

PUBLIKATIONEN VON PROF. DR. OLIVER SANDFUCHS

Stand Oktober 2018

Books

Meyer, J., Sandfuchs, O., Thomas, C.: *Moderne Lichtquellen: Materialien, Optische Mikrostrukturen und Prüfverfahren. LED 2014: Beiträge zur Technologie.* 1. Auflage. Herausgegeben von D. Köhler.

Scientific Journal Papers

Karthaus, D., Giehl, M., O. Sandfuchs, O., u.a.: Modeling of light-emitting diode wavefronts for the optimization of transmission holograms. In: *Appl. Opt.* 56 (2017), S. 5234-5241.

Sandfuchs, O., Brunner, R.: Efficiency-achromatized reflective dispersion grating by a double-blazed configuration: Theoretical conditions for optimal material selection. Special issue on "Micro- and Nano-optics". In: *Asian J. Phys.* 25 (2016), S. 897-906. (invited paper)

Thomae, D., Sandfuchs, O., Brunner, R.: Influence of oblique illumination on perfect Talbot imaging and nearly perfect self-imaging for gratings beyond five diffraction orders. In: *J. Opt. Soc. Am. A* 32 (2015). S. 2365-2372.

Thomae, D., Sandfuchs, O., Brunner, R.: Quantitative analysis of imperfect frequency multiplying in fractional Talbot planes and its effect on high-frequency-grating lithography. In: *J. Opt. Soc. Am. A* 31 (2014), S. 1436-1444.

Thomae, D., Maass, J., Sandfuchs, O. u.a.: Flexible mask illumination setup for serial multi-patterning in Talbot lithography". In: *Appl. Opt.* 53 (2014), S. 1775-1781.

Maass, J., Sandfuchs, O., Gatto A. u.a.: Talbot-carpetts of periodic and quasi-periodic close-packed 2D mask structures calculated by modified chirp-z-algorithm. In: *Proc. SPIE vol. S. 8428, Micro-Optics* (2012). S. 84281L (2012).

Maass, J., Sandfuchs, O., Thomae, D. u.a.: Effective and flexible modeling approach to investigate various 3D Talbot carpetts from a spatial finite mask. In: *J. Eur. Opt. Soc. Rap. Public.* 8 (2011). S. 13004-1-8.

Brunner, R., Sandfuchs, O., Pacholski, C. u.a.: Lessons from nature: Biomimetic subwavelength structures for high-performance optics. In: *Laser Photonics Rev.* 6 (2011). S. 641-659. (invited paper)

Sandfuchs, O., Schwanke, Ch., Burkhardt, M. u.a.: Modeling adapted to manufacturing aspects of holographic grating structures. In: *J. Eur. Opt. Soc.* 6 (2011). S. 11006-1-10 (2011). (invited paper)

Brunner, R., Burkhardt, M., Steiner, R., Sandfuchs, O.: *Micro-Spectral Sensors: Concepts, Efficiency and Manufacturing.* In: *Proc. SPIE vol. 7716* (2010). S. 771611-1-7.

PUBLIKATIONEN VON PROF. DR. OLIVER SANDFUCHS

Stand Oktober 2018

Brunner, R., Dobschal, H.-J., Steiner, R., Burkhardt, M., Cumme, M., Sandfuchs, O. u.a.: Microstructured optics for excimer-based systems: applications for imaging, beam shaping and coherence management. In: Proc. SPIE vol. 7652 (2010). S. 765227-1-8.

Sandfuchs, O., Pätz, D., Sinzinger, S. u.a.: Analysis of the influence of the passive facet of blazed transmission gratings in the intermediate diffraction regime. In: J. Opt. Soc. Am. A, vol. 25 (2008). S. 1885-1893.

Sandfuchs, O., Pesch, A., Brunner, R.: Rigorous modeling of dielectric and metallic blaze gratings in the intermediate structure regime. In: Proc. SPIE vol. 6675 (2007). S. 66750I.

Sandfuchs, O., Brunner, R., Pätz, D. u.a.: Rigorous analysis of shadowing effects in blazed transmission gratings. In: Opt. Lett., vol. 31 (2006). S. 3638-3640.

