



Invitation and Program

International Workshop on Innovative Optics Manufacturing

December 1st and 2nd 2009 / MARITIM Hotel Duesseldorf, Germany

Replicative Manufacturing of High Precision Optical Elements and Microoptics

supported by the European Union within the Project "Production 4 Micro"

Background and Motivation

Highly precise optical elements with aspheric and even free form surfaces as well as diffractive optical elements have become indispensable components in modern optical applications. They make available a rich variety of new optical functions and designs. Examples are especially extremely miniaturized optical systems e.g. for mobile phones, automotive optical sensors or LED-illumination systems.

The high precision manufacturing of these optical elements is a challenging task, however. Common optical grinding technology often is not the best choice either due to technological or cost reasons or it is plainly not suited for the required part.

Replication technologies offer an alternative approach in this case. Here an appropriate master form is manufactured ideally only once. Then the form is transferred to the desired workpiece by replication. For optics production injection moulding for polymer optical elements and glass moulding are the most common technologies in use.

Nevertheless, also for these technologies the high precision of the innovative optical elements require deeper knowledge and improved methods. Within the framework of the project "Production Technologies for Micro-Systems – Production 4 μ" the European Union fosters the development and adaptation of these replication technologies for the high production in the European Union.

Scope

The workshop addresses users, developers, producers and equipment manufacturers along the production chain of innovative high precision optical and micro-optical elements.

The workshop wants to provide a platform for exchange of information, experience and new approaches in the field of innovative optics manufacturing. Further the workshop is to disseminate the results of the project "Production 4 μ" and make them available to the community.

The workshop will address the topics

- overview of replicative aspheric and micro-optics production
- production adapted optical design and materials
- mould manufacturing
- moulding process
- quality

Workshop Chair

Prof. Dr. F. Klocke
Fraunhofer Institute for Production Technology-
IPT, Aachen, Germany

Credits

This workshop is supported by the European Union within the project "Production Technologies for Micro-Systems – Production 4 μ".

Lab Visit

The Fraunhofer Institute for Production Technology IPT, Aachen, offers the possibility to visit its labs in the morning of the first workshop day, December 1st 2009. Aachen is located approx. 100 km from Duesseldorf.

The visit is not part of the workshop program.

Please contact the IPT directly for further information under
Fraunhofer Institut für Produktionstechnologie IPT
Dipl.-Ing. Sebastian Nollau
Steinbachstraße 17
52074 Aachen
Tel: +49 (0) 2 41/89 04-2 71
Fax: +49 (0) 2 41/89 04-62 71
E-Mail: sebastian.nollau@ipt.fraunhofer.de
Internet: www.ipt.fraunhofer.de

Workshop Languages

English / German; Englisch / Deutsch
No simultaneous translation will be provided

Program

Tuesday, December 1st, 2009

- 14:00 Welcome and Opening Remarks
Olaf Dambon, Fraunhofer IPT, Aachen, Germany
- 14:15 Replication of Microoptical Elements
Andreas Bräuer, Fraunhofer IOF, Jena, Germany
(Winner of "Deutscher Zukunftspreis 2007")
- 15:10 Features for Functions Integration in Plastic Optics Design
Roberto Gava, Fundacio ASCAMM, Barcelona, Spain
Jukka-Tapani Mäkinen, VTT Technical Research Center, Oulu, Finland
- 15:50 Precision Glass Moulding of Optical Elements
Carl Gaebe, Ullrich Blöcher, GD Optical Competence GmbH, Sinn, Germany
- 16:30 Coffee Break
- 17:00 Special Glasses for Moulding of High Precision Optics and Micro Optics
Bianca Schreder, Schott AG, Mainz, Germany
- 17:40 Cermented Carbides for Precision Moulding Form Applications
Michael Dröschel, Ceratizit SA, Luxembourg

Wednesday, December 2nd, 2009

- 09:00 Injection Moulding v/s Glass Moulding- the Manufacturing of High Precision Aspherical Optics and Microoptics
Rien de Schipper, Penta HT Optics, Eindhoven, Netherlands
- 09:55 Tool Manufacturing for Precision Glass Moulding
Bernd Bressler, Aixtooling GmbH, Aachen, Germany
- 10:35 Ultra High Precision Machines for Mould Manufacturing
Martin Weinzierl, Fraunhofer IPT, Aachen, Germany
- 11:15 Coffee Break
- 11:45 Advanced Coating of Moulds - Trends towards Ultra High Precision
Niels J. Mikkelsen, Ewa Bienk
CemeCon Scandinavia A/S, Åbyhøj, Denmark
- 12:25 Numerical Simulation of Precision Glass Moulding
Olaf Dambon, Fraunhofer IPT, Aachen, Germany
- 13:00 Lunch Break
- 14:00 Industrial Manufacturing of Precision Moulded Aspheres
Andreas Kunz, Fisba Optik AG, St. Gallen, Switzerland
- 14:40 Moulding of Micro-Optical Elements - Challenges and Applications
Daniel Hollstegge, Fraunhofer IPT, Aachen, Germany
Olaf Rübenach, Ingeneric GmbH, Aachen Germany
- 15:20 Optical Surface Measurement in the Nanometer Range
Cord Brüggemann, Fisba Optik AG, St. Gallen, Switzerland
- 16:00 Functional Test of Free Form Optical Elements
Thomas Henning, University of Applied Sciences, Bremen, Germany
- 16:40 Summary and Concluding Remarks
Olaf Dambon, Fraunhofer IPT, Aachen, Germany
- 17:00 End of Workshop

Program subject to changes !

