PROCEEDINGS OF SPIE

SPIDigitalLibrary.org/conference-proceedings-of-spie

Front Matter: Volume 10492

, "Front Matter: Volume 10492," Proc. SPIE 10492, Optical Interactions with Tissue and Cells XXIX, 1049201 (3 May 2018); doi: 10.1117/12.2322671

SPIE.

Event: SPIE BiOS, 2018, San Francisco, California, United States

PROGRESS IN BIOMEDICAL OPTICS AND IMAGING

Vol. 19 No. 26

Optical Interactions with Tissue and Cells XXIX

**E. Duco Jansen
Hope Thomas Beier**
Editors

**29–30 January 2018
San Francisco, California, United States**

Sponsored and Published by
SPIE

Volume 10492

Proceedings of SPIE 1605-7422, V. 10492

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

Optical Interactions with Tissue and Cells XXIX, edited by E. Duco Jansen, Hope Thomas Beier, Proc. of SPIE Vol. 10492, 1049201 · © 2018 SPIE · CCC code: 1605-7422/18/\$18 · doi: 10.1117/12.2322671

Proc. of SPIE Vol. 10492 1049201-1

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 SPIDigitalLibrary.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 *Optical Interactions with Tissue and Cells XXIX*, edited by E. Duco Jansen, Hope T. Beier, Proceedings of SPIE Vol. 10492 (SPIE, Bellingham, WA, 2018) Seven-digit Article CID Number.

ISSN: 1605-7422

ISSN: 1996-756X (electronic)

ISBN: 9781510614697

ISBN: 9781510614703 (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 © 2018, 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 \$18.00 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 0277-786X/18/\$18.00.

Printed in the United States of America.

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

SPIE. DIGITAL LIBRARY

SPIDigitalLibrary.org

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

SESSION 1	ULTRAFast PULSED LASER INTERACTIONS
10492 04	Infrared laser damage thresholds in corneal tissue phantoms using femtosecond laser pulses [10492-3]
10492 05	Femtosecond laser assisted photo-transfection and differentiation of mouse embryonic stem cells [10492-4]
10492 06	Highlighting the nuances behind interaction of picosecond pulses with human skin: relating distinct laser-tissue interactions to their potential in cutaneous interventions [10492-44]
SESSION 2	PHOTOTHERMAL EFFECTS
10492 07	Porcine skin damage thresholds for pulsed nanosecond-scale laser exposure at 1064 nm [10492-6]
10492 09	Photothermal effect of infrared lasers on ex vivo lamb brain tissues [10492-9]
SESSION 3	PHOTOMECHANICAL EFFECTS
10492 0B	Performance of Er:YAG laser ablation of hard bone under different irrigation water cooling conditions [10492-11]
10492 0D	Quantitative evaluation of the safety of mucosal incision and submucosal dissection for colon during endoscopic submucosal dissection using carbon dioxide laser [10492-13]
SESSION 4	LASER MODULATION OF CELLS
10492 0E	Myocardial electrical conduction blockade time dominated by irradiance on photodynamic reaction: in vitro and in silico study [10492-14]
10492 0G	Control of intracellular ionic concentrations by mid-infrared laser irradiation [10492-16]
SESSION 5	NOVEL APPLICATIONS OF LASERS IN BIOSYSTEMS
10492 0I	Frequency of resonance of human sweat duct in different modes of operation [10492-18]

- 10492 OJ **Continuous optical measurement system of hemolysis during a photosensitization reaction using absorption spectrum** [10492-19]
- 10492 OK **Light scattering influence in cyanobacteria suspensions inside a photobioreactor** [10492-20]
- 10492 OM **Characterization of the Cherenkov scatter function for use in superficial dose measurement from external beam radiation treatments** [10492-22]

SESSION 6 OPTICAL PROPERTIES OF TISSUES

- 10492 OP **Optical coefficient measurements using bulk living tissue by an optical fiber puncture with FOV change** [10492-26]
- 10492 OQ **Regression models for real-time estimation of optical and structural sample properties from subdiffusive spatially resolved reflectance** [10492-27]

SESSION 7 NUMERICAL APPROACHES SIMULATING LASER-TISSUE INTERACTIONS

- 10492 OT **Monte Carlo modeling of fluorescence in semi-infinite turbid media** [10492-30]
- 10492 OV **Raman Monte Carlo simulation for light propagation for tissue with embedded objects** [10492-32]

POSTER SESSION

- 10492 OX **Comparison of light absorption levels with different skin phantoms and the Monte Carlo simulation using Fourier-domain optical coherence tomography** [10492-33]
- 10492 OZ **Effect of two laser photobiomodulation application protocols on the viability of random skin flap in rats** [10492-35]
- 10492 IO **Assessment of varying width illumination in hyperspectral push-broom system for scattering anisotropy measurements** [10492-36]
- 10492 IS **Fullerene C60 and graphene photosensibles for photodynamic virus inactivation** [10492-41]
- 10492 I6 **Focusing light through random photonic layers by four-element division algorithm** [10492-43]
- 10492 I7 **Deep-tissue two-photon imaging in brain and peripheral nerve with a compact high-pulse energy ytterbium fiber laser** [10492-45]

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.

