PROCEEDINGS OF SPIE

SPIDigitalLibrary.org/conference-proceedings-of-spie

Front Matter: Volume 10380

, "Front Matter: Volume 10380," Proc. SPIE 10380, Ultrafast Nonlinear Imaging and Spectroscopy V, 1038001 (25 October 2017); doi: 10.1117/12.2295977

SPIE.

Event: SPIE Optical Engineering + Applications, 2017, San Diego, California, United States

PROCEEDINGS OF SPIE

Ultrafast Nonlinear Imaging and Spectroscopy V

Zhiwen Liu
Iam Choon Khoo
Demetri Psaltis
Kebin Shi
Editors

6–7 August 2017
San Diego, California, United States

Sponsored and Published by
SPIE

Volume 10380

Proceedings of SPIE 0277-786X, V. 10380

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

Ultrafast Nonlinear Imaging and Spectroscopy V, edited by Zhiwen Liu, Iam Choon Khoo,
Demetri Psaltis, Kebin Shi, Proc. of SPIE Vol. 10380, 1038001 · © 2017 SPIE
CCC code: 0277-786X/17/\$18 · doi: 10.1117/12.2295977

Proc. of SPIE Vol. 10380 1038001-1

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 *Ultrafast Nonlinear Imaging and Spectroscopy V*, edited by Zhiwen Liu, Iam Choon Khoo, Demetri Psaltis, Kevin Shi, Proceedings of SPIE Vol. 10380 (SPIE, Bellingham, WA, 2017) Seven-digit Article CID Number.

ISSN: 0277-786X
ISSN: 1996-756X (electronic)

ISBN: 9781510612174
ISBN: 9781510612181 (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 © 2017, 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/17/\$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 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

v	<i>Authors</i>
vii	<i>Conference Committee</i>

SFG/SHG SPECTROSCOPY

10380 02	Effects of cations and cholesterol with sphingomyelin membranes investigated by high-resolution broadband sum frequency vibrational spectroscopy (Invited Paper) [10380-1]
----------	---

NOVEL ULTRAFAST SOURCES AND APPLICATIONS

10380 07	Multicolor broadband tunable pulses generation from a Yb:KGW ultrafast laser (Invited Paper) [10380-6]
----------	---

ULTRAFAST ELECTRON DIFFRACTION AND IMAGING I

10380 0D	Imaging electronic motions by ultrafast electron diffraction (Invited Paper) [10380-12]
10380 0E	Imaging carrier dynamics on the surface of the N-type silicon [10380-13]

ULTRAFAST ELECTRON DIFFRACTION AND IMAGING II

10380 0F	Serial single molecule electron diffraction imaging: diffraction background of superfluid helium droplets (Invited Paper) [10380-14]
10380 0G	Ultrafast nanoscale magnetic switching via intense picosecond electron bunches (Invited Paper) [10380-15]

BIOLOGICAL IMAGING AND SENSING APPLICATIONS I

10380 0I	Smartphone chloridometer for point-of-care applications [10380-17]
10380 0K	Measure the spatial distribution of corneal elasticity by combining femtosecond laser induced breakdown spectroscopy and acoustic radiation force elasticity microscope [10380-19]

BIOLOGICAL IMAGING AND SENSING APPLICATIONS II

10380 0Q	Pump-probe spectroscopy and imaging of heme proteins: temperature effects and data analysis (Invited Paper) [10380-26]
----------	---

- 10380 0S **Kinetics model for the wavelength-dependence of excited-state dynamics of hetero-FRET sensors (Invited Paper) [10380-28]**

NOVEL IMAGING TECHNIQUES I

- 10380 0U **Femtosecond pulse delivery through multi-core fibers for imaging and ablation (Invited Paper) [10380-30]**

NOVEL IMAGING TECHNIQUES II

- 10380 11 **Coherence-domain imaging with harmonic holography (Invited Paper) [10380-37]**

POSTER SESSION

- 10380 12 **Research study of the treatment efficacy of staphylococcia in the palatine tonsils by using Raman-scattering spectroscopy method [10380-39]**
- 10380 13 **Research studies of aging changes of hyaline cartilage surface by using Raman-scattering spectroscopy [10380-40]**
- 10380 14 **Research of rats' tubular bones in simulation of reduction bone tissue mineral density using Raman spectrum method [10380-41]**
- 10380 15 **Optical assessment of bone bioimplants [10380-42]**
- 10380 16 **Extension of supercontinuum spectrum generated in photonic crystal fiber by using chirped femtosecond pulses [10380-43]**

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.

