




Photonics BW
Kompetenznetz Optische Technologien

 **Laser Institute
of America**

 Projektträger
Forschungszentrum
Karlsruhe (PTKA)

 **Technologiezentrum**

WLT Wissenschaftliche
Gesellschaft
Lasertechnik e.V.


Wirtschaftsförderung
Region Stuttgart

...FGSW...
...IFSWS...



*Trends of Laser-Technology in
Industrial Material Processing*

... **SLT** ...

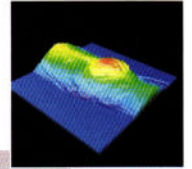
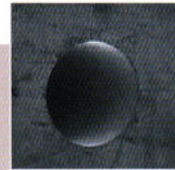
STUTTGART LASER TECHNOLOGIES
FORUM
4 - 6 March 2008

Stuttgart Laser Technology Forum '08

In March 2008 Stuttgart will once again be in the spotlight of laser experts and laser users. From March 4th to 6th the fifth "Stuttgarter Lasertage" (Stuttgart Laser Technology Forum SLT) will present highlights and innovations in laser technology as well as their applications in the industrial practice. For the first time the conference will be held at the New Trade Fair Centre Stuttgart as part of the new international trade fair for system solutions in laser material processing, LASYS.

Held every two years and with presentations from well-known representatives from industry and science the SLT have been established as a major forum of the laser branch. In 2008 the SLT will address an international audience for the first time (translation of the presentations in English/German).

The Stuttgart Laser Technology Forum 2008 will mainly focus on process control in manufacturing with lasers, micro materials processing, and best practice examples in applications of brilliant laser sources (in particular disc laser and fibre laser). New trends in laser developments as well as in beam shaping and beam delivery will point out potential developments for future laser technologies.





On 3 March 2008 the WLT Laser Summerschool 2008 will be held in the context of the SLT 2008. This meeting, organized by the German Scientific Society of Laser Technology WLT e.V. (www.wlt.de) addresses young engineers and scientists from industry and research. It serves as a forum for the exchange of newest F&E results in the field of laser technology.

On 6 March 2008 the closed annual meeting of the BMBF-Association FEMTONIK (www.fgsw.de/femtonik) as well as a meeting of the WG2 photonics21-forum will take place.

We look forward to welcoming you in Stuttgart!

Prof. Dr. Thomas Graf, Director IFSW

Dipl.-Betriebswirtin (FH) Susanne Kern, Managing Director FGSW

Stuttgart is the centre of a region which has a significant reputation in laser material processing. This is reflected by the presence of leading laser manufacturers and users in mechanical engineering.

Recognized scientific institutions as well as R&D partners contribute to a fruitful interrelation between teaching, research and industrial development.

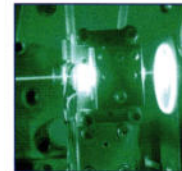
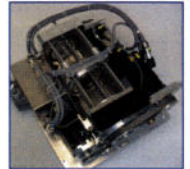
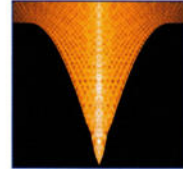
Stuttgart Laser is characterised by an application-oriented co-operation between scientific establishments and important companies, which contribute to the stimulation of innovations. The competence network "Photonics BW e.V." coordinates the common efforts of science and industry to support a sustainable progress of laser technology.

The co-operation of

- the Institut für Strahlwerkzeuge (IFSW) of the University Stuttgart, and

- the Forschungsgesellschaft für Strahlwerkzeuge mbH (FGSW)

combines all the potential in the field of laser research and laser applications with a holistic approach covering every aspect from laser sources to their applications and ranges from fundamental investigations to industrial technology transfer.

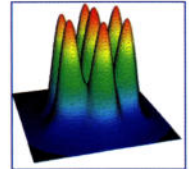
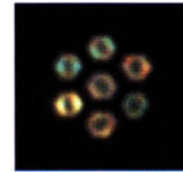
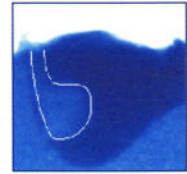


The institutes offer extensive services within the fields of research, application, and consultation. They have the latest state of the art laboratory equipment as well as an appropriate infrastructure for application orientated research and development.

