

# CURRICULUM VITAE

## MACIEJ WOJTKOWSKI Ph.D.

### Short Bio-note:

**Maciej Wojtkowski** (b.1975) is active in the field of biomedical imaging. His research interest includes optical coherence tomography and low coherence interferometry applied to biomedical imaging. Dr Wojtkowski has significant impact on development of Fourier domain OCT (FdOCT) technique. The first FdOCT instrument for in vivo retinal imaging was designed and constructed by dr Wojtkowski and his colleagues from the Medical Physics Group at Nicolaus Copernicus University Poland in 2001. Dr Wojtkowski also contributed in development and construction of three clinical prototype high speed and high resolution OCT instruments which are in use in ophthalmology clinics: in Collegium Medicum in Bydgoszcz, Poland, New England Eye Center, Boston, USA, and UPMC Pittsburgh. He is an author of more than 120 publications including 63 full papers in peer reviewed journals. During his academic career Dr Wojtkowski served short internships in Vienna University and University of Kent. He also worked for two years as postdoctoral fellow in joint project between Massachusetts Institute of Technology and New England Eye Center. Currently dr Wojtkowski leads his own research team (15 group members) of Optical Biomedical Imaging Group at Nicolaus Copernicus University, Toruń, Poland.

### Work:

Institute of Physics at Nicolaus Copernicus University  
ul. Grudziadzka 5, 87-100 Torun, Poland  
tel. ++48-56-611-3213 / fax. ++48-56-622-53-97  
[max@fizyka.umk.pl](mailto:max@fizyka.umk.pl) / Website: <http://obig.fizyka.umk.pl>

### EDUCATION AND RESEARCH DEGREES:

- 2010, May 12 **Habilitation in Physics**, Nicolaus Copernicus University, Torun, Poland. Book: *Obrazowanie za pomocą tomografii optycznej OCT z detekcją fourierowską*
- 2003, March 05 **Ph.D. in Physics**, Nicolaus Copernicus University, Torun, Poland. Dissertation: *Medical applications of Spectral OCT*
- 1999, June 20 **M.Sc. in Physics**, Nicolaus Copernicus University, Torun, Poland. Dissertation: *Measurement of object properties by Complex Interferometry OCT*

### EMPLOYMENT AND INTERNSHIP HISTORY

#### Academic appointments

- from 2011 **Associate Professor** and leader of the Optical Biomedical Imaging Group, Institute of Physics. N. Copernicus University, Toruń, Poland.
- 2003 – 2011 **Assistant Professor** Medical Physics Group, Institute of Physics. N. Copernicus University, Toruń, Poland.
- 1999 – 2003 **University Research and Teaching Assistant**, Institute of Physics. N. Copernicus University, Toruń, Poland.

#### Postdoctoral training

- 2003 – 2005 **Post-doctoral / Retina Research Fellow** Massachusetts Institute of Technology, MA, USA;

Predoctoral training

2001 (2 months) **Exchange Researcher**, Institute for Medical Physics, University of Vienna, Austria,  
 2002 (2months) **Exchange Researcher**, Institute for Medical Physics, University of Vienna, Austria,  
 2000 (2 months) **Exchange Researcher**; Applied Optics Group, University of Kent, Canterbury, UK  
 1998-1999 **Exchange MSc. Student**, Institute for Medical Physics, University of Vienna, Austria.

AWARDS, HONORS AND FELLOWSHIPS

2012 Prize of Fundation for Polish Science  
 2011 1<sup>st</sup> grade Award of Prime Minister for habilitation book in 2010  
 2011 2<sup>nd</sup> grade Award of Ministry of Science for habilitation book in 2010  
 2010 Gladden senior fellow, University of Western Australia, Perth, Australia  
 2009 1<sup>st</sup> grade prize of the Rector of the Nicolaus Copernicus University  
 2008 Medal for Young Scientist, Warsaw Technical University  
 2007 European Young Investigator Award, EuroHORCs and ESF / FNP, Helsinki  
 2006 Homing; grant/award for returning researchers of the Foundation for Polish Science  
 2004 Professor Stefan Pienkowski's Award, Warsaw University  
 2004 Prize of Ministry of Science for PhD thesis  
 2003 "Start" Scholarship for Young Scientists of the Foundation for Polish Science (FNP)  
 2001 Special Award of the weekly "Polityka"  
 2000 2<sup>nd</sup> grade prize of the Rector of the Nicolaus Copernicus University

