

PROCEEDINGS OF SPIE

Optics in Health Care and Biomedical Optics VII

Qingming Luo
Xingde Li
Ying Gu
Yuguo Tang
Dan Zhu
Editors

12–14 October 2016
Beijing, China

Sponsored by
SPIE
COS—Chinese Optical Society

Cooperating Organizations
Tsinghua University (China) • Peking University (China) • University of Science and Technology of China (China)
Zhejiang University (China) • Tianjin University (China) • Beijing Institute of Technology (China) • Beijing University of
Posts and Telecommunications (China) • Nankai University (China) • Changchun University of Science and
Technology (China) • University of Shanghai for Science and Technology (China) • Capital Normal University (China)
Huazhong University of Science and Technology (China) • Beijing Jiaotong University (China) • Shanghai Institute of
Optics and Fine Mechanics (China) • Changchun Institute of Optics and Fine Mechanics (China) • Institute of
Semiconductors (China) • Institute of Optics and Electronics (China) • Institute of Physics (China) • Shanghai Institute
of Technical Physics (China) • China Instrument and Control Society (China) • Optoelectronics Technology
Committee, COS (China) • SPIE National Committee in China (China) • Optical Society of Japan (Japan) • Optical
Society of Korea (Korea, Republic of) • The Australian Optical Society (Australia) • Optics and Photonics Society of
Singapore (Singapore) • European Optical Society

Supporting Organizations
CAST—China Association for Science and Technology (China)
NSFC—National Nature Science Foundation (China)

Published by
SPIE

Volume 10024

Proceedings of SPIE 0277-786X, V. 10024

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

Optics in Health Care and Biomedical Optics VII, edited by Qingming Luo, Xingde Li, Ying Gu, Yuguo Tang, Dan Zhu,
Proc. of SPIE Vol. 10024, 1002401 · © 2016 SPIE · CCC code: 0277-786X/16/\$18 · doi: 10.1117/12.2265119

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 *Optics in Health Care and Biomedical Optics VII*, edited by Qingming Luo, Xingde Li, Ying Gu, Yuguo Tang, Dan Zhu, Proceedings of SPIE Vol. 10024 (SPIE, Bellingham, WA, 2016) Seven-digit Article CID Number.

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510604674

ISBN: 9781510604681 (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 © 2016, 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 0277-786X/16/\$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**

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

ix	<i>Authors</i>
xiii	<i>Symposium Committees</i>
xv	<i>Conference Committee</i>

ADVANCED OPTICAL TECHNIQUES FOR CLINICAL MEDICINE II

10024 0B	Detection and classification of ebola on microfluidic chips [10024-11]
----------	---

MULTIMODAL BIOMEDICAL IMAGING

10024 0D	Studying the numeration methods of signals with unstable background for in vivo flow cytometry (Invited Paper) [10024-13]
10024 0E	Microwave-induced thermoacoustic imaging system based on flexible transducer [10024-14]
10024 0H	All-optically integrated multimodality imaging system: combined photoacoustic microscopy, optical coherence tomography, and fluorescence imaging [10024-17]
10024 0I	Extinction measurement of dense media by an optical coherence tomography technique [10024-18]

TISSUE OPTICS

10024 0J	Microfluidic cytometers with integrated on-chip optical components for blood cell analysis (Invited Paper) [10024-19]
10024 0K	Weighted optimization of irradiance for photodynamic therapy of port wine stains [10024-20]
10024 0M	Stage scoring of liver fibrosis using Mueller matrix microscope [10024-22]
10024 0N	3D printing of tissue-simulating phantoms for calibration of biomedical optical devices [10024-23]
10024 0O	Effect of surface topographic features on the optical properties of skin: a phantom study [10024-24]
10024 0P	Structured light imaging system for structural and optical characterization of 3D tissue-simulating phantoms [10024-25]

MICROSCOPY AND IMAGING II

10024 1I **A frequency domain reconstruction of SIM image using four raw images** [10024-38]

NANO/BIPHOTONICS

10024 15 **Multiple gold-dimer detection from large scattering background** [10024-42]

10024 17 **Anti-hepatocarcinoma effects of berberine-nanostructured lipid carriers against human HepG2, Huh7, and EC9706 cancer cell lines (Invited Paper)** [10024-44]

