

Dr. Sharon M. Weiss

Curriculum Vitae

March 2017

Professor of Electrical Engineering, Physics,
and Materials Science and Engineering
Deputy Director, Vanderbilt Institute of
Nanoscale Science and Engineering
Vanderbilt University

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RESEARCH INTERESTS

My research is in the areas of nano-photonics, nanomaterials, and light-matter interaction. My particular interests include:

- Silicon photonic and porous silicon biosensors
- Silicon photonic and opto-electronic building blocks for optical communication
- Hybrid and nanocomposite material systems

EDUCATION

Ph.D. in Optics, University of Rochester, Rochester, New York, 2005

M.S. in Optics, University of Rochester, Rochester, New York, 2001

B.S. in Optics with *Highest Distinction*, University of Rochester, Rochester, New York, 1999

PROFESSIONAL EXPERIENCE

Vanderbilt University, Department of Electrical Engineering and Computer Science, Nashville, TN

Professor of Electrical Engineering, July 2016 – Present

Associate Professor of Electrical Engineering, September 2011 – June 2016

Assistant Professor of Electrical Engineering, September 2005 – 2011

Vanderbilt University, Department of Physics and Astronomy, Nashville, TN

Professor of Physics [secondary appointment], July 2016 – Present

Associate Professor of Physics [secondary appointment], September 2011 – June 2016

Assistant Professor of Physics [secondary appointment], September 2005 – 2011

Vanderbilt University, Interdisciplinary Materials Science Program, Nashville, TN

Professor of Materials Science and Engineering [secondary appointment], April 2017 – Present

Vanderbilt University, Vanderbilt Institute of Nanoscale Science and Engineering, Nashville, TN

Deputy Director, July 2014 – Present

Member, September 2005 – 2014

Vanderbilt University, Interdisciplinary Program in Materials Science, Nashville, TN

Member, September 2005 – Present

Vanderbilt University, Vanderbilt Institute for Integrative Biosystems Research & Education, Nashville, TN

Member, May 2008 – Present

HONORS AND AWARDS (* Denotes honor or award for supervised student)

- 2017 Cornelius Vanderbilt Endowed Chair in Engineering
- 2016-2017 IEEE Photonics Society Distinguished Lecturer
- 2016 Vanderbilt School of Engineering Excellence in Teaching Award
- 2016-2019* National Science Foundation Graduate Research Fellowship to Francis Afzal
- 2016* Best Talk of the Day, Kelsey Beavers et al.; Best Talk of the Day, Yiliang Zhao et al.; and Best Poster of the Day, Josh Fain et al., Porous Semiconductors – Science and Technology Conference, Tarragona, Spain
- 2015-2017 Vanderbilt Chancellor Faculty Fellow
- 2014-2017* National Science Foundation Graduate Research Fellowship to Joshua Fain
- 2014* Best Talk of the Day, Kelsey Beavers et al., Porous Semiconductors – Science and Technology Conference, Benidorm, Alicante, Spain
- 2013 Invited to attend the EU-US Frontiers of Engineering Symposium (~60 participants)
- 2012-2015* National Science Foundation Graduate Research Fellowship to Kelsey Beavers
- 2012-2013 Defense Science Study Group (14 participants)
- 2012 Senior Member, Institute of Electrical and Electronics Engineers (IEEE)
- 2012 Senior Member, Optical Society of America (OSA)
- 2012 Senior Member, The International Society for Optical Engineering (SPIE)
- 2012* First place, Student Paper Competition, Judson Ryckman et al., IEEE Group IV Photonics, San Diego, CA
- 2012* Best Talk of the Day, Judson Ryckman et al., Porous Semiconductors – Science and Technology Conference, Malaga, Spain
- 2011* Symposium T Graduate Student Presentation Award, Judson Ryckman et al., Materials Research Society Spring Meeting, San Francisco, CA
- 2010-2013* National Science Foundation Graduate Research Fellowship to Judson Ryckman
- 2010 Participated in the U.S. Frontiers of Engineering Symposium (~100 participants)
- 2010 Participated in the German-American Frontiers of Science Symposium (~70 participants)
- 2009-2015 Presidential Early Career Award for Scientists and Engineers (PECASE)
- 2009-2010 ARO Young Investigator Award
- 2008-2013 NSF CAREER Award
- 2002 Best Talk of the Day, Porous Semiconductors – Science and Technology Conference, Tenerife, Spain
- 1999-2002 National Defense Science and Engineering Graduate Fellowship
- 1999-2002 National Science Foundation Fellowship (declined)
- 1998 Inducted into Phi Beta Kappa Honor Society
- 1997-1999 Barry M. Goldwater Scholarship
- 1997 Inducted into Tau Beta Pi Engineering Honor Society
- 1995-1998 Varsity Soccer Letters

PROFESSIONAL AFFILIATIONS

- Institute of Electrical and Electronics Engineers, Senior Member (IEEE)
- The International Society for Optical Engineering, Senior Member (SPIE)
- Optical Society of America, Senior Member (OSA)
- Materials Research Society (MRS)
- American Association for the Advancement of Science (AAAS)

PUBLICATIONS

Supervised graduate and undergraduate students, and postdoctoral researchers, are underlined

Refereed Journal Articles

- J1. S. M. Lo, S. Hu, G. Gaur, Y. Kostoulas, **S. M. Weiss**, and P. M. Fauchet, "Photonic crystal microring resonator for label-free biosensing," *Opt. Express* **25**, 7046-7054 (2017). doi: 10.1364/OE.25.007046
- J2. Y. Zhao, G. Gaur, S. T. Retterer, P. E. Laibinis, and **S. M. Weiss**, "Flow-through porous silicon membranes for real-time label-free biosensing," *Anal. Chem.* **88**, 10940-10948 (2016). doi: 10.1021/acs.analchem.6b02521
- J3. S. Hu and **S. M. Weiss**, "Design of photonic crystal cavities for extreme light concentration," *ACS Photon.* **3**, 1647–1653 (2016). doi: 10.1021/acsp Photonics.6b00219
- J4. Y. Zhao, G. Gaur, R. L. Mernaugh, P. E. Laibinis, and **S. M. Weiss**, "Comparative kinetic analysis of closed-ended and open-ended porous sensors," *Nanoscale Res. Lett.* **11**, 395 (2016). doi: 10.1186/s11671-016-1614-3
- J5. K. R. Beavers, T. A. Werfel, T. Shen, T. E. Kavanaugh, K. V. Kilchrist, J. W. Mares, J. S. Fain, C. Wiese, K. C. Vickers, **S. M. Weiss**, and C. L. Duvall, "Porous silicon and polymer nanocomposites for delivery of peptide nucleic acids as anti-microRNA therapies," *Adv. Mater.* **28**, 7984-7992 (2016). doi: 10.1002/adma.201601646
- J6. T. Wang, S. Hu, B. Chamlagain, T. Hong, Z. Zhou, **S. M. Weiss**, and Y. Xu, "Visualizing light scattering in silicon waveguides with black phosphorous photodetectors," *Adv. Mater.* **28**, 7162-7166 (2016). doi: 10.1002/adma.201506277
- J7. A. Simbula, G. A. Rodriguez, M. Menotti, S. De Pace, **S. M. Weiss**, M. Galli, M. Liscidini, and D. Bajoni, "Low-power four wave mixing in porous silicon microring resonators," *Appl. Phys. Lett.* **109**, 021106 (2016). doi: 10.1063/1.4958698
- J8. S. Bhandaru, A. Bozzola, M. Liscidini, and **S. M. Weiss**, "Efficiency enhancement via metal-coated porous amorphous silicon back reflector incorporated in amorphous silicon solar cells," *MRS Comm.* **6**, 117-123 (2016). [Invited letter]. doi: 10.1557/mrc.2016.15
- J9. G. Gaur, D. S. Koktysh, D. M. Fleetwood, R. A. Weller, R. A. Reed, B. R. Rogers, and **S. M. Weiss**, "Influence of high energy radiation and subsequent reversible photodarkening of CdTe/CdS quantum dots," *ACS Appl. Mater. Interfaces* **8**, 7869-7876 (2016). doi: 10.1021/acsami.5b09657
- J10. K. Qin, S. Hu, S. T. Retterer, I. I. Kravchenko, and **S. M. Weiss**, "Slow light Mach-Zehnder interferometer for optical label-free biosensing," *Opt. Lett.* **41**, 753-756 (2016). doi:10.1364/OL.41.000753
- J11. G. Gaur, D. S. Koktysh, D. M. Fleetwood, R. A. Weller, R. A. Reed, and **S. M. Weiss**, "Influence of Interfacial Oxide on the Optical Properties of Single Layer CdTe/CdS Quantum Dots in Porous Silicon Scaffolds," *Appl. Phys. Lett.* **107**, 063106 (2015). Doi:10.1063/1.4928663
- J12. J. S. Fain, J. W. Mares, and **S. M. Weiss**, "Size-controlled nickel oxide nanoparticle synthesis using mesoporous silicon thin films," *J. Nanoparticle Res.* **17**, 331 (2015). doi:10.1007/s11051-015-3122-2
- J13. P. Markov, R. E. Marvel, H. J. Conley, K. J. Miller, K. Bolotin, R. F. Haglund, and **S. M. Weiss**, "Optically monitored electrical switching in vanadium dioxide," *ACS Photon.* **2**, 1175–1182 (2015). doi:10.1021/acsp Photonics.5b00244

- J14. J. W. Mares, J. S. Fain, K. R. Beavers, C. L. Duvall, and S. M. Weiss, "Shape-engineered multifunctional porous silicon nanoparticles by direct imprinting," *Nanotechnol.* **26**, 271001 (2015). doi:10.1088/0957-4484/26/27/271001
- J15. T. Hong, B. Chamlagain, S. Hu, S. M. Weiss, Z. Zhou, and Y.-Q. Xu, "Plasmonic hot electron induced photocurrent response at MoS₂-metal junctions," *ACS Nano* **9**, 5357-5363 (2015). doi:10.1021/acsnano.5b01065
- J16. G. A. Rodriguez, S. Hu, and S. M. Weiss, "Porous silicon integrated ring resonator for compact, high sensitivity biosensing applications," *Opt. Express* **23**, 7111-7119 (2015). [Selected to appear in *Virtual Journal for Biomedical Optics* vol. 10, issue 4 (2015)] doi:10.1364/OE.23.007111
- J17. P. Markov, K. Appavoo, R. F. Haglund, and S. M. Weiss, "Hybrid Si-VO₂-Au modulator based on near-field plasmonic coupling," *Opt. Express* **23**, 6878-6887 (2015). doi:10.1364/OE.23.006878.
- J18. S. Bhandaru, S. Hu, D. M. Fleetwood, and S. M. Weiss, "Total ionizing dose effects on silicon ring resonators," *IEEE Trans. Nucl. Sci.* **62**, 323-328 (2015). doi: 0.1109/TNS.2014.2387772
- J19. S. Bhandaru, E. X. Zhang, D. M. Fleetwood, R. A. Reed, R. A. Weller, R. R. Harl, B. R. Rogers, and S. M. Weiss, "Ultra-thin oxide growth on silicon during 10-keV x-ray irradiation," *Surf. Sci.* **635**, 49-54 (2015). doi:10.1016/j.susc.2014.12.006
- J20. Y. Zhao, J. L. Lawrie, K. R. Beavers, P. E. Laibinis, and S. M. Weiss, "Effect of DNA-induced corrosion on passivated porous silicon biosensors," *ACS Appl. Mater. Interfaces* **6**, 13510-13519 (2014). doi: 10.1021/am502582s
- J21. S. Hu, Y. Zhao, K. Qin, S. T. Retterer, I. I. Kravchenko, and S. M. Weiss, "Enhancing the sensitivity of label-free silicon photonic biosensors through increased probe molecule density," *ACS Photon.* **1**, 590-597 (2014). doi: 10.1021/ph500075g
- J22. K. R. Beavers, J. W. Mares, C. M. Swartz, Y. Zhao, S. M. Weiss, and C. L. Duvall, "In situ synthesis of peptide nucleic acids in porous silicon for drug delivery and biosensing," *Bioconj. Chem.* **25**, 1192-1197 (2014). [Note: C. M. Swartz is a high school teacher] doi: 10.1021/bc5001092
- J23. G. A. Rodriguez, J. D. Lonai, R. L. Mernaugh, and S. M. Weiss, "Porous silicon Bloch surface and sub-surface wave structure for simultaneous detection of small and large molecules," *Nanoscale Res. Lett.* **9**, 383 (2014). [Note: J. D. Lonai was an undergraduate student at the time of publication] doi:10.1186/1556-276X-9-383
- J24. G. A. Rodriguez, J. D. Ryckman, Y. Jiao, and S. M. Weiss, "A size selective porous silicon grating-coupled Bloch surface and sub-surface wave biosensor," *Biosens. Bioelectron.* **53**, 486-493 (2014). doi: 10.1016/j.bios.2013.10.028
- J25. J. D. Ryckman and S. M. Weiss, "Slotted photonic crystal single nanobeam cavity," *Optics & Photonics News*, **24** (12), 43 (2013). [Selected for *Optics in 2013* special issue]
- J26. L. Oakes, A. Westover, J. W. Mares, S. Chatterjee, W. R. Erwin, R. Bardhan, S. M. Weiss, and C. L. Pint, "Surface engineered porous silicon for stable, high performance electrochemical supercapacitors," *Sci. Rep.* **3**, 3020 (2013). doi:10.1038/srep03020
- J27. J. W. Mares, J. S. Fain, and S. M. Weiss, "Variable conductivity of nanocomposite nickel oxide-porous silicon," *Phys. Rev. B* **88**, 075307 (2013). doi:10.1103/PhysRevB.88.075307
- J28. Y. Jiao, J. D. Ryckman, D. S. Koktysh, and S. M. Weiss, "Controlling surface enhanced Raman scattering using grating-type patterned nanoporous gold substrates," *Opt. Mater. Express* **3**, 1137-1148 (2013). doi: 10.1364/OME.3.001137