MEMBERSHIP AND ACTIVITY

- Conference scientific program committees:
  - SPIE Photonics West, Conference 6847 – Coherence Domain Optical Methods and Optical Coherence Tomography in Biomedicine XII San Jose, CA, USA, 21 – 23.01.2008
  - OSA (Optical Society of America) Biomed, StPetersburg, Fl, USA, 16 – 19.03.2008
  - SPIE Photonics West, Conference 7168 – Coherence Domain Optical Methods and Optical Coherence Tomography in Biomedicine XIII San Jose, CA, USA, 26 - 28.01.2009
  - SPIE/OSA European Conferences on Biomedical Optics, Conference - Optical Coherence Tomography and Coherence Techniques IV, Munich, Germany, 14-17.06.2009
  - SPIE Photonics West, Conference 7554 – Coherence Domain Optical Methods and Optical Coherence Tomography in Biomedicine XIV San Jose, CA, USA, 25-27.01.2010
  - SPIE Photonics West, Conference 7889 – Coherence Domain Optical Methods and Optical Coherence Tomography in Biomedicine XV San Jose, CA, USA, 24-26.01.2011
  - SPIE/OSA European Conferences on Biomedical Optics, Conference 8091 - Optical Coherence Tomography and Coherence Techniques V, Munich, Germany, 22-26.05.2011
  - SPIE Photonics West, Conference 8213 – Coherence Domain Optical Methods and Optical Coherence Tomography in Biomedicine XVI San Jose, CA, USA, 23-26.01.2012
  - SPIE Photonics West, Conference BO200 – Coherence Domain Optical Methods and Optical Coherence Tomography in Biomedicine XVII San Francisco, CA, USA, 02-07.02.2013
  - SPIE/OSA European Conferences on Biomedical Optics, Conference - Optical Coherence Tomography and Coherence Techniques VI, Munich, Germany, 12-16.05.2013
  - SPIE Photonics West, Conference 8934 – Coherence Domain Optical Methods and Optical Coherence Tomography in Biomedicine XVIII San Francisco, CA, USA, 03-04.02.2014

- Supervisor of NCU Association of Physics Student, from 2005
- Supervisor of Student Chapter of Optical Society of America (OSA), from 2009
- Association in Vision and Ophthalmology (ARVO), from 2003
- Optical Society of America (OSA), from 2008
- International Society for Optics and Photonics SPIE, from 2000
- Polish Photonic Society, from 2008
- International Association of Physics Students, 1997-1999
- NCU Association of Physics Student (chair 1995-1998), member 1994-1999

#### Edition of scientific journals:

- 2009- **Optics Express**, Optical Society of America, topical editor (more than 300 edited papers)
- 2010- **Biomedical Optics Express**, Optical Society of America, topical associate editor
- 2011 **Optometry and Vision Science**, Kluvier Guest editor in Special Issue: "Imaging and Measurement in the Eye: Now and Ahead"

### TEACHING

#### MSc. And BSc. THESIS Supervision

- 2013 Dominik Charczun, BSc "Badanie własności statystycznych światła supercontinuum generowanego przez pompowanie kryształu fotonicznego" Faculty of Physics, Astronomy and Informatics at NCU Toruń
- 2012 Wojciech Fojt, MSc, „Minimalizacja niekorzystnych efektów fizycznych w rekonstrukcji tkanki z wykorzystaniem spiralnego protokołu skanowania w tomografii optycznej OCT”, Faculty of Physics, Astronomy and Informatics at NCU Toruń
- 2011 Agnieszka Łuszczek, MSc „Optymalizacja mocy światła w siatkówkowych pomiarach optycznych In vivo” Faculty of Mathematics and Physics at Szczecin University
- 2011 Sylwia Maliszewska, MSc „Pomiary interferometryczne z wykorzystaniem generacji drugiej harmonicznej”,
- 2010 Paweł Kos, MSc „Automatyczne wykrywanie przestrzeni płynowych w obrazach dna oka otrzymany w OCT” Faculty of Physics, Astronomy and Informatics at NCU Toruń
- 2009 Beata Krzechka, MSc „Analiza ilościowa struktur siatkówki w zwyrodnieniu plamki związany z wiekiem za pomocą spektralnej tomografii OCT”, Faculty of Physics, Astronomy and Informatics at NCU Toruń
- 2009 Maciej Pańkowiec, Eng, BSc, „Moduł sterowania urządzenia tomografu optycznego OCT wykorzystującego laser strojony”, Faculty of Physics, Astronomy and Informatics at NCU Toruń
- 2008 Sebastian Majewski, MSc, „Platforma cyfrowa do transferu danych i transmisji głosu”, Faculty of Physics, Astronomy and Informatics at NCU Toruń

#### PhD THESIS Supervision

- 2007-2012 Karol Karnowski - finished - Faculty of Physics, Astronomy and Informatics at NCU
- 2008- 2013 Danuta Bukowska - finished- Faculty of Physics, Astronomy and Informatics at NCU
- 2008- 2014 Daniel Szlag - in progress- Faculty of Physics, Astronomy and Informatics at NCU Toruń
- 2008- 2013 Szymon Tamborski - in progress - Faculty of Physics, Astronomy and Informatics at NCU
- 2009- 2014 Daniel Rumiński - in progress - Faculty of Physics, Astronomy and Informatics at NCU
- 2011- 2014 Sylwia Maliszewska - in progress- Faculty of Physics, Astronomy and Informatics at NCU

#### Courses

- Basic Physics „Optics” regular course for undergraduate students 60 hours
- Basic Physics „Mechanics” regular course for undergraduate students 60 hours

- Optical Tomography regular course for undergraduate students 120 hours
- Physics Practicum regular course for undergraduate students 160 hours
- Medical Physics laboratory - regular course for undergraduate students 250 hours
- Computer Metrology – laboratory - regular course for undergraduate students 250 hours
- Fundamentals of Labview programming regular course for undergraduate students 150 hours

## REPORT OF RESEARCH

### Outcome in numbers:

120 publications:

- 79 peer-reviewed papers
- 1 book (single author) and 2 book chapters
- 58 full-length conference proceedings
- 59 presentations:
  - 16 conference invited talks
  - 25 open seminar talks
  - 12 regular conference talks and 6 posters
- Co-author in additional 67 conference presentations
- 7 patents and 6 patent applications
- 12 research projects ( 8 – project leader (incl .management), 4 – principal investigator)

