

## Publication List

Ming C. Wu

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### Book Chapters

- B1. M.C. Wu, J.-C. Tsai, W. Piyawattanametha, and P.R. Patterson, "Optical MEMS and Nano-Photonics," in *MEMS/NEMS Handbook* (translated into Chinese), Zhou Zhaoying, Editor, Chinese Science Publishing Company, to be published in 2005.
- B2. M. C. Wu and P. R. Patterson, "Free-Space Optical MEMS," in *MEMS Handbook*, Korvink and O. Paul, Editors, William Andrew Publishing, NY, to be published in 2004.
- B3. P. K. L. Yu and M. C. Wu, "Photodiodes for High Performance Analog Links," in *RF Photonic Technology in Optical Fiber Links*, W. S. C. Chang, Editor, Cambridge University Press, Cambridge, UK, 2002.
- B4. M. C. Wu, S. S. Lee, L. Fan, and G. D. Su, "Optical MEMS: Huge Possibilities for Lilliputian-sized Devices," in *Trends in Optics and Photonics (TOPS)*, Vol. 23, H. Haus, Editor, Optical Society of America, Washington DC, October 1998.
- B5. M. C. Wu and Y. K. Chen, "Monolithic Colliding Pulse Mode-Locked Diode Lasers," in *Compact Sources for Ultrashort Pulses*, I. Duling, III, Editor, pp. 381-424, Cambridge University Press, Cambridge, UK, 1995.

### Archival Journal Publications

- J1. J-A. Paik, S-K. Fan, H. Chang, C-J. Kim, M.C. Wu and B. Dunn, "Development of Spin Coated Mesoporous Oxide Films for MEMS Structures," accepted for publication in *J. Electroceramics*
- J2. Dooyoung Hah, Patterson PR, Nguyen HD, Toshiyoshi H, Wu MC. "Theory and experiments of angular vertical comb-drive actuators for scanning micromirrors," *IEEE Journal of Selected Topics in Quantum Electronics*, vol.10, no.3, May-June 2004, pp.505-13.
- J3. Fujino M, Patterson PR, Nguyen H, Piyawattanametha W, Wu MC. "Monolithically cascaded micromirror pair driven by angular vertical combs for two-axis scanning," *IEEE Journal of Selected Topics in Quantum Electronics*, vol.10, no.3, May-June 2004, pp.492-7.
- J4. Gupta V, Snow R, Wu MC, Jain A, Tsai J. "Recovery of stiction-failed MEMS structures using laser-induced stress waves," *Journal of Microelectromechanical Systems*, vol.13, no.4, Aug. 2004, pp.696-700.
- J5. Hung Nguyen, Dooyoung Hah, Pamela R. Patterson, Rumin Chao, Wibool Piyawattanametha, Erwin Lau, and Ming C. Wu, "Angular Vertical Comb Driven Tunable Capacitor with High Tuning Capabilities," *IEEE/ASME Journal of Microelectromechanical Systems*, Vol. 13, No. 3 , pp. 406 – 413, June 2004
- J6. J.-C. Tsai, S. Huang, D. Hah, H. Toshiyoshi, and M.C. Wu, "Open-Loop Operation of MEMS-Based  $1 \times N^2$  Wavelength-Selective Switch With Long-Term Stability and Repeatability," *IEEE Photonics Technology Letters*, Vol. 16, No. 4, pp.1041 – 1043, April 2004
- J7. Dooyoung Hah, Sophia Huang, Jui-Che Tsai, Hiroshi Toshiyoshi, and Ming C. Wu, "Low Voltage, Large Scan Angle MEMS Analog Micromirror Arrays with Hidden Vertical Comb-Drive Actuators," *IEEE/ASME Journal of Microelectromechanical Systems*, Vol. 13, No. 2, pp. 279 – 289, April 2004.
- J8. \* Sanjeev Murthy, Seong-Jin Kim, Thomas Jung, Zhi-Zhi Wang, Wei Hsin, T. Itoh, and Ming C. Wu, "Backward Wave Cancellation in Distributed Traveling Wave Photodetectors," *IEEE Journal of Lightwave Technology*, Vol. 21, No. 12 , pp. 3071-3077, Dec. 2003 (Invited Paper)

