

24./25.9.2008 | OptoNet Workshop

Ultra Precision Manufacturing

of Freeforms and Microstructures



Fraunhofer Institut
Angewandte Optik
und Feinmechanik

optonet
knowledge competence cooperation

Contents of the Workshop

Goals

- ~ Aspheres, freeforms and microstructures – from design to fabrication and replication, a full overview
- ~ Generation of visions for new applications and products
- ~ Representation of outstanding potentials for R&D tasks

Main Focus

- ~ Ultra precision manufacturing of complex optical surfaces
- ~ Metrology in manufacturing
- ~ Process chains for aspheres and freeforms
- ~ Moulded optics
- ~ Ultra precision machine tools

UNIVERSITÄT JENA
1558 – 2008 450 JAHRE

JENA.
STADT DER WISSENSCHAFT 2008

Wednesday, September 24th

12:00 Start & Welcome snack

12:45 *Welcome and News from Optical System Technology*
A. Tünnermann, FRAUNHOFER IOF

13:00 Part 1 · Freeforms & Aspheres

Chairman: K. Schindler, OPTONET E.V.

13:00 *Trends in Aspheres & Freeform Optics*
K.-F. Beckstette, CARL ZEISS AG

13:45 *Freeform Optics for Display Technologies*
J. Zänkert, LINOS PHOTONICS GMBH

14:10 *Aspheres and Freeform Optics
for Astronomical Instrumentation*
W. Holota, EADS ASTRIUM GMBH

14:35 *Freeform Manufacturing
by Ruling and Slow-Tool Machining*
A. Gebhardt, R. Steinkopf, S. Risse, FRAUN-
HOFER IOF; V. Giggel, CARL ZEISS JENA GMBH

15:00 Coffee break

15:20 Part 2 · Freeforms & Aspheres Technology

Chairman: R. Eberhardt, FRAUNHOFER IOF

15:20 *Process Chain for the Manufacturing
of Precise Aspheres*
S. Kiontke, ASPHERICON GMBH

15:45 *Deterministic Shape Correction with Fluid Jet
Polishing using Sub-Millimeter Footprints*
O. Fähnle, W. Messelink, M. Forrer,
FISBA OPTIK AG, CH

16:10 *Sub-aperture Finishing and Metrology Techniques
for Aspheres and Freeform Optics*
M. Tricard, QED TECHNOLOGIES INC., USA

16:35 *Off-Axis Grinding Machine (OAGM) // BoX®
Ultra Precision Freeform Grinding and
Measuring Machine*
P. Morantz, CRANFIELD UNIVERSITY, UK

17:00 Coffee break

18:00 Guided tour through the University Main Building

19:30 Get-together, Hotel Schwarzer Bär
Sponsored by CARL ZEISS JENA and LINOS

Thursday, September 25th

09:30 Opening

K.-F. Beckstette, Carl Zeiss AG

09:35 Part 3 · Metrology for Freeforms and Microstructures

Chairman: G. Günther Carl Zeiss AG

09:35 *Interferometric Measurement of Aspherical Elements in Lithographic Projection Optics*

M. Dreher, B. Dörband, CARL ZEISS SMT AG

10:15 *CGHs for Measuring of Aspheres in Industrial Manufacturing*

O. Falkenstörfer, R. Schreiner, JENOPTIK LASER, OPTIK, SYSTEME

10:40 *Diffraction Optics for High Precision Quality Control of Freeform Surfaces*

J.-M. Asfour, DIOPTIC GMBH

11:05 *Metrology for Steep-sided Aspherical Lens Moulds*

M. Middleton, AMETEK GMBH/TAYLOR HOBSON, UK

11:30 Lunch break

12:30 Part 4 · Moulded Optics

Chairman: M. Schiele, LINOS Photonics GmbH & Co. KG

12:30 *Precision Moulded Aspherical Lenses and Diffractive Optical Elements*

R. Biertümpfel, S. Reichel, H. Vogt, SCHOTT AG

12:55 *NanoReplica – Nanoprecise Moulds*

E. Beckert, FRAUNHOFER IOF

13:20 *Precision Grinding and Polishing of Micro Aspherical Ceramic Moulds*

H. Suzuki, UNIVERSITY KOBE, JAPAN

13:45 *Technologies for Fast Moulding of Micro Optical Components from Inorganic Glass*

G. Kleer, FRAUNHOFER IWM;

G. Droß, GD OPTICAL COMPETENCE GMBH

14:10 Part 5 · Manufacturing and Process Issues

Chairman: K.-F. Beckstette, CARL ZEISS AG

14:10 *Micro Milling – An Alt. Solution for Diamond Turning of Lens Arrays*

S. Badrawy, MOORE NANOTECH, USA

14:35 *Recent Advancements in Slow Tool Servo and Fast Tool Servo Machining*

J.W. Roblee, PRECITECH, USA

15:00 *Fast-Tool Servo for Freeform Machining*

C. Wenzel, FRAUNHOFER IPT

15:25 Closure

R. Eberhardt, FRAUNHOFER IOF

15:30 Lab tour Fraunhofer IOF

Workshop Date

Wednesday/Thursday
September 24th/25th, 2008

Workshop Location

Fraunhofer-Institut
für Angewandte Optik und Feinmechanik
Albert-Einstein-Straße 7
07745 Jena | Germany

Registration

Please send the completed registration form via fax by
September 17th, 2008, at the latest, to +49 (0) 3641 / 65 83 44
or use the online registration at www.optonet-jena.de.

Attendance fee

~ 1 day

- 150 € regular
- 90 € members of a German Competence Network
for Optical Technologies

~ 2 days

- 190 € regular
- 130 € members of a German Competence Network
for Optical Technologies

(no VAT included according to §4 Nr. 22A UStG)

Please arrange a bank transfer of the fee by
September 17th, 2008, at the latest, to the account
of OptoNet e.V.:

Bank Sparkasse Jena
Bank code 830 530 30
Account No. 271 004
Swift code HELA DE F1 JEN
IBAN DE40 8305 3030 0000 2710 04
Purpose WorkshopUPM [name, first name]

With your registration you accept our terms & conditions.

Registration for the Workshop

›Ultra Precision Manufacturing«

Via Telefax to: +49 (0) 3641 / 65 83 44

I will participate on the workshop

- on September 24TH
- on September 25TH
- I am/our company or institution is a member of a German Competence Network for Optical Technologies.
- Please keep me informed about future workshops or events of OptoNet e.V.

Title

Last Name

First Name

Company/Institution

Address

Address

ZIP Code

City

Country

Telephone

E-Mail

Date

Signature

Veranstalter

optonet

OptoNet e.V.

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GEFÖRCEKT VOM



**Bundesministerium
für Bildung
und Forschung**



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und Feinmechanik

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Partner



Carl Zeiss Jena GmbH
www.zeiss.de

LINOS

LINOS Photonics GmbH & Co. KG
www.linos.com

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September 24th & 25th, 2008

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