**Bibliometric information:** Total number of citations >4500; h-index=33. (Web of Science, April 2014)

### REASERCH FUNDING INFORMATION

DATE	INVOLVEMENT	FUNDING AGENCY	PROJECT TITLE	NUMBER/TYPE
2000-2001	Principal Investigator	Polish Ministry of Science & Informatics	Zwiększenie prędkości rejestracji tomogramu w tomografii optycznej z użyciem światła częściowo spójnego(OCT)	KBN 8T11E 03819
2005-2008	Principal Investigator	Polish Ministry of Science & Informatics	Wykorzystanie spektralnej tomografii optycznej OCT do diagnozowania wybranych chorób oczu	2P05B 20729
2005-2008	Principal Investigator	Grant of JM Rector UMK	Fourierowska fazoczuła tomografia optyczna OCT z zastosowaniem do pomiarów przedniego odcinka oka	504-F
2007-2009	Principal Investigator	Foundation for Polish Science	Quantitative measurements of high-speed and high-resolution Spectral Optical Coherence Tomography In	Homing

## ophthalmology

2008-2013	Principal Investigator	European Young Investigator Award EUROHORCS/ESF	Structural and functional imaging by Fourier domain Optical Coherence Tomography with optical Frequency Comb method	2007-PL1,
2008-2010	Scientific supervisor	Foundation for Polish Science	Zastosowanie lasera strojonego w obrazowaniu tomograficznym tkanek oka	Ventures
2010-2012	Scientific supervisor	Polish Ministry of Science & Informatics	Ultraszybka tomografia optyczna OCT z użyciem laserów strojonych	NN202482039
2011-2014	Workpackage lider	European Grant FW 7, Marie Curie Initial Training Networks ITN	PROPHET- Postgraduate Research on Photonics as an Enabling Technology	Marie Curie Network
2011-2015	Principal Investigator	Foundation for Polish Science	Novel optical techniques for enhanced structural, functional and dynamical imaging of anterior and posterior segments of the eye	TEAM
2011-2016	Principal Investigator	Polish National Science Center	Focusing and imaging in scattering media by partial coherence interferometry and adaptive optics.	Maestro

**Transfer of technology:**

- **2005-2006** Transfer of technology for in-vivo retinal imaging SOCT Copernicus, Optopol Technology – transfer of know-how along with a working prototype of the SOCT device to a producer and vendor of medical equipment from Poland, who created a device that is now commercially available worldwide.
- **2006-2007** Transfer of technology and apparatus for high resolution in-vivo retinal imaging SOCT Copernicus HR Optopol Technology – active support of the development of the second generation of SOCT device.
- **2006-2007** Transfer of technology and equipment for the high resolution imaging of anterior chamber of the human eye Anterius, Optopol Technology – transfer of know-how and expertise that allowed to create SOCT device especially suited for imaging of anterior chamber of the human eye.

**DETAILED LIST OF PUBLICATIONS AND INVITED TALKS****Books:**

1. M. Wojtkowski „Obrazowanie za pomocą tomografii optycznej OCT z detekcją fourierowską”, (rozprawa habilitacyjna), wydawnictwo naukowe Uniwersytetu Mikołaja Kopernika w Toruniu, 2009.

**Book chapters:**

1. D. Huang, O.Tan, J.G.Fujimoto, W.Drexler, J.F. deBoer, M.Wojtkowski, A.Kowalczyk – Optical Coherence Tomography in: Retinal Imaging, D.Huang, P.K.Kaiser, C.Y.Lowder, E.I.Traboulsi Eds., Elsevier, Philadelphia 2006 pp 47-65
2. R. Leitgeb and M. Wojtkowski – Complex and Coherence Noise Free Fourier domain Optical Coherence Tomography in “Optical Coherence Tomography, Technology and Applications”, ed. Wolfgang Drexler, James G. Fujimoto Eds., Springer-Verlag, Berlin Heidelberg 2008, pp 177-209