- J29. G. Gaur, D. S. Koktysh, and **S. M. Weiss**, “Immobilization of Quantum Dots in Nanostructured Porous Silicon Films: Characterizations and Signal Amplification for Dual-Mode Optical Biosensing,” *Adv. Funct. Mater.* **23**, 3604-3614 (2013). [Back cover article Aug. 7, 2013 issue] doi:10.1002/adfm.201370145
- J30. J. D. Ryckman, K. A. Hallman, R. E. Marvel, R. F. Haglund, and **S. M. Weiss**, “Ultra-compact silicon photonic devices reconfigured by an optically induced semiconductor-to-metal transition,” *Opt. Express* **21**, 10753-10763 (2013). doi: 10.1364/OE.21.010753
- J31. J. D. Ryckman, Y. Jiao, and **S. M. Weiss**, “Three-dimensional patterning and morphological control of porous nanomaterials by gray-scale direct imprinting,” *Sci. Rep.* **3**, 1502 (2013). doi:10.1038/srep01502
- J32. J. G. Forsythe, J. A. Broussard, J. L. Lawrie, M. Kliman, Y. Jiao, **S. M. Weiss**, D. J. Webb, and J. A. McLean, “Semitransparent Nanostructured Films for Imaging Mass Spectrometry and Optical Microscopy,” *Anal. Chem.* **84**, 10665–10670 (2012). doi:10.1021/ac3022967
- J33. S. Bhandaru, E. X. Zhang, D. M. Fleetwood, R. A. Reed, R. A. Weller, R. R. Harl, B. R. Rogers, and **S. M. Weiss**, “Accelerated oxidation of silicon due to x-ray irradiation,” *IEEE Trans. Nucl. Sci.* **59**, 781-785 (2012). doi: 10.1109/TNS.2011.2182207
- J34. J. D. Ryckman and **S. M. Weiss**, “Low mode volume slotted photonic crystal single nanobeam cavity,” *Appl. Phys. Lett.* **101**, 071104 (2012). [Cover article of August 13, 2012 issue] doi:10.1063/1.4742749
- J35. X. Wei, J. W. Mares, Y. Gao, D. Li, and **S. M. Weiss**, “Biomolecule kinetics measurements in flow cell integrated porous silicon waveguides,” *Biomed. Opt. Express* **3**, 1993-2003 (2012). doi:10.1364/BOE.3.001993
- J36. C. Kang, **S. M. Weiss**, Y. A. Vlasov, and S. Assefa, “Optimized light-matter interaction based on defect hole placement in photonic crystal cavities,” *Opt. Lett.* **37**, 2850-2852 (2012). doi:10.1364/OL.37.002850
- J37. P. Markov, J. G. Valentine, and **S. M. Weiss**, “Fiber-to-chip coupler designed using an optical transformation,” *Opt. Express* **20**, 14705-14713 (2012). doi:10.1364/OE.20.014705
- J38. J. D. Ryckman, V. Diez-Blanco, J. Nag, R. E. Marvel, B. K. Choi, R. F. Haglund, Jr., and **S. M. Weiss**, “Photothermal optical modulation of ultra-compact hybrid Si-VO₂ ring resonators,” *Opt. Express* **20**, 13215-13225 (2012). doi:10.1364/OE.20.013215
- J39. E. X. Zhang, A. K. M. Newaz, S. Bhandaru, B. Wang, C. X. Zhang, D. M. Fleetwood, M. L. Alles, R. D. Schrimpf, S. T. Pantelides, **S. M. Weiss**, R. A. Reed, R. A. Weller, and K. I. Bolotin, “Low-energy x-ray- and ozone-exposure induced defect formation in graphene materials and devices,” *IEEE Trans. Nucl. Sci.* **48**, 2961-2967 (2011). doi:10.1109/TNS.2011.2167519
- J40. J. D. Ryckman and **S. M. Weiss**, “Localized field enhancements in guided and defect modes of a periodic slot waveguide,” *IEEE Photonics J.* **3**, 986-995 (2011). doi:10.1109/JPHOT.2011.2170966
- J41. J. W. Mares and **S. M. Weiss**, “Diffusion dynamics of small molecules from mesoporous silicon films by real-time optical interferometry,” *Appl. Opt.* **50**, 5329-5337 (2011). doi:10.1364/AO.50.005329
- J42. Y. Jiao, J. D. Ryckman, P. N. Ciesielski, C. A. Escobar, G. K. Jennings, and **S. M. Weiss**, “Patterned nanoporous gold as an effective SERS template,” *Nanotechnol.* **22**, 295302 (2011). doi:10.1088/0957-4484/22/29/295302

- J43. J. L. Lawrie and **S. M. Weiss**, “Stabilization of hydroxyl-terminated silane in porous silicon for in-situ DNA synthesis,” *Phys. Stat. Sol. C* **8**, 1851-1855 (2011). doi:10.1002/pssc.201000187
- J44. X. Wei and **S. M. Weiss**, “Guided mode biosensor based on grating coupled porous silicon waveguide,” *Opt. Express* **19**, 11330-11339 (2011). [Selected to appear in *Virtual Journal for Biomedical Optics* vol. 6, issue 7 (2011) and highlighted on EurekAlert.org, esciencenews.com, sciencedaily.com, and optoq.com] doi:10.1364/OE.19.011330
- J45. J. D. Ryckman, M. Liscidini, J. E. Sipe, and **S. M. Weiss**, “Direct imprinting of porous substrates: A rapid and low-cost approach for patterning porous materials,” *Nano Lett.* **11**, 1857–1862 (2011). [Cover article of May 2011 issue] doi:10.1021/nl1028073
- J46. C. Kang, C. Phare, Y. A. Vlasov, S. Assefa, and **S. M. Weiss**, “Photonic crystal slab sensor with enhanced surface area,” *Opt. Express* **18**, 27930-27937 (2010). [Note: C. Phare was an undergraduate student at the time of publication] doi:10.1364/OE.18.027930
- J47. Y. Jiao, D. S. Koktysh, N. Phambu, and **S. M. Weiss**, “Dual-mode sensing platform based on colloidal gold functionalized porous silicon,” *Appl. Phys. Lett.* **97**, 153125 (2010). doi:10.1063/1.3503608
- J48. J. D. Ryckman, R. A. Reed, R. A. Weller, D. M. Fleetwood, and **S. M. Weiss**, “Enhanced room temperature oxidation in silicon and porous silicon under 10keV x-ray irradiation,” *J. Appl. Phys.* **108**, 113528 (2010). doi:10.1063/1.3512965
- J49. J. L. Lawrie, Y. Jiao, and **S. M. Weiss**, “Size-dependent infiltration and optical detection of nucleic acids in nanoscale pores,” *IEEE Trans. Nanotechnol* **9**, 596-602 (2010). doi:10.1109/TNANO.2010.2055580
- J50. H. Park, J. Qi, Y. Xu, K. Varga, **S. M. Weiss**, B. R. Rogers, G. Lüpke, and N. Tolk, “Boron induced charge traps near the interface of Si/SiO₂ probed by second harmonic generation,” *Phys. Stat. Sol. B*, **247**, 1997-2001 (2010). doi:10.1002/pssb.200983956
- J51. J. D. Ryckman, M. Liscidini, J. E. Sipe, and **S. M. Weiss**, “Porous silicon structures for low-cost diffraction-based biosensing,” *Appl. Phys. Lett.* **96**, 171103 (2010). [Selected to appear in *Virtual Journal of Biological Physics Research* vol. 19, issue 9 (2010).] doi:10.1063/1.3421545
- J52. J. D. Gosnell, S. J. Rosenthal, and **S. M. Weiss**, “White light emission characteristics of polymer-encapsulated CdSe nanocrystal films,” *IEEE Photon. Technol. Lett.* **22**, 541-543 (2010). doi:10.1109/LPT.2010.2041549
- J53. M. A. Schreuder, K. Xiao, I. N. Ivanov, **S. M. Weiss**, and S. J. Rosenthal, “White light-emitting diodes based on ultrasmall cadmium selenide electroluminescence,” *Nano Lett.* **10**, 573-576 (2010). doi:10.1021/nl903515g
- J54. Y. Jiao and **S. M. Weiss**, “Design parameters and sensitivity analysis of polymer-cladded porous silicon waveguides for small molecule detection,” *Biosens. Bioelectron.* **25**, 1535-1538 (2010). doi:10.1016/j.bios.2009.10.040
- J55. H. Park, J. Qi, Y. Xu, K. Varga, **S. M. Weiss**, B. R. Rogers, G. Lüpke, and N. H. Tolk, “Characterization of boron charge traps at the interface of Si/SiO₂ using second harmonic generation,” *Appl. Phys. Lett.* **95**, 062102 (2009). doi:10.1063/1.3202420
- J56. G. Rong and **S. M. Weiss**, “Biomolecule size-dependent sensitivity of porous silicon sensors,” *Phys. Stat. Sol. A* **206**, 1365-1368 (2009). doi:10.1002/pssa.200881097
- J57. J. L. Lawrie, Z. Xu, G. Rong, P. E. Laibinis, and **S. M. Weiss**, “Synthesis of DNA oligonucleotides in mesoporous silicon,” *Phys. Stat. Sol. A* **206**, 1339-1342 (2009). doi:10.1002/pssa.200881114

- J58. **S. M. Weiss**, **G. Rong**, and **J. L. Lawrie**, “Current status and outlook for silicon-based optical biosensors,” *Physica E* **41**, 1071-1075 (2009). doi:10.1016/j.physe.2008.08.031
- J59. **X. Wei**, **C. Kang**, M. Liscidini, **G. Rong**, S. T. Retterer, M. Patrini, J. E. Sipe, and **S. M. Weiss**, “Grating couplers on porous silicon planar waveguides for sensing applications,” *J. Appl. Phys.* **104**, 123113 (2008). doi: 10.1063/1.3043579
- J60. **G. Rong**, **J. D. Ryckman**, R. Mernaugh, and **S. M. Weiss**, “Label-free porous silicon membrane waveguide for DNA sensing,” *Appl. Phys. Lett.* **93**, 161109 (2008). [Selected to appear in *Virtual Journal of Biological Physics Research* vol. 16, issue 9 (2008) and *Virtual Journal of Nanoscale Science & Technology* vol. 18, issue 18 (2008).] doi:10.1063/1.3005620
- J61. **C. Kang** and **S. M. Weiss**, “Photonic crystal with multiple-hole defect for sensor applications,” *Opt. Express* **16**, 18188-18193 (2008). [Selected to appear in *Virtual Journal for Biomedical Optics* vol. 3, issue 12 (2008).] doi:10.1364/OE.16.018188
- J62. J. J. Saarinen, **S. M. Weiss**, P. M. Fauchet, and J. E. Sipe, “Reflectance analysis of a multilayer 1-D porous silicon structure: theory and experiment,” *J. Appl. Phys.* **104**, 0131003 (2008). doi:10.1063/1.2949265
- J63. **G. Rong**, A. Najmaie, J. E. Sipe, and **S. M. Weiss**, “Nanoscale porous silicon waveguide for label-free DNA sensing,” *Biosens. Bioelectron.* **23**, 1572-1576 (2008). doi:10.1016/j.bios.2008.01.017
- J64. M. A. Schreuder, **J. D. Gosnell**, N. J. Smith, **S. M. Weiss**, and S. J. Rosenthal, “Encapsulated white-light CdSe nanocrystals as nanophosphors for solid-state lighting,” *J. Mater. Chem.* **18**, 970-975 (2008). [Note: identified as “hot article” and highlighted on back cover of journal] doi:10.1039/B716803A
- J65. **H. Park**, J. H. Dickerson, and **S. M. Weiss**, “Spatially localized one-dimensional porous silicon photonic crystals,” *Appl. Phys. Lett.* **92**, 011113 (2008). doi:10.1063/1.2830816
- J66. **S. M. Weiss**, J. Zhang, P. M. Fauchet, V. V. Seregin and J. L. Coffey, “Tunable silicon-based light sources using erbium doped liquid crystals,” *Appl. Phys. Lett.* **90**, 031112 (2007). doi:10.1063/1.2432295
- J67. **S. M. Weiss** and P. M. Fauchet, “Porous silicon one-dimensional photonic crystals for optical signal modulation,” *IEEE J. Quantum Electron.* **12**, 1514-1519 (2006). doi:10.1109/JSTQE.2006.884083
- J68. M. Haurylau, J. Zhang, **S. M. Weiss**, P. M. Fauchet, D. Martyshkin, V. I. Rupasov, and S. G. Krivoshlykov, “Nonlinear optical response of photonic bandgap structures containing PbSe quantum dots,” *J. Photochem. Photobiol. A.* **183**, 329-333 (2006). doi:10.1016/j.jphotochem.2006.03.026
- J69. J. J. Saarinen, J. E. Sipe, **S. M. Weiss**, and P. M. Fauchet, “Optical sensors based on resonant porous silicon structures,” *Opt. Express* **13**, 3754-3764 (2005). doi:10.1364/OPEX.13.003754
- J70. **S. M. Weiss** and P. M. Fauchet, “Thermal tuning of one-dimensional silicon-based photonic bandgap structures,” *Phys. Stat. Sol. C* **2**, 3278-3282 (2005). doi:10.1002/pssc.200461143
- J71. **S. M. Weiss**, H. Ouyang, J. Zhang, and P. M. Fauchet, “Electrical and thermal modulation of silicon photonic bandgap microcavities containing liquid crystals,” *Opt. Express* **13**, 1090-1097 (2005). doi:10.1364/OPEX.13.001090
- J72. **S. M. Weiss**, M. Haurylau, and P. M. Fauchet, “Tunable photonic bandgap structures for optical interconnects,” *Opt. Mat.* **27**, 740-744 (2005). doi:10.1016/j.optmat.2004.08.007