Alghamdi, Maha, 0F	Vengelis, Julius, 16
Asadova, A. A., 12, 14	Volova, L. T., 13, 14, 15
Bartels, Randy A., 0Q	Wang, Erkang, 0Q
Berakdar, J., 0G	Wilson, Jesse W., 0Q
Boersma, Arnold J., 0S	Yang, Jian, 0I
Boltovskaya, V. V., 15	Yue, Jianing, 07
Conkey, Donald B., 0U	Zhang, Chenji, 0I
Creer, Michael, 0I	Zhang, Jie, 0F
Currie, Megan, 0S	Zhang, Wenkai, 07
Dolgushkin, D. A., 13, 14, 15	Zhang, Zhen, 02
Domingue, Scott R., 0Q	Zhou, Liang, 07
Dürr, H. A., 0G	
Fedorova, Ya. V., 14, 15	
Feng, Rong-juan, 02	
Frolov, O. O., 15	
Guo, Yuan, 02	
He, Yunteng, 0F	
Heikal, Ahmed A., 0S	
Hu, Mingyong, 0K	
Ityaksov, Yu. D., 12	
Jarutis, Vygandas, 16	
Kakkava, Eirini, 0U	
Kim, Jimin P., 0I	
Kong, Wei, 0F	
Lazarev, V. A., 13	
Lei, Lei, 0F	
Leighton, Ryan, 0S	
Leopold, Hannah J., 0S	
Li, Xin, 0K	
Li, Yi-yi, 02	
Liu, Ming-hua, 02	
Liu, Zhiwen, 0I	
Markova, M. D., 13	
Moser, Christophe, 0U	
Najafi, Ebrahim, 0E	
Oswalt, Andrew, 0F	
Psaltis, Demetri, 0U, 11	
Pu, Ye, 11	
Schäffer, A. F., 0G	
Schwarz, Jacob, 0S	
Shao, Hua-Chieh, 0D	
Sheets, Erin D., 0S	
Sirutkaitis, Valdas, 16	
Starace, Anthony F., 0D	
Stasio, Nicolino, 0U	
Sun, Hui, 0K	
Timchenko, E. V., 12, 13, 14, 15	
Timchenko, P. E., 12, 13, 14, 15	
Tyumchenkova, A. S., 12, 13	

Conference Committee

Conference Chair

Zhiwen Liu, The Pennsylvania State University (United States)

Conference Co-Chairs

Iam Choon Khoo, The Pennsylvania State University (United States)

Demetri Psaltis, Ecole Polytechnique Fédérale de Lausanne
(Switzerland)

Kebin Shi, Peking University (China)

Program Track Chairs

Shizhuo Yin, The Pennsylvania State University (United States)

Ruyan Guo, The University of Texas at San Antonio (United States)

Conference Program Committee

George Barbastathis, Massachusetts Institute of Technology
(United States)

Randy A. Bartels, Colorado State University (United States)

Martin Centurion, University of Nebraska-Lincoln (United States)

Jason M. Eichenholz, Open Photonics, Inc. (United States)

Kenan Gundogdu, North Carolina State University (United States)

Hans D. Hallen, North Carolina State University (United States)

Zhenyu Li, The George Washington University (United States)

Fiorenzo Gabriele Omenetto, Tufts University (United States)

Michelle Y. Sander, Boston University (United States)

Jigang Wang, Iowa State University of Science and Technology
(United States)

Yong Xu, Virginia Polytechnic Institute and State University
(United States)

Session Chairs

- 1 SFG/SHG Spectroscopy
Kebin Shi, Peking University (China)
- 2 Novel Ultrafast Sources and Applications
William Murray, The Pennsylvania State University (United States)
- 3 Ultrafast Electron Diffraction and Imaging I
William Renninger, Yale University (United States)

- 4 Ultrafast Electron Diffraction and Imaging II
 Joshua Noble, The Pennsylvania State University (United States)
- 5 Biological Imaging and Sensing Applications I
 Martin Centurion, University of Nebraska-Lincoln (United States)
- 6 Nanoscale Phenomena
 Michelle Y. Sander, Boston University (United States)
- 7 Biological Imaging and Sensing Applications II
 Kenan Gundogdu, North Carolina State University (United States)
- 8 Novel Imaging Techniques I
 Ye Pu, Ecole Polytechnique Fédérale de Lausanne (Switzerland)
- 9 Novel Imaging Techniques II
 Zhiwen Liu, The Pennsylvania State University (United States)