PROCEEDINGS OF SPIE

Biophotonics in Point-of-Care III

Hatice Altug Julien Moreau Editors

10–12 April 2024 Strasbourg, France

Sponsored by SPIE

Cooperating Organisations Photonics 21 (Germany) EOS—European Optical Society

Published by SPIE

Volume 13008

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 *Biophotonics in Point-of-Care III*, edited by Hatice Altug, Julien Moreau, Proc. of SPIE 13008, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510673342

ISBN: 9781510673359 (electronic)

Published by

SPIE

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

SPIE.orc

Copyright © 2024 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

vii Conference Committee

SESSION 1	APPLICATIONS OF POCT
13008 02	Fluorescence spectroscopy enhancing aflatoxin detection in solid food products: from laboratory setup towards handheld sensing units (Invited Paper) [13008-1]
13008 03	Smartphone-based colorimetry analysis for estimation of albumin concentration [13008-3]
13008 04	Fast and reliable micro bioassay techniques based on biospeckle for swift water assessment using plankton [13008-4]
13008 05	Design, fabrication, and testing of a smartphone-based bimodal device for oral precancer diagnosis [13008-41]
SESSION 2	PHOTONIC AND NANOPHOTONIC SENSING MEANS I
13008 06	Detecting malaria with surface plasmon microscope [13008-6]
SESSION 3	PHOTONIC AND NANOPHOTONIC SENSING MEANS II
13008 07	Surface plasmon resonance in polymer optical fibers for point of care analysis (Invited Paper) [13008-9]
13008 08	Engineering SERS-active substrates: design and characterization of advanced structures [13008-10]
13008 09	SERS biosensor for ultrasensitive detection of human thyroglobulin [13008-11]
SESSION 4	PHOTONIC AND NANOPHOTONIC SENSING MEANS III
13008 0A	Surface plasmon resonance imaging signal amplification for the detection of micro-RNAs in the context of organ donation [13008-15]
13008 OB	Optimization of a silicon nitride-based microring resonator platform towards pinnacle sensitivity in chemical- and biosensing [13008-16]

SESSION 5	PHOTONIC AND NANOPHOTONIC SENSING MEANS IV
13008 0C	Innovative pyroelectric biosensor for detecting picogram level of neurodegeneration protein biomarkers [13008-18]
13008 0D	Insulin detection using plasmonic optical fiber chips: a benchmark [13008-19]
SESSION 6	ENABLING TECHNOLOGIES FOR INSTRUMENTATION AND LAB ON A CHIP I
13008 0E	Automation of optical tweezers: an enabler for single cell analysis and diagnostic (Invited Paper) [13008-21]
13008 OF	Single cell analysis by holographic microscopy and flow cytometry: an high-throughput and label-free approach $[13008\hbox{-}22]$
13008 0G	Towards label-free flow cytometry for automated cell identification using diffuse reflectance spectroscopy [13008-23]
SESSION 7	ENABLING TECHNOLOGIES FOR INSTRUMENTATION AND LAB ON A CHIP II
13008 0H	The LUMINA setup for a light-based urine monitoring and analysis [13008-26]
13008 01	Analysis of infusion solutions using a multisensory approach consisting of Raman spectroscopy, refractometry, and UV/Vis spectroscopy to prevent medication errors (Best Student Paper Award) [13008-27]
13008 OJ	Precision point-of-care in drug delivery: empowering innovations with optical fiber assisted by microfluidics $[13008-28]$
13008 OK	Fused silica microfluidic chip platform for dynamic light scattering and particle size calculation [13008-30]
	POSTER SESSION
13008 OL	Biomarker identification and point-of-care assessment in urosepsis supported by machine learning [13008-32]
13008 OM	Laser micromachining for enhancing lateral flow assay colorimetric signal sensitivity [13008-33]
13008 ON	Design and application of a low-cost camera-based spectrometer [13008-34]
13008 00	Modulation of surface plasmon resonance energy using graphene quantum dots on biosensors application [13008-36]

13008 OP	Fundamental studies of graphene oxide quantum dots for plasmonic properties and microRNAs in sensing mechanism [13008-37]
13008 0Q	DNA-nanomachine-based chemiluminescent assay for pathogen detection in food-borne infections [13008-39]
13008 OR	Cell counting platform for life science applications [13008-43]
13008 OS	Portable optofluidic device for dynamic binding analysis in field-settings [13008-44]
	DIGITAL POSTER SESSION
13008 OT	A highly sensitive narrowband metasurface absorber in the terahertz regime for early detection of cancer cells [13008-38]