

# ***Twelfth International Conference on Photonics and Imaging in Biology and Medicine (PIBM 2014)***

**Qingming Luo**  
**Lihong V. Wang**  
**Valery V. Tuchin**  
*Editors*

**14–17 June 2014**  
**Wuhan, China**

*Organized and Sponsored by*

Huazhong University of Science and Technology (China) • Wuhan National Laboratory for Optoelectronics (China) • Britton Chance Center for Biomedical Photonics (HUST) (China) • Key Laboratory of Optoelectronic Science and Technology for Medicine (Fujian Normal University), Ministry of Education (China) • SPIE

*Co-organized by*

Key Laboratory of Biomedical Photonics (HUST), Ministry of Education (China) • Virtual Research Center of Biomedical Photonics (HUST), Ministry of Education (China) • Hubei Bioinformatics and Molecular Imaging Key Laboratory (HUST) (China) • Biomedical Photonics Committee of Chinese Optical Society (China)

*Published by*  
SPIE

**Volume 9230**

Proceedings of SPIE, 1605-7422, V.9230

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

Twelfth International Conference on Photonics and Imaging in Biology and Medicine (PIBM 2014),  
edited by Qingming Luo, Lihong V. Wang, Valery V. Tuchin, Proc. of SPIE Vol. 9230, 923001  
© 2014 SPIE · CCC code: 1605-7422/14/\$18 · doi: 10.1117/12.2084339

The papers included 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. The papers published in these proceedings 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 this book:

Author(s), "Title of Paper," in *Twelfth International Conference on Photonics and Imaging in Biology and Medicine (PIBM 2014)*, edited by Qingming Luo, Lihong V. Wang, Valery V. Tuchin, Proceedings of SPIE Vol. 9230 (SPIE, Bellingham, WA, 2014) Article CID Number.

ISSN: 1605-7422

ISBN: 9781628412840

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 © 2014, 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](http://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 1605-7422/14/\$18.00.

Printed in the United States of America.

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



[SPIDigitalLibrary.org](http://SPIDigitalLibrary.org)

---

**Paper Numbering:** Proceedings of SPIE follow an e-First publication model, with papers published first online and then in print and on CD-ROM. Papers are published as they are submitted and meet publication criteria. A unique, consistent, permanent citation identifier (CID) number is assigned to each article at the time of the first 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, print, and electronic versions of the publication. SPIE uses a six-digit CID article numbering system in which:

- The first four 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. The complete citation is used on the first page, and an abbreviated version on subsequent pages. Numbers in the index correspond to the last two digits of the six-digit CID Number.

# Contents

ix	<i>Authors</i>
xiii	<i>Conference Committee</i>
xv	<i>Introduction</i>

---

## ANALYTICAL BIOPHOTONICS

---

9230 02	<b>Diagnose human tumors by THz near-field imaging [9230-13]</b>
9230 03	<b>Anti-hepatocarcinoma effects of berberine nanosuspension against human HepG2 and Huh7 cells as well as H22 tumor bearing mice [9230-26]</b>
9230 04	<b>In vitro determination of glucose concentration based on photoacoustic spectroscopy and chemometrics [9230-17]</b>
9230 05	<b>The synchronous fluorescence spectra character of hypocrellin B with type I collagen under irradiation [9230-36]</b>
9230 06	<b>Simulation of a pulsed light propagation in the prostate phantom [9230-65]</b>
9230 07	<b>Point of care nucleic acid detection of viable pathogenic bacteria with isothermal RNA amplification based paper biosensor [9230-72]</b>
9230 08	<b>Removing the polarization artifacts in Mueller matrix images recorded with a GRIN lens: a simulation approach [9230-78]</b>
9230 09	<b>Visual detection of Akt mRNA in living cell using gold nanoparticle beacon [9230-82]</b>
9230 0A	<b>Effective reduction of non-specific binding by bovine serum albumin modified quantum dot surface for cell targeted imaging [9230-84]</b>
9230 0B	<b>Synthesis of biocompatible SiO<sub>2</sub> coated ZnO quantum dots for cell imaging [9230-85]</b>
9230 0C	<b>Optimization and characterization of the photosensitive N-succinyl-N'-4-(2-nitrobenzyloxy)-succinyl-chitosan micelles [9230-87]</b>
9230 0D	<b>Screening mTOR siRNA based on bioinformatics and detecting the transcription by the gold nanoparticle beacon [9230-89]</b>
9230 0E	<b>A novel microRNA assay with optical detection and enzyme-free DNA circuits [9230-91]</b>
9230 0F	<b>Projected restarted framework for tomographic reconstruction [9230-105]</b>
9230 0H	<b>Adrenergic mechanism responsible for pathological alteration in gastric mucosal blood flow in rats with ulcer bleeding [9230-112]</b>