Organisers / Contact

Verein Deutscher Ingenieure e. V.
VDI Society for Production and Logistics
Dr. Marcus Scholl / Mrs. Bettina Helmert
P.O. Box 10 11 39, D-40002 Duesseldorf
e-mail: scholl@vdi.de or helmert@vdi.de
Phone: +49 (0) 211 62 14-3 73
Fax: +49 (0) 211 62 14-1 51

General Information

Confirmation: Upon receipt of the completed form the registration will be confirmed. All material will be available at the registration desk on-site.

Payment Details: All payments must be made in Euro (€) by the following methods:

Foreign participants: Payment by credit card is absolutely necessary. The following cards are accepted: Euro/Master, Visa, American Express and Diners. Your card number and expiration date should be added on the registration form. For quick and accurate processing of your registration, we would also appreciate a copy of your credit card together with the registration form.

German participants: Payment by bank transfer: After receipt of the invoice the payment should be settled.

Registration: Please complete and forward the enclosed registration form (one form for each participant) to VDI Society for Production and Logistics, Mrs B. Helmert, address cf. above.
Late registration on the workshop site is accepted, too.

Cost share per participant: € 220,- (includes: copies of abstracts, CD with presentations, refreshments/lunch in breaks as indicated in program)

Cancellation: Refunding of cost share is possible only if participation is cancelled at least 14 days before the workshop. The cost share will be refunded minus a processing fee of €50,- plus 19% VAT. In case of later cancellation the full cost share is due. Participation can be transferred to another person.

Workshop Site:

The workshop will take place in the Maritim Hotel located directly over the way of the VDI building.

MARITIM Hotel Duesseldorf / VDI-Haus
Maritim-Platz 1 / VDI-Platz 1
40474 Duesseldorf, Germany
Telefon: +49 (0) 211 52 09-0
<http://www.vdi.de>

Both locations can be reached from Terminal C, Duesseldorf Airport, by a walk of less than 5 minutes.

How to reach the workshop site: Please download descriptions and maps in German or English from the following page:
www.vdi.de/kontakt

Registration Desk: The registration desk at the conference site will be occupied by Mrs Bettina Helmert, VDI Society for Production and Logistics (cf. "Contact").

Opening Times: 12:00-18:00 h on Dec. 1st, 2009, 08:30-17:00 h on Dec. 2nd, 2009.

Accommodation: A certain number of rooms are reserved in the following hotels under the key word "VDI Workshop Optics Manufacturing". Please contact the hotels at your earliest convenience to book your accommodation. Prices are for single room, one night, incl. breakfast.

Maritim Hotel Maritim-Platz 1 40474 Duesseldorf SR €139,00	Tel.: +49 211 52 09-0 Fax: +49 211 52 09-1000 www.maritim.de *
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Hotel Abode Hunsrückstr. 35 40213 Duesseldorf SR €68,00	Tel.: +49 211 17 30 0-0 Fax: +49 211 17 30 0-40 www.hotelwieland.de *
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Hotel Haus am Zoo Sybelstr. 21 40239 Duesseldorf SR €85,00 /102,00,-	Tel.: +49 211 61 69 61-0 Fax: +49 211 61 69 61-69 www.hotel-haus-am-zoo.de *
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Hotel Windsor Grafenberger Allee 36 40237 Duesseldorf SR €99,00/119,00	Tel.: +49 211 91 46 8-0 Fax: +49 211 91 46 8-40 www.windsorhotel.de *
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* Keyword: VDI (Workshop Optics Manufacturing)
All prices without guarantee.

The following organisation can help with further hotel recommendations:

Duesseldorf Marketing & Tourismus GmbH
Telefon +49 211 17 20 20
Telefax +49 211 16 10 71
E-Mail: reservation@duesseldorf.de
<http://www.duesseldorf-tourismus.de>



Registration Form

International Workshop on Innovative Optics Manufacturing
December 1/2, 2009 / Maritim Hotel, Duesseldorf, Germany

First name	Surname	Title
Company/Institute		
Department	Position	
Post Code / City	Street/Post Box	
Country	E-Mail	
Phone	Fax	

Name, company and city will appear in the list of participants. The list will be included in the workshop material for all participants. Please use one form per person.

Cost share per participant:	€ 220.-
(includes: copies of abstracts, CD with presentations, refreshments/lunch in breaks as indicated in program)	

Payment by Credit Card (only for participants who do not have a bank account in Germany)		
<input type="checkbox"/> Eurocard/Mastercard	<input type="checkbox"/> Visa	
<input type="checkbox"/> American Express	<input type="checkbox"/> Diners	
Card number	Amount	Valid until
Place, Date	Signature ..X.....	

Date	Signature
	X

Please return to:

by fax: +49 (0) 211 62 14-1 55

Verein Deutscher Ingenieure e.V.
VDI Society for Production and Logistics
Mrs Bettina Helmert
P.O. Box 10 11 39
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