

PROCEEDINGS OF SPIE

High Contrast Metastructures XII

Connie J. Chang-Hasnain
Jonathan A. Fan
Weimin Zhou
Editors

30 January – 1 February 2023
San Francisco, California, United States

Sponsored and Published by
SPIE

Volume 12432

Proceedings of SPIE 0277-786X, V. 12432

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

High Contrast Metastructures XII, edited by Connie J. Chang-Hasnain,
Jonathan A. Fan, Weimin Zhou, Proc. of SPIE Vol. 12432, 1243201
© 2023 SPIE · 0277-786X · doi: 10.1117/12.2675515

Proc. of SPIE Vol. 12432 1243201-1

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 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 XII*, edited by Connie J. Chang-Hasnain, Jonathan A. Fan, Weimin Zhou, Proc. of SPIE 12432, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

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

ISBN: 9781510659698
ISBN: 9781510659704 (electronic)

Published by
SPIE
P.O. Box 10, Bellingham, Washington 98227-0010 USA
Telephone +1 360 676 3290 (Pacific Time)
SPIE.org
Copyright © 2023 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*

META-OPTICS

- 12432 02 **Monolithic integration metalens in the entire matrix of the silicon photomultipliers for improving the performance of the silicon photomultipliers** [12432-11]
- 12432 03 **Reconfigurable focusing and defocusing meta lens using Sb₂Se₃ phase change material** [12432-12]

INVERSE DESIGN AND MODELING METASURFACE

- 12432 04 **Bloch mode analysis of subwavelength polarizing planar optics** [12432-14]
- 12432 05 **Model-based optical proximity correction for immersion lithography-based flat optics platform** [12432-15]
- 12432 06 **Dispersion engineered hybrid meta-surface design for highly compact optical systems** [12432-16]

META-OPTICS AND APPLICATIONS

- 12432 07 **Meta-optic miniaturized telephoto lens system** [12432-32]
- 12432 08 **Monolithic broadband multispectral color filter array** [12432-33]
- 12432 09 **Metalenses for visible wavelengths: NIL volume manufacturing** [12432-34]

TUNABLE METASURFACE FOR IMAGING/LIDAR

- 12432 0A **Metamaterial spectrometer on a chip for hyperspectral imaging and atmospheric sounding** [12432-37]

- 12432 OB **Phase shift of liquid crystal-induced resonance tuning in dielectric metasurface at telecommunication wavelength [12432-46]**

Conference Committee

Symposium Chairs

Sonia M. García-Blanco, Universiteit Twente (Netherlands)
Bernd Witzigmann, Friedrich-Alexander-Universität Erlangen-Nürnberg
(Germany)

Symposium Co-chairs

Ulrich T. Schwarz, Technische Universität Chemnitz (Germany)
Karin Hinzer, University of Ottawa (Canada)

Program Track Chair

Ali Adibi, Georgia Institute of Technology (United States)

Conference Chairs

Connie J. Chang-Hasnain, Bixel Photonics Corporation Ltd.
(United States)
Jonathan A. Fan, Stanford University (United States)
Weimin Zhou, DEVCOM Army Research Laboratory (United States)

Conference Program Committee

Andrea Alù, The City University of New York Advanced Science
Research Center (United States)
Markus-Christian Amann, Walter Schottky Institut (Germany)
Amir Arbabi, University of Massachusetts, Amherst (United States)
Il-Sug Chung, Ulsan National Institute of Science and Technology
(Korea, Republic of)
Andrei Faraon, California Institute of Technology (United States)
Yuri S. Kivshar, The Australian National University (Australia)
Fumio Koyama, Tokyo Institute of Technology (Japan)
Arseniy I. Kuznetsov, A*STAR Institute of Materials Research and
Engineering (Singapore)
Philippe Lalanne, Laboratoire Photonique, Numérique et
Nanosciences (France)
John R. Lawall, National Institute of Standards and Technology
(United States)
Tien-Chang Lu, National Yang Ming Chiao Tung University (Taiwan)
Rainer F. Mahrt, IBM Research – Zürich (Switzerland)
Arka Majumdar, University of Washington (United States)
Bala Pesala, Council of Scientific & Industrial Research (India)
Pengfei Qiao, Pinnacle Photonics (United States)

Jon A. Schuller, University of California, Santa Barbara (United States)
Shulin Sun, Fudan University (China)
Pierre Viktorovitch, École Centrale de Lyon (France)
Alan E. Willner, The University of Southern California (United States)
Ming C. Wu, University of California, Berkeley (United States)