- J73. **S. M. Weiss** and P. M. Fauchet, “Temperature stability for photonic crystal devices,” *Optics & Photonics News*, **15** (12), 35 (2004).
- J74. **S. M. Weiss**, M. Molinari, and P. M. Fauchet, “Temperature stability for silicon-based photonic bandgap structures,” *Appl. Phys. Lett.* **83**, 1980 (2003). doi:10.1063/1.1609249
- J75. **S. M. Weiss** and P. M. Fauchet, “Electrically tunable porous silicon active mirrors,” *Phys. Stat. Sol. A* **197**, 556-558 (2003). doi: 10.1002/pssa.200306562
- J76. T. G. Brown, R. P. Fabrizio, and **S. M. Weiss**, “Semiconductor periodic structures for out-of-plane optical switching and Bragg-soliton excitation,” *Opt. Express* **3**, 433-439 (1998). doi:10.1364/OE.3.000433

Book Chapters

- B1. S. Hu and **S. M. Weiss**, “Biological applications of silicon nanostructures,” in *Silicon Nanophotonics: Basic Principles, Present Status, and Perspectives*, 2nd edition, edited by L. Khriachtchev (Pan Stanford Publishing, 2016), Chpt. 15, pp. 457-494. ISBN: 9789814669764
- B2. J. D. Ryckman and **S. M. Weiss**, “Imprinting Porous Silicon,” in *Porous Silicon – The Handbook*, edited by L. T. Canham (Springer, 2015), Chpt. 56, pp. 551-557. ISBN: 9783319057439
- B3. **S. M. Weiss** and X. Wei, “Porous Silicon Optical Waveguides,” in *Porous Silicon – The Handbook*, edited by L. T. Canham (Springer, 2015), Chpt. 83, pp. 815-822. ISBN: 9783319057439
- B4. G. A. Rodriguez, J. L. Lawrie, and **S. M. Weiss**, “Porous silicon biosensors for DNA sensing,” in *Porous Silicon for Biomedical Applications*, edited by H. A. Santos (Woodhead Publishing, 2014), Chpt. 14, pp. 304-333. ISBN: 9780857097118
- B5. J. L. Lawrie and **S. M. Weiss**, “Silicon photonics for biosensing applications,” in *Silicon Photonics for Telecommunications and Biomedical Applications*, edited by S. Fathpour and B. Jalali (Taylor & Francis, 2011), Chpt. 6, pp. 201-230. ISBN: 9781439806371
- B6. **S. M. Weiss** and G. Rong, “Porous silicon waveguides for small molecule detection,” in *Nanoscience and Nanotechnology for Chemical and Biological Defense*, edited by R. Nagarajan, W. Zukas, T. A. Hatton, S. Lee (ACS Symposium Series Vol. 1016, Oxford University Press, 2010), Chpt. 14, pp. 185-194. ISBN: 9780841269811
- B7. **S. M. Weiss**, “Biological applications of silicon nanostructures,” in *Silicon Nanophotonics: Basic Principles, Present Status, and Perspectives*, edited by L. Khriachtchev (World Scientific Publishing Company, 2008), Chpt. 16, pp. 425-448. ISBN: 9789814241113

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- C1. T. Cao, Y. Zhao, and **S. M. Weiss**, “A smartphone compatible colorimetric biosensing system based on porous silicon,” *Proc. of SPIE* **10077**, 1007713 (2017).
- C2. Y. Zhao, G. A. Rodriguez, Y. M. Graham, T. Cao, G. Gaur, and **S. M. Weiss**, “Resonant photonic structure in porous silicon for biosensing,” *Proc. of SPIE* **10081**, 100810D (2017).
- C3. K. J. Miller, P. Markov, R. E. Marvel, R. F. Haglund, and **S. M. Weiss**, “Hybrid silicon-vanadium dioxide electro-optic modulators,” *Proc. of SPIE* **9752**, 975203 (2016).
- C4. F. C. Cheong, T. Paprotta, J. W. Mares, **S. M. Weiss**, J. Schumacher, and A. E. Cable, “Systematic study and quantification of optical forces on porous silicon nanoparticles,” *Proc. of SPIE* **9337**, 93370O (2015).

- C5. S. M. Lo, S. Hu, **S. M. Weiss**, and P. M. Fauchet, “Photonic crystal microring resonator based sensors,” *CLEO: Science and Innovations*, OSA Technical Digest (Optical Society of America, 2014), paper JTU4A.79.
- C6. Y. Zhao, J. L. Lawrie, P. E. Laibinis, and **S. M. Weiss**, “Understanding and mitigating DNA induced corrosion in porous silicon based biosensors,” *Proc. of SPIE* **8933**, 893302 (2014).
- C7. S. Hu, K. Qin, I. I. Kravchenko, S. T. Retterer, and **S. M. Weiss**, “Suspended micro-ring resonator for enhanced biomolecule detection sensitivity,” *Proc. of SPIE* **8933**, 893306 (2014).
- C8. S. M. Lo, J. Y. Lee, **S. M. Weiss**, and P. M. Fauchet, “Chirped photonic crystal mode converters for broad-band coupling with highly dispersive photonic crystal microring resonators,” *Proc. of SPIE* **8990**, 89901E (2014).
- C9. P. Markov, J. D. Ryckman, R. E. Marvel, K. A. Hallman, R. F. Haglund, and **S. M. Weiss**, “Silicon-VO₂ hybrid electro-optic modulator,” in *CLEO: Science and Innovations*, OSA Technical Digest (Optical Society of America, 2013), paper CTu2F.7.
- C10. G. Gaur, D. Koktysh, D. M. Fleetwood, R. A. Reed, R. A. Weller, and **S. M. Weiss**, “Effects of x-ray and gamma-ray irradiation on the optical properties of quantum dots immobilized in porous silicon,” *Proc. of SPIE* **8725**, 87252D (2013).
- C11. G. A. Rodriguez, J. D. Ryckman, Y. Jiao, R. L. Fuller, and **S. M. Weiss**, “Real-time detection of small and large molecules using a porous silicon grating-coupled Bloch surface wave label-free biosensor,” *Proc. SPIE* **8570**, 857004 (2013). [Note: R. L. Fuller was an undergraduate student at the time of publication]
- C12. G. Gaur, D. Koktysh, and **S. M. Weiss**, “Porous silicon biosensors using quantum dot signal amplifiers,” *Proc. of SPIE* 8594, 859408 (2013).
- C13. J. W. Mares, X. Wei, and **S. M. Weiss**, “Porous materials for optical detection of chemicals, biological molecules, and high-energy radiation,” *Proc. SPIE* **8376**, 837609 (2012).
- C14. P. Markov, J. G. Valentine, and **S. M. Weiss**, “Fiber-to-chip coupler based on transformation optics,” in *CLEO: QELS-Fundamental Science*, OSA Technical Digest (Optical Society of America, 2012), paper QM1C.2.
- C15. J. D. Ryckman, M. Liscidini, J. E. Sipe, and **S. M. Weiss**, “Low-cost micro- and nano-structures in porous nanomaterials realized by direct imprinting of porous substrates,” *Mater. Res. Soc. Symp. Proc.* **1340**, t01-08 (2011).
- C16. C. Kang, **S. M. Weiss**, Y. A. Vlasov, and S. Assefa, “Optimization of defect hole placement in resonant cavities,” in *Conference on Lasers and Electro-Optics/International Quantum Electronics Conference*, OSA Technical Digest (Optical Society of America, 2011), paper CThQ3.
- C17. Y. Jiao, J. D. Ryckman, M. Liscidini, J. E. Sipe, P. N. Ciesielski, C. A. Escobar, G. K. Jennings, and **S. M. Weiss**, “Direct imprinted gratings on nanoporous gold as effective SERS substrates,” in *Conference on Lasers and Electro-Optics/International Quantum Electronics Conference*, OSA Technical Digest (Optical Society of America, 2011), paper CFN3.
- C18. J. D. Ryckman, M. Liscidini, J. E. Sipe, and **S. M. Weiss**, “Direct imprinting of porous substrates,” in *Conference on Lasers and Electro-Optics/International Quantum Electronics Conference*, OSA Technical Digest (Optical Society of America, 2011), paper CMEE3.
- C19. G. Gaur, D. Koktysh, and **S. M. Weiss**, “Integrating colloidal quantum dots with porous silicon for high sensitivity biosensing,” *Mater. Res. Soc. Symp. Proc.* **1301**, 241-246 (2011).

- C20. Y. Jiao, D. Koktysh, and **S. M. Weiss**, “Dual detection platform with refractive index and SERS sensing based on colloidal gold functionalized porous silicon substrates,” *Mater. Res. Soc. Symp. Proc.* **1301**, 247-252 (2011).
- C21. X. Wei and **S. M. Weiss**, “Grating coupled waveguide biosensor based on porous silicon,” *Mater. Res. Soc. Symp. Proc.* **1301**, 219-224 (2011).
- C22. J. M. Burst, T. J. Peshek, T. A. Gessert, T. J. Coutts, X. Li, D. Levi, **S. M. Weiss**, and B. R. Rogers, “Effect of oxygen partial pressure and annealing of permittivity-engineered ITO studied by in-situ ellipsometry,” in *Proc. of IEEE 35th Photovoltaic Specialist Conference* (Institute of Electrical and Electronics Engineers, 2010), paper 596-C25.
- C23. C. Kang, C. Phare, **S. M. Weiss**, Y. A. Vlasov, and S. Assefa, “Photonic crystal defects with increased surface area for improved refractive index sensing,” in *Conference on Lasers and Electro-Optics/International Quantum Electronics Conference*, OSA Technical Digest (Optical Society of America, 2010), paper CTuL1. [Note: C. Phare was an undergraduate at the time of publication]
- C24. J. D. Ryckman, M. Liscidini, J. E. Sipe, and **S. M. Weiss**, “Diffraction based biosensing with porous silicon,” in *Conference on Lasers and Electro-Optics/International Quantum Electronics Conference*, OSA Technical Digest (Optical Society of America, 2010), paper CTuB4.
- C25. Y. Jiao and **S. M. Weiss**, “Enhanced PNA detection sensitivity based on polymer-cladded porous silicon waveguide,” *Proc. of SPIE* **7553**, 75530O (2010).
- C26. J. D. Ryckman, M. Liscidini, J. E. Sipe, and **S. M. Weiss**, “Low-cost optical microstructures fabricated by imprinting porous silicon,” *Proc. of SPIE* **7591**, 759108 (2010).
- C27. J. Nag, J. D. Ryckman, M. T. Hertkorn, B. K. Choi, R. F. Haglund, Jr., and **S. M. Weiss**, “Ultrafast compact silicon-based ring resonator modulators using metal-insulator switching of vanadium dioxide,” *Proc. of SPIE* **7597**, 759710 (2010).
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- C29. M. Liscidini, X. Wei, C. Kang, G. Rong, S. Retterer, M. Patrini, J. Sipe, and **S. Weiss**, “Gratings on porous silicon structures for sensing applications,” in *Conference on Lasers and Electro-Optics/International Quantum Electronics Conference*, OSA Technical Digest (Optical Society of America, 2009), paper CMG7.
- C30. Y. Jiao, G. Rong, and **S. M. Weiss**, “Porous waveguide in the Kretschmann configuration for small molecule detection,” *Proc. of SPIE* **7322**, 732205 1-10 (2009).
- C31. J. L. Lawrie, Z. Xu, P. E. Laibinis, and **S. M. Weiss**, “DNA oligonucleotide synthesis in mesoporous silicon for biosensing applications,” *Proc. of SPIE* **7167**, 71670R (2009).
- C32. X. Wei, C. Kang, G. Rong, S. T. Retterer, and **S. M. Weiss**, “Porous silicon waveguide with integrated grating coupler for DNA sensing,” *Proc. of SPIE* **7167**, 70670C (2009).
- C33. J. D. Gosnell and **S. M. Weiss**, “Light scattering by white-emitting CdSe nanocrystals and traditional YAG:Ce³⁺ phosphor particles,” *Mater. Res. Soc. Symp. Proc.* **1148E**, 1148-PP09-02 (2009).
- C34. G. Rong, X. Wei, C. Kang, M. Liscidini, J. E. Sipe, R. L. Mernaugh, and **S. M. Weiss**, “Nanoscale porous silicon waveguides for biosensing applications,” *Proc. of IEEE LEOS*, 340-341 (2008).

