Wei Wu	Vei WuL318, 2145 Sheridan Rd, Evanston, IL 60208Phone: (847)491-7727 Email: <a href="mailto:www@u@uHomepage: http://www.eecs.northweste	
EDUCATION	Northwestern University, Evanston, IL Ph.D. Electrical Engineering and Computer Northwestern University, Evanston, IL M.S. Electrical Engineering and Computer Peking University, Beijing, China B.S. Microelectronics, School of Electroni	2006—2010 Science Advisor: Prof. Hooman Mohseni 2006—2008 Science Advisor: Prof. Hooman Mohseni 2002—2006 ics Engineering and Computer Science
HONORS& AWARDS	 2010-The Best Student Paper Award, SPIE Photonics Devices + Applications Conference 2010-Terminal Year Fellowship, Northwestern University 2010-Newport Spectra-Physics Research Excellence Award 2009-Chinese Government Scholarship for Outstanding Self-financed Students Studying Abroad 2009-Grand Prize Winner of Student Research Challenge, TEGAM <i>Inc</i>. 2009-Research Project Grant Award, Initiative for Sustainability and Energy at Northwestern University 2008-The Ryan Fellowship, Northwestern University 2008-The SPIE Scholarship, the International Society for Optics and Photonics 2006-Walter P. Murphy Fellowship, Northwestern University 2005-Undergraduate Scholarship, Peking University 2004-President's Undergraduate Research Fellowship, Peking University 	
RESEARCH EXPERIENCE	RESEARCH ASSISTANT, Northwestern University 2006—Present Bio-Inspired Sensors and Optoelectronics Laboratory (BISOL): Developed a nano-processing technique based on super focusing property of silica micro-/nano-spheres (Leading) Modeled photonic property of silica/polystyrene micro-/nano-spheres on photoresist by 3D FDTD method Designed a method to routinely form a large monolayer (~cm^2) of microspheres on photoresist Achieved a large uniform nanohole/nanopillar array (~180 nm diameter) with controlled pitches using standard UV source (wavelength of ~400 nm) Research was published as a cover of Nanotechnology, and reported by many scientific media Developed an electrically tunable quantum wire/dot infrared photodetector (Leading) Modeled the quantum dots/nanowires formed by electrical confinement on quantum wells by 3D-FEM Designed and developed multiple processing strategies to fabricate the electrically tunable quantum dot/nanowire intersubband devices (implemented over 50 processing steps for a single device)	
	 Extensive experience of nanostructure er Characterized electrical and optical prop Designed and developed a surface plasmonic Modeled the surface plasmonic enhanced Fabricated and characterized the infrared Achieved a record of high quantum effic Research was reported in Imaging &Deta Fabricated a focal plane array of single phot 	erties of infrared photodetectors c enhanced quantum well infrared photodetector (<i>Leading</i>) d optical absorption of quantum wells by 3D FDTD method l photodetector devices iency and detectivity for quantum well photodetectors ectors News by <i>Laser Focus World</i> on detectors for making a near-infrared imager

