

PROCEEDINGS OF SPIE

# ***Laser Technology for Defense and Security XX***

**Mark Dubinskii**  
**Mark S. Zediker**  
*Editors*

**16–17 April 2025**  
**Orlando, Florida, United States**

*Sponsored and Published by*  
SPIE

**Volume 13452**

Proceedings of SPIE 0277-786X, V. 13452

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](http://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 *Laser Technology for Defense and Security XX*, edited by Mark Dubinskii, Mark S. Zediker, Proc. of SPIE 13452, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510686939

ISBN: 9781510686946 (electronic)

Published by

**SPIE**

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

Telephone +1 360 676 3290 (Pacific Time)

[SPIE.org](http://SPIE.org)

Copyright © 2025 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](http://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](http://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*

---

## SEMICONDUCTOR LASERS

---

- 13452 01 **Advances in manufacturing of high peak energy diode laser stacks** [13452-3]
- 13452 03 **Watt-class high-brightness 1650nm tapered semiconductor optical amplifier for remote sensing** [13452-5]

---

## BEAM CONTROL AND PROPAGATION

---

- 13452 04 **Enabling multiple access free space optical communications through solid state beam directing** [13452-8]

---

## ADVANCED LASER CONCEPTS

---

- 13452 05 **DUV 247.5-nm CW DPSS laser source for Raman spectroscopy** [13452-12]
- 13452 06 **Seamless aperture and length enlargement of single crystalline materials for high-energy laser applications** [13452-15]
- 13452 07 **Brookhaven's accelerator test facility: a testbed for advanced particle accelerators and lasers** [13452-33]

---

## FIBER LASERS

---

- 13452 08 **Enhanced suppression of stimulated Brillouin scattering (SBS) in high energy fiber lasers through novel chaotic phase modulation** [13452-16]
- 13452 09 **An alternative method of changing the pulse duration in a stretcher-compressor pair by changing the gas pressure in the compressor** [13452-21]
- 13452 0A **Hollow-core fibers for gas-filled Raman lasers** [13452-19]