PROCEEDINGS OF SPIE

SPIDigitalLibrary.org/conference-proceedings-of-spie

Front Matter: Volume 9698

, "Front Matter: Volume 9698," Proc. SPIE 9698, Advanced Biomedical and Clinical Diagnostic and Surgical Guidance Systems XIV, 969801 (6 May 2016); doi: 10.1117/12.2229250

SPIE.

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

PROGRESS IN BIOMEDICAL OPTICS AND IMAGING

Vol. 17 No. 10

Advanced Biomedical and Clinical Diagnostic and Surgical Guidance Systems XIV

Tuan Vo-Dinh
Anita Mahadevan-Jansen
Warren S. Grundfest
Editors

14–16 February 2016
San Francisco, California, United States

Sponsored and Published by
SPIE

Volume 9698

Proceedings of SPIE 1605-7422, V. 9698

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

Advanced Biomedical and Clinical Diagnostic and Surgical Guidance Systems XIV, edited by Tuan Vo-Dinh,
Anita Mahadevan-Jansen, Warren S. Grundfest, Proc. of SPIE Vol. 9698, 969801
© 2016 SPIE · CCC code: 1605-7422/16/\$18 · doi: 10.1117/12.2229250

Proc. of SPIE Vol. 9698 969801-1

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 *Advanced Biomedical and Clinical Diagnostic and Surgical Guidance Systems XIV*, edited by Tuan Vo-Dinh, Anita Mahadevan-Jansen, Warren S. Grundfest M.D., Proceedings of SPIE Vol. 9698 (SPIE, Bellingham, WA, 2016) Six-digit Article CID Number.

ISSN: 1605-7422

ISSN: 2410-9045 (electronic)

ISBN: 9781628419320

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. 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 six-digit CID article numbering system structured as follows:

- 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.

Contents

v	Authors
vii	Conference Committee

FLUORESCENCE AND RAMAN DETECTION SYSTEMS I

9698 02	Time-resolved fluorescence spectroscopy for intraoperative assistance of thyroid surgery [9698-1]
9698 03	Design and validation of a near-infrared fluorescence endoscope for detection of early esophageal malignancy using a targeted imaging probe [9698-2]

FLUORESCENCE AND RAMAN DETECTION SYSTEMS II

9698 07	Optical fiber Raman-based spectroscopy for oral lesions characterization: a pilot study [9698-6]
---------	--

OPTICAL DETECTION AND SENSING TECHNOLOGIES

9698 0A	Optical elastic scattering for early label-free identification of clinical pathogens [9698-9]
---------	--

VISUALIZATION AND IMAGE-GUIDED SYSTEMS I

9698 0I	A Google Glass navigation system for ultrasound and fluorescence dual-mode image-guided surgery [9698-17]
---------	--

VISUALIZATION AND IMAGE-GUIDED SYSTEMS II

9698 0K	Image-guided cold atmosphere plasma (CAP) therapy for cutaneous wound [9698-18]
---------	--

NEAR INFRARED SPECTROSCOPY SENSING METHODS

9698 0X	Diagnosis potential of near infrared Mueller Matrix imaging for colonic adenocarcinoma [9698-32]
---------	--

IMAGING AND DETECTION METHODS

- 9698 10 **The blood perfusion and NADH/FAD content combined analysis in patients with diabetes foot [9698-36]**

POSTER SESSION

- 9698 12 **A 2-axis polydimethylsiloxane (PDMS) based electromagnetic MEMS scanning mirror for optical coherence tomography [9698-39]**
- 9698 16 **A scalable correlator for multichannel diffuse correlation spectroscopy [9698-43]**
- 9698 17 **Raman spectroscopy and immunohistochemistry for schwannoma characterization: a case study [9698-44]**
- 9698 19 **Evaluation of motion compensation method for assessing the gastrointestinal motility using three dimensional endoscope [9698-46]**
- 9698 1C **A finger-free wrist-worn pulse oximeter for the monitoring of chronic obstructive pulmonary disease [9698-49]**
- 9698 1D **Development of single-channel stereoscopic video imaging modality for real-time retinal imaging [9698-37]**
- 9698 1E **Which blood oxygen can sensitively indicate shock severity? [9698-31]**
- 9698 1F **A novel method to estimate oxygen saturation of the internal jugular vein blood [9698-34]**

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.

