PROCEEDINGS OF SPIE

SPIDigitalLibrary.org/conference-proceedings-of-spie

Front Matter: Volume 10592

, "Front Matter: Volume 10592," Proc. SPIE 10592, Biophotonics—Riga 2017, 1059201 (8 January 2018); doi: 10.1117/12.2306175

SPIE.

Event: The Second International Conference "Biophotonics-Riga 2017", 2017, Riga, Latvia

Biophotonics—Riga 2017

Janis Spigulis

Editor

27–29 August 2017

Riga, Latvia

Organized by

University of Latvia (Latvia)

Sponsored by

SOPHIS – Latvian National Research Program

SPIE – The International Society for Optics and Photonics

SLOB – International Society for Applied Optics (Latvia)

ASI – Institute of Atomic Physics and Spectroscopy, University of Latvia

UAB Monospektra (Lithuania)

Published by

SPIE

Volume 10592

Proceedings of SPIE, 1605-7422, V. 10592

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

Biophotonics—Riga 2017, edited by Janis Spigulis, Proc. of SPIE Vol. 10592
1059201 · © 2017 SPIE · CCC code: 1605-7422/17/\$18
doi: 10.1117/12.2306175

Proc. of SPIE Vol. 10592 1059201-1

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 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 *Biophotonics—Riga 2017*, edited by Janis Spigulis, Proceedings of SPIE Vol. 10592 (SPIE, Bellingham, WA, 2017) Seven-digit Article CID Number.

ISSN: 1605-7422

ISSN: 2410-9045 (electronic)

ISBN: 9781510616769

ISBN: 9781510616776 (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 © 2017, 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 1605-7422/17/\$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**

SPIEDigitalLibrary.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>
ix	<i>Introduction</i>

THE SECOND INTERNATIONAL CONFERENCE "BIOPHOTONICS-RIGA 2017"

10592 02	Microscopic and macroscopic spectral peculiarities of cutaneous tumours (Invited Paper) [10592-7]
10592 03	Remote photoplethysmography system for unsupervised monitoring regional anesthesia effectiveness (Invited Paper) [10592-11]
10592 04	Rosacea assessment by erythema index and principal component analysis segmentation maps [10592-3]
10592 05	Application of fluorescent and vibration spectroscopy for septic serum human albumin structure deformation during pathology [10592-4]
10592 06	Semi-automated non-invasive diagnostics method for melanoma differentiation from nevi and pigmented basal cell carcinomas [10592-5]
10592 07	Evaluation of skin pathologies by RGB autofluorescence imaging [10592-8]
10592 08	Cavity ring down spectrometry for disease diagnostics using exhaled air [10592-10]
10592 09	First results of cavity ring down signals from exhaled air [10592-17]
10592 0A	Computed aided system for separation and classification of the abnormal erythrocytes in human blood [10592-13]
10592 0B	Development of optical WGM resonators for biosensors [10592-19]
10592 0C	Application of quantum dots CdSeZnS / ZnS luminescence, enhanced by plasmons of silver rough surface for detection of albumin in blood facies of infected person [10592-24]
10592 0D	Monitoring soft tissue coagulation by optical spectroscopy [10592-9]
10592 0E	Evaluation of nitroglycerin effect on remote photoplethysmogram waveform acquired at green and near infra-red illumination [10592-18]
10592 0F	Image quality enhancement for skin cancer optical diagnostics [10592-21]
10592 0G	Color constancy in dermatoscopy with smartphone [10592-16]

- 10592 OH **AOTF-based optical system of a microscope module for multispectral imaging techniques** [10592-23]
- 10592 OI **Conjugation of fiber-coupled wide-band light sources and acousto-optical spectral elements** [10592-22]
- 10592 OJ **The silver layers in fiber-optic sensors** [10592-6]
- 10592 OK **Implicit dosimetry of microorganism photodynamic inactivation** [10592-14]
- 10592 OL **pEGFP transfection into murine skeletal muscle by electrosoneporation** [10592-15]
- 10592 OM **Estimation of the effect of radionuclide contamination on *Vicia sativa* L. induction of chlorophyll fluorescence parameters using "Floratest" optical biosensor** [10592-20]

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.

