# Three-Dimensional and Multidimensional Microscopy: Image Acquisition and Processing XXIX

Thomas G. Brown Tony Wilson Laura Waller Editors

22–27 January 2022 San Francisco, California, United States

20–24 February 2022 ONLINE

Sponsored and Published by

**Volume 11966** 

Proceedings of SPIE, 1605-7422, V. 11966

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

Three-Dimensional and Multidimensional Microscopy: Image Acquisition and Processing XXIX, edited by Thomas G. Brown, Tony Wilson, Laura Waller, Proc. of SPIE Vol. 11966, 1196601 ⋅ © 2022 SPIE ⋅ 1605-7422 ⋅ doi: 10.1117/12.2634734

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 Three-Dimensional and Multidimensional Microscopy: Image Acquisition and Processing XXIX, edited by Thomas G. Brown, Tony Wilson, Laura Waller, Proc. of SPIE 11966, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 1605-7422

ISSN: 2410-9045 (electronic)

ISBN: 9781510648036

ISBN: 9781510648043 (electronic)

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA Telephone +1 360 676 3290 (Pacific Time)

SPIE.org

Copyright © 2022 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.



**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**

Conference Committee

	MULTIDIMENSIONAL FLUORESCENCE MICROSCOPY
11966 02	Multispectral time-resolved fluorescence microscopy based on compressive acquisitions [11966-3]
11966 03	Low dosage 3D volume fluorescence microscopy imaging using compressive sensing [11966-4]
	MEDICAL APPLICATIONS OF MULTIDIMENSIONAL MICROSCOPY
11966 04	Hyperspectral imaging and adaptive thresholding to identify agonist-induced cAMP signals in pulmonary microvascular endothelial cells [11966-8]
	ADVANCES IN MICROSCOPE DESIGN
11966 05	Efficient and versatile aberration correction through sensorless adaptive optics [11966-10]
11966 06	Validation of excitation-scan hyperspectral multi-faceted mirror array prototype system advancements to hyperspectral imaging applications [11966-11]
11966 07	Flexible conjugate adaptive optics with a refractive wavefront modulator [11966-12]
11966 08	A compact open-top light-sheet microscope for Optofluidic imaging [11966-14]
	MULTIMODAL AND HYPERSPECTRAL IMAGING
11966 09	High-resolution volumetric imaging using hybrid image of Fourier light-field microscopy and wide-field microscopy [11966-16]
11966 OA	Enabling hyperspectral acquisition for scanning laser optical tomography [11966-17]

### **NEW METHODS IN NONLINEAR MICROSCOPY**

11966 OB	Quantification of collagen networks in mammary tumors using TPEF and laser-based tomography [11966-21]
11966 OC	Automated chondrocyte viability analysis of articular cartilage based on deep learning segmentation and classification of two-photon microscopic images [11966-22]
	NEW METHODS IN COMPUTATIONAL MICROSCOPY
11966 OD	Evaluation of tile artifact correction methods for multiphoton microscopy mosaics of whole-slide tissue sections [11966-26]

## **Conference Committee**

### Symposium Chairs

**Jennifer K. Barton**, The University of Arizona (United States) **Wolfgang Drexler**, Medizinische University Wien (Austria)

### **Program Track Chairs**

**Ammasi Periasamy**, University of Virginia (United States) **Daniel L. Farkas**, University of Southern California (United States) and SMI (United States)

### Conference Chairs

**Thomas G. Brown**, University of Rochester (United States) **Tony Wilson**, University of Oxford (United Kingdom) **Laura Waller**, University of California, Berkeley (United States)

### Conference Program Committee

Martin Booth, University of Oxford (United Kingdom)
Charles A. DiMarzio, Northeastern University (United States)
Jonathan T.C. Liu, University of Washington (United States)
Raimund J. Ober, Texas A&M University (United States)
Chrysanthe Preza, The University of Memphis (United States)
Monika Ritsch-Marte, Medizinische University Innsbruck (Austria)
Zachary J. Smith, University of Science and Technology of China (China)