10024 1B **Evaluation of free radical scavenging and anti-oxidative capacity of polydatin-nanostructured lipid carriers** [10024-48]

PHOTON THERAPEUTICS

10024 1C **Quantification of reactive oxygen species for photodynamic therapy (Invited Paper)** [10024-49]

10024 1G ***In vitro* photodynamic inactivation effects of cationic benzylidene cyclopentanone photosensitizers on clinical fluconazole-resistant *Candida albicans* planktonic cells and biofilms** [10024-53]

10024 1H **Antimicrobial blue light inactivation of Methicillin-resistant *Staphylococcus aureus*** [10024-54]

BIOMEDICAL SPECTROSCOPY

10024 1J **Quantitatively differentiating microstructural variations of skeletal muscle tissues by multispectral Mueller matrix imaging** [10024-56]

10024 1M **Hyperspectral-stimulated Raman scattering imaging of cholesteryl ester accumulation: new avenue to diagnosis of human prostate cancer** [10024-59]

POSTER SESSION

10024 1O **Hemoglobin concentration determination based on near infrared spatially resolved transmission spectra** [10024-60]

10024 1P **Research of transmissive near infrared spectroscopy for non-invasive blood glucose measurement** [10024-61]

10024 1Q **Amplitude enhancement by a gold dimer** [10024-62]

10024 1R **Wavelength selection based on two-dimensional correlation spectroscopy: application to noninvasive hemoglobin measurement by dynamic spectrum** [10024-63]

- 10024 1S **Adaptive photoacoustic imaging quality optimization with EMD and reconstruction**
[10024-64]
- 10024 1V **Influence of incident light offset on diffuse reflectance measurement for curved object: a Monte Carlo-based study** [10024-67]
- 10024 1X **Pigmented skin lesion detection using random forest and wavelet based texture** [10024-69]
- 10024 1Y **Wavelength-swept fiber laser based on acousto-optic tuning method** [10024-70]
- 10024 1Z **Identification of tumor cells infiltrating into connective tissue in esophageal cancer by multiphoton microscopy** [10024-71]
- 10024 20 **Identification of calcifications in intracranial neoplasms using two-photon excitation fluorescence microscopy** [10024-72]
- 10024 22 **Identification of the boundary between normal brain tissue and ischemia region using two-photon excitation fluorescence microscopy** [10024-74]
- 10024 24 **Quantification of collagen distributions in rat hyaline and fibro cartilages based on second harmonic generation imaging** [10024-77]
- 10024 25 **Label-free imaging of rat spinal cords based on multiphoton microscopy** [10024-78]
- 10024 26 **A method based on coffee-ring deposition confocal Raman spectroscopy of analysis of melamine in milk** [10024-79]
- 10024 27 **Monitoring the elasticity changes of HeLa cells during mitosis by atomic force microscopy**
[10024-80]
- 10024 28 **Determination of acceptor-to-donor cross section ratio for two-photon excitation in living cells** [10024-81]
- 10024 29 **Detection of mast cell secretion by using surface enhanced Raman scattering** [10024-82]
- 10024 2A **Polymer dots with broadband optical absorption (500 nm - 700 nm) and high-efficiency photoacoustic conversion for in vivo multispectral photoacoustic imaging** [10024-83]
- 10024 2B **Effect of 17β -estradiol on the elasticity of MCF-7 cells by atomic force microscopy**
[10024-84]
- 10024 2C **Numerical simulation and analysis of accurate blood oxygenation measurement by using optical resolution photoacoustic microscopy** [10024-85]
- 10024 2D **In vivo noninvasive measurement of preprandial and postprandial blood glucose using optical coherence tomography** [10024-86]
- 10024 2E **Measuring blood oxygenation of pulsatile arteries using photoacoustic microscopy**
[10024-87]
- 10024 2F **Self-assembled dye-doped polymer microspheres as whispering gallery mode lasers**
[10024-88]

