

SLT Program: Tuesday, 21 June 2022**ROOM C1.2.2: Plenary Session**

09:00	SLT 2022 OPENING AND INFORMATION Heidi-Maria Götz, IFSW, University of Stuttgart, Germany	09:30	TOWARDS AUTOMATED SELF-LEARNING PROCESS OPTIMIZATION Andreas Michalowski, Bosch Research, Renningen, Germany
09:10	WELCOME TO THE SLT 2022 Thomas Graf, IFSW, University of Stuttgart, Germany	10:00	INDUSTRIAL LASER PROCESSING: WHAT'S NEXT? Christian Schmitz, TRUMPF SE + Co. KG, Ditzingen, Germany

10:30 COFFEE BREAK**ROOM C1.2.1, SLT Topic 1:****FUNDAMENTALS AND APPLICATIONS
OF CW LASER PROCESSING****1.1 PROCESS IMPROVEMENT WITH SHAPED
LASER BEAMS, Chair R. Weber**

11:15	Latest Technology Leaps due to Beam Shaping in Laser Materials Processing T. Hesse, TRUMPF Laser- und Systemtechnik GmbH, Ditzingen, Germany
11:40	Laser Processing with Arbitrary Beam Patterns J. Wagner, IFSW, University of Stuttgart, Germany
12:05	Fast Beam Oscillations Improve Laser Cutting of Thick Materials A. Wetzig, Fraunhofer IWS, Dresden, Germany

ROOM C1.2.2, SLT Topic 2:**ULTRAFAST LASER SOURCES AND OPTICS****2.1 HIGH POWER AND HIGH ENERGY ULTRAFAST LASERS
Chair M. Abdou Ahmed**

11:15	Industrial High Power Lasers Covering ns to fs Regime A. Killi, TRUMPF Laser GmbH, Schramberg, Germany
11:40	Generation of Visible and UV Ultra-Short Laser Pulses at High Average Power, C. Röcker, IFSW, University of Stuttgart, Germany
12:05	High Beam Quality Thin-Disk PERLA Platform for Multibeam Micromachining M. Chyla, HiLASE Centre, Dolní Břežany, Czech Republic

12:30 LUNCH AND LASYS VISIT**1.2 PROCESS CONTROL FOR ADDITIVE MANUFACTURING
AND WELDING, Chair C. Hagenlocher**

14:15	OCT in Additive Manufacturing – New Approaches in System and Sensor Technology for DED with Powder and Wire M. Kogel-Hollacher, Precitec GmbH & Co. KG, Gaggenau, Germany
14:40	Advanced Process Monitoring Approaches for Additive Manufacturing of Metals T. Seefeld, BIAS GmbH, Bremen, Germany
15:05	Process Monitoring of Laser Welding Processes with a Multi-Sensoric Approach C. Franz, 4D Photonics GmbH, Isernhagen, Germany

**2.2 NOVEL LASER AND BEAM DELIVERY CONCEPTS
Chair M. Abdou Ahmed**

14:15	Innovative Lasers and Beam Transportation with Microstructured Optical Fibers E. Audouard, Amplitude, Pessac, France
14:40	Design, Production, and Characterization of Specialty Optical Fibers at the IFSW C. Röhrer, IFSW, University of Stuttgart, Germany
15:05	Thulium-Based, Ultrafast Fiber Lasers: From a Laboratory Curiosity to a Top-Performer M. Kumkar, TRUMPF Laser GmbH, Schramberg, Germany

15:30 COFFEE BREAK**1.3 PROCESS FUNDAMENTALS OF ADDITIVE
MANUFACTURING AND WELDING, Chair T. Graf**

16:10	Experimental Advances in Dynamic Laser Coupling Measurements on Metals – From Solids to Powders B. J. Simonds, National Institute of Standards and Technology, Boulder, USA
16:35	Numerical Simulation of Laser Powder Bed Fusion A. Otto, TU Vienna, Research Unit for Photonic Technologies, Austria
17:00	Looking Back – Process Fundamentals for Laser Beam Welding over the Years P. Berger, IFSW, University of Stuttgart, Germany

**2.3 HOLISTIC APPROACH TO ULTRAFAST LASER
PROCESSING SYSTEMS, Chair V. Onuseit**

16:10	kW-Class Picoseconds Thin-Disk Laser for High-Throughput Manufacturing A. Loescher, IFSW, University of Stuttgart, Germany
16:35	Automated Free-Space Beam Delivery System for Ultrafast Laser Beams in the kW Regime A. Peter, IFSW, University of Stuttgart, Germany
17:00	kW-Class Ultrafast Laser Applications: From Drilling and Cutting to Surface Structuring and Micromilling D. Holder, IFSW, University of Stuttgart, Germany

17:30 INDIVIDUAL TRANSFER TO THE IFSW

18:30	SLT 2022 EVENING WELCOME Thomas Graf, Director of the IFSW
18:45	PRESENTATION OF LASER APPLICATION BASICS LIVE Staff of the IFSW
19:30	NETWORKING AND DINNER IN THE INNER COURTYARD Swabian Evening at the IFSW