- C35. C. Kang and **S. M. Weiss**, “Photonic crystal defect tuning for optimized light-matter interaction,” *Proc. of SPIE* **7031**, 70310G (2008).
- C36. G. Rong and **S. M. Weiss**, “Influence of biomolecule size on performance of nanostructured sensing devices” *Proc. of SPIE* **6769**, 676909 1-10 (2007).
- C37. J. D. Gosnell, M. A. Schreuder, S. J. Rosenthal, and **S. M. Weiss**, “Efficiency improvements of white-light CdSe nanocrystal-based LEDs,” *Proc. of SPIE* **6669**, 66690R 1-11 (2007).
- C38. H. Park, A. A. Stramel, D. A. Harju, **S. M. Weiss**, and J. H. Dickerson, “A novel method of photonic band-gap lithography of porous silicon heterostructures,” *Proc. of SPIE* **6640**, 66400C 1-6 (2007). [Note: A. A. Stramel and D. A. Harju were undergraduate students at the time of publication]
- C39. G. Rong and **S. M. Weiss**, “Optical DNA sensing based on resonant porous silicon structures,” *Proc. of SPIE* **6477**, 647717 1-11 (2007).
- C40. J. D. Gosnell, M. A. Schreuder, M. J. Bowers II, S. J. Rosenthal, and **S. M. Weiss**, “Cadmium selenide nanocrystals as white-light phosphors,” *Proc. of SPIE* **6337**, 63370A 1-9 (2006).
- C41. G. Rong, J. J. Saarinen, J. E. Sipe, and **S. M. Weiss**, “High sensitivity sensor based on porous silicon waveguide,” *Mater. Res. Soc. Symp. Proc.* **934**, 0934-I10-04 1-6 (2006).
- C42. G. Rong, A. Najmaie, J. E. Sipe, and **S. M. Weiss**, “Porous silicon waveguides for DNA detection,” *3rd IEEE International Conference on Group IV Photonics*, 13-15 (2006).
- C43. **S. M. Weiss**, “Porous silicon waveguide biosensors,” *IEEE LEOS*, 310-311 (2006).
- C44. **S. M. Weiss** and P. M. Fauchet, “Active building blocks for silicon photonic devices,” *Proc. of SPIE* **6017**, 60170H 1-9 (2005).
- C45. J. J. Saarinen, J. E. Sipe, **S. M. Weiss**, and P. M. Fauchet, “Optical sensor based on resonant porous silicon structures,” *Quantum Electronics and Laser Science Conference*, vol. 2, pp. 1283-1285 (2005).
- C46. H. Chen, M. Haurylau, **S. M. Weiss**, J. Ruan, J. Zhang, H. Ouyang, and P. M. Fauchet, “Silicon-based building blocks for VLSI on-chip optical interconnects,” *Proc. of IEEE International Interconnect Technology Conference*, 237-239 (2005).
- C47. **S. M. Weiss**, M. Lee, M. Molinari, H. Ouyang, and P. M. Fauchet, “Control and elimination of the effect of ambient temperature fluctuations on photonic bandgap device operation,” *Proc. of SPIE* **5511**, 144-155 (2004).
- C48. M. Haurylau, **S. M. Weiss**, and P. M. Fauchet, “Dynamically tunable 1D and 2D photonic bandgap structures for optical interconnect applications,” *Proc. of SPIE* **5511**, 38-49 (2004).
- C49. **S. M. Weiss**, M. Haurylau, and P. M. Fauchet, “Silicon-based photonic bandgap modulators,” *First IEEE International Conference on Group IV Photonics*, 171-173 (2004).
- C50. **S. M. Weiss**, M. Haurylau, and P. M. Fauchet, “Tunable porous silicon mirrors for optoelectronic applications,” *Mater. Res. Soc. Symp. Proc.* **737**, F3.50 1-6 (2003).
- C51. **S. M. Weiss** and P. M. Fauchet, “Electrically tunable silicon-based mirrors,” *Proc. of SPIE* **4654**, 36-44 (2002).

- C52. H. A. Lopez, J. E. Lugo, S. Chan, **S. M. Weiss**, C. C. Striemer, and P. M. Fauchet, "Erbium emission from silicon based photonic bandgap materials," *Mater. Res. Soc. Symp. Proc.* **638**, F17.2 1-6 (2001).

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- E1. Active Photonic Crystals II, *Proc. of SPIE 7031*, **Sharon M. Weiss**, Ganapathi S. Subramania, and Florencio Garcia-Santamaria, editors, 2008.
- E2. Active Photonic Crystals, *Proc. of SPIE 6640*, **Sharon M. Weiss**, Ganapathi S. Subramania, and Florencio Garcia-Santamaria, editors, 2007.
- E3. Tuning the Optic Response of Photonic Bandgap Structures III, *Proc. of SPIE 6322*, Paul V. Braun and **Sharon M. Weiss**, editors, 2006.

Invited Talks

- OT1. "Optical modulation in silicon-vanadium dioxide photonic structures," *SPIE Optics & Photonics*, San Diego, CA, Aug. 2017 (Authors: K. J. Miller, K. A. Hallman, R. F. Haglund, and **S. M. Weiss**).
- IT2. "Exploiting light-matter interaction in silicon photonics for biosensing," *IEEE Photonics Society Seminar Series*, CREOL, College of Optics and Photonics, University of Central Florida, Orlando, FL, April 2017.
- IT3. "Exploiting light-matter interaction in silicon photonics for biosensing," *Physics Seminar Series*, Sewanee The University of the South, Sewanee, TN, Mar. 2017.
- IT4. "Control of light through photonic crystal unit cell design," *SPIE Photonics West*, San Francisco, CA, Jan. 2017.
- IT5. "Exploiting light-matter interaction in silicon photonics for biosensing," *IEEE Photonics Society Seminar Series*, University of Texas at Austin, Austin, TX, Nov. 2016.
- IT6. "Exploiting light-matter interaction in silicon photonics for biosensing," *IEEE Photonics Society Seminar Series*, University of Texas at Arlington, Arlington, TX, Nov. 2016.
- IT7. "Exploiting light-matter interaction in silicon photonics for biosensing," *IEEE Photonics Society and Materials Research Laboratory Seminar Series*, University of Illinois at Urbana-Champaign, Urbana, IL, Sept. 2016.
- IT8. "Ultrafast optical switching in hybrid silicon-vanadium dioxide photonic structures," *SPIE Optics & Photonics*, San Diego, CA, Aug. 2016.
- IT9. "Advanced photonic structures in porous silicon," *1st International Symposium on Functional Porous Materials*, San Luis Potosí, Mexico, April 2016.
- IT10. "Silicon photonics for sensing," *Interdisciplinary Distinguished Seminar Series*, North Carolina State University, Raleigh, NC, Oct. 2015.
- IT11. "Nanostructured silicon biosensors," *SPIE Optics & Photonics*, San Diego, CA, Aug. 2015.
- IT12. "Radiation studies on silicon photonic ring resonators," *SPIE Optics & Photonics*, San Diego, CA, Aug. 2015 (Authors: **S. M. Weiss**, S. Bhandaru, S. Hu, and D. M. Fleetwood).
- IT13. "Exploiting light-matter interaction in optical biosensors for improved performance," *Department of Electrical and Computer Engineering Seminar Series*, University of Rochester, Rochester, NY, March 2015.
- IT14. "Cost-effective and high enhancing SERS substrates based on imprinted nanoporous gold," *SPIE Photonics West*, San Francisco, CA, Feb. 2015.

- IT15. “Enhancing light-matter interaction in optical biosensors,” *Department of Physics Colloquium Series*, University of Alabama- Birmingham, Birmingham, AL, Nov. 2014.
- IT16. “Application of resonant porous silicon photonic structures for biosensing,” *American Chemical Society National Meeting*, San Francisco, CA, Aug. 2014.
- IT17. “Rapid, cost-effective, and reproducible SERS substrates based on stamped nanoporous gold,” *Army Research Laboratory Sponsored Workshop on Flexible SERS Substrates: Challenges and Opportunities*, St. Louis, MO, June 2014.
- IT18. “Multi-hole defect photonic crystals with enhanced surface area for biosensing applications” *Laser Science Conference at OSA Frontiers in Optics*, Orlando, FL, Oct. 2013 (Authors: S. Hu, C. Kang, Y. Zhao, J. W. Mares, Y. A. Vlasov, S. Assefa, and **S. M. Weiss**).
- IT19. “Integrated nanoscale porous silicon photonic structures for molecular sensing,” *OSA Integrated Photonics Research, Silicon and Nano-Photonics*, Rio Grande, Puerto Rico, July 2013 (Authors: J. W. Mares, X. Wei, G. A. Rodriguez, J. D. Ryckman, and **S. M. Weiss**).
- IT20. “Nanoscale porous materials for application in chemical and biomolecular detection” *Materials Research Science and Engineering Center Speaker Series*, Northwestern University, Evanston, IL, April 2013.
- IT21. “Biosensors based on nanoscale porous silicon waveguides and silicon photonic crystals,” *SPIE Photonics West*, San Francisco, CA, Feb. 2013.
- IT22. “Patterned nanoporous gold: A highly efficient and cost-effective SERS substrate,” *Army Research Lab*, Adelphi, MD, Dec. 2012.
- IT23. “Low mode volume active regions in silicon photonic cavities for low power, ultrafast switching,” *Materials Research Society*, Boston, MA, Nov. 2012.
- IT24. “Light-matter interactions in nanoporous materials for biosensing applications,” *Dept. of Physics and Astronomy Seminar Series*, Middle Tennessee State University, Murfreesboro, TN, Oct. 2012.
- IT25. “Porous materials for optical detection of chemicals, biological molecules, and high energy radiation,” *SPIE Defense Security and Sensing*, Baltimore, MD, April 2012.
- IT26. “Nanoscale porous materials for optical biosensing,” *NSF Workshop on Micro, Nano, Bio Systems*, Arlington, VA, March 2012.
- IT27. “Hybrid nanoscale material systems for advanced optical performance in sensing and computing,” *Chemical and Biological Engineering Department Seminar Series*, University of Alabama, Tuscaloosa, AL, Feb. 2012.
- IT28. “A career path in academia,” Job Information Forum, *American Vacuum Society Annual Meeting*, Nashville, TN, Nov. 2011.
- IT29. “Design and characterization of high surface area nanoscale porous materials for small molecule chem-bio sensing,” *NanoTechnology for Defense Conference*, Bellevue, Washington, Oct. 2011.
- IT30. “Porous silicon for chemical and biomolecular sensing,” *4th International Conference on Micro-Nanoelectronics, Nanotechnology, and MEMS*, Athens, Greece, Dec. 2010.
- IT31. “Nanostructured, high surface area materials for sensing applications,” *Center for Nanophase Materials Sciences 2010 User Meeting*, Oak Ridge National Laboratory, Oak Ridge, TN, Sept. 2010.

- IT32. “Nanoscale porous silicon for the enhanced detection of chemical and biological molecules,” *German-American Frontiers of Science Symposium Flash Poster Talk*, Potsdam, Germany, June 2010.
- IT33. “Optical properties of silicon-based nano- and micro-structures for analyte detection, information routing, and radiation monitoring,” *Optical Society of America – Rochester Section Seminar Series*, Rochester, NY, Mar. 2010.
- IT34. “Using silicon photonic components as highly sensitive biosensors,” UCLA, Los Angeles, CA, Jan. 2010.
- IT35. “Size-dependent infiltration and optical detection of nucleic acids in nanoscale pores,” *Berkeley Sensor & Actuator Center Seminar Series*, UC Berkeley, Berkeley, CA, Jan. 2010.
- IT36. “Tuning the feature size of nanostructured materials for improved infiltration and detection of small molecules,” *SPIE Photonics West*, San Francisco, CA, Jan. 2010.
- IT37. “Nanostructured resonant waveguides and optical cavities for enhanced sensing capabilities,” *Center for Nanophase Materials Sciences Triennial DOE Review*, Oak Ridge National Laboratory, Oak Ridge, TN, Dec. 2009.
- IT38. “Silicon nanophotonics for biosensing applications,” *ECE Seminar Series*, University of Texas at Austin, Austin, TX, Nov. 2009.
- IT39. “Silicon-based building blocks for integrated small-molecule biosensors,” *Naval Research Laboratory*, Washington, DC, July 2009.
- IT40. “Silicon nanophotonics for biosensing applications,” *IBM T.J. Watson Research Center*, Yorktown Heights, NY, June 2009.
- IT41. “Nano-optics: From Street Lights to Invisibility Cloaks,” *4th Annual National Center for Learning and Teaching in Nanoscale Science and Engineering Workshop*, Fisk University, Nashville, TN, June 2009.
- IT42. “Nanostructured Materials for Biosensors,” *Nanotechnology in Biology and Medicine Workshop*, University of Buffalo, Buffalo, NY, May 2009.
- IT43. “Efficient capture and detection of nanoscale biomolecules using optically resonant porous silicon structures,” *SPIE Photonics West*, San Jose, CA, Jan. 2009.
- IT44. “Detection of small molecules using porous silicon optical waveguides” *Materials Research Society*, Boston, MA, Dec. 2008.
- IT45. “Insights on the transition to an academic career,” *Careers in Research Forum, IEEE-LEOS*, Newport Beach, CA, Nov. 2008.
- IT46. “Detection of nanoscale molecules in nanoscale holes,” *Institute of Optics colloquium*, University of Rochester, Rochester, NY, Sept. 2008.
- IT47. “Current status and outlook for silicon-based optical biosensors,” *European Materials Research Society*, Strasbourg, France, May 2008.
- IT48. “Porous materials for enhanced nanoscale biological and chemical detection,” *SPIE Photonics West*, San Jose, CA, Jan. 2008.
- IT49. “CdSe white light nanophosphors for solid state lighting,” *Central Research and Services Laboratory seminar*, OSRAM-SYLVANIA, Beverly, MA, Sept. 2007.

