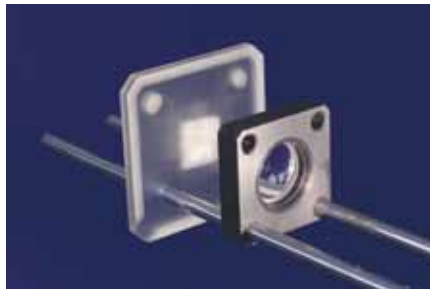




Precision and Micro Engineering – In the Application

11th – 15th October 2004, Aachen, Germany



Fraunhofer Institut
Produktionstechnologie

Components of innovative and successful products are characterised more and more frequently by outstanding levels of surface quality, form tolerances on a nano-meter scale or an extremely high degree of miniaturisation. As a result of that the market of highly integrated, miniaturised systems or ultra-precise manufactured parts is increasing continuously. Applications are to be found in the branches mechatronics, micro-electronics, bio-medical engineering, optics, automotive engineering or chemical engineering.

If such extremely demanding manufacturing specifications are to be met, it is vital to have the right production equipment, including ultra-precision and micro machine tools. Wherever precision on a nano-meter scale is required in the production processes or whenever there is a need for part sizes on a micro-meter scale, a combination of thorough theoretical knowledge and practical know-how is essential for the manufacturer.

The 5-day course, "Precision and Micro Engineering – In the Application" is an entirely innovative type of training, combining theoretical knowledge and practical know-how in university presentations as well as a wealth of experience from industry. It is being run as part of the EC-funded VisionOnline Virtual Institute. VisionOnline is coordinated by the European Society for the Precision and Nanotechnologies euspen, an international association for the promotion of ultra-precision, micro and nano technologies.

"Precision and Micro Engineering – In the Application" is the second course organised by the Fraunhofer IPT within the VisionOnline pro-

gramme. The very successful first one held in 2002 gave an overview over the technical basis of "Micro-machining operations", "Micro-machining with laser" and "Micro-plastics processing". Aim of this second course is to fundamentally deepen the contents of the first one and it therefore covers the following technical topics: "Manufacturing of optical and micro-optical components", "Tool making and replication techniques in precision and micro engineering" and "Metrology methods in ultra-precision and micro technology".

The topics of this course will be presented by Aachen's outstanding research institutes, the Fraunhofer Institute for Production Technology IPT, the Fraunhofer Institute for Laser Technology ILT and the Institute of Plastics Processing IKV, as well as by experts of the world famous companies Precitech Inc., Stähli AG, Wahl-Optoparts GmbH, *Acri.Tec GmbH, Ultra Reflex and Fries Research Technology FRT.



Module 1 Manufacturing of optical and micro optical components

Monday, 11th October, 2004

10.00 - 10.30	Registration
10.30 - 11.00	Welcome Prof. Brecher, Fraunhofer IPT
11.00 - 12.00	Keynote Speech: Technology marketing – why should I care? Dr. Neuy, IVAM NRW e.V.
12.00 - 13.30	Lunch
13.30 - 14.30	Technical solutions for manufacturing optimised optical implants Dr. Kreiner, *Acri.Tec GmbH
14.30 - 15.30	The mechano-chemical polishing technique for the manufacturing of high precision optical components Mr Dambon, Fraunhofer IPT
15.30 - 16.00	Coffee Break
16.00 - 17.00	Face polishing of large glass plates for the manufacturing of precision optics Mr Brunner, Stähli AG
19.30	Seminar Dinner

Tuesday, 12th October, 2004

8.30 - 9.30	Diamond machining of large scale optical surfaces Mr Wenzel, Fraunhofer IPT
9.30 - 10.30	Ultra-precision milling of optical freeform surfaces Mr Wanders, Precitech, Inc.
10.30 - 11.00	Coffee Break
11.00 - 12.00	Machining of aspheric mirrors using a Fast-Tool-Servo Mr Niehaus, Fraunhofer IPT
12.00 - 13.30	Lunch
13.30 - 14.30	ELID grinding of optical surfaces Prof. Reynaerts, KU Leuven
14.30 - 17.00	Workshop at Fraunhofer IPT shopfloor – Manufacturing of optical parts

Module 2 Tool making and replication techniques in precision and micro engineering

Wednesday, 13th October, 2004

8.30 - 9.30	Micro milling of steel for the mould and die industry Mr von Bodenhausen, Fraunhofer IPT
9.30 - 10.30	µEDM opens up the material palette for micro systems Mr Förster, IMTEK
10.30 - 11.00	Coffee Break
11.00 - 12.00	Proceeding and manufacturing methods in the replication with high precision and micro mold toolings Mr Schulz, WAHL-optoparts GmbH
12.00 - 13.30	Lunch
13.30 - 14.30	Ultrasonic assisted manufacturing technologies in the application Mr Weber, Fraunhofer IPT
14.30 - 15.30	Laser microfabrication for moulds and forming parts Dr. Gillner, Fraunhofer ILT
15.30 - 16.00	Coffee Break
16.00 - 17.00	Micro injection moulding – micro assembly injection moulding Mr Opfermann, IKV

Module 3 Metrology methods in ultra-precision and micro technology

Thursday, 14th October, 2004

- 8.30 - 9.30 Micro injection moulding of triple mirror array structures
Mr Steiner, Ultra Reflex GmbH
- 9.30 - 10.30 Mould making and precision glass moulding process
Mr Pongs, Fraunhofer IPT
- 10.30 - 11.00 Coffee Break
- 11.00 - 12.00 Micro-forming of metallic micro parts
Mr Geißdörfer, LFT
- 12.00 - 13.30 Lunch
- 13.30 - 17.00 Workshop at Fraunhofer IPT shopfloor – Micro tool making

IKV lab tour – Replication techniques

Friday, 15th October, 2004

- 8.30 - 9.30 Topography measurement of large optical surfaces: New deflectometric and interferometric scanning techniques
Dr. Geckeler, PTB
- 9.30 - 10.30 Surface metrology for production and development
Dr. Koglin, Fries Research Technology
- 10.30 - 11.00 Coffee Break
- 11.00 - 12.00 Machine-integrated measurement of ultraprecise surfaces
Mr Schneefuß, Fraunhofer IPT
- 12.00 - 13.30 Lunch
- 13.30 - 15.00 Fraunhofer IPT Lab tour – Metrology methods
- 15.00 End of Training Week

Companies and institutes involved



Fraunhofer Institut Lasertechnik



Host of the Seminar

The Fraunhofer Institute for Production Technology IPT is committed to research and development in a wide range of aspects of precision and ultra-precision engineering. Research conducted at the institute focuses on areas such as large surface area micro structuring with optical surface quality, manufacturing of optical components with form tolerances on a nano-meter scale and on the development of ultra-precision machine tools. The Fraunhofer IPT hosts the "Center for precision and micro technology" of Nordrhein-Westfalen.



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www.ipt.fraunhofer.de

Registration Information

Seminar Fee

Training Week (11th - 15th October)
€ 1 500,- euspen member
€ 1 700,- non euspen member

Module 1
Manufacturing of optical and micro optical components (11th - 12th October)

Module 2
Tool making and replication techniques in precision and micro engineering (13th - 14th October)

Module 3
Metrology methods in ultra-precision and micro technology (15th October)

Each Module
€ 550,- euspen members
€ 650,- non euspen members

The seminar fee includes the participation in all presentations, proceedings, the guided tours through the labs of the research institutes, coffee breaks, lunch and seminar dinner.

euspen Membership

It is possible to become a euspen member for 70 Euro per year and hence take advantage of reduced registration fees. For further information, please contact the euspen headquarters (info@euspen.org or www.euspen.com).

Registration Information

Registration

Please complete the registration form and return to:

Fraunhofer Institute for Production Technology IPT
Dipl.-Ing. Christian Peschke
Steinbachstraße 17
52074 Aachen,
Germany

Phone +49 (0) 2 41 / 89 04-2 53
Fax +49 (0) 2 41 / 89 04-62 53
christian.peschke@ipt.fraunhofer.de

Payment

Participants will receive an invoice. Please do not send currency.

Confirmation

Every participant will receive a comprehensive information package including location map.

Hotel Accommodation

Accommodation can be organised on request.

Seminar Dinner

The dinner will take place on the first day of the Training Week, Monday, 11th October, 2004.

Registration

Please send your registration back to us by mail or by fax:
+49 (0) 2 41/8 90 4-62 53

Fraunhofer-Institute for
Production Technology IPT
Dipl.-Ing. Christian Peschke
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Germany

Registration Form

Training Week

- € 1,500 euspen member
- € 1,700 non euspen members

Module 1

- € 550 euspen member
- € 650 for non euspen members

Module 2

- € 550 euspen members
- € 650 non euspen members

Module 3

- € 550 euspen members
- € 650 non euspen members

Name _____

Institution/Company _____

Address _____

City/Zip Code _____

Country _____

Phone/Telefax _____

Email _____

euspen Membership Number _____

Date/Place/Signature _____

These data will be held by the Fraunhofer IPT for its use in this training week