PROCEEDINGS OF SPIE

SPIDigitalLibrary.org/conference-proceedings-of-spie

Front Matter: Volume 9721

, "Front Matter: Volume 9721," Proc. SPIE 9721, Nanoscale Imaging, Sensing, and Actuation for Biomedical Applications XIII, 972101 (15 June 2016); doi: 10.1117/12.2239500

SPIE.

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

PROGRESS IN BIOMEDICAL OPTICS AND IMAGING

Vol. 17 No. 33

Nanoscale Imaging, Sensing, and Actuation for Biomedical Applications XIII

Alexander N. Cartwright

Dan V. Nicolau

Editors

15–17 February 2016

San Francisco, California, United States

Sponsored and Published by

SPIE

Volume 9721

Proceedings of SPIE, 1605-7422, V. 9721

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

Nanoscale Imaging, Sensing, and Actuation for Biomedical Applications XIII, edited by
Alexander N. Cartwright, Dan V. Nicolau, Proc. of SPIE Vol. 9721, 972101 · © 2016
SPIE · CCC code: 0277-786X/16/\$18 · doi: 10.1117/12.2239500

Proc. of SPIE Vol. 9721 972101-1

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 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 *Nanoscale Imaging, Sensing, and Actuation for Biomedical Applications XIII*, edited by Alexander N. Cartwright, Dan V. Nicolau, Dror Fixler, Proceedings of SPIE Vol. 9721 (SPIE, Bellingham, WA, 2016) Six-digit Article CID Number.

ISSN: 1605-7422

ISSN: 2410-9045 (electronic)

ISBN: 9781628419559

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

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 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

SESSION 1	BIOSENSING NANO-STRUCTURES/PARTICLES I
9721 05	Engineering molecularly-active nanoplasmonic surfaces for DNA detection via colorimetry and Raman scattering [9721-3]
9721 06	Extremely sensitive dual imaging system in solid phantoms [9721-4]
9721 07	Plasmonic nanohole-based sub-diffraction-limited fluorescence microscopy for imaging of gliding biomolecules [9721-5]
9721 0A	Surface plasmon enhanced cell microscopy with blocked random spatial activation [9721-8]
9721 0B	An optical sensing approach for the noninvasive transdermal monitoring of cortisol [9721-9]
SESSION 2	BIOSENSING NANO-STRUCTURES/PARTICLES II
9721 0F	Gold nanoparticles based imaging technique and drug delivery for the detection and treatment of atherosclerotic vascular disease [9721-29]
9721 0H	Optoelectronic investigation of nanodiamond interactions with human blood [9721-31]
SESSION 3	NANOSCALE IMAGING AND SPECTROSCOPY I
9721 0I	Image and flow cytometric analysis of gold nanoparticle uptake by macrophages (Invited Paper) [9721-11]
9721 0J	Plasma dispersion effect assisted nanoscopy based on tuning of absorption and scattering resonances of nanoparticles (Invited Paper) [9721-12]
9721 0K	Fundamental limits of super-resolution microscopy by dielectric microspheres and microfibers [9721-13]
9721 0L	Broadband energy-entangled photon for high resolution temporal sensing [9721-14]
SESSION 4	NANOSCALE IMAGING AND SPECTROSCOPY II
9721 0O	Cross slit-grooves grid structure for surface plasmon resonant sensor [9721-17]

- 9721 OP **Detection of organic nanoparticles within tissues using optical iterative method** [9721-18]
- 9721 OR **Non-radiative excitation fluorescence microscopy** [9721-20]
- 9721 OS **Non-contact speckle based optical sensor for detection of glucose concentration using magneto-optic effect** [9721-21]
- 9721 OT **A novel method for sensing metastatic cells in the CSF of pediatric population with medulloblastoma by frequency domain FLIM system** [9721-22]
- 9721 OU **Seeing the unseen with localized optical contrast** [9721-23]
- 9721 OV **Temporally flickering nanoparticles for compound cellular imaging and super resolution** [9721-24]
- 9721 OW **Comprehensive Monte-Carlo simulator for optimization of imaging parameters for high sensitivity detection of skin cancer at the THz** [9721-25]
- 9721 OX **Single molecule localizations by pattern matching** [9721-26]

POSTER SESSION

- 9721 OZ **Experimental system for measuring the full scattering profile of cylindrical phantoms** [9721-33]

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.