Brunner, R., Burkhardt, M., Pesch, A., Sandfuchs, O. u.a.: Diffraction-based solid immersion lens. In: J. Opt. Soc. Am. A, vol. 21 (2004). S. 1186-1191.

Denz, C., Jander, Ph., Schwab, M., Sandfuchs, O. u.a.: Transverse pattern formation and its control in photorefractive optics. In: Ann. Phys., vol. 13, no. 7-8 (2004). S. 391-402.

Pauly, F., Sandfuchs, O., Kaiser, F. u.a.: High-modulation-depth effects in photorefractive wave mixing: influence on pattern formation and physical foundations. In: Opt. Commun., vol. 218 (2003). S. 385-407.

Sandfuchs, O.: Self-Organization, Amplitude Equations and Fourier-Control in a Nonlinear Optical Feedback System. Dissertation (2001), Im: Fachbereich Physik am Institut für Angewandte Physik der TU Darmstadt. Shaker-Verlag Aachen (2002).

Sandfuchs, O., Kaiser, F., Belic, M. R.: Self-organization and Fourier selection of optical patterns in a nonlinear photorefractive feedback system. In: Phys. Rev. A, vol. 64 (2001), S. 063809-1—20.

Sandfuchs, O., Belic, M. R., Kaiser, F.: Wave mixing in a bulk photorefractive medium: spatiotemporal structures and amplitude equations. Special issue of the International School on "Space Time Chaos". In: Intl. J. Bifurc. & Chaos, vol. 11, no. 11 (2001). S. 2823-2836.

Belic, M. R., Vujic, D., Sandfuchs, O., Kaiser, F.: Two-zone double phase conjugate mirror. In: Opt. Commun., vol. 198 (2001). S. 217-226.

Sandfuchs, O., Kaiser, F., Belic, M. R.: Dynamics of transverse waves and zigzag instabilities in photorefractive two-wave mixing with a feedback mirror. In: J. Opt. Soc. Am. B, vol. 18 (2001). S. 505-514.

Vujic, D., Belic, M. R., Sandfuchs, O. u.a.: Beam bending in photorefractive conjugators. In: Europhys. Lett., vol. 53 (2001). S. 190-196.

Sandfuchs, O., Leonardy, J., Kaiser, F. u.a.: Spatio-temporal dynamics in photorefractive two-wave mixing configurations: the counterpropagating geometry and the unidirectional ring oscillator. Special issue of the 178th Heraeus-Seminar on "Pattern formation in nonlinear optical systems", Chaos. In: Solitons & Fractals, vol. 10 (1999). S. 709-724.

PUBLIKATIONEN VON PROF. DR. OLIVER SANDFUCHS

Stand Oktober 2018

Sandfuchs, O., Kaiser, F., Belic, M. R.: Influence of dark intensity and intensity-dependent relaxation time on spatiotemporal grating formation. Special issue on "Nonlinear Dynamics in Optics". In: Asian J. Phys., vol. 7 (1998). S. 629-639. (invited paper)

Sandfuchs, O., Kaiser, F., Belic M. R.: Spatio-temporal pattern formation in counterpropagating two-wave mixing with an externally applied field. Topical issue on "Photorefractive Materials, Effects, and Devices". In: J. Opt. Soc. Am. B, vol. 15 (1998). S. 2070-2078.

Belic, M. R., Petrovic, M., Sandfuchs, O. u.a.: Threshold couplings of phase-conjugate mirrors with two interaction regions. In: Opt. Lett., vol. 23 (1998). S. 340-342.

Sandfuchs, O., Leonardy, J., Kaiser, F. u.a.: Transverse instabilities in photorefractive counterpropagating two-wave mixing. In: Opt. Lett., vol. 22 (1997). S. 498-500.

Conference Presentations

Karthaus, D., Giehl, M., Sandfuchs, O. u.a.: Optimization of computer-generated transmission holograms using different LED wavefront approximations. In: Proceedings of the 118. annual conference of the German Society of Applied Optics (DGaO), June, 2017, Dresden, Germany.