- J9. Hiroshi Toshiyoshi, Guo-Dung John Su, Jason LaCosse, and Ming C. Wu, "A Surface Micromachined Optical Scanner Array using Photoresist Lenses Fabricated by a Thermal Reflow Process," *IEEE Journal of Lightwave Technology*, Vol. 21, No. 7, pp. 1700 -1708, July 2003.
- J10. Pei Yu Chiou, Hyejin Moon, Hiroshi Toshiyoshi, Chang-Jin Kim, and Ming C. Wu, "Light actuation of liquid by optoelectrowetting," *Sensors & Actuators A-Physical*, vol. A104, no.3, pp.222-228, May 2003.
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## Refereed Conference Papers

\* Denotes invited presentations

- C1. \* H.-K. Sung, T. Jung, D. Tishinin, K.Y. Liou, W.T. Tsang, and M.C. Wu “Optical Injection-Locked Gain-Lever Distributed Bragg Reflector Lasers with Enhanced RF Performance,” 2004 IEEE International Topical Meeting on Microwave Photonics (MWP), Ogunquit, Maine, October 4-6, 2004, pp. 225-228 ([Invited Paper](#)).
- C2. E.K. Lau and M.C. Wu, “Amplitude and Frequency Modulation of the Master Laser in Injection-Locked Laser Systems,” 2004 IEEE International Topical Meeting on Microwave Photonics (MWP), Ogunquit, Maine, October 4-6, 2004, pp. 142-145.
- C3. Jui-che Tsai, Li Fan, Chao-hsi Chi, Dooyoung Hah, and Ming C. Wu, “A Large Port-Count 1x32 Wavelength-Selective Switch Using a Large Scan-Angle, High Fill-Factor, Two-Axis Analog Micromirror Array,” 30th European Conference on Optical Communication (ECOC), September 5-9, 2004, Stockholm, Sweden. Paper Tu1.5.2.
- C4. Jui-che Tsai, Li Fan, Dooyoung Hah, and Ming C. Wu, “A High Fill-Factor, Large Scan-Angle, Two-Axis Analog Micromirror Array Driven by Leverage Mechanism,” IEEE/LEOS International Conference on Optical MEMS and Their Applications, Takamatsu, Japan, August 22-26, 2004, Paper C-2.
- C5. \* Ming C. Wu, “Micro and Nanoscale Optical MEMS,” ICO International Conference on Optics and Photonics on Technology Frontier, Makuhari Messe, Chiba, Japan, July 12-15, 2004 ([Invited Paper](#))
- C6. Ming-Chang M. Lee and Ming C. Wu, “3D Silicon Transformation using Hydrogen Annealing,” Proc. Solid State Sensor, Actuator and Microsystems Workshop (Hilton Head 2004) Hilton Head Island, South Carolina, June 6-10, 2004.
- C7. Aaron T. Ohta, Pei-Yu Chiou, and Ming C. Wu, “dynamic array manipulation of microscopic particles via optoelectronic tweezers,” Proc. Solid State Sensor, Actuator and Microsystems Workshop (Hilton Head 2004) Hilton Head Island, South Carolina, June 6-10, 2004.
- C8. Rihui He, Li Fan, Ming C. Wu, and Chang-Jin “CJ” Kim, “porous polysilicon formed by electrochemical etching for on-chip vacuum encapsulation,” Proc. Solid State Sensor, Actuator and Microsystems Workshop (Hilton Head 2004) Hilton Head Island, South Carolina, June 6-10, 2004.
- C9. Ming-Chang M. Lee, Sagi Mathai, Ming C. Wu, “Dynamic dispersion compensator using MEMS-actuated microdisk resonators,” Proc. Conference of Lasers and Electro-Optics (CLEO), Paper CThMM4, San Francisco, California, May 17-21, 2004.
- C10. Aaron T. Ohta, Pei Yu Chiou, Ming C. Wu, “Dynamic DMD-driven optoelectronics tweezers for microscopic particle manipulation,” Proc. Conference of Lasers and Electro-Optics (CLEO), Paper CWS5, San Francisco, California, May 17-21, 2004.
- C11. Wibool Piyawattanametha, Li Fan, Shuting Hsu, Makoto Fujino, Ming C. Wu, Paul R. Herz, Aaron D. Aguirre, Yu Chen, James G. Fujimoto, “Two-dimensional endoscopic MEMS scanner for high resolution optical coherence tomography,” Proc. Conference of Lasers and Electro-Optics (CLEO), Paper CWS2, San Francisco, California, May 17-21, 2004.
- C12. Jui-che Tsai, Ming C. Wu, “1xN<sup>2</sup> wavelength-selective switches with tilted 2D collimator arrays for inter-channel-response suppression,” Proc. Conference of Lasers and Electro-Optics (CLEO), Paper CTuFF7, San Francisco, California, May 17-21, 2004.
- C13. J.C. Tsai, M.C. Wu, “1xN<sup>2</sup> Wavelength-selective switches with high fill-factor two-axis analog micromirror arrays,” Proc. Optical Fiber Communications Conf., (OFC 2004), Paper MF42, Los Angeles, California, February 23-27, 2004.

