

PROCEEDINGS OF SPIE

Novel Optical Systems, Methods, and Applications XXVI

Cornelius F. Hahlweg
Joseph R. Mulley
Editors

22–23 August 2023
San Diego, California, United States

Sponsored and Published by
SPIE

Volume 12665

Proceedings of SPIE 0277-786X, V. 12665

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

Novel Optical Systems, Methods, and Applications XXVI, edited by
Cornelius F. Hahlweg, Joseph R. Mulley, Proc. of SPIE Vol. 12665,
1266501 · © 2023 SPIE · 0277-786X · doi: 10.1117/12.3012670

Proc. of SPIE Vol. 12665 1266501-1

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 *Novel Optical Systems, Methods, and Applications XXVI*, edited by Cornelius F. Hahlweg, Joseph R. Mulley, Proc. of SPIE 12665, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

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

ISBN: 9781510665446
ISBN: 9781510665453 (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*

LASER SYSTEMS AND APPLICATIONS

- 12665 02 **Er³⁺ doped tellurite whispering gallery mode microlaser in 1.5 μ m-1.61 μ m wavelength region generated by 0.98 μ m pump laser** [12665-1]
- 12665 03 **Towards next-generation ultrastable lasers with microstructured mirrors (Invited Paper)** [12665-2]
- 12665 04 **Laser frequency stabilization using HCN gas cell** [12665-3]
- 12665 05 **Non-destructive quality evaluation of periodically poled MgO:PPLN and Rb:PPKTP crystals based on parametric light generation** [12665-4]

BIOMEDICAL APPLICATIONS

- 12665 06 **Integrated interferometer design for zero cross-sensitivity to matrix perturbations** [12665-5]
- 12665 07 **A photoacoustic spectroscopy system for noninvasive diagnosis of endometriosis in the abdominal cavity** [12665-6]

METROLOGY APPLICATIONS

- 12665 09 **Building a low-cost strain sensor prototype using fiber Bragg gratings with resonant cavity light emitting diodes** [12665-8]
- 12665 0A **New patterned silicon wafer shape metrology system (Invited Paper)** [12665-9]

MULTI- AND HYPERSPECTRAL SYSTEMS

- 12665 0B **Dual fiber coupled laser-driven light source** [12665-11]
- 12665 0D **Snapshot 12-band multispectral imager** [12665-13]
- 12665 0E **A 380-1100nm spectrum matching light source with high spectral resolution, throughput, speed, and stability** [12665-14]

DESIGN, MODELING, AND METHODS

- 12665 0F **Marker-based registration error estimation in see-through AR applications** [12665-16]
- 12665 0G **Optimization of residual stress and micro-yield strength in an additively manufactured high-strength aluminum alloy** [12665-17]

GEOLOGICAL APPLICATIONS

- 12665 0J **Photochromic gemstone analysis using in situ absorption spectroscopy** [12665-21]
- 12665 0K **Optical fiber-based novel quasi-distributed pressure sensing** [12665-22]

POSTER SESSION

- 12665 0M **Excimer laser based photoluminescence device for diamond identification** [12665-24]
- 12665 0O **Method of polarization-maintaining photonic crystal fiber nonlinear response measurement using phase shift between orthogonal polarization modes** [12665-30]
- 12665 0Q **View rotation spectacles** [12665-32]
- 12665 0R **Ideal thin lens lookalike** [12665-33]
- 12665 0S **Tapered optical fiber sensor of acid and alkaline solution with MWCNT and alizarin red S** [12665-38]
- 12665 0T **3D-representation of skin malformations using spectral line imaging and modified Beer-Lambert law** [12665-39]
- 12665 0U **Resonant cavity design for enhanced magneto-optic measurements** [12665-34]

DIGITAL POSTER SESSION

- 12665 0V **NUV and DUV high-magnification unified lens objectives: optical design** [12665-36]
- 12665 0W **Contrary microscope: opportunities and advantages, optical design** [12665-37]

Conference Committee

Program Track Chair

José Sasián, Wyant College of Optical Sciences (United States)

Conference Chairs

Cornelius F. Hahlweg, bbw Hochschule (Germany)

Joseph R. Mulley, IDEX Health & Science, LLC (United States)

Conference Program Committee

Joseph S. Choi, Northrop Grumman Corporation (United States)

Blake G. Crowther, Synopsys, Inc. (United States)

Stephan Fahr, JENOPTIK Optical Systems GmbH (Germany)

Peter I. Goldstein, Philips Color Kinetics (United States)

G. Groot Gregory, Synopsys, Inc. (United States)

Eric Herman, Synopsys, Inc. (United States)

Quazi Rushnan Islam, University of Rochester (United States)

R. John Koshel, Wyant College of Optical Sciences (United States)

Sara Madaan, The University of Southern California (United States)

Bharathwaj Appan Narasimhan, Magic Leap, Inc. (United States)

S. Craig Olson, L3Harris Technologies, Inc. (United States)

José M. Sasián, Wyant College of Optical Sciences (United States)

Hamilton Shepard III, Waymo, LLC (United States)

Haiyin Sun, ChemImage Corporation (United States)

Akila S. Udage, Rensselaer Polytechnic Institute (United States)

Zhen Wang, Gemological Institute of America (United States)

Udo Zölzer, Helmut-Schmidt Universität (Germany)