Karthaus, D., Sandfuchs, O., Sinzinger, S.: Transmission holograms for white light illumination. In: Proceedings of the 12th International Symposium on Automotive Lighting (ISAL), vol. 17, September, 2017, Darmstadt, Germany.

Sandfuchs, O., Brunner, R.: Reflective Double-blazed gratings for Broadband Spectral Efficiencies. In: annual meeting of the European Optical Society (EOSAM), September, 2016, Berlin, Germany. (oral presentation)

Karthaus D., Sandfuchs, O., Sinzinger, S.: Optimization of holograms for application in automotive headlamps with LED illumination. In: Conference Proceedings of Applied Industrial Optics: Spectroscopy, Imaging and Metrology, OSA technical digest JW4A.17, 2016, Washington D.C., U.S.A..

Sandfuchs, O., Brunner, R.: Bionics and Biomimetic Optics – What applied optics can learn from nature. In: Proceedings of the 117. annual conference of the German Society of Applied Optics (DGaO), May, 2016, Hannover, Germany. (oral presentation)

Karthaus, D., Sandfuchs, O., Sinzinger, S.: Design and Simulation of Computer-generated Volume Holograms for Automotive Headlamps. In: Proceedings of the 117. Annual conference of the German Society of Applied Optics (DGaO), May, 2016, Hannover, Germany. (oral presentation)

Schöne, M., Sandfuchs, O., Neumann, C.: Diffractive Optics in Automotive Headlamps – New Design Concepts Including a Special Simulation Process. In: Proceedings of the 117. annual conference of the German Society of Applied Optics (DGaO), May, 2016, Hannover, Germany. (oral presentation)

Brunner, R., Sandfuchs, O.: Aspects of Diffractive, Micro- and Nano-Structured Optics towards Commercial Exploitation. In: 10. International Conference on Optics-photonics

PUBLIKATIONEN VON PROF. DR. OLIVER SANDFUCHS

Stand Oktober 2018

Design and Fabrication (ODF) in corporation with the Optical Society of Japan, February, 2016, Weingarten, Germany. (invited oral pres.)

Karthaus, D., Koren, N., Sandfuchs, O. u.a.: Holograms in automotive headlamps with LED illumination. In: Proceedings of the 11th International Symposium on Automotive Lighting (ISAL), vol. 16, September, Darmstadt, Germany.

Schöne, M., Sandfuchs, O., Neumann, C.: Diffractive Optics in Automotive Headlamps – Design and Simulation. In: 11. International Symposium on Automotive Lighting (ISAL), September, 2015, Darmstadt, Germany. (poster presentation)

Karthaus, D., Sandfuchs, O., Sinzinger, S.: Holograms in Automotive Headlamps – Chances and Challenges. In: Proceedings of the 116. annual conference of the German Society of Applied Optics (DGaO), May, 2015, Brno, Czech Republic. (poster presentation)

Schöne, M., Sandfuchs, O., Neumann, C.: Diffractive Optics in Automotive Headlamps – Thermal effects and optical system design. In: Proceedings of the 116. annual conference of the German Society of Applied Optics (DGaO), May, 2015, Brno, Czech Republic. (poster presentation)

Thomae, D., Maass, J., Sandfuchs, O. u.a.: Modifizierte Talbot-Lithografie zur Strukturierung effizienter spektroskopischer Blaze-Gitter. In: Proceedings of the 114. annual conference of the German Society of Applied Optics (DGaO), May, 2013, Braunschweig, Germany. (oral presentation)

Maass, J., Puffky, O., Thomae, D., Gatto, A., Sandfuchs, O. u.a.: Efficient production of arbitrary periodic structures by dynamic Talbot lithography. In: Conference on High Aspect Ratio Micro and Nano System Technology (HARMNST), April, 2013, Berlin, Deutschland. (poster presentation)

Burkhardt, M., Fechner, R., Erdmann, L., Frost, F., Steiner, R., Sandfuchs, O. u.a.: Imaging gratings with modulated blaze realized by a combination of holography and reactive ion beam etching. In: Proceedings of the 113. annual conference of the German Society of Applied Optics (DGaO), May-June, 2012, Eindhoven, Netherlands. (oral presentation)

