

PROGRESS IN BIOMEDICAL OPTICS AND IMAGING

Vol. 27 No. 17

Optics and Biophotonics in Low-Resource Settings XII

**David Levitz
Aydogan Ozcan**
Editors

**17–18 January 2026
San Francisco, California, United States**

Sponsored and Published by
SPIE

Volume 13839

Proceedings of SPIE, 1605-7422, V. 13839

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 *Optics and Biophotonics in Low-Resource Settings XII*, edited by David Levitz, Aydogan Ozcan, Proc. of SPIE 13839, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 1605-7422

ISSN: 2410-9045 (electronic)

ISBN: 9781510695917

ISBN: 9781510695924 (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*

COMPUTATIONAL IMAGING AND SENSING METHODS I

- 13839 02 **Noninvasive malaria risk stratification in school-age children using smartphone conjunctiva photography** [13839-1]
- 13839 03 **Virtual polychromatic digital holographic microscopy: AI-based physics-informed super-resolution and denoising** [13839-2]

EMERGING TECHNOLOGIES

- 13839 07 **Intelligent OCT system for intraoperative lung tumor grading with few-shot learning** [13839-6]
- 13839 0A **Advancing reagentless SERS sensors towards the point-of-care using lyophilization** [13839-9]

LOW COST OPTICAL SYSTEMS IN BIOPHOTONICS AND WOMEN'S HEALTH

- 13839 0B **Usability analysis of integrated and improvised smartphone-based cervical imaging systems** [13839-10]
- 13839 0D **NIR-Dx: advancing breast cancer diagnosis with multiwavelength near-infrared optical scattering spectroscopy probe** [13839-12]
- 13839 0E **A real-time multispectral non-contact transvaginal imaging probe (GynoSight v3.0) for early detection of premalignant cervical cancer** [13839-13]
- 13839 0F **Comparison of different focus measuring functions in low-cost cervical imaging** [13839-14]

COMPUTATIONAL IMAGING AND SENSING METHODS II

- 13839 0G **InSight: an AI-based screening tool for eye diseases in low-resource settings** [13839-15]
- 13839 0H **Identifying skin cancer using conventional smartphone images** [13839-16]

EMERGING LOW COST SPECTRAL METHODS

- 13839 OI **Emulating properties of digital color images of human skin and nevi using tissue-simulating phantoms** [13839-18]
- 13839 OJ **Training a smartphone-based oximetry algorithm using low-cost easy-to-prepare tissue-simulating phantoms** [13839-19]

POSTER SESSION

- 13839 OK **CycleGAN-assisted image translation for deep ultraviolet-excitation fluorescence images of pancreatic endoscopic ultrasound-fine needle aspiration/biopsy** [13839-21]
- 13839 OM **Quantum biosensing illuminates infected cells for timely disease diagnosis** [13839-23]
- 13839 ON **A highly miniaturized fluorimeter for 3D printed microfluidic chips** [13839-24]