- IT50. “Highly sensitive biosensor based on large surface area and electric field localization in porous silicon,” *Brooks Air Force Base*, Brooks City-Base, TX, Aug. 2007.
- IT51. “Nanostructures for solid-state lighting and optical biosensing,” *EECS Department seminar*, Ohio University, Athens, OH, Apr. 2007.
- IT52. “Small molecule detection with porous silicon waveguides,” *Department of Biomedical Engineering*, Vanderbilt University, Nashville, TN, March 2007.
- IT53. “Nanophotonic devices for DNA detection and white-light generation,” *ECE and IEEE co-sponsored seminar*, Georgia Institute of Technology, Atlanta, GA, Mar. 2007.
- IT54. “Optical DNA sensing based on resonant porous silicon structures,” *SPIE Photonics West*, San Jose, CA, Jan. 2007.
- IT55. “Photonics, materials, and biology-inspired research at the nanoscale: An overview of Vanderbilt University initiatives,” *CUDOS colloquium*, University of Sydney, Sydney, Australia, Dec. 2006.
- IT56. “Silicon optical sensors for the detection of chemical and biological species,” *Center for Physics and Chemistry of Materials seminar*, Fisk University, Nashville, TN, Nov. 2006.
- IT57. “Porous silicon waveguide biosensors,” *IEEE LEOS Annual Meeting*, Montreal, Quebec, Canada, Oct. 2006.
- IT58. “A new platform for silicon-based biosensing,” *Department of Physics and Laboratory for Surface Modification seminar*, Rutgers University, Piscataway, NJ, July 2006.
- IT59. “Porous Silicon Waveguide Biosensors,” *Department of Physics*, Vanderbilt University, Nashville, TN, May 2006.
- IT60. “Bioanalytical systems: Engineering of sensors, interfaces, and lab-on-a-chip devices,” *Wright-Patterson Air Force Base*, OH, April 2006.
- IT61. “New applications for silicon in photonics and biomedicine,” *APS Annual Meeting*, Baltimore, MD, Mar. 2006.
- IT62. “Resonant porous silicon devices for photonics and biosensing applications,” *Physics Department colloquium*, University of Toronto, Toronto, Ontario, Canada, Mar. 2006.
- IT63. “Silicon Nanostructures for Optical Switching and Biosensing,” *Vanderbilt Institute of Nanoscale Science and Engineering NanoDay*, Vanderbilt University, Nashville, TN, Oct. 2005.
- IT64. “Active building blocks for silicon photonic devices,” *SPIE Optics East*, Boston, MA, Oct. 2005.
- IT65. “Control and elimination of the effect of ambient temperature fluctuations on photonic bandgap device operation,” *SPIE Annual Meeting*, Denver, CO, Aug. 2004.
- IT66. “Porous silicon: a versatile medium for photonic bandgap structures,” *Department of Physics seminar*, Rensselaer Polytechnic Institute, Troy, NY, Oct. 2003.

Other Talks

Note that talks given prior to 2005 are not listed. Presenter is italicized.

- OT1. “Slotted photonic crystal nanobeams for enhanced light-matter interaction and optical forces,” *F. Afzal* and **S. M. Weiss**; SPIE Optics & Photonics, San Diego, CA, Aug. 2017.
- OT2. “Bowtie photonic crystal with deep subwavelength mode confinement in a dielectric material,” *S. Hu*, M. Khater, R. Salas-Montiel, E. Kratschmer, S. Engelmann, W. M. J. Green, and **S. M. Weiss**; Conference on Lasers and Electro-Optics (CLEO), San Jose, CA, May 2017.

- OT3. “Silicon waveguide modulator with in-line phase change material,” *K. J. Miller*, K. A. Hallman, R. F. Haglund, and **S. M. Weiss**; Conference on Lasers and Electro-Optics (CLEO), San Jose, CA, May 2017.
- OT4. “Correlation of laser- and ion-induced single event effects,” *R.A. Reed*, R. A. Weller, **S. M. Weiss**, R. D. Schrimpf, A. L. Sternberg, J. Kozub, *L. D. Ryder*, and K. H. Ryder; GOMACTech, Reno, NV, Mar. 2017.
- OT5. “A smartphone compatible colorimetric biosensing system based on porous silicon,” *T. Cao*, *Y. Zhao*, and **S. M. Weiss**; SPIE Photonics West, San Francisco, CA, Jan. 2017.
- OT6. “Resonant photonic structures in porous silicon for biosensing,” *S. M. Weiss*, *G. A. Rodriguez*, *Y. Zhao*, *T. Cao*, *Y. M. Graham*, and *G. Gaur*; SPIE Photonics West, San Francisco, CA, Jan. 2017.
- OT7. “Flow-through porous silicon membranes for optical biosensing,” *Y. Zhao*, *T. Cao*, *G. Gaur*, P. E. Laibinis, and **S. M. Weiss**; Materials Research Society Fall Meeting, Boston, MA, Nov. 2016.
- OT8. “Silicon-compatible pseudocapacitors based on nickel hydroxide functionalization of carbonized porous silicon,” *J. S. Fain*, J. W. Mares, and **S. M. Weiss**; American Vacuum Society Annual Meeting, Nashville, TN, Nov. 2016.
- OT9. “Ultrafast optical switching in hybrid Si-VO₂ photonics,” *R. F. Haglund* and **S. M. Weiss**; Tenth International Conference on Photo-Excited Processes and Applications, Brasov, Romania, Aug. 2016. [invited]
- OT10. “Four-wave mixing in porous silicon microring resonators,” *A. Simbula*, *G. A. Rodriguez*, M. Menotti, M. Galli, D. Bajoni, **S. M. Weiss**, and M. Liscidini; International Conference on Transparent Optical Networks (ICTON), Trento, Italy, July 2016. [invited]
- OT11. “Four-wave mixing in porous silicon microring resonators,” *A. Simbula*, *G. A. Rodriguez*, M. Menotti, M. Galli, D. Bajoni, **S. M. Weiss**, and M. Liscidini; Conference on Lasers and Electro-Optics (CLEO), San Jose, CA, June 2016.
- OT12. “Plasmonic hot electron induced photocurrent response at MoS₂-metal junctions,” *T. Hong*, B. Chamlagain, *S. Hu*, **S. Weiss**, Z. Zhou, and Y. Xu; APS March Meeting, Baltimore, MD, March 2016.
- OT13. “‘Smart’ porous silicon nanocomposites for improved peptide nucleic acid delivery and micro-RNA inhibition in vivo,” *K. Beavers*, T. Werfel, T. Shen, T. Kavanaugh, K. Kilchrist, J. Mares, *J. Fain*, C. Wiese, K. Vickers, **S. Weiss**, and C. Duvall; Porous Semiconductors – Science and Technology Conference, Tarragona, Spain, Mar. 2016. [Note: K. R. Beavers received the Best Talk of the Day award for this presentation]
- OT14. “Transient pseudocapacitor electrode based on Ni(OH)₂-functionalized porous silicon,” *J. S. Fain*, J. W. Mares, *C. M. Henley*, *G. R. Tate*, C. L. Pint, and **S. M. Weiss**; Porous Semiconductors – Science and Technology Conference, Tarragona, Spain, Mar. 2016. [Note: C. M. Henley and G. R. Tate were undergraduates at the time of this presentation]
- OT15. “Flow-through porous silicon membranes for rapid, label-free biosensing,” *Y. Zhao*, *G. Gaur*, *T. Cao*, P. E. Laibinis, and **S. M. Weiss**; Porous Semiconductors – Science and Technology Conference, Tarragona, Spain, Mar. 2016. [Note: Y. Zhao received the Best Talk of the Day award for this presentation]
- OT16. “Laser processing of phase-changing vanadium dioxide for ultrafast optical switching applications,” *R. F. Haglund* and **S. M. Weiss**; 11th International Laser Processing and Systems Conference, Shanghai, China, March 2016. [invited]

- OT17. “Hybrid silicon-vanadium dioxide electro-optic modulators,” K. J. Miller, P. Markov, R. E. Marvel, R. F. Haglund, and **S. M. Weiss**; SPIE Photonics West, San Francisco, CA, Feb. 2016.
- OT18. “Porous silicon nanoparticle delivery of peptide nucleic acid anti-microRNA therapeutics,” K. R. Beavers, J. W. Mares, **S. M. Weiss**, and C. L. Duvall; Society for Biomaterials Annual Meeting, Charlotte, NC, April 2015.
- OT19. “Progress in Ni_xMg_{1-x}O thin films for optoelectronic applications,” J. W. Mares, R. C. Boutwell, **S. M. Weiss**, and W. V. Schoenfeld, SPIE Photonics West, San Francisco, CA, Feb. 2015. [invited]
- OT20. “Hybrid plasmonic and photonic devices based on optical switching in vanadium dioxide,” R. F. Haglund, **S. M. Weiss**, and K. Appavoo; SPIE Photonics West, San Francisco, CA, Feb. 2015. [invited]
- OT21. “Photonic crystal microring resonators for label-free DNA sensing,” S. M. Lo, S. Hu, Y. Kostoulas, **S. M. Weiss**, and P. M. Fauchet, SPIE Photonics West, San Francisco, CA, Feb. 2015.
- OT22. “Optical microring resonator biosensors based on porous silicon,” G. A. Rodriguez, S. Hu, and **S. M. Weiss**, Materials Research Society Fall Meeting, Boston, MA, Nov. 2014.
- OT23. “Metal oxide-hybridized mesoporous silicon thin films for diverse applications,” J. W. Mares, J. S. Fain, C. M. Henley, S. Deka, and **S. M. Weiss**, 8th International Workshop on Zinc Oxide and Related Materials, Niagara Falls, Canada, Sept. 2014. [Note: C. M. Henley and S. Deka were undergraduates at the time of this presentation]
- OT24. “Porous silicon Bloch surface and sub-surface wave structure for simultaneous detection of small and large molecules,” G. A. Rodriguez, J. D. Lonai, and **S. M. Weiss**; Porous Semiconductors – Science and Technology Conference, Benidorm, Alicante, Spain, Mar. 2014. [invited] [Note: J. D. Lonai was an undergraduate at the time of this presentation]
- OT25. “Porous silicon functionalization for drug delivery and biosensing by in situ peptide nucleic acid synthesis,” K. R. Beavers, J. W. Mares, C. M. Swartz, **S. M. Weiss**, and C. L. Duvall; Porous Semiconductors – Science and Technology Conference, Benidorm, Alicante, Spain, Mar. 2014. [Note: K. R. Beavers received the Best Talk of the Day award for this presentation]
- OT26. “Chirped photonic crystal mode converters for broad-band coupling with highly dispersive photonic crystal microring resonators,” S. M. Lo, J. Y. Lee, **S. M. Weiss**, and P. M. Fauchet; SPIE Photonics West, San Francisco, CA, Feb. 2014.
- OT27. “Suspended micro-ring resonator for enhanced biomolecule detection sensitivity,” S. Hu, K. Qin, I. I. Kravchenko, S. T. Retterer, and **S. M. Weiss**; SPIE Photonics West, San Francisco, CA, Feb. 2014.
- OT28. “Understanding and mitigating DNA induced corrosion in porous silicon based biosensors,” Y. Zhao, J. L. Lawrie, P. E. Laibinis, and **S. M. Weiss**; SPIE Photonics West, San Francisco, CA, Feb. 2014.
- OT29. “Metal oxide/porous silicon nanocomposites for variable resistance devices,” J. W. Mares, J. S. Fain, S. Deka, and **S. M. Weiss**; Southeastern Section of the American Physical Society 80th Annual Meeting, Bowling Green, KY, Nov. 2013. [invited] [Note: S. Deka was an undergraduate at the time of this presentation]
- OT30. “Photonic crystal biosensor with in-situ synthesized DNA probes for enhanced sensitivity,” S. Hu, Y. Zhao, S. T. Retterer, I. I. Kravchenko, and **S. M. Weiss**; IEEE Photonics Conference, Bellevue, WA, September 2013.