- 10024 2G **A method to improve the measurement stability of scattering coefficients in lip with optical coherence tomography** [10024-89]
- 10024 2H **The optimum measurement precision evaluation for blood components using near-infrared spectra on 1000-2500 nm** [10024-90]
- 10024 2I **Quantitative optical biomarkers of lung cancer based intrinsic two-photon excited fluorescence signal** [10024-91]
- 10024 2K **Effects of large vessel on temperature distribution based on photothermal coupling interaction model** [10024-93]
- 10024 2L **Detection of the multiphoton signals in stained tissue using nonlinear optical microscopy** [10024-94]
- 10024 2M **The novel drug delivery to vascular wall using laser driven thermal balloon: basic study *ex vivo*** [10024-95]
- 10024 2N **Optimization on source detector distance for the glucose sensing in a tissue phantom using near-infrared diffuse spectra** [10024-96]
- 10024 2O **Assessment of spatial information for hyperspectral imaging of lesion** [10024-97]
- 10024 2Q **Endoscopic optical coherence tomography using compressive sensing** [10024-99]
- 10024 2R **Temperature insensitive prediction of glucose concentration in turbid medium using multivariable calibration based on external parameter orthogonalization** [10024-100]
- 10024 2S **Determination of the reference position in the near-infrared non-invasive blood glucose measurement *in vivo*** [10024-101]
- 10024 2T **Rotary-scanning optical resolution photoacoustic microscopy** [10024-102]
- 10024 2W **Evaluation on the detection limit of blood hemoglobin using photoplethysmography based on path-length optimization** [10024-105]
- 10024 2X **Evaluation and recognition of skin images with aging by support vector machine** [10024-106]
- 10024 2Y **Preliminary experiments on pharmacokinetic diffuse fluorescence tomography of CT-scanning mode** [10024-107]
- 10024 30 **Differentiation of highly metastatic nasopharyngeal carcinoma cells using multiphoton microscopy** [10024-109]
- 10024 31 **Measuring the biomechanical properties of the actin in MCF-7 breast cancer cell with a combined system of AFM and SIM** [10024-110]
- 10024 32 **Childhood lymphoblastic leukemia adverse drug reactions: study of risk factors and therapy prognosis by optical methods** [10024-111]
- 10024 33 **Parameter estimation and analysis model selections in fluorescence correlation spectroscopy** [10024-112]

- 10024 34 **Acquisition of mouse optical structures *in vivo* with the aid of registered atlas** [10024-113]
- 10024 35 **Novel shadowless imaging for eyes-like diagnosis *in vivo*** [10024-114]
- 10024 36 **Interstitial optical parameter quantification of turbid medium based on CW radiance measurements** [10024-115]
- 10024 38 **Dorsal hand vein recognition based on Gabor multi-orientation fusion and multi-scale HOG features** [10024-117]
- 10024 39 **Discrimination of liver cancer in cellular level based on backscatter micro-spectrum with PCA algorithm and BP neural network** [10024-118]
- 10024 3B **Compact hybrid real-time hyperspectral imaging system with high effective spatial, spectral, and temporal resolution** [10024-120]
- 10024 3C **Interferometer immunosensor based on porous silicon for determining alpha-fetoprotein** [10024-121]
- 10024 3D **Label-free and high-sensitive detection for genetic point mutation based on hyperspectral interferometry** [10024-122]
- 10024 3F **Application study of transport intensity equation in quantitative phase reconstruction** [10024-124]
- 10024 3G **Photophysical property of the pyridyl and pyrimidinyloxy silicon (IV) phthalocyanines and their morphology of polymeric nanoparticles** [10024-125]
- 10024 3I **2D light scattering label-free cytometry using light-sheet illumination** [10024-127]
- 10024 3J **The effect of metal ions on the photophysical and photochemical property of phenylthio bromo metal phthalocyanines** [10024-128]
- 10024 3K **Monitoring the change of mitochondrial morphology and its metabolism of the breast cancer cells with the treatment of Hsp70 inhibitor during heat shock by fluorescence imaging** [10024-129]
- 10024 3N **Development of wide-angle 2D light scattering static cytometry** [10024-132]
- 10024 3O **Diffuse reflectance spectroscopy study of *in vitro* tissue for nasopharyngeal carcinoma diagnosis** [10024-133]
- 10024 3P **Photophysical properties of catechol axially substituted tetra-*a*-(pentyloxy) titanium (IV) phthalocyanine** [10024-134]
- 10024 3S **Integrated acoustic-resolution and optical-resolution photoacoustic microscopy using a single multifunctional acoustic lens** [10024-137]
- 10024 3T ***En-face* sectional imaging using single-shot full-field optical coherence tomography (SS-FF-OCT) based on white light emitting diode (WLED)** [10024-138]
- 10024 3U **Whole-body and multispectral photoacoustic imaging of adult zebrafish** [10024-139]