Alnis, J., 08, 09, 0B	Pareniuk, O., 0M
Atvars, A., 0B	Pernuš, Franjo, 0G
Avramov, Latchezar, 02	Petrovska, Ramona, 0L
Aydoĝan, Melike, 0J	Pirkina, A., 0B
Batshev, Vladislav, 0H, 0I	Plorina, Emilija V., 07
Belov, Artyom, 0H	Polschikova, Olga, 0H, 0I
Bliznuks, Dmitrijs, 0F	Pozhar, Vitold, 0H, 0I
Bolocko, Katrina, 06, 0F	Ramazanova, Alina, 0H
Borisova, Ekaterina, 02	Revalde, G., 08, 09
Bratchenko, Ivan, 02	Ruban, Yu., 0M
Brice, I., 0B	Rubins, Uldis, 03, 04, 0E, 0L
Bryukhanov, V., 05, 0C	Saknite, Inga, 04
Caica, A., 0E	Samusev, I., 05, 0C
Ciċkiewicz, Maciej, 0A	Šatkauskas, Saulius, 0L
Cugmas, Błaż, 0G	Shavanova, K., 0M
Daugelavičius, Rimantas, 0K	Skudra, A., 08, 09
Derjabo, Alexander, 07	Slezhkin, V., 05, 0C
Ficek, Mateusz, 0A	Spigulis, Janis, 04, 0D
Genova, Tzanişlava, 02	Tamošiūnas, Mindaugas, 0K, 0L
Gorevoy, Alexey, 0I	Terziev, Ivan, 02
Gorin, Dmitry, 02	Trebst, T., 0D
Grabovskis, A., 0E	Troyanova, Petranka, 02
Grochowski, Michał, 0A	Ubele, A., 0B
Grundšteins, K., 08, 09, 0B	Viter, R., 0B
Heinrichs, H., 0D	Wąsowicz, Michał, 0A
Illienko, V., 0M	Wehner, M., 0D
Jakovels, Dainis, 0L	Zakharov, Valery, 02
Jędrzejewska-Szczerska, Małgorzata, 0J	Zyubin, A., 05, 0C
Kadikis, Roberts, 0L	
Karpieńko, Katarzyna, 0A	
Khokhlov, Demid, 0I	
Konstantinova, E., 05, 0C	
Kuliešienė, Neringa, 0K	
Kulka, Marek, 0A	
Kuzmina, Ilona, 04, 0F	
Lange, Marta, 03, 07	
Lihachev, Alexey, 06, 07, 0D, 0F	
Lihacova, Ilze, 06, 07, 0D	
Likar, Boštjan, 0G	
Listewnik, Paulina, 0J	
Lomova, Maria, 02	
Machikhin, Alexander, 0H, 0I	
Majchrowicz, Daria, 0J	
Marcinkevics, Z., 03, 0E	
Matveeva, K., 05, 0C	
Mikołajczyk, Agnieszka, 0A	
Miscuks, A., 03	
Moiseeva, E., 0C	
Nesterova, N., 0M	

Conference Committee

Conference Chair

Janis Spigulis, University of Latvia (Latvia)

Scientific Committee

Stefan Andersson-Engels, Tyndall National Institute (Ireland)

Ekaterina Borisova, Institute of Electronics, BAS (Bulgaria)

Ricardas Rotomskis, Vilnius University (Lithuania)

Janis Spigulis, University of Latvia (Latvia)

Valery Tuchin, Saratov State University (Russia)

Local Organizing Committee

Ilona Kuzmina, University of Latvia (Latvia)

Edgars Kviesis-Kipge, University of Latvia (Latvia)

Ilze Lihacova, University of Latvia (Latvia)

Uldis Rubins, University of Latvia (Latvia)

Inga Shirante, University of Latvia (Latvia)

Janis Spigulis, University of Latvia (Latvia)

Session Chairs

- 1 Optical Clinical Diagnostics
 Janis Spigulis, University of Latvia (Latvia)
- 2 Optical In-vivo Monitoring
 Andris Grabovskis, University of Latvia (Latvia)
- 3 Biomedical Tissue Imaging
 Janis Alnis, University of Latvia (Latvia)

Introduction

The 2nd International Conference “Biophotonics–Riga 2017” (BPR17) was held in Riga on 27-29 August 2017. The conference was organized by Biophotonics Laboratory, Institute of Atomic Physics and Spectroscopy (University of Latvia) with support of the National Research Programme SOPHIS, the International Society for Optics and Photonics (SPIE) and other sponsors.

Three key topics were discussed: (i) Optical Clinical Diagnostics, (ii) Optical In-vivo Monitoring, and (iii) Biomedical Tissue Imaging. Biophotonics experts from 12 European countries and the USA presented their recent achievements in this emerging research and technology area.

I am sincerely thankful to all authors, participants and sponsors for their contribution to the success of the second Biophotonics–Riga conference.

Janis Spigulis