

Weiguo (Bill) Yang

Assistant Professor
Electrical Engineering
Department of Engineering and Technology
369 Belk Building
Western Carolina University
Cullowhee, NC 28723
Tel: (828) 227-2693; Fax: (828) 227-7838
E-mail: wyang@email.wcu.edu

Professional Experiences:

- 8/2007-present Assistant Professor, Dept. of Engineering and Technology
Western Carolina Univ., Cullowhee, North Carolina
- Research interests focus on optoelectronics and metamaterials.
 - Teaching website: <http://paws.wcu.edu/wyang>
- 5/2007-8/2007 Principal Engineer, Lightwave System
Ciena Corp., Maryland, North Carolina
- Long-haul and ultra-long-haul production systems, in particular the impact of fiber polarization mode dispersion.
- 8/1999-3/2007 Member of Technical Staff, Bell Labs
Lucent Technologies Inc., Holmdel, New Jersey
- Semiconductor opto-electronic material and devices.
 - Monolithic active-passive integration on III-V.
 - Spectral analysis for optical communication systems.
- 8/1995-8/1999 Research and Teaching Assistant
Dept. of Electrical Engineering, Princeton Univ., Princeton, New Jersey
- Ultrafast pulse shaping at 1.5 μm .
 - Commercial ultrafast systems, including Ti:sapphire mode-locked lasers, CPA and OPA systems with applications in coherent control.
 - Teaching Assistant.
- 9/1992-6/1995 Research and Teaching Assistant, Dept. of Physics, USTC, Hefei, China
- Theoretical model of quantum acousto-optical mode couplers.
 - Teaching Assistant.

Education Background:

- Ph.D. Electrical Engineering, Princeton University, 1999
Ph.D. Thesis: "AOM-Based Ultrafast Pulse Shaping at 1550 nm and Its Applications to High-Speed Optical Telecommunications," November 1999.
Advisor: Prof. Warren S. Warren
- M.A. Electrical Engineering, Princeton University, 1997

- M.S. Physics, University of Science and Technology of China, 1995
M.S. Thesis: “Theory of Quantum Acousto-Optical Mode Combiner and Its Applications,” May 1995.

Advisor: Prof. G.-C. Guo

- B.S. Physics, University of Science and Technology of China, 1992
B.S. Thesis: “Collaborative radiation of crystal-like gas,” June 1992.

Advisor: Prof. G.-C. Guo

Professional Memberships and Services:

- Senior Member, IEEE
- Member, OSA
- Member, ASEE
- Peer review for *Optics Letters*, *Optics Express*, *Applied Optics*, *JOSA*, *IEEE Photonic Technology Letters*, *Journal of Lightwave Technologies*, *Journal of Optical Networking*, *ASEE Conferences*, etc.
- Business plan review for chinese private venture capitals
- Technical consulting for Ying-Si Sci-Tech Ltd., Hong Kong

Patents:

1. W. Yang, “Monolithically Integrated Optical Coupler With Substantially No Splitting Loss”, Issued, October 2007
2. W. Yang, “Architecture Of Fiber Optical Transmission System Featuring Chaotic Lasers And The Partial Response Channel”, Pending, January 2007
3. W. Yang and P. G. Bernasconi, “Active/Passive Monolithically Integrated Channel Filtering Polarization Splitter”, Issued, December 2006
4. P. G. Bernasconi, D. Van Throughout, C. Dorrer, W. Yang, L. Zhang, “High Power Multi-Frequency Laser”, Issued, March 2006
5. W. Yang, “Receiver Scheme For Synchronous Digital Transmission”, Pending, March 2006
6. W. Yang, “Passively Mode-Locking Waveguide Lasers”, pending, January 2006
7. W. Yang and L. Zhang, “Self-Mode-Locked Semiconductor Lasers”, Pending, Oct. 2005
8. W. Yang and J. H. Sinsky, “Technique For Monitoring SONET Signal”, Issued, May 2005
9. W. Yang and Z. Zheng, “Method and Apparatus for Optical Layer Network Management”, Pending, July 2002