- 10024 3V **Revealing the cellular metabolism and microstructural changes *in vivo* in senescing *Acer saccharum* leaves using two-photon FLIM and full-field OCM** [10024-140]
- 10024 3X **Temporal evolution of liquid-assisted hard bio-tissue ablation with infrared pulsed lasers under a liquid environment** [10024-142]
- 10024 3Y **A comparative study of metabolic state of stem cells during osteogenic and adipogenic differentiations via fluorescence lifetime imaging microscopy** [10024-143]
- 10024 40 **Saliva surface-enhanced Raman spectroscopy for noninvasive optical detection of nasopharyngeal cancer** [10024-145]
- 10024 41 **The effect of axial ligands on the quantum yield of singlet oxygen of new silicon phthalocyanine** [10024-146]
- 10024 44 **Photoinduced electron transfer between benzyloxy dendrimer phthalocyanine and benzoquinone** [10024-150]
- 10024 46 **Study on nasopharyngeal cancer tissue using surface-enhanced Raman spectroscopy** [10024-152]
- 10024 4G ***In vivo* hyperspectral imaging and differentiation of skin cancer** [10024-165]
- 10024 4I **Skin cancer texture analysis of OCT images based on Haralick, fractal dimension, Markov random field features, and the complex directional field features** [10024-167]
- 10024 4M **Grid-based visual aid for enhanced microscopy screening in diagnostic cytopathology** [10024-171]
- 10024 4N **Blood vessel damage correlated with irradiance for *in vivo* vascular targeted photodynamic therapy** [10024-172]
- 10024 4O **Improving the signal-to-noise ratio in ultrasound-modulated optical tomography by a lock-in amplifier** [10024-173]
- 10024 4P **Synthesis and application of the reduction-sensitive drug delivery system based on water-soluble ZnInAgS quantum dots** [10024-174]
- 10024 4Q **Depth-section imaging of swine kidney by spectrally encoded microscopy** [10024-175]
- 10024 4S **Non-invasive optical detection of HBV based on serum surface-enhanced Raman spectroscopy** [10024-177]
- 10024 4T **Development of a new first-aid biochemical detector** [10024-178]
- 10024 4W **Retinal image quality and visual stimuli processing by simulation of partial eye cataract** [10024-181]
- 10024 5I **Spectral domain optical coherence tomography with extended depth-of-focus by aperture synthesis** [10024-30]

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.

