

PROCEEDINGS OF SPIE

***Laser Applications in Microelectronic
and Optoelectronic Manufacturing
(LAMOM) XXXI***

**Godai Miyaji
Gwenn Pallier
Nirmala Kandadai**
Editors

**19–21 January 2026
San Francisco, California, United States**

Sponsored by
SPIE

Cosponsored by
Aperture Optical Sciences, Inc. (United States)
Okamoto Optics, Inc. (Japan)
Plymouth Grating Laboratory, Inc. (United States)

Published by
SPIE

Volume 13880

Proceedings of SPIE 0277-786X, V. 13880

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.

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 Applications in Microelectronic and Optoelectronic Manufacturing (LAMOM) XXXI*, edited by Godai Miyaji, Gwenn Pallier, Nirmala Kandadai, Proc. of SPIE 13880, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510696747

ISBN: 9781510696754 (electronic)

Published by

SPIE

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

Telephone +1 360 676 3290 (Pacific Time)

SPIE.org

Copyright © 2026 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*

GLASS PROCESSING: JOINT SESSION WITH CONFERENCES 13880 AND 13881

13880 02 **High-speed and crack-free micromachining with GHz-burst femtosecond laser of fused silica and silicon carbide** [13880-46]

TRANSPARENT MATERIAL PROCESSING

13880 03 **Submicrometer-scale 3D grinding of diamond by ultrashort-pulse laser with in-process interferometric topography measurement (LAMOM Best Postdoctoral Oral Presentation Award)** [13880-4]

13880 04 **Machine-learning-guided monolithic fabrication of microfluidic and lab-on-chip devices via femtosecond laser micromachining** [13880-6]

13880 05 **Femtosecond laser-machined microfluidic device for volatile organic components detection in 3D spheroids development** [13880-5]

DIRECT WRITING I

13880 06 **Femtosecond laser-reductive sintering of copper(II)-oxide nanoparticles to produce high-performance micro heating structures for future lab-on-chip systems** [13880-14]

13880 07 **Laser sintering development of printed electronics for in-space applications** [13880-15]

13880 08 **Comparative study of bulk modifications in borosilicate glass induced by femtosecond laser in single pulse, MHz-, and GHz-burst regimes** [13880-16]

DIRECT WRITING II

13880 09 **Nanoporous glass membranes fabricated by femtosecond laser micromachining for in vitro lab-on-chip applications** [13880-18]

13880 0A **Large-area glass welding and dissimilar bonding using femtosecond lasers** [13880-19]

LASER-MATTER INTERACTION I

- 13880 0B **Application and synthesis of ultrafast laser-based nanoparticles and doped 2D material** [13880-23]
- 13880 0C **Intraoral sensor based on laser-induced graphene for monitoring oral function** [13880-25]

CUTTING/DRILLING

- 13880 0D **Realtime measurement of the ablation rate during ultrashort pulsed laser processing (Invited Paper)** [13880-26]
- 13880 0E **A high-throughput, high-fidelity, laser-based method for cross sectioning in advanced microelectronics** [13880-27]

LASER-MATTER INTERACTION II

- 13880 0F **Event-based PIV for flow visualization in laser ablation processes** [13880-47]

POSTER SESSION

- 13880 0G **Laser-processed biphasic liquid metal conductors for soft bioelectronics** [13880-35]
- 13880 0H **A flow vector assessment based on spiral thermal flow sensor and deep learning** [13880-36]
- 13880 0I **Direct measurement of light-to-heat energy conversion during pure copper welding using a blue laser** [13880-38]
- 13880 0J **Formation process of nitrogen-vacancy centers in diamonds by sub-10 femtosecond laser pulses (LAMOM Best Student Poster Award)** [13880-39]
- 13880 0K **In situ observation and analysis of molten pool dynamics in high-power laser keyhole welding** [13880-40]
- 13880 0L **Beam profile control for highly efficient pure copper coating using multibeam metal powder deposition with blue diode lasers** [13880-41]
- 13880 0M **Controlling spatial distribution of plasmonic near-fields on Si excited with a femtosecond laser pulse using a SiO₂ film** [13880-42]