

Fraunhofer Institute for Laser Technology ILT

ILT

April 8–9, 2025 | Program

11

II

# 8<sup>th</sup> UKP Workshop Ultrafast Laser Technology

www.ultrafast-laser.com

1

We thank all the exhibitors of the 8<sup>th</sup> UKP Workshop Ultrafast Laser Technology 2025 for their support!



# WELCOME

# 8<sup>th</sup> UKP Workshop Ultrafast Laser Technology

Every two years, Fraunhofer ILT organises the UKP Workshop on Ultrashort Pulse Laser Technology in Aachen. The 8<sup>th</sup> UKP Workshop will focus on processes and systems that can help companies exploit the full power spectrum of ultrafast laser performance capabilities thatrest on wavelength choice, power-scaling, high-speed scanning or suitable beam shaping. Our presentations will provide valuable insights and knowhow on how to select the right laser source or how to modify a laser beam profile in time and space to achieve optimal process conditions. In addition, experts will discuss how to push the limits of today's ultrashort pulse laser process technology.

#### Your benefit

- Benefit from the exchange with international specialists from laser development, process engineering and industry
- Discover more about the latest trends in ultrafast laser technology and get new ideas for promising
- Take the opportunity to discuss specific problems with well-known companies at the accompanying tabletop exhibition

#### New event modules in 2025

- Lab Tour at Fraunhofer ILT
- Marketplace with scientific exchange and snacks

We look forward to welcoming you in Aachen!

# 8<sup>th</sup> UKP WORKSHOP – PROGRAM DAY 1 – TUESDAY, APRIL 8, 2025

- 8:00 Check-In
- 9:00 Welcome Dr. Dennis Haasler, Fraunhofer ILT, Aachen (D)

#### **Beam Sources**

- 9:15 Industrial 1 kW 10 mJ ultrafast laser for novel applications Dr. Dominik Bauer, TRUMPF Laser SE, Schramberg (D)
  9:45 Ultrafast lasers and applications
  - **from 1.3 μm to deep UV** Dr. Ralf Knappe, Coherent Kaiserslautern GmbH, Kaiserslautern (D)
- 10:15 Versatile Laser Source: from femtoseconds to nanoseconds Deividas Andriukaitis, EKSPLA, Vilnius (LT)

#### 10:45 Coffee Break and Exhibition

#### **Beam Shaping**

- 11:15 Industrial laser beam shaping by a single element Anna Stadlbauer, HOLO/OR Ltd., Ness Ziona (IL) / SCANLAB GmbH, Puchheim (D)
- 11:45 Innovate and excel: new high-power LCOS spatial light modulator pushing boundaries in laser material processing Thomas Niedereichholz, Hamamatsu Photonics Deutschland GmbH, Herrsching (D)
- 12:15 High-speed MEMS SLMs: phase modulation for beam forming and high-resolution patterned line-beams Dr. Stephen Hamann, Silicon Light Machines,

San Jose (USA)

12:45 Lunch Break and Exhibition

# **Applications 1**

- 13:45 Concepts for scaling and automating USP laser material processing for the production of medical components Martin Reininghaus, Pulsar Photonics GmbH, Aachen (D) Smart processing for industrial laser machining 14:15 Florian Lendner, GFH GmbH, Deggendorf (D) 14:45 3D Laser beam shaping with diffractive neural networks: theory and practice Paul Buske, RWTH Aachen University – TOS, Aachen (D) 15:05 Innovative applications involving optical stamping with shaped beams Martin Osbild, Fraunhofer ILT, Aachen (D) Tailored intensity distributions to increase precision 15:25 and productivity of selective laser-induced etching Martin Kratz, Fraunhofer ILT, Aachen (D) 15:45 Coffee Break and Exhibition
- 16:05 Shuttle Transfer to Fraunhofer ILT

## Marketplace – Ultrafast Lasers at Fraunhofer ILT

- 16:25 Lab Tour at Fraunhofer ILT
- 19:00 Shuttle service from Fraunhofer ILT to "DAS LIEBIG"
- 19:30 Future trends of ultrafast laser technology between research and industry Prof. Arnold Gillner, RWTH Aachen University – LLT, Aachen (D)
- 19:45 Scientific exchange with Snacks "DAS LIEBIG", Liebigstraße 19, 52070 Aachen
- 22:00 End of day 1 Shuttle service from "DAS LIEBIG" to Aachen Center

# 8<sup>th</sup> UKP WORKSHOP – PROGRAM DAY 2 – WEDNESDAY, APRIL 9, 2025

- 8:00 Check-In
- 9:00 Welcome Dr. Dennis Haasler, Fraunhofer ILT, Aachen (D)

#### **Fundamentals**

- 9:05 Generation and characterization of anisotropic nanostructures using ultrashort pulsed lasers Dr. Jörn Bonse, Bundesanstalt für Materialforschung und -prüfung (BAM), Berlin (D)
- 9:35 Fundamentals & applications of sub 100 fs pulse materials processing

Prof. Oleg Pronin, n2-Photonics GmbH, Hamburg (D)

- 10:05 Reliable FEMTOSECOND UV and DUV solid-state lasers for industry applications Lukas Rimkus, Light Conversion Ltd., Vilnius (LT)
- 10:35 Coffee Break and Exhibition

## **Process Scaling**

- **11:00 Process scaling with cascaded scan systems** Dr. Holger Schlüter, SCANLAB GmbH, Puchheim
- 11:30 Advancements in high precision beam steering mechanics and control methods Bryan Germann, Aerotech, Inc., Pittsburgh (USA)
- 12:00 Ultrafast and precise micro texturing of two and three-dimensional surfaces Dr. Florian Rößler, MOEWE Optical Solutions GmbH, Mittweida (D)
- 12:30 Lunch Break and Exhibition