Abbadi, Ahmad, 3B
Ago, Tomoki, 0I
Anna, Tushi, 3T, 3V
Arai, Tsunenori, 2M
Babak, S., 32
Bai, Baodan, 3F
Bao, Fangjian, 4P
Bo, En, 5I
Borisova, A., 32
Bratchenko, Ivan A., 4G, 4I
Cai, Gan, 39
Carson, Paul L., 1S
Chai, Xinyu, 2E
Chakraborty, Sandeep, 3V, 3Y
Chen, Da, 26
Chen, Faner, 3X
Chen, Jianfeng, 0O
Chen, Jianling, 3I
Chen, Jianxin, 1Z, 20, 22, 24, 25, 2I, 2L
Chen, Kuizhi, 3J
Chen, Ming-hui, 1Y
Chen, Tong-sheng, 17, 1B, 28
Chen, Xiaogang, 2F
Chen, Zhe, 3G
Chen, Zhongjiang, 0H
Cheng, Wei, 3F
Chiou, Arthur, 3T, 3V, 3Y
Chu, Fenghong, 3F
Chu, Jiaru, 0O
Dai, Tianhong, 1H
Danilenko, Olga, 4W
Deng, Dawei, 4P
Deng, Tao, 4P
Ding, Chizhu, 1V
Ding, Hao, 4T
Ding, Xuemei, 27, 33
Ding, Yao, 1S
Dong, Erbao, 0N, 0O
Dong, Shiqing, 33
Dong, Xiaona, 39
Dong, Yang, 1J
Du, Huiping, 22
Du, Jun, 1M
Fan, Hua, 17
Fan, Yun-ping, 1Y
Fan, Yunqian, 0B
Fang, Na, 20
Fang, Yanyan, 1G
Feng, Shangyuan, 4S
Feng, Shaodong, 2Q
Fu, Rongxin, 3D
Gao, Feng, 2Y, 34, 36
Gao, Wanrong, 4Q
Ge, Xiaosong, 3O, 40, 46
Gu, Ying, 1G, 1H
Guo, Chao, 2H, 2N, 2R, 2W
Guo, Chengwen, 1S
Guo, Heng, 3S
Han, Guang, 2S
Han, Tongshuai, 2H, 2N, 2R, 2W
Han, Tuo, 38
He, Chao, 1J
He, Hao, 0D
He, Honghui, 0M, 1J
He, Linhuan, 0K
Herman, Ondrej, 3B
Homma, Rie, 2M
Hong, Quanxing, 40
Hong, Xin, 15, 1Q
Hou, Zexian, 28
Hu, Jingfei, 4T
Hu, Liangjun, 2X, 4O
Hu, Ping, 1X
Hu, Xiao-Ming, 0J, 0K
Hua, Mingxin, 3X
Huang, Dehuang, 1P
Huang, Guoliang, 0B, 35, 3D
Huang, Na, 3U
Huang, Qin, 0B
Huang, Shiguang, 0B
Huang, Wei, 3O, 40, 46
Huang, XiaoShuai, 1I
Huang, Yide, 3P
Iwai, Toshiaki, 0I
Ji, Zhong, 0E
Jia, Zhenhong, 3C
Jiang, Jing, 3C
Jiang, Kai, 35, 3D
Jiang, Liwei, 1Z
Jiang, Ningcheng, 27, 2B, 3I
Jiang, Yufeng, 3G, 3P, 44
Jin, Xiangyu, 0B
Jin, Zheng, 15, 1Q
Kang, Deyong, 1Z, 2L
Kang, Dezhi, 20
Khramov, Alexander G., 4I
Kou, Yue, 0B
Kozlov, Sergey V., 4G

