

PROGRESS IN BIOMEDICAL OPTICS AND IMAGING

Vol. 27 No. 32

Polarized Light and Optical Angular Momentum for Biomedical Diagnostics 2026

**Juan Campos Coloma
Igor V. Meglinski
Tatiana Novikova**
Editors

**17–19 January 2026
San Francisco, California, United States**

Sponsored and Published by
SPIE

Volume 13854

Proceedings of SPIE, 1605-7422, V. 13854

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 *Polarized Light and Optical Angular Momentum for Biomedical Diagnostics 2026*, edited by Juan Campos Coloma, Igor V. Meglinski, Tatiana Novikova, Proc. of SPIE 13854, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510696211

ISBN: 9781510696228 (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*

MACHINE LEARNING MODELS AND IMAGE ANALYSIS

- 13854 02 **Diffusion modelling of polarimetric cervical tissue properties** [13854-1]
- 13854 03 **Polarization memory mapping using physically informed neural network** [13854-5]
- 13854 04 **Physical realizability test for 3×4 partial Mueller matrix using supervised learning algorithms** [13854-4]

CLINICAL APPLICATIONS OF POLARIMETRY

- 13854 05 **Discriminating brain tumors from fiber-crossing zones in linear retardance images of brain tissue via depolarization contrast** [13854-9]

BIOMEDICAL APPLICATIONS OF ORBITAL ANGULAR MOMENTUM

- 13854 06 **Polarized and structured light techniques for quantitative biomedical diagnostics (Invited Paper)** [13854-15]
- 13854 07 **Optical vortex beams generated by conical refraction for tissue characterization (Best Student Paper Award)** [13854-16]
- 13854 08 **Combining light's degrees of freedom to see through biological tissues with topology** [13854-17]

POLARIZATION IMAGING AND ANALYTICS

- 13854 09 **Backscattering scanning polarimetry for brain structure investigation (Invited Paper)** [13854-18]
- 13854 0A **Revealing the structure of hierarchical nondepolarizing systems through Fourier series emergence of angle-resolved Mueller matrices** [13854-19]
- 13854 0B **Consistent reconstruction of partially measured Mueller matrices: enpolarizing, depolarizing, and retarding descriptors** [13854-20]
- 13854 0C **Using polarized light for ellipsometry- and polarimetry-based analysis of biological samples (Invited Paper)** [13854-22]

POLARIZATION IN TISSUE DIAGNOSTICS

13854 0D **Contrasting transmission and backreflection configurations in polarimetric imaging (Invited Paper)** [13854-29]

POSTER SESSION

13854 0E **Field of view and depth of field extension in Mueller matrix microscopy** [13854-35]

13854 0F **Correction of polarimetric artifacts caused by a plastic cover in an imaging Mueller polarimeter operating in reflection mode** [13854-38]

13854 0G **Probing turbid media with structured light: OAM beams for precision diagnostics** [13854-41]

13854 0H **Modeling of a polarization-sensitive endoscope that extracts tissue's Mueller matrix parameters** [13854-45]

13854 0I **Validation of a polarized hyperspectral imaging (PHSI) probe using phantoms and biological tissues** [13854-46]