

LIST OF Sergey Alexandrov's PUBLICATIONS AND PATENTED INVENTIONS

Fully refereed journal articles

1. T.R. Hillman, **S.A. Alexandrov**, T.Gutzler, and David D. Sampson, "Microscopic particle discrimination using spatially-resolved Fourier-holographic light scattering angular spectroscopy", *Optics Express*, 2006, submitted for publication.
2. **S.A. Alexandrov**, T. R. Hillman, T. Gutzler, and D. D. Sampson, "Synthetic aperture Fourier holographic optical microscopy", *Phys. Rev. Lett.*, 2006, accepted for publication.
3. **S.A. Alexandrov**, T. R. Hillman and D. D. Sampson, "Spatially resolved Fourier holographic light scattering angular spectroscopy", *Optics Letters*, 2005, vol. 30, N24, pp. 3305-3307. Also was selected for inclusion in a meta-journal for important developments in biology: *Virtual J. of Biol. Phys. Research*, vol. 11, no. 1, 2006.
4. **S.A. Alexandrov**, P. Meredith, T. J. McIntyre, and A. V. Zvyagin, "Holographic Digital Fourier Microscopy for Selective Imaging of Biological Tissue", *International Journal of Imaging Systems and Technology*, 2004, Vol. 14, pp. 253-258.
5. A.V. Zvyagin, K. K. M. B. D. Silva, **S.A. Alexandrov**, T.R. Hillman, J.J. Armstrong, T.Tsuzuki and D.D. Sampson, Refractive index tomography of turbid media by bifocal optical coherence refractometry, *Optics Express*, 2003, vol. 11, N25, pp.3503-3517 (<http://www.opticsexpress.org/abstract.cfm?URI=OPEX-11-25-3503>).
6. J.J. Armstrong, M.S. Leigh, I.D. Walton, A.V. Zvyagin, **S.A. Alexandrov**, S.Schwer, D.R. Hillman, P.R. Eastwood and D.D. Sampson, *In vivo* size and shape measurement of the human upper airway using endoscopic long-range optical coherence tomography, *Optics Express*, 2003, vol.11, N15, pp.1817-1826 (<http://www.opticsexpress.org/abstract.cfm?URI=OPEX-11-15-1817>).
7. **S.A. Alexandrov**, A.V. Zvyagin, K.K.M.B.D.Silva, D.D.Sampson, Bifocal optical coherence refractometry of turbid media. *Optics Letters*, 2003, vol.28, N2, pp.117-119.
8. **S.A. Alexandrov**, I.V. Chernyh, Vibration-proof interferometer for studying transparent objects. *Journal of Optical Technology (A Translation of Opticheskii Zhurnal*, 2001, vol.68, N3, pp.70-73), v 68, n 3, pp. 222-224.
9. **S.A. Alexandrov**, I.V. Chernyh, Interference method for determination of the refractive index and thickness. *Optical Engineering*. 2000, vol. 39, N9, pp. 2480-2486.
10. **S.A. Alexandrov**, Incoherent method of hologram formation. *Optics and Spectroscopy*, 1998, vol.85, N6, pp.946-949. Translated from *Optika i Spektroskopiya*, 1998, vol.85, N6, pp.1029-1032.
11. **S.A. Alexandrov**, Optical method of investigating the geometry of phase objects. *Technical Physics Letters*, v 22, N 3, 1996, p 225, and *Pisma v zhurnal tekhnicheskoi fiziki*, 1996, vol. 22, N 6, pp.1-4.
12. **S.A. Alexandrov**, Holographic polarization interferometry. *JEOS A, Pure and Applied Optics*. 1996, Vol.5, pp.767-776.
13. L.V. Tanin, S.K. Dick, **S.A. Alexandrov**, Polarization characteristics of the radiation is scattering by human skin. *Bulletin of the Russian Academy of Sciences. Physics*, v 59, N 6, 1995, p 998 (*Izvestiya Akademii nauk Rossii. Physical Series*, 1995, vol. 59, N6, pp.84-89).

