PROCEEDINGS OF SPIE

SPIDigitalLibrary.org/conference-proceedings-of-spie

Front Matter: Volume 9689

, "Front Matter: Volume 9689," Proc. SPIE 9689, Photonic Therapeutics and Diagnostics XII, 968901 (9 May 2016); doi: 10.1117/12.2229196

SPIE.

Event: SPIE BiOS, 2016, San Francisco, California, United States

Photonic Therapeutics and Diagnostics XII

Bernard Choi
Nikiforos Kollias
Haishan Zeng
Hyun Wook Kang
Brian J. F. Wong
Justus F. Ilgner
Guillermo J. Tearney
Kenton W. Gregory
Laura Marcu
Melissa C. Skala
Paul J. Campagnola
Andreas Mandelis

Editors

13–14 February 2016
San Francisco, California, United States

Sponsored and Published by
SPIE

Volume 9689

Proceedings of SPIE, 1605-7422, V. 9689

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

Photonic Therapeutics and Diagnostics XII, edited by Bernard Choi, et al., Proc. of SPIE
Vol. 9689, 968901 · © 2016 SPIE · CCC code: 1605-7422/16/\$18 · doi: 10.1117/12.2229196

Proc. of SPIE Vol. 9689 968901-1

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 this book:

Author(s), "Title of Paper," in *Photonic Therapeutics and Diagnostics XII*, edited by Bernard Choi, et al., Proceedings of SPIE Vol. 9689 (SPIE, Bellingham, WA, 2016) Six-digit Article CID Number.

ISSN: 1605-7422

ISSN: 2410-9045 (electronic)

ISBN: 9781628419245

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 1605-7422/16/\$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**

SPIEDigitalLibrary.org

Paper Numbering: Proceedings of SPIE follow an e-First publication model, with papers published first online and then in print. Papers are published as they are submitted and meet publication criteria. A unique 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.

Contents

ix *Authors*
xiii *Conference Committee*

Part A Photonics in Dermatology and Plastic Surgery

SKIN CANCER I

9689 05 Noninvasive skin cancer diagnosis using multimodal optical spectroscopy [9689-4]

SKIN CANCER II

9689 08 A machine learning method for identifying morphological patterns in reflectance confocal microscopy mosaics of melanocytic skin lesions in-vivo [9689-7]

WIDE-FIELD IMAGING II

9689 0F Spectral-spatial classification combined with diffusion theory based inverse modeling of hyperspectral images [9689-14]

WOUND HEALING

9689 0G Fluorescence imaging of tryptophan and collagen cross-links to evaluate wound closure ex vivo [9689-15]

OCT

9689 0M High-resolution label-free vascular imaging using a commercial, clinically approved dermatological OCT scanner (Invited Paper) [9689-21]

9689 0N Three-dimensional multifunctional optical coherence tomography for skin imaging [9689-22]

9689 0O Towards the use of OCT angiography in clinical dermatology [9689-23]

THERAPEUTICS

9689 0Q New insights into photodynamic therapy treatment through the use of 3D Monte Carlo radiation transfer modelling [9689-25]

9689 0R Laser ablation of basal cell carcinomas guided by confocal microscopy [9689-26]

OPTICAL MICROSCOPY I

- 9689 0U Dermoscopy-guided reflectance confocal microscopy of skin using high-NA objective lens with integrated wide-field color camera [9689-29]
- 9689 0W Investigation of the effect of hydration on dermal collagen in ex vivo human skin tissue using second harmonic generation microscopy [9689-31]

OPTICAL MICROSCOPY II

- 9689 0Z An unsupervised machine learning method for delineating stratum corneum in reflectance confocal microscopy stacks of human skin in vivo [9689-34]

FLUORESCENCE AND RAMAN SPECTROSCOPY

- 9689 12 Measurement of diffusion of fluorescent compounds and autofluorescence in skin in vivo using a confocal instrument [9689-37]

POSTER SESSION

- 9689 15 Metal-clad waveguide characterization for contact-based light transmission into tissue [9689-40]
- 9689 16 Remote optical configuration of pigmented lesion detection and diagnosis of bone fractures [9689-41]
- 9689 19 UV photostability of insect repellents evaluated through Raman spectroscopy [9689-44]

