Novel Biophotonics Techniques and Applications V

Arjen Amelink Seemantini K. Nadkarni Editors

26–27 June 2019 Munich, Germany

Sponsored by The Optical Society (United States) SPIE

Published by SPIE

Volume 11075

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 Novel Biophotonics Techniques and Applications V, edited by Arjen Amelink, Seemantini K. Nadkarni, Proceedings of SPIE-OSA Vol. 11075 (SPIE, Bellingham, WA, 2019) Seven-digit Article CID Number.

ISSN: 1605-7422

ISSN: 2410-9045 (electronic)

ISBN: 9781510628434

ISBN: 9781510628441 (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
and
The Optical Society
2010 Massachusetts Ave., N.W., Washington, D.C., 20036 USA
Telephone +1 202 223 8130 (Eastern Time) · Fax +1 202 223 1096

Copyright © 2019, Society of Photo-Optical Instrumentation Engineers and The Optical Society

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 1605-7422/19/\$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

vii xi	Authors Conference Committee
XI	Commence Communica
SESSION 1	PHYSIOLOGY AND FLOW
11075 02	Optical interferometric temperature sensors for intravascular blood flow measurements [11075-1]
11075 03	Assessment of optical coherence tomography speckle patterns in low-scatterer-concentration regions: simulations for lymphatic vessels mapping [11075-2]
11075 05	Towards direct measurements of remitted photon path lengths in skin: kinetic studies in the range 520-800 nm $\ [11075-4]$
11075 06	Surface Enhanced Raman Spectroscopy (SERS) optical fibers for remote sensing [11075-5]
11075 07	Studies of age-related changes in blood perfusion coherence using wearable blood perfusion sensor system [11075-6]
SESSION 2	MULTIMODAL AND CLINICAL IMAGING
11075 08	Combined fluorescence lifetime imaging-optical coherence tomography for in vivo label-free assessment of high-risk atherosclerotic plaque (Invited Paper) [11075-7]
11075 09	Diagnostics of high grade cervical intraepithelial neoplasia with Mueller matrix polarimetry [11075-8]
11075 0A	Design and evaluation of two imaging systems for very wide field fluorescence microscopy [11075-9]
11075 OB	Smartphone-based epifluorescence microscope for fresh tissue imaging (Invited Paper) [11075-10]
SESSION 3	CELL PHYSIOLOGY AND IMAGING I
11075 0C	Microlaser-based contractility sensing in single cardiomyocytes and whole hearts (Invited Paper) [11075-11]

11075 0D	Influence of interaction time on the red blood cell (dis)aggregation dynamics in vitro studied by optical tweezers [11075-12]
11075 OE	Probing living cells by terahertz attenuated total reflection: application to permeabilization dynamics [11075-13]
11075 OF	Combined use of optical tweezers and scanning electron microscopy to reveal influence of nanoparticles on red blood cells interactions [11075-14]
SESSION 4	CELL PHYSIOLOGY AND IMAGING II
11075 OH	Hydrogels for light delivery in in vivo optogenetic applications (Invited Paper) [11075-16]
11075 OJ	Results on identification of bacteria aging in complex environmental samples using Raman spectroscopy [11075-18]
11075 OK	Delayed luminescence for in vitro study of mitochondrial dysfunctions in neurodegenerative diseases [11075-19]
11075 OL	Laser speckle micro-rheology for investigating the biomechanics of breast cancer progression [11075-67]
SESSION 5	SENSING, DIAGNOSTICS AND THERAPY I
11075 ON	Use of dynamic light scattering for assessing acute pain [11075-21]
11075 00	High accuracy platelet counting using lensfree imaging [11075-22]
11075 OP	Novel method for non-invasive blood pressure measurement from the finger using an optical system based on dynamic light scattering [11075-23]
11075 0Q	Correlation of mosquito wing-beat harmonics to aid in species classification and flight heading assessment $[11075\text{-}24]$
SESSION 6	SENSING, DIAGNOSTICS AND THERAPY II
11075 OR	Influence of scattering and birefringence on the phase shift between electric field components of polarized light propagated through biological tissues [11075-25]
11075 OS	Multimaterial bioresorbable optical fibers for theranostics [11075-26]
11075 OT	Tumor growth monitoring using polarized light [11075-27]
11075 OU	Raman spectroscopy using spatial light modulators [11075-28]