- 9230 0I **Enhanced Landweber algorithm via Bregman iterations for bioluminescence tomography** [9230-115]
- 9230 0J **Raman spectroscopy of human saliva for acute myocardial infarction detection** [9230-129]
- 9230 0K **Spectral imaging of breast fibroadenoma using second-harmonic generation** [9230-133]
- 9230 0M **Study of solvation dynamics in the interior of staphylococcal nuclease (SNase) using picosecond-resolved emission spectra of tryptophan** [9230-136]
- 9230 0N **Improved localization accuracy in double-helix point spread function super-resolution fluorescence microscopy using selective-plane illumination** [9230-149]
- 9230 0O **Reducing the orientation influence of Mueller matrix measurements for anisotropic scattering media (Best Student Paper – Oral)** [9230-157]
- 9230 0P **The toxicity and invasive effects of QDs on mung bean development** [9230-160]
- 9230 0Q **A dual-excitation approach for dynamic fluorescence molecular tomography** [9230-161]
- 9230 0R **An optical approach to validate ultrasound surface segmentation of the heart** [9230-169]
- 9230 0S **The effect of polymer dots on bioactivity of mouse sperm in vitro** [9230-177]
- 9230 0T **Photophysical property of a polymeric nanoparticle loaded with an aryl benzyl ester silicon (IV) phthalocyanine** [9230-179]
- 9230 0U **A comparison of optical clearing potential of disaccharide with monosaccharide** [9230-185]
- 9230 0V **Effects of cholesterol on plasma membrane lipid order in MCF-7 cells by two-photon microscopy** [9230-186]
- 9230 0W **Label-free imaging of cellular malformation using high resolution photoacoustic microscopy** [9230-187]
- 9230 0Y **Elasticity measurement of breast cancer cells by atomic force microscopy** [9230-190]
- 9230 0Z **Ultrasound modulated fluorescence emission from Pyrene-labelled liposome contrast agents (Best Student Paper – Oral)** [9230-192]
- 9230 10 **Based on surface-enhanced Raman spectroscopy analysis of serum albumin in different stages of liver disease for early screening primary liver cancer** [9230-195]
- 9230 11 **Study on the influence of absorption on anisotropic tissues by Mueller matrix decomposition** [9230-197]
- 9230 12 **Interaction of 1.319  $\mu\text{m}$  laser with skin: an optical-thermal-damage model and experimental validation** [9230-200]
- 9230 13 **Optical coherence tomography examination of hair** [9230-204]

- 9230 14 **Photoacoustic Doppler flowmetry of carbon particles flow using an autocorrelation method** [9230-220]
- 9230 15 **Concentration determination of collagen and proteoglycan in bovine nasal cartilage by Fourier transform infrared imaging and PLS (Best Student Paper – Oral)** [9230-242]
- 9230 16 **A fast 3D image reconstruction method based on Monte-Carlo simulation for laminar optical tomography** [9230-244]

---

#### IMMUNOPHOTONICS

---

- 9230 17 **Photodynamic antimicrobial chemotherapy using zinc phthalocyanine derivative for bacterial skin infection** [9230-33]
- 9230 18 **Preparation of multifunctional upconversion nanoconstruct for in vitro and in vivo imaging and photodynamic therapy induced by near-infrared light (Invited Paper)** [9230-83]
- 9230 19 **Preliminary study on novel targeted anti-tumor drug aminoglucose based-doxorubicin** [9230-90]
- 9230 1A **Mussel-inspired synthesis of polydopamine-functionalized graphene oxide hydrogel as broad-spectrum antimicrobial material** [9230-120]
- 9230 1B **The application of quantum dots for the melanoma tumor in vivo imaging** [9230-165]
- 9230 1C **Phototherapy-treated apoptotic tumor cells induce pro-inflammatory cytokines production in macrophage** [9230-191]
- 9230 1D **In vivo study of ALA PLGA nanoparticles-mediated PDT for treating cutaneous squamous cell carcinoma** [9230-214]

