PROCEEDINGS OF SPIE

Emerging Technologies for Cell and Tissue Characterization II

Seemantini K. Nadkarni Giuliano Scarcelli Editors

28–29 June 2023 Munich, Germany

Sponsored by SPIE

Co-sponsored by Optica (United States)

Published by SPIE

Volume 12629

Proceedings of SPIE 0277-786X, V. 12629

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 *Emerging Technologies for Cell and Tissue Characterization II*, edited by Seemantini K. Nadkarni, Giuliano Scarcelli, Proc. of SPIE 12629, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X ISSN: 1996-756X (electronic)

ISBN: 9781510664678 ISBN: 9781510664685 (electronic)

Published by **SPIE** P.O. Box 10, Bellingham, Washington 98227-0010 USA Telephone +1 360 676 3290 (Pacific Time) SPIE.org Copyright © 2023 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

v Conference Committee

POLARIZATION-BASED IMAGING

- 12629 02Partial Mueller polarimetry for the complete optical diagnosis of biological tissue
(Invited Paper) [12629-1]
- 12629 03 Characterization of different thawing mechanisms of fibroblast cell-containing tissue models by Mueller polarimetry and statistical analysis [12629-2]
- 12629 07 Myocardium tissue alterations in acute cardiac attack and respiratory arrest evaluated by polarized light [12629-5]

NOVEL METHODS

- 12629 0B Real-time ultrashort laser pulse compression based on single-shot spectrogram [12629-9]
- 12629 OC Raman spectroscopy in in vitro cell cultures: understanding chemoresistance [12629-10]

COMPUTATIONAL METHODS

- 12629 0D Unleashing the power of high-throughput bright-field imaging for enhanced mesenchymal cell separation: a novel supervised clustering approach in vitro augmentation of healthy and stressful conditions [12629-11]
- 12629 OE Data analysis methods for the quantification of the morphology and dynamics of the retinal vessels [12629-12]

DEALING WITH HIGHLY SCATTERING MEDIA

- 12629 0G Direct measurements of diffusive samples by random lasing (Invited Paper) [12629-14]
- 12629 01 Three-dimensional reconstruction of subsurface absorbing structures in tissue phantoms from photothermal radiometric records [12629-16]
- 12629 0J Age-related changes of dermal scattering coefficient assessed using a noninvasive optical technique [12629-17]

CELL AND TISSUE MECHANICS

- 12629 0M Air-jet based optical coherence elastography of brain tumor tissue: stiffness evaluation by structural histological analysis [12629-20]
- 12629 00 Spatial reorganization of F-actin in respiratory cells as measured by Brillouin microscopy [12629-22]

INTERFEROMETRY

- 12629 0Q Digital inline holographic microscopy for fast, label-free detection of antimicrobial mechanism of action [12629-24]
 12629 0R Multi-range scanning laser ophthalmoscope for imaging the morphology and dynamics of the retinal vessels [12629-25]
 12629 0T Metabolic and morphological evaluation of an artificial full-thickness skin model using a multimodal photonic system [12629-27]
 POSTER SESSION
- 12629 0W Optimizing the classification of biological tissues using polarized data supported by machine learning [12629-31]