



annual report
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INSTITUT FÜR
TECHNISCHE OPTIK
UNIVERSITÄT STUTTGART



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ANNUAL REPORT 2009/2010

Invited lectures on international conferences

C. Pruss, E. Garbusi, W. Osten:

Advances in 3D asphere testing and reconstruction

Three-Dimensional Imaging, Visualization, and Display 2009. Edited by Javidi, Bahram; Son, Jung-Young; Martinez-Corral, Manuel; Okano, Fumio; Osten, Wolfgang. Proceedings of the SPIE, Vol. 7329 (2009) pp. 732905-732905-10 Orlando, FL, USA, 15.4.2009

W. Osten:

Increased flexibility for optical metrology by digital holography

OSA Topical Meeting "Digital Holography" 2009, 27 April – 1st May 2009, Vancouver, Canada

W. Osten:

Simulations of Scatterometry down to 22 nm structure sizes and beyond

International Conference on Frontiers of Characterization and Metrology for Nanoelectronics 2009, 11 – 15 May 2009, Albany, USA

W. Osten:

Some answers to new challenges in optical metrology

OptiMess 2009, 25 – 27 May, 2009, Antwerp, Belgium

W. Osten:

Testing aspheric lenses: some new approaches with increased flexibility

International Symposium on Measurement Technology & Intelligent Instruments, 30. June - 2nd July 2009, St. Petersburg, Russia

W. Osten:

Making, Testing, Applying – Some New Approaches in the Field of Micro Optics

5th Sino-German Symposium on Micro- and Nano-Production, Measurement and Application. 25.-28. September 2009, Shanghai, China

W. Osten:

Spatial Light Modulators and their Properties for Optical Micro-Manipulation

2nd International Symposium on Trends in Micromanipulation, 12. – 15. April 2010, Obergurgl, Austria

W. Osten:

Optical Metrology: From the laboratory to the real world

Speckle 2010, 12 – 15 September 2010, Florianopolis, Brazil

W. Osten:

Different Approaches to Overcome Existing Limits in Optical Micro- and Nanometrology

257th PTB-Seminar: „3D Micro- and Nanometrology - Requirement & Developments. 27 – 28 September 2010, Braunschweig, Germany

W. Osten:

Making, Testing, Applying – Some New Approaches in the Field of Micro Optics

2010 Sino-German Symposium on Laser Technology and Applications, 4 – 6 October 2010, Wuhan, China

G. Pedrini:

Resolution enhanced technologies in digital holography

The Ninth International Conference: "Correlation Optics 2009", September 20-24, 2009, Chernivtsi, Ukraine

Editorial work

Osten, W.; Kujawska, M. (Eds.):

Fringe 2009. Proc. Of the 6th International Workshop on Advanced Optical Metrology
Springer, Heidelberg, Dordrecht, London, New York 2009

Gorecki, C.; Asundi, A.; Osten, W. (Eds.):

Optical Micro- and Nanometrology III
Proc. SPIE Vol. 7718, Bellingham 2010

Osten, W.; et. al. (Eds.):

50 Jahre ITO
Institut für Technische Optik, Stuttgart 2010,
ISBN 978-3-923560-64-6

Itoh, K.; Javidi, B.; McManamon, P.F.; Osten, W.; Leheny, R.F. (Eds.):

Optics and Photonics for
Security and Defense
Proc. of the IEEE. Volume: 97,
Issue: 6 Pages: 954-956 Published: June 2009

Reviewed papers

Almoro, P. F.; Pedrini, G.; Anand, A.; Osten, W.; Hanson, S. G.

Angular displacement and deformation analyses using a speckle-based wavefront sensor

Applied Optics 48 (2009) 5 pp. 932–940

Almoro, P. F.; Pedrini, G.; Zhang, F.; Maallo, A. M. S.; Anand, A.; Gundu, P. N.; Wang, W.; Asundi, A.; Osten, W.; Hanson, S. G.

Fault-Tolerant Characterization of Phase Objects Using a Speckle-Based Phase Retrieval Technique

International Journal of Optomechatronics 4 (2010) 4 pp. 397–410

Almoro, P. F.; Pedrini, G.; Gundu, P. N.; Osten, W.; Hanson, S. G.