---

#### NEUROPHOTONICS

---

- 9230 1E **Automatic detection and quantitative analysis of cells in the mouse primary motor cortex** [9230-123]
- 9230 1F **Determination of nitric oxide mediating intracellular  $Ca^{2+}$  release on neurons based on confocal microscopy imaging** [9230-132]
- 9230 1G **Low-level laser therapy promotes dendrite growth via upregulating brain-derived neurotrophic factor expression (Best Student Paper – Oral)** [9230-155]

---

#### TRANSLATIONAL BIOPHOTONICS

---

- 9230 1H **A physical model eye with 3D resolution test targets for optical coherence tomography** [9230-25]

- 9230 1I **Partial least squares regression on DCT domain for infrared face recognition** [9230-34]
- 9230 1J **Research of second harmonic generation images based on texture analysis** [9230-42]
- 9230 1K **A fast and high-sensitive dual-wavelength diffuse optical tomography system using digital lock-in photon-counting technique** [9230-43]
- 9230 1L **Imaging of surgical margin in pancreatic metastasis using two-photon excited fluorescence microscopy** [9230-51]
- 9230 1M **Label-free visualization of collagen in submucosa as a potential diagnostic marker for early detection of colorectal cancer** [9230-52]
- 9230 1N **Differentiating fibroadenoma and ductal carcinoma in situ from normal breast tissue by multiphoton microscopy** [9230-59]
- 9230 1O **Observation and analysis on skin cancer induced by UVB irradiation using optical coherence tomography** [9230-64]
- 9230 1P **Noncontact photoacoustic tomography imaging using a low-coherence interferometer with rapid detection of phase modulation** [9230-88]
- 9230 1Q **Assessing the therapeutic effect of 625-nm light-emitting diodes** [9230-94]
- 9230 1R **Comparison of two strategies for detection of reactive oxygen species** [9230-95]
- 9230 1S **Full-range Fourier domain polarization-sensitive optical coherence tomography using sinusoidal phase modulation (Best Student Paper – Oral)** [9230-98]
- 9230 1T **Computer-aided design of peptide near infrared fluorescent probe for tumor diagnosis** [9230-99]
- 9230 1U **Visual detection of multidrug resistance gene in living cell using the molecular beacon imaging** [9230-101]
- 9230 1V **Gastric cancer target detection using near-infrared hyperspectral imaging with chemometrics** [9230-110]
- 9230 1W **In vivo vascular imaging with adaptive optics confocal scanning fluorescence microscopy** [9230-111]
- 9230 1X **Raman spectroscopy combined with multivariate analysis techniques as a potential tool for semen investigation** [9230-113]
- 9230 1Y **A novel method for speckle reduction in optical coherence tomography by image registration** [9230-118]
- 9230 1Z **Serum albumin analysis for type II diabetes detection using surface-enhanced Raman spectroscopy** [9230-122]
- 9230 20 **Non-invasive optical detection of esophagus cancer based on urine surface-enhanced Raman spectroscopy** [9230-124]

- 9230 21 **Detection of human serum proteins using Raman and SERS spectroscopy** [9230-128]
- 9230 22 **Developing a free-space fluorescence molecular tomography system** [9230-144]
- 9230 23 **Dual-modal whole eye photoacoustic imaging** [9230-151]
- 9230 24 **Compact high-speed line scanning quasi-confocal ophthalmoscope and retina imaging experiments** [9230-156]
- 9230 25 **Multifunctional upconversion nanoprobe for tumor fluorescence imaging and near-infrared thermal therapy** [9230-167]
- 9230 26 **Ultrashort microwave pulsed thermoacoustic imaging for tumor localization over whole breast** [9230-172]
- 9230 27 **Intravascular photoacoustic tomography for characterization of atherosclerotic lipid and inflammation** [9230-173]
- 9230 28 **Using micro-Raman spectroscopy for nasopharyngeal cancerous tissue detection** [9230-201]



## Authors

Numbers in the index correspond to the last two digits of the six-digit citation identifier (CID) article numbering system used in Proceedings of SPIE. The first four 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.