- C14. C.H. Chi, J. Yao, J.C. Tsai, M.C. Wu, K. Okamoto, "Compact 1x8 MEMS optical switches using planar lightwave circuits," Optical Fiber Communications Conf., (OFC 2004), Paper THQ4, Los Angeles, California, February 23-27, 2004.
- C15. J. Yao, M.C.M. Lee, and M. C. Wu, "1550-nm Superprism Demultiplexers in 2-D Silicon-on-Insulator Slabs, Optical Fiber Communications Conf., (OFC 2004), Paper THR1, Los Angeles, California, February 23-27, 2004.
- C16. Pei Yu Chiou, Wilson Wang, James C. Liao, Ming C. Wu, "Cell Addressing And Trapping Using Novel Optoelectronic Tweezers," IEEE International Conference on MicroElectroMechanical Systems (MEMS), Maastricht, The Netherlands, January 25-29, 2004.
- C17. Jui-che Tsai and Ming C. Wu, "High Fill-Factor Two-Axis Analog Micromirror Array for  $1 \times N^2$  Wavelength-Selective Switches," IEEE International Conference on MicroElectroMechanical Systems (MEMS), Maastricht, The Netherlands, January 25-29, 2004.
- C18. Hyuk-Kee Sung, Thomas Jung, Ming C. Wu, D. Tishinin, K.Y. Liou, and W.T. Tsang, "Optical Generation of Millimeter-Waves using Monolithic Sideband Injection Locking of a Two-Section DFB Laser," IEEE LEOS 2003 Annual Meeting, Paper ThAA-2, Tucson, Arizona, October 26 – 30, 2003
- C19. H.-K. Sung, Thomas Jung, Ming C. Wu, D. Tishinin, T. Tanbun-Ek, K.Y. Liou, and W.T. Tsang, "Modulation Bandwidth Enhancement and Nonlinear Distortion Suppression in Directly Modulated Monolithic Injection-locked DFB Lasers," International Topical Meeting on Microwave Photonics (MWP 2003), Budapest, Hungary, September 10-12, 2003.
- C20. P. Y. Chiou, Z. Chang, and M.C. Wu, "A Novel Optoelectronic Tweezer using Light Induced Dielectrophoresis," IEEE/LEOS International Conference on Optical MEMS and Their Applications, Paper MA3, Hawaii, August 18-21, 2003.
- C21. M.-C.M. Lee and M.C. Wu, "A MEMS-Actuated Tunable Microdisk Resonator," IEEE/LEOS International Conference on Optical MEMS and Their Applications, Paper MC3, Hawaii, August 18-21, 2003.
- C22. J.-C. Tsai, S. Huang, D. Hah, and M.C. Wu, " $1 \times N^2$  Wavelength-Selective Switch With Telescope-magnified 2D Input/Output Fiber Collimator Array," International Conference on Optical MEMS and Their Applications, Paper TuA2, Hawaii, August 18-21, 2003.
- C23. W. Piyawattanametha, P.R. Patterson, D. Hah, H. Toshiyoshi, and M.C. Wu, "A 2D Scanner by Surface and Bulk Micromachined Angular Vertical Comb Actuators," International Conference on Optical MEMS and Their Applications, Paper TuB4, Hawaii, August 18-21, 2003.
- C24. M. Fujino, P. R. Patterson, H. Nguyen, W. Piyawattanametha and M. C. Wu, "Cascaded Micromirror Pair Driven by Angular Vertical Combs for Two-Axis Scanning," International Conference on Optical MEMS and Their Applications, Paper TuB7, Hawaii, August 18-21, 2003.
- C25. Zhuang, Y.; Wu, Y.; Chang, W.S.C.; Yu, P.K.L.; Mathai, S.; Wu, M.; Tishinin, D.; Lion, K.Y., "Peripheral coupled waveguide traveling-wave electroabsorption modulator," Microwave Symposium Digest, 2003 IEEE MTT-S International, Vol. 2, pp. 1367 -1370, June 8-13, 2003.
- C26. Jui-che Tsai, Sophia Huang, Dooyoung Hah, and Ming C. Wu, "Analog Micromirror Arrays with Orthogonal Scanning Directions for Wavelength-Selective  $1 \times N^2$  Switches," 12<sup>th</sup> International Conference on Solid-State Sensors and Actuators (Transducers '03), Boston, MA, June 2003.
- C27. Pei Yu Chiou, Zehao Chang, Ming C. Wu, "Pico Liter Droplet Manipulation Based on a Novel Continuous Opto-Electrowetting Mechanism," 12<sup>th</sup> International Conference on Solid-State Sensors and Actuators (Transducers '03), Boston, MA, June 2003.
- C28. Hsin Chang, Rihui He, Jong-Ah Paik, Pamela R. Patterson, Chang-Jin Kim, Bruce Dunn, and Ming C. Wu, "Aerogel MEMS", Proceedings of the 2003 SEM Annual Conference, pp.316-323, Charlotte, NC, June 2-4, 2003.