Publications I: Journal papers

1. W. Yang, "An Analytic Approach to Random Phase Error and its Impact on the Performance and Design of Arrayed-Waveguide Gratings," *IEEE J. Quantum Electronics*, v.43, p.568 (2007)
2. W. Yang, "Picosecond dynamics of semiconductor Fabry-Perot lasers: A simplified model," *IEEE J. Sel. Top. Quant. Electron.*, v.13, p.1235 (2007)
3. W. Yang, N. J. Sauer, P. G. Bernasconi, and L. Zhang, "Self-mode-locked single-section Fabry-Perot semiconductor lasers at 1.56 μm " *Applied Optics*, v.46, p.113 (2007)
4. W. Yang, "Self-Start Mode-Locking by Multi-Spatial-Mode Active Waveguiding," *Optics Letters*, v.31, p.2287 (2006)
5. W. Yang, "Optical frame timing recovery in a time-multiplexed wavelength-division-multiplexing ring network," *J. Optical Networking*, v.5, p.210-220 (2006)
6. W. Yang, "Analytical Formula for Radio-Frequency Spectral Monitoring of the SONET Frame Alignment Header," *IEEE Photonics Technology Letters*, v.18, p.253 (2006)
7. P. G. Bernasconi, L. Zhang, W. Yang, N. J. Sauer, L. L. Buhl, J. H. Sinsky, I. Kang, S. Chandrasekhar, and D. T. Neilson, "Monolithically Integrated 40-Gb/s Switchable Wavelength Converter," *J. Lightwave Technology*, v.24, p.71 (2006)
8. P. G. Bernasconi, W. Yang, L. Zhang, N. J. Sauer, L. L. Buhl, I. Kang, S. Chandrasekhar, and D. T. Neilson, "40 Gbit/s RZ wavelength converter in a monolithically integrated chip with a tunable laser," *Electronics Letters*, v. 41, pp.701-702 (2005)
9. W. Yang and Z. Zheng, "Advanced channel monitoring for optical layer management," *J. Optical Networking*, vol. 2, pp.428-435 (2003)
10. D. Van Thourhout, P. G. Bernasconi, B. Miller, W. Yang, L. Zhang, N. J. Sauer, and L. W. Stulz, "High-power digitally tunable laser with integrated star coupler," *Electronics Letters*, v.39, pp.370 (2003)
11. D. Van Thourhout, L. Zhang, W. Yang, B. Miller, N. J. Sauer, C. R. Doerr, "Compact digitally tunable laser," *IEEE Photonics Technology Letters*, v.15, pp.182 (2003)
12. W. Yang, "Sensitivity of optical performance monitoring with optical preamplification," *J. Optical Networking*, v.1, p.454-459 (2002)
13. D. Van Thourhout, P. G. Bernasconi, B. Miller, W. Yang, L. Zhang, N. J. Sauer, L. W. Stulz, S. Cabot, "Novel geometry for an integrated channel selector," *IEEE J. Selected Topics in Quantum Electronics*, v.8, pp.1211 (2002)
14. W. Yang, "Sensitivity Issues of Optical Performance Monitoring," *IEEE Photonics Technology Letters*, v.14, p107-109 (2002)
15. W. Yang and J. H. Sinsky, "RF Spectral Analysis for SONET Framing Recognition and Performance Monitoring," *J. Optical Networking*, v.1, p.74-79 (2002)

16. W. Yang, H. Kobayashi, and W. S. Warren “Frequency-domain differential phase-shift keying (FD-DPSK) of ultrafast laser pulses” *IEEE Photonics Technology Letters*, v.14, pp. 215-217 (2002)
17. W. Yang and J. H. Sinsky, “SONET Framing Recognition Using Modulation Domain Analysis,” *IEEE Photonics Technology Letters*, v.13, pp. 1127-1129 (2001)
18. M. R. Fetterman, J. C. Davis, H.-S. Tan, W. Yang, D. Goswami, J.-K. Rhee, and W. S. Warren, “Demonstration of FFH modulation and detection,” *J.O.S.A.* **B18**, pp. 1372-1376 (2001).
19. W. Yang, M. R. Fetterman, D. Goswami, and W. S. Warren, “High-Ratio Electro-Optical Data Compression for Massive Accessing Networks Using AOM-Based Ultrafast Pulse Shaping,” *Journal of Optical Communications*, v.22, pp. 15-18 (2001)
20. F. Huang, W. Yang, and W. S. Warren, “Quadrature spectral interferometric detection and pulse shaping,” *Optics Letters*, v.26, pp. 382-384 (2001).
21. W. Yang, M. R. Fetterman, J. C. Davis and W.S. Warren, “Spectral interference measurement of nonlinear pulse propagation dynamics in optical fibers,” *Optics Letters* v.25, pp. 22-24 (2000)
22. W. Yang, F. Huang, M. R. Fetterman, J. C. Davis, D. Goswami, and W. S. Warren, “Real-time Adaptive Amplitude Feedback in an AOM-Based Ultrafast Pulse Shaping System,” *IEEE Photonics Technology Letters*, v.11, pp. 1665-1667 (1999)
23. M. R. Fetterman, J. C. Davis, D. Goswami, W. Yang, and W. S. Warren, “Propagation of complex laser pulses in optically dense media,” *Physical Review Letters*, v.82, pp. 3984-3986 (1999)
24. W. Yang, D. Keusters, D. Goswami, and W. S. Warren, “Rapid ultrafine optical tunable delay line at 1550 nm,” *Optics Letters*, v.23, pp. 1843-1845 (1998)
25. M. R. Fetterman, D. Goswami, D. Keusters, W. Yang, J.-K. Rhee, and W. S. Warren, “Ultrafast Pulse Shaping: Amplification and Characterization,” *Optics Express*, v.3, pp. 366-375 (1998)

