

PROCEEDINGS OF SPIE

3D Printed Optics and Additive Photonic Manufacturing III

**Alois M. Herkommer
Georg von Freymann
Manuel Flury**
Editors

**3–7 April 2022
Strasbourg, France**

**9–20 May 2022
ONLINE**

Sponsored by
SPIE

Cosponsored by
City of Strasbourg (France)
IdEx University of Strasbourg (France)
CNRS (France)
iCube (France)
Université de Strasbourg (France)

Cooperating Organisations
Photonics 21 (Germany)
EOS—European Optical Society (Germany)
Photonics Public Private Partnership (Belgium)
Photonics France (France)

Published by
SPIE

Volume 12135

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 *3D Printed Optics and Additive Photonic Manufacturing III*, edited by Alois M. Herkommer, Georg von Freymann, Manuel Flury, Proc. of SPIE 12135, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

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

ISBN: 9781510651463
ISBN: 9781510651470 (electronic)

Published by

SPIE

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

Telephone +1 360 676 3290 (Pacific Time)

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. 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*

APPLICATIONS FOR OPTICS I

12135 02 **Fully monolithic and additively manufactured mounting structures for optical elements**
[12135-6]

TECHNOLOGIES

12135 03 **Numerical modeling for large-scale parts fabricated by directed energy deposition**
(Invited Paper) [12135-8]

12135 04 **3D printing with polyvinyl chloride (PVC) using selective laser baking method** [12135-12]

APPLICATIONS FOR OPTICS II

12135 05 **Design, laser direct writing prototyping, and characterization of fan-out diffractive optical**
elements for optical interconnect applications [12135-15]

12135 06 **Investigation of the ability of SLB 3D printing process for fabrication of micro-optical structures**
with PDMS [12135-17]

APPLICATIONS FOR OPTICS III

12135 07 **Generation and propagation of airy beams and one inch diameter focusing optics using 3D**
printed optics (Invited Paper) [12135-18]

12135 08 **Maskless lithography with holographic feedback for the fabrication of optical elements**
[12135-20]

12135 09 **Advanced manufacturing techniques for wafer-level freeform micro optics with high refractive**
index [12135-21]