Phase microscopy of technical and biological samples through random phase modulation with a diffuser

Optics Letters 35 (2010) 7 pp. 1028–1030

Anand, A.; Chhaniwal, V. K.; Almoro, P.; Pedrini, G.; Osten, W.

Shape and deformation measurements of 3D objects using volume speckle field and phase retrieval

Optics Letters 34 (2009) 10 pp. 1522–1524

Baer, G.; Garbusi, E.; Lyda, W.; Osten, W.

Automated surface positioning for a non-null test interferometer

Optical Engineering 49 (2010) 9 pp. 95602

Burla, A.; Lyda, W.; Osten, W.; Regin, J.; Westkämper, E.; Zimmermann, J.; Sawodny, O.

Reliability Analysis of Indicator Functions in an Automated Multiscale Measuring System

tm - Technisches Messen 77 (2010) 9 pp. 493–499

Daneshpanah, M.; Zwick, S.; Schaal, F.; Warber, M.; Javidi, B.; Osten, W.

3D Holographic Imaging and Trapping for Non-Invasive Cell Identification and Tracking

Journal of Display Technology 6 (2010) 10 pp. 490–499

Faridian, A.; Hopp, D.; Pedrini, G.; Eigenthaler, U.; Hirscher, M.; Osten, W.

Nanoscale imaging using deep ultraviolet digital holographic microscopy

Optics Express 18 (2010) 13 pp. 14159–14164

Fu, Y.; Pedrini, G.; Hennelly, B. M.; Groves, R. M.; Osten, W.

Dual-wavelength image-plane digital holography for dynamic measurement

Optics and Lasers in Engineering 47 (2009) 5 pp. 552–557

Garbusi, E.; Osten, W.

Perturbation methods in optics: application to the interferometric measurement of surfaces

JOSA A 26 (2009) 12 pp. 2538–2549

Garbusi, E.; Osten, W.

Analytical study of disturbing diffraction orders in in-line computer generated holograms for aspheric testing

Optics Communications 283 (2010) 13 pp. 2651–2656

Garbusi, E.; Pruss, C.; Osten, W.

Process-Integrated Measurement of Aspherical Surfaces – Prozessintegrierte Vermessung asphärischer Oberflächen

tm - Technisches Messen 76 (2009) 7-8 pp. 354–359

Gopinathan, U.; Pedrini, G.; Javidi, B.; Osten, W.

Lensless 3D Digital Holographic Microscopic Imaging at Vacuum UV Wavelength

Journal of Display Technology 6 (2010) 10 pp. 479–483

Groves, R.; Pradarutti, B.; Kouloumpi, E.; Osten, W.; Notni, G.

2D and 3D non-destructive evaluation of a wooden panel painting using shearography and terahertz imaging

NDT & E INTERNATIONAL 42 (2009) 6 pp. 543-549

Haist, T., Osten, W.

Proposal for Secure Key Distribution Using Classical Optics

Lecture Notes in Computer Science 5882 (2009) pp. 99-101

Haist, T., Osten, W.

White-light interferometric method for secure key distribution

Journal of Supercomputing, Springer 0920-8542 (2010) pp. 1-7

Hering, M.; Körner, K.; Jähne, B.

Correlated speckle noise in white-light interferometry: theoretical analysis of measurement uncertainty

Applied Optics 48 (2009) 3 pp. 525-538

Hopp, D.; Pruss, C.; Osten, W.; Seybold, J.; Mayer, V.; Kück, H.

Optischer inkrementaler Drehgeber in Low-Cost-Bauweise

tm - Technisches Messen 77 (2010) 6 pp. 358-363

Kohler, C.; Haist, T.; Osten, W.

Model-free method for measuring the full Jones matrix of reflective liquid-crystal displays

Optical Engineering 48 (2009) 4 pp. 044002

Kohler, C.; Zhang, F.; Osten, W.

Characterization of a spatial light modulator and its application in phase retrieval

Applied Optics 48 (2009) 20 pp. 4003-4008

Osten, W.; Dörband, B.; Garbusi, E.; Pruss, C.; Seifert, L.

Testing aspheric lenses: New approaches

Optoelectronics, Instrumentation and Data Processing 46 (2010) 4 pp. 329-339

Pedrini, G.; Gaspar, J.; WU, T.; Osten, W.; Paul, O.