- OT31. "Silicon-VO₂ hybrid electro-optic modulator," P. Markov, J. D. Ryckman, R. E. Marvel, K. A. Hallman, R. F. Haglund, and **S. M. Weiss**; Conference on Lasers and Electro-Optics (CLEO), San Jose, CA, June 2013.
- OT32. "Porous silicon biosensors using quantum dot signal amplifiers," G. Gaur, D. Koktysh, and **S. M. Weiss**; SPIE Photonics West, San Francisco, CA, Feb. 2013. [invited]
- OT33. "Detection of small and large molecules using a porous silicon grating-coupled Bloch surface wave label-free biosensor," G. A. Rodriguez, J. D. Ryckman, Y. Jiao, R. L. Fuller, and **S. M. Weiss**; SPIE Photonics West, San Francisco, CA, Feb. 2013. [Note: R. L. Fuller was an undergraduate at the time of the presentation]
- OT34. "Surface enhanced Raman scattering on grating-type patterned nanoporous gold films," Y. Jiao, J. D. Ryckman, **S. M. Weiss**; SPIE Photonics West, San Francisco, CA, Feb. 2013.
- OT35. "Integration of NiO into nanoscale porous silicon for engineered memristive behavior," J. W. Mares, J. S. Fain, and **S. M. Weiss**; Materials Research Society Fall Meeting, Boston, MA, Nov. 2012.
- OT36. "Shape-engineered porous silicon nanoparticles by direct imprinting for targeted drug delivery," J. W. Mares, J. D. Ryckman, K. R. Beavers, C. L. Duvall, and **S. M. Weiss**; Biomedical Engineering Society Annual Meeting, Atlanta, GA, Oct. 2012.
- OT37. "Integrated nanoscale porous silicon waveguide for molecular sensing applications," X. Wei, J. W. Mares, and **S. M. Weiss**; Laser Science at the Optical Society of America's Frontiers in Optics Meeting, Rochester, NY, Oct. 2012.
- OT38. "Photothermal optical switching in ultra-compact hybrid Si-VO₂ ring resonators," J. D. Ryckman, V. Diez-Blanco, J. Nag, R. E. Marvel, B. K. Choi, R. F. Haglund, and **S. M. Weiss**; IEEE Group IV Photonics, San Diego, CA, August 2012. [Note: J. D. Ryckman received the top award for the student paper competition]
- OT39. "Low mode volume slotted photonic crystal single nanobeam cavity in silicon," J. D. Ryckman and **S. M. Weiss**; IEEE Group IV Photonics, San Diego, CA, August 2012.
- OT40. "Fiber-to-chip coupler based on transformation optics," P. Markov, J. G. Valentine, and **S. M. Weiss**; Conference on Lasers and Electro-Optics (CLEO), San Jose, CA, May 2012.
- OT41. "Gray-scale direct imprinting of porous substrates," J. D. Ryckman and **S. M. Weiss**; Porous Semiconductors – Science and Technology Conference, Malaga, Spain, Mar. 2012. [Note: J. D. Ryckman received Best Talk of the Day Award]
- OT42. "Nickel oxide hybridized porous silicon for memristor studies," J. W. Mares, J. S. Fain, and **S. M. Weiss**; Porous Semiconductors – Science and Technology Conference, Malaga, Spain, Mar. 2012. [Note: J. W. Mares received Best Talk of the Day Award]
- OT43. "Real-time molecular detection using a nanoscale porous silicon waveguide biosensor," X. Wei, J. W. Mares, and **S. M. Weiss**; American Physical Society Annual Meeting, March 2012.
- OT44. "Effect of 10 keV x-rays on silicon oxidation," S. Bhandaru, R. R. Harl, E. X. Zhang, D. M. Fleetwood, R. A. Reed, R. A. Weller, B. R. Rogers, and **S. M. Weiss**; American Vacuum Society Annual Meeting, Nashville, TN, Nov. 2011.
- OT45. "Functionalization of mesoporous silicon biosensors to achieve tunable DNA bioreceptor density," J. L. Lawrie, R. R. Harl, B. R. Rogers, P. Laibinis, and **S. M. Weiss**; American Vacuum Society Annual Meeting, Nashville, TN, Nov. 2011.

- OT46. “X-ray induced defect formation in graphene,” *E. X. Zhang*, A. K. M. Newaz, *S. Bhandaru*, M. L. Alles, D. M. Fleetwood, R. D. Schrimpf, K. Bolotin, R. A. Reed, R. A. Weller, **S. M. Weiss** and S. T. Pantelides; American Vacuum Society Annual Meeting, Nashville, TN, Nov. 2011.
- OT47. “Direct imprinted gratings on nanoporous gold as effective SERS substrates,” *Y. Jiao*, *J. D. Ryckman*, M. Liscidini, J. E. Sipe, *P. N. Ciesielski*, *C. A. Escobar*, G. K. Jennings, and **S. M. Weiss**; Conference on Lasers and Electro-Optics (CLEO), Baltimore, MA, May 2011.
- OT48. “Optimization of defect hole placement in resonant cavities,” *C. Kang*, **S. M. Weiss**, Y. A. Vlasov, and S. Assefa; Conference on Lasers and Electro-Optics (CLEO), Baltimore, MA, May 2011.
- OT49. “Direct imprinting of porous substrates,” *J. D. Ryckman*, M. Liscidini, J. E. Sipe, and **S. M. Weiss**; Conference on Lasers and Electro-Optics (CLEO), Baltimore, MA, May 2011.
- OT50. “Low-cost micro- and nano-structures in porous nanomaterials realized by direct imprinting of porous substrates,” *J. D. Ryckman*, M. Liscidini, J. E. Sipe, and **S. M. Weiss**; Materials Research Society Spring Meeting, San Francisco, CA, Apr. 2011. [Note: J. D. Ryckman earned the 2011 MRS Spring Meeting Symposium T Graduate Student Presentation Award]
- OT51. “Si-VO₂ hybrid photonic structures for optical modulation and reconfigurable photonic networks,” *J. D. Ryckman*, *J. Nag*, *C. Kang*, *T. E. Whittle*, *P. Markov*, B. K. Choi, R. F. Haglund, Jr., and **S. M. Weiss**; Materials Research Society Spring Meeting, San Francisco, CA, Apr. 2011.
- OT52. “Integrating colloidal quantum dots with porous silicon for high sensitivity biosensing,” *G. Gaur*, D. Koktysh, and **S. M. Weiss**; Materials Research Society Fall Meeting, Boston, MA, Nov. 2010.
- OT53. “Dual detection platform with refractive index and SERS sensing based on colloidal gold functionalized porous silicon substrates,” *Y. Jiao*, D. Koktysh, and **S. M. Weiss**; Materials Research Society Fall Meeting, Boston, MA, Nov. 2010.
- OT54. “Silicon ring resonator modulated by the metal-insulator transition in vanadium dioxide,” *J. Nag*, *J. D. Ryckman*, B. K. Choi, **S. M. Weiss**, and R. F. Haglund; European Materials Research Society Spring Meeting, Strasbourg, France, June 2010.
- OT55. “Photonic crystal defects with increased surface area for improved refractive index sensing,” *C. Kang*, *C. Phare*, **S. M. Weiss**, Y. A. Vlasov, and S. Assefa; Conference on Lasers and Electro-Optics, San Francisco, CA, May 2010. [Note: C. Phare was an undergraduate student at the time of this presentation]
- OT56. “Diffraction based biosensing with porous silicon,” *J. D. Ryckman*, *M. Liscidini*, J. E. Sipe, and **S. M. Weiss**; Conference on Lasers and Electro-Optics, San Francisco, CA, May 2010.
- OT57. “Detection of charged and uncharged oligos using in situ synthesized DNA probes in porous silicon,” *J. L. Lawrie*, *Z. Xu*, P. E. Laibinis, and **S. M. Weiss**; Porous Semiconductors – Science and Technology Conference, Valencia, Spain, Mar. 2010.
- OT58. “Micron and submicron sized optical structures fabricated by imprinting porous silicon,” *J. D. Ryckman*, M. Liscidini, J. E. Sipe, and **S. M. Weiss**; Porous Semiconductors – Science and Technology Conference, Valencia, Spain, Mar. 2010.
- OT59. “Sensitivity analysis of polymer-cladded porous silicon waveguide for small molecule detection,” *Y. Jiao* and **S. M. Weiss**; SPIE Photonics West, San Francisco, CA, Jan. 2010.
- OT60. “Low-cost optical microstructures fabricated by imprinting porous silicon,” *J. D. Ryckman*, M. Liscidini, J. E. Sipe, and **S. M. Weiss**; SPIE Photonics West, San Francisco, CA, Jan. 2010.

- OT61. "Ultrafast compact silicon-based ring resonator modulators using metal-insulator switching of vanadium dioxide," J. Nag, J. D. Ryckman, R. F. Haglund, Jr., and **S. M. Weiss**; SPIE Photonics West, San Francisco, CA, Jan. 2010.
- OT62. "Enhancement of diffraction-based biosensing using porous structures and electromagnetic surface states," J. E. Sipe, **S. M. Weiss**, and M. Liscidini; SPIE Photonics West, San Francisco, CA, Jan. 2010 (**invited**).
- OT63. "Permittivity-engineered TCOs studied by in-situ spectroscopic ellipsometry," J. Burst, T. J. Peshek, X. Li, T. A. Gessert, D. H. Levi, B. R. Rogers, and **S. M. Weiss**; American Vacuum Society International Symposium, San Jose, CA, Nov. 2009.
- OT64. "Boron induced charge traps at the interface of Si/SiO₂ probed by second harmonic generation," H. Park, J. Qi, Y. Xu, K. Varga, **S. M. Weiss**, B. R. Rogers, G. Lüpke, and N. Tolk; Optics of Surfaces and Interfaces VIII, Ischia, Italy, Sept. 2009.
- OT65. "Size-selective filtration, concentration, and enhanced detection of biomolecules using mesoporous silicon," **S. M. Weiss**, Y. Jiao, J. L. Lawrie, and G. Rong; Nanoelectronic Devices for Defense & Security, Ft. Lauderdale, FL, Sept. 2009.
- OT66. "Gratings on porous silicon structures for sensing applications," M. Liscidini, X. Wei, C. Kang, G. Rong, S. T. Retterer, M. Patrini, J. E. Sipe, and **S. M. Weiss**; Conference on Lasers and Electro-Optics, Baltimore, MD, June 2009.
- OT67. "Porous waveguides in the Kretschmann configuration for small molecule detection," Y. Jiao, G. Rong, and **S. M. Weiss**; SPIE Defense, Security, and Sensing, Orlando, FL, April 2009.
- OT68. "DNA oligonucleotide synthesis in mesoporous silicon for biosensing applications," J. L. Lawrie, Z. Xu, P. E. Laibinis, and **S. M. Weiss**; SPIE Photonics West, San Jose, CA, Jan. 2009.
- OT69. "Porous silicon waveguide with integrated grating coupler for DNA sensing," X. Wei, C. Kang, G. Rong, S. T. Retterer, and **S. M. Weiss**; SPIE Photonics West, San Jose, CA, Jan. 2009.
- OT70. "Nanoscale porous silicon waveguides for biosensing applications," G. Rong, X. Wei, C. Kang, M. Liscidini, J. E. Sipe, R. L. Mernaugh, and **S. M. Weiss**; IEEE LEOS, Newport Beach, CA, Nov. 2008.
- OT71. "Encapsulation of white-light CdSe nanocrystals for use in solid-state lighting," M. A. Schreuder, J. D. Gosnell, N. J. Smith, M. R. Warnement, **S. M. Weiss** and S. J. Rosenthal; PRiME (associated with the Electrochemical Society), Honolulu, HI, Oct. 2008.
- OT72. "Photonic crystal defect tuning for optimized light-matter interaction," C. Kang and **S. M. Weiss**; SPIE Optics & Photonics, San Diego, CA, Aug. 2008.
- OT73. "Influence of biomolecule size on performance of nanostructured sensing devices," G. Rong and **S. M. Weiss**; SPIE Optics East, Boston, MA, Sept. 2007.
- OT74. "A novel method of photonic band-gap lithography of porous silicon heterostructures," H. Park, A. Stramel, D. Harju, **S. M. Weiss**, and J. Dickerson; SPIE Optics & Photonics, San Diego, CA, Aug. 2007.
- OT75. "Efficiency improvements of white-light CdSe nanocrystal-based LEDs," J. D. Gosnell, M. A. Schreuder, S. J. Rosenthal, and **S. M. Weiss**; SPIE Optics & Photonics, San Diego, CA, Aug. 2007.