Part B Therapeutics and Diagnostics in Urology

ADVANCED TECHNOLOGY IN UROLOGY

- 9689 1A Fluorescence spectroscopy incorporating a ratiometric approach for the diagnosis and classification of urothelial carcinoma [9689-45]
- 9689 1B Cavitation bubble dynamics during thulium fiber laser lithotripsy [9689-46]

PHOTOTHERAPEUTICS

- 9689 1E Study of cavitation bubble dynamics during Ho:YAG laser lithotripsy by high-speed camera [9689-49]
- 9689 1G Thulium fiber laser lithotripsy using small spherical distal fiber tips [9689-51]

TISSUE IMAGING

- 9689 1J High efficiency for prostate biopsy qualification with full-field OCT after training [9689-54]

POSTER SESSION

- 9689 1Q Proximal fiber tip damage during Holmium:YAG and thulium fiber laser ablation of kidney stones [9689-62]
- 9689 1R Laser treatment of female stress urinary incontinence: optical, thermal, and tissue damage simulations [9689-63]
- 9689 1S Diffusing, side-firing, and radial delivery laser balloon catheters for creating subsurface thermal lesions in tissue [9689-64]

Part C Optical Imaging, Therapeutics, and Advanced Technology in Head and Neck Surgery and Otolaryngology

CLINICAL AND OPERATIVE HEAD AND NECK CANCER IMAGING

- 9689 1W Monitoring longitudinal changes in irradiated head and neck cancer xenografts using diffuse reflectance spectroscopy [9689-68]
- 9689 1X Progress in reflectance confocal microscopy for imaging oral tissues in vivo [9689-69]

OCT APPLICATIONS IN THE HEAD, NECK, AND UPPER AIRWAY I

- 9689 23 Swept-source anatomic optical coherence elastography of porcine trachea [9689-76]

OCT APPLICATIONS IN THE HEAD, NECK, AND UPPER AIRWAY II

- 9689 26 Measurement of ciliary beat frequency using ultra-high resolution optical coherence tomography [9689-79]

ENDOCRINE IMAGING AND SPECTROSCOPY

- 9689 2A Biochemical and molecular characterization of thyroid tissue by micro-Raman spectroscopy and gene expression analysis [9689-83]
- 9689 2B Simultaneous fingerprint and high-wavenumber fiber-optic Raman endoscopy for *in vivo* diagnosis of laryngeal cancer [9689-84]

INNER AND MIDDLE EAR IMAGING AND PHYSIOLOGY

- 9689 2G Signal and response properties indicate an optoacoustic effect underlying the intra-cochlear laser-optical stimulation [9689-89]
- 9689 2H Three-dimensional imaging of intracochlear tissue by scanning laser optical tomography (SLOT) [9689-90]
- 9689 2I Combination therapy using antioxidants and low level laser therapy (LLLT) on noise induced hearing loss (NIHL) [9689-91]

SURGICAL THERAPEUTICS

- 9689 2K Primary investigations on the potential of a novel diode pumped Er:YAG laser system for middle ear surgery [9689-177]

Part D Diagnostic and Therapeutic Applications of Light in Cardiology

BLOOD

- 9689 2T Brillouin spectroscopy of clotting dynamics in a model system [9689-100]

MULTIMODALITY IMAGING

- 9689 2V Evaluation of combined near-IR spectroscopic (NIRS)-IVUS imaging as a means to detect lipid-rich plaque burden in human coronary autopsy specimens [9689-102]

MYOCARDIUM

- 9689 36 OptoDyCE: Automated system for high-throughput all-optical dynamic cardiac electrophysiology [9689-113]
- 9689 3A OCT imaging of myocardium extending to pulmonary vein [9689-117]

INTRAVASCULAR OCT

- 9689 3B Influence of distance and incident angle on light intensities in intravascular optical coherence tomography pullback runs [9689-118]
- 9689 3D Light intensity matching between different intravascular optical coherence tomography systems [9689-120]
- 9689 3F Characterization of atherosclerotic plaques by cross-polarization optical coherence tomography [9689-129]

NEW DIAGNOSTIC TECHNIQUES

- 9689 3H **A pilot study using laser-based technique for non-invasive diagnostics of hypertensive conditions in mice** [9689-123]
- 9689 3J **Non-contact measurement of carotid arterial stiffness by two-point heart-pulse laser detection** [9689-125]

Part E Diagnostic and Treatment of Diseases in the Breast and Reproductive System II