11075 OV	Disposable and versatile optical sensors for SERS analysis of liquid samples by fiber-based spectroscopy [11075-29]
11075 OW	Anticoagulation and hemostasis monitoring during cardiac surgery with a drop of whole blood using a novel optical sensor [11075-68]
	POSTER SESSION
11075 OY	Comparative study of quantitative methods to determine component concentration for water-free biotissue phantom [11075-31]
11075 OZ	Optical trapping dynamics probed by real-time back-scatter imaging [11075-32]
11075 10	Fluorescence spectroscopy as a tool for discriminating Escherichia coli contaminated meat [11075-33]
11075 14	Tissue polarimetric study I: In search of reference parameters and depolarizing Mueller matrix model of ex vivo colon samples [11075-37]
11075 15	Multi channels fiber optic reflex probes for fluorescent and UV-VIS-NIR spectroscopy based on novel types of multimode fiber optics bundles [11075-38]
11075 16	Solid heterogeneous phantoms for multimodal ultrasound and diffuse-optical imaging: an outcome of the SOLUS project for standardization [11075-39]
11075 18	Terahertz pulsed spectroscopy of human brain tumors in a gelatin slab [11075-42]
11075 1A	Single blood cell Raman spectroscopy reveals elevated haemoglobin content in poikilocytosis [11075-44]
11075 1E	Laser induced functionalized graphene oxides for both multiphoton imaging and near-infrared photothermal therapy [11075-48]
11075 1F	Combined multi-wavelength laser speckle contrast imaging and diffuse reflectance imaging for skin perfusion assessment [11075-49]
11075 1G	Zeolite magnetic nano/micro-particles for adsorption, delivery and release of photodynamic dyes [11075-50]
11075 1H	Hollow gold nanoshells modified with PEG: synthesis and application as photothermal agents [11075-51]
11075 11	A fiber based in vitro optical signal diagnosis technique for interspecies transmissibility [11075-52]
11075 1J	Assessing calvarial defect healing with trace element analysis and Raman spectroscopy [11075-53]

11075 1K	Hybrid technique for characterization of human skin by combining machine learning and inverse Monte Carlo approach [11075-54]
11075 1L	Activity of smooth muscle cells after short-term heating/stretch-fixing up to 96 hours [11075-55]
11075 1M	Modular multi-wavelength LED based light source for hyperspectral imaging [11075-56]
11075 1N	Novel optical technologies for ultrashort pulsed laser surgery [11075-57]
11075 10	Influence of healthy skin baseline on bruise dynamics parameters as assessed by optical methods [11075-58]
11075 1P	Speckle sensors: laser speckle patterns for diagnostics in dermatology [11075-59]
11075 1Q	Automated microorganisms activity detection on the early growth stage using artificial neural networks [11075-60]
11075 1R	Assessment of meat freshness and spoilage detection utilizing visible to near-infrared spectroscopy [11075-61]
11075 1S	Influence of silver-core gold-shell nanoparticle parameters on the variation of surface-enhanced Raman spectra [11075-62]
11075 IT	Gold nanoparticles-enhanced gold-silver alloy surface plasmon resonance sensor for the detection of C-reactive protein [11075-63]
11075 1U	Early diagnostics of ischemia by means of electrocardiographic signals processing using acousto-optic Fourier processors with time integration [11075-64]
11075 1V	Colloidally stable silicon quantum dots as temperature biosensors [11075-65]