Bai, Jing, 0F, 0Q  
Cao, Bo, 0N  
Cao, Gang, 1X, 1Z, 28  
Cao, Xu, 0F, 0Q  
Chang, Jintao, 08  
Chen, Danni, 0N, 0P, 0S  
Chen, Guannan, 1J  
Chen, Haiyan, 0B  
Chen, Haiyu, 06  
Chen, Hong, 1L  
Chen, Hua, 02  
Chen, Jianling, 0V  
Chen, Jianxin, 1L, 1M, 1N  
Chen, Jincan, 17  
Chen, Jing, 1L  
Chen, Maowen, 0J, 28  
Chen, Qiang, 0P, 0S, 1B  
Chen, Qun, 25  
Chen, Rong, 0J, 10, 1X, 1Z, 20, 21, 28  
Chen, Shangbin, 1E  
Chen, Tongsheng, 03  
Chen, Weiting, 1K  
Chen, Weiwei, 20  
Chen, Xiuqin, 0T  
Chen, Xiwen, 1X  
Chen, Xueying, 16  
Chen, Yan, 1S  
Chen, Youting, 1L  
Chen, Yuanxiang, 0J  
Chen, Zhifen, 1M  
Chen, Zhongjiang, 0W  
Chen, Zhuo, 17  
Cui, Shanshan, 16  
Ding, Yichen, 22  
Du, E., 0O  
Feng, Changyin, 1M  
Feng, Gang, 0P, 0S  
Feng, Shangyuan, 1X, 20  
Feng, Wei, 0U  
Feng, Yayi, 1B  
Feng, Yongzhen, 05  
Fu, Fangmeng, 1N  
Fu, Yong, 26  
Gao, Feng, 16, 1K  
Gao, Guangyu, 0M  
Gao, Weidong, 1R  
Gekalyuk, A. S., 0H  
Gong, Haiming, 1J  
Gong, Hui, 1E  
Gong, Qihuang, 0M  
Gong, Wei, 13  
Gu, Yue-qing, 09, 0A, 0B, 0C, 0D, 18,  
19, 1R, 1T, 1U  
Guan, Guoxian, 1M  
Guo, Jian, 06  
Guo, Xin, 1S  
Guo, Yihong, 11  
Guo, Zhouyi, 1A  
Hao, Bingtao, 1H  
He, Honghui, 08, 0O  
He, Wei, 0F  
He, Yi, 1W, 24  
He, Yipeng, 1F  
He, Yong, 1E  
He, Yonghong, 0O  
He, Zhiyong, 1G  
Hong, Baoyu, 1H  
Hong, Zhipeng, 1L  
Hu, Ping, 17  
Hu, Zhixiong, 1H  
Huang, Lingling, 20  
Huang, Mingdong, 17  
Huang, Shanshan, 0C, 18  
Huang, Shaohua, 20  
Huang, Wei, 0J, 28  
Huang, Xuan, 0P  
Huang, Yun, 05  
Huang, Zhen, 04  
Huang, Zheng, 13, 1D  
Huang, Zufang, 10, 1J, 1X, 1Z, 21  
Ji, Zhong, 26  
Jia, Mengyu, 16  
Jiang, Houmin, 1V  
Jiang, Ningcheng, 0Y  
Jiang, Weizhong, 1M  
Jiao, Luguang, 12  
Li, Anan, 1E  
Li, Bingbing, 0W  
Li, Changhui, 22, 23  
Li, Heng, 0N  
Li, Hui, 06, 0V, 13, 1O  
Li, Jiao, 1H  
Li, Ling, 10, 1Z, 21  
Li, Lingmei, 05  
Li, Linsen, 17  
Li, Siwen, 09, 0D, 19  
Li, Xiqi, 1W, 24  
Li, Yan, 1J