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- C30. Dennis T.K. Tong, Ming C. Wu, Sol P. Dijaili, "Intrinsic intermodulation distortion characteristics of Linear Optical Amplifier," Proc. Conference on Lasers and Electro-Optics (CLEO 2003), Baltimore, Maryland, June 1-6, 2003, (Opt. Soc. America, Salem, MA) Paper CThD.
- C31. Jui-che Tsai, Sophia Huang, Dooyoung Hah, and Ming C. Wu, "Wavelength-Selective  $1 \times N^2$  Switches with Two-Dimensional Input/Output Fiber Array," Proc. Conference on Lasers and Electro-Optics (CLEO 2003), Baltimore, Maryland, June 1-6, 2003, (Opt. Soc. America, Salem, MA) Paper CTuQ.
- C32. \* Dooyoung Hah, Chang-Auck Choi, Chi-Hoon Jun, Youn Tae Kim, Pamela R. Patterson, Hiroshi Toshiyoshi, Ming C. Wu, "MOEMS Scanners for Optical Networks," 9<sup>th</sup> KIEE (Korean Institute of Electrical Engineers) MEMS symposium, 2003 (Invited Paper)
- C33. S. Murthy, T. Jung, T. Itoh, M. C. Wu, Z. Wang and W. Hsin, "Traveling Wave Photodetectors with Backward Wave Cancellation," Proc. Government Microcircuit Applications and Critical Technology Conference (GOMACTech-03), Tampa, Florida, March 31 – April 3, 2003.
- C34. D.T.K. Tong, M. C. Wu, and S. Dijaili, "Hybrid RF/Digital Wavelength-Division-Multiplexed Links with Gain-Clamped Semiconductor Optical Amplifiers," Proc. Government Microcircuit Applications and Critical Technology Conference (GOMACTech-03), Tampa, Florida, March 31 – April 3, 2003.
- C35. W. Piyawattanametha, P. R. Patterson, D. Hah, H. Toshiyoshi, and M. C. Wu, "A Surface and Bulk Micromachined Angular Vertical Combdrive for Scanning Micromirrors," Proc. Optical Fiber Communications (OFC) Conference, Atlanta, Georgia, March 23-28, 2003.
- C36. Pei Yu Chiou, Ze Hao Chang, Ming C. Wu, "Light Actuated Microfluidic Devices," Proc. IEEE International Conference on MicroElectroMechanical Systems (MEMS), Kyoto, Japan, January 2003.
- C37. \* Ming-Chang M. Lee, Dooyoung Hah, Erwin K. Lau, Hiroshi Toshiyoshi, Ming C. Wu, "Nano-Electro-Mechanical Photonic Crystal Switches," 6<sup>th</sup> International Symposium on Contemporary Photonics Technology (CPT), Tokyo, Japan, January 15-17, 2003. (Invited Paper).
- C38. S. Murthy, T. Jung, M.C. Wu, Z. Wang, and W. Hsin, "Linearity Improvement in Photodetectors by using Index-Matching Layer Extensions," Proc. IEEE Lasers and Electro-Optics Society (LEOS) Annual Meeting, Paper WH3, Glasgow, Scotland, November 10-14, 2002.
- C39. \* Ming C. Wu, Jui-Che Tsai, Sophia Huang, and Dooyoung Hah, "MEMS WDM Routers Using Analog Micromirror Arrays," Proc. IEEE Lasers and Electro-Optics Society (LEOS) Annual Meeting, Paper WBB4, Glasgow, Scotland, November 10-14, 2002 (Invited Talk).
- C40. S. Murthy, T. Jung, T. Itoh, M. C. Wu, Z. Wang, and W. Hsin, "High-Speed High-Power Distributed Photodetectors With Backward Wave Cancellation," International Topical Meeting on Microwave Photonics Conference (MWP 2003), Postdeadline Paper, Awaji Island, Japan, November 5-8, 2002.
- C41. \* Ming C. Wu, "Optical MEMS from Micro to Nano Scale," 3rd International Conference on Optics- photonics Design & Fabrication (ODF 2003), Tokyo, Japan, October 30 – November 1, 2002 (Plenary Talk).
- C42. Sophia Huang, Jui-Che Tsai, Dooyoung Hah, Hiroshi Toshiyoshi, and Ming C. Wu, "Open-Loop Operation of MEMS WDM Routers with Analog Micromirror Array," IEEE/LEOS International Conference on Optical MEMS and Their Applications, Lugano, Switzerland, August 20 – 23, 2002.