- OT76. "Porous silicon waveguides for small molecule detection," G. Rong and **S. M. Weiss**; American Chemical Society National Meeting, Boston, MA, Aug. 2007.
- OT77. "Porous Silicon Waveguides for Biosensing Applications," G. Rong, A. Najmaie, J. E. Sipe, and **S. M. Weiss**; OSA Annual Meeting, Rochester, NY, Oct. 2006.
- OT78. "Porous silicon waveguides for DNA detection," G. Rong, A. Najmaie, J. E. Sipe, and **S. M. Weiss**; Group IV Photonics, Ottawa, Ontario, Canada, Sept. 2006.
- OT79. "Cadmium selenide nanocrystals as white-light phosphors," J. D. Gosnell, M. A. Schreuder, S. J. Rosenthal, and **S. M. Weiss**; SPIE Optics & Photonics, San Diego, CA, Aug. 2006.
- OT80. "High sensitivity sensor based on porous silicon waveguide," G. Rong, J. J. Saarinen, J. E. Sipe, and **S. M. Weiss**; MRS Spring Meeting, San Francisco, CA, Apr. 2006.

Posters

Note that posters given prior to 2005 are not listed. Presenter is italicized.

- PO1. "Low cost portable biosensors made from porous silicon annular Bragg resonators," Y. M. Graham, Y. Zhao, G. Gaur, and **S. M. Weiss**; Council on Undergraduate Research's Research Experiences for Undergraduates Symposium, Arlington, VA, Oct. 2016. [Note: Y. M. Graham was an undergraduate at the time of this presentation]
- PO2. "Bloch surface wave ring resonators," G. A. Rodriguez, M. Menotti, D. Aurelio, M. Liscidini, and **S. M. Weiss**; Conference on Lasers and Electro-Optics (CLEO), San Jose, CA, June 2016.
- PO3. "Advanced porous silicon photonic structures for biosensing applications," G. A. Rodriguez, A. P. Cartwright, P. Markov, and **S. M. Weiss**; Porous Semiconductors – Science and Technology Conference, Tarragona, Spain, Mar. 2016. [Note: A. P. Cartwright was an undergraduate at the time of this presentation]
- PO4. "Scalable fabrication of shape-engineered porous silicon nanoparticles by direct imprinting," J. W. Mares, J. S. Fain, K. R. Beavers, C. L. Duvall, and **S. M. Weiss**; Porous Semiconductors – Science and Technology Conference, Tarragona, Spain, Mar. 2016. [Note: J. S. Fain received the Best Poster of the Day award for this presentation]
- PO5. "Biosensing and optical modulation on a silicon platform," K. J. Miller, G. A. Rodriguez, Y. Zhao, P. Markov, S. Hu, and **S. M. Weiss**, Center for Nanophase Materials Sciences Annual Users Meeting, Oak Ridge National Laboratory, Oak Ridge, TN, Sept. 2015.
- PO6. "Systematic study and quantification of optical forces on porous silicon nanoparticle," F. C. Cheong, T. Paprotta, J. W. Mares, **S. M. Weiss**, J. Schumacher, and A. E. Cable, SPIE Photonics West, San Francisco, CA, Feb. 2015.
- PO7. "Nickel oxide nanoparticle size tunability through mesoporous silicon template hybridization," J. S. Fain, J. W. Mares, and **S. M. Weiss**, Materials Research Society Fall Meeting, Boston, MA, Nov. 2014.
- PO8. "Silicon photonics for biosensing and reconfigurable photonics Applications," P. Markov, G. A. Rodriguez, J. W. Mares, R. E. Marvel, R. F. Haglund, and **S. M. Weiss**, Center for Nanophase Materials Sciences Annual Users Meeting, Oak Ridge National Laboratory, Oak Ridge, TN, Sept. 2014.
- PO9. "Direct imprinting of nanoporous gold for uniform, large area SERS substrates," G. A. Rodriguez, Y. Jiao, J. D. Ryckman, and **S. M. Weiss**, Army Research Laboratory Sponsored Workshop on Flexible SERS Substrates: Challenges and Opportunities, St. Louis, MO, June 2014.

- PO10. "Photonic crystal microring resonator based sensors," *S. M. Lo, S. Hu, S. M. Weiss, and P. M. Fauchet*; CLEO, San Jose, CA, June 2014.
- PO11. "An improved strategy for the loading, characterization, and controlled delivery of peptide nucleic acid therapeutics," *K. B. Beavers, J. W. Mares, B. C. Evans, S. M. Weiss, and C. L. Duvall*; BMES Annual Meeting, Seattle, WA, Sept. 2013.
- PO12. "Nanostructure-initiator mass spectrometry: Practical insights, fundamental implications, and emerging applications," *J. Forsythe, J. Broussard, J. Lawrie, M. Kliman, Y. Jiao, S. Weiss, D. Webb, and J. McLean*; 61st American Society for Mass Spectrometry Conference on Mass Spectrometry, Minneapolis, Minnesota, June 2013.
- PO13. "Nanomaterials for enabling advanced medicine," *K. R. Beavers, G. A. Rodriguez, J. W. Mares, Y. Jiao, J. L. Lawrie, C. L. Duvall, and S. M. Weiss*; 19th Annual Coalition for National Science Funding, Rayburn House Office Building, Washington, D.C., May 2013.
- PO14. "Effects of x-ray and gamma-ray irradiation on the optical properties of quantum dots immobilized in porous silicon," *G. Gaur, D. S. Koktysh, D. M. Fleetwood, R. A. Reed, R. A. Weller and S. M. Weiss*; SPIE Defense, Security, and Sensing, Baltimore, MD, April 2013.
- PO15. "Nanophotonics: From novel fabrication technologies to reconfigurable photonics," *S. Hu, J. D. Ryckman, Y. Jiao, J. W. Mares, V. Diez-Blanco, R. E. Marvel, R. F. Haglund and S. M. Weiss*; Center for Nanophase Materials Sciences Annual Users Meeting, Oak Ridge National Laboratory, Oak Ridge, TN, Sept. 2012.
- PO16. "DNA aptamer based detection of adenosine molecules in DNA-functionalized porous silicon," *J. L. Lawrie, P. E. Laibinis, and S. M. Weiss*; Porous Semiconductors – Science and Technology Conference, Malaga, Spain, Mar. 2012.
- PO17. "Optimization of DNA receptor density in porous materials for improved detection in label-free biosensing applications," *J. L. Lawrie, P. E. Laibinis, and S. M. Weiss*; Chemical and Biological Defense Science and Technology Conference, Las Vegas, NV, Nov. 2011.
- PO18. "Porous silicon films with tunable diffusion coefficients for controlled drug release," *J. W. Mares and S. M. Weiss*; Biomedical Engineering Society Annual Meeting, Hartford, CT, Oct. 2011.
- PO19. "Accelerated oxidation of silicon due to x-ray irradiation," *S. Bhandaru, E. X. Zhang, D. M. Fleetwood, R. A. Reed, R. A. Weller and S. M. Weiss*; Radiation Effects on Components & Systems (RADECS), Sevilla, Spain, Sept. 2011.
- PO20. "Dynamics and applications of laser-induced phase transition of VO₂ films," *V. M. Diez Blanco, J. D. Ryckman, P. Markov, S. M. Weiss, and R. F. Haglund*; Center for Nanophase Materials Sciences Annual Users Meeting, Oak Ridge National Laboratory, Oak Ridge, TN, Sept. 2011.
- PO21. "Low-energy x-ray- and ozone-exposure induced defect formation in graphene materials and devices," *E. X. Zhang, A. K. M. Newaz, S. Bhandaru, B. Wang, C. X. Zhang, D. M. Fleetwood, M. L. Alles, R. D. Schrimpf, S. T. Pantelides, S. M. Weiss, R. A. Reed, R. A. Weller, and K. I. Bolotin*; IEEE Nuclear and Space Radiation Effects Conference, Las Vegas, NV, July 2011.
- PO22. "Grating coupled waveguide biosensor based on porous silicon," *X. Wei and S. M. Weiss*; Materials Research Society Fall Meeting, Boston, MA, Nov. 2010.
- PO23. "X-ray Photoelectron Spectroscopy studies of biosensor surface chemistry," *R. R. Harl, J. L. Lawrie, S. M. Weiss, and B. R. Rogers*; 13th Topical Conference on Quantitative Surface Analysis (AVS Applied Surface Science Division), Albuquerque, NM, Oct. 2010.

- PO24. "Effect of oxygen partial pressure and annealing of permittivity-engineered ITO studied by in-situ ellipsometry," J. M. Burst, T. J. Peshek, T. A. Gessert, T. J. Coutts, X. Li, D. Levi, **S. M. Weiss**, and B. R. Rogers; 35th IEEE Photovoltaic Specialists Conference, Honolulu, HI, June 2010.
- PO25. "Nanoscale porous silicon biosensors," **S. M. Weiss (invited)**; German-American Frontiers of Science Symposium, Potsdam, Germany, June 2010.
- PO26. "An aptamer based approach to label-free biosensors in porous silicon waveguides," J. L. Lawrie, Z. Xu, P. E. Laibinis, and **S. M. Weiss**; Chemical and Biological Defense Science and Technology Conference, Dallas, TX, Nov. 2009.
- PO27. "Small molecule sensing with silicon-based photonic structures," C. Kang, X. Wei, S. T. Retterer, and **S. M. Weiss**; Center for Nanophase Materials Sciences Annual Users Meeting, Oak Ridge National Laboratory, Oak Ridge, TN, Sept. 2009.
- PO28. "Light scattering by white-emitting CdSe nanocrystals and traditional YAG:Ce³⁺ phosphor particles," J. D. Gosnell and **S. M. Weiss**; Materials Research Society Symposium, Boston, MA, Dec. 2008.
- PO29. "Synthesis of DNA oligonucleotides in mesoporous silicon," J. L. Lawrie, Z. Xu, G. Rong, P. E. Laibinis, and **S. M. Weiss**; Porous Semiconductors – Science and Technology Conference, Mallorca, Spain, Mar. 2008.
- PO30. "Biomolecule size-dependent sensitivity of porous silicon sensors," G. Rong and **S. M. Weiss**; Porous Semiconductors – Science and Technology Conference, Mallorca, Spain, Mar. 2008.
- PO31. "Influence of biomolecule size on performance of nanostructured sensing devices," G. Rong and **S. M. Weiss**; SPIE Optics East, Boston, MA, Sept. 2007.

PATENTS

- P1. **S. M. Weiss**, Y. Jiao, J. D. Ryckman, P. N. Ciesielski, G. K. Jennings, "Nanoscale porous gold film SERS template," *U.S. Patent No.: 9593981* (issued March 2017).
- P2. **S. M. Weiss**, J. D. Ryckman, M. Liscidini, and J. E. Sipe, "Direct imprinting of porous substrates," *U.S. Patent No.: 9352543* (issued May 2016).
- P3. J. W. Mares and **S. M. Weiss**, "Nanocomposite material, tunable resistor device, and method," *US Patent No.: 9231209* (issued January 2016).
- P4. G. Rong, R. L. Mernaugh, and **S. M. Weiss**, "Porous membrane waveguide sensors and sensing systems therefrom for detecting biological or chemical targets," *U.S. Patent No.: 8506887* (issued August 2013).
- P5. **S. M. Weiss**, J. D. Ryckman, C. Kang, M. Liscidini, and J. E. Sipe, "Diffraction gratings comprising porous materials and diffraction-based sensors comprising porous materials," *U.S. Patent No.: 8349617* (issued January 2013).
- P6. **S. M. Weiss**, P. M. Fauchet, and M. Molinari, "Methods for the control and elimination of the temperature dependence of the optical properties of photonic bandgap structures and systems thereof," *U.S. Patent No.: 7266284* (issued September 2007).
- P7. **S. M. Weiss**, J. D. Ryckman, and Y. Jiao, "Porous nanomaterials having three-dimensional patterning and methods of making and using the same," *US Patent Application Number 14/103,811* (filed Dec. 2013).

SPONSORED RESEARCH ACTIVITIES

The Weiss group has received >\$8.7M in support from the National Science Foundation, Army Research Office, Air Force Office of Scientific Research, and Defense Threat Reduction Agency.