Kuo, Jean-Cheng, 3Y
 Kuo, Wen-Chuan, 3T, 3V
 Lai, Chih-Ming, 3T
 Lal, Amit, 1I
 Lavrova, A., 32
 Li, Buhong, 1C, 4N
 Li, Gang, 1O, 1R, 2O
 Li, Hai-Jie, 1B
 Li, Hui, 2D, 2G, 2K, 2X, 3K, 4O
 Li, Jiao, 2Y
 Li, Jingwen, 2I, 3O
 Li, Juan, 29
 Li, Lianhuang, 2O
 Li, Lin, 2C, 2E
 Li, Qi, 35, 3D
 Li, Qian, 2C, 2E
 Li, Qiang, 3X
 Li, Qin, 0J
 Li, Ren, 29
 Li, Yasheng, 1P
 Li, Zhe, 1R
 Li, Zhifang, 2D, 2G, 2K
 Li, Zuoran, 2K
 Liao, Chenxi, 24, 25
 Liao, Haiyang, 4T
 Liao, Jiuling, 4Q
 Liao, Ningfang, 1P
 Lin, Duo, 3O, 4O, 46
 Lin, Guimin, 4O
 Lin, Hongxin, 2I
 Lin, Huiyun, 4N
 Lin, Jiangbo, 1Z, 2L
 Lin, Juqiang, 29
 Lin, Ling, 1O, 1R, 2O
 Lin, Linsheng, 1C, 4N
 Lin, Meiai, 3I
 Lin, Peihua, 2O
 Lin, Ting, 3P
 Lin, Xue, 0B, 3D
 Lin, Xueliang, 3O, 4O, 46, 4S
 Lin, Yao, 4S
 Liu, Guangli, 0N, 0O
 Liu, Jin, 2H, 2N, 2R, 2S, 2W
 Liu, Linbo, 5I
 Liu, Lingling, 36
 Liu, Qiao, 3N
 Liu, Rong, 2S
 Liu, Songde, 0P
 Liu, Suquan, 4T
 Liu, Weijing, 3F
 Liu, Wenge, 24, 25
 Liu, Xiaosheng, 0B
 Lv, Guodong, 3C
 Lv, Huafei, 3P, 4I
 Lv, Xiang, 0N
 Lv, Xiaoyi, 3C
 Ma, Dongdong, 3J, 44
 Ma, Hui, 0M, 1J
 Ma, Li, 35
 Malaschenko, V., 32
 Meng, Xiang-Ping, 17, 1B
 Meng, Yuquan, 0N
 Mo, Jiaqing, 3C
 Moryatov, Alexander A., 4G
 Myakinin, Oleg O., 4G, 4I
 Niu, Xiangyu, 4N
 Ogawa, Emiyu, 2M
 Opryshko, N., 32
 Ou, Meng-Hsin, 3Y
 Ozolinsh, Maris, 4W
 Pan, Sujuan, 3G, 3J, 3P, 4I, 44
 Pavelek, Martin, 3B
 Peng, Yiru, 3G, 3J, 3P, 4I, 44
 Prenosil, Vaclav, 3B
 Qi, Weizhi, 2T
 Qu, Lingzhi, 4P
 Raupov, Dmitry S., 4I
 Riziotis, Christos, 4M
 Roth, Filip, 3B
 Shao, Changshun, 3N
 Shao, Liwei, 1P
 Shao, Pengfei, 0N
 Shen, Pingping, 3J
 Shen, Shuwei, 0N
 Shi, Fan, 1B
 Shimazaki, Natsumi, 2M
 Smith, Zach, 0P
 Song, Xiaojun, 3F
 Su, Shilin, 4T
 Su, Xuanta, 3I, 3N
 Su, Ya, 3D
 Sukanuma, Kao, 2M
 Sun, Cuiying, 2R
 Sun, Di, 2H, 2N, 2R, 2W
 Sun, Hongyi, 2F
 Sun, Zhenzhen, 3O
 Suo, Yuanzhen, 0D
 Tan, Zong, 26
 Tan, Zou, 1C
 Tan, Zou, 4N
 Tao, Jian-feng, 1Y
 Tsiambas, Evangelos, 4M
 Wan, Wenbo, 34
 Wang, Cheng, 39
 Wang, Jie, 2Q
 Wang, Jie, 4P
 Wang, Jingxin, 1Q
 Wang, Ping, 1M
 Wang, Qiwen, 4S
 Wang, Ruliang, 3D
 Wang, Shu, 22
 Wang, Xiaoling, 0D
 Wang, Xin, 2Y
 Wang, Xingfu, 20, 22
 Wang, Xueding, 1S
 Wang, Ye, 0M
 Wang, Yi-fei, 17, 1B
 Wang, Ying, 1G
 Wang, Yucheng, 1H
 Wang, Yuhua, 27, 28, 29, 2B, 31, 33, 3G, 3J, 3P