Calibration of optical systems for the measurement of microcomponents

Optics and Lasers in Engineering 47 (2009) 2 pp. 203-210

Pedrini, G.; Gaspar, J.; Osten, W.; Paul, O.

Development of Reference Standards for the Calibration of Optical Systems Used in the Measurement of Microcomponents

Strain 46 (2010) 1 pp. 79-88

Pedrini, G.; Gaspar, J.; Paul, O.; Osten, W.

Measurement of in-plane deformations of microsystems by digital holography and speckle interferometry

Chinese Optics Letters 7 (2009) 12 pp. 1109-1112

Rafler, S.; Petschow, M.; Seifert, U.; Frenner, K.; Göckeritz, J.; Osten, W.

Effects of pupil discretization and Littrow illumination in the simulation of bright-field defect detection

Optics Letters 34 (2009) 12 pp. 1840-1842

Schaal, F.; Warber, M.; Zwick, S.; van der Kuip, H.; Haist, T.; Osten, W.

Marker-free cell discrimination by holographic optical tweezers

J. Europ. Opt. Soc. Rap. Public. 4 (2009) 09028

Schuster, T.; Rafler, S.; Ferreras Paz, V.; Frenner, K.; Osten, W.

Fieldstitching with Kirchhoff-boundaries as a model based description for line edge roughness (LER) in scatterometry

Microelectronic Engineering 86 (2009) 4-6 pp. 1029-1032

Situ, G.; Pedrini, G.; Osten, W.

Spiral phase filtering and orientation-selective edge detection/enhancement

JOSA A 26 (2009) 8 pp. 1788–1797

Situ, G.; Pedrini, G.; Osten, W.

Strategy for cryptanalysis of optical encryption in the Fresnel domain

Applied Optics 49 (2010) 3 pp. 457–462

Situ, G.; Warber, M.; Pedrini, G.; Osten, W.

Phase contrast enhancement in microscopy using spiral phase filtering

Optics Communications 283 (2010) 7 pp. 1273–1277

Warber, M.; Maier, S.; Haist, T.; Osten, W.

Combination of scene-based and stochastic measurement for wide-field aberration correction in microscopic imaging

Applied Optics 49 (2010) 28 pp. 5474–5479

Zwick, S.; Haist, T.; Miyamoto, Y.; He, L.; Warber, M.; Hermer-schmidt, A.; Osten, W.

Holographic twin traps

Journal of Optics A: Pure and Applied Optics 11 (2009) 3 pp. 34011

Zwick, S.; Haist, T.; Warber, M.; Osten, W.

Dynamic holography using pixelated light modulators

Applied Optics 49 (2010) 25 pp. F47-F58

Zwick, S.; Schaub, C.; Haist, T.; Osten, W.

Light fields with an axially expanded intensity distribution for stable three-dimensional optical trapping

Optics Express 18 (2010) 19 pp. 19941–19950

Conference proceedings and journals

2009

Anand, A.; Chhaniwal, V. K.; Pedrini, G.; Osten, W.

Digital holographic tomography of phase objects

Proceedings of SPIE 7389 (2009) pp. 73890L

Anand, A.; Chhaniwal, V. K.; Pedrini, G.; Osten, W.

Shape measurement of diffuse and transparent objects by two wavelength contouring using phase retrieval

Proceedings of SPIE 7390 (2009) pp. 73900D

Berger, R.; Osten, W.

Analogy of white-light interferometry and pulse shaping

In: Fringe 2009, Proceedings of the 6th International Workshop on Advanced Optical Metrology (2009) pp. 384–389

Ferreras Paz, V.; Schuster, T.; Frenner, K.; Osten, W.; Szikszai, L.; Mört, M.; Hohle, C.; Bloess, H.

Simulation based sensitivity analysis and optimization of Scatterometry measurements for future semiconductor technology nodes

In: Fringe 2009, Proceedings of the 6th International Workshop on Advanced Optical Metrology (2009) pp. 592–595

Fleischle, D.; Lyda, W.; Osten, W.

Modeling and simulation of a chromatic-confocal sensor to measure rough surfaces

Proc. DGaO, 110. Tagung (2009) B7

Garbusi, E.; Baer, G.; Pruss, C.; Osten, W.

Rapid and flexible measurement of precision aspheres

In: Fringe 2009, Proceedings of the 6th International Workshop on Advanced Optical Metrology (2009) pp. 330–338

Gessenhardt, C.; Zimmermann, F.; Reichle, R.; Pruss, C.; Osten, W.; Schulz, C.

Endoscopic imaging LIF diagnostics in IC engines

Proceedings of the European Combustion Meeting (2009) 810 / 328

Gessenhardt, C.; Zimmermann, F.; Schulz, C.; Reichle, R.; Pruss, C.; Osten, W.

Hybrid Endoscopes for Laser-Based Imaging Diagnostics in IC Engines

SAE international: Combustion and Flow Diagnostics and Fundamental Advances in Thermal and Fluid Sciences (2009) pp. 2009-01-0655

Groves, R. M.; Derauw, D.; Thizy, C.; Alexeenko, I.; Osten, W.; Georges, M.; Tornari, V.

Automated Phase Map Referencing Against Historic Phase Map Data

In: Fringe 2009, Proceedings of the 6th International Workshop on Advanced Optical Metrology (2009) pp. 193–196

Groves, R. M.; Li, A.; Liu, X.; Hackney, S.; Peng, X.; Osten, W.

2.5D virtual reality visualisation of shearography strain data from a canvas painting

Proceedings of SPIE 7391 (2009) pp. 739109

Häfner, M.; Reichle, R.; Pruss, C.; Osten, W.

Laser direct writing of high resolution structures on curved substrates: evaluation of the writing precision

In: Fringe 2009, Proceedings of the 6th International Workshop on Advanced Optical Metrology (2009) pp. 772–775

Haist, T.; Osten, W.

Vorschlag einer abhörsicheren Datenkommunikation mit Licht

Proc. Optics in Computing (ORT) (2009) pp. 55-57

Haist, T.; Osten, W.

White-light interferometric computing and secure data transmission

Conference on Lasers and Electro-Optics/Pacific Rim (CLEOPR) paper: ThJ3_1 (2009)

Kohler, C.; Osten, W.; Zhang, F.

Phase retrieval with an LCoS display: characterization and application

In: Fringe 2009, Proceedings of the 6th International Workshop on Advanced Optical Metrology (2009) pp. 72–77

Lyda, W.; Burla, A.; Haist, T.; Zimmermann, J.; Osten, W.; Sawodny, O.

Automated Multiscale Measurement System for micro optical elements

In: Fringe 2009, Proceedings of the 6th International Workshop on Advanced Optical Metrology (2009) pp. 584–591

Lyda, W.; Fleischle, D.; Haist, T.; Osten, W.

Chromatic confocal spectral interferometry for technical surface characterization

Proceedings of SPIE 7432 (2009) pp. 74320Z

Lyda, W.; Zimmermann, J.; Burla, A.; Regin, J.; Osten, W.; Sawodny, O.; Westkämper, E.

Sensor and actuator conditioning for multiscale measurement systems on example of confocal microscopy

Proceedings of SPIE 7389 (2009) pp. 738903

Maisch, S.; Frenner, K.; Schweizer, H.; Osten, W.

Design of Optical Metamaterials

Proc. DGaO, 110. Tagung (2009) A19

Maisch, S.; Schau, P.; Frenner, K.; Osten, W.

About the feasibility of nearfield-farfield transformers based on optical metamaterials

In: Fringe 2009, Proceedings of the 6th International Workshop on Advanced Optical Metrology (2009) pp. 375–383

Osten, W.

Some answers to new challenges in Optical Metrology

Proc. of the 4th Intern. Conf. on Optical Measurement Techniques for Structures & Systems, Shaker Publ. (2009) pp. 11-29

Osten, W.; Ferreras Paz, V.; Frenner, K.; Schuster, T.; Bloess, H.

Simulations of Scatterometry down to 22 nm Structure Sizes and Beyond with special Emphasis to LER

AIP Proc. 1173 (2009) pp. 371-378

Pedrini, G.; Hopp, D.; Gopinathan, U.; Osten, W.

Resolution enhanced technologies in digital holography

Proceedings of SPIE 7388 (2009) pp. 73880K

Pruss, C.; Garbusi, E.; Osten, W.

Advances in 3D asphere testing and reconstruction

Proceedings of SPIE 7329 (2009) pp. 732905

Schaal, F.; Warber, M.; Rembe, C.; Haist, T.; Osten, W.

Dynamic multipoint vibrometry using spatial light modulators

In: Fringe 2009, Proceedings of the 6th International Workshop on Advanced Optical Metrology (2009) pp. 528–533

Schaal, F.; Warber, M.; Zwick, S.; van der Kuip, H.; Haist, T.; Osten, W.

Marker-free cell discrimination by holographic optical tweezers

Journal of the European Optical Society-rapid Publications 4 (2009) 09028

Seifert, L.; Pruss, C.; Dörband, B.; Osten, W.

Measuring aspheres with a chromatic Fizeau interferometer

Proceedings of SPIE 7389 (2009) pp. 738919

Situ, G.; Pedrini, G.; Osten, W.

Anisotropic spiral phase filtering for image enhancement in edge detection and microscopy

Proceedings of SPIE 7388 (2009) pp. 738800

Situ, G.; Pedrini, G.; Osten, W.

Collision in double-phase encryption based on fractional Fourier transform

Proceedings of SPIE 7512 (2009) pp. 751205

Situ, G.; Warber, M.; Pedrini, G.; Osten, W.

Orientation-selective spiral-phase contrast microscopy

In: Fringe 2009, Proceedings of the 6th International Workshop on Advanced Optical Metrology (2009) pp. 230–235

Warber, M.; Zwick, S.; Hasler, M.; Haist, T.; Osten, W.

SLM-based phase-contrast filtering for single and multiple image acquisition

Proceedings of SPIE 7442 (2009) pp. 74420E

Zwick, S.; Warber, M.; Gorski, W.; Haist, T.; Osten, W.

Flexible Adaptive Phase Contrast Methods Using a Spatial Light Modulator

Proc. DGaO, 110. Tagung (2009) A3

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Alexeenko, I.; Vandenrijt, J-F.; Georges, M.; Pedrini, G.; Thizy, C.; Osten, W.; Vollheim, B.

Digital Holographic Interferometry by Using Long Wave Infrared Radiation (CO₂ Laser)

Applied Mechanics and Materials Volumes 24 – 25 (2010) p. 147-152
Online available: <http://www.scientific.net/AMM.24-25.147>

Bilski, B.; Frenner, K.; Osten, W.

Investigation of enhanced 2D field-stitching method as a simulation-tool for line-edge roughness in scatterometry

Proceedings of SPIE 7718 (2010) pp. 771808

Burla, A.; Haist, T.; Lyda, W.; Osten, W.

An assistance system for the selection of sensors in multi-scale measurement systems

Proceedings of SPIE 7791 (2010) pp. 77910I

Burla, A.; Haist, T.; Lyda, W.; Yesuadimai Michael, A.; Osten, W.

Rapid ideal template creation for the inspection of MEMS based on self-similarity characteristics

Proceedings of SPIE 7798 (2010) pp. 77981W

Faridian, A.; Hopp, D.; Pedrini, G.; Osten, W.

Deep ultraviolet digital holography for nanoscopic applications

Proc. DGaO, 111. Tagung (2010) A34

Faridian, A.; Hopp, D.; Pedrini, G.; Osten, W.

Deep-ultraviolet digital holographic microscopy for nano-inspection

Proceedings of SPIE 7718 (2010) pp. 771803

Faridian, A.; Hopp, D.; Pedrini, G.; Osten, W.

Different approaches to increase resolution in DHM

Information Optics (WIO), 9th Euro-American Workshop on (2010) pp. 1–3

Fleischle, D.; Lyda, W.; Mauch, F.; Haist, T.; Osten, W.

Untersuchung zum Zusammenhang von spektraler Abtastung und erreichbarer Messunsicherheit bei der chromatisch-konfokalen Mikroskopie an rauen Objekten

Proc. DGaO, 111. Tagung (2010) A14

Fleischle, D.; Lyda, W.; Mauch, F.; Osten, W.

Optical metrology for process control: modeling and simulation of sensors for a comparison of different measurement principles

Proceedings of SPIE 7718 (2010) pp. 77181D

Gilbergs, H.; Frenner, K.; Eberhard, P.; Osten, W.

Modellgestützte Rekonstruktion der Lage von dezentrierten Linsen in optischen Systemen

Proc. DGaO, 111. Tagung (2010) B1

Gorecki, C.; Asundi, A. K.; Osten, W.; Bilski, B.; Frenner, K.

Investigation of enhanced 2D field-stitching method as a simulation-tool for line-edge roughness in scatterometry

Proceedings of SPIE 7718 (2010) pp. 771808

Haist, T., Burla, A.

Learning by playing: how to create the perfect learning game for and with optics

Proc. SPIE 7783 (2010) 77830E

Lyda, W.; Burla, A.; Haist, T.; Zimmermann, J.; Osten, W.; Sawodny, O.

Automated multiscale measurement system for MEMS characterisation

Proceedings of SPIE 7718 (2010) pp. 77180G

Lyda, W.; Fleischle, D.; Mauch, F.; Haist, T.; Osten, W.

Vor- und Nachteile der chromatisch-konfokalen Spektralinterferometrie im Vergleich zur klassischen Spektralinterferometrie

Proc. DGaO, 111. Tagung (2010) B31

Osten, W.; Garbusi, E.; Fleischle, D.; Lyda, W.; Pruss, C.; Reichle, R.; Falldorf, C.

Optical metrology: from the laboratory to the real world

Proceedings of SPIE 7387 (2010) pp. 73871G

Pedrini, G.; Maisch, S.; Gaspar, J.; Paul, O.; Osten, W.

Measurement of nanometric deformations of microsystems

Proc. DGaO, 111. Tagung (2010) A13

Reichle, R.; Häfner, M.; Pruß, C.; Osten, W.

Diffraktive Strukturen auf gekrümmten
Oberflächen für hybride Abbildungssysteme

Photonik 4 (2010) pp. 36–40

Reingand, N.; Osten, W.; Albertazzi, A.; Kaufmann, G. H.

Bringing university invention to the market

Proceedings of SPIE 7387 (2010) 738712

Ruppel, T.; Osten, W.; Sawodny, O.

Adaptive optics simulation with mechani-
cally motivated basis functions

Proceedings of SPIE 7736 (2010) pp. 77363Y

Schau, P.; Frenner, K.; Fu, L.; Schweizer, H.; Osten, W.

Coupling between surface plasmons
and Fabry-Pérot modes in metallic double
meander structures

Proceedings of SPIE 7711 (2010) pp. 77111F

Patents

Patent Applications

Ruprecht, Aiko:

Optisches Detektionsverfahren
mittels Vielstrahlinterferenz

DE 10 2007 030 814 A1 2009.01.08, priority data: 2007.07.03

*Körner, Klaus; Kohler, Christian; Papastathopoulos, Evangelos;
Osten, Wolfgang:*

Method and arrangement for a rapid and
robust chromatic confocal 3d measurement
technique

US 2009/0021750 A1 2009.01.22, priority data: 2006.02.08
JP 2009 526 216 (T) 2009.07.16, priority data: 2006.02.08

Verfahren und Anordnung zur schnellen
und robusten chromatisch-konfokalen
3D-Messtechnik

AT 442 604 (T) 2009.09.15, priority data: 2006.02.08
(all from family list for DE 10 2006 007 170 B4)
Assignee: Sirona Dental Systems GmbH

Körner, Klaus; Lyda, Wolfram; Osten, Wolfgang:

Anordnung und Verfahren zur konfokalen,
spektralen Zweistrahl-Interferometrie

DE 10 2008 020 902 A1 2009.10.29, priority data: 2008.04.18

Körner, Klaus; Osten, Wolfgang:

Verfahren und Anordnung zur skalierbaren
Interferometrie

DE 10 2008 062 879 A1 2010.05.12, priority data: 2008.10.10,
2008.10.14, 2008.12.15

Verfahren und Anordnung zur Interferometrie

PCT/EP 2009/007327, WO 2010/040570 A1 2010.04.15

Hopp, David; Pruß, Christof; Osten, Wolfgang:

Verfahren zur optischen Kompensation
der Maßspurdezentrierung bei Drehwinkel-
sensoren

DPMA-AZ: 10 2009 040 790, priority data: 2009.09.09
PCT/EP2010/005514

Körner, Klaus; Berger, Reinhard; Osten, Wolfgang:

Verfahren und Anordnung zur robusten
Interferometrie

DPMA-AZ: 10 2010 006 239, priority data: 2010.01.22

Additional patent application
Körner, Klaus; Osten, Wolfgang:

Verfahren zur robusten, insbesondere
weitskaligen Interferometrie

DPMA-AZ: 10 2010 056 122, priority data: 2010.12.20

Wibbing, Daniel; Hopp, David:

Positionsmesssystem und Verfahren zur
Ermittlung einer Absolutposition

DPMA-AZ: 10 2010 045 355, priority data: 2010.09.14
Assignee: Festo AG & Co. KG

Körner, Klaus; Osten, Wolfgang:

Robustes One-Shot-Interferometer und
Verfahren, insbesondere auch als Scout-
Sensor zur multisensoriellen Material-
messung oder Tumorzellen-Erkennung

DPMA-AZ: 10 2010 046 907, priority data: 2010.09.24

Granted Patents

*Lehmann, Peter; Lücke, Peter; Mohr, Jürgen;
Morgan-Iglesias, Javier Carlos; Osten, Wolfgang;
Ruprecht, Aiko; Schönfelder, Sven:*

Optical Measuring Head

US 7,486,394 B2 2009.02.03, priority data: 2006.09.02
Assignee: Carl-Mahr Holding GmbH

*Körner, Klaus; Berger, Reinhard; Droste, Ulrich;
Kerwien, Norbert; Kohler, Christian; Osten, Wolfgang;
Papastathopoulos, Evangelos; Pruß, Christof; Ruprecht, Aiko;
Wiesendanger, Tobias:*

Interferometrisches Verfahren und Anordnung

EP 1 805 477 B1 2009.04.08, priority data: 2004.10.20,
2005.02.03, 2005.09.05

*Körner, Klaus; Berger, Reinhard; Droste, Ulrich;
Kohler, Christian; Osten, Wolfgang; Pruß, Christof;
Ruprecht, Aiko; Wiesendanger, Tobias:*

Verfahren und Anordnung zur konfoka- len, chromatischen, interferometrischen, spektroskopischen Abtastung für optische Mehrlagendatenspeicher

EP 1 846 923 B1 2009.04.08, priority data: 2005.02.03

*Körner, Klaus; Kohler, Christian; Papastathopoulos, Evangelos;
Osten, Wolfgang:*

Verfahren und Anordnung zur schnellen und robusten chromatisch-konfokalen 3D-Messtechnik

DE 10 2006 007 170 B4 2009.06.10, priority data: 2005.02.08
EP 1 984 770 B1 2009.09.09

Method and arrangement for a rapid and robust chromatic confocal 3d measurement technique

US 7,787,132 B2 2010.08.31
Assignee: Sirona Dental Systems GmbH

Górski, Witold, Marek; Osten, Wolfgang:

Optisches Abbildungssystem und Verfahren zum Ermitteln dreidimensionaler Amplituden- und/oder Phasenverteilungen

DE 10 2007 036 309 B4 2009.09.03, priority data: 2007.07.31

Ruprecht, Aiko:

Optisches Detektionsverfahren mittels Vielstrahlinterferenz

DE 10 2007 030 814 B4 2010.02.11, priority data: 2007.07.03

Körner, Klaus; Lyda, Wolfram; Osten, Wolfgang:

Anordnung und Verfahren zur konfokalen, spektralen Zweistrahl-Interferometrie

DE 10 2008 020 902 B4 2010.07.29, priority data: 2008.04.18

Körner, Klaus; Osten, Wolfgang:

Sensor zur Erfassung der Topografie mit einem Zweistrahl-Interferometer

DE 103 21 895 B4 2010.09.16, priority data: 2003.05.07

Körner, Klaus; Osten, Wolfgang:

Verfahren und Anordnung zur skalierbaren Interferometrie

DE 10 2008 062 879 B4 2010.10.28, priority data: 2008.10.10,
2008.10.14, 2008.12.15

Doctoral Thesis, Diploma Thesis & Student Research Thesis

Doctoral Thesis 2009–2010

Seifert, Lars

Flexible Verfahren zur Vermessung
asphärischer Flächen

2/2009

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Rigorese Rekonstruktionsmethoden der
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