## 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** 

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 SPIF 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 Vm7 i ffUb 5 ggc WJUhY gĕ ₺ Wži bXYf "JW bgY 'Zfca 'GD-9.

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
- ix Introduction

## THE SECOND INTERNATIONAL CONFERENCE "BIOPHOTONICS-RIGA 2017"

	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 OB	Development of optical WGM resonators for biosensors [10592-19]
10592 OC	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 OE	Evaluation of nitroglycerin effect on remote photoplethysmogram waveform acquired at green and near infra-red illumination [10592-18]
10592 OF	Image quality enhancement for skin cancer optical diagnostics [10592-21]
10592 0G	Color constancy in dermatoscopy with smartphone [10592-16]

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