Afanasyev, M., 15	Liebano, R. E., 0Z
Anfimov, P., 15	Likar, Boštjan, 0Q
Arai, Tsunenori, 0E, 0J, 0P	Lukyanov, N., 15
Arce-Diego, J. L., 0K	Maaza, Malik, 05
Assis, L., 0Z	Manoto, Sello, 05
Avó, L. R. S., 0Z	Martignago, C. C. S. M., 0Z
Awazu, Kunio, 0D	Mayurova, A., 15
Belousova, I., 15	Milanic, M., 10
Beltrán Bernal, Lina M., 0B	Morita, Yoshinori, 0D
Boretsky, Adam R., 04, 07	Mthunzi-Kufa, Patience, 05
Bossini, P. S., 0Z	Muraviova, T., 15
Botchkareva, Natalia V., 06	Naglič, Peter, 0Q
Brost, Eric, 0M	Nakazawa, Haruna, 0P
Bürmen, Miran, 0Q	Neve, L. M. G., 0Z
Bykovskaya, E., 15	Noguchi, Takuma, 0D
Caldwell, John H., 17	Noojin, Gary D., 04, 07
Cattin, Philippe C., 0B	Ogawa, Emiyu, 0E, 0J, 0P
Clary, Joseph E., 04	Ombinda Lemboumba, Satuurmin, 05
DeLisi, Michael P., 07	Ong, Yi Hong, 0T
Doi, Marika, 0P	Özgürün, Baturay, 09
Dougakiuchi, T., 0G	Paklinov, N., 15
Fang, Longjie, 16	Pang, Lin, 16
Fanjul-Vélez, F., 0K	Parizotto, N. A., 0Z
Finlay, Jarod C., 0T	Periyasamy, Vijitha, 0V
Fontaine, Arjun K., 17	Pernuš, Franjo, 0Q
Friederich, Niklaus, 0B	Peterson, Amanda M., 07
Gibson, Emily A., 17	Piotrovsky, L., 15
Grishkanich, A., 15	Pramanik, Manojit, 0V
Gülsoy, Murat, 09	Rauter, Georg, 0B
Hamada, R., 0J	Redka, D., 15
Hazama, Hisanao, 0D	Renno, A. C., 0Z
Honda, Norihiro, 0D	Rockwell, Benjamin A., 04
Hvorostovsky, A., 15	Ruzankina, J., 15
Ivančič, Matic, 0Q	Rylkov, V., 15
Jaafar, Humaira Bte, 0V	Schmidt, Morgan S., 07
Jo, Hang Chan, 0X	Shayeganrad, Gholamreza, 0B
Kancer, A., 15	Shimizu, Y., 0G
Kawase, Kodo, 0I	Shingledecker, Aurora D., 07
Kim, Dae Yu, 0X	Sirotkin, A., 15
Kim, Jae Hun, 0X	Starodubzev, A., 15
Kinumura, Kento, 0I	Stergar, J., 10
Kirchner, Matthew S., 17	Stupnikov, A., 15
Kiselev, O., 15	Takahashi, Shogo, 0I
Kiselev, V., 15	Takebe, G., 0G
Kosa, Gabor, 0B	Thobakgale, Lebogang, 05
Krisko, T., 15	Thomas, Robert J., 07
Kudashev, I., 15	Tijerina, Amanda J., 07
Kumru, Semih S., 07	Tim, C. R., 0Z
Kustikova, M., 15	Tripathi, Saroj R., 0I

Uzunbajakava, Natallia E., 06
Varghese, Babu, 06
Verhagen, Rieko, 06
Vogel, Alfred, 06
Watanabe, Yoichi, 0M
Weir, Richard F., 17
Yamauchi, T., 0G
Zam, Azhar, 0B
Zarubaev, V., 15
Zelechowski, Marek, 0B
Zhang, Xicheng, 16
Zhu, Timothy C., 0T
Zuo, Haoyi, 16

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

Steven L. Jacques, Tufts University (United States)

Conference Chairs

E. Duco Jansen, Vanderbilt University (United States)
Hope Thomas Beier, Air Force Research Laboratory (United States)

Conference Program Committee

Randolph Glickman, The University of Texas Health Science Center at
San Antonio (United States)
Bennett L. Ibey, Tri Service Research Laboratory (United States)
Steven L. Jacques, Tufts University (United States)
Beop-Min Kim, Korea University (Korea, Republic of)
Alexander J. Makowski, Prozess Technologie (United States)
Jessica C. Ramella-Roman, Florida International University
(United States)
Marissa Nicole Rylander, Virginia Polytechnic Institute and State
University (United States)
Zachary D. Taylor, University of California, Los Angeles (United States)
Robert J. Thomas, Air Force Research Laboratory (United States)
Alfred Vogel, Universität zu Lübeck (Germany)
Gerald J. Wilmink, WiseWear Corporation (United States)

Session Chairs

- 1 Ultrafast Pulsed Laser Interactions
Hope Thomas Beier, Air Force Research Laboratory (United States)
- 2 Photothermal Effects
Joel N. Bixler, Texas A&M University (United States)

- 3 Photomechanical Effects
Nathaniel Pope, Air Force Research Laboratory (United States)
- 4 Laser Modulation of Cells
Michael L Denton, Tri Service Research Laboratory (United States)
- 5 Novel Applications of Lasers in Biosystems
Hope Thomas Beier, Air Force Research Laboratory (United States)
- 6 Optical Properties of Tissues
Alexandra J. Walsh, University of Wisconsin-Madison (United States)
- 7 Numerical Approaches Simulating Laser-Tissue Interactions
Michael Delisi, Engility Corporation (United States) and Air Force Research Laboratory (United States)