**Publications in Peer-Reviewed Journals:**

1. I. Grulkowski, J. K. Nowak, K. Karnowski, P. Zebryk, M. Puszczewicz, J. Walkowiak, and M. Wojtkowski „Quantitative assessment of oral mucosa and labial minor salivary glands in patients with Sjögren’s syndrome using swept source OCT” *Biomedical Optics Express*. 5(1):259-274. 2014
2. M. Szkulmowski, M. Wojtkowski “Averaging techniques for OCT imaging” *Optics Express*. 21(8):9757-9772. 2013
3. B. L. Sikorski, D. Bukowska, J. J. Kaluzny, A. Kowalczyk, and M. Wojtkowski, Restoration of photoreceptor structure and function in nonischaemic central retinal vein occlusion, *Acta Ophthalmologica* 91(2), e163-e165. 2013
4. D. Borycki, M. Nowakowski, and M. Wojtkowski, "Control of the optical field coherence by spatiotemporal light modulation". *Opt Lett*. 38(22):4817-4820. 2013
5. A. Bouwens, D. Szlag, M. Szkulmowski, T. Bolmont, M. Wojtkowski, and T. Lasser, "Quantitative lateral and axial flow imaging with optical coherence microscopy and tomography". *Optics Express*. 21(15):17711-17729. 2013
6. D.M. Bukowska, L. Derzsi, S. Tamborski, M. Szkulmowski, P. Garstecki, and M. Wojtkowski, "Assessment of the flow velocity of blood cells in a microfluidic device using joint spectral and time domain optical coherence tomography". *Optics Express*. 21(20):24025-24038. 2013
7. E. Gamba, S. Ortiz, P. Perez-Merino, M. Gora, M. Wojtkowski, and S. Marcos, "Static and dynamic crystalline lens accommodation evaluated using quantitative 3-D OCT". *Biomedical Optics Express*. 4(9):1595-1609. 2013
8. K. Komar, P. Stremplewski, M. Motoczynska, M. Szkulmowski, and M. Wojtkowski, "Multimodal instrument for high-sensitivity autofluorescence and spectral optical coherence tomography of the human eye fundus". *Biomedical Optics Express*. 4(11):2683-2695. 2013
9. D. Bukowska, D. Ruminski, D. Szlag, I. Grulkowski, J. Wlodarczyk, M. Szkulmowski, G. Wilczynski, I. Gorczynska, and M. Wojtkowski, "Multi-parametric imaging of murine brain using spectral and time domain optical coherence tomography". *Journal of Biomedical Optics*. 17(10). 2012
10. B.F. Kennedy, M. Wojtkowski, M. Szkulmowski, K.M. Kennedy, K. Karnowski, and D.D. Sampson, "Improved measurement of vibration amplitude in dynamic optical coherence elastography". *Biomedical Optics Express*. 3(12). 2012
11. M. Sylwestrzak, D. Szlag, M. Szkulmowski, I. Gorczynska, D. Bukowska, M. Wojtkowski, and P. Targowski, "Four-dimensional structural and Doppler optical coherence tomography imaging on graphics processing units". *Journal of Biomedical Optics*. 17(10). 2012
12. M. Szkulmowski, I. Gorczynska, D. Szlag, M. Sylwestrzak, A. Kowalczyk, and M. Wojtkowski, "Efficient reduction of speckle noise in Optical Coherence Tomography". *Optics Express*. 20(2):1337-1359. 2012
13. M. Wojtkowski, B. Kaluzny, and R.J. Zawadzki, "New Directions in Ophthalmic Optical Coherence Tomography". *Optometry and Vision Science*. 89(5):524-542. 2012
14. K. Karnowski, B. J. Kaluzny, M. Szkulmowski, M. Gora, and M. Wojtkowski, „Corneal topography with high-speed swept source OCT in clinical examination” *Biomedical Opt Express*, 2 (9), 2709-2720, 2011
15. Sergio Ortiz, Damian Siedlecki, Pablo Pérez-Merino, Noelia Chia, Alberto de Castro, Maciej Szkulmowski, Maciej Wojtkowski, and Susana Marcos, "Corneal topography from spectral optical coherence tomography (sOCT)," *Biomed. Opt. Express* 2, 3232-3247 (2011)
16. D. Alonso-Caneiro, K. Karnowski, B. J. Kaluzny, A. Kowalczyk, and M. Wojtkowski, „Assessment of corneal dynamics with high-speed swept source Optical Coherence Tomography combined with an air puff system”, *Opt Express*, 19 (15), 14188-14199, 2011
17. B. L. Sikorski, D. Bukowska, J. J. Kaluzny, M. Szkulmowski, A. Kowalczyk, and M. Wojtkowski, "Drusen with Accompanying Fluid underneath the Sensory Retina," *Ophthalmology*, 118 (1), 82-92, 2011.
18. M. Wojtkowski, "High-speed optical coherence tomography: basics and applications," *Appl Opt*, 49 (16), D30-61, 2010.
19. S. Ortiz, D. Siedlecki, I. Grulkowski, L. Remon, D. Pascual, M. Wojtkowski, and S. Marcos, "Optical distortion correction in optical coherence tomography for quantitative ocular anterior segment by three-dimensional imaging," *Opt Express*, 18 (3), 2782-2796, 2010.
20. B. J. Kaluzny, M. Gora, K. Karnowski, I. Grulkowski, A. Kowalczyk, and M. Wojtkowski, "Imaging of the lens capsule with an ultrahigh-resolution spectral optical coherence tomography prototype based on a femtosecond laser," *Br J Ophthalmol*, 94 (3), 275-277, 2010.
21. M. Wojtkowski, B. Sikorski, I. Gorczynska, M. Gora, M. Szkulmowski, D. Bukowska, J. J. Kaluzny, J. G. Fujimoto, and A. Kowalczyk, "Comparison of reflectivity maps and outer retinal topography in retinal disease by 3-D Fourier domain optical coherence tomography," *Opt Express*, 15 (5), 4189-4207, 2009.
22. A. Szkulmowska, M. Szkulmowski, D. Szlag, A. Kowalczyk, and A. Wojtkowski, "Three-dimensional quantitative imaging of retinal and choroidal blood flow velocity using joint Spectral and Time domain Optical Coherence Tomography," *Opt Express*, 17 (13), 10584-10598, 2009.

23. Z. Michalewska, J. Michalewski, B. L. Sikorski, J. J. Kaluzny, M. Wojtkowski, R. A. Adelman, and J. Nawrocki, "A study of macular hole formation by serial spectral optical coherence tomography," *Clin Experiment Ophthalmol*, 37 (4), 373-383, 2009.
24. J. J. Kaluzny, M. Wojtkowski, B. L. Sikorski, M. Szkulmowski, A. Szkulmowska, T. Bajraszewski, J. G. Fujimoto, J. S. Duker, J. S. Schuman, and A. Kowalczyk, "Analysis of the outer retina reconstructed by high-resolution, three-dimensional spectral domain optical coherence tomography," *Ophthalmic Surg Lasers Imaging*, 40 (2), 102-108, 2009.
25. B. J. Kaluzny, A. Szkulmowska, M. Szkulmowski, T. Bajraszewski, A. Kowalczyk, and M. Wojtkowski, "Fuchs' endothelial dystrophy in 830-nm spectral domain optical coherence tomography," *Ophthalmic Surg Lasers Imaging*, 40 (2), 198-200, 2009.
26. I. Grulkowski, M. Gora, M. Szkulmowski, I. Gorczynska, D. Szlag, S. Marcos, A. Kowalczyk, and M. Wojtkowski, "Anterior segment imaging with Spectral OCT system using a high-speed CMOS camera," *Opt Express*, 17 (6), 4842-4858, 2009.
27. I. Gorczynska, V. J. Srinivasan, L. N. Vuong, R. W. Chen, J. J. Liu, E. Reichel, M. Wojtkowski, J. S. Schuman, J. S. Duker, and J. G. Fujimoto, "Projection OCT fundus imaging for visualising outer retinal pathology in non-exudative age-related macular degeneration," *Br J Ophthalmol*, 93 (5), 603-609, 2009.
28. M. Gora, K. Karnowski, M. Szkulmowski, B. J. Kaluzny, R. Huber, A. Kowalczyk, and M. Wojtkowski, "Ultra high-speed swept source OCT imaging of the anterior segment of human eye at 200 kHz with adjustable imaging range," *Opt Express*, 17 (17), 14880-14894, 2009.
29. M. Szkulmowski, I. Grulkowski, D. Szlag, A. Szkulmowska, A. Kowalczyk, M. Wojtkowski, "Flow velocity estimation by complex ambiguity free joint Spectral and Time domain Optical Coherence Tomography," *Opt Express*, 17 (16), 14281-14297, 2009.
30. I. Grulkowski, I. Gorczynska, M. Szkulmowski, D. Szlag, A. Szkulmowska, R. Leitgeb, A. Kowalczyk, and M. Wojtkowski, "Scanning protocols dedicated to smart velocity ranging in Spectral OCT" *Opt Express*, 17 (26), 23736-23754, 2009.
31. M. Szkulmowski, A. Szkulmowska, T. Bajraszewski, A. Kowalczyk, and M. Wojtkowski, "Flow velocity estimation using joint Spectral and Time Domain Optical Coherence Tomography," *Opt Express*, 16 (9), 6008-6025, 2008.
32. A. Szkulmowska, M. Szkulmowski, A. Kowalczyk, and M. Wojtkowski, "Phase-resolved Doppler optical coherence tomography - limitations and improvements," *Opt Lett*, 33 (13), 1425-1427, 2008.
33. V. J. Srinivasan, B. K. Monson, M. Wojtkowski, R. A. Bilonick, I. Gorczynska, R. Chen, J. S. Duker, J. S. Schuman, and J. G. Fujimoto, "Characterization of outer retinal morphology with high-speed, ultrahigh-resolution optical coherence tomography," *Invest Ophth Vis Sci*, 49 (4), 1571-1579, 2008.
34. B. L. Sikorski, M. Wojtkowski, J. J. Kaluzny, M. Szkulmowski, and A. Kowalczyk, "Correlation of spectral optical coherence tomography with fluorescein and indocyanine green angiography in multiple evanescent white dot syndrome," *Brit J Ophthalmol*, 92 (11), 1552-1557, 2008.
35. T. Mumcuoglu, G. Wollstein, M. Wojtkowski, L. Kagemann, H. Ishikawa, M. L. Gabriele, V. Srinivasan, J. G. Fujimoto, J. S. Duker, and J. S. Schuman, "Improved visualization of glaucomatous retinal damage using high-speed ultrahigh-resolution optical coherence tomography," *Ophthalmology*, 115 (5), 782-789, 2008.
36. Z. Michalewska, S. Cisiecki, B. Sikorski, J. Michalewski, J. J. Kaluzny, M. Wojtkowski, and J. Nawrocki, "Spontaneous closure of stage III and IV idiopathic full-thickness macular holes - a two-case report," *Graef Arch Clin Exp*, 246 (1), 99-104, 2008.
37. B. J. Kaluzny, A. Szkulmowska, M. Szkulmowski, T. Bajraszewski, A. Wawrocka, M. R. Krawczynski, A. Kowalczyk, and M. Wojtkowski, "Granular corneal dystrophy in 830-nm spectral optical coherence tomography," *Cornea*, 27 (7), 830-832, 2008.
38. M. L. Gabriele, H. Ishikawa, G. Wollstein, R. A. Bilonick, K. A. Townsend, L. Kagemann, M. Wojtkowski, V. J. Srinivasan, J. G. Fujimoto, J. S. Duker, and J. S. Schuman, "Optical coherence tomography scan circle location and mean retinal nerve fiber layer measurement variability," *Invest Ophth Vis Sci*, 49 (6), 2315-2321, 2008.
39. T. Bajraszewski, M. Wojtkowski, M. Szkulmowski, A. Szkulmowska, R. Huber, and A. Kowalczyk, "Improved spectral optical coherence tomography using optical frequency comb," *Opt Express*, 16 (6), 4163-4176, 2008.
40. M. K. Yoon, R. W. Chen, T. R. Hedges, V. J. Srinivasan, W. Gorczynska, J. G. Fujimoto, M. Wojtkowski, J. S. Schuman, and J. S. Duker, "High-speed, Ultrahigh resolution optical coherence tomography of the retina in hunter syndrome," *Ophthal Surg Las Im*, 38 (5), 423-428, 2007.
41. A. J. Witkin, M. Wojtkowski, E. Reichel, V. J. Srinivasan, J. G. Fujimoto, J. S. Schuman, and J. S. Duker, "Photoreceptor disruption secondary to posterior vitreous detachment as visualized using high-speed ultrahigh-resolution optical coherence tomography," *Arch Ophthalmol-Chic*, 125 (11), 1579-1580, 2007.
42. M. Szkulmowski, M. Wojtkowski, B. Sikorski, T. Bajraszewski, V. J. Srinivasan, A. Szkulmowska, J. J. Kaluzny, J. G. Fujimoto, and A. Kowalczyk, "Analysis of posterior retinal layers in spectral optical coherence tomography images of the normal retina and retinal pathologies," *J Biomed Opt*, 12 (4), -, 2007.
43. J. A. Rodriguez-Padilla, T. R. Hedges, B. Monson, V. Srinivasan, M. Wojtkowski, E. Reichel, J. S. Duker, J. S. Schuman, and J. G. Fujimoto, "High-speed ultra-high-resolution optical coherence tomography findings in hydroxychloroquine retinopathy," *Arch Ophthalmol-Chic*, 125 (6), 775-780, 2007.

