## PROCEEDINGS OF SPIE

## High Power Lasers: Technology and Systems, Platforms, Effects VI

Harro Ackermann Willy L. Bohn Editors

6 September 2023 Amsterdam, Netherlands

Sponsored by SPIE

Cooperating Organisations
Cranfield University (United Kingdom)

Published by SPIE

**Volume 12739** 

Proceedings of SPIE 0277-786X, V. 12739

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 SPIEDigitalLibrary.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 *High Power Lasers: Technology and Systems, Platforms, Effects VI*, edited by Harro Ackermann, Willy L. Bohn, Proc. of SPIE 12739, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510667075

ISBN: 9781510667082 (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.



**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

SESSION 1	ARCHITECTURES FOR POWER SCALING
12739 02	Beam combination system for coherent combination of high power fiber arrays (Invited Paper) [12739-1]
12739 03	Recent advances in high-power 2 µm fiber lasers systems (Invited Paper) [12739-2]
SESSION 2	FIBER LASERS AND BEAM COMBINATION
12739 04	Filament-mediated disruption of laser propagation (Invited Paper) [12739-6]
12739 05	HEL atmospheric propagation: extreme stray light events [12739-8]
SESSION 3	LASER EFFECTS AND SAFETY ISSUES
12739 06	
	Laser penetration of metal targets with high powers of up to 120 kW [12739-10]
12739 07	Laser penetration of metal targets with high powers of up to 120 kW [12739-10]  Testing the vulnerability of lightweight drone propellers to high-energy laser irradiations [12739-11]
12739 07 12739 08	Testing the vulnerability of lightweight drone propellers to high-energy laser irradiations
	Testing the vulnerability of lightweight drone propellers to high-energy laser irradiations [12739-11]  The effect of laser irradiation on contrast and image quality of infrared window materials

## **Conference Committee**

Symposium Chair

Ric Schleijpen, TNO (Netherlands)

Conference Chairs

**Harro Ackermann**, Joint Directed Energy Transition Office (United States)

Willy L. Bohn, BohnLaser Consult (Germany)