## PROCEEDINGS OF SPIE

## International Academic Conference on Optics and Photonics (IACOP 2023)

Yang Yue Gefeson Mendes Pacheco Editors

29–30 October 2023 ONLINE, China

Organized by Pashanhu Association of Scholars and Engineers (PASE)

Published by SPIE

**Volume 12972** 

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 *International Academic Conference on Optics and Photonics (IACOP 2023)*, edited by Yang Yue, Gefeson Mendes Pacheco, Proc. of SPIE 12972, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510672543

ISBN: 9781510672550 (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

	OPTICAL SENSOR
12972 02	Photonic integrated wireless communication and sensing with OFDM modulation [12972-2]
12972 03	Seven-core fiber spatial multiplexing refractometer based on convolutional neural networks [12972-3]
12972 04	3-DOF angle measurement method based on two interference images [12972-6]
12972 05	Simultaneously reconstructing gas and carbon soot properties using multispectral light field images [12972-8]
12972 06	Temperature sensing system based on OFDR demodulation principle for identical weakly reflecting FBGs [12972-13]
12972 07	Miniaturized interferometric fiber optic gyroscope based on a novel Y-waveguide and photonic crystal fiber [12972-21]
	OPTICAL IMAGING
12972 08	Denoising for optical-resolution photoacoustic microscopy via a score-based diffusion generative model [12972-17]
12972 09	Enhancing photoacoustic imaging with BFP-GAN [12972-25]
12972 0A	Generative model for limited-view photoacoustic tomography reconstruction [12972-29]
12972 OB	BaTiO <sub>3</sub> microsphere assisted imaging of erythrocytes by light structuring photonic hook [12972-33]
	OPTICAL COMMUNICATION
12972 0C	BER performance of QPSK, 16-APSK and 16-QAM E-band photon-assisted millimeter wave wireless system in Rician channel [12972-11]
12972 0D	Scalable low-modal-crosstalk mode-group demultiplexer for MDM transmission over MMF [12972-24]

12972 OE	Analysis of nonlinear phase noise suppression for CO-OFDM systems based Gaussian basis expansion method [12972-37]
12972 OF	Gaussian basis expansion-based phase noise suppression for CO-OFDM system [12972-41]
	OPTICAL TECHNOLOGY
12972 0G	The design of compact air-cooling LD-pumped Nd:YVO4 laser [12972-5]
12972 OH	Techniques for speeding up algorithms for implementing rigorous coupled-wave analysis [12972-7]
12972 01	All polarization maintaining Brillouin erbium-doped fiber laser with narrow linewidth and stable single longitudinal mode $[12972-10]$
12972 OJ	Quantitative analysis method for the Fourier transform Infrared spectroscopy of gases [12972-20]
12972 OK	GaN-based back-illuminated ultraviolet photodetector with an absorption layer compensation doping [12972-30]
12972 OL	Improvement of target recognition ability based on micro-scanning [12972-34]
12972 OM	Thermal ablation behavior of infrared optical element under high energy CW laser [12972-35]