- C43. \* M. C. Wu, D. Hah, S. Huang, and J.-C. Tsai, "MEMS Photonic Devices and Their Applications," 7<sup>th</sup> OptoElectronics and Communications Conference (OECC), Paper 9C1-2, Yokohama, Japan, July 8-12, 2002. (Invited Talk)
- C44. \* P. R. Patterson, D. Hah, M. M. C. Lee, J.C. Tsai, and M.C. Wu, "Recent advances in optical MEMS devices and systems" SPIE's 47<sup>th</sup> Annual Meeting, Seattle, Washington, July 7-11, 2002. (Invited Talk)
- C45. \* M. C. Wu, P. R. Patterson, D. Hah, M.-C. M. Lee, S. Huang, and J.-C. Tsai, "Advanced MEMS for Photonics," 60<sup>th</sup> Device Research Conference (DRC), Paper I-3, Santa Barbara, June 24-26, 2002. (Invited Talk)
- C46. H. Nguyen, D. Hah, P.R. Patterson, W. Piyawattanametha, M.C. Wu, and R. Chao, "A Novel MEMS Tunable Capacitor based on Angular Vertical Comb Drive Actuators," Technical Digest of 2002 Solid-State Sensor, Actuator and Microsystems Workshop, p, 277, Hilton Head Island, SC, June 2 - 6, 2002.
- C47. D. Hah, S. Huang, H. Nguyen, H. Chang, J.-C. Tsai, M.C. Wu, and H. Toshiyoshi, "Low Voltage MEMS Analog Micromirror Arrays with Hidden Vertical Comb-Drive Actuators," Technical Digest of 2002 Solid-State Sensor, Actuator and Microsystems Workshop, p, 11, Hilton Head Island, SC, June 2 - 6, 2002.
- C48. P.-Y. Chiou, M.C. Wu, H. Moon, C.-J. Kim, and H. Toshiyoshi, "Optical Actuation of Microfluidics based on Opto-Electrowetting," Technical Digest of 2002 Solid-State Sensor, Actuator and Microsystems Workshop, p, 269, Hilton Head Island, SC, June 2 - 6, 2002.
- C49. \* Pamela R. Patterson, Dooyoung Hah, Hiroshi Toshiyoshi, and Ming C. Wu, "MOEMS Electrostatic Scanning Micromirrors Design and Fabrication," 201st Meeting of the Electrochemical Society (ECS), Philadelphia, Pennsylvania, May 12-17, 2002.
- C50. Dooyoung Hah, Hiroshi Toshiyoshi, and Ming C. Wu, "Design of Electrostatic Actuators for MOEMS Applications," Design, Test, Integration, and Packaging of MEMS/MOEMS (DTIP 2002), Cannes-Mundelein, France, May 6-8, 2002.
- C51. Dooyoung Hah, Sophia Huang, Hung Nguyen, Hsin Chang, Hiroshi Toshiyoshi, and Ming C. Wu, "A Low Voltage, Large Scan Angle MEMS Micromirror Array with Hidden Vertical Comb-Drive Actuators for WDM Routers," 2002 Optical Fiber Communication (OFC) Conference, Paper TuO-3, Anaheim, California, March 17-24, 2002
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