The work on process development and the investigations on technical laser applications in production can rely on advanced equipment that is suitable for industrial use. These are a variety of laser beam sources and facilities for high power applications as well as different stations for micro and macro material processing.

The „Centre for Diagnostics of Laser Based Production Processes“, which has been installed at the FGSW in 2005, supports the industry in the further development of laser processes and thus solving urgent production problems.

With the start-up of the research and production facility for optical fibers the IFSW will set new accents in the field of beam delivery, beam shaping and and fiber-based laser sources.



Mon 3 March 2008

09:00 WLT Summer School _____ C4.1 / C4.2

Tue 4 March 2008

from 08:30 Registration

9:00 - 17:00

Industrial exhibition in Hall 4

You can find the complete program at

www.slt.uni-stuttgart.de

09:15 Welcome

09:30 Laser Sources _____ C1.1.2

11:30 coffee break

11:50 Laser Safety _____ C1.1.2

12:50 lunchtime

14:10 Cutting _____ C1.1.2

15:50 coffee break

17:15 Get-Together / Exhibitor evening LASYS & SLT

Wed 5 March 2008

C4	Welding	09:20	Micro-Machining	C5
		10:40	coffee break	
C4	Welding	11:00	Micro-Machining	C5
		13:00	lunchtime	
C4	Brazing	14:20	Micro-Machining	C5
		15:40	coffee break	
C4	Cladding	16:00	Welding of Plastics	C5
		18:30	Evening Reception	

Thu 6 March 2008

09:00 Annual Meeting FEMTONIK (closed)
Meeting WG2 Photonics21 (closed)

C1.1.2 _____ **9:15 Welcome**

Prof. Dr. Thomas Graf, IFSW

from 08:30 Registration

Laser Sources

Chair: Prof. Dr. Thomas Graf

9:30 Fields of Application of different laser concepts

Thorsten Frauenpreiß, Dr. Wolfram Rath, ROFIN-SINAR Laser GmbH

10:00 Fiberlasers: Benchmarks and Trends

V. Gapontsev, E. Shcherbakov, J. Thieme, B. Kessler, IPG Laser GmbH

9:00 – 17:00

10:30 Beam Sources and Their Application Areas at TRUMPF

Jens Bleher, Managing Director TRUMPF Laser- und Systemtechnik GmbH, P O 1450, 71252 Ditzingen, Germany

Industrial exhibition in

11:00 Beam Shaping for High-Power Lasers

Th. Graf, A. Voß, M. Abdou Ahmed, M. M. Vogel, A. Austerschulte, D. Kauffmann, A. Popp, and C. Neugebauer Institut für Strahlwerkzeuge (IFSW), Universität Stuttgart, Pfaffenwaldring 43, D-70569 Stuttgart, Germany

Hall 4

11:30 coffee break

Laser Safety

Chair: Dr. Andreas Voss

11:50 Instructions and Regulations for the Production and the Application of Lasers

Dipl.- Physiker Martin Brose Berufsgenossenschaft Elektro Textil Feinmechanik Köln, Gustav-Heinemann-Ufer 130, 50968 Köln

12:10 Laser machines and Class 1 laser classifications

Georg Vees, Karl Schulmeister Austrian Research Centers GmbH – ARC

12:30 Industrial Laser Safety – Impediment or Chance

Zaeh, M. F., Oefe, F., Trautmann, A. Institute for Machine Tools and Industrial Management, Technische Universität

12:50 lunchtime

Cutting

Chair: Dipl.-Ing. Peter Berger

14:10 Cutting with high brightness lasers

Eckhard Beyer^{1,2}, Thomas Himmer¹, Matthias Lütke², Florian Bartels¹

¹ Fraunhofer IWS, Winterbergstr. 28, 01277 Dresden, Germany

² Dresden University of Technology, 01062 Dresden, Germany

14:30 3D material processing with robots and fibre-couple lasers

Dipl.-Ing. Norbert Höppe, Vertrieb Lasertechnik, Reis Robotics

14:50 Analysis of Disc and Fibre Laser Cutting of Metals

T. Zhang, M. Gross, M. Sparkes, W. O'Neill. Institute for Manufacturing, Department of Engineering, University of Cambridge, UK

