

Technical Conference

Room: Highland Room C

Monday-Thursday 2-5 May 2005

Optifab

Conference Chairs:



Robert E. Fischer,
OPTICS 1 Inc.



Matthias Pfaff,
OptoTech
Optikmaschinen
GmbH (Germany)



Masahide Katsuki,
Toshiba Machine Co.
(Japan)



**Kathleen A.
Richardson,**
Clemson Univ.

Program Committee: **Michael J. Bechtold**, OptiPro Systems; **Christopher T. Cotton**, ASE Optics, Inc.; **Walter C. Czajkowski**, Edmund Industrial Optics; **Michael A. DeMarco**, QED Technologies Inc.; **Edward M. Fess**, Univ. of Rochester; **Donald Golini**, QED Technologies, LLC; **Heidi Hofke**, OptoTech Optical Machinery Inc.; **Arne Lindquist**, Schneider Optical Machines, LLC; **Michael P. Mandina**, Optimax Systems, Inc.; **Paul Meier-Wang**, AccuCoat Inc.; **Richard A. Nasca**, Corning Tropol Corp.; **Michael N. Naselaris**, Stefan Sydor Optics, Inc.; **John J. Nemecek**, Fisba Optik LLC; **Robert F. Novak**, Monroe Community College; **Carolyn Russell**, QED Technologies Inc.; **Annette Sansone**, Univ. of Rochester; **John M. Schoen**, Univ. of Rochester; **Jim M. Sydor**, Sydor Optics, Inc.; **David Young**, Corning Tropol

Monday 2 May

SESSION 1

Room: Highland Room C Mon. 1:00 to 5:30 pm

1:00 pm: **Precision finishing with magnetorheological (MR) jet technology**, W. Kordonski, A. B. Shorey, M. Tricard, QED Technologies, Inc. [TD03-01]

1:20 pm: **Free form surfaces: a challenge in optical manufacturing**, T. Herrmann, D. Bergner, U. Birnbaum, O. Falkenstörfer, J. Röder, R. Schreiner, T. Waak, JENOPTIK Laser, Optik, Systeme GmbH (Germany) [TD03-02]

1:40 pm: **HyDra: a novel hydrodynamic polishing tool for high quality optical surfaces**, E. Sohn, E. Ruiz, E. Luna, L. Salas, Univ. Nacional Autónoma de México (Mexico) [TD03-03]

2:00 pm: **Automatically high precision manufacturing technology for micro-optic subgroups**, T. Sure, Leica Microsystems Wetzlar GmbH (Germany); V. Guyenot, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany); M. Gerhardt, OptoTech GmbH (Germany) [TD03-04]

2:20 pm: **Applying fluid jet polishing for shape corrections as well as for prepolishing optical surfaces**, W. A. Messelink, Fachhochschule Aargau (Switzerland) and Fisba Optik AG (Switzerland); R. Wäger, Fachhochschule Aargau (Switzerland); T. Wons, Fisba Optik AG (Switzerland); K. C. Heiniger, Fachhochschule Aargau (Switzerland); O. W. Föhnle, Fisba Optik AG (Switzerland) [TD03-05]

2:40 pm: **Precision cylinder optics for higher requirements**, J. Röder, D. Bergner, O. Falkenstörfer, R. Schreiner, D. Malina, JENOPTIK Laser, Optik, Systeme GmbH (Germany) [TD03-06]

Coffee Break 3:00 to 3:30 pm

3:30 pm: **Research on fabrication of aspheres at the Center of Optics Technology at the University of Applied Science in Aalen**, R. Boerret, J. Burger, A. Bich, Univ. of Applied Science Aalen (Germany) [TD03-07]

3:50 pm: **Fabrication of blanks, figuring, polishing and testing of segmented astronomical mirrors for SALT and LAMOST projects**, A. P. Semenov, M. A. Abdulkadyrov, A. N. Ignatov, V. E. Patrikeev, V. V. Pridnya, A. V. Polyanchikov, Y. A. Sharov, JSC Lytkarino Optical Glass Plant (Russia) [TD03-08]

4:10 pm: **Normal optics production using MRF**, M. DeMarco, QED Technologies, Inc. [TD03-09]

4:30 pm: **Applying 5S lean tools to optical fabrication**, G. J. Arserio, R. A. Nasca, Corning Tropol Corp. [TD03-10]

4:50 pm: **Ultraform finishing process**, M. J. Bechtold, D. Mohring, OptiPro Systems; E. M. Fess, Univ. of Rochester [TD03-11]

