

## Program

# LaP | LOM

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- LaP – 6<sup>th</sup> Conference on Laser Polishing
- LOM – 1<sup>st</sup> Conference on Laser-based Optics Manufacturing

October 15–16, 2024 in Aachen, Germany



## Joint Conference LaP | LOM 2024

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### Joint Conference

This year's 6<sup>th</sup> Conference on Laser Polishing LaP will be held for the first time in combination with the 1<sup>st</sup> Conference on Laser-based Optics Manufacturing LOM. We look forward to welcoming you to this groundbreaking event that brings together leading experts, researchers, and industrialists from the world of laser polishing and laser-based optics manufacturing.

This year we are broadening our horizons by combining the latest developments, challenges, and successes in laser polishing with the innovative technologies and applications in laser-based optics manufacturing. This combination allows for a rich discussion on the synergies between the two fields as well as the future opportunities and trends in laser processing.

The conference provides a unique platform to exchange knowledge, present research results and discuss the latest technologies

and applications. We cordially invite you to take part in this inspiring event, expand your network and help shape the future of laser processing and optics manufacturing.

With 70 to 80 participants from different areas of industry and science, LaP has established itself as one of the most important conferences on laser polishing. The LOM will now expand this event to further applications on laser polishing and laser-based optics manufacturing.

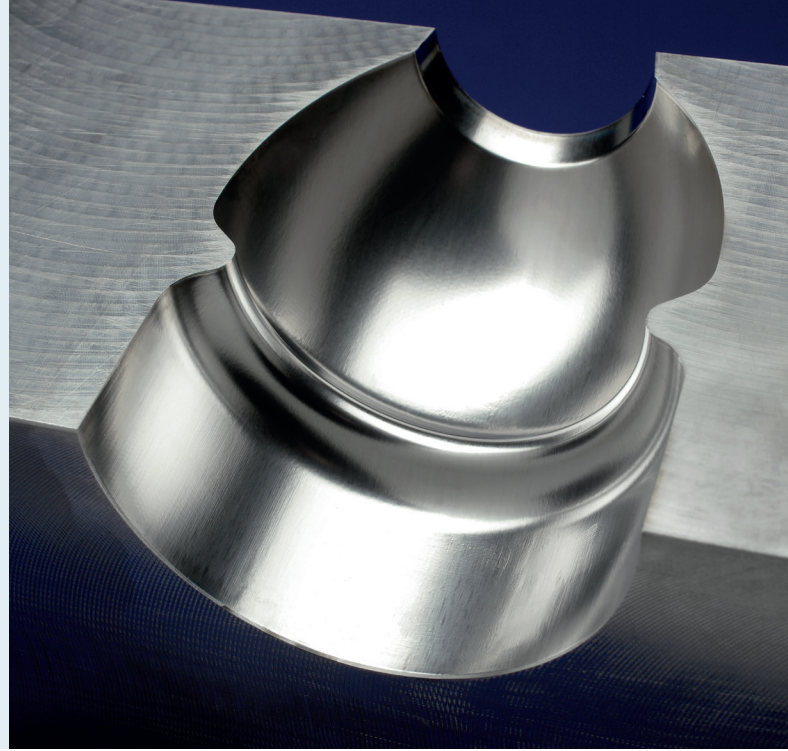
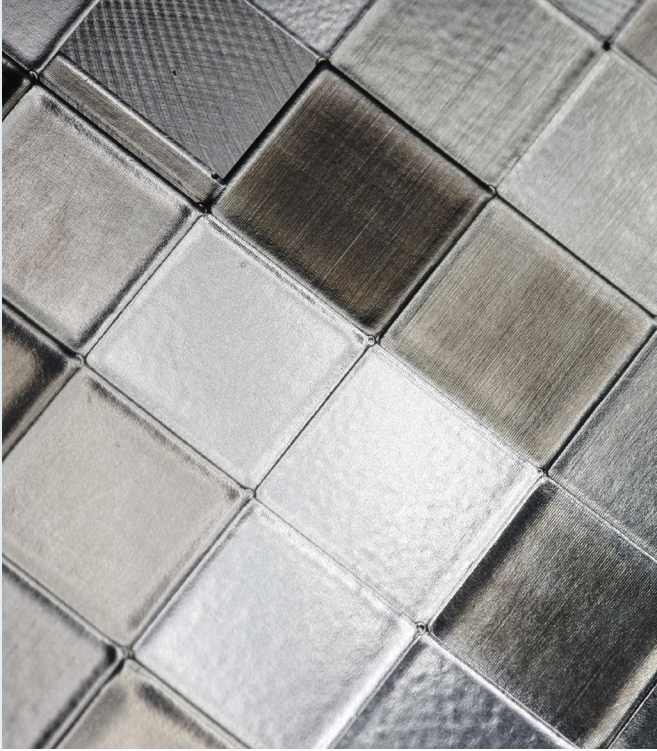
We are looking forward to meeting you at the LaP | LOM joint conference at October 15–16, 2024 in Aachen.