GYNECOLOGY

- 9689 3P **Three-photon imaging of ovarian cancer (Invited Paper)** [9689-131]
- 9689 3Q **Improved selection of cortical ovarian strips for autotransplantation of ovarian tissue using full-field optical coherence tomography (FFOCT)** [9689-132]
- 9689 3R **Functional optical coherence tomography for high-resolution mapping of cilia beat frequency in the mouse oviduct *in vivo*** [9689-133]

BREAST CANCER

- 9689 3Z **Redox subpopulations and the risk of cancer progression: a new method for characterizing redox heterogeneity** [9689-145]
- 9689 41 **Using a reflectance-based correction on Cherenkov images to strengthen correlation with radiation surface dose in an anthropomorphic breast phantom** [9689-147]
- 9689 42 **Diffuse optical tomography with structured-light patterns to quantify breast density** [9689-148]
- 9689 43 **Photoacoustic spectroscopy based investigatory approach to discriminate breast cancer from normal: a pilot study** [9689-149]

POSTER SESSION

- 9689 44 **Design of an everting balloon to deploy a microendoscope to the fallopian tubes** [9689-134]
- 9689 45 **Wide-field lifetime-based FRET imaging for the assessment of early functional distribution of transferrin-based delivery in breast tumor-bearing small animals** [9689-143]
- 9689 46 **Large area 3-D optical coherence tomography imaging of lumpectomy specimens for radiation treatment planning** [9689-151]

- 9689 47 **Cervical collagen imaging for determining preterm labor risks using a colposcope with full Mueller matrix capability** [9689-152]
- 9689 48 **Photodynamic therapy of Cervical Intraepithelial Neoplasia (CIN) high grade** [9689-153]
- 9689 4A **GNR@mSiO₂-TDM1 conjugates as multimodal platform for breast cancer therapy as well as enhanced photoacoustic agent** [9689-156]
- 9689 4D **Morphologic 3D scanning of fallopian tubes to assist ovarian cancer diagnosis** [9689-159]
- 9689 4E **Spectroscopic imaging system for high-throughput viability assessment of ovarian spheroids or microdissected tumor tissues (MDTs) in a microfluidic chip** [9689-160]

Part F Optics in Bone Surgery and Diagnostics

MUSCULOSKELETAL IMAGING AND DIAGNOSTICS I

- 9689 4F **Study of photoacoustic measurement of bone health based on clinically relevant models (Invited Paper)** [9689-164]
- 9689 4G **Determining early markers of disease using Raman spectroscopy in a rat combat-trauma model of heterotopic ossification** [9689-162]
- 9689 4H **Photoacoustic imaging of inflammatory arthritis in human joints** [9689-163]
- 9689 4I **Optical diagnostics of osteoblast cells and osteogenic drug screening** [9689-166]
- 9689 4J **Fourth near-infrared optical window for assessment of bone and other tissues** [9689-167]
- 9689 4K **A portable cross-shape near-infrared spectroscopic detector for bone marrow lesions diagnosis** [9689-165]

BONE SURGERY AND DIAGNOSTICS

- 9689 4M **Spatially offset raman spectroscopy for non-invasive assessment of fracture healing (Invited Paper)** [9689-173]
- 9689 4N **In-situ photopolymerized and monitored implants: successful application to an intervertebral disc replacement** [9689-168]

POSTER SESSION

- 9689 4R **Reliability analysis of instrument design of noninvasive bone marrow disease detector** [9689-172]

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.

