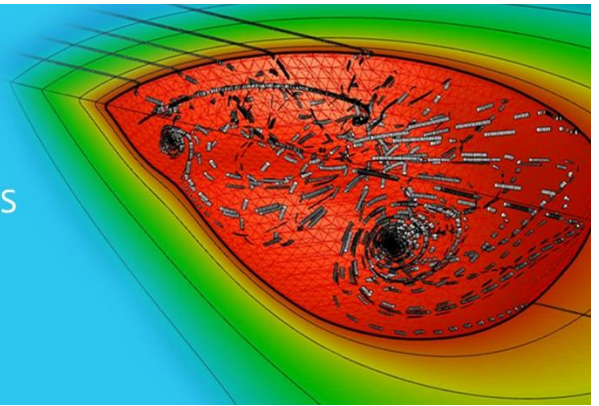


Simulation – Laser Processes and Components

March 12–13, 2025, Dresden



Final Program

Day 1, Wednesday, March 12, 2025

- 12:00–13:05 Opening and Lunch
- 13:05–13:50 Simulation Methods and Tools in the Context of Laser Material Processing and Component Design – an Overview
Markus Wagner | Fraunhofer IWS
- 13:50–14:10 On the Simulation of Direct Laser Interference Patterning Surface Structuring Process in Metals: Temporal Evolution of Structure Formation and Marangoni Convection
Andrés Lasagni | TU Dresden
- 14:10–14:30 Thermal Analysis in Laser Material Processing – Challenges, Approaches and Prospects
Achim Mahrle | Fraunhofer IWS
- 14:30–15:00 Coffee Break
- 15:00–15:20 Optimization of Temperature Fields in Laser Hardening of Complex Geometries
Marko Seifert | Fraunhofer IWS
- 15:20–15:40 Distortion and Residual Stresses in Large Scale Additive Manufacturing
Mirko Riede | Fraunhofer IWS
- 15:40–16:05 Fundamentals of Ablation Induced by Ultrafast Laser Radiation
Markus Olbrich | Hochschule Mittweida
- 16:05–17:30 Time for Hotel Check-in
- 17:30–22:00 Dinner & Lab Tour at Fraunhofer IWS

Day 2, Thursday, March 13, 2025

- 08:30–09:20 Welcome with Coffee
- 09:20–09:40 Simulation of Cutting-edge Laser-based Manufacturing Processes
Stefan Lutz | Schaeffler Technologies AG & Co. KG
- 09:40–10:00 Application and Benefits of Gas Flow Simulations in Laser Material Processing
Madlen Borkmann | Fraunhofer IWS
- 10:00–10:20 Advanced Meshfree Simulation Using SPH for Laser Welding and Laser Cutting
Peter Eberhard / Universität Stuttgart
- 10:20–11:00 Coffee Break
- 11:00–11:20 Simulation of Laser Welding for Larger Components
Maialen Areitioaurtena | IKERLAN
- 11:20–11:40 Simulation and Experimental Investigation for the Design and Evaluation of Laser-welded Components
Axel Jahn | Fraunhofer IWS
- 11:40–12:00 Beyond the Ideal Beam: Optical Simulation as a Key to Enhanced Laser Process Modeling
Benedikt Brandau | JENOPTIK Automatisierungstechnik GmbH
- 12:00–12:20 Simulations of Laser Material Processing on the Example of Hardening and Laser Metal Deposition Using Comsol Multiphysics
Piotr Koruba | Wroclaw University of Science and Technology
- 12:20–13:30 Lunch and Farewell