



MONDAY, MAY 30, 2005  
From 9:30 to 18:00

ON:

## In situ diagnostic and control systems in laser materials processing: recent developments for industrial applications



Despite of many already developed applications the potential of laser materials processing in industrial production is not yet fully tapped. Regarding the steadily increasing demands on quality and automatisaion of processes, in-situ diagnostic and loop process control systems gain more and more importance in the main key sectors of the laser treatment of materials including : Laser welding, cutting, etching, marking, surface treatments and micro-machining.

The development and optimization of such systems, which will contribute for the spread of the laser processing technology in industry, are based on a thorough theoretical and experimental knowledge of the beam-material interaction and take advantage of the various complex induced physica-chemical phenomena which develop during the heating, melting or vaporization of the irradiated surface area. Recent progress in image processing, optical instrumentation and vision systems also contribute to the development of the most advanced in-situ diagnostic and control equipments available today on the market..

This one-day international Industrial Forum will be the unique opportunity to bring together both main equipment manufacturers and potential customers including scientists, engineers, developers and production

managers. The goal is to provide the largest possible overview about the present status and future challenges for in-situ diagnostic and control systems and their applications in industrial laser materials processing. Their economic impact on the development of new markets will be also considered

Keynote oral presentations will be given by the leading experts in the different topical areas and a technical round table between the main systems manufacturers and customers will optimize the dissemination of the information.

### Co-Chairmen:

#### **Eric FOGARASSY**

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# Programme

- 9:00**      **Welcome**  
Eric Fogarassy, Jacky Portrat
- 9:30**      **Diagnostic center for laser based materials processing at FGSW – an overview**  
Christoph Deininger (IFSW, Stuttgart, Germany)
- 10:00**     **Recent developments and trends in processing monitoring and control of laser materials processing**  
Stephan Kaieler (ILT Fraunhofer, Aachen, Germany)
- 10:30**     **Pyrometry applications in industrial laser welding and cladding**  
Philippe Bertrand (ENISE, Saint-Etienne, France)
- 11:00**     **BREAK**
- 11:30**     **Image processing for advanced process monitoring in laser treatment**  
Berthold Kessler (PRECITEC KG, Gaggenau, Germany)
- 12:00**     **Review of optical characterization of laser processed surfaces in industry**  
Jean Louis Stehlé (SOPRA SA, Bois-Colombes, France)
- 12:30**     **LUNCH**
- 14:00**     **Camera-based in-process monitoring during laser beam welding**  
Juergen Mueller-Borhanian (IFSW, Stuttgart, Germany)
- 14:30**     **High-speed CMOS cameras with LinLog-technology – a further step in on-line control and quality improvement of laser beam welding (Tailored Blanks)**  
Bernhard Mandel (PHOTONFOCUS AG, Lachen, Switzerland)
- 15:00**     **Laser welding & quality control : an automotive supplier point of view**  
Romaric Lenoir (VALEO Electrical Systems, Etaples-sur-Mer, France)
- 15:30**     **BREAK**
- 16:00**     **Temperature controlled selective soldering with laser radiation**  
Luedger Bosse (ILT Fraunhofer, Aachen, Germany)
- 16:30**     **Recent advances in diagnostic system applied to laser material processing tools** (*tentative title*)  
Urban Widen (PERMANOVA, Mölndal, Sweden)
- 17:00**     **Round Table**

# Technical Forum - Registration Form

(before May 14, 2005)

**NAME:** \_\_\_\_\_

First Name: \_\_\_\_\_

**INSTITUTION:** \_\_\_\_\_

Department: \_\_\_\_\_

Street/ PO Box: \_\_\_\_\_

Zip/City: \_\_\_\_\_

Phone: \_\_\_\_\_

Fax: \_\_\_\_\_

e-mail: \_\_\_\_\_

I will attend the **E-MRS Technical Forum**  
**Monday May 30, 2005**

**Registration fees : 150,00 Euro net** including the lunch.

Please charge my credit card :  
 carte bleue  carte visa Eurocard/Mastercard  
Card number: \_\_\_\_\_

Expiration date: \_\_\_\_\_

Card holder's signature:

- I enclose a cheque (to the order of E-MRS)
- I enclose a copy of a bank transfer  
Account references: ASS. EMRS CONFERENCES BANQUE POPULAIRE D'ALSACE  
IBAN:FR76 1760 7000 0111 1913 8543 911  
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- I enclose a purchase order form to invoice my institution/company

**In case of full participation in E-MRS Meeting the registration in the Technical Forum is free of charge, please indicate clearly on the E-MRS conference registration form "TECHNICAL FORUM"**