PROCEEDINGS OF SPIE

Ultrafast Imaging and Spectroscopy

Zhiwen Liu
Editor

25–26 August 2013
San Diego, California, United States

Sponsored and Published by
SPIE

Volume 8845

Proceedings of SPIE 0277-786X, V. 8845

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

Ultrafast Imaging and Spectroscopy, edited by Zhiwen Liu, Proc. of SPIE Vol. 8845,
884501 · © 2013 SPIE · CCC code: 0277-786X/13/$18 · doi: 10.1117/12.2048663

The papers included 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. The papers published in these proceedings 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 *Ultrafast Imaging and Spectroscopy*, edited by Zhiwen Liu, Proceedings of SPIE Vol. 8845 (SPIE, Bellingham, WA, 2013) Article CID Number.

ISSN: 0277-786X
ISBN: 9780819496959

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

Printed in the United States of America.

Publication of record for individual papers is online in the 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 and on CD-ROM. Papers are published as they are submitted and meet publication criteria. A unique, consistent, permanent 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. Numbers in the index correspond to the last two digits of the six-digit CID Number.

Contents

BIOAPPLICATIONS OF ULTRAFAST NONLINEAR SPECTROSCOPY AND IMAGING

ULTRAFAST SPECTROSCOPY

RAMAN SPECTROSCOPY AND IMAGING

POSTER SESSION

Conference Committee

Program Track Chairs

Shizhuo Yin, The Pennsylvania State University (United States)
Ruyan Guo, The University of Texas at San Antonio (United States)

Conference Chair

Zhiwen Liu, The Pennsylvania State University (United States)

Conference Cochairs

Iam Choon Khoo, The Pennsylvania State University (United States)
Demetri Psaltis, École Polytechnique Fédérale de Lausanne (Switzerland)

Conference Program Committee

George Barbastathis, Massachusetts Institute of Technology (United States)
Randy Bartels, Colorado State University (United States)
Martin Centurion, University of Nebraska-Lincoln (United States)
Yujie J. Ding, Lehigh University (United States)
Jason M. Eichenholz, Open Photonics, Inc. (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)
Kebin Shi, Peking University (China)
Yong Xu, Virginia Polytechnic Institute and State University (United States)

Session Chairs

1 Ultrafast Electron Diffraction and Imaging
Seong H. Kim, The Pennsylvania State University (United States)

2 SFG/SHG Spectroscopy and Imaging
Martin Centurion, University of Nebraska-Lincoln (United States)

3 Nanoscale Devices and Imaging
Zhenyu Li, The George Washington University (United States)

4 Novel Ultrafast Nonlinear Imaging and Spectroscopy Techniques
Yong Xu, Virginia Polytechnic Institute and State University (United States)

5 Bioapplications of Ultrafast Nonlinear Spectroscopy and Imaging
Chuanshan Tian, Fudan University (China)