Ahmad, Shakil, 3H	Carbinatto, Fernanda M., 48
Ahmed, Asif, 3H	Carini, Marco, 1A
Alessi-Fox, Christi A., 08, 0Z	Cernea, Cláudio R., 2A
Alfano, Robert R., 4J	Chandra, Subhash, 43
Ambrose, Catherine, 4M	Chang, Chun-Hung, 1R, 1S
Ambrosi, Christina M., 36	Chang, So-Young, 2I
Amirsolaimani, Babak, 3P	Chen, Chih-Shan Jason, 0R
Anand, Suresh, 1A	Chen, Jason J., 26
Anderson, R. Rox, 0G	Chen, Jeon-hor, 42
Andrade, J., 2H	Chen, Yu, 3A
Andreozzi, Jacqueline Marie, 1W, 41	Chen, Zhongping, 26
Antonopoulos, G. C., 2H	Cheng, Qian, 4F
Arbustini, E., 3J	Chernomordik, Viktor, 47
Ayadi, J., 3J	Chininis, Jeffrey, 15
Badger, Christopher, 26	Cho, Jaedu, 42
Bagnato, Vanderlei Salvador, 48	Choi, Woo June, 0O
Baran, Utku, 0O	Chue-Sang, Joseph, 47
Barnard, Nicola, 46	Chung, Phil-Sang, 2I
Barroso, Margarida, 45	Cicchì, Riccardo, 1A
Barton, Jennifer Kehlet, 3P, 44	Cilwa, Katherine E., 4G
Baumhoff, Peter, 2G	Consoli, A., 3J
Behringer, Richard R., 3R	Cordova, Miguel, 0R, 1X
Beiderman, Yevgeny, 16	Coughlan, Carolyn A., 26
Belotto, Renata, 48	Crane, Nicole J., 4G
Benboujja, Fouzi, 4D	Crisci, Alfonso, 1A
Benedetti, M., 3J	da Silva, Eduardo Venerando, 48
Beuvon, F., 1J	Dalimier, E., 1J
Bi, Xiaohong, 4M	Daly, D., 12
Bien, Harold, 36	Datta, Anirbit, 43
Bishitz, Yael, 16	Davis, Thomas A, 4G
Bjorgan, Asgeir, 0F	De Montigny, Etienne, 4D
Black, John, 44	Delongchamps, N. Barry, 1J
Bório, Viviane Gadret, 19	Deschênes, Andréanne, 4D
Bosse, Tjalling, 3Q	Devincentis, Dennis, 1E
Boudoux, Caroline, 4D	Dickensheets, David L., 0U
Bourban, Pierre-Etienne, 4N	Dickfeld, Timm, 3A
Bozkurt, Alican, 0Z	Dijkstra, Jouke, 3B, 3D, 3Q
Brandão, Lenine G., 2A	Ding, Hao, 4M
Brooks, Dana H., 08, 0Z	Duc, A., 1J
Brown, C. Tom A., 0Q	Dudenkova, Varvara V., 3F
Brown, N. J., 0M	Dy, Jennifer G., 08, 0Z
Bu, Ruofei, 23	Eggermont, Jeroen, 3B, 3D, 3Q
Burton, Jason C., 3R	Entcheva, Emilia, 36
Bustamante-Lopez, Sandra C., 2T	Farinelli, Bill, 0G
Buttenschoen, K. K., 12	Favalli, V., 3J
Byers, R. A., 0M	Feldchtein, Felix I., 3F
Campbell, C. Louis, 0Q	Feng, Ting, 4F
Canevari, Renata A., 2A	Feng, Xu, 05
Cao, Fei, 4A	Fernandes, Adjaci Uchôa, 19
Cao, Meng, 4F	Forsberg, Jonathan A., 4G

