

PROCEEDINGS OF SPIE

# *Components and Packaging for Laser Systems VIII*

Alexei L. Glebov  
Paul O. Leisher  
*Editors*

22–27 January 2022  
San Francisco, California, United States

20–24 February 2022  
ONLINE

*Sponsored and Published by*  
SPIE

**Volume 11982**

Proceedings of SPIE 0277-786X, V. 11982

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 *Components and Packaging for Laser Systems VIII*, edited by Alexei L. Glebov, Paul O. Leisher, Proc. of SPIE 11982, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510648357

ISBN: 9781510648364 (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 © 2022 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*

---

## ADVANCED PACKAGING SOLUTIONS FOR LASER DIODES: JOINT SESSION WITH CONFERENCES 11982 AND 11983

---

- 11982 02 **High-power, high-brightness, high-efficiency, small-volume, low-weight, high-gas-tightness semiconductor laser-diode pump module** [11982-1]
- 11982 03 **High power conductively cooled laser diode array operating under hard pulse condition** [11982-2]
- 11982 04 **High power, high brightness, low weight diode laser pump source** [11982-3]

---

## LASER SOURCES FOR LIDAR: JOINT SESSION WITH 11982 AND 11983

---

- 11982 05 **Compact and lightweight space-qualifiable LIDAR transmitter** [11982-4]
- 11982 06 **>3W diffraction-limited 1550 nm diode laser amplifiers for LIDAR** [11982-5]

---

## MID-IR LASER COMPONENTS

---

- 11982 07 **Path to higher SWaP-C for cooled IR through thermoelectrics with distributed transport properties** [11982-8]

---

## LASER DIODE PACKAGING I

---

- 11982 08 **Operation of broad area high power diode lasers immersed in coolant** [11982-11]

---

## LASER DIODE PACKAGING II

---

- 11982 09 **Effect of stress on the temperature coefficient of solder-free mounted laser diode bars** [11982-20]

---

#### HIGH POWER/ENERGY LASER COMPONENTS I

---

- 11982 0A     **Integrated SmartLaser™ micro-module with connectivity for remote operation** [11982-23]
- 11982 0B     **Record power transmission of intense UV radiation in a single-mode hollow-core fiber with 23.3W, 155μJ, 10ns pulses at 343nm** [11982-25]
- 11982 0C     **Laser damage properties of Al<sub>2</sub>O<sub>3</sub>/MgF<sub>2</sub> antireflection coatings on large, curved substrates at 248 nm** [11982-26]
- 11982 0D     **Optical glass for high power digital projection** [11982-27]

---

#### HIGH POWER/ENERGY LASER COMPONENTS II

---

- 11982 0E     **Thermal management optimization in high-power 3D sensing VCSELs** [11982-28]
- 11982 0F     **Beam size adjustable high uniformity line beam diode laser system** [11982-29]
- 11982 0H     **Compact, line broadened frequency comb-based seed laser source for spectral beam combining** [11982-31]
- 11982 0G     **Function-integrated laser system based on 3D-printed optomechanics** [11982-32]
- 11982 0I     **Cascade laser technologies: challenges for a broad adoption** [11982-35]