Publications II: Conferences and Meetings

1. W. Yang and C. Dorrer, “Ultrafast Pulse Characterization of Semiconductor Single-Section Fabry-Parot Mode-Locked Lasers, *CLEO/IQEC 2009*, paper CTuQ1 (2009)
2. W. Yang, A. Martin, R. Adams, J. Zhang, and K. Burbank, “Intentional Learning in Core Engineering and Engineering Technology Education, *2009 ASEE Annual Conference*, paper AC2009-2061 (2009)
3. J. Yao, S. Wang, J. Zhou, K. Li, M. Lange, W. Yang, P. Gardner, L. Peltz, R. Frampton, J. H. Hunt, J. Becker, “Ultra-High Sensitivity Photodetector Arrays with Integrated Amplification and Passivation Nano-Layer, *SPIE Photonic West 2009*, paper 7212-33 (2009)

4. Y. Huang, W. Yang, R. Adams, B. Howell, J. Z. Zhang, and K. Burbank, "Teaching Electromagnetic Fields with Computer Visualization, *accepted 2008 IAJC-NAIT-IJME International Conference*
5. J. O. Schenk, R. P. Ingel, M. A. Fiddy, and W. Yang "Split Band Edge Structures and Negative Index, *2008 Slow and Fast Light (SL) Topical Meeting*, paper SMB6 (2008)
6. W. Yang, J. O. Schenk, and M. A. Fiddy, "Energy Velocity in Negative Group Index Structures, *2008 Slow and Fast Light (SL) Topical Meeting*, paper SWB5 (2008)
7. W. Yang, "Modulation Property of Multi-Spatial-Mode Semiconductor Mode-Locked Lasers, *CLEO/QELS 2008* paper JThA12 (2008)
8. W. Yang, Y. Huang, R. Adams, J. Z. Zhang, and K. Burbank, "Effective Teaching of Photonics E&M Theory Using COMSOL, *ASEE 2008* paper AC 2008-1093 (2008)
9. J. Z. Zhang, K. Burbank, B. Howell, W. Yang, Y. Huang, R. Adams, "Scholarship Reconsidered and Its Impact on Engineering and Technology Graduate Education, *ASEE 2008*, paper AC 2008-553 (2008)
10. W. Yang, L. L. Buhl, M. R. Fetterman, "Experimental Modulation Response Beyond the Relaxation Oscillation Frequency in a Multiple-Spatial-Mode Laser Diode Based on Active Spatial Mode Coupling, *CLEO 2007*, paper CThK3 (2007)
11. W. Yang, "Single-Contact Multi-Spatial-Mode Mode-Locking Fabry-Perot Semiconductor Laser Diodes, *CLEO 2007*, paper JWA123 (2007)
12. A. Bhardwaj, N. J. Sauer, L. L. Buhl, W. Yang, L. Zhang, D. T. Neilson, "Optical Equalizer Monolithically Integrated with a Semiconductor Optical Amplifier, *OFC 2007*, paper OWP3 (2007)
13. W. Yang, "Multi-spatial-mode (MSM) mode-locking lasers with no saturable absorber," LEOS semiconductor laser workshop, May 2006
14. P. G. Bernasconi, L. Zhang, W. Yang, L. L. Buhl, N. J. Sauer, A. Bhardway, J. Gripp, J. E. Simsarian, and D. T. Neilson, "Monolithically integrated differential Mach-Zehnder filter for 40 Gb/s wavelength conversion in high-confinement butt-joint SOAs," IPRM'06, 2006
15. P. G. Bernasconi, W. Yang, L. Zhang, N. J. Sauer, L. L. Buhl, I. Kang, S. Chandrasekhar, and D. T. Neilson, "Monolithically integrated 40Gb/s wavelength converter with multi-frequency laser," OFC'05, PDP16, 2005
16. W. Yang, P. G. Bernasconi, L. Zhang, L. W. Stulz, S. Cabot, N. J. Sauer, M. Zirngibl, B. I. Miller, D. Van Thourhout, "8-channel DWDM multiplexer with integrated per-channel amplification on 100 GHz frequency grid," OAA 2004;
17. W. Yang, H. Kobayashi, W. S. Warren, "Ultrafast laser pulse spectral domain differential phase shift keying," OFC 2001, WDD45, Anaheim, California, March 2001
18. W. Yang, "Wideband Jones Matrix Measurement Using Amplified Spontaneous Emission (ASE) Source and Optical Spectrum Analyzer (OSA) detection," OSA Annual Meeting, ThGG-4, Providence, Rhode Island, October 2000

