 1605-7422/20/\$21.00.

Printed in the United States of America by Curran Associates, Inc., under license from SPIE.

Publication of record for individual papers is online in the SPIE Digital Library.



Paper Numbering: Proceedings of SPIE follow an e-First publication model. A unique citation identifier (CID) number is assigned to each article at the time of publication. Utilization of CIDs allows articles to be fully citable as soon as they are published online, and connects the same identifier to all online and print versions of the publication. SPIE uses a seven-digit CID article numbering system structured as follows:

- The first five digits correspond to the SPIE volume number.
- The last two digits indicate publication order within the volume using a Base 36 numbering system employing both numerals and letters. These two-number sets start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B ... 0Z, followed by 10-1Z, 20-2Z, etc. The CID Number appears on each page of the manuscript.

Contents

- v Authors
- vii Conference Committee

LASER IN EROSION REDUCTION, THERMAL IMAGING OF DENTAL MATERIALS, BLEACHING AND SESSION 1 PLAQUE PH MEASUREMENT 11217 03 Assessment of thermal changes in different restorative materials using a thermal camera [11217-2] 11217 04 Diode activated home bleaching techniques with stereolithographic models and trays [11217-3] LASER IN ACID RESISTANCE, OCT AND ADAPTION OF RESTORATIONS, CARIES DETECTION AND ITS **SESSION 2** VALIDATION AND IMAGING 11217 06 Optical Coherence Tomography (OCT) for the evaluation of internal adaptation of class V resin restorations on dentin [11217-6] SWIR, thermal and CP-OCT imaging probes for the in vivo assessment of the activity of root 11217 08 caries lesions [11217-8] LLT AND PERIODONTAL LIGAMENT, PS-OCT IN ORAL TISSUES WITH PRECANCEROUS AND **SESSION 3** CANCEROUS LESIONS 11217 09 Evaluation of low level laser therapy, platelet rich plasma, and their combination on the proliferation rate of human periodontal ligament fibroblast: an in vitro study [11217-9] A-scan spectral intensity profile in OCT as a potential imaging biomarker of oral precancerous 11217 OB and cancerous tissues [11217-11] **POSTER SESSION** 11217 OE Classification of pit and fissure for caries risk based on 3D surface morphology analysis of tooth [11217-14] 11217 0G Optimization methods for deep neural networks classifying OCT images to detect dental caries [11217-16]

11217 0H A thermal imaging handpiece for the clinical assessment of lesion activity on root surfaces via dehydration [11217-17]

- 11217 01 A SWIR imaging handpiece for the clinical assessment of lesion activity via dehydration: preclinical assessment [11217-18]
- 11217 0J A dual handheld SWIR transillumination/reflectance probe for imaging lesions on tooth occlusal and proximal surfaces [11217-19]
- 11217 0K In vivo spectral guided removal of composite from tooth surfaces with a CO₂ laser [11217-20]