44. J. J. Kaluzny, A. Szkulmowska, T. Bajraszewski, M. Szkulmowski, B. J. Kaluzny, I. Gorczynska, P. Targowski, and M. Wojtkowski, "Retinal imaging by spectral optical coherence tomography," *Eur J Ophthalmol*, 17 (2), 238-245, 2007.
45. B. J. Kaluzny, W. Fojt, A. Szkulmowska, T. Bajraszewski, M. Wojtkowski, and A. Kowalczyk, "Spectral optical coherence tomography in video-rate and 3D imaging of contact lens wear," *Optometry Vision Sci*, 84 (12), 1104-1109, 2007.
46. M. Y. Kahook, R. J. Noecker, H. Ishikawa, G. Wollstein, L. Kagemann, M. Wojtkowski, J. S. Duker, V. J. Srinivasan, J. G. Fujimoto, and J. S. Schuman, "Peripapillary schisis in glaucoma patients with narrow angles and increased intraocular pressure," *Am J Ophthalmol*, 143 (4), 697-699, 2007.
47. L. Kagemann, G. Wollstein, M. Wojtkowski, H. Ishikawa, K. A. Townsend, M. L. Gabriele, V. J. Srinivasan, J. G. Fujimoto, and J. S. Schuman, "Spectral oximetry assessed with high-speed ultra-high-resolution optical coherence tomography," *J Biomed Opt*, 12 (4), -, 2007.
48. B. B. Gao, A. Clermont, S. Rook, S. J. Fonda, V. J. Srinivasan, M. Wojtkowski, J. G. Fujimoto, R. L. Avery, P. G. Arrigg, S. E. Bursell, L. P. Aiello, and E. P. Feener, "Extracellular carbonic anhydrase mediates hemorrhagic retinal and cerebral vascular permeability through prekallikrein activation," *Nat Med*, 13 (2), 181-188, 2007.
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### **Patents:**

1. M. Wojtkowski, A. Kowalczyk, P. Targowski, R. Leitgeb, „Sposób obrazowania obiektu anatomicznego metodą spektralnej tomografii optycznej, zwłaszcza siatkówki oka ludzkiego” – patent PL-205340, zgłoszenie nr P-357000 z dnia 12.11.2002, patent issued 30.04.2010
2. M. Wojtkowski, T. Bajraszewski, A. Kowalczyk, P. Targowski, Układ sterowania natężeniem wiązki światła w urządzeniu do spektralnej tomografii optycznej, Patent PL-206508, zgłoszenie nr P-362154 z dn. 12.09.2003, patent issued 31.08.2010 – sold to Optopol Technology
3. M. Wojtkowski, A. Kowalczyk, P. Targowski, P. Woszczyk Sposób szybkiego obrazowania obiektów metoda spektralnej tomografii optycznej w świetle częściowo spójnym, patent PL-206507, zgłoszenie nr P-363410 z dnia 12.11.2003, patent issued 31.08.2010- sold to Optopol Technology
4. M. Wojtkowski, M. Szkulmowski, T. Bajraszewski, „ Spectral Optical Coherence Tomography (SOCT), High-speed ODL”, Nr patent EP 2 144 050 B1 Application No. 08012549.5, filing date: 11.07.2008, patent issued 15.09.2010 – sold to Optopol Technology
5. T. Bajraszewski, M. Szkulmowski, P. Dalasiński, M. Wojtkowski, „Apparatus for optical coherence tomography and non-interferometric imaging” Nr: EP 2 159 535 B1 Application No. 08015180.6, filing date: 28.08.2008 Nr patent EP 2 159 535 B1, issued 18.08.2010 - sold do Optopol Technology
6. V. J. Srinivasan, J.G. Fujimoto, T. H. Ko, M. Wojtkowski, R. Huber Methods and Apparatus for Optical Coherence Tomography Scanning US patent, Nr patent US 7884945-B2 Application No. 11/336427, Date of filing: 20.01.2006, patent issued 08.02.2011- property of MIT, licensed by Optovue
7. P. Wojdas, G. Slusarczyk, T. Bajraszewski, M. Wojtkowski, A. Szkulmowska, P. Targowski, and A. Kowalczyk “Apparatus for optical frequency domain tomography with adjusting system “US patent, Nr patent US 8,570,525 B2 Application No. 12/441,686, Date of filing: 23.06. 2006, patent issued 29.10.2013

