PROCEEDINGS OF SPIE

SPIDigitalLibrary.org/conference-proceedings-of-spie

Front Matter: Volume 11554

, "Front Matter: Volume 11554," Proc. SPIE 11554, Advanced Sensor Systems and Applications X, 1155401 (3 November 2020); doi: 10.1117/12.2585904

SPIE.

Event: SPIE/COS Photonics Asia, 2020, Online Only

PROCEEDINGS OF SPIE

Advanced Sensor Systems and Applications X

**Zuyuan He
Gang-Ding Peng**
Editors

**11–16 October 2020
Online Only, 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) • Japan Optical Society (Japan) • Korea Optical Society (Korea, Republic of) • Australia Optical Society (Australia) • Singapore Optical Society (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 11554

Proceedings of SPIE 0277-786X, V. 11554

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

Advanced Sensor Systems and Applications X, edited by Zuyuan He,
Gang-Ding Peng, Proc. of SPIE Vol. 11554, 1155401 • © 2020 SPIE
CCC code: 0277-786X/20/\$21 • doi: 10.1117/12.2585904

Proc. of SPIE Vol. 11554 1155401-1

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 *Advanced Sensor Systems and Applications X*, edited by Zuyuan He, Gang-Ding Peng, Proceedings of SPIE Vol. 11554 (SPIE, Bellingham, WA, 2020) Seven-digit Article CID Number.

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

ISBN: 9781510639232
ISBN: 9781510639249 (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.

**SPIE. DIGITAL
LIBRARY**
SPIEDigitalLibrary.org

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

BIOLOGICAL AND CHEMICAL SENSORS

- 11554 04 **Influence of inorganic ions on photoluminescence of carbon dots in aqueous suspensions** [11554-3]
- 11554 05 **Design and experiment of C₄F₇N/CO₂ mixed gas portable detection system based on NDIR technology** [11554-4]
- 11554 06 **Electrostatic-responsive microdroplet lasers for ultrasensitive molecular detection** [11554-5]
- 11554 07 **Pendulum-style adjustment of captured particles with fiber tweezers based on asymmetrical fiber tip for CARS system** [11554-6]
- 11554 09 **A novel Raman spectrum detection system based on an integrated optical biosensor** [11554-8]

REFRACTIVE INDEX SENSORS

- 11554 0C **Coupled loss-gain microresonators with Fano resonance for high-sensitivity refractometric sensing** [11554-11]
- 11554 0D **Low detection limit refractive index sensor based on open microcavity Mach-Zehnder interferometer and fiber ring laser** [11554-12]

SIMULATION AND SIGNAL PROCESSING

- 11554 0G **Extraction of Brillouin frequency shift in Brillouin distributed fiber sensors by neighbors-based machine learning** [11554-15]

MICRO/NANOSTRUCTURE SENSORS

- 11554 0I **Application of metasurface to inclination angle measurement** [11554-17]
- 11554 0J **A tilted long-period grating imprinted on a commercial plastic optical fiber for liquid level sensing** [11554-18]
- 11554 0K **All-single-mode fiber intracavity displacement sensor based on Er-doped fiber ring laser** [11554-19]

- 11554 OM **Temporal resolution research based on x-ray superconducting nanowire single-photon detectors** [11554-21]
- 11554 ON **Simulation and investigation of the resonator gyro** [11554-22]
- 11554 OO **Numerical simulations of local plasmonic field distortion for multimodal core-shell gold-based nanoparticles** [11554-24]

PRESSURE AND VIBRATION SENSORS

- 11554 OQ **Design of high-sensitive optical fiber acoustic sensor based on a photonic crystal fiber** [11554-26]

NEW SENSOR DEVICES AND APPLICATIONS

- 11554 OU **Structural crack identification method based on dynamic distributed strain monitoring** [11554-30]
- 11554 OV **Comparative analyses of different interrogation techniques of an interferometric fiber optic SPR sensor** [11554-31]
- 11554 OX **Titanium-based optical transition edge sensors under the ion irradiation** [11554-33]

POSTER SESSION

- 11554 OY **A vibration monitoring system based on Sagnac interferometer with a novel algorithm** [11554-34]
- 11554 OZ **Research on leak detection of vials based on tunable diode laser absorption spectroscopy technology** [11554-35]
- 11554 10 **Smart sensor optimized by system control** [11554-36]
- 11554 11 **Demonstration of a polarization maintaining fiber tape for simultaneous transverse-force and temperature sensing based on distributed polarization crosstalk analysis** [11554-37]
- 11554 13 **All-photonic-crystal-fiber polarizer based on mode-selective coupling** [11554-39]
- 11554 14 **Investigation of a cascading core-offset in-line fiber Mach-Zehnder interferometer for refractive index measurement** [11554-40]
- 11554 15 **Optical sensors based on cascaded micro-ring resonators with thermo-optical tuning** [11554-41]

- 11554 17 **An event recognition method for Φ -OTDR based on the Gaussian mixture model/hidden Markov models [11554-43]**
- 11554 1A **A novel mini-DAS module for submarine application [11554-46]**
- 11554 1B **A non-invasive optical fiber pulse sensor using a single-mode thin-core fiber for home health monitoring [11554-47]**
- 11554 1C **Vibration measurement technique for repeated fiber-optic hydrophone transmission cable system [11554-48]**
- 11554 1D **A method for monitoring partial discharge of electrical cable based on magneto-optic crystal optical fiber current sensor [11554-49]**
- 11554 1F **Flexible transparent array capacitive sensor based on pyramid structure [11554-51]**
- 11554 1G **Research on acoustic detective sensitivity of optical fiber sensors [11554-52]**
- 11554 1H **Self-standing metallic mesh with Cu nanoparticles for flexible transparent non-enzymatic glucose sensor [11554-53]**
- 11554 1J **A new laser scattering measurement system [11554-55]**
- 11554 1K **Fiber-laser-based cantilever-type vector sensor for acoustic motion measurement [11554-56]**
- 11554 1L **Instability mechanism of intensity-noise-induced phase noise in PGC detection system and suppression thereof [11554-57]**
- 11554 1M **Research on 3×3 coupler photoelectric detecting technology based on light source modulation in fiber optic hydrophone [11554-58]**
- 11554 1N **FDTD simulations of local plasmonic fields for gold surfaces fabricated by femtosecond laser ablation method [11554-59]**
- 11554 1P **Measurement research of the optical fiber vector hydrophone used in underwater acoustic applications in the deep ocean [11554-61]**
- 11554 1Q **A surface-enhanced Raman scattering molecular beacon for the detection of miRNA-21 [11554-62]**