# **Applications 2**

13:30	Ultrashort pulse welding of glass: from lab to application
	Dr. Jens Ulrich Thomas, SCHOTT AG, Mainz (D)
14:00	USP laser processing in liquids for semiconductor
	manufacturing
	Alexander Kanitz, Lidrotec GmbH, Bochum (D)
14:30	Enhancing the thermal emissivity of metal
	surfaces by USP laser processing for efficient
	heat transfer in space
	Prof. Eike Hübner, Fraunhofer HHI, Berlin (D)
15:00	USP laser-based manufacturing of optical
	components
	Astrid Saßmannshausen, Fraunhofer ILT, Aachen (D)
15:30	Short- and ultrashort pulse lasers for Li-ion battery
	and power electronics materials processing
	Markus Rütering, MKS Instruments, Inc., Darmstadt (D)
15:30	Outlook
	Dr. Dennis Haasler, Fraunhofer ILT, Aachen (D)
16:15	End of Workshop

Program subject to changes. Lectures are presented in English and German with simultaneous interpreting.

# **GENERAL INFORMATION**

# LOCATIONS AND HOTELS

#### Venue

 Workshop and Marketplace: "DAS LIEBIG", Liebigstraße 19, 52070 Aachen, Germany, <u>www.dasliebig.de</u>

#### **Conference Language**

All lectures are presented in English.

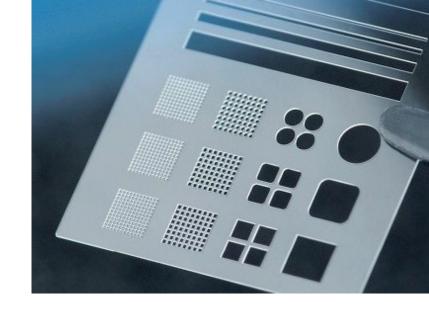
#### **Shuttle Service**

For the Lab Tour at Fraunhofer ILT on April 8, 2025, a free shuttle service will be available between the conference center "Das LIEBIG" and Melaten Campus. This service will transport participants to the venue and return them at the end of the Lab Tour. We encourage you to use this service.

#### Hotels

For the participants of the UKP Workshop 2025, we have compiled a list of hotels in different categories in Aachen for your convenience. Please note that we do not offer any special conditions or discounts for these hotels. Accommodation bookings must be made independently and directly via the respective hotels. Please be aware that spam e-mails or offers of accommodation may be received from third parties or agencies. We do not work with agencies.

Further information and all questions about booking will beanswered directly by the respective hotels.



# CONDITIONS OF PARTICIPATION

### **Registration Fee**

The registration fee for the 8<sup>th</sup> UKP Workshop 2025 includes workshop proceedings, lunch, light refreshments, and coffee breaks on both conference days. It also covers the complimentary shuttle service between the hotels and the meeting site "DAS LIEBIG" in Aachen.

- €845 8<sup>th</sup> UKP Workshop (April 8–9, 2025)
- €80 (plus 19 % VAT) Marketplace Scientific exchange with Snacks (April 8, 2025)

\*Please note, that the workshop participation cannot be booked without the Marketplace.

# **GENERAL INFORMATION**

# CONDITIONS OF PARTICIPATION

# FRAUNHOFER ILT

#### SHORT PROFILE

### Registration

To register please use the form provided online at <u>www.ultrafast-laser.com</u>. Once you have signed up, you will receive a confirmation of participation via e-mail as well as your invoice, which can be settled by bank transfer.

#### **Registration Deadline: March 11, 2025.**

At Check-In you will receive your name badge and the workshop proceedings. Please wear your badge during the whole conference and the evening event.

### Cancellations

Cancellations of participation must be submitted in writing to <u>ukp@ilt.fraunhofer.de</u>. Those who cancel by March 11, 2025 will be reimbursed the attendance fee minus an administration charge of  $\in$  100. Cancellations after this date will incur the full attendance fee. Should this happen, you will be sent a summary of the conference proceedings. We also welcome a substitute participant. In this case please provide us the name of the substitute participant via e-mail.

For further information please visit: www.ultrafast-laser.com

With more than 550 employees, more than 19,500 m<sup>2</sup> net floor space and more than 40 spin-offs, the Fraunhofer Institute for Laser Technology ILT is one of the world's most important contract research and development institutes in the fields of laser development and laser applications for 40 years. Our core competencies include the development of new laser beam sources and components, laser measurement and testing technology, and laser manufacturing technology. This includes cutting, ablation, drilling, welding and soldering as well as surface finishing, micro manufacturing and additive manufacturing, among others.

The areas of application for laser beam sources and processes include production and metrology, energy and mobility, medical and environmental technology, and quantum technology. Together with excellent partners from German and international research and industry, we develop, for example, satellitebased measurement systems for climate research or frequency converters for a fiber-based quantum internet. Cross-sectionally, Fraunhofer ILT addresses issues of digitalization in photonics and production technology, process monitoring and control, simulation and modeling, AI in laser technology, and the entire field of system technology.

# Organization

Fraunhofer Institute for Laser Technology ILT Steinbachstraße 15 52074 Aachen, Germany www.ilt.fraunhofer.de

# Contact

Dr. Dennis Haasler Phone +49 241 8906-8321 ukp@ilt.fraunhofer.de

Oscar Otero M.Sc. Phone +49 241 8906-151 ukp@ilt.fraunhofer.de