14. **S.A.Alexandrov**, L.V.Tanin, A.S.Rubanov, Immersion methods for determination of height and direction of the surface's relief. Zhurnal tekhnicheskoi fiziki, 1994, Vol.64, N2, pp.201-205.
15. L.V. Tanin, **S.A. Alexandrov**, V.K. Zaborovsky, M.M. Loiko, Moire topography for investigation the shape of the spine in norm and pathology. In: Perifericheskaya Nervnaya Sistema, 1994, Vol. 17, pp.44-49, Minsk.
16. L.V. Tanin, A.A. Kumeusha, M.M. Loiko, **S.A. Alexandrov**, I.V. Markhvida, S.K. Dick, L.A. Vasilevskaya, Laser microhaematomyograph for measuring the tonic states of the muscles and surface blood flow. In: Perifericheskaya Nervnaya Sistema, 1994, Vol. 17, pp.50-57, Minsk.
17. **S.A. Alexandrov**, S.K. Dick, L.V. Tanin, R.M. Tanina, V.A. Lapina, Analysis of the spectral characteristics of the radiation is scattering by human skin and development contactless noninvasive optical method for study of the blood flow. In: Perifericheskaya Nervnaya Sistema, 1993, Vol. 16, pp.13-22 ,Minsk.
18. **S.A. Alexandrov**, L.V. Tanin, A.S. Rubanov, Increase the resolving power for holographic multibeams methods of contour of the surface's relief. Pisma v zhurnal tekhnicheskoi fiziki, 1993, vol.19, N18, pp.40-43.
19. **S.A. Alexandrov**, Determination of the surface components of the deformation shift gradient matrix by the method of the holographic interferometry. Izvestiya vysshikh uchebnykh zavedenii, Priborostroenie, 1985 vol.28, N 7, 1985, pp.74-78.
20. I.M. Nagibina, **S.A. Alexandrov**, Investigation of phase distribution of the interference fields. Optika i Spektroskopiya, 1985, vol.58, N 1, pp.153-156.
21. I.M. Nagibina, **S.A. Alexandrov**, D.N. Sitnik, Investigation of the spatial structure of the interference field. Izvestiya vysshikh uchebnykh zavedenii, Priborostroeniye, 1985, vol.28, N 9, pp. 65-69.
22. **S.A. Alexandrov**, V.L. Kazak, Synthesis and analysis of interference fields in holographic interferometry. Optica i Spektroskopiya, 1984, vol.57, N 5, pp.894-898.

Conference papers

Invited Papers

1. **S. A. Alexandrov**, S. G. Adie, D. D. Sampson, "Investigating the utility of refractive index tomography based on OCT". Publication: Proceedings of SPIE Vol. 5771, pp. 108-119, Saratov Fall Meeting 2004: Optical Technologies in Biophysics and Medicine VI; Valery V. Tuchin; Ed. Publication Date: Jun 2005.
2. D. D. Sampson, S. G. Adie, **S. A. Alexandrov**, J. J. Armstrong, T. R. Hillman, M. S. Leigh, "Optical coherence tomography: from fundamentals to clinical medical imaging", Australian Conference on Lasers and Spectroscopy, Auckland, New Zealand, 5-9 December 2005, Paper TuE1.

Full length referred international conference papers

1. **S. A. Alexandrov**, T. R. Hillman, Thomas Gutzler, Michael B. Same, and D. D. Sampson, "Particle sizing with spatially resolved Fourier-holographic light scattering angular spectroscopy", *Biomedical Imaging*; Fred S. Azar, Dimitris N. Metaxas; Eds., 2006, Proceedings of SPIE, Vol. 6081-3, pp. 15-25.