Li, Yongzeng, 1X  
 Li, Yu, 0M  
 Li, Zhifang, 06  
 Li, Zhongliang, 1S, 1Y  
 Lian, Yuane, 1N  
 Liao, Fadian, 10, 1Z, 21  
 Liao, Yuhui, 0E  
 Lin, Duo, 20  
 Lin, Guimiao, 0P, 0S, 1B  
 Lin, Hongxin, 1X  
 Lin, Jia, 28  
 Lin, Jinyong, 0J, 10, 1X, 1Z, 21  
 Lin, Juqiang, 0Y, 10, 1X, 1Z, 21  
 Liu, Celong, 11  
 Liu, Chang, 19  
 Liu, Fei, 0F, 0Q  
 Liu, Guodong, 04  
 Liu, Hongxing, 07  
 Liu, Jun, 1P  
 Liu, Nenrong, 10, 1Z, 21  
 Liu, Wei, 05  
 Liu, Wenli, 1H  
 Liu, Yao, 1J  
 Liu, Zhiming, 1A  
 Lou, Cunguang, 26  
 Lu, Cuixia, 1C  
 Lu, Tao, 14  
 Luo, Jianwen, 0F, 0Q  
 Lychagov, V. V., 0H  
 Ma, Dongdong, 0T  
 Ma, Hui, 08, 0O, 11  
 Ma, Ning, 0U  
 Ma, Yi, 09, 0D, 1U  
 Mao, Zongzhen, 1Q  
 Mather, Melissa L., 0Z  
 Men, Jing, 0M  
 Meng, Chengbo, 1G  
 Meng, Yunlong, 1E  
 Moles, Matthew D., 0Z  
 Morgan, Stephen P., 0Z  
 Nan, Nan, 1S, 1Y  
 Nie, Yuting, 1N  
 Niu, Hanben, 0N  
 Pan, Sujuan, 0T  
 Pavlov, A. N., 0H  
 Peng, Yiru, 0T  
 Pu, Huangsheng, 0F  
 Qin, Huan, 27  
 Qiu, Jingting, 1M  
 Ren, Qiushi, 22, 23  
 Ren, Zhong, 04  
 Ruan, Qiuyong, 10, 1Z, 21  
 Schlaefer, Alexander, 0R  
 Semyachkina-Glushkovskaya, O. V., 0H  
 Semyachkin-Glushkovskiy, I. A., 0H  
 Shi, Guohua, 1W, 24  
 Shi, Lei, 1D  
 Shi, Yujiao, 27  
 Shi, Zheng, 1L  
 Sun, Liqing, 28  
 Sun, Minghao, 0O  
 Tang, Hongchun, 1P  
 Tang, Zhilie, 1P  
 Tian, Caiping, 09, 0D  
 Tuchin, V. V., 0H  
 Ulanova, M. V., 0H  
 Wang, Bo, 0R  
 Wang, Chuan, 1N  
 Wang, Guohe, 22  
 Wang, Jiarui, 12  
 Wang, Jing, 1X  
 Wang, Lan, 20  
 Wang, Lele, 1H  
 Wang, Ling, 0A  
 Wang, Qian, 0A, 0B  
 Wang, Ruhua, 0P  
 Wang, ShuFeng, 0M  
 Wang, Wei, 0M  
 Wang, Xiangzhao, 1S, 1Y  
 Wang, Xiaojie, 1D  
 Wang, Xiaomei, 0P, 0S, 1B  
 Wang, Xiaozhou, 02  
 Wang, Xinpeng, 1A  
 Wang, Xiuli, 1D  
 Wang, Xuan, 1Y  
 Wang, Yi, 1P  
 Wang, Yi-fei, 03  
 Wang, Yuhua, 0K, 0T, 0V, 0Y, 1F  
 Wang, Yunfei, 11  
 Wang, Yunxia, 1O  
 Wang, Zhaohui, 09  
 Wang, Zhibin, 1W, 24  
 Wang, Zhi-ping, 03  
 Wei, Ling, 1W, 24  
 Wei, Yanchun, 1C, 25  
 Weng, Guo-Xing, 06, 0J  
 Wu, Baoyan, 25  
 Wu, Jinbo, 1B  
 Wu, Jingpeng, 1E  
 Wu, Jun-biao, 03  
 Wu, Ning, 23  
 Wu, Shanshan, 0J, 1Z, 20, 28  
 Wu, Shulian, 1O  
 Wu, Yan, 1N  
 Wu, Yongbo, 1P  
 Xia, Yang, 15  
 Xia, Yi, 0I  
 Xiao, Zhi-Yan, 15  
 Xie, Shusen, 0V, 0Y, 13, 1F  
 Xie, Wenming, 06  
 Xie, Zhihua, 1I  
 Xing, Da, 07, 1C, 1G, 25, 27  
 Xu, Chaoxian, 0Y  
 Xu, Gaixia, 0P, 0S, 1B  
 Xu, Guodong, 1Q  
 Xu, Jianshu, 13  
 Xu, Yahao, 1L  
 Yan, Heping, 05  
 Yang, Hongqin, 0T, 0V, 0Y, 13  
 Yang, Jinwen, 02

