PROCEEDINGS OF SPIE

AOPC 2020: Optical Information and Network

Jie Zhang Songnian Fu He Zhang Editors

30 November–2 December 2020 Beijing, China

Sponsored by Chinese Society for Optical Engineering (CSOE) (China)

Technical Sponsor SPIE

Organized by

Chinese Society for Optical Engineering (CSOE) (China) • Academy of Opto-Electronics of Electronics Technology of China (China) • Science and Technology on Low-light-level Night Vision Laboratory (China) • Science and Technology on Electro-Optical Information Security Control (China)

Published by SPIE

Volume 11569

Proceedings of SPIE 0277-786X, V. 11569

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

AOPC 2020: Optical Information and Network, edited by Jie Zhang, Songnian Fu, He Zhang, Proc. of SPIE Vol. 11569, 1156901 · © 2020 SPIE CCC code: 0277-786X/20/\$21 · doi: 10.1117/12.2585976 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 AOPC 2020: Optical Information and Network, edited by Jie Zhang, Songnian Fu, He Zhang, Proceedings of SPIE Vol. 11569 (SPIE, Bellingham, WA, 2020) Seven-digit Article CID Number.

ISSN: 0277-786X ISSN: 1996-756X (electronic)

ISBN: 9781510639591 ISBN: 9781510639607 (electronic)

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.org Copyright © 2020, 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 \$21.00 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/20/\$21.00.

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: 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 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

OPTICAL INFORMATION AND NETWORK

11569 02	An optimization and stabilization algorithm of Brillouin shifted sidebands in BOTDA sensors [11569-2]
11569 03	Magnetic field sensor based on a microsphere attached to a side-polished fiber [11569-4]
11569 04	Research on free-space optical communication system for OFDM serial relay based on exponentiated Weibull turbulence model [11569-5]
11569 05	Constellation shaping in optical transport network [11569-6]
11569 06	Slit parameter effects on the orbital angular momentum measurement of partially coherent vortex beams in near field [11569-7]
11569 07	Microwave interrogated cascaded fiber Mach-Zehnder interferometer for optical length measurement [11569-9]
11569 08	Fiber optic current sensor temperature compensation through RBF neural network [11569-10]
11569 09	Fault diagnosing methods of fiber optic current sensor: a review [11569-11]
11569 0A	Design of a 1×K wavelength selective switch based on TEC fiber array in curved alignment [11569-12]
11569 OB	Ammonium ion detection using a tilted fiber grating sensor [11569-13]
11569 OC	The influence of fiber fusion parameters on the performance and reliability of FOG [11569-14]
11569 OD	Detection of Bragg wavelength shift with high resolution based on an Erbium-doped fiber Bragg grating [11569-16]
11569 OE	A Fabry-Perot interferometer for simultaneous measuring temperature and strain based on sapphire-derived fiber-air [11569-17]
11569 OF	Research on early failure mechanism of the fiber-optic hydrophone [11569-18]
11569 0G	Edge characteristic analysis of demodulation structure based on micro-ring resonator in fiber Bragg grating sensing system [11569-19]
11569 OH	A mathematical research on flattop all-fiber MZI interleaver based on double-deviations models and uniform design method [11569-21]

- 11569 01 Research on the strong impact vibration characterics of HPFOG [11569-22]
- 11569 0J Research on thermal induced preload of machine tool spindle bearings based on FBG sensor [11569-23]
- 11569 OK Nonlinear equalization method based on Gaussian mixture model clustering algorithm for a coherent optical OFDM communication system [11569-24]
- 11569 OL Security monitoring of smart campus using distributed fiber optic acoustic sensing [11569-25]
- 11569 0M A network design scheme evaluation model based on AHP and business priority [11569-26]
- 11569 ON Accurate model and compensation method of scale error of HPFOG [11569-27]
- 11569 00 Fiber laser temperature sensor based on SMF-TMCF-SMF structure in 2 µm band [11569-28]
- 11569 OP A calibration-free carbon monoxide sensor based on TDLAS technology [11569-29]
- 11569 0Q Detection and calibration method for decomposition of sulfur hexafluoride based on TDLAS [11569-30]
- 11569 OR Filter-free photonic generation of dual-chirp microwave waveform with frequency and bandwidth multiplication [11569-31]
- 11569 0S Study on influence of polymer functional resin for optical fiber sensing on FOG [11569-32]
- **Design of erbium-doped fiber source with low relative intensity noise of FOG** [11569-33]
- 11569 0U Unity integration of Au grating and microfluid for refractive-index sensing [11569-34]