

Magdalena S. Nawrocka, Ph.D.

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Education

Wroclaw University of Technology, Wroclaw, Poland
Ph.D. in Physics, 2001
M.S. in Electrical Engineering, 1996

Employment

Adelphi University, Garden City, Department of Physics
2009 – present Assistant Professor

Florida International University, Miami, FL, Dept. of Electrical and Computer Engineering
2005 – 2008 Visiting Scientist, Nanophotonics and Nanofabrication Research Group
2004 – 2005 Visiting Research Associate (volunteer work), Center for the Study of
Matter at Extreme Conditions

University of Quebec at Ottawa, Gatineau, QC, Canada, Dept. of Computer Sciences and Engineering
2002 – 2004 Postdoctoral Research Fellow
2000 and 1998 Research Associate (two three-month appointments)

Wroclaw University of Technology, Institute of Physics, Wroclaw, Poland
1997 – 2003 Research and Teaching Assistant

Telecommunication Systems Company “Conntel”, Wroclaw, Poland
1996 – 1997 Assistant Designer

Research

Nano- and micro-photonics:

- Plasmonics
- Silicon and polymer photonics

Fiber Optics

- Fiber-optic sensors and sensor networks
- Polarization and birefringence in optical waveguides

Teaching

1. Electromagnetic Theory (Adelphi University)
2. Fiber Optics (Wroclaw University of Technology)
3. Fiber Optics in biomedical engineering (Guest Lecturer, Florida Intl. University)
4. Quantum Mechanics (Adelphi University)
5. Modern Physics (Adelphi University)
6. General Physics (Adelphi University, Wroclaw University of Technology)
7. How Things Work / Physics for non-science majors (Adelphi University)

Industry

Designed fiber-optic telecommunication systems
Installed fiber-optic telecommunication networks

Grants

1. Adelphi Faculty Development Grant, 2011 (\$3,400)
2. NATO Science Fellowship, Natural Sciences and Engineering Research Council of Canada, 2002, (33,000 CAD)
3. Workshop participation, Advanced Study Institute / Optical Waveguide Sensing and Imaging in Medicine, Environment, Security and Defense, October 12-21, 2006, Gatineau, Québec, Canada (2,000 CAD)

Honors and accomplishments

1. Student mentoring. Undergraduate students received / were offered:
 - A stipend from Cornell University to participate in the Summer 2011 Research Experience for Undergraduates at the Center for Nanoscale Systems at Cornell
 - A stipend from the Society of Physics Students for undergraduate summer 2011 research at the National Institute of Standards and Technology in its Semiconductor Electronics Division
 - A stipend from Louisiana State University and Howard Hughes Medical Institute to participate in the Summer 2011 Undergraduate Research Program
 - A stipend from The City University of New York to participate in the 2011 CUNY Summer Undergraduate Research Program
2. Best Poster Award, on the International Conference of Optical Metrology Interferometry' 99, September 20-23, 1999, Pultusk, Poland
3. Honorable Mention for the Fiber-Optic Sensor Device for Hydrostatic Pressure Measurements, Intertechnology' 98 Contest, 1998 June, Lodz, Poland

Invited lectures

1. Indian Institute of Technology - Delhi, India, Semiconductors, metals and optical fibers for photonic devices, May 25, 2010
2. University of Missouri - Kansas City, Photonic devices - from bulky apparatus to nanoscale instruments, April 21, 2006
3. Indian Institute of Technology - Delhi, India, Photonic devices - from bulky apparatus to nanoscale instruments, December 20, 2005

Professional activities and service

1. Optical Society of America, member since 2005
2. IEEE Photonics Society, member since 2006
3. IEEE, Institute of Electrical and Electronics Engineers, Inc., member since 2006
4. SPIE, The International Society for Optical Engineering, member since 2007
5. The New York Academy of Sciences, member, 2010-2011
6. 19 reviews for Optics Express, Journal of Lightwave Technology, IEEE Sensors Journal, IEEE Transactions on Instrumentation and Measurement, and IEEE/ASME Transactions on Mechatronics
17 reviews for Optics Express, IEEE journals and transactions
7. Jury member on student's Oral Presentation Competition 2006, Material Advantage Chapter at Florida International University of ASM International (The Materials Information Society) and TMS (The Minerals, Metals & Materials Society)

Publications*Book chapters:*

1. M. S. Nawrocka, "Solar Energy", Encyclopedia of Environment and Society, SAGE Publications, 2007

Journals:

1. X. Wang, J. A. Martinez, M. S. Nawrocka, R. R. Panepucci, Compact thermally tunable silicon wavelength switch: modeling and characterization, IEEE Photon. Technol. Lett. 20 (11), 936-938, 2008
2. M. S. Nawrocka, X. Wang, T. Liu, R. R. Panepucci, Tunable silicon microring resonator with wide free-spectral-range, Appl. Phys. Lett. 89, 071110(1-3), 2006
3. M. S. Nawrocka, W. J. Bock, W. Urbanczyk, Dynamic high-pressure calibration of the fiber-optic sensor based on birefringent side-hole fibers, IEEE Sensors Journal, 5 (5), 1011-1018, 2005
4. W. J. Bock, M. S. Nawrocka, W. Urbanczyk, Universal readout system for temperature, elongation and hydrostatic pressure sensors based on highly birefringent fibers, IEEE Trans. Instrum. Meas. 53 (1), 170-174, 2004
5. W. J. Bock, M. S. Nawrocka, W. Urbanczyk, Coherence-multiplexed fiber-optic sensor systems for measurements of dynamic pressure and temperature change, IEEE Trans. Instrum. Meas. 51 (5), 980-984, 2002
6. M. S. Nawrocka, W. Urbanczyk, Optimization of detection system for low-coherence interferometric sensors based on highly birefringent fibers, Opt. Appl. 31 (1), 231-250, 2001
7. W. Urbanczyk, M. S. Nawrocka, W. J. Bock, Digital demodulation system for low-coherence interferometric sensors based on highly birefringent fibers, Appl. Opt. 40 (36), 6618-6625, 2001
8. W. J. Bock, M. S. Nawrocka, W. Urbanczyk, Highly sensitive fiber-optic sensor for dynamic pressure measurements, IEEE Trans. Instrum. Meas. 50 (5), 1085-1088, 2001

Conferences:

1. M. S. Nawrocka, S. Shrestha, R. R. Panepucci, J. Widera, Plasmon-based light enhancement from a hybrid copper-gold planar structure. SPIE Conference - Optics & Photonics 2011, San Diego Convention Center, San Diego, CA, 21-25 August, 2011
2. Sajan Shrestha (faculty sponsor: M. S. Nawrocka), Plasmonic hybrid nanostructures for surface-enhanced Raman spectroscopy. 8th Annual Adelphi Research Conference, Adelphi University, Garden City, NY, April 11, 2011
3. Binayak Kandel (faculty sponsor: M. S. Nawrocka), Efficient collection of light scattered from micro-size structures using dark-field reflection microscopy. National Conference on Undergraduate Research 2011, Ithaca College, Ithaca, NY and 8th Annual Adelphi Research Conference, Adelphi University, Garden City, NY, April 11, 2011
4. Nabil Merchant (faculty sponsor: M. S. Nawrocka), Resonant Plasmon Coupling in Gold Nanoparticle Microarrays. National Conference on Undergraduate Research 2011, Ithaca College, Ithaca, NY and 8th Annual Adelphi Research Conference, Adelphi University, Garden City, NY, April 11, 2011
5. X. Wang, J.A. Martinez, M. S. Nawrocka, R. R. Panepucci, Compact Thermally Tunable Silicon Wavelength Switch. University/Government/Industry Micro/Nano Symposium, 2008. UGIM 2008. 17th Biennial, Louisville, KY, USA, p.126-127, 13-16 July 2008
6. T. Liu, M. Nawrocka, R. Panepucci, Short polymer waveguide resonator with Bragg reflectors, Proc. SPIE 6645, 66450H, 2007
7. X. Wang, M. S. Nawrocka, A. Lavrenov, R. R. Panepucci, Compact MEMS switch and variable optical attenuator on high contrast silicon waveguides. SPIE Conference - Optics & Photonics, San Diego, California, USA, 26 - 30 August 2007

