PROCEEDINGS OF SPIE

Infrared Sensors, Devices, and Applications V

Paul D. LeVan Ashok K. Sood Priyalal Wijewarnasuriya Arvind I. D'Souza Editors

12–13 August 2015 San Diego, California, United States

Sponsored and Published by SPIE

Volume 9609

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 religince thereon.

Please use the following format to cite material from these proceedings:

Author(s), "Title of Paper," in *Infrared Sensors, Devices, and Applications V*, edited by Paul D. LeVan, Ashok K. Sood, Priyalal Wijewarnasuriya, Arvind I. D'Souza, Proceedings of SPIE Vol. 9609 (SPIE, Bellingham, WA, 2015) Six-digit Article CID Number.

ISSN: 0277-786X

ISSN: 1996-756X (electronic) ISBN: 9781628417753

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA Telephone +1 360 676 3290 (Pacific Time) · Fax +1 360 647 1445 SPIE.ora

Copyright © 2015, Society of Photo-Optical Instrumentation Engineers.

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 copying fees. The Transactional Reporting Service base fee for this volume is \$18.00 per article (or portion thereof), which should be paid directly to the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923. Payment may also be made electronically through CCC Online 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. The CCC fee code is 0277-786X/15/\$18.00.

Printed in the United States of America Vm7 i ffUb 5 ggc WJUhY gz & Wzi bXYf JW bgY Zfca 'GD-9.

Publication of record for individual papers is online in the SPIE Digital Library.



Paper Numbering: Proceedings of SPIE follow an e-First publication model. A unique citation identifier (CID) number is assigned to each article 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 six-digit CID article numbering system structured as follows:

- The first four 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 Authors
- vii Conference Committee
- ix Summary

SESSION 1	NOVEL DETECTORS AND MATERIALS
9609 02	Advanced EO/IR technologies at DARPA/MTO (Invited Paper) [9609-32]
9609 03	Semi-insulating GaAs and Au Schottky barrier photodetectors for near-infrared detection (1280 nm) [9609-1]
9609 04	Heterojunction depth in P+-on-n eSWIR HgCdTe infrared detectors: generation-recombination suppression [9609-2]
9609 06	Compositional control of the mixed anion alloys in gallium-free InAs/InAsSb superlattice materials for infrared sensing [9609-3]
9609 08	High-responsivity and high-saturation-current Si/Ge uni-traveling-carrier photodetector [9609-5]
9609 09	Enhancement of electron-injection detector performance by their unique three-dimensional geometry [9609-6]
9609 0A	A new detector for high-speed swept source optical coherence tomography [9609-7]
9609 OC	Characterization on Geiger-mode operation of deep diffused silicon APDs [9609-9]
9609 0D	Development of large area nanostructured antireflection coatings for EO/IR sensor applications [9609-38]
SESSION 2	MODELS, SIMULATIONS, THEORY
9609 OE	Determining the electrical mechanism of the surface resistivity property of doped polyvinyl alcohol (PVA) and the pyroelectric property of polyvinylidene difluoride (PVDF) thin films [9609-10]
9609 01	Series-coupled fiber double-ring in Mach–Zehnder interferometer for temperature sensing [9609-20]

SESSION 3	FOCAL PLANE ARRAYS AND ELECTRO-OPTICAL COMPONENTS
9609 OJ	Fabrication of Resonator-Quantum Well Infrared Photodetector (RQWIP) with 10.2 µm cutoff [9609-14]
9609 OL	All optical modulator based on silicon resonator [9609-16]
9609 OM	Design of ultra-thin metallic grating based circular polarizer in the near infrared [9609-17]
SESSION 4	INNOVATIVE EO FIBER APPLICATIONS
9609 00	Design and development of wafer-level near-infrared micro-camera [9609-33]
9609 OP	Mid-infrared GeTe ₄ waveguides on silicon with a ZnSe isolation layer [9609-36]
9609 OR	Integrated multi-color illumination source for lab-on-a-chip fluorescence analysis [9609-21]
9609 OS	Mechanically induced long period fiber gratings on single mode tapered optical fiber for structure sensing applications $[9609-22]$
9609 OT	PET and PVC separation system based on optical sensors [9609-23]
SESSION 5	COMPONENTS AND APPLICATIONS OF EO/IR TECHNOLOGY
9609 OU	LWIR pupil imaging and prospects for background compensation [9609-24]
9609 OV	High-performance near-infrared spectrally encoded microscopy by using a balanced detector [9609-25]
9609 OX	Development of high gain avalanche photodiodes for UV imaging applications [9609-34]
9609 OY	Large format MBE HgCdTe on silicon detector development for astronomy [9609-35]
	POSTER SESSION
9609 12	Welding pool measurement using thermal array sensor [9609-29]
9609 13	Photothermal deflection of laser beam as means to characterize thermal properties of biological tissue: numerical study [9609-30]