Francis, Sheeja, 4H
 Franco, Walfre, 0G
 Fried, Nathaniel M., 1B, 1G, 1Q, 1R, 1S
 Gandjbakhche, Amir, 47
 Garcia, Javier, 16
 Gelikonov, Gregory V., 3F
 Gervais, T., 4E
 Gilardi, L., 3J
 Gill, Melissa, 08
 Girish, Dhanuj, 4H
 Girish, Gandikota, 4H
 Girkin, J. M., 12
 Giuliani, G., 3J
 Gladkova, Natalia D., 3F
 Gladstone, David J., 41
 Glaser, Adam K., 41
 Godbout, Nicolas, 4D
 Gogola, Gloria, 4M
 Goode, Meghan M., 2V
 Grainger, Stephanie J., 2V
 Greiner, Cherry A., 2V
 Gubarkova, Ekaterina V., 3F
 Gulsen, Gultekin, 42
 Gunn, Jason R., 1W
 Hardy, Luke A., 1B, 1G, 1Q, 1R
 Hatch, Kenneth, 3P
 Hausladen, Florian, 2K
 Heger, Michael, 0U
 Heisterkamp, Alexander, 2G, 2H
 Hendricks, Michael J., 2V
 Holness, Nola A., 47
 Hong, Young-Joo, 0N
 Howard, Caitlin, 44
 Huang, Zhiwei, 2B
 Hunt, Heather K., 15
 Inada, Natalia Mayumi, 48
 Intes, Xavier, 45
 Irby, Pierce B., 1B, 1G, 1Q
 Jacques, Steven L., 0W
 Jarvis, Lesley A., 41
 Jermyn, M., 4E
 Jiang, Shudong, 1W
 Jing, Joseph C., 26
 Jo, Janggun, 4H
 Jung, Jae-Yun, 2I
 Kallweit, Nicole, 2G
 Kasaragod, Deepa, 0N
 Keenan, Molly, 44
 Kellam, James, 4M
 Kendall-Dupont, J., 4E
 Kennedy, Joshua D., 1B, 1G
 Kennelly, Michael J., 1R
 Khajuria, Deepak Kumar, 4I
 Khan, Atif, 46
 Khoushabi, Azadeh, 4N
 Kieu, Khanh, 3P
 Kim, Leonard, 46
 Kiseleva, Elena B., 3F
 Klimas, Aleksandra, 36
 Kolanti, Elayaraja, 4I
 Kose, Kivanc, 08, 0Z
 Kozloff, Ken, 4F
 Kral, Andrej, 2G
 Kreitinger, Seth, 0U
 Krueger, Alexander, 2G
 Kuppen, Peter J. K., 3Q
 Kurachi, Cristina, 48
 Kuznetsov, Sergei S., 3F
 Kwong, Jessica, 42
 Larina, Irina V., 3R
 Leblond, F., 4E
 Leduc, Mikael, 4D
 Lee, Min young, 2I
 Lelieveldy, Boudewijn P. F., 3B, 3D, 3Q
 Li, En, 0N
 Li, Lin Z., 3Z
 Li, Ting, 4K, 4R
 Li, Yifan, 42
 Li, Zhifang, 3A
 Lim, Chwee Ming, 2B
 Lim, Sung Kyu, 2I
 Lin, Kan, 2B
 Litvinova, Karina S., 3H
 Liu, Shengnan, 3B, 3D
 Lombardi, Wellington, 48
 Lu, Guijin, 4M
 Madden, Sean P., 2V
 Madore, Wendy-Julie, 4D
 Mahato, Krishna Kishore, 43
 Maier, Hannes, 2G
 Majdani, O., 2H
 Makita, Shuichi, 0N
 Mariano, A., 3J
 Markey, Mia K., 05
 Marquardt, April, 4H
 Marra, Kayla, 1W
 Martin, Airtion A., 2A
 Masse, M., 4E
 Matcher, S. J., 0M
 Mathew, Stanley, 43
 McGuinness, Ian, 44
 Meissner II, Kenith E., 2T
 Mello, Evandro S., 2A
 Mes-Masson, Anne-Marie, 4D, 4E
 Meyer, H., 2H
 Migliacci, Jocelyn, 1X
 Minzioni, P., 3J
 Mitran, Sorin, 23
 Moiseev, Alexander A., 3F
 Moseley, Harry, 0Q
 Moser, Christophe, 4N
 Moy, Austin J., 05
 Muller, James E., 2V
 Myers, Erinn M., 1R
 Nakatani, Shimpei, 3D
 Nayak, Subramanya G., 43
 Nehal, Kishwer, 0R
 Nesi, Gabriella, 1A
 Neto, Lázaro P. M., 2A
 Nolte, L., 2H
 Nordgaard, Håvard B., 0F
 Nouizi, Farouk, 42

