

PROCEEDINGS OF SPIE

Metamaterials XIV

Vladimír Kuzmiak
Tomasz Stefaniuk
Kęstutis Staliūnas
Editors

26–27 April 2023
Prague, Czech Republic

Sponsored by
SPIE

Cooperating Organisations
ELI Beamlines (Czech Republic)
HiLASE Centre (Czech Republic)
Laserlab Europe
AWE (United Kingdom)
STFC (United Kingdom)

Published by
SPIE

Volume 12568

Proceedings of SPIE 0277-786X, V. 12568

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

Metamaterials XIV, edited by Vladimír Kuzmiak, Tomasz Stefaniuk, Kęstutis Staliūnas, Proc. of SPIE
Vol. 12568, 1256801 · © 2023 SPIE · 0277-786X · doi: 10.1117/12.2689027

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 *Metamaterials XIV*, edited by Vladimír Kuzmiak, Tomasz Stefaniuk, Kęstutis Staliūnas, Proc. of SPIE 12568, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510662568

ISBN: 9781510662575 (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*

HYPERBOLIC AND TOPOLOGICAL METAMATERIALS

12568 04 **Influence of extrinsic properties on magnetism and magnetotransport in Mn doped Bi₂Te₃ topological insulator with self-organized MnBi₂Te₄ layers (Invited Paper) [12568-3]**

NON-HERMITIAN PHOTONICS

12568 07 **Light control by scattering cancellation in ordered and disordered non-Hermitian media, direct, and inverse design (Invited Paper) [12568-6]**

12568 08 **Effect of the symmetry breaking on the scattering properties of the Fano-Anderson model [12568-7]**

TEMPORAL PHOTONIC CRYSTALS, ACTIVE AND NONLINEAR METAMATERIALS

12568 0D **Stabilization of microlasers by non-Hermitian potentials (Invited Paper) [12568-12]**

12568 0E **Non-Hermitian spatiotemporal potentials for turbulence control in parabolic and fractional dispersion [12568-13]**

CHIRAL METAMATERIALS

12568 0H **Light beaming and outcoupling enhancement from quantum wells with Al metasurfaces [12568-17]**

12568 0I **Absorptance control based on integrated devices with phase change materials [12568-18]**

DIELECTRIC METASURFACES

12568 0N **A new physical framework to investigate scattering suppression from coated spheres [12568-23]**

PLASMONIC FUNDAMENTALS I

12568 0Q **Engineering the spectral response of disordered plasmonic nanoparticle suspensions**
[12568-26]

12568 0R **Plasmon-enhanced high operating temperature infrared photodetectors** [12568-27]

PLASMONIC FUNDAMENTALS II

12568 0S **Optimizing the coupling of light to plasmons through engineered dipolar scatterers
(Invited Paper)** [12568-29]

POSTER SESSION

12568 0V **Design and analysis of multiband metamaterial in microwave regime** [12568-33]

12568 0X **Angle-dependent chiro-optical characterization of self-assembled nanohole arrays in silver
over a wide spectrum range** [12568-35]

12568 0Y **Semi-analytical technique for the design of passive daytime radiative cooling coating
(Best Student Paper Award)** [12568-36]

12568 0Z **Quality factor enhancement via lattice coupled toroidal mode in a terahertz metamaterial**
[12568-37]

12568 11 **Dielectric metalens with reduced meta-atom aspect ratio and high focusing efficiency**
[12568-39]

12568 12 **A bowtie antenna plasmonic metamaterial emitter for high-performance radiative cooling**
[12568-40]

12568 16 **Hierarchical plasmon-optical cavities based on porous silicon photonic crystals for light-matter
coupling with quantum emitters** [12568-44]

12568 17 **Design of all-dielectric high NA mid infra-red metalens using inverse design and topology
optimization** [12568-45]

12568 18 **Ultrasensitive biosensor using a Fano resonant asymmetric all-dielectric metasurface**
[12568-46]

12568 19 **Ultra-sensitive gas sensor using Fano resonance in hybrid nano-bar/nano-elliptic dielectric
metasurface** [12568-47]

12568 1A **Perfect invisibility with nested inside-out cloaks** [12568-54]

Conference Committee

Symposium Chairs

Bedřich Rus, ELI Beamlines (Czech Republic)
Saša Bajt, Deutsches Elektronen-Synchrotron (Germany)
Ivo Rendina, Istituto di Scienze Applicate e Sistemi Intelligenti
"Eduardo Caianiello" (Italy)
Mike Dunne, SLAC National Accelerator Laboratory (United States)
Chris B. Edwards, STFC Rutherford Appleton Laboratory
(United Kingdom)

Conference Chairs

Vladimír Kuzmiak, Institute of Photonics and Electronics of the
ASCR, v.v.i. (Czech Republic)
Tomasz Stefaniuk, University of Warsaw (Poland)
Kęstutis Staliūnas, Universitat Politècnica de Catalunya (Spain)

Conference Programme Committee

Tomasz J. Antosiewicz, University of Warsaw (Poland)
Che Ting Chan, Hong Kong University of Science and Technology
(Hong Kong, China)
F. Javier García de Abajo, ICFO - Institut de Ciències Fotòniques
(Spain)
Maria Kafesaki, Foundation for Research and Technology-Hellas
(Greece)
Yuri S. Kivshar, The Australian National University (Australia)
Alexey V. Krasavin, King's College London (United Kingdom)
Andrei V. Lavrinenko, DTU Fotonik (Denmark)
Peter Markos, Comenius University in Bratislava (Slovakia)
Ekmel Özbay, Bilkent University (Turkey)
Concita Sibilía, Università degli Studi di Roma La Sapienza (Italy)
Mario Silveirinha, Universidade Técnica de Lisboa (Portugal)
Costas M. Soukoulis, Iowa State University (United States)
Martin Wegener, Karlsruher Institut für Technologie (Germany)
Piotr Wróbel, University of Warsaw (Poland)
Nikolay I. Zheludev, Optoelectronics Research Center
(United Kingdom)
Alessandro Belardini, Sapienza Università di Roma (Italy)