Abdulhalim, Ibrahim, 0W	Lev, Eli I., 0F
Allen, K. W., 0K	Li, Y., 0K
Anand, Arun, 0S	Lieberman, V., 0K
Ankri, Rinat, 0F, 0I	Limberopoulos, N. I., 0K
Astratov, V. N., 0K	Lipovsky, Anat, 0P
Azougi, Jonathan, 0J	Liu, Danping, 0J
Bang, Yousung, 0O	Lubart, Rachel, 0P
Barnoy, Eran A., 06	Mabbott, Samuel, 05
Beiderman, Yevgeny, 0S	Maslov, A. V., 0K
Bernhard, Christof, 0L	Meir, Rinat, 0V
Bessire, Bänz, 0L	Meiri, Amihai, 0V
Bharadwaj, Krishna, 0U	Melzer, Susanne, 0I
Brettin, A., 0K	Mikami, Nagisa, 07
Cameron, Brent D., 0B	Motiei, Menachem, 0F
Christof, Bernhard, 0L	Nakarmi, Bikash, 0O
Clark, Alasdair W., 05	Nayhoz, Tsviya, 06
Cooper, Jonathan M., 05	Ney, Michael, 0W
Danan, Yossef, 0J, 0V	Nishizaka, Takayuki, 07
Douplik, Alexandre, 0J	Oh, Youngjin, 07, 0A
Duadi, Hamootal, 0P, 0Z	Ojha, Yagya R., 0B
Farahi, N., 0K	Ozana, Nisan, 0S
Feder, Idit, 0Z	Pinhas, Hadar, 0J
Feurer, Thomas, 0L	Polani, Sagi, 0S
Ficek, M., 0H	Popovtzer, Rachela, 06
Fixler, Dror, 06, 0F, 0I, 0P, 0T, 0Z	Raghavan, Srinivasan, 0U
García, Javier, 0S	Ramon, Yehonatan, 0J
Gershanov, Sivan, 0T	Ray, Krishanu, 06
Goldenberg-Cohen, Nitza, 0T	Riachy, Lina, 0R
Graham, Duncan, 05	Rothschild, M., 0K
Grahner, Anja, 0I	Schwarz, Ariel, 0S
Gupta, Niraj K., 0B	Shemer, Amir, 0S
He, Siheng, 0X	Sinvani, Moshe, 0J
Hess, Henry, 0X	Son, Taehwang, 0A
Heydari, Esmaeil, 05	Stefanov, André, 0L
Hochhauser, Edith, 0F	Suran, Swathi, 0U
Hwang, Yongsoon, 0B	Tárnok, Attila, 0I
Ilovitsh, Tali, 0J, 0V	Thompson, David, 05
Jaffiol, Rodolphe, 0R	Urbas, A. M., 0K
Jang, Wonjae, 0O	Varma, Manoj M., 0U
Javidi, Baharam, 0S	Vézy, Cyrille, 0R
Jedrzejewska-Szczerska, M., 0H	Walker, D. E., Jr., 0K
Kim, Bongho, 0O	Wasowicz, M., 0H
Kim, Donghyun, 07, 0A	Weiss, Ronald, 0I
Kim, Kyujung, 07	Won, Y. H., 0O
Kinosita, Yoshiaki, 07	Wróbel, M. S., 0H
Lee, Jooho, 0O	Yahav, Gilad, 0T
Lee, Muyoung, 0O	Yang, Heejin, 0A
Lee, Wonju, 07, 0A	Yariv, Inbar, 0P
Leshem-Lev, Dorit, 0F	Zalevsky, Zeev, 0J, 0S, 0V

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

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

Dan V. Nicolau, McGill University (Canada)

Conference Chairs

Alexander N. Cartwright, University at Buffalo (United States)

Dan V. Nicolau, McGill University (Canada)

Conference Co-chair

Dror Fixler, Bar-Ilan University (Israel)

Conference Program Committee

Lorena Betancor, Universidad ORT Uruguay (Uruguay)

Stefan Diez, Technical University Dresden (Germany)

Henry Hess, Columbia University (United States)

Sung Jin Kim, University of Miami (United States)

Armagan Kocer, Academisch Ziekenhuis Groningen (Netherlands)

Abraham Lee, University of California, Irvine (United States)

Heiner Linke, Lund University (Sweden)

Brian D. MacCraith, Dublin City University (Ireland)

Alf Mansson, Linnaeus University (Sweden)

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

Frantisek Stepanek, Institute of Chemical Technology, Prague
(Czech Republic)

Henrique Toma, Universidade de São Paulo (Brazil)

Sharon M. Weiss, Vanderbilt University (United States)

Session Chairs

- 1 Biosensing Nano-structures/Particles I
Dan V. Nicolau, McGill University (Canada)
- 2 Biosensing Nano-structures/Particles II
Dror Fixler, Bar-Ilan University (Israel)
- 3 Nanoscale Imaging and Spectroscopy I
Dror Fixler, Bar-Ilan University (Israel)
- 4 Nanoscale Imaging and Spectroscopy II
Tim Timothy, University at Buffalo (United States)