Oldenburg, Amy L., 23
 Ortega-Martinez, Antonio, 0G
 Ozana, Nisan, 16
 Paluchowski, Lukasz A., 0F
 Patel, Snehal, 1X
 Patra, B., 4E
 Pavone, Francesco Saverio, 1A
 Pereira, Marina A., 2A
 Perna, M., 3J
 Peters, Inge T. A., 3Q
 Peterson, Gary, 0U, 1X
 Pierce, Mark C., 46
 Pioletti, Dominique, 4N
 Pogue, Brian W., 1W, 41
 Price, Hillel, 23
 Priya, Mallika, 43
 Provencher, Diane M., 4D
 Qureshi, Ammar T., 4G
 Rafailov, Edik U., 3H
 Rafailov, Ilya E., 3H
 Rahimi, Kurosh, 4D
 Rajadhyaksha, Milind, 08, 0R, 0U, 0Z, 1X
 Ramella-Roman, Jessica, 47
 Randeberg, Lise L., 0F
 Rao, Bola Sadashiva Satish, 43
 Ray, Satadru, 43
 Rebrova, N., 3J
 Reichenberg, Jason S., 05
 Rhee, Chung-Ku, 2I
 Ricco, R., 1J
 Rice, Photini, 3P
 Ripken, Tammo, 2G, 2H
 Rossi, Anthony, 0R
 Roy Mahapatra, D., 4I
 Rudkouskaya, Alena, 45
 Samatham, Ravikant, 0W
 Santos, André B. O., 2A
 Sasaoka, Tomoko, 0N
 Sauer-Budge, Alexis, 44
 Saybolt, Matthew D., 2V
 Schizas, Constantin, 4N
 Schmocker, Andreas M., 4N
 Schulze, J., 2H
 Schwarz, Ariel, 16
 Sibony, M., 1J
 Sierra, Heidy, 0R
 Silveira, Landulfo, 19
 Sinsuebphon, Nattawut, 45
 Sisk, A., 1J
 Sokolovski, Sergei G., 3H
 Sordillo, Diana C., 4J
 Sordillo, Laura A., 4J
 Sordillo, Peter P., 4J
 Soto, Claudio A. T., 2A
 Stegehuis, Paulien L., 3Q
 St-Georges-Robillard, A., 4E
 Stock, Karl, 2K
 Stoff, Susan, 47
 Strupler, M., 4E
 Su, Erica, 26
 Su, Jimmy L., 2V
 Su, Min-Ying, 42
 Su, Yu, 4K, 4R
 Sugiyama, Satoshi, 0N
 Sun, Yunlong, 4R
 Sutton, E. E., 12
 Tang, Qinggong, 3A
 Tate, Tyler, 44
 Timofeeva, Lidia B., 3F
 Tinne, Nadine, 2G, 2H
 Tozer, G., 0M
 Traverso, Andrew J., 2T
 Trimpos, J. Baptist, 3Q
 Tunnell, James W., 05
 Utzinger, Urs, 44
 Vahrmeijer, Alexander L., 3Q
 van de Velde, Cornelis J. H., 3Q
 Veerla, Sarath Chandra, 4I
 Vishwanath, Karthik, 1W
 Vitkin, Alex I., 3F
 Wang, Bohan, 3A
 Wang, Cuihuan, 46
 Wang, Jianfeng, 2B
 Wang, Keqing, 3H
 Wang, Nicholas K., 0W
 Wang, Ruikang K., 0O
 Wang, Shang, 3R
 Wang, Xiuhong, 4A
 Wang, Xueding, 4F, 4H
 Wang, Ying, 0G
 Warnecke, A., 2H
 West, Christopher, 4M
 Whiteside, Paul, 15
 Wilensky, Robert L., 2V
 Williams, John C., 36
 Wilson, Christopher R., 1B, 1G, 1Q
 Wolterbeek, Ron, 3B
 Wong, Brian J. F., 26
 Wood, Kenneth, 0Q
 Wurm, Holger, 2K
 Xu, Guan, 4H
 Xu, He N., 3Z
 Xuan, Jason R., 1E
 Yakovlev, Vladislav V., 2T
 Yamanari, Masahiro, 0N
 Yang, C., 1J
 Yao, Qian, 4A
 Yasuno, Yoshiaki, 0N
 Yu, Honggang, 1E
 Yu, Jinzhu, 36
 Yuan, Jie, 4F, 4H
 Zalevsky, Zeev, 16
 Zanon, Daniella Karassawa, 1X
 Zdanski, Carlton, 23
 Zhang, Jian J., 1E
 Zhang, Lin, 3H
 Zhang, Rongxiao, 41
 Zheng, Jie, 42
 Zheng, Wei, 2B

Conference Committee

Symposium Chairs

James G. Fujimoto, Massachusetts Institute of Technology
(United States)

R. Rox Anderson, Wellman Center for Photomedicine, Massachusetts
General Hospital (United States) and Harvard School of Medicine
(United States)

Program Track Chair

Brian Jet-Fei Wong, Beckman Laser Institute and Medical Clinic
(United States)

Part A Photonics in Dermatology and Plastic Surgery

Conference Chairs

Bernard Choi, Beckman Laser Institute and Medical Clinic
(United States)

