

PROCEEDINGS OF SPIE

Ultrafast Nonlinear Imaging and Spectroscopy VI

Zhiwen Liu
Demetri Psaltis
Kebin Shi
Editors

19–20 August 2018
San Diego, California, United States

Sponsored and Published by SPIE

Volume 10753

Proceedings of SPIE 0277-786X, V. 10753

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

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 VI*, edited by Zhiwen Liu, Demetri Psaltis, Kebin Shi, Proceedings of SPIE Vol. 10753 (SPIE, Bellingham, WA, 2018) Seven-digit Article CID Number.

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510620773

ISBN: 9781510620780 (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 © 2018, 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/18/\$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>

ADVANCED IMAGING TECHNOLOGIES I

10753 OF	Tomographic imaging with harmonic holography in tissues of known refractive index distribution (Invited Paper) [10753-13]
----------	--

ADVANCED IMAGING TECHNOLOGIES II

10753 OI	Mid-infrared photothermal spectroscopy with phase analysis (Invited Paper) [10753-17]
----------	--

ULTRAFAST ELECTRON IMAGING

10753 OR	Attomicroscopy: attosecond electron microscopy (Invited Paper) [10753-26]
10753 OS	High-coherence relativistic electron probes for ultrafast structural dynamics (Invited Paper) [10753-27]

BIOLOGICAL APPLICATIONS

10753 10	Resonance Raman imagery of semi-fossilized soft tissues (Invited Paper) [10753-35]
10753 12	Critical setup parameter for ultrafast whitelight coherent antistokes raman scattering spectroscopy of living plankton in sea water (Invited Paper) [10753-37]
10753 13	Low cost laser induced breakdown spectroscopy technique for detection of microorganisms [10753-38]

POSTER SESSION

10753 14	In vivo NIR Raman and autofluorescence spectroscopies of skin neoplasms [10753-39]
10753 17	Experimental study of Kerr effect and nonlinear absorption of multi walled carbon nanotubes [10753-42]