PROCEEDINGS OF SPIE

Metamaterials, Metadevices, and Metasystems 2024

Nader Engheta Mikhail A. Noginov Nikolay I. Zheludev Editors

18–22 August 2024 San Diego, California, United States

Sponsored and Published by SPIE

Volume 13109

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 *Metamaterials, Metadevices, and Metasystems 2024*, edited by Nader Engheta, Mikhail A. Noginov, Nikolay I. Zheludev, Proc. of SPIE 13109, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510678781

ISBN: 9781510678798 (electronic)

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA Telephone +1 360 676 3290 (Pacific Time)

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.



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

vi Conference Committee

	LASING AND EMISSION
13109 02	Bright magnetic dipole emission in Langmuir-Blodgett monolayers and its control with plasmonics [13109-99]
	TIME PHENOMENA II
13109 03	Spontaneous PT-symmetry breaking in spatiotemporal photonic crystals [13109-24]
	COUPLING AND ENERGY TRANSFER
13109 04	Förster resonance energy transfer in absorbing environment (Invited Paper) [13109-27]
13109 05	Coupling of optical, magnetic, and electric effects in permalloy and gold-permalloy bilayer structures [13109-30]
	PHOTONIC QUANTUM ENGINEERING I
13109 06	Highly efficient real-time spatially resolved sensing of ultraviolet light [13109-32]
13109 07	Reduction of dark current in Ge-on-Si avalanche photodiodes using a double mesa structure [13109-33]
13109 08	In situ, non-invasive novel measurement method for the determination of integrated waveguide losses [13109-34]
	PHOTONIC QUANTUM ENGINEERING II
13109 09	Pulse tunable SiGeSn/GeSn multi-quantum-well microdisk lasers [13109-37]

	META-DEVICES I
13109 0A	Metasurface-enabled additive manufacturing via two photon polymerization [13109-44]
13109 OB	Sensitivity enhancement of THz metamaterial by reduction of the Fabry-Pérot oscillations and decoupling its resonance from substrate losses [13109-47]
	META-DEVICES II
13109 0C	Bandpass filter characteristics of multilayer metallo-dielectric structures [13109-50]
13109 0D	Tin-doping effect on improving stability of perovskite quantum dots [13109-51]
	META-SURFACES III
13109 OE	Multilayered multifunctional metasurfaces for the generation and manipulation of highly structured vectorial beams [13109-65]
	SENSORS
13109 OF	All-dielectric optical biosensors based on bound states in the continuum: a new paradigm in healthcare and food quality assessment [13109-69]
13109 OG	Breathalyzer-based prompt screening and diagnosis of respiratory diseases using metamaterial-based terahertz impedance spectroscopy of viruses [13109-71]
13109 OH	Polyatomic refractory metastructure for perfect absorption and efficient thermal management [13109-60]
	NOVEL PHENOMENA I
13109 01	A robust framework for the generation of random metamaterials based on a graph algorithm [13109-90]
	MODELING AND ANALYSIS
13109 OJ	Nonlinear modal excitation of coherent plasmonic structures (Invited Paper) [13109-84]
13109 OK	Comparative analysis of wavefront aberrations between plano-convex lenses and metalenses [13109-86]

POSTER SESSION

13109 OM	Deep learning enhanced optimization of a broadband and wide-angle reflective linear terahertz polarization converter [13109-42]
13109 ON	Slot tuned high Q EIT metasurface [13109-91]
13109 00	Planar resonant microwave cavities for the detection of $Ca(NO_3)_2$, KNO_3 , and $Mg(NO_3)_2$ concentrations [13109-93]
13109 OP	Optimization of broadband, polarization-independent metasurface using gradient-based inverse design [13109-95]
13109 0Q	Design of black matrix in meta-mirror applied micro-OLED cavity using nanoslit of vertical plasmonic resonance [13109-97]
13109 OR	Angle-independent micro-OLED cavity via phase-compensating plasmonic resonant metasurface [13109-98]