Nikiforos Kollias, Consultant (United States)

Haishan Zeng, The BC Cancer Agency Research Center (Canada)

Conference Program Committee

Anthony J. Durkin, Beckman Laser Institute and Medical Clinic
(United States)

Conor L. Evans, Wellman Center for Photomedicine (United States)

Kristen Marie Kelly M.D., University of California, Irvine School of
Medicine (United States)

Milind Rajadhyaksha, Memorial Sloan-Kettering Cancer Center
(United States)

Jessica C. Ramella-Roman, The Catholic University of America
(United States)

Lise Lyngsnes Randeberg, Norwegian University of Science and
Technology (Norway)

Session Chairs

Skin Cancer I

Milind Rajadhyaksha, Memorial Sloan-Kettering Cancer Center
(United States)

Skin Cancer II

Kristen M. Kelly M.D., Beckman Laser Institute and Medical Clinic
(United States)

Clinical Perspective

Anthony J. Durkin, Beckman Laser Institute and Medical Clinic
(United States)

Wide-Field Imaging I

Anthony J. Durkin, Beckman Laser Institute and Medical Clinic
(United States)

Wide-Field Imaging II

Jessica C. Ramella-Roman, Florida International University
(United States)

Wound Healing

Jessica C. Ramella-Roman, Florida International University
(United States)

Optical Clearing

Haishan Zeng, BC Cancer Research Center (Canada)

OCT

Haishan Zeng, BC Cancer Research Center (Canada)

Therapeutics

Bernard Choi, Beckman Laser Institute and Medical Clinic
(United States)

Optical Microscopy I

Lise L. Randeberg, Norwegian University of Science and Technology
(Norway)

Optical Microscopy II

Conor L. Evans, Wellman Center for Photomedicine (United States)

Fluorescence and Raman Spectroscopy

Conor L. Evans, Wellman Center for Photomedicine (United States)

Part B Therapeutics and Diagnostics in Urology

Conference Chair

Hyun Wook Kang, Pukyong National University (Korea, Republic of)

Conference Program Committee

Geoffrey N. Box M.D., The Ohio State University (United States)

Kin Foong Chan, Dermira, Inc. (United States)

Nathaniel M. Fried, The University of North Carolina at Charlotte
(United States)

Babak Shadgan M.D., The University of British Columbia (Canada)

Ronald Sroka, Laser-Forschungslabor (Germany)

Joel M. Teichman M.D., St. Paul's Hospital (Canada)

Matthias Trottmann, Universität München (Germany)

Rudolf M. Verdaasdonk, Vrije University Medical Center (Netherlands)

Session Chairs

- 1 Advanced Technology in Urology
Nathaniel M. Fried, The University of North Carolina at Charlotte
(United States)
Kin Foong Chan, Dermira, Inc. (United States)
- 2 Phototherapeutics
Kin Foong Chan, BioPharmX, Inc. (United States)
- 3 Tissue imaging
Ronald Sroka, Laser-Forschungslabor (Germany)
Kin Foong Chan, Dermira, Inc. (United States)
- 4 Tissue Diagnostics
Ronald Sroka, Laser-Forschungslabor (Germany)

Part C Optical Imaging, Therapeutics, and Advanced Technology in Head and Neck Surgery and Otolaryngology

Conference Chairs

Brian J. F. Wong M.D., Beckman Laser Institute and Medical Clinic
(United States)
Justus F. Ilgner M.D., University Hospital Aachen (Germany)

Conference Program Committee

Waseem K. Jerjes, University College London (United Kingdom)
Joseph C. Jing, Beckman Laser Institute and Medical Clinic
(United States)
Milind Rajadhyaksha, Memorial Sloan-Kettering Cancer Center
(United States)
Chung-Ku Rhee M.D., Dankook University Hospital
(Korea, Republic of)
Jennifer E. Rosen, Boston University (United States)
Henricus J. C. M. Sterenborg, Erasmus MC (Netherlands)