5:10 pm: **Conditioning method development for 3M Trizact™ diamond tile fixed abrasives used in the finishing of brittle substrates**, T. D. Fletcher, F. Gobena, V. Romero, W. Schoenhofen, 3M Co. [TD03-52]

Tuesday 3 May

SESSION 2

Room: Highland Room C Tues. 8:30 to 9:30 am

8:30 am: **Glass molding technologies**, H. Murakoshi, Toshiba Machine Co., Ltd. (Japan) [TD03-12]

8:50 am: **Grinding technologies of aspherical glass molding dies**, Y. Kojima, M. Katsuki, Toshiba Machine Co., Ltd. (Japan) [TD03-13]

9:10 am: **Force sensors in monitoring precision grinding**, E. Marsh, The Pennsylvania State Univ. [TD03-14]

Poster Previews

Room: Highland Room C Tues. 9:30 am

(3-minute presentations)

The following Oral Poster Previews will be on display in the Highland Room A during the Wednesday Poster Session. Authors will be present for discussion from 5:00 to 6:30 pm.

Optical Manufacturing

A novel polishing head with a gimbals structure for the higher speed polishing process, H. Lee, Hanbat National Univ. (South Korea); C. Song, H. Lee, C. Park, Korea Institute of Machinery and Materials (South Korea) [TD03-27]

Process of Polish for two concave steel molds with hyperbolic shape and 2600 mm of diameter, F. S. Granados-Agustín, S. Vazquez-Montiel, A. Jaramillo-Núñez, J. Pedraza-Chavez, Instituto Nacional de Astrofísica Óptica y Electrónica (Mexico) [TD03-28]

Design and fabrication of microlens array for VCSEL to fiber coupling, S. Kim, H. Kim, J. Lee, J. Lim, S. Kang, Yonsei Univ. (South Korea) [TD03-30]

Several technical problems of high power He-Ne laser with flat discharge tube, Y. Ling, Southeast Univ. (China) [TD03-31]

Optimization of fluid jet polishing CNC tool design, W. A. Messelink, Fachhochschule Aargau (Switzerland) and Fisba Optik AG (Switzerland); R. Wäger, Fachhochschule Aargau (Switzerland); T. Wons, Fisba Optik AG (Switzerland); K. C. Heiniger, Fachhochschule Aargau (Switzerland); O. W. Föhnle, Fisba Optik AG (Switzerland) [TD03-32]

Particle tracking in a fluid jet polishing slurry flow, R. Wäger, Fachhochschule Aargau (Switzerland); W. A. Messelink, Fachhochschule Aargau (Switzerland) and Fisba Optik AG (Switzerland); T. Wons, O. W. Föhnle, Fisba Optik AG (Switzerland); K. C. Heiniger, Fachhochschule Aargau (Switzerland) [TD03-33]

Prediction of the depth of cut for tools having a finite contact patch, C. Bouvier, S. M. Gracewski, S. J. Burns, E. Fess, Univ. of Rochester [TD03-34]

Fabrication of affordable aspheric mirrors by electroforming, B. Stein, NiCoForm, Inc.; A. Caneer, Advanced Optical Systems, Inc. [TD03-35]

GRANTECAN Telescope M3 Mirror manufacturing, M. A. Abdulkadyrov, A. N. Ignatov, V. E. Patrikeev, V. V. Pridnya, A. A. Polyanchikov, A. P. Semenov, Y. A. Sharov, JSC Lytkarino Optical Glass Plant (Russia) [TD03-36]

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M1 and M2 mirrors manufacturing for VISTA Telescope, M. A. Abdulkadyrov, A. N. Ignatov, V. E. Patrikeev, V. V. Pridnya, A. V. Polyanchikov, A. P. Semenov, Y. A. Sharov, JSC Lytkarino Optical Glass Plant (Russia) [TD03-37]

Surface error analysis and experiment study on the 1.2m sphere mirror, Z. Chen, S. Yang, S. Wang, X. Gu, S. Wang, National Astronomical Observatories, CAS (China) [TD03-38]

Development of compliant tools and processes to polish axisymmetric surfaces, C. Bouvier, S. M. Gracewski, S. J. Burns, E. Fess, Univ. of Rochester [TD03-39]

Double-sided lapping and polishing of optical materials, M. N. Naselaris, Sydor Optics, Inc. [TD03-40]

Surface Characterization, Chemistry, and Material Science

Comparative microindentation and DISLOCATION activity in silicon and CaF₂: a model, J. C. Lambropoulos, S. Q. Zhang, Univ. of Rochester [TD03-41]

Use of nanocrystalline ceria in EUV lithography optics polishing, P. G. Murray, Nanophase Technologies Corp.; T. Boehm, H. Maltor, Carl Zeiss SMT AG (Germany) [TD03-42]