2. A.V. Zvyagin, **S. A. Alexandrov**, K. K. M. B. D. Silva, T. R. Hillman, J. J. Armstrong, T. Tsuzuki, D. D. Sampson, "Refractive index tomography of turbid media by bifocal optical coherence refractometry," in Coherence Domain Optical Methods and Optical Coherence Tomography in Biomedicine VIII, edited by V. V. Tuchin, Joseph A. Izatt, James G. Fujimoto, Proceedings of SPIE Vol. 5316 (SPIE, Bellingham, WA, 2004) pp.155-166.
3. **S.A. Alexandrov**, I.V. Chernyh, P.T. Lischenko, Laser interferometer for determination of refractive index and thickness. Proceedings of SPIE, 1997, vol. 3134, pp. 486-491.
4. **S.A. Alexandrov**, I.V. Chernyh, V.N. Korban, Interference refractometer and thicknessmeter. Proceedings of SPIE, 1996, vol. 2782, pp. 778-785.
5. L.V. Tanin, S.C. Dick, **S.A. Alexandrov**, M.M. Loiko, A.A. Kumeisha, I.V. Markhvida, L.A. Vasilevskaya. Laser specklometer for determining the biomechanical parameters of skeletal muscles and the microhaemodynamics of human skin. Proceedings of SPIE, 1996, vol.2769, pp. 94-100.
6. **S.A. Alexandrov**, V.C. Zabarovski, M.M. Loiko, Two projection moire technique in investigation of the respiratory function of the lungs. Proceedings of SPIE, 1995, vol.2628, pp. 211-215.
7. L.V. Tanin, A.V. Agashkov, **S.A. Alexandrov**, S.C. Dick, F.G. Drick, L.A. Lavrovsky, V.V. Manikalo, U.F. Morgun, Y.S. Tipenko, M.M. Loiko, L.A. Vasilevskaya, Laser-holographic system for determining the state of the human circulatory system. Proceedings of SPIE, 1995, vol.2390, pp.54-65.
8. **S.A. Alexandrov**, Noncoherent polarization method for obtaining holograms. Proceedings of SPIE, 1995, vol.2406, p.364-368.
9. L.V. Tanin, V.A. Dmitriev; **S.A. Aleksandrov**, Determination of skin vibration amplitude in the process of human skeletal muscle contraction. Proceedings of SPIE, 1995, v 2370, p.384-388.
10. **S.A. Alexandrov**, H. Podbielska, H. Kasprzak, Interferometric approach for measurement of the corneal topography. Proceedings of SPIE, 1994, vol.2329, pp. 95-101.
11. **S.A. Alexandrov**, V.C. Zabarovski, M.M. Loiko, Two projection moire technique for investigations of the spine`s shape in norm and pathology. Proceedings of SPIE, 1994, vol.2329, pp. 172-177.
12. L.V. Tanin, S.C. Dick, **S.A. Alexandrov**, M.M. Loiko, L.A. Vasilevskaja, On the choice of informative parameters of the spectrum of scattered radiation intensity fluctuations for evaluating the mickrohaemodynamics of human skin. Proceedings of SPIE,1994. vol. 2329, pp. 104-114.
13. L.V. Tanin, V.A. Lapina, S.C. Dick, **S.A. Aleksandrov**, R.M. Tanina, Spectral two-wavelength method of quantitative estimation of oxyhemoglobin concentration in the human skin blood flow in vivo. Proceedings of SPIE, 1993, vol.1887, pp.158-164.
14. **S.A. Aleksandrov**, L.V. Tanin, Holographic polarization measurements. Proceedings of SPIE, 1993, vol.1914, pp.155-160.
15. **S.A. Aleksandrov**, L.V. Tanin, A holographic polarization method of determining the surface shape. Proceedings of SPIE, 1993, vol.2004, pp.355-360.