NATIONAL AND INTERNATIONAL SERVICE

Advisory Boards and Professional Society Leadership

- 2016-2018 *Features Panel Member* of the Editorial Advisory Board of *Analytical Chemistry* journal
 2014-2016 *OSA Optical Biosensors Technical Group - Executive Committee, Vice Chair of Competitions*
 2013 *Technical Advisory Board Member* for Review of U.S. Army In-House Laboratory Independent Research and Surface Science Initiative Programs at Edgewood Chemical and Biological Center

Conference Organization and Responsibilities

- 2017 *Program Committee Member*, “Micro- and Nano-Photonic Devices,” CLEO, San Jose, CA, May 2017
 2016-present *Program Committee Member*, “Optical Interconnects,” IEEE Photonics Conference, Waikoloa, HI, Oct. 2016; Orlando, FL, Oct. 2017
 2016-present *Conference Co-chair*, “Frontiers in Pathogen Detection: From Nanosensors to Systems,” SPIE Photonics West, San Francisco, CA, Feb. 2016
 2014-present *Program Committee Member*, “Nanoscale Imaging, Sensing, and Actuation for Biomedical Applications,” SPIE Photonics West, San Francisco, CA, Feb. 2014
 2012-present *International Scientific Committee*, Porous Semiconductors – Science and Technology, Malaga, Spain, March 2012; Benidorm-Alicante, Spain, March 2014; Tarragona, Spain, March 2016
 2012-2013 *Organizer and Conference Chair*, “Optical and Laser-Based Approaches in Chemical and Biological Sensing,” Laser Science Conference at OSA Frontiers in Optics, Rochester, NY, Oct. 2012; Orlando, FL, Oct. 2013
 2009-2015 *Program Committee Member*, “Frontiers in Pathogen Detection: From Nanosensors to Systems,” SPIE Photonics West, San Jose/San Francisco, CA, Jan./Feb. 2009-2015
 2009-2010 *Program Committee Member*, “Photonic Microdevices/Microstructures for Sensing,” SPIE Defense, Security, and Sensing, Orlando, FL, Apr. 2009
 2007-2008 *Conference Chair*, “Active Photonic Crystals,” SPIE Optics & Photonics, San Diego, CA, Aug. 2007-2008
 2007 *Program Committee Member*, Optics of Surfaces and Interfaces VII, Alta, WY, July 2007
 2006 *Conference Co-chair*, “Tuning the Optical Response of Photonic Bandgap Structures,” SPIE Optics & Photonics, San Diego, CA, Aug. 2006
 2006 *Organizer and Chair*, FIAP-sponsored Invited Symposium, “New Applications of Silicon in Photonics and Biomedicine,” APS March Meeting, Baltimore, MD, Mar. 2006

Journal Reviewing

ACS Nano, ACS Photonics, Advanced Functional Materials, Advanced Materials, Advanced Optical Materials, Analytica Chimica Acta, Analytical Chemistry, Applied Optics, Applied Physics Letters, Applied Surface Science, Biomaterials, Biosensors and Bioelectronics, IEEE Journal of Selected Topics in Quantum Electronics, Journal of Applied Physics, Journal of Nanophotonics, Journal of Physical Chemistry, Journal of the Optical Society of America B, Langmuir, Materials, Nano Letters, Nature Communications, Nature Nanotechnology, Nature Photonics, Optical Materials, Optics Express, Optics Letters, Physica Status Solidi, Scientific Reports, Sensors and Actuators B

Review Panels

Army Research Office proposal reviewer (2011, 2012, 2014)
 Defense Threat Reduction Agency proposal reviewer (2010)
 Defense Threat Reduction Agency science review panel member for Chemical and Biological Defense
 Physical Science & Technology Basic Research Program (2008, 2009)
 Department of Energy, Office of Basic Energy Sciences proposal reviewer (2015, 2016)
 Freiburg Institute for Advanced Studies Marie Curie Fellowships (2015)
 Hong Kong Research Grants Council (2012)
 Israel Science Foundation proposal reviewer (2012, 2017)
 National Science Foundation proposal reviewer (2006-2013)
 Research Corporation Cottrell Research Grant proposal reviewer (2012)
 Technical Advisory Board member for review of U.S. Army In-House Laboratory Independent Research
 and Surface Science Initiative Programs at Edgewood Chemical Biological Center (2013)
 United States-Israel Binational Science Foundation proposal reviewer (2009)
 U.S. Civilian Research & Development Foundation proposal reviewer (2006, 2010)
 Vermont DEPSoR pre-proposal reviewer (2008)

INTRAMURAL SERVICE

University

2017 Provost's Ad Hoc Committee on Graduate Education and Research Endowment
 2016 – present Vanderbilt University Research Council
 2015 – present Chancellor's Biomedical Sciences Advisory Committee
 2015 – present Vanderbilt's Representative on Oak Ridge Associated Universities Council
 2015 – present Vanderbilt Institute of Nanoscale Science and Engineering REU Advisory Board
 2015 Ad Hoc Grievance Committee
 2014 – present Deputy Director of Vanderbilt Institute of Nanoscale Science and Engineering
 2013 Participant in NSF Advocacy Day on Capitol Hill (Washington, DC)
 2013 Faculty Seminar at Commencement 2013, "Data at the Speed of Light"
 2012 – present Chair of Vanderbilt Institute of Nanoscale Science and Engineering User Committee
 2012 – 2016 Center for Technology Transfer and Commercialization Faculty Advisory Committee
 2012 – 2014 IGPMS Executive Committee
 2012 – 2013 Member of committee tasked to help design VINSE cleanroom in TEAM building
 2012 Application evaluator for the Graduate School's Enhancing Diversity in Graduate
 Education (EDGE) Program PhD Recruitment Event
 2012 Chair of Cleanroom Assessment Committee tasked with evaluating the suitability of the
 Vanderbilt Institute of Nanoscale Science and Engineering cleanroom and core facility
 space for supporting current and future research and teaching initiatives at Vanderbilt
 2011 – 2012 Vanderbilt Institute of Nanoscale Science and Engineering REU Advisory Board
 2010 – 2013 Technology Review Committee
 2010 Dissertation Enhancement Selection Committee
 2009 – 2011 Women's Center Advisory Board
 2009 – 2010 Vanderbilt Institute of Nanoscale Science and Engineering Colloquium organizer
 2009 – 2010 Vice-chair of Graduate Faculty Council
 2008 – present Faculty advisor for graduate student chapter of Materials Research Society
 2008 Sole faculty presenter at Engineering Alumni Council Meeting
 2007 – 2012 Vanderbilt Institute of Nanoscale Science and Engineering User Committee
 2007 – 2010 Graduate Faculty Council
 2007 – 2008 Helped start student chapter of the Materials Research Society (role: faculty advisor)
 2005 – 2007 Graduate Faculty Delegate Assembly

Department

- 2016 – 2017 Physics faculty search committee
 2016 – 2017 EE faculty search committee
 2015 – 2016 Member of School of Engineering Committee on Faculty Development and Diversity
 2015 – 2016 ChBE faculty search committee
 2015 Member of Working Group on Faculty Financial Incentives Related to Research
 2014 – 2015 ChBE faculty search committee
 2013 – 2014 EE/ChBE joint faculty search committee (Nano-Energy)
 2012 – present EECS representative on the Vanderbilt Institute of Nanoscale Science and Engineering Advisory Committee (Executive Committee)
 2012 – 2014 EE Director of Graduate Studies
 2012 – 2013 Member of committee tasked to help design lab space for VUSE floor of TEAM building
 2010 – 2012 Interdisciplinary Graduate Program in Materials Science graduate admissions committee
 2010 EE faculty representative for Engineering Open House lab tour
 2009 – 2013 EE Class of 2013 faculty advisor
 2009 – 2010 EECS Lecture Series organizer
 2008 – 2009 EE faculty search committee (Optoelectronics/Signal Processing)
 2008 – 2009 Physics faculty search committee (Experimental Condensed Matter Physics)
 2008 Presentation to Industrial Advisory Board
 2006 – 2009 Advisor for ENGAGE scholars

COMMUNITY SERVICE

- Engineering Explorers Post (associated with Boy Scouts of America)
Presentations, demonstrations, and lab tours for high school students (participated multiple years)
- Governor's School for Emerging Technologies/Tennessee Tech President's Summer Science Academy
Demonstrations and lab tours for high school students (participated multiple years)
- Harpeth Hall Engineering Day
Panel discussion and demonstrations for 7th grade girls about light and sound waves and their importance for communication technologies
- Laboratory tours and demonstrations for various middle and high school students and other visitors (multiple years)
- Making Stuff (based on NOVA TV series)
Led a science café discussion about stronger, smaller, cleaner, and smarter materials that are transforming our world, and helped to organize complementary outreach presentations and demonstrations at the Nashville Public Library and Nashville Adventure Science Center
- NISE (Nanoscale Informal Science Education) Network's NanoDays
Hands-on nanoscience-themed activities for K-12 students at Nashville Adventure Science Center (participated multiple years)
- NSF RET (Research Experience for Teachers)
Presentations, demonstrations, and lab tours for high school teachers (participated multiple years)
- Summer Academy for Gifted Education
Taught one segment of nanotechnology course, including hands-on demonstrations, for high school students (participated multiple years)
- TWISTER (Tennessee Women In Science, Technology, Engineering, and Research)
Presentations and demonstrations for high school girls (participated multiple years)
- Vanderbilt Summer Academy
Presentations and demonstrations for high school students in the Introduction to Nanotechnology class (participated multiple years)

RESEARCH TRAINING AND SUPERVISION

Postdoctoral Researchers Advised

1. Jeremy Mares (9/2010 – 9/2012)
Current Employment: R&D, FARO Technologies

Doctoral Students Graduated

1. Guoguang Rong, Ph.D. in Electrical Engineering, *Label-free nanoscale biosensing using a porous silicon waveguide*, August 2008.
Current Employment: Associate Professor, School of Microelectronics, Shanghai Jiao Tong University (China)
2. Jonathan Gosnell, Ph.D. in Materials Science, *A phosphor-based light emitting diode using white-light cadmium selenide nanocrystals*, May 2010.
Current Employment: Research Scientist, Crane Micro-Optic Solutions
3. Christopher Kang, Ph.D. in Materials Science, *Multiple-Hole Defects: Optimizing Light-Matter Interaction in Photonic Crystal Cavities*, August 2011.
Current Employment: Research Scientist, Intel Corporation
4. Xing Wei, Ph.D. in Electrical Engineering, *Porous silicon waveguide biosensors with a grating coupler*, May 2012.
Current Employment: Manufacturing Engineer, Max Mobility
5. Jenifer Lawrie, Ph.D. in Materials Science, *In situ DNA synthesis in porous silicon for biosensing applications*, December 2012.
Current Employment: Faculty, Webb School of Knoxville
6. Yang Jiao, Ph.D. in Electrical Engineering, *Improved sensing performances based on nanoscale porous substrates*, May 2013.
Current Employment: Patent Engineer, King & Wood Mallesons
7. Judson Ryckman, Ph.D. in Electrical Engineering, *Porous and phase change nanomaterials for photonic applications*, May 2013 (Recipient of NSF Graduate Research Fellowship).
Current Employment: Research Scientist, Intel Corporation
8. Shweta Bhandaru, Ph.D. in Materials Science, *Material, optical, and electro-optical characterization of Si and Si-based devices under the influence of high energy radiation*, May 2015.
Current Employment: Research Scientist, GlobalFoundries
9. Petr Markov, Ph.D. in Electrical Engineering, *Hybrid silicon-vanadium dioxide modulators and transformation optics couplers for optical interconnects*, May 2015.
Current Employment: Consultant, LBMC Technologies
10. Girija Gaur, Ph.D. in Electrical Engineering, *Quantum dot integrated silicon photonic devices for optical sensor applications*, December 2015.
Current Employment: Technical Specialist, Banner & Witcoff
11. Gilbert Rodriguez, Ph.D. in Electrical Engineering. *Advanced porous silicon photonic devices for biosensing applications*, May 2016.
Current Employment: Engineer, Camgian Microsystems
12. Kelsey Beavers, Ph.D. in Materials Science. *Engineering porous silicon nanoparticles for delivery of peptide nucleic acid therapeutics*, May 2017. (co-advised by Craig Duvall, BME)
Current Employment: Program Manager, Vanderbilt Institute for Clinical and Translational Research

13. Shuren Hu, Ph.D. in Physics. *Engineering light-matter interaction in dielectric nanophotonic resonators*, May 2017.
Current Employment: Research Scientist, GlobalFoundries
14. Yiliang Zhao, Ph.D. in Materials Science., *Engineering porous silicon photonic structures towards fast and reliable optical biosensing*, May 2017.

Doctoral Students

1. Joshua Fain, Ph.D. student in Electrical Engineering.
2. Kevin Miller, Ph.D. student in Materials Science.
3. Francis Afzal, Ph.D. student in Electrical Engineering.
4. Tengfei Cao, Ph.D. student in Materials Science.
5. Vijayashree Parsi Sreenivas, Ph.D. student in Physics.
6. Sami Halimi, Ph.D. student in Electrical Engineering.
7. Landen Ryder, Ph.D. student in Electrical Engineering (co-advisor with Robert Weller, EE)

M.S. Students Graduated

1. Ran Yan, M.S. in Electrical Engineering, August 2008.
Current Employment: HL7 Interface Analyst, NightHawk Radiology
2. Sarah-Ann Michelle Harrell, M.S. in Materials Science, *Bright White Light Emission of Ultrasmall Nanocrystals for Use in Solid State Lighting*, May 2013 (co-advisor with Sandra Rosenthal, Chemistry).
Current Employment: Instructor, LEAD Academy
3. Kun Qin, M.S. in Electrical Engineering, *Slow Light Mach-Zehnder Interferometer for Optical Label-free Biosensing*, May 2014.
Current Employment: Viper Design, LLC
4. Suruj Deka, M.S. in Electrical Engineering, *Memristance Phenomenon in TiO₂-Porous Silicon Nanocomposites*, May 2015.
Current Employment: Ph.D. student, University of California at San Diego
5. M. B. Balakrishnan, M.S. in Electrical Engineering, May 2015.
Current Employment: Java Developer, Kaiser

Thesis Committee Member

1. Isom Kelly, Ph.D. student in Biomedical Engineering
2. Austin Howes, Ph.D. student in Physics
3. Nitin Muralidharan, Ph.D. student in Materials Science
4. Stanley Lo, Ph. D. student in Electrical Engineering
5. Keith Share, Ph.D. student in Materials Science
6. