

PROCEEDINGS OF SPIE

High Contrast Metastructures XIII

Connie J. Chang-Hasnain
Andrea Alù
Weimin Zhou
Editors

29–31 January 2024
San Francisco, California, United States

Sponsored and Published by
SPIE

Volume 12897

Proceedings of SPIE 0277-786X, V. 12897

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

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 SPIDigitalLibrary.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 *High Contrast Metastructures XIII*, edited by Connie J. Chang-Hasnain, Andrea Alù, Weimin Zhou, Proc. of SPIE 12897, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

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

ISBN: 9781510670549
ISBN: 9781510670556 (electronic)

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA

Telephone +1 360 676 3290 (Pacific Time)

SPIE.org

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.

**SPIE. DIGITAL
LIBRARY**

SPIDigitalLibrary.org

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

v *Conference Committee*

HARNESSING LIGHT WITH METAOPTICS

- 12897 02 **Observation of chiral cavity modes** [12897-3]
- 12897 03 **Experimental demonstration of resonant third-harmonic generation using quasi-BIC resonances in silicon elliptical dimer metasurfaces with nanodisk couplers** [12897-4]

STRUCTURED LIGHT WITH METASURFACES

- 12897 04 **Programmable structured light using metasurface optics and individually addressable VCSEL array** [12897-13]
- 12897 05 **Observation of the orbit-orbit interaction of light in plasmonics** [12897-14]

ADVANCED IMAGING WITH METASURFACES

- 12897 06 **Designing hybrid imaging systems with metalenses and refractive elements** [12897-17]

ACTIVE METASURFACE DEVICES

- 12897 07 **Reconfigurable metasurface with liquid crystal alignment effect for next-generation meta-LCoS devices** [12897-27]

DESIGN, SIMULATION, AND MODELING METASURFACE/METASTRUCTURES

- 12897 08 **Deep learning-based approach for multi-functional fabrication-friendly metasurfaces** [12897-30]
- 12897 09 **Simulation methods for large-area meta-surfaces: comparison local periodic, overlapping domains, and full wave calculations** [12897-31]
- 12897 0A **High efficiency metalens design using wavefront error optimization** [12897-33]

METALENS AND PLAT OPTICS

- 12897 0B **The phase-change-material-based dynamic metalens with ITO heater** [12897-37]
- 12897 0C **Multilayer Huygens' metasurfaces as a platform for large area multiwavelength metalenses**
[12897-38]

MANIPULATE LIGHT SOURCE WITH METASURFACES

- 12897 0D **Advancing nanolasers based on topological cavities: vortex disclination nanolaser (Invited Paper)** [12897-47]

METAPHOTONIC WITH SPECIAL MATERIALS/PERMITTIVITIES

- 12897 0E **Higher diffraction orders and manufacturing defects in large metalenses** [12897-52]
- 12897 0F **Hybrid Fabry-Perot cavity for multispectral analysis: an experimental demonstration** [12897-54]