15:10 Cutting with Low and High Power Fiber Lasers

M. Grupp, (Application Manager IPG Laser GmbH)

15:30 Laser cutting with CO2 lasers – The benchmark

Gerhard Hammann, TRUMPF Werkzeugmaschinen, Ditzingen, Germany

15:50 coffee break

17:15 Get-Together / Exhibitor evening LASYS & SLT

Herr U. Kromer von Baerle, Messe Stuttgart

Herr P. Leibinger, TRUMPF

Herr Ministerpräsident G. Oettinger

Exhibitor evening

Welding

Chair: Dipl.-Ing. Rainer Schuster / Dipl.-Ing. Peter Berger

Impact of welding distortion on the development and production of aircraft fuselage shellsKocik, Rainer¹, Schimanski Kai²¹ Airbus Deutschland GmbH, Airbus-Allee 1, 28199 Bremen, Germany² Stiftung Institut für Werkstofftechnik, Badgasteiner Str. 3, 28359 Bremen, Germany**Potential of minimization of distortions by system-orientated analysis of the process chain**K. Schimanski¹, A. von Hehl¹, H.-W. Zoch¹, R. Kocik²¹ Stiftung Institut für Werkstofftechnik, Badgasteiner Str. 3, 28359 Bremen, Germany² Airbus Deutschland GmbH, Airbus-Allee 1, 28199 Bremen, Germany**Surface modification by laser beam induced movement of material**

Paul Hilton and Lien Nguyen TWI Ltd Granta Park, Great Abington, Cambridge CB1 6AL, UK

Tel. +44(0)1223891162 e-mail paul.hilton@twi.co.uk lien.nguyen@twi.co.uk

Robot-Guided Remote Laser Welding: Process and Control

W. Becker, M. Beck, T. Stahs Daimler AG, Group Research & MBC Development, Ulm, Germany

New applications for Laser welded profiles make press shops more profitable

Heinrich Weber, Dreistern GmbH & Co. KG, Schopfheim, Germany

New methods for the manufacturing of highly stressed, thin-walled flexible pipes

Dipl.-Ing. Wolfgang Weil, weil engineering gmbh, Neuenburger Str. 23, 79379 Müllheim

8:30 Registration

Micro-Machining

Chair: Dipl.-Ing. Steffen Sommer

9:20 Silicon Wafers Cut by Laser MicroJet® for PV ApplicationsBernold Richerzhagen¹, Thorsten Grahl²¹ Synova SA, Chemin de la Dent d'Oche, CH-1024 Ecublens, Switzerland² Wacker SCHOTT Solar GmbH, Carl-Zeiss-Str. 4, D-63755 Alzenau, Germany**9:40 Boosting the lifetime of deep-drawing tools by laser structuring**Gabriel Dumitru¹, Valerio Romano²¹ Inspire AG, Tannenstrasse 3, 8092 Zurich, Switzerland² Institute of Applied Physics, University of Bern, Sidlerstrasse 5, 3012 Bern, Switzerland**10:00 Advancement of the reproducibility of spot welding by using real-time-feedback-controlling**

R. Holtz, K. Richter, C. Garthoff LASAG AG, Thun, Switzerland

10:20 Laser Structuring of Thin Film Solar Cell Modules

Francisco Carrasco, Thomas Schlenker, Andreas Letsch

Manz Automation AG, Steigackerstraße 5 – 727768 Reutlingen, Germany

10:40 coffee break**11:00 Large-scale Production based on Excimer Lasers**

Gerd Spiecker Coherent GmbH, 37079 Göttingen, Germany

11:20 Micromachining with short and ultrashort laser pulses

Dr. Joachim Radtke, Dr. Jens König Robert Bosch GmbH, Corporate Sector Research and