16. **S.A. Aleksandrov**, L.V. Tanin, A holographic method for investigating liquid and gas media. Proceedings of SPIE, 1993, vol.2043, pp. 398-403.
17. L.V. Tanin, S.K. Dick, **S.A. Aleksandrov**, R.M. Tanina, Noninvasive contactless method of estimating of oxyhaemoglobin concentration in skin blood flow. OWLS II, in: Optics for Protection of Man and Against Natural and Technological Disasters, ELSEIVIER, Amsterdam, London, New-York, Tokyo, 1993, pp. 239-243.
18. **S.A. Aleksandrov**, L.V. Tanin, Determination of the refractive index of liquid and gaseous media by optical computing. Proceedings of SPIE, 1993, Vol.2051, pp.833-839.
19. L.V. Tanin, A.A. Kumeusha, M.M. Loiko, **S.A. Aleksandrov**, I.V. Markhvida, S.K. Dick, L.A. Vasilevskaya, Laser Microhaematomyograph. Proceedings of SPIE, 1993, Vol. 2083, pp.280-286.
20. **S.A. Aleksandrov**, L.V. Tanin, Application of optical analog calculations for analysis of interferograms. Proceedings of SPIE, 1992, vol.1806, pp.437-444.
21. **S.A. Aleksandrov**, L.V. Tanin, The use of interference fields for optical analog calculations. Proceedings of SPIE, 1992, vol.1806, pp.461- 469.
22. **S.A. Aleksandrov**, I.V. Chernyh, Interferometer for measurement of absolute refractive index and thickness. Proceedings of SPIE, 1992, vol.1756, pp.221-226.

Abstracts

1. **S.A. Alexandrov**, T.R. Hillman, T. Gutzler and D.D. Sampson, Quantifying morphology with Fourier holographic spatially resolved angular scattering spectroscopy, *Focus on Microscopy* 2006, Abstract Book p.70, Perth, Australia, April 2006.
2. D.D. Samson, S.G. Adie, **S.A. Alexandrov**, J.J. Armstrong, T.R. Hillman, M.S. Leigh, "Tissue imaging with optical coherence tomography", *Biophotonics in Australia*, Abstracts, p. 14-15, Sydney, Australia, February 2006.
3. **Sergey A. Alexandrov**, Timothy R. Hillman, Abbey J. Trewenack and David D. Sampson, "Measurement of angular scattering distributions with digital Fourier holography for mapping scatterer size distributions over large areas", *Focus on Microscopy*, Jena, Germany, March, 2005.
4. Armstrong, Julian J.; Leigh, Matthew S.; Walton, Ian D.; Schwer, Stefan; Zvyagin, Andrei V.; **Alexandrov, Sergey A.**; Sampson, David D.; Hillman, David R.; Eastwood, Peter R.. "An endoscopic long-range optical coherence tomography system and its application to in vivo size and shape measurement of large hollow organs", presented at *OFS-16: 2003 16th Optical Fibre Sensors Conference*; Proceedings of IEICE, p. 722-725, Nara, Japan, October 2003.
5. A.V. Zvyagin, **S.A. Alexandrov**, P. Meredith, T.J. McIntyre, "Multi-frame digital holography for imaging of biological tissue", Australasian Conference on Optics, Lasers and Spectroscopy (ACOLS 03), Melbourne, 1-4 December 2003, Book of Abstract, p. 55.
6. **Sergey A. Alexandrov**, Andrei V. Zvyagin, K. K. M. B. Dilusha Silva, Timothy R. Hillman, Julian J. Armstrong, T. Tsuzuki and David D. Sampson, "Tomographic imaging of refractive index in turbid media", presented at *World Congress on Medical Physics and Biomedical Engineering*, paper N 35, Sydney, Australia, August 2003.
7. P. Eastwood, J. Armstrong, A. Zvyagin, **S. Alexandrov**, S. Schwer, M. Leigh, D. Hillman, D. Sampson, I. Walton, "In vivo size and shape measurement of the human upper airway using endoscopic long – range optical coherence tomography (OCT)", presented at *World Congress on Medical Physics and Biomedical Engineering*, paper N 454, Sydney, Australia, August 2003.