Session Chairs

- 1 Clinical and Operative Head and Neck Cancer Imaging
 Brian J. F. Wong, Beckman Laser Institute and Medical Clinic
 (United States)
 Justus F. Ilgner M.D., Uniklinik RWTH Aachen (Germany)
- 2 OCT Applications in the Head, Neck, and Upper Airway I
 Joseph C. Jing, Beckman Laser Institute and Medical Clinic
 (United States)
- 3 OCT Applications in the Head, Neck, and Upper Airway II
 Justus F. Ilgner M.D., Uniklinik RWTH Aachen (Germany)
 Joseph C. Jing, Beckman Laser Institute and Medical Clinic
 (United States)
- 4 Endocrine Imaging and Spectroscopy
 Milind Rajadhyaksha, Memorial Sloan-Kettering Cancer Center
 (United States)
- 5 Inner and Middle Ear Imaging and Physiology
 Chung-Ku Rhee M.D., Dankook University Hospital
 (Korea, Republic of)
 Justus F. Ilgner M.D., Uniklinik RWTH Aachen (Germany)

- 6 Surgical Therapeutics
Justus F. Ilgner M.D., Uniklinik RWTH Aachen (Germany)

Part D Diagnostic and Therapeutic Applications of Light in Cardiology

Conference Chairs

Guillermo J. Tearney M.D., Wellman Center for Photomedicine
(United States)
Kenton W. Gregory M.D., Oregon Medical Laser Center
(United States)
Laura Marcu, University of California, Davis (United States)

Conference Program Committee

Gijs van Soest, Erasmus MC (Netherlands)
Carlo Di Mario, University College London (United Kingdom)
Stanislav Y. Emelianov, The University of Texas at Austin (United States)

Session Chairs

- 1 Advanced OCT
Gijs van Soest, Erasmus MC (Netherlands)
- 2 Blood
Seemantini K. Nadkarni, Harvard Medical School (United States)
- 3 Multimodality Imaging
Hongki Yoo, Hanyang University (Korea, Republic of)
- 4 Photacoustics and Spectroscopy
Laura Marcu, University of California, Davis (United States)
- 5 Myocardium
Kenton W. Gregory M.D., Oregon Medical Laser Center
(United States)
- 6 Intravascular OCT
Guillermo J. Tearney, Wellman Center for Photomedicine
(United States)
- 7 New Diagnostic Techniques
Adrien E. Desjardins, University College London (United Kingdom)

Part E **Diagnosis and Treatment of Diseases in the Breast and Reproductive System II**

Conference Chairs

Melissa C. Skala, Vanderbilt University (United States)
Paul J. Campagnola, University of Wisconsin-Madison (United States)

Conference Program Committee

Ji-Xin Cheng, Purdue University (United States)
Darren M. Roblyer, Boston University (United States)
Anita Mahadevan-Jansen, Vanderbilt University (United States)
Bruce J. Tromberg, Beckman Laser Institute and Medical Clinic
(United States)

Session Chairs

- 1 Gynecology
 Anita Mahadevan-Jansen, Vanderbilt University (United States)
 Melissa C. Skala, Vanderbilt University (United States)
- 2 Tumor Margin Assessment
 Paul J. Campagnola, University of Wisconsin-Madison (United States)
- 3 Optical Coherence Tomography and Fluorescence Imaging
 Melissa C. Skala, Vanderbilt University (United States)
- 4 Breast Cancer
 Darren M. Roblyer, Boston University (United States)

Part F **Optics in Bone Surgery and Diagnostics**

Conference Chair

Andreas Mandelis, University of Toronto (Canada)

Conference Co-chair

Michael D. Morris, University of Michigan (emeritus) (United States)

Conference Program Committee

Robert R. Alfano, The City College of New York (United States)

Bennett T. Amaechi, The University of Texas Health Science Center at San Antonio (United States)
Peter Fratzl, Max-Planck-Institut für Kolloid- und Grenzflächenforschung (Germany)
Huabei Jiang, University of Florida (United States)
Stephen J. Matcher, The University of Sheffield (United Kingdom)
Eleftherios P. Paschalis, Ludwig Boltzmann Institut (Austria)
Rahul Tandon D.D.S., Loma Linda University (United States)
Xueding Wang, University of Michigan Medical School (United States)
Victor X. D. Yang, Ryerson University (Canada)

Session Chairs

- 1 Musculoskeletal Imaging and Diagnostics I
Andreas Mandelis, University of Toronto (Canada)
- 2 Bone Surgery and Diagnostics
Michael D. Morris, University of Michigan (United States)
- 3 Musculoskeletal Imaging and Diagnostics II
Xueding Wang, University of Michigan (United States)