Advance Engineering, Robert-Bosch-Strasse 2, 71701 Schwieberdingen, Germany

Status and potential of laser welding of gear parts at Daimler AG

Christian Elsner, Simon Raithel¹

¹ Mercedes-Benz Werk Untertürkheim, HPC H151 – PWT/VUF, 70546 Stuttgart, Germany

Laser Welding of Axle Gears

Dr. Tim Angerer BMW Group, Munich, Germany

Approaches for Spatter Suppression at Welding with Lasers of Strong Focusability

Jan Weberpals¹, Friedrich Dausinger²

¹ Technologiegesellschaft für Strahlwerkzeuge mbH, Rotebühlstr. 87, 70178 Stuttgart, Germany

² Dausinger & Giesen GmbH, Rotebühlstr. 87, 70178 Stuttgart, Germany

Melt flow dynamics and process limitations in laser beam welding with brilliant laser beam sources using high welding velocities

A. Heß, F. Dausinger Forschungsgesellschaft für Strahlwerkzeuge (FGSW mbH), Pfaffenwaldring 43, 70569 Stuttgart, Germany

11:40

Diagnostics of melt dynamics during ultrashort pulse laser drilling

A. Michalowski^{1,2}, D. Walter², F. Dausinger²

¹ Institut für Strahlwerkzeuge (IFSW), Pfaffenwaldring 43, 70569 Stuttgart, Germany

² Forschungsgesellschaft für Strahlwerkzeuge, Pfaffenwaldring 43, 70569 Stuttgart, Germany

12:00

Rapid tooling for micro tools

Dipl. Phys. Michael Kuhl, senior researcher SAUER – Lasertec, Maybachstrasse 6 D-87437 Kempten, Germany

12:20

Highly efficient laser micro texturing for the printing industry

Stephan Brüning¹, Guido Hennig², Karl-Heinz Selbmann², Andreas Brockelt²

¹ Schepers GmbH & Co KG, Karl-Benz Str. 7, 48691 Vreden, Germany

² MDC Max Daetwyler AG, Flugplatz CH – 3368 Bleienbach, Switzerland

12:40

High Power Picosecond UV Laser for Microelectronics, Flat Panel Display and Solar Cell Processing

Michael Kauf, Raj Patel, Jim Bovatsek, Wolfgang Gries Newport Corporation, Irvine, USA

13:00 lunchtime

C4

Brazing

Chair: Klaus Löffler

The laser brazing process

Dr. Torsten Jäckel Volkswagen AG, Wolfsburg, Germany

14:20

Micro-Machining

Chair: Dipl.-Phys. Dmitrij Walter

Industrial Applications for Pulsed Fiber Lasers

Andreas Bünting, Dr. Jörg Thieme, IPG

C5

SLT'08

12

Laser brazing with Diode lasers

Dr.-Ing. Christoph Ullmann, Dr.-Ing. Axel Luft, Laserline GmbH, Fraunhofer Str., 56218 Mülheim-Kärlich, Germany

14:40

Choose the right Laser Technology for your specific Micro Machining Application

Stephan Geiger¹, Susanne Löttsch¹, Roland Mayerhofer²

¹ ROFIN / Baasel Lasertech, Petersbrunner Strasse 1b, D-82319 Starnberg, Germany

² ROFIN-SINAR Inc., 40984 Concept Dr., Plymouth, MI 48170, USA

As Smooth as the part itself – Premium class joining with Laser Beam Brazing

Sascha Debuan, Daimler AG, 71059 Sindelfingen, Germany

15:00

Welding with TruPulse Advantages of a New Technology

Elke Kaiser, Alexander Hangst, TRUMPF Laser GmbH + Co. KG, Aichhalder Strasse 39, Schramberg, Germany

Novel System Technology For Laser Brazing

Prof. Dr.-Ing. Peter Hoffmann^a, Dipl.-Ing. (FH) Andreas Loosen^a,
Dipl.-Wirtsch.-Ing. A. Grimm^b, Dipl.-Ing. Jan Musiol^b

^a ERLAS - Erlanger Lasertechnik GmbH, Kraftwerkstr. 26, 91056 Erlangen, Germany

^b BLZ Bayerisches Laserzentrum GmbH, Konrad-Zuse-Str. 2-6, 91052 Erlangen, Germany