8. A. V. Zvyagin, **S. A. Alexandrov**, K. K. M. B. D. Silva, T. R. Hillman, J. J. Armstrong, T. Tsuzuki and D. D. Sampson, "Bifocal refractive index tomography of turbid media", *Focus on Microscopy*, Genova, Italy, April, 2003
9. **S.A. Alexandrov**, Holographic polarization interferometry in investigation of eye. European Optical Society Topicalmeetings Digest Series: Physiological Optics, Wroclaw, Poland, 22-25 September, 1999, pp. 17-18.
10. **S.A. Alexandrov**, V.K. Zabarovsky, M.M. Loiko, Two-projection moire method for investigation of the man spine curvature. Abstract book of the IV Scientific Technical Conference "Application of the Lasers in Medicine and Biology". Kiev-1995, pp.147-148.
11. **S.A. Alexandrov**, H. Podbielska, H. Kasprzak, Interference method for investigation of the surfaces shape of the cornea. Abstract book of the IV Scientific Technical Conference "Application of the Lasers in Medicine and Biology". Kiev-1995, p.32.
12. L.V. Tanin, S.C. Dick, **S.A. Alexandrov**, M.M. Loiko, L.A. Vasilevskaya and I.V. Markhvida, Informative parameters obtained with the help of a laser specklometer in studies of the myotonus and microhaemodynamics of the human skin. Book of Abstracts of International Conference "Light and Biological Systems", 3-6 July 1995, Wroclaw, Poland, p.101.
13. L.V. Tanin, S.C. Dick, **S.A. Alexandrov**, M.M. Loiko, A.A. Kumeisha, I.V. Markhvida, L.A. Vasilevskaya, Laser speclometer for determining the biomechanical parameters of skeletal muscles and the microhaemodynamics of human skin. Technical Digest of 8-th Laser Optics Conference, June 27-July 1, St.Petersburg, Russia, 1995, vol.1, pp.304-305.
14. **S.A. Aleksandrov**, I.V. Chernyh, K.G. Predko, Interferometric method for the determination of absolute refractive index and optical thickness. Abstracts book of the International Conference on Refractometry, May 16-20, 1994, Warsaw, Poland, p.25. Proceed. SPIE, Vol.2208, p.214, 1994.
15. V.K. Zabarovski, **S.A. Alexandrov**, M.M. Loiko, Diagnostic Biplanar Moire Method. Abstract book of "Third Neuropathology International Scientific Exchange". June 2-20, 1994, p.30.
16. L.V. Tanin, S.C. Dick, **S.A. Alexandrov**, M.M. Loiko, L.A. Vasilevskaja, On the choice of informative parameters of the spectrum of scattered radiation intensity fluctuations for evaluating the mickrohaemodynamics of human skin. Abstract Book of BiOS Europe'94, International Symposium on Biomedical Optics, 6-10 September 1994, Lille, France. 2329-19, p. 102.
17. **S.A. Alexandrov**, V.C. Zabarovski, M.M. Loiko, Double projection moire technique for investigations of the spine's shape in norm and pathology. Abstract Book of BiOS Europe'94, International Symposium on Biomedical Optics, 6-10 September 1994, Lille, France. 2329-37, pp. 104-105.
18. I.P. Antonov, L.V. Tanin, **S.A. Alexandrov**, M.M. Loiko, S.K. Dick, L.A. Vasilevskaja, A.A. Kumeisha, Investigation of the vibrational properties of the muscular tissues by the speckle-optics method. In: Optical Method in Bio-Medical and Environmental Sciences, ELSEIVER, Tokyo, Amsterdam, 1994, p.76.
19. L.V. Tanin, S.K. Dick, **S.A. Alexandrov**, Polarization characteristics of the radiation is scattering by human skin. Digest of the Laser Optics'93. St.Petersburg, Russia, Vol.2, p.627, 1993.
20. **S.A. Alexandrov**, L.V. Tanin, Laser-holographic immersion methods for investigation of the surface's shape. Digest of the Laser Optics'93. St.Petersburg, Russia, Vol.2, p.499, 1993.