### **Patent applications:**

1. P. Woszczyk, M. Wojtkowski, A. Kowalczyk, P. Targowski, R. Leitgeb T. Bajraszewski, “A method of fast imaging of objects by means of spectral coherence tomography using partially coherent light”, patent application PCT/PL 03/00118, filing date: 12.11.2003
2. M. Wojtkowski, P. Wojdas, M. Szkulmowski, „Optical set for examining of objects and method for examining of objects”, EPO, Application No. 08465003.5 – 2319 (21.07.2008) Date of filing: 15.08.2008,
3. T. Bajraszewski, M. Szkulmowski, M. Wojtkowski, P. Dalasinski, „ Multifunctional SOCT device”, Application Nr: EP

08 015 180.6, filing date: 27.08.2008

4. M. Szkulmowski, M. Wojtkowski, A. Szkulmowska, T. Bajraszewski, „Simultaneous complex ambiguity removal and velocity estimation”, Application No. 08015674.8, Date of filing: 05.09.2008,
5. M. Wojtkowski, M. Nowakowski, D. Borycki “Interferometric method and apparatus for spatio-temporal optical coherence modulation”, PCT/EP2013/073710,13.11.2013
6. M. Wojtkowski, A. Szkulmowska “Method and apparatus for optical differentiating objects”, pending

### **Invited Conference Talks :**

1. M. Wojtkowski, V. J. Srinivasan, T. H. Ko, J. S. Duker, J. S. Shumann, J. G. Fujimoto „New technology for ophthalmic imaging”, invited talk delivered at NIH, Optical Imaging 2004 Optical Diagnostic Imaging from Bench to Bedside at the National Institutes of Health, Washington USA, 21.09.2004
2. M. Wojtkowski, A. Kowalczyk, “Fourier domain OCT: high resolution three dimensional imaging”, invited talk delivered at EVER 05 conference, Vilamoura, Portugal, 6.10.2005
3. M. Wojtkowski, “Spectral-domain OCT”, invited talk delivered at Optical Coherence Tomography Symposium, Advanced Capabilities for Clinical Practice and Basic Research, Massachusetts General Hospital, 7.11.2005
4. M. Wojtkowski, A. Kowalczyk “Studies of dynamic processes in biomedicine by high-speed spectral optical coherence tomography” invited keynote talk delivered at SPIE, BIOS 2007 [6136-1], San Jose, 25.01.2007
5. Maciej Wojtkowski “OCT – state of the art and its future development” invited talk delivered at Optical Coherence Tomography for Examination of Art, Workshop, Toruń, Poland 3-5.08.2008
6. M. Wojtkowski, “Structural and functional imaging with Fourier domain OCT”, invited keynote talk at Polish-Czech-Slovak Optical Conference on Wave and Quantum Aspects of Contemporary Optics, Polanica Zdrój, 8-12.09.2008
7. M. Wojtkowski, “Structural and functional imaging with ultrahigh-speed Optical Coherence Tomography”, Invited talk at 1<sup>st</sup> Conference on basic research in Ophthalmology, Kraków 19.04.2009
8. M. Wojtkowski, “Application of spectral OCT in ophthalmology - future developments “, invited keynote talk at IV International SPIE Students’ Chapters Meeting, Toruń 14.05.2009
9. M. Wojtkowski „Spectral Optical Coherence Tomography development and transfer of the technology” invited talk at conference Własność przemysłowa w innowacyjnej gospodarce, Urząd patentowy RP, Kraków, 3-4.09.2009
10. M. Wojtkowski “Ultrahigh speed and functional OCT”, invited plenary talk delivered at Saratov Fall Meeting 2009, Saratov State University, Saratov, Russia, 21-24.09.2009
11. M. Wojtkowski „Spectral Optical Coherence Tomography development and transfer of the technology” invited talk at Euroforum, European Innovation, Europarliament, Brussels 5.10.2009
12. M. Wojtkowski „High speed Optical Coherence Tomography. Towards the structure and function of the human eye” Asia Communications and Photonics, Shanghai, China 2-6.11.2009
13. M. Wojtkowski, A. Kowalczyk, „High speed Optical Coherence Tomography - Towards the structure and function of the human tissue ” XVI krajowa konferencja Biocybernetyka i Inżynieria biomedyczna , Warszawa 26-29.04.2010
14. M. Wojtkowski, Medical Physics Group at Nicolaus Copernicus University” Euroscience Open Forum (ESOF), Torino, Italy, 2-7.07.2010
15. M. Wojtkowski, “High speed optical coherence imaging - towards the structure and the physiology of living tissue”, SPIE Optics and Photonics, Interferometry XV, San Diego, Ca, USA 1-5 .08.2010
16. M. Wojtkowski, „Obrazowanie medyczne i biofotonika”, Polska Konferencja Optyczna, Miedzyzdroje 29.06.2011