15:20

Exploiting radial polarization in material processing

Tobias Moser¹, Marwan Abdou Ahmed², Matthias Schäfer¹, Andreas Voss², Moritz M. Vogel²,
Thomas Graf²

¹ LASAG AG, C.F.L. Lohnerstrasse 24, 3602 Thun, Switzerland

² Institut für Strahlwerkzeuge (IFSW), Pfaffenwaldring 43, 70569 Stuttgart, Deutschland

15:40

coffee break

C4 _____ Cladding

Chair: Dipl.-Ing. Peter Berger

Welding of Plastics _____ C5

Chair: Dr.-Ing. Alexander Knitsch

Revival of Laser Cladding Applications as a result of increasing material cost

Klaus Löffler, TRUMF Laser und Systemtechnik GmbH, Johann Maus Strasse 2, 71254 Ditzingen, Germany

16:00

Laser welding of plastics – from micro to macro

Carsten Wenzlau Leister Technologies GmbH, Aachen, Germany

Direct Metal Laser-Sintering (DMLS) State of the Art 2007

Mike Shellabear, Martin Heugel, Robert Domröse EOS GmbH, Robert-Stirling Ring 1, 82152 Krailling, Germany

16:20

Process and Quality Control – Laser Welding of Polymers

U. Russek¹, T. Fox¹, H. Aehling², H. Gehlen², S. Mann³, C. Franz³, P. Abels³, P. Bruns⁴, L. Aschke^a

¹ Huf Tools GmbH, Güterstr. 17, 42551 Velbert, Germany

² Amtron GmbH, Am Weiweg 8, 52146 Würselen, Germany

³ Fraunhofer Institut für Lasertechnik, Steinbachstr. 15, 52072, Aachen, Germany

^a LIMO-Lissotschenko Mikrooptik GmbH, Bookenburgweg 4-8, 44319 Dortmund, Germany

The Cost Effective Application of Laser Metal Deposition for the Repair of Turbine Engine Components

Dr P A Carroll¹, R Ganter², J Metzger²

¹ LPW Technology Ltd, 8 Elm Tree Road, Lymm, Cheshire, WA13 0NB, England

² TRUMPF Laser- und Systemtechnik GmbH, Johann-Maus-Straße 2, 71254 Ditzingen, Germany

Lasercladding with powder new development and example praxis statement-

Reinhard Pötzl, Eifeler Lasertechnik GmbH, Talstraße 30, 74379 Ingersheim, Germany

16:40

Keyless Entry System: Laser welded external Door Handle

Dr. Dirk Hänsch ProLas GmbH , St. Jobser Str. 53, 52146 Würselen, Germany

17:00

Evening Reception

18:30

Evening reception with demonstrations at IFSW/FGSW

4 March 2008 Get-Together / Exhibitor evening LASYS & SLT

The LASYS organisers would like to invite all the attending exhibitors, as well as the participants of the SLT 08 to the evening get-together that they will be hosting on Tuesday, March 4th 2008 (registration required).

The event will commence at 17:15 in the Atrium at the New Trade Fair Centre Stuttgart (East Entrance).

The event shall be opened by:
Herr U. Kromer von Baerle, Messe Stuttgart
Herr P. Leibinger, TRUMPF
Herr Ministerpräsident G. Oettinger