Abdulvapova, Zera N., 10	Kolodziejski, Noah J., 16
Bachmann, L., 02	Krupatkin, Alexander I., 10
Basilio, F. S., 02	Lacot, Éric, 0A
Bohndiek, Sarah E., 03	Lee, Changho, 12
Brandao, M. P., 02	Lee, Sangyeob, 1D
Brindle, Kevin M., 03	Lee, Yeh Wen, 1C
Carvalho, Luis Felipe C. S., 07, 17	Li, Jiahong, 0K
Chen, Jyh-Chern, 1C	Li, Kai, 1E, 1F
Cheng, Cheng, 0K	Li, Ting, 1E, 1F
Christian, James F., 16	Li, XiangXiang, 0K
Chu, Chang-Sheng, 1C	Li, Yu-Tang, 1C
Chuang, Shuang-Chao, 1C	Lim, Geunbae, 12
Chung, Lung Pin, 1C	Lin, Kan, 0X
Conti de Freitas, L. C., 02	Litvinova, Karina S., 10
das Chagas, Maurilio José, 17	Liu, Peng, 0I
di Pietro, Massimiliano, 03	Loddi, Vinicius, 17
Dinten, Jean-Marc, 0A	Marcoux, Pierre, 0A
dos Santos, Laurita, 17	Martin, Ailton Abrahão, 07, 17
Dremin, Victor V., 10	Martin, Edward W., Jr., 0I
Dunaev, Andrey V., 10	Maurin, Max, 0A
Fan, Chih-Hsun, 1C	McAdams, Daniel, 16
Farkas, Dana, 16	Méteau, Jérémy, 0A
Fernandez, Daniel E., 16	Nagakura, Toshiaki, 19
Ferreira, Isabelle, 07, 17	Neto, Lazaro Pinto Medeiros, 07, 17
Fitzgerald, Rebecca C., 03	Neves, Andre A., 03
Fujinaga, Tetsuji, 19	Novikova, Irina N., 10
Gal, Olivier, 0A	Ohno, Yuko, 19
Galstyan, Gagik R., 10	Oliveira, Inajara P., 07
Gan, Qi, 0I, 0K	Pan, Boan, 1E, 1F
Gao, Yuan, 1E, 1F	Park, Jihoon, 1D
Genuer, Valentin, 0A	Pei, Jing, 0I
Ha, Myungjin, 1D	Podolsky, Matthew J., 16
Haddad, Marcelo, 17	Povoski, Stephen P., 0I
Haleplian, K., 02	Radfar, Edalat, 1D
Hu, Chuazhen, 0I	Rafailov, Edik U., 10
Huang, Zhiwei, 0X	Rafailov, Ilya E., 10
Iijima, Hideki, 19	Rangel, João Lucas, 07
Ito, A. S., 02	Ren, Wenqi, 0K
Iwakura, R., 02	Ruan, Zhengshang, 1E, 1F
Jang, Seulki, 1D	Schultz, Emmanuelle, 0A
Jin, Fan, 0K	Shao, Pengfei, 0I
Joseph, James, 03	Sidorov, Victor V., 10
Jung, Byungjo, 1D	Sokolovski, Sergei G., 10
Kido, Michiko, 19	Stapels, Christopher J., 16
Kim, Chulhong, 12	Takahashi, Hideya, 19
Kim, Jeehyun, 12	Takehara, Tetsuo, 19
Kim, Jin Young, 12	Ting, Yue, 0K
Kim, Sehui, 12	Tsuji, Masahiko, 19
Kitakawa, Dárcio, 07	Tweedle, Michael F., 0I

Wang, Benzhong, 01
Wang, Dong, 01
Wang, Jianfeng, 0X
Watabe, Kenji, 19
Waterhouse, Dale J., 03
Xu, Ronald X., 01, 0K
Yamada, Kenji, 19
Ye, Jian, 01
Yilmaz, Alper, 01
Yoshimoto, Kayo, 19
Yu, Sungkon, 1D
Yu, Zelin, 0K
Yue, Jian, 01
Zhang, Shiwu, 0K
Zhang, Zeshu, 01
Zheng, Wei, 0X
Zherebtsov, Evgeny A., 10
Zherebtsova, Angelina I., 10

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 Chairs

Tuan Vo-Dinh, Fitzpatrick Institute for Photonics, Duke University
(United States)

Anita Mahadevan-Jansen, Vanderbilt University (United States)

Conference Chairs

Tuan Vo-Dinh, Fitzpatrick Institute for Photonics, Duke University
(United States)

Anita Mahadevan-Jansen, Vanderbilt University (United States)

Warren S. Grundfest, University of California, Los Angeles
(United States)

Conference Program Committee

Maurice C. Aalders, Forensic Technical Solutions (Netherlands)

Francesco Baldini, Istituto di Fisica Applicata "Nello Carrara" (Italy)

Jennifer K. Barton, The University of Arizona (United States)

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

Gerald Grant, Duke University (United States)

Daniel C. Gray, Lighthouse Imaging LLC (United States)

Cristina Kurachi, Universidad de São Paulo (Brazil)

Hong Liu, The University of Oklahoma (United States)

Laura Marcu, University of California, Davis (United States)

Mary-Ann Mycek, University of Michigan (United States)

Jianan Y. Qu, Hong Kong University of Science and Technology
(Hong Kong, China)

Urs Utzinger, The University of Arizona (United States)

Session Chairs

- 1 Fluorescence and Raman Detection Systems I
Tuan Vo-Dinh, Fitzpatrick Institute for Photonics, Duke University
(United States)
- 2 Fluorescence and Raman Detection Systems II
Tuan Vo-Dinh, Fitzpatrick Institute for Photonics, Duke University
(United States)
- 3 Optical Detection and Sensing Technologies
Cristina Kurachi, Universidad de São Paulo (Brazil)
- 4 Microscopy and Imaging Technologies
Laura Marcu, University of California, Davis (United States)
Mary-Ann Mycek, University of Michigan (United States)
- 5 Visualization and Image-Guided Systems I
Anita Mahadevan-Jansen, Vanderbilt University (United States)
- 6 Visualization and Image-Guided Systems II
Warren S. Grundfest, University of California, Los Angeles
(United States)
Anita Mahadevan-Jansen, Vanderbilt University (United States)
- 7 Optical Coherence Techniques
Stephen A. Boppart, University of Illinois at Urbana-Champaign
(United States)
Jennifer K. Barton, The University of Arizona (United States)
- 8 Optical Diagnostic Devices
Francesco Baldini, Istituto di Fisica Applicata "Nello Carrara" (Italy)
- 9 Near Infrared Spectroscopy Sensing Methods
Zhiwei Huang, National University of Singapore (Singapore)
- 10 Imaging and Detection Methods
Quan Liu, Nanyang Technological University (Singapore)