### **Invited seminar talks and short courses :**

1. M. Wojtkowski, A. Kowalczyk „Spektroskopowa tomografia OCT”, invited lecture delivered at Institute of Geophysics, Faculty of Physics, Warsaw University, 21.05.2000
2. M. Wojtkowski, „Pomiary in vivo za pomocą spektralnej tomografii OCT”, invited lecture delivered at Institute of Photonics, Warsaw Technical University, 12.04.2002
3. M. Wojtkowski „Spectral OCT new powerful tool for medical diagnosis” invited lecture delivered at Institute of Applied Physics, Tsukuba University, Japan, 29.10.2002

4. M. Wojtkowski, „Spectral OCT- new applications” invited lecture delivered at Applied Optics Group, Yamagata University, Japan, 31.10.2002
5. M. Wojtkowski, „Spectral OCT vs Time domain OCT” invited lecture delivered at Research Laboratory of Electronics Massachusetts Institute of Technology, Cambridge, MA, USA, 24.01.2003
6. M. Wojtkowski, „Tomografia Optyczna OCT”, invited lecture delivered at Institute of Experimental Physics, Warsaw University, 6.03.2003
7. M. Wojtkowski, „Tomografia Optyczna OCT”, invited lecture delivered at Institute of Applied Optics, Warsaw, 11.03.2003
8. M. Wojtkowski, „Tomografia Optyczna SOCT”, invited lecture delivered at Institute of Physical Chemistry PAN, Warsaw, 29.05.2003
9. A. Kowalczyk and M. Wojtkowski “Tomografia Optyczna w zastosowaniach medycznych”, invited lecture delivered at the meeting of Polish Medical Society in Toruń, 3.04.2008
10. M. Wojtkowski, Tomografia Optyczna OCT, invited lecture delivered at Wydział Inżynierii Materiałowej, Warsaw Technical University, 04.03.2008,
11. M. Wojtkowski, „Ophthalmic applications of Optical Coherence Tomography”, Applied Optics Group, Uniwersytet Tsukuba, Japan, 25.08.2008
12. M. Wojtkowski, “Fourier domain OCT” Instytut Chemii Fizycznej, Polskiej Akademii Nauk, Seminarium Grupy Materii Skondensowanej, 9.10.2008
13. M. Wojtkowski, “Fourier domain detection in OCT”, Seminar in Photonics Division, Institute of Physics, Jagiellonian University Kraków, Poland 10.12.2008
14. M. Wojtkowski, “Functional OCT”, Visual Optics and Biophotonics Lab Instituto de Óptica "Daza de Valdés" Spanish Council for Scientific Research, CSIC, prof Susana Marcos, 26.03.2009
15. M. Wojtkowski, “Laser, oko, komputer i ... fizyka”, invited, popular lecture delivered at Zespół Szkół Elektronicznych, Bydgoszcz, Poland 19.05.2009
16. M. Wojtkowski “Optical tomography -limitations and perspectives”, short course in Modern Optics I delivered at International School for Junior Scientists and students on Optics, Laser Physics & Biophotonics at Saratov Fall Meeting 2009, Saratov State University, Saratov, Russia, 21-24.09.2009
17. M Wojtkowski “High speed Optical Coherence Tomography”, Seminar at Medical Physics Group, Medical University of Vienna 24.03.2010.
18. M. Wojtkowski, “New perspectives in Biophotonics”, Canon Inc, Tokyo, Japan, 15.09.2010
19. M. Wojtkowski, “Biophotonics and imaging”, short course: “UWA masterclasses”, University of Western Australia, Perth, Australia 21.10.2010
20. M. Wojtkowski, “Introduction to optical tomography” - Seminar at Optical and Biomedical Engineering Laboratory in the School of Electrical, Electronic and Computer Engineering at the University of Western Australia in Perth, Western Australia, 24.10.2010.
21. M. Wojtkowski, “High speed Optical Coherence Tomography –ophthalmic applications” Seminar at Optical and Biomedical Engineering Laboratory in the School of Electrical, Electronic and Computer Engineering at the University of Western Australia in Perth, Western Australia 5.10.2010
22. M. Wojtkowski, “Functional OCT” Seminar at Optical and Biomedical Engineering Laboratory in the School of Electrical, Electronic and Computer Engineering at the University of Western Australia in Perth, Western Australia, 19.10.2010
23. M. Wojtkowski, “Biophotonics and Imaging”, Faculty of Physics & Applied Computer Science, AGH University of Science and Technology, Kraków, Poland 03.12.2010
24. M. Wojtkowski, “High speed, in vivo, optical coherence imaging - towards the structure and function of living tissue”, The University of Arizona, College of Optical Sciences, Tucson, Az, USA 03.02.2011
25. M. Wojtkowski, „Ultrahigh speed optical 3-D imaging using Fourier domain Optical Coherence Tomography” colloquium in Applied Optics Group National University of Ireland, Galway, Ireland, 07.03.2011
26. M. Wojtkowski, “ Biophotonics and Imaging”, Summer School of Erasmus Mundus Master “OpSciTech”, Warsaw, 15.07.2011
- 27.** M. Wojtkowski, “Biofotonika”, Zjazd Stypendystów FNP, 20lecie FNP, Warsaw 24.09.2011