Sincerely,

A handwritten signature in black ink, appearing to read 'Willenborg', with a stylized flourish at the end.

Dr. Edgar Willenborg  
Fraunhofer Institute for Laser Technology ILT





## Invitation to LaP | LOM 2024

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### Main Topics

- Laser polishing of metals  
(e. g. functional surfaces, mechanical properties, additive manufactured parts)
- Laser polishing of glass and laser-based processes for manufacturing optical surfaces
- Laser polishing of other materials such as plastics
- Precision shape correction of optical surfaces
- Further related topics  
(e. g. metrology and process control)

### General Information

The conference will take place at Fraunhofer ILT in Aachen, Germany and will be held in English. The conference fee for both LaP | LOM together will be 490,- € payable on receipt of invoice by attendees as well as speakers.

### Registration online

Please register online at:  
[www.ilt.fraunhofer.de/lap-lom](http://www.ilt.fraunhofer.de/lap-lom)

### Schedule

- Registration deadline for conference  
September 29, 2024
- Conference LaP | LOM 2024  
October 15–16, 2024



## LaP | LOM 2024 – Program Day 1 (Oct. 15, 2024)

**8:30**      **Registration & Coffee Reception**

**9:00**      **Session I – Laser Polishing of Metals**

(Chair: Astrid Saßmannshausen)

■ **Increasing the area rate of laser polishing using a polygon scanner**

Linda Pabst, Robby Ebert, André Streek  
Laserinstitut Hochschule Mittweida, Germany

■ **Laser polishing SGI cast iron: investigating the influence of chemical composition**

Onur Özaydin<sup>1</sup>, Edgar Willenborg<sup>2</sup>  
<sup>1</sup> Foundry Institute of RWTH Aachen University, Germany  
<sup>2</sup> Fraunhofer ILT, Aachen, Germany

■ **Laser polishing enhances fatigue performance of additive manufactured alloy**

Yingchun Guan  
School of Mechanical Engineering & Automation and National Engineering Laboratory  
of Additive Manufacturing for Large Metallic Components, Beihang University, Beijing, China

**10:30**      **Coffee Break**

**11:00**      **Session II – Laser Polishing of Metals and Ceramics**

(Chair: Christian Vedder)

■ **Fundamental studies of laser-polishing procedures for niobium surfaces**

Florian Brockner<sup>1</sup>, Frederic Braun<sup>1</sup>, Laura Kreinest<sup>2</sup>, Dirk Lützenkirchen-Hecht<sup>1</sup>  
<sup>1</sup> FK 4 Physik, Bergische Universität Wuppertal, Germany  
<sup>2</sup> Fraunhofer ILT, Aachen, Germany

■ **Micro polishing by surface melting with USP laser radiation**

Astrid Saßmannshausen, Martin Osbild  
Fraunhofer ILT, Aachen, Germany

■ **Study on the mechanism and technology of ultrafast laser polishing  
of superhard materials under the preheating of infrared laser**

Bowei Luo, Yongquan Zhou, Mingjun Liu, Haibing Xiao, Xiaomei Xu  
School of Intelligent Manufacturing and Equipment, Shenzhen Institute of Information Technology, China

# LaP | LOM 2024 – Program Day 1 (Oct. 15, 2024)

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12:30	<b>Lunch</b>
13:30	<b>Session III – Laser Polishing and Figuring of Glass</b> (Chair: N.N.) <ul style="list-style-type: none"><li>■ <b>Laser polishing of glass – from macro to micro</b> Thomas Schmidt, Stephan Kottwitz, Susanne Kasch Günter-Köhler-Institute for Joining Technology and Materials Testing, Jena, Germany</li><li>■ <b>Enhanced shape accuracy and reduced MSFE in laser polishing of optics</b> Manuel Jung Fraunhofer ILT, Aachen, Germany</li><li>■ <b>Laser beam figuring of optics made from glass</b> Emrah Uluz, Astrid Saßmannshausen Fraunhofer ILT, Aachen, Germany</li><li>■ <b>Theoretical and experimental investigations in thermo-mechanical properties of fused silica with pulsed CO<sub>2</sub> laser processing</b> Yichi Han, Chaoyang Wei Shanghai Institute of Optics and Fine Mechanics, CAS, China</li></ul>
15:30	<b>Lab Tour / Coffee Break</b>
18:00	<b>End of Lectures and Lab Tour</b>
18:15	<b>Discussion with Speakers and Experts</b> with food and drinks
22:00	<b>End of Day 1</b>

