

PROCEEDINGS OF SPIE

Optoelectronic Devices and Integration XIII

Xuping Zhang
Baojun Li
Changyuan Yu
Xinliang Zhang
Editors

12–14 October 2024
Nantong, China

Sponsored by
SPIE
COS—Chinese Optical Society

Cooperating Organizations

Tsinghua University (China) • Peking University (China) • University of Science and Technology of China (China) • Zhejiang University (China) • Tianjin University (China) • Beijing Institute of Technology (China) • Beijing University of Posts and Telecommunications (China) • Nankai University (China) • Changchun University of Science and Technology (China) • University of Shanghai for Science and Technology (China) • Capital Normal University (China) • Huazhong University of Science and Technology (China) • Beijing Jiaotong University (China) • China Jiliang University (China) • Shanghai Institute of Optics and Fine Mechanics, CAS (China) • Changchun Institute of Optics, Fine Mechanics and Physics, CAS (China) • Institute of Semiconductors, CAS (China) • Institute of Optics and Electronics, CAS (China) • Institute of Physics, CAS (China) • Shanghai Institute of Technical Physics, CAS (China) • China Instrument and Control Society (China) • Optical Society of Japan (Japan) • Optical Society of Korea (Republic of Korea) • Australian and New Zealand Optical Society • Optics and Photonics Society of Singapore (Singapore) • European Optical Society

Supporting Organizations

China Association for Science and Technology (CAST) (China)
Department of Information of National Nature Science Foundation, China (NSFC) (China)

Published by
SPIE

Volume 13236

Proceedings of SPIE 0277-786X, V. 13236

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 *Optoelectronic Devices and Integration XIII*, edited by Xuping Zhang, Baojun Li, Changyuan Yu, Xinliang Zhang, Proc. of SPIE 13236, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510682009

ISBN: 9781510682016 (electronic)

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA

Telephone +1 360 676 3290 (Pacific Time)

SPIE.org

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.

**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

- vii *Symposium Committee*
- xi *Conference Committee*

INTERACTION BETWEEN LIGHT, HEAT, AND MATTER

- 13236 03 **An all-polymer spring optomechanical-microresonator-based ultrasonic sensor (Invited Paper)** [13236-2]
- 13236 04 **Engineered photonic supercontinuum generation with Bragg scattered dispersion** [13236-3]
- 13236 05 **Analysis of the influence of surface roughness of gold electrodes on electromagnetic-thermal effect in thin-film lithium niobate modulator** [13236-5]

HIGH-PERFORMANCE SENSING AND MEASUREMENT

- 13236 09 **Ultra-high resolution optical vector analysis based on optical double sideband modulation** [13236-9]

OPTICAL COMMUNICATIONS AND BEAMFORMING

- 13236 0E **Ultrafast high response waveguide MUTC photodetector for optical-to-microwave conversion** [13236-14]
- 13236 0F **Power control of ultra-wideband optical communication system based on optimization algorithm** [13236-15]
- 13236 0G **Low-loss flat-topped wavelength division (de)multiplexer based on cascaded Mach-Zehnder interferometers** [13236-16]
- 13236 0H **High-speed PAM8 silicon photonics IM/DD system with artificial neural network equalization** [13236-17]

OPTICAL AND OPTOELECTRONIC DEVICE INTEGRATION

- 13236 0J **Integrated low-cost and low-loss spot size converter for thin film lithium niobate** [13236-19]

DATA ACQUIRING AND PROCESSING

- 13236 0L **Vision transformer with photonic integrated circuits** [13236-23]

- 13236 OM **Application of technical vision system in the task of automation assembly processes of integrated circuits** [13236-24]
- 13236 ON **Research on the method for matching the design of high-speed LVDS driver with transmission lines for CMOS image sensor** [13236-25]
- 13236 OO **Research on pixel MTF of low light image sensor** [13236-26]
- 13236 OP **High-accuracy and real-time phase solution algorithm based on extended Kalman filter for multi-degree-of-freedom grating interferometer** [13236-27]
- 13236 OQ **Automated acquisition of spectral data and development of peak detection algorithms** [13236-28]
- 13236 OR **A gradient-free training approach for optical neural networks based on stochastic functions** [13236-29]

POSTER SESSION

- 13236 OT **Highly confined light guiding in a groove-coupled hybrid Bloch surface waveguide** [13236-20]
- 13236 OU **Research on infrared polarizing elements and optical systems based on metasurface** [13236-31]
- 13236 OY **Near-infrared upconversion organic light-emitting devices** [13236-35]
- 13236 OZ **Low-loss spot-size converter for thin-film lithium niobate photonic integrated circuits at 780nm with simple fabrication process** [13236-36]
- 13236 10 **Packaging technology for four channel 200Gbit/s optical emission module based on PAM4** [13236-37]
- 13236 11 **Low loss of flexible polymer optical waveguide MT-type connector coupled to fiber MT-type connector** [13236-38]
- 13236 12 **Broadband dual-comb laser based on a single-cavity dual-wavelength fiber laser** [13236-39]
- 13236 13 **High working distance and six-degree-of-freedom grating encoder based on lens batch collimation** [13236-40]
- 13236 14 **Manufacturing of wire grid polarizer by laser interference lithography** [13236-41]
- 13236 15 **The alignment method based on substrate profile for multiple exposure** [13236-42]

- 13236 16 **Research on octupling frequency triangular-shaped waveform generator with flexible repetition rate tunability** [13236-43]
- 13236 17 **Study on optical compensation method for beam squint of broadband phased array antenna** [13236-44]