	□ Involved in developing a bio-inspired nano-injector based type-II single photon detector with a very large gain and low noise working at room temperature	
	 An injectorless quantum cascade laser with very low voltag Involved in developing an injectorless quantum casca achieved a very low voltage defect of 57 meV at 77K at 	e defect ade laser based on double LO-phonon resonance, and $6.7 \ \mu m$.
	 A plasmonic photonic crystal as emitter of Thermophotovo Modeled the optical properties of periodic hole arrays p 	ltaics to enhance the efficiency erforated in metal-dielectric-metal layers
	 A Collaborated with Prof. Samuel Stupp and Prof. Fraser Stoddart's Group on polarization measurements of novel organic ferroelectric crystals. 	
	 President's Undergraduate Research Fellowship, Peking Nano Device Physics and Chemistry key Laboratory of 1 Deposited and characterized high-κ dielectric material on sin 	University, 2004—2006 National Education Department: ngle-wall carbon nanotube field-effect transistors
CONFERENCES PRESENTED	 SPIE Optics + Photonics, San Diego, CA, Aug. 2010 SPIE Photonics West, San Francisco, CA, Jan. 2010 ChinaNano, Beijing, China, Sep. 2009 21st Lasers and Electro-Optics Society (LEOS) Annual Meeting, Newport Beach, CA, Nov. 2008 SPIE Optics +Photonics, San Diego, CA, Aug. 2008 Virtual Conference on Nanoscale Science and Technology (VCNST), July 2008 NSTI Nanotech Conference, Boston, MA, Jun. 2008 Joint Conference on Interaction Among Nanostructures, Orlando, FL, Feb. 2008 	
TECHNICAL SKILLS	 DEVICE FABRICATION: Photolithography, E-beam lithography, Focused Ion Beam, E-beam/Thermal Metallization, RIE, PECVD, Semiconductor/Metal Wet Etching, Electrochemical Anodization, Ellipsometry, Wire-bonding, Polishing CHARACTERIZATIONS: SEM, AFM, Low-temperature Probe Station and Cryosat, FTIR, NSOM, Low-noise Amplifier, High-speed Oscilloscope, Lock-in Amplifier, Optical Spectrum Analyzer, LCR Meter SOFTWARE SKILLS: Matlab, MathCad, COMSOL, Lumerical, Rsoft Photonics, Labview, CAD LT, Visual Basic, PSPICE 	
MEMBERSHIP	 Sigma Xi Honored Research Society (<i>Full member</i>) The International Society for Optics and Photonics (SPIE) IEEE Photonics Society 	 The Optical Society of America (OSA) American Physical Society (APS) IEEE Electron Device Society
JOURNAL REVIEWER	 Optics Letter Semiconductor Science and Technology Journal of Physics D: Applied Physics IEEE Journal of Quantum Electronics IEEE Photonics Journal 	 Optics Express IEEE Photonics Technology Letter Nanotechnology Nanoscale Research Letters Journal of the Optical Society of America A

u s curricurum Vilde, [

TEACHING Teaching assistant of EECS-381 "Electronic Properties of Material" at Northwestern for two quarters EXPERIENCE

- · Directed an undergraduate student's summer research project in our lab
 - Demonstrated and assisted other group members operating SEM and FIB instruments for many times

PUBLICATIONS PEER-REVIEWED JOURNALS:

- W. Wu, A. Katsnelson, O. G. Memis, and H. Mohseni, "A deep sub-wavelength process for the formation of highly 1 uniform arrays of nanoholes and nanopillars", Nanotechnology, 18 (48), 485302, 2007 (Cover, cited 20 times)
- 2. W. Wu, A. Bonakdar, and H. Mohseni, "Plasmonic enhanced QWIP with high detectivity", Appl. Phys. Lett., 96, 161107, 2010
- W. Wu, D. Dey, and H. Mohseni, "A voltage tunable quantum dot photodetector for terahertz detection", J. Phys. D: 3. Appl. Phys, 43, 155101, 2010
- 4. W. Wu, D. Dey, O. G. Memis and H. Mohseni, "Modeling and fabrication of electrically tunable quantum dot intersubband devices", Appl. Phys. Lett., 94 (19), 193113, 2009 (Selected for Virtual Journal of Nanoscale Science and Technology, 19 (21), May 2009)
- 5. D. Dey, W. Wu, O. G. Memis and H. Mohseni, "Injectorless quantum cascade laser with low voltage defect and improved thermal performance grown by metal-organic chemical-vapor deposition", Appl. Phys. Lett., 94 (8), 081109, 2009
- 6. W. Wu, D. Dey, A. Katsnelson, O. G. Memis and H. Mohseni, "Large areas of periodic nanoholes perforated in multistacked films produced by lift-off", J. Vac. Sci. Technol. B, 26 (5), 1745, 2008 (Selected for Virtual Journal of Nanoscale Science and Technology, 18 (13), Sep. 2008)
- O. G. Memis, J. Kohouteck, W. Wu, R. Gelfand, and H. Mohseni, "Signal-to-Noise Performance of a Short-Wave 7. Infrared Nano-Injection Imager", Optics Lett., 35 (16), 2699, 2010
- 8. O. G. Memis, J. Kohouteck, W. Wu, R. Gelfand, and H. Mohseni, "A Short-Wave Infrared Nano-Injection Imager with 2,500 A/W Responsivity and Low Excess Noise", IEEE Photonics Journal, 2 (5), 858, 2010
- 9. W. Wu, D. Dey, O. G. Memis, A. Katsnelson and H. Mohseni, "Fabrication of Large Area Periodic Nanostructures Using Nanosphere Photolithography", Nanoscale Res. Lett., 3 (10), 351, 2008
- 10. W. Wu, D. Dey, O. G. Memis, A. Katsnelson and H. Mohseni, "A Novel Self-aligned and Maskless Process for Formation of Highly Uniform Arrays of Nanoholes and Nanopillars", Nanoscale Res. Lett., 3(3), 123, 2008
- 11. A. Guo, Y. Fu, L. Guan, Z. Zhang, W. Wu, J. Chen, Z. Shi, Z. Gu, R. Huang, and X. Zhang, "Spontaneously Formed Closed Rings of Single-Wall Carbon Nanotube Bundles and Their Physical Mechanism", J. Phys. Chem. C, 111 (9), 3555, 2007 (Undergraduate work)
- 12. A. K. Shveyd, A. S. Tayi, C. Sue, J. M. Szarko, B. Rolczynski, M. Mara, W. Wu, S. K. Dey, A. Slawin, H. Mohseni, L. X. Chen, J. F. Stoddart, S. I. Stupp, "Ferroelectricity in Self-Assembling Supramolecular Networks of Charge Transfer Complexes", Nature 2010 (In preparation)