Sandfuchs, O., Burkhardt, M., Steiner, R. u.a.: Holografisch mikrostrukturierte Gitter für Hochleistungsspektrometer. In: 112. Jahrestagung der Deutschen Gesellschaft für angewandte Optik, June, 2011, Ilmenau, Deutschland. (oral presentation)

Burkhardt, M., Sandfuchs, O., Steiner, R. u.a.: Möglichkeiten und Grenzen der interferenzlithografischen Herstellung modulierter Blazegitter. In: 112. Jahrestagung der Deutschen Gesellschaft für angewandte Optik, June, 2011, Ilmenau, Deutschland. (oral presentation)

Jope, J., Sandfuchs, O., Deparnay, A. u.a.: Effective modeling approach to investigate various 2D Talbot carpets. In: Doctoral Student's Conference for the Discussion of Optical Concepts, Abbe School of Photonics, März, 2011 Naumburg, Germany. (poster presentation)

Helgert, M., Steiner, R., Burkhardt, M., Glaser, T., Pesch, A., Sandfuchs, O. u.a.: Applications for microstructured optics at Carl Zeiss. In: EOS Annual Meeting, TOM4 – Micro-Optics, October, 2010, Paris, France. (poster presentation: TOM4_3998_25)

PUBLIKATIONEN VON PROF. DR. OLIVER SANDFUCHS

Stand Oktober 2018

Brunner, R., Dobschal, H.-J., Steiner, R., Burkhardt, M., Cumme, M., Sandfuchs, O. u.a.: Microstructured optics for excimer-based systems: applications for imaging, beam shaping and coherence management. In: International Optical Design Conference (IODC) – Optical Fabrication and Testing, June, 2010, Jackson Hole, Wyoming, USA. (oral presentation and paper: IWC5)

Sandfuchs, O., Schwanke, Ch., Burkhardt, M. u.a.: Ideal and holographic grating structures: sine versus blaze. In: Laser and World of Photonics Congress 2009 / EOS-Topical Meeting – Manufacturing of Optical Components, Juni, 2009. (awarded best oral presentation, ISBN 978-3-00-024190-1)

Ehret, G., John, C., Buhr, E., Helgert, M., Sandfuchs, O. u.a.: Nicht-invasive Bestimmung der Profilgeometrie von diffraktiven optischen Strukturen mit hohem Aspektverhältnis. In: Proceedings der 109. Tagung der Deutschen Gesellschaft für Angewandte Optik, 2008, Esslingen a.N., Deutschland. (ISSN 1614-8436), Vortrag A15 <http://www.dagao-proceedings.de>

Sandfuchs, O., Pesch, A., Brunner, R.: Rigorous modeling of various blaze-type profiles and incidence geometries in the intermediate structure regime. In: Optics & Photonics – Optical Modeling and Performance Predictions III, August, 2007, San Diego (USA). (oral presentation)

Sandfuchs, O., Pätz, D., Pesch, A. u.a.: Rigorous analysis of shadowing effects for blaze-type structures on imaging optical elements. In: EOS Topical Meeting on Micro-Optics, Diffractive Optics and Optical MEMS, 2006, S. 84.85, Paris, France. (oral presentation:)TOM4

Sandfuchs, O., Pesch, A., Brunner, R.: Polarization-dependent photonic bandgaps in the visible spectrum with dispersive materials. In: Proceedings of the 10th Microoptics Conference, 2004, Jena, Germany. (Poster: L-53)

Brunner, R., Pesch, A., Sandfuchs, O. u.a.: Phase and polarization effects on diffraction based solid immersion lens systems. In: Proc. of the 10th Microoptics Conference, 2004, Jena, Germany. (Oral present.: D-7)

Sandfuchs, O., Pesch, A., Brunner, R.: Komplexe strukturierte Schichtsysteme zur Erzeugung polarisationsabhängiger photonischer Bandlücken für Applikationen im sichtbaren Spektralbereich. In: 104. Jahrestagung der Deutschen Gesellschaft für angewandte Optik, 2003, Münster (Westf.), Deutschland. (Vortrag: B 11)