21. L.V. Tanin, S.K. Dick, **S.A. Alexandrov**, A.S. Rubanov, Investigation of the polarization properties of the light is scattering by human skin surfaces. Laser Technology'93, Abstracts book, doc.21, Shatura, Russia, 1993.
22. **S.A. Alexandrov**, I.V. Chernyh, Laser interferometric refractometer. Laser Technology'93, Abstracts book, doc.58, Shatura, Russia, 1993.
23. L.V. Tanin, A.A. Kumeusha, M.M. Loiko, **S.A. Aleksandrov**, I.V. Markhvida, S.K. Dick, L.A. Vasilevskaya, Laser Microhaematomyograph. Abstract Book of BiOS Europe'93, International Symposium on Biomedical Optics, 1-5 September 1993, Budapest, Hungary, 2083-08, p. 49.
24. **S.A. Aleksandrov**, L.V. Tanin, Application of optical analog calculations for analysis of interferograms. Technical Digest of ICO International Topical Meeting on Optical Computing, June 29-July 1, 1992, Minsk, Belarus, 29E13.
25. **S.A. Aleksandrov**, L. V.Tanin, The use of interference fields for optical analog calculations. Technical Digest of ICO International Topical Meeting on Optical Computing, June 29-July 1, 1992, Minsk, Belarus, 29E18.
26. **S.A. Alexandrov**, D.N. Sitnik, Investigation of precision potentialities of interferogram interpretation methods based on determination of interference vector. Digest of the 5th All-Union Conference on Holography, Riga, 1985, p.176.

Inventions

1. **S.A. Alexandrov**, M.M. Loiko V.C. Zabarovski, A.P. Shkadarevich, Device for creation of the moiré pattern. Patent of Republic of Belarus N 3525, 2000.
2. **S.A. Alexandrov**, V.C. Zabarovski, M.M. Loiko, A.P. Shkadarevich, Method for investigation of the surface relief of a human body. Patent of Republic of Belarus N 3479, 2000.
3. **S.A. Alexandrov**, I.V. Chernyh, Device for determination of the refractive index and thickness. Patent of Republic of Belarus N 2444, 1998. Euroasian Patent N 000367, 1999.
4. **S.A. Alexandrov**, Method for obtaining of holograms and apparatus for its realization. Patent of Republic of Belarus N 2438, 1998.
5. **S.A. Alexandrov**, L.V. Tanin, Holographic method of determination of surface relief. Patent of Russia N 2090838, 1997.
6. **S.A. Alexandrov**, L.V. Tanin, Method of determination of relief of object. Patent of Russia N 2085838, 1997.
7. **S.A. Aleksandrov**, Method for measuring geometric characteristics of objects. Patent of Russia N 2062978, 1996.
8. **S.A. Alexandrov**, S.K. Dick, M.M. Loiko, L.V. Tanin, G.G. Petrovsky, Device for determining human tissues and organs ischemia degree. Patent of Russia N 2061514, 1996.
9. **S.A. Alexandrov**, Holographic method for determination of the displacements of the object points. Patent of Russia, Publication in Abstracts Russian patents 1994-2006 (rus.) N 92011620, 1995.
10. L.V. Tanin, **S.A. Alexandrov**, A.S. Rubanov, Holographic method for determination of the refractive index of liquid and gaseous media. Patent of Russia N 2039969, 1995.

11. **S.A. Alexandrov**, L.V. Tanin, Holographic method for determination of the macrorelief of the objects surface. Patent of Russia N 2075883, 1997.
12. **S.A. Alexandrov** Holographic method for determination of the optical characteristics of the transparent objects. Patent of Russia N 2071047, 1996.
13. L.V. Tanin, **S.A. Alexandrov**, Holographic method for determination of the surface relief of the object. Patent of Russia N 2085835, 1997.
14. **S.A. Alexandrov**, I.V. Chernyh, Device for determination of the refractive index. Inventor's certificate N 1755125, USSR, 1992.
15. **S.A. Alexandrov**, G.M. Samoilov, N.G. Jaroshevich, Method for determination of the refractive index of transparent media. Inventor's certificate N 1550378, USSR, 1989.
16. I.M. Nagibina, **S.A. Alexandrov**, V.L. Kazak, D.N. Sitnik, Method for investigating of the characteristics of objects. Inventor's certificate N 1182865, USSR, 1985.