CONFERENCE PROCEEDINGS:

- W. Wu, A. Bonakdar, R. Gelfand, "A normal-incident quantum well infrared photodetector enhanced by surface 1. plasmon resonance", Proc. of SPIE, vol. 7780, 77801A-1, 2010 (The best student paper)
- O.G. Memis, J. Kohoutek, W. Wu, R.M. Gelfand, and H. Mohseni, "Short-Wave Infrared Nano-Injection Imaging 2. Sensors", IEEE Sensors, 2010 (accepted)
- W. Wu, and H. Mohseni, "A tunable terahertz photodetector based on electrical confinement", Proc. of SPIE, vol. 3 7763, 77630G-1, 2010

- R. Gelfand, J. Kohoutek, D. Dey, <u>W. Wu</u>, A. Bonakdar, and H. Mohseni, "Design of a plasmonic photonic crystal for single bio-molecule spectroscopy", Proceeding of SPIE, vol. 7759, 2010
- <u>W. Wu</u>, D. Dey and H. Mohseni, "Modeling of an electrically tunable quantum dot photodetector for terahertz detection", Proceedings of SIE, vol. 7601, 760109, 2010
- O. G. Memis, J. Kohoutek, D. Dey, <u>W. Wu</u> and H. Mohseni, "Resonant Tunneling Injection Detectors and Imagers", LEOS 22nd Annual Meeting, 2009
- D. Dey, <u>W. Wu</u>, O.G. Memis and H. Mohseni, "Design and simulations of electrically tunable quantum dot cascade laser", Proceeding of SPIE, vol. 7406, 74060Q, 2009
- W. Wu, D. Dey, O. G. Memis, A. Katsnelson and H. Mohseni, "Electrically Confined Quantum Dot Intersubband Optoelectronic Devices", LEOS2008 21st Annual meeting, pp. 618, 2008
- D. Dey, <u>W. Wu</u>, O. G. Memis and H. Mohseni, "Injectorless Quantum Cascade Laser with very Low Voltage-Defect Grown by Metal-Organic Chemical Vapor Deposition", LEOS 21st Annual meeting, pp. 800, 2008
- 10. <u>W. Wu</u>, D. Dey, O. G. Memis, A. Katsnelson and H. Mohseni, "A novel lithography technique for formation of large areas of uniform nanostructures", Proceeding of SPIE, vol. 7039, 70390P, 2008
- <u>W. Wu</u>, D. Dey, O. G. Memis, A. Katsnelson and H. Mohseni, "A novel self-assembled and maskless technique for highly uniform arrays of nano-holes and nano-pillars", Nanotech 2008, vol. 1, 574, 2008
- 12. O.G. Memis, <u>W. Wu</u>, D. Dey, A. Katsnelson and H. Mohseni, "Detailed Numerical Modeling of a Novel Infrared Single Photon Detector for $\lambda > 1 \mu m$ ", 7th International Conference on Numerical Simulation of Optoelectronic Devices, pp. 63, 2007
- H. Mohseni, O. G. Memis, S. C. Kong, A. Katsnelson, and <u>W. Wu</u>, "A novel SWIR detector with an ultra-high internal gain and negligible excess noise", Proceeding of SPIE, Vol. 6737, 7370W-1, 2007
- O. G. Memis, <u>W. Wu</u>, D. Dey, A. Katsnelson, and H. Mohseni, "A Type-II Near-Infrared Detector with Very High Stable Gain and Low Noise at Room Temperature", Semiconductor Device Research Symposium, 2007 International, vol. 1-2, 575, 2007