

PROGRESS IN BIOMEDICAL OPTICS AND IMAGING

Vol. 27 No. 33

Imaging, Manipulation, and Analysis of Biomolecules, Cells, and Tissues XXIV

Jessica P. Houston

Xuantao Su

Editors

19–21 January 2026

San Francisco, California, United States

Sponsored and Published by

SPIE

Volume 13855

Proceedings of SPIE, 1605-7422, V. 13855

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 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 *Imaging, Manipulation, and Analysis of Biomolecules, Cells, and Tissues XXIV*, edited by Jessica P. Houston, Xuantao Su, Proc. of SPIE 13855, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510696235

ISBN: 9781510696242 (electronic)

Published by

SPIE

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

Telephone +1 360 676 3290 (Pacific Time)

SPIE.org

Copyright © 2026 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*

LABEL FREE APPROACHES

- 13855 02 **Label-free wide-field holographic imaging of porcine, sheep, and rabbit esophageal tissue samples subjected to laser-induced thermal damage** [13855-2]

BIOMEDICAL: JOINT SESSION WITH CONFERENCES 13855 AND 13918

- 13855 03 **3D imaging of biological specimens using the LUCID clearing reagent and the HandySPIM lens-free light-sheet module** [13855-10]

AI FOR IMAGING AND SENSING I

- 13855 04 **From art to optimization: information-theoretic principles for spectral cytometry panel design (Invited Paper)** [13855-11]
- 13855 05 **Adaptive confocal scanning laser polarimeter for early and accurate detection of glaucoma** [13855-12]

MULTIMODAL IMAGING AND SENSING

- 13855 06 **Light scattering imaging and sizing of small extracellular vesicles (Invited Paper)** [13855-16]

INTRAVITAL AND FUNCTIONAL IMAGING

- 13855 07 **Automated noninvasive laser speckle imaging of the chick blood vessels and heart rate during antihypertensive drug injection** [13855-23]

AI FOR IMAGING AND SENSING II

- 13855 08 **Simultaneous localization and depth estimation of fluorescence probes within biological tissues via deep learning in NIR-II fluorescence molecular imaging (Invited Paper)** [13855-24]
- 13855 09 **Organelle-based classification of metastatic breast cancer subtypes using self-supervised learning** [13855-26]

MICROTECHNICAL AND MOLECULAR-PROBE APPROACHES

- 13855 0A **Polarization-resolved chlorophyll imaging for noninvasive plant tissue assessment using a silicon-rich nitride metalens array** [13855-32]
- 13855 0B **Illuminating native fluorescence signatures for cancer detection** [13855-33]

POSTER SESSION

- 13855 0C **Multiscale Gaussian regularization for accurate reconstruction in NIR-II fluorescence molecular tomography** [13855-37]
- 13855 0D **Real-time imaging of zebrafish cardiac dynamics using a custom light sheet microscope (M λ -sMx-SPIM)** [13855-40]
- 13855 0E **A noninvasive setup for integrated correlative light-electron microscopy** [13855-41]