SLT Program: Wednesday, 22 June 2022**ROOM C1.2.2: Plenary Session**

09:00	SLT 2022 OPENING AND INFORMATION Heidi-Maria Götz, IFSW, University of Stuttgart, Germany	09:30	THE (R)EVOLUTION OF LITHOGRAPHY OPTICS: EUV ENABLES THE CONTINUATION OF MOORE'S LAW Thomas Stammer, Carl Zeiss SMT GmbH, Oberkochen, Germany
09:05	ADDITIVE MANUFACTURING UNDER SPACE CONDITIONS USING THE EINSTEIN-ELEVATOR Ludger Overmeyer, Leibniz University Hannover, Germany	10:00	ON THE WAY TO THE UNIVERSAL LASER MACHINE Thomas Graf, IFSW, University of Stuttgart, Germany

10:30 COFFEE BREAK**ROOM C1.2.1, SLT Topic 3:****FUNDAMENTALS AND APPLICATIONS OF ULTRAFAST LASER PROCESSING****3.1 SPATIAL AND TEMPORAL OPTIMIZATION OF ULTRAFAST LASER PROCESSES, Chair D. Holder**

11:15	System Technology for Processing with High-Power Ultrafast Lasers, B. Neuenschwander, Bern University of Applied Sciences, Burgdorf, Switzerland
11:40	Optimized Airy-Beams for Round Glass Edge Cutting J. U. Thomas, SCHOTT AG, Mainz, Germany
12:05	Latest Progress in Precise and Efficient Materials Processing with Ultrashort Laserpulses A. Gillner, Fraunhofer ILT, Aachen, Germany

ROOM C1.2.2, SLT Topic 4:**HIGH AVERAGE POWER CW LASER SOURCES AND OPTICS****4.1 DYNAMIC PATH PLANNING FOR LASER MACHINING
Chair S. Boley**

11:15	Iterative Path Planning for Laser Metal Deposition with Online Control M. Wolf, ISW, University of Stuttgart, Germany
11:40	Toolpath Generation in Laser Metal Deposition for Complex 3D Geometries, R. Beccard, LUNOVU GmbH, Herzogenrath, Germany
12:05	Closed-Loop Control of Ultrafast Laser Ablation M. Buser, IFSW, University of Stuttgart, Germany

12:30 LUNCH AND LASYS VISIT**3.2 SPECIAL SYSTEMS FOR HIGH-PRECISION LASER DRILLING, Chair V. Onuseit**

14:15	High-Speed Rotary Optics for Ultra-Short Pulse Lasers with High Average Powers and Short Laser Pulses R. Holtz, University of Applied Sciences and Arts Northwestern Switzerland, Windisch, Switzerland
14:40	5-Axis Scan Head for High Precision Drilling H. Schlüter, SCANLAB GmbH, Puchheim, Germany
15:05	Optic Concept for High Power Helical Drilling D. Brinkmeier, IFSW, University of Stuttgart, Germany

**4.2 LASER BEAM TAILORING
Chair M. Abdou Ahmed**

14:15	Nonlinear Optics in Multipass Cells M. Hanna, Laboratoire Charles Fabry, Université Paris-Saclay, Palaiseau, France
14:40	MPLC Systems for High-Power CW and fs Laser Beams G. Pallier, Cailabs, Rennes, France
15:05	Latest Results on Grating Waveguide Structures for Pulsed Laser Systems M. Rumpel, MarTec Photonics, Stuttgart, Germany

15:30 COFFEE BREAK**3.3 FOCUS ON X-RAYS FROM ULTRAFAST LASER PROCESSING, Chair C. Hagenlocher**

16:00	Introduction to the USP-X-Ray Session R. Weber, IFSW, University of Stuttgart, Germany
16:10	The Current Legal Situation for Operating Ultrashort-Pulsed Laser Material Processing Stations, M. Rothmund, Regierungspräsidium Stuttgart, Referat 54.6, Heilbronn, Germany
16:25	X-Ray Protection in an Industrial Production Environment C. Freitag, LightPulse LASER PRECISION, Stuttgart, Germany
16:40	X-Ray Emissions during Laser Turning with Ultra-Short Laser Pulses, R. Giedl-Wagner, GFH GmbH, Deggendorf, Germany
16:55	X-Ray Emission from Industrial Applications with Ultra-Short Laser Pulses G. Kunz, Robert Bosch GmbH, Renningen, Germany

**4.3 INTELLIGENT LASER AND PROCESSING SYSTEMS
Chair V. Onuseit**

16:00	Lasers that Learn B. Mills, Optoelectronics Research Centre, University of Southampton, United Kingdom
16:25	Optimization of the Laser Beam Welding Process using Combination of Physical Based and Data Driven AI Models A. Ilin, Robert Bosch GmbH, Renningen, Germany
16:50	Application of Machine Learning for Quality Assessment of Laser Powder Bed Fusion Process A. Molotnikov, RMIT University, Melbourne, Australia

17:15 SLT 2022 CLOSING NOTE

17:15	R. Weber, IFSW, University of Stuttgart, Germany	V. Onuseit, IFSW, University of Stuttgart, Germany
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