8. A. Martinez, T. Liu, M. S. Nawrocka, R. R. Panepucci, Micro-opto-electro-mechanical system (MOEMS) for microstructure manipulation and optical characterization. SPIE Conference - Optics & Photonics, San Diego, California, USA, 26 - 30 August 2007
9. T. Liu, M. S. Nawrocka, R. R. Panepucci, Polymer waveguide resonator with distributed Bragg reflectors. SPIE Conference - Optics & Photonics, San Diego, California, USA, 26-30 August 2007
10. J. A. Martinez, X. Wang, M. S. Nawrocka, R. R. Panepucci, Microheater tuning of silicon-on-insulator ring resonator, CLEO/QELS Conference, Baltimore Convention Center, Baltimore, MD, USA, May 6-11, 2007
11. T. Liu, M.S. Nawrocka, R. R. Panepucci, Polymer waveguide resonator with distributed Bragg reflectors - design and numerical analysis, Optical Fiber Communication Conference and Exposition and the National Fiber Optic Engineers Conference, Anaheim Convention Center, Anaheim, CA, USA, March 25-29, 2007
12. M. S. Nawrocka, X. Wang, T. Liu, J. A. Martinez, R. R. Panepucci, Nanophotonics for communications and biosensing, Optical Waveguide Sensing & Imaging in Medicine, Environment, Security and Defence Workshop, NATO-Advanced Study Institute, Gatineau, Québec, Canada, October 12 - 21, 2006
13. R. R. Panepucci, T. Liu, M. Nawrocka, Polymers photonic crystal cavities fabricated by direct electron-beam lithography, The 50th International Conference on Electron, Ion and Photon Beam Technology & Nanofabrication, Baltimore Marriott Waterfront, Baltimore, Maryland, May 30 - June 2, 2006
14. X. Wang, M. S. Nawrocka, I. Kartadjojaja, V. Almeida, M. Lipson, B. Ilic, R.R. Panepucci, Silicon cantilever-wavelength displacement sensors, The 49th International Conference on Electron, Ion and Photon Beam Technology & Nanofabrication, JW Marriott Orlando, Grande Lakes, Florida, May 31 - June 3, 2005
15. W. J. Bock, M. S. Nawrocka, T. Martynkien, W. Urbanczyk, S. Demers, A fiber-optic temperature sensor for marine applications, Proc. of IEEE Instrum. Meas. Technol. Conference, Ottawa, Ontario, Canada, 17-19 May 2005
16. W. J. Bock, M. S. Nawrocka, W. Urbanczyk, J. Rostkowski, Fiber-optic sensor for automotive applications. Proc. of the 3rd IEEE Conference on Sensors, Vienna, Austria, p. 248-251, Oct. 24-27, 2004
17. W. J. Bock, M. S. Nawrocka, W. Urbanczyk, Dynamic calibration of the fiber-optic pressure sensor based on side-hole fiber. Proc. of IEEE Sensors 2003 Conference, Toronto, Canada, Oct. 22-24, Vol. 1, 709-712, 2003
18. W. J. Bock, M. S. Nawrocka, W. Urbanczyk, J. Wojcik, Studies of temperature-insensitive dynamic pressure sensing using elliptical-core side-hole fibers, Proc. SPIE 5260, 278-283, 2003
19. W. J. Bock, M. S. Nawrocka, W. Urbanczyk, Coherence-multiplexed fiber-optic sensor systems for measurements of dynamic pressure and temperature changes, Proc. of the 10th Conf. IEEE Trans. Instrum. Meas. Technol., Budapest, Hungary, May 21-23, 2001
20. W. J. Bock, M. S. Nawrocka, W. Urbanczyk, Universal readout system for temperature, elongation and hydrostatic pressure sensors based on highly birefringent fibers, Proc. of IEEE Trans. Instrum. Meas. Technol. Conf., Anchorage, AK, USA, May 21-23, 2002
21. M. S. Nawrocka, W. Urbanczyk, W. J. Bock, Fiber-optic sensor for simultaneous measurements of pressure and temperature changes, Proc. SPIE 4356, 248-253, 2000
22. W. J. Bock, M. S. Nawrocka, W. Urbanczyk, Application of side-hole fibers for dynamic pressure measurements, Proc. SPIE 4087, 1175-1179, 2000
23. W. J. Bock, M. S. Nawrocka, W. Urbanczyk, J. Rostkowski, Highly sensitive fiber-optic sensor for dynamic pressure measurements, Proc. of the 17th Conf. IEEE Trans. Instrum. Meas. Technol. p. 591-594, Baltimore, Maryland, USA, May 1-4, 2000

24. M. S. Nawrocka, W. J. Bock, W. Urbanczyk, Application of side-hole fiber for measurement of fast hydrostatic pressure changes, Proc. of 7th Scientific Conf. on Optical Fibers and their Applications, p. 363-369, Krasnobrod, Poland, Oct. 14-16, 1999
25. M. S. Nawrocka, W. Urbanczyk, W. J. Bock, J. Wojcik, Highly sensitive fiber-optic sensor for dynamic pressure measurements, Proc. SPIE 3745, 293-297, 1999
26. M. S. Nawrocka, W. Urbanczyk, W. J. Bock, Optical sensor for hydrostatic pressure measurement, Proc. of 5th Scientific Conf. Optoelectronic and Electronic Sensors, p. 485-488, Jurata, Poland, May 10-14, 1998
27. M. S. Nawrocka, W. Urbanczyk, W. J. Bock, Fiber-optic sensor for measurements of fast hydrostatic pressure changes. Proc. of 5th Scientific Conference on Optical Fibers and their Applications, p. 177-183, Bialowieza, Poland, January 22-24, 1998