Sandfuchs, O., Pesch, A., Kleemann, B. u.a.: Design and Rigorous Modelling of Structured Multilayer Gratings for Broadband Applications in the Visible Spectrum. In: Technical Digest of the 10th Conference on Lasers and Electro-Optics/Europe, 2003, Munich, Germany. Poster: CM4T, Europhysics Conference Abstracts vol. 27E, CM4T

Sandfuchs, O., Belic, M. R., Kaiser, F.: Self-organization and Fourier-Control of transverse patterns in photorefractive wave mixing with a single feedback mirror. In: European Conference on Atomic and Molecular Physics VII and Spring Meeting of the Deutsche Physikalische Gesellschaft, 2001, S. 202, Berlin, Germany. Talk: Q 16.4, Verhandl. DPG (VI) 36

Sandfuchs, O., Belic, M. R., Kaiser, F.: Spatiotemporal structures in volume-holographic wave mixing. In: International School on "Space Time Chaos: Characterization, Control, and

PUBLIKATIONEN VON PROF. DR. OLIVER SANDFUCHS

Stand Oktober 2018

Synchronization", June, 2000, Universidad de Navarra, Pamplona (Spain). (poster presentation.)

Sandfuchs, O., Kaiser, F.: Selbstorganisation raumzeitlicher Muster im photorefraktiven Wellenmischen. In: Frühjahrstagung der Deutschen Physikalischen Gesellschaft, 1999, S. 379 Heidelberg, Deutschland. Vortrag: Q 2.2, Verhandl. DPG (VI) 34

Sandfuchs, O., Kaiser, F., Belic, M. R.: Spatio-temporal structures and amplitude equations in photorefractive wave mixing due to reflection gratings. In: Technical Digest of the 7th European Quantum Electronics Conference, 1998, S. 196, Glasgow, Scotland UK. Poster: QThG18, IEEE Proceedings 98TH8326

Patents and Patent Applications

Burkhardt, M., Helgert, M., Sandfuchs, O. u.a.: „Verfahren zum Erzeugen einer latenten Subwellenlängen-Gitterstruktur in einer Resistschicht“. DE Patent No. 10 2005 028232 B4, Februar, 2016.

Koos, Ch., Widulle F., Totzeck, M., Sandfuchs, O.: Optische Anordnung zur Erfassung von spekulär reflektiertem Licht. DE Patent No. 10 2013 219809 A1, April, 2015.

Maass, J., Gatto, a., Sandfuchs, O. u.a.: Verfahren und Vorrichtung zur Herstellung dreidimensionaler Strukturen. DE Patent No. 10 2012 109130 B4, Dezember, 2014.

Sandfuchs, O., Brunner, R.: Reflektives Beugungsgitter. DE Patent No. 10 2009 029324 A1, März, 2011.

Correns, N., Dobschal, H.-J., Martin, D., Sandfuchs, O. u.a.: Spektrometer. DE Patent No. 10 2007 011324 A1, September, 2008.

Dobschal, H.-J., Sandfuchs, O., Diete, N. u.a.: Objektivsystem zum Aufbau eines Objektivs. DE Patent No. 10 2004 035766 A1, März, 2006.

Sandfuchs, O., Strössner, U., Brunner, R. u.a.: "Diffractive Element for the Polarization Separation of Nonpolarized Electromagnetic Radiation in the UV Region, and Method for Producing a Diffractive Element of this Type. WO Patent No. 2006 021288 A1, Mar. 2, 2006. DE Patent No. 10 2004 040534 B4, Juni, 2006.

Sandfuchs, O., Pesch, A.: Photonische Kristallstruktur. DE Patent No. 10 2004 041222 A1, März, 2006.

Burkhardt, M., Helgert, M., Sandfuchs, O. u.a.: Polarisationsstrahlteiler auf Basis eines hochfrequenten Gitters. DE Patent No. 10343720 A1, Februar, 2005.

Sandfuchs, O., Pesch, A., v. Blanckenhagen, B.: Polarisationsstrahlteiler. DE Patent No. 10327963 A1, Januar, 2005.