Yang, Mengting, 05  
Yang, Sihua, 0W, 27  
Yang, Yi, 1Q  
Yang, Yinghong, 1M  
Yang, Zaifu, 12  
Yi, Weisong, 1V  
Yi, Xi, 1K  
Yin, Deyan, 0C, 18  
Yin, Jianhua, 15  
Ying, Ming, 1B  
Yu, Bin, 0N  
Yu, Jie, 0N  
Yuan, Xiaochan, 1A  
Zeng, Nan, 08, 0O, 11  
Zeng, Yixiu, 0V, 1F  
Zeng, Yongyi, 10, 21  
Zhai, Peng, 0P, 0S, 1B  
Zhai, Xiaohui, 22  
Zhang, Congying, 1T  
Zhang, Guanglei, 0F  
Zhang, Hang, 1Y  
Zhang, Jian, 1V  
Zhang, Jian, 27  
Zhang, Jucheng, 05  
Zhang, Meng, 0I  
Zhang, Min, 0A, 0B  
Zhang, Niya, 1V  
Zhang, Qimei, 0Z  
Zhang, Xuexi, 15  
Zhang, Yanding, 1F  
Zhang, Yaxin, 17  
Zhang, Ying, 18  
Zhang, Yudong, 1W, 24  
Zhang, Zhenxi, 0R  
Zhao, Huijuan, 16, 1K  
Zhao, Tian, 02  
Zhao, Yanshu, 0C  
Zheng, Liqin, 0K, 1F  
Zheng, Xiaoxiao, 1O  
Zhong, Dongping, 0M  
Zhong, Huiqing, 1A  
Zhou, Qiumei, 1U  
Zhou, Qun, 03  
Zhou, Shanyong, 17  
Zhou, Xiaoming, 07, 0E  
Zhou, Yuanshu, 1R  
Zhu, Dan, 0U  
Zhu, Xiaomei, 1B  
Zhu, Xiaoqin, 1J, 1L, 1M  
Zhuo, Shuangmu, 1L, 1M  
Zuo, Simin, 0Q



# Conference Committee

## *Conference Chairs*

**Qingming Luo**, Huazhong University of Science and Technology (China)  
**Lihong V. Wang**, Washington University in St. Louis (United States)  
**Valery V. Tuchin**, N.G. Chernyshevsky Saratov State University  
(Russian Federation)

## *Organizing Committee Chairs*

**Hui Gong**, Huazhong University of Science and Technology (China)  
**Zheng Huang**, Fujian Normal University (China)  
**Dan Zhu**, Huazhong University of Science and Technology (China)

## *Session Chairs*

- 1 Plenary Session  
**Qingming Luo**, Huazhong University of Science and Technology (China)  
**Valery V. Tuchin**, N.G. Chernyshevsky Saratov State University  
(Russian Federation)
- 2 Britton Chance Centennial  
**Lihong V. Wang**, Washington University in St. Louis (United States)  
**Colin Sheppard**, Italian Institute of Technology (Italy)
- 3 Britton Chance Centennial  
**Xingde Li**, Johns Hopkins University (United States)  
**Steven Goodman**, State University of New York Upstate Medical  
University (United States)
- 4 Neurophotonics  
**Brain M. Salzberg**, University of Pennsylvania (United States)  
**Dongwu Du**, State University of New York at Stony Brook (United States)
- 5 Immunophotonics  
**Wei Chen**, University of Central Oklahoma (United States)  
**Xing Da**, South China Normal University (China)
- 6 Poster Session  
**Shoko Nioka**, University of Pennsylvania (United States)  
**Dan Zhu**, Huazhong University Science and Technology (China)
- 7 Plenary Session  
**Christian Depeursinge**, King Abdullah University of Science and  
Technology (Saudi Arabia)  
**Hong Liu**, University of Oklahoma (United States)

Plenary Session

**Stephen P. Morgan**, University of Nottingham (United Kingdom)

**Min Gu**, Swinburne University of Technology (Australia)

8 Best Student Presentation Session

**Pourrezaei Kambiz**, Drexel University (United States)

**Haishan Zeng**, British Columbia Cancer Agency Research Centre  
(Canada)

9 Translational Biophotonics

**Stephen J. Matcher**, University of Sheffield (United Kingdom)

**Geng Ku**, University of Texas MD Anderson Cancer Center (United States)

10 Analytical Biophotonics

**Jürgen Lademann**, Charité Universitätsmedizin Berlin (Germany)

**Zheng Huang**, Fujian Normal University (China)

11 Valery Tuchin's 70th Anniversary

**Larin Kirill**, University of Houston (United States)

**Lihong Wang**, Washington University in St. Louis (United States)

12 Valery Tuchin's 70th Anniversary

**Ruikang Wang**, University of Washington (United States)

## Introduction

The papers included in this volume were part of the 12th International Conference on Photonics and Imaging in Biology and Medicine (PIBM 2014), held 14–17 June 2014, in Wuhan, P. R, China, which were selected and subject to review by the editors or conference committee. Some conference presentations may not be available for publication. The papers published in these proceedings 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.

**Qingming Luo**  
**Lihong V. Wang**  
**Valery V. Tuchin**

