

PROGRESS IN BIOMEDICAL OPTICS AND IMAGING
Vol. 20 No. 26

Optical Interactions with Tissue and Cells XXX

Hope Thomas Beier
Bennett L. Ibey
Editors

2-3 February 2019
San Francisco, California, United States

Sponsored and Published by
SPIE

Volume 10876

Proceedings of SPIE, 1605-7422, V. 10876

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 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 XXX*, edited by Hope T. Beier, Bennett L. Ibey, Proceedings of SPIE Vol. 10876 (SPIE, Bellingham, WA, 2019) Seven-digit Article CID Number.

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

ISBN: 9781510623941
ISBN: 9781510623958 (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 © 2019, 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 1605-7422/19/\$18.00.

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.

**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	<i>Authors</i>
vii	<i>Conference Committee</i>

NOVEL APPLICATIONS OF LASERS AND LIGHT IN BIOMEDICINE

10876 02	Drug contact time dominates a necessary time for myocardial cells necrosis by a photodynamic reaction [10876-1]
10876 03	Biofabrication of a vascular capillary by ultra-short laser pulses [10876-2]
10876 06	Fluorescence spectroscopy of mouse organs using ultraviolet excitation: towards assessment of organ viability for transplantation [10876-5]
10876 07	Setup and analysis to stretch adherent cells with light [10876-6]

OPTICAL PROPERTIES OF TISSUES I

10876 09	Extraction of tissue optical parameters from diffuse reflectance measurements with a new able to count derivatives inverse Monte Carlo method [10876-8]
----------	--

OPTICAL PROPERTIES OF TISSUES II

10876 0F	Optical properties of thermally damaged porcine dermis and subcutaneous fat [10876-13]
----------	---

ULTRAFAST PULSED LASER INTERACTIONS

10876 0I	Nonlinear optical properties of water from 1150 nm to 1400 nm [10876-15]
10876 0J	Mid-infrared femtosecond laser damage thresholds in skin [10876-16]
10876 0K	Near infrared femtosecond laser-induced bacterial inactivation [10876-17]

CELLULAR BIOMOLECULAR RESPONSE

10876 0L	Cell membrane molecular dynamics under a NIR focused laser [10876-18]
----------	--

10876 0M **Comparison of various neural network-based models for retinal lesion analysis** [10876-19]

NUMERICAL APPROACHES SIMULATING LASER-TISSUE INTERACTIONS AND RESPONSE

10876 0Q **Light propagation in highly scattering biological tissues analyzed by Green's functions** [10876-24]

10876 0R **Convolutional deep network for light propagation in heterogeneous bio-tissues** [10876-25]

10876 0S **Monte Carlo weighted algorithms for calculation of radiation characteristics and their derivatives in the biomedical optics problems** [10876-26]

10876 0T **MCmatlab: an open-source user-friendly MATLAB-integrated 3D Monte Carlo light transport solver with heat diffusion and tissue damage** [10876-27]

10876 0V **Comparison of various neural network-based models for retinal lesion analysis** [10876-29]

PHOTOTHERMAL INTERACTIONS

10876 0X **Interaction of thulium fiber laser with urinary stone: effect of laser parameter on fragmented particle size and retropulsion** [10876-31]

10876 0Y **Primary investigations on defined thermal effects on soft tissue using a diode pumped Er:YAG laser system** [10876-32]

POSTER SESSION

10876 19 **Soft tissue wound healing by low level laser** [10876-36]

10876 1A **Characterization of photophysical properties of curcumin for theranostics of neurodegenerative diseases** [10876-37]

10876 1C **Photothermal interactions with interstitial thermotherapy of vascular formations by infrared laser radiation of different wavelengths and the possibility of their ultrasonic evaluation** [10876-39]

10876 1G **Antimicrobial photodynamic therapy applied to inactivation of salmonella enterica and staphylococcus aureus** [10876-43]

10876 1H **Teaching light-tissue interactions: using technology for education** [10876-44]

10876 1I **Fluorescence spectroscopy analysis of light-induced tooth whitening** [10876-45]