# LaP | LOM 2024 – Program Day 2 (Oct. 16, 2024)

8:30	<b>Registration &amp; Coffee Reception</b>
9:00	<b>Session IV – Laser-Based Form Manufacturing and Process Chains</b> (Chair: N.N.) <ul style="list-style-type: none"><li>■ <b>Overview on processes for laser-based optics manufacturing</b> Edgar Willenborg Fraunhofer ILT, Aachen, Germany</li><li>■ <b>Complex 3-dimensional glass shapes generated by bottom-up laser ablation</b> Martin Reininghaus Pulsar Photonics GmbH, Herzogenrath, Germany</li><li>■ <b>Manufacturing optical components by selective laser-induced etching</b> Martin Kratz Fraunhofer ILT, Aachen, Germany</li></ul>
10:30	<b>Coffee Break</b>
11:00	<b>Session V – Laser-Based Form Manufacturing and Process Chains</b> (Chair: Martin Kratz) <ul style="list-style-type: none"><li>■ <b>Laser technology for the production of individualized intraocular lenses</b> Jana Köller, Reinhart Poprawe, Axel von Wallfeld AIXLens GmbH, Alsdorf, Germany</li><li>■ <b>Glass microlens arrays - Laser-based manufacturing options</b> Thomas Schmidt, Daniel Conrad, Susanne Kasch Günter-Köhler-Institute for Joining Technology and Materials Testing, Jena, Germany</li><li>■ <b>High power lasers in ultra precision machines for optics manufacturing</b> Christian Wenzel INNOLITE GmbH, Aachen, Germany</li></ul>
12:30	<b>Lunch</b>
13:30	<b>Session VI – Laser-Based Scratch and Dig Removal and LIDT</b> (Chair: Manuel Jung) <ul style="list-style-type: none"><li>■ <b>Anomalies and crack-less multi-pass laser processing borosilicate glass using a pulsed CO<sub>2</sub> laser</b> Allison Browar, Christopher Mah, Eyal Feigenbaum Lawrence Livermore National Laboratory, CA, USA</li><li>■ <b>The Application of hybrid laser ablation for surface modification on fused silica optics</b> Li Zhou, Youen Jiang, Hui Wei, Xue Pan, Wei Fan, Xuechun Li, Jianqiang Zhu National Laboratory on High Power Laser and Physics, Shanghai Institute of Optics and Fine Mechanics, CAS, China</li><li>■ <b>Laser-based process for fabricating high laser damage threshold optics</b> Chaoyang Wei Shanghai Institute of Optics and Fine Mechanics, CAS, China</li><li>■ <b>Healing scratch &amp; dig with CO<sub>2</sub> laser to improve surface quality and yield</b> Oliver Fähnle<sup>1</sup>, Jens Bliedtner<sup>2</sup> <sup>1</sup> IMP Institut für Mikrotechnik und Photonik, Eastern Switzerland University of Applied Sciences OST, Switzerland <sup>2</sup> Fachbereich SciTec, Ernst-Abbe-Hochschule Jena, Germany</li></ul>
15:30	<b>Closing</b>
15:45	<b>End of Conference</b>



## Fraunhofer Institute for Laser Technology ILT

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The Fraunhofer Institute for Laser Technology ILT is one of the most important development and contract research institutes in laser development and application worldwide. Its activities encompass a wide range of areas such as developing new laser beam sources and components, laser-based metrology, testing technology and industrial laser processes. This includes laser cutting, ablation, drilling, welding and soldering as well as surface treatment, micro processing and additive manufacturing. Furthermore, Fraunhofer ILT develops photonic components and beam sources for quantum technology.

Overall, Fraunhofer ILT is active in the fields of laser plant technology, digitalization, process monitoring and control, simulation and modeling, AI in laser technology and in the entire system technology. We offer feasibility studies, process qualification and laser integration in customized manufacturing lines. The institute focuses on research and development for industrial and societal challenges in the areas of health, safety, communication, production, mobility, energy and environment. Fraunhofer ILT is integrated into the Fraunhofer Gesellschaft.

### Organization

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