Effects of glass mechanical properties on polishing, S. N. Shafir, J. C. Lambropoulos, Univ. of Rochester [TD03-43]

Coffee Break 10:30 to 11:00 am

Wednesday 4 May

SESSION 3

Room: Highland Room C Wed. 8:30 to 9:30 am

8:30 am: **Development of a new process for manufacturing precision gobs out of new developed low Tg optical glasses for precise pressing of aspherical lenses**, R. Jaschek, C. Klein, C. Schenk, K. Schneider, J. Freund, S. Ritter, SCHOTT AG (Germany) [TD03-15]

8:50 am: **Optical materials micromechanical property database**, J. C. Lambropoulos, Univ. of Rochester [TD03-17]

9:10 am: **Ultra-precision finishing of micro aspherical surface by ultrasonic vibration assisted polishing**, H. Suzuki, R. Kawamori, Y. Yamamoto, T. Okino, Y. Hijikata, T. Moriwaki, Kobe Univ. (Japan); M. Miyabara, Toyohashi Univ. of Technology (Japan) [TD03-53]

Poster Previews

Room: Highland Room C Wed. 9:00 am

(3-minute presentations)

The following Oral Poster Previews will be on display in the Highland Room A during the Wednesday Poster Session. Authors will be present for discussion from 5:00 to 6:30 pm.

Optical Metrology and Testing

Power spectral density plots inside MRF spots, J. E. DeGroot, A. E. Marino, K. E. Spencer, S. D. Jacobs, Univ. of Rochester [TD03-45]

Phase retrieval as an optical metrology tool, G. R. Brady, J. R. Fienup, Univ. of Rochester [TD03-46]

Imaging of biological tissues with optical coherence tomography system using Jones-Mueller calculus, S. Firdous, Sr., Pakistan Institute of Engineering and Applied Science (Pakistan) [TD03-47]

Mechanical errors related to interferometric radius of curvature measurements, P. J. McGhee, Fisba Optik and Univ. of Rochester [TD03-48]

Quadratic coefficient of spherical aberration effect in study of laser beam quality factor, M. Bouafia, A. Bencheikh, L. L. Bouamama, Univ. Ferhat Abbas de Sétif (Algeria); B. Eppich, Technische Univ. Berlin (Germany) [TD03-49]

The sum of all errors, B. Light, Optimax Systems, Inc. [TD03-50]

Calibrating interferometric imaging distortion using subaperture stitching interferometry, S. O'Donohue, P. Murphy, G. Forbes, J. Fleig, P. Dumas, QED Technologies, Inc. [TD03-51]

Coffee Break 10:30 to 11:00 am

Plan to Attend

Wednesday Poster Session

5:00 to 6:30 pm • Highland Room A

Poster authors may set up their posters on Wednesday from 10:00 am to 4:00 pm. Poster authors should check in with the SPIE Registration Area prior to tacking up their posters.

Authors will be present for discussion during the Poster Session.

Thursday 5 May

SESSION 4

Room: Highland Room C Thurs. 8:30 to 10:30 am

8:30 am: **Where do optical tolerances come from?**, J. Bentley, Corning Tropel Corp. and Univ. of Rochester [TD03-18]

8:45 am: **Designing optics in CAD software**, J. Venturino, OPTIS (France) . . [TD03-20]

9:00 am: **Designing and specifying aspheres for manufacturability**, J. J. Kumler, Coastal Optical Systems, Inc. [TD03-21]

9:15 am: **Measurement of mild aspheric surfaces with subaperture stitching interferometry**, P. E. Murphy, G. W. Forbes, J. F. Fleig, QED Technologies, Inc. [TD03-22]

9:30 am: **Correcting optical systems by improving transmitted wavefronts with MRF**, C. Hall, P. Dumas, S. O'Donohue, QED Technologies, Inc. [TD03-23]

9:45 am: **MTF testing of imaging systems: a practical solution for production environments**, S. P. Sadoulet, Edmund Optics, Inc. [TD03-24]

10:00 am: **The ultra-high precision form measurement of small, steep-sided aspheric molds, incorporating novel hardware and software developments**, M. J. Hutchinson, M. Mills, Taylor Hobson Ltd. (United Kingdom) [TD03-25]

10:15 am: **Tactile sensor for aspheric measurements**, R. Schöne, T. Hanning, FORWISS/Univ. of Passau (Germany); J. Zaenker, LINOS Photonics GmbH (Germany) [TD03-26]

Coffee Break 10:30 to 11:00 am