Wang, Zhenyu, 24, 25
 Wang, Zhi-ping, 17, 1B
 Wang, Zhiyong, 38
 Wei, Chunjuan, 3F
 Wei, Dan, 0D
 Wei, Guoqiang, 46
 Wei, Xunbin, 0D
 Weng, Cuncheng, 4S
 Wu, Jigang, 2Q
 Wu, Jingping, 4O
 Wu, Shijun, 3G, 3P, 44
 Wu, Shulian, 2X
 Wu, Xiang, 2F
 Wu, Xuejing, 1Z
 Wu, Zanyi, 20
 Xi, Lei, 2T, 3S, 3U
 Xi, Peng, 11
 Xie, Linyan, 3N
 Xie, Shusen, 27, 28, 29, 2B, 2F, 2I, 30, 31, 33, 3J, 3X, 41
 Xing, Da, 0E, 0H
 Xu, Guan, 1S
 Xu, Jian, 1Z, 2L
 Xu, Kexin, 2S
 Xu, Meifang, 1Z
 Xu, Ronald X., 0N, 0O, 0P
 Xu, Zhihong, 3O, 40, 46
 Xue, Liang, 3F
 Xue, Ning, 35, 3D
 Yang, Hongqin, 27, 28, 2B, 2F, 31, 33, 3G, 3J, 3K, 3P, 41, 44
 Yang, Jing, 39
 Yang, Sihua, 0E, 0H
 Yang, Tie-jun, 1X
 Yang, Wenming, 1P
 Yang, Xiaoping, 38
 Yang, Xue, 2O
 Ye, Qing, 30
 Ye, Zulin, 1G
 Yin, Guoyan, 2Y
 Yin, Li-De, 1B
 Yokota, Ryoko, 0I
 You, Minghai, 3I
 Yu, Biying, 3K
 Yu, Tianhao, 2C, 2E
 Yu, Xinxin, 3P, 41
 Yuan, Jie, 1S
 Yuan, Li, 0N
 Yuan, Zhen, 2A
 Yue, Shuhua, 1M
 Zakharov, Valery P., 4G, 4I
 Zavjalova, Varvara, 4W
 Zeng, Di, 3G, 3P, 44
 Zeng, Jinshu, 27
 Zeng, Yaping, 2L
 Zhan, Zhenlin, 2I, 30, 3X
 Zhang, Hao, 1Y
 Zhang, Jian, 2A
 Zhang, Jinde, 1C, 4N
 Zhang, Junqi, 3D
 Zhang, Lili, 35
 Zhang, Limin, 2Y, 36
 Zhang, Linna, 1O, 1R
 Zhang, Rong, 4P
 Zhang, Shengzhao, 1R
 Zhang, Tiantian, 3J, 44
 Zhang, Xianzeng, 3X
 Zhang, Xiaoman, 3K
 Zhang, Xiyang, 2D, 2G, 2K
 Zhang, Xuemei, 4I
 Zhang, Yanqi, 2Y
 Zhang, Ying, 2D, 2G
 Zhang, Ziyang, 2H, 2N, 2R, 2W
 Zhao, Gang, 0O
 Zhao, Huijuan, 2Y, 36
 Zhao, Yingying, 0J
 Zhao, Yuxia, 1G
 Zhao, Zuhua, 0N, 0O
 Zheng, Gang, 1Y
 Zheng, Liqin, 28, 29, 2B
 Zheng, Zuci, 40, 4S
 Zherdeva, Larisa A., 4G
 Zhou, Chuanqing, 2C, 2E
 Zhou, Jialing, 0M
 Zhou, Jie, 33
 Zhou, Linquan, 25
 Zhou, Shaona, 1G
 Zhou, Ximing, 0N
 Zhou, Ya, 0K
 Zhou, Zhongxing, 2Y
 Zhu, Lili, 4O
 Zhu, Xiaoqin, 1Z, 22, 24, 25, 2I
 Zhuo, Shuangmu, 1Z, 22, 24, 2I, 30
 Zu, Guo, 0B
 Zuo, Ning, 2I
 Zyubin, A., 32

Symposium Committees

General Chairs

Robert Lieberman, SPIE President, Lumoptix, LLC (United States)
Guangcan Guo, Chinese Optical Society President, University of
Science and Technology of China (China)

General Co-chairs

Arthur Chiou, National Yang-Ming University (Taiwan, China)
Jianlin Cao, China Ministry of Science and Technology (China)
Junhao Chu, Shanghai Institute of Technical Physics (China)

Technical Program Chairs

Songlin Zhuang, University of Shanghai for Science and Technology
(China)
Xingde Li, Johns Hopkins University (United States)

Technical Program Co-chairs

Bingkun Zhou, Tsinghua University (China)
Qiming Wang, Institute of Semiconductors (China)
Tianchu Li, National Institute of Metrology (China)
Wei Huang, Nanjing University of Technology (China)
Ying Gu, PLA General Hospital (China)
Huilin Jiang, Changchun University of Science and Technology
(China)

Local Organizing Committee Chair

Qihuang Gong, Peking University (China)

Local Organizing Committee Co-chairs

Xu Liu, Zhejiang University (China)
Daoyin Yu, Tianjin University (China)
Guoqiang Ni, Beijing Institute of Technology (China)
Shusen Xie, Fujian Normal University (China)
Xiaomin Ren, Beijing University of Posts and Telecommunications
(China)

General Secretary

Yan Li, Chinese Optical Society/Peking University (China)