19. W. Yang, M. R. Fetterman, J. C. Davis, and W. S. Warren, "Cross-spectral interference studies of nonlinear effects," OSA Annual Meeting, ThS5, Santa Clara, California, September 1999
20. M. R. Fetterman, J. C. Davis, H.-S. Tan, W. Yang, D. Goswami, J.-K. Rhee, and W. S. Warren, "Demonstration of a communication protocol based on wavelength-time modulation and detection of ultrafast laser pulses," OSA Annual Meeting, WLL140, Santa Clara, California, September 1999
21. W. Yang, F. Huang, M. R. Fetterman, and W. S. Warren, "Adaptive Spectral Control of Femtosecond Pulses with Feedback Pulse-Shaping," CAP 1999, Princeton University, Princeton, New Jersey, May 1999
22. W. Yang and W. S. Warren, "Applications of AOM Ultrafast Pulse Shaping in High-Speed Optical Telecommunications," POEM Annual Review Meeting, Invited talk, Princeton University, Princeton, New Jersey, January 1999
23. J. C. Davis, M. R. Fetterman, D. Goswami, W. Yang, D. Keusters, and W. S. Warren, "Altering excitation dynamics in optically dense media using shaped ultrafast laser pulses," CLEO'99, QTuM7, Baltimore, Maryland, March 1999,
24. M. R. Fetterman, D. Goswami, J. C. Davis, D. Keusters, W. Yang, J.-K. Rhee, and W. S. Warren, "Adiabatic passage using ultrafast pulse shaping," OSA Annual Meeting, ThI5, Baltimore MA, October 1998
25. W. Yang, D. Goswami, M. R. Fetterman, and W. S. Warren, "Fast programmable coherent spectral encoder for femtosecond optical pulses," OSA Annual Meeting, ThOO2, Baltimore MA, October 1998
26. W. Yang, J. C. Davis, D. Goswami, M. R. Fetterman, and W. S. Warren, "Optical wavelength domain code-division multiplexing using ultrafast optical pulse shaping with AOM approach," *SPIE Proc.* v. 3531, pp. 80-87 (1998)
27. W. Yang, D. Goswami, and W. S. Warren, "Ultrafast 1550 nm optical communications using acousto-optic pulse shaping," *Proc. 32nd Conf. on Information Sciences and Systems*, TP-4, pp. 168-169, Princeton, New Jersey, March 1998
28. W. Yang, "AOM-based Ultrafast Pulse Shaping at 1550 nm and Application to Optical Telecommunications," CULA site review presentation, Princeton University, Princeton, New Jersey, December 1998
29. D. Keusters, M. R. Fetterman, W. Yang, J.-K. Rhee, D. Goswami, and W. S. Warren, "Analyzing shaped femto- and picosecond pulses using the Spectrally and Temporally Resolved Upconversion Technique," CULA Kick-off Meeting, Princeton University, Princeton, New Jersey, December, 1997
30. W. Yang, D. Goswami, and W. S. Warren, "Ultrafast 1550 nm optical communication using acousto-optic pulse shaping," CULA Kick-off Meeting, Princeton University, Princeton, New Jersey, December, 1997

31. W. Yang, D. Keusters, D. Goswami, and W. S. Warren, "Fast and ultra-fine tunable optical delay line at 1550 nm wavelength," CULA Kick-off Meeting, Princeton University, Princeton, New Jersey, December, 1997
32. W. Yang and G.-C. Guo, "Odd and Even coherent states as Shrodinger Cats," *Proc. 6th Annual meeting of Quantum Optics Association*, p. 68, Jiang-Xi, P. R. China, Oct. 1994
33. W. Yang and G.-C. Guo, "Quantum Opto-Acoustic Mode Combiner and Its Applications," *Proc. 6th Annual meeting of Quantum Optics Association*, p.62, Jiang-Xi, P. R. China, Oct. 1994