## Nanophotonics and Micro/Nano Optics VI

Zhiping Zhou Kazumi Wada Limin Tong 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 Science and Technology (China) • Capital Normal University (China) • Huazhong University of 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 11556

Proceedings of SPIE 0277-786X, V. 11556

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

Nanophotonics and Micro/Nano Optics VI, edited by Zhiping Zhou, Kazumi Wada Limin Tong, Proc. of SPIE Vol. 11556, 1155601 · © 2020 SPIE CCC code: 0277-786X/20/\$21 · doi: 10.1117/12.2585919 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 Nanophotonics and Micro/Nano Optics VI, edited by Zhiping Zhou, Kazumi Wada, Limin Tong, Proceedings of SPIE Vol. 11556 (SPIE, Bellingham, WA, 2020) Seven-digit Article CID Number.

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

ISBN: 9781510639270 ISBN: 9781510639287 (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

## SILICON PHOTONICS

11556 03	Strain-enhanced Ge epitaxial layer on Si-on-quartz wafer for near-infrared photonic devices [11556-1]
11556 04	High sensitivity and ultra-compact liquid sensor based on a ring resonator with a CMOS- compatible hybrid plasmonic waveguide [11556-2]
11556 05	CMOS-compatible low stress silicon nitride films for photonic integration [11556-3]
11556 06	Compact and low loss silicon TM-pass polarizer using a subwavelength-grating based asymmetrical directional coupler [11556-4]
	SURFACE PLASMONS
11556 OC	Interrogation of a plasmonic nanoantenna with a phase-shifted Bragg grating waveguide configuration [11556-11]
	METAMATERIALS
11556 01	Digital electronic neural networks with analog nanophotonic frontends: a numerical study [11556-17]
	POSTER SESSION
11556 OL	POSTER SESSION Performance evaluation experiments on scanning probe microscope [11556-20]
11556 OL 11556 OM	
	Performance evaluation experiments on scanning probe microscope [11556-20]
11556 OM	Performance evaluation experiments on scanning probe microscope [11556-20] Design and parameter optimization of two-dimensional waveguide coupler[11556-22]
11556 OM 11556 ON	Performance evaluation experiments on scanning probe microscope [11556-20] Design and parameter optimization of two-dimensional waveguide coupler[11556-22] Study on silicon photonic devices for photonic neural network [11556-23]

- 11556 0X Introducing negative effective radius variations to control whispering gallery modes propagating on optical fibers [11556-35]
- 11556 10Pitch rotation of hexagonal microparticle using single beam thermo-optical tweezers<br/>[11556-38]