

Multiscale Imaging and Spectroscopy V

Paul J. Campagnola
Darren M. Roblyer
Alex J. Walsh
Editors

27–28 January 2024
San Francisco, California, United States

Sponsored by
SPIE

Cosponsored by
The Boston University Photonics Center (United States)

Published by
SPIE

Volume 12827

Proceedings of SPIE, 1605-7422, V. 12827

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

Multiscale Imaging and Spectroscopy V, edited by Paul J. Campagnola, Darren M. Roblyer,
Alex J. Walsh, Proc. of SPIE Vol. 12827, 1282701 · © 2024 SPIE
1605-7422 · doi: 10.1117/12.3030042

Proc. of SPIE Vol. 12827 1282701-1

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 *Multiscale Imaging and Spectroscopy V*, edited by Paul J. Campagnola, Darren M. Roblyer, Alex J. Walsh, Proc. of SPIE 12827, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 1605-7422

ISSN: 2410-9045 (electronic)

ISBN: 9781510669130

ISBN: 9781510669147 (electronic)

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA

Telephone +1 360 676 3290 (Pacific Time)

SPIE.org

Copyright © 2024 Society of Photo-Optical Instrumentation Engineers (SPIE).

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 fees. To obtain permission to use and share articles in this volume, visit Copyright Clearance Center 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.

Printed in the United States of America by Curran Associates, Inc., under license from SPIE.

Publication of record for individual papers is online in the SPIE Digital Library.

**SPIE. DIGITAL
LIBRARY**

SPIDigitalLibrary.org

Paper Numbering: A unique citation identifier (CID) number is assigned to each article in the Proceedings of SPIE 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 *Conference Committee*

NEW MULTISCALE TECHNOLOGIES I

12827 02 **Using 3D printed optical elements for multifocal image scanning microscopy** [12827-4]

NEW MULTISCALE TECHNOLOGIES II

12827 03 **A compact system for multimodal optical tissue analysis via integrated stereo and hyperspectral imaging** [12827-11]

LIGHT AND DATA II

12827 04 **Hyperspectral imaging at visible to near-infrared wavelengths with deep learning to rapidly quantify tissue oxygenation, blood, and melanin content** [12827-29]

12827 05 **Development of a multi-scale imaging tool to quantify in vivo metabolic heterogeneity** [12827-31]

POSTER SESSION

12827 06 **Fixative induced effects in labeled and unlabeled fluorescence: implications for biomedical imaging studies** [12827-33]

12827 07 **Assessing tissue interrogation volume of an implantable optical sensor using TracePro ray tracing software** [12827-37]

12827 08 **Registration of hyperspectral images and mass spectrometry data for the correlation of tissue optical spectra and molecular profiles** [12827-39]

Conference Committee

Symposium Chairs

Sergio Fantini, Tufts University (United States)
Paola Taroni, Politecnico di Milano (Italy)

Program Track Chairs

Brian Jet-Fei Wong, Beckman Laser Institute and Medical Clinic
(United States) and University of California, Irvine (United States)
Eva M. Sevick, The University of Texas Health Science Center at
Houston (United States)

Conference Chairs

Paul J. Campagnola, University of Wisconsin-Madison (United States)
Darren M. Roblyer, Boston University (United States)
Alex J. Walsh, Texas A&M University (United States)

Conference Program Committee

Jonathon Quincy Brown, Tulane University (United States)
Ji-Xin Cheng, Boston University (United States)
Mini Das, University of Houston (United States)
Kevin W. Eliceiri, University of Wisconsin-Madison (United States)
Irene Georgakoudi, Tufts University (United States)
Yevgenia Kozorovitskiy, Northwestern University (United States)
Muyinatu A. Lediju Bell, Johns Hopkins University (United States)
Kristen C. Maitland, Chan Zuckerberg Initiative (United States)
Srivalleesha Mallidi, Tufts University (United States)
Narasimhan Rajaram, University of Arkansas (United States)
Andrew M. Rollins, Case Western Reserve University (United States)
Melissa C. Skala, Morgridge Institute for Research (United States)