Local Organizing Committee

Zhiping Zhou, Peking University (China)
Changhe Zhou, Shanghai Institute of Optics and Fine Mechanics, CAS
(China)
Qingming Luo, Huazhong University of Science and Technology
(China)
Chongxiu Yu, Beijing University of Posts and Telecommunication
(China)
Hongda Chen, Institute of Semiconductors (China)
Yongtian Wang, Beijing Institute of Technology (China)
Yiping Cui, Southeast University (China)
Xuping Zhang, Nanjing University (China)
Feijun Song, Daheng Corporation (China)
Cunlin Zhang, Capital Normal University (China)
Yanting Lu, Nanjing University (China)
Yuejin Zhao, Beijing Institute of Technology (China)
Chunqing Gao, Beijing Institute of Technology (China)
Tiegen Liu, Tianjin University (China)
Xiaocong Yuan, Nankai University (China)
Weimin Chen, Chongqing University (China)
Zhongwei Fan, Academy of Optoelectronics (China)
Hanyi Zhang, Tsinghua University (China)
Lan Wu, Zhejiang University (China)
Yongsheng Zhang, University of Science and Technology of China
(China)
Hong Yang, Peking University (China)
Xiaoying Li, Tianjin University (China)
Wei Xiong, Chinese Optical Society (China)

Conference Committee

Conference Chairs

Qingming Luo, Huazhong University of Science and Technology (China)

Xingde Li, Johns Hopkins University (United States)

Ying Gu, Chinese PLA General Hospital (China)

Yuguo Tang, Suzhou Institute of Biomedical Engineering and Technology (China)

Conference Co-chair

Dan Zhu, Huazhong University of Science and Technology (China)

Conference Program Committee

Jing Bai, Tsinghua University (China)

Stephen A. Boppart M.D., University of Illinois at Urbana-Champaign (United States)

Wei R. Chen, University of Central Oklahoma (United States)

Yu Chen, University of Maryland, College Park (United States)

Linhong Deng, Chongqing University (China)

Zhihua Ding, Zhejiang University (China)

Qiyong Gong, West China Hospital (China)

Hui Li, Fujian Normal University (China)

Hong Liu, The University of Oklahoma (United States)

Hui Ma, Tsinghua University (China)

Atsushi Maki, Hitachi, Ltd. (Japan)

Yingtian Pan, Stony Brook University (United States)

Paras N. Prasad, University at Buffalo (United States)

Yuwen Qin, National Natural Science Foundation (China)

Junle Qu, Shenzhen University (China)

Qiushi Ren, Shanghai Jiao Tong University (China)

Jie Tian, Institute of Automation (China)

Valery V. Tuchin, N.G. Chernyshevsky Saratov State University (Russian Federation)

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

Ruikang K. Wang, University of Washington (United States)

Xunbin Wei, Shanghai Jiao Tong University (China)

Xujie Xia, Shanghai Jiao Tong University (China)

Da Xing, South China Normal University (China)

Kexin Xu, Tianjin University (China)

Yudong Zhang, Institute of Optics and Electronics (China)

Zhenxi Zhang, Xi'an Jiaotong University (China)

Session Chairs

- 1 Advanced Optical Techniques for Clinical Medicine I
Qingming Luo, Huazhong University of Science and Technology (China)
Xingde Li, Johns Hopkins University (United States)
- 2 Advanced Optical Techniques for Clinical Medicine II
Qingming Luo, Huazhong University of Science and Technology (China)
Xingde Li, Johns Hopkins University (United States)
- 3 Multimodal Biomedical Imaging
Xunbin Wei, Shanghai Jiao Tong University (China)
Qin Li, Beijing Institute of Technology (China)
- 4 Tissue Optics
Xunbin Wei, Shanghai Jiao Tong University (China)
Qin Li, Beijing Institute of Technology (China)
- 5 Microscopy and Imaging I
Junle Qu, Shenzhen University (China)
Dan Zhu, Huazhong University of Science and Technology (China)
- 6 Microscopy and Imaging II
Junle Qu, Shenzhen University (China)
Dan Zhu, Huazhong University of Science and Technology (China)
- 7 Nano/Biophotonics
Xiangwei Zhao, Southeast University (China)
Tongsheng Chen, South China Normal University (China)
- 8 Photon Therapeutics
Ying Gu, Chinese PLA General Hospital (China)
Buhong Li, Fujian Normal University (China)
- 9 Biomedical Spectroscopy
Ying Gu, Chinese PLA General Hospital (China)
Buhong Li, Fujian Normal University (China)