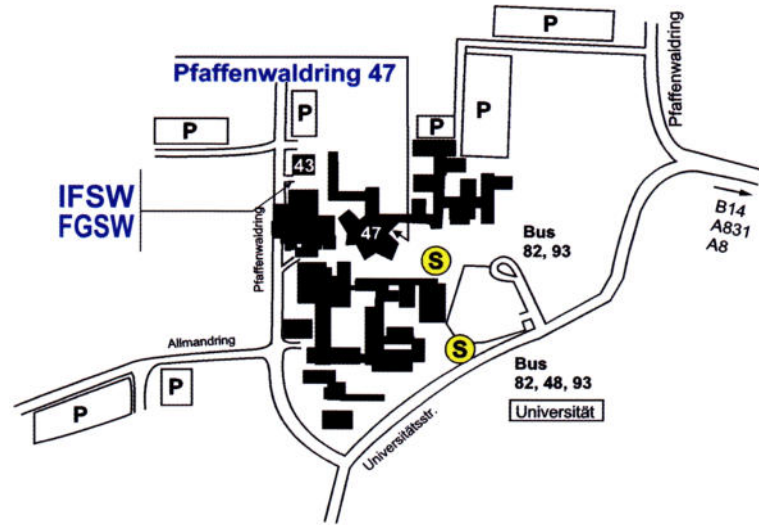
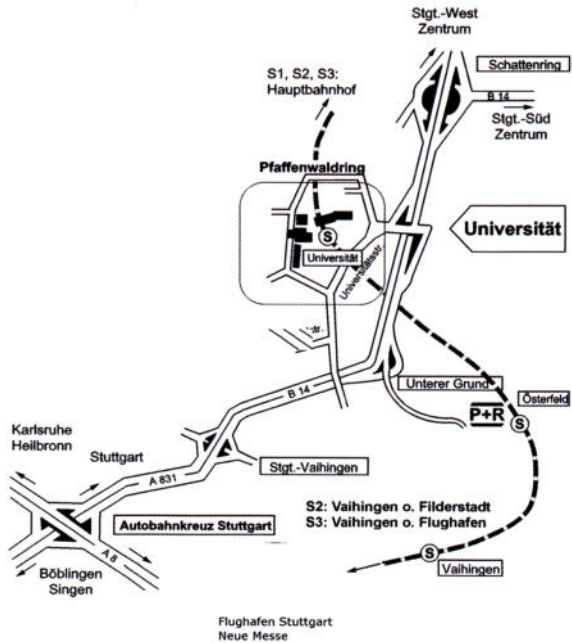
5 March 2008 SLT evening reception and tour of the institute

The sponsors wish to invite you to take part in a catered indoor SLT evening reception which will take place on Wednesday, March 5th 2008 on the Stuttgart University campus (Pfaffenwaldring 47, see site plan p.15).

Furthermore, we would like to invite you on a guided tour of the laboratories at the IFSW and FGSW (the neighbouring building, Pfaffenwaldring 43, see site plan p.15).

The event begins at 18:30.





Organiser/Host Forschungsgesellschaft für Strahlwerkzeuge mbH
Pfaffenwaldring 43
70569 Stuttgart
phone: +49 (0)711 351451-0
fax: +49 (0)711 351451-91
e-mail: info@fgsw.de
internet: <http://www.fgsw.de>

**Sponsors and
Partners** LIA, Laser Institute of America
Photonics BW, Kompetenznetz Optische Technologien
PTKA, Projektträger Forschungszentrum Karlsruhe
TRUMPF, Laser und Systemtechnik GmbH
VDI, Technologiezentrum
Wirtschaftsförderung Region Stuttgart
WLT, Wissenschaftliche Gesellschaft Lasertechnik e.V.

Location Presentations scheduled for the 4th and 5th of March 2008 will take place in the
International Congress Center (ICS) at the New Trade Fair Centre in Stuttgart.

The company exhibition stand is located from the 4th until the 6th of March 2008
in Hall 4 at the New Trade Fair Centre Stuttgart.

The SLT evening reception and institute tour begins at 18:30 on March 5th 2008 on the Stuttgart University campus.

The evening reception will take place in the lower foyer of Pfaffenwaldring 47.

The guided institute tour shall be hosted by the IFSW and FGSW located in Pfaffenwaldring 43.

In order to get to the University campus in Stuttgart-Vaihingen, please take the S-Bahn commuter train line S2 or S3 (see p.15), to "Universität" and exit in the "Universitätszentrum" direction.

Registration Office

Registration at the New Trade Fair Centre Stuttgart
Monday to Thursday from 8.30 AM
phone: +49(0) 170 5814650

Directions and Accommodation

Landesmesse Stuttgart, ICS
Directions and accommodation details may be found at
internet: <http://www.lasys-messe.de>
internet: <http://www.accorhotels.com>
e-mail: messe-stuttgart@accor.com

Institut für Strahlwerkzeuge / Forschungsgesellschaft für Strahlwerkzeuge
internet: <http://www.ifsw.uni-stuttgart.de>
internet: <http://www.fgs.de>



