

PROCEEDINGS OF SPIE

Holography: Advances and Modern Trends VIII

Antonio Fimia
Miroslav Hrabovský
Editors

24–25 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 12574

Proceedings of SPIE 0277-786X, V. 12574

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 *Holography: Advances and Modern Trends VIII*, edited by Antonio Fimia, Miroslav Hrabovský, Proc. of SPIE 12574, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510662681

ISBN: 9781510662698 (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

vii *Conference Committee*

ADVANCED HOLOGRAPHY: SPECIAL SESSION HONORING JOHN (SEÁN) SHERIDAN

- 12574 03 **Multilayer volume holographic gratings from BayFol HX: light and neutron optical characteristics (Invited Paper)** [12574-1]
- 12574 04 **Enhanced design of pure phase greyscale diffractive optical elements by phase-retrieval-assisted multiplexing of complex functions** [12574-2]
- 12574 05 **Modelling HOE performance with an extended source: experimental investigation using misaligned point sources** [12574-3]
- 12574 06 **Development of holographic optical elements for use in wound monitoring** [12574-4]
- 12574 07 **Spinning optical drills by dynamic high-order Bessel beam mixing** [12574-5]

METAMATERIALS AND DIGITAL HOLOGRAPHY

- 12574 08 **Laser ultrasonics for measurement of the thickness of metal plates using a photorefractive liquid crystal (Invited Paper)** [12574-7]
- 12574 0A **Fresnel incoherent correlation holography with Lucy-Richardson-Rosen algorithm and modified Gerchberg-Saxton algorithm** [12574-41]

HOLOGRAPHIC MATERIALS I

- 12574 0C **Development of high efficiency and wide acceptance angle holographic solar concentrators for breakthrough photovoltaic applications** [12574-11]
- 12574 0D **Fabrication and characterisation of large area, uniform, and controllable surface relief patterns in photopolymer material** [12574-13]
- 12574 0E **Design and fabrication of volume holographic optical couplers for a range of non-normal incidence angles** [12574-14]

HOLOGRAPHIC MATERIALS II

- 12574 OF **Generating diffraction efficiency profiles in Bayfol HX vHOEs (Invited Paper)** [12574-15]
- 12574 OG **Diffraction efficiency in reflection holograms stored in photopolymers doped with metallic nanoparticles** [12574-16]
- 12574 OH **Improvements in VPHGs for astronomy based on photopolymers** [12574-17]
- 12574 OI **High-performance liquid chromatography and UV-visible measurements to optimize the storage of volume holograms in hydrogels** [12574-18]
- 12574 OJ **System for the manufacture of low-frequency gratings with different geometric profiles** [12574-19]

DIGITAL HOLOGRAPHY I

- 12574 OL **Holographic-laser-excited volumetric graphics (Invited Paper)** [12574-21]
- 12574 OM **Holographic solution to a fundamental problem in diffractive optics: resolution beyond diffraction and lithography limits** [12574-22]
- 12574 ON **Deep variational Hilbert quantitative phase imaging** [12574-23]
- 12574 OO **Realizing large-area diffractive lens using multiple subaperture diffractive lenses and computational reconstruction** [12574-24]

DIGITAL HOLOGRAPHY II

- 12574 OR **Quantitative comparison of the light sources in grating-based common-path quantitative phase microscopy** [12574-26]
- 12574 OS **Design and fabrication of multiple LED illuminated computer-generated holograms generating 3D effects for automotive applications** [12574-27]
- 12574 OV **Experimental examination of lensless digital holographic microscopy imaging capabilities based on custom-designed spatial resolution targets** [12574-30]
- 12574 OW **Compressive digital holography and Gibbs ringing** [12574-31]

3D HOLOGRAPHY

- 12574 0X **Performance evaluation of different optical schemes for realization of holographic printers**
[12574-32]
- 12574 0Y **Grating-based common-path quantitative phase microscopy in low photon budget regime**
[12574-33]
- 12574 0Z **CCD and Hartmann-Shack wavefront sensor to analyse holographic lens resolution**
(Best Student Paper Award) [12574-34]
- 12574 10 **Measuring the lipid content in angiosperms using in-line digital holographic microscopy**
[12574-35]
- 12574 11 **Double exposure ESPI for non-contact photoacoustic tomography** [12574-36]

POSTER SESSION

- 12574 12 **Chalcogenide thin films as a material for holographic applications** [12574-37]
- 12574 13 **Developing novel holographic optomechanical sensing platform for detection of volatile organic compounds** [12574-38]
- 12574 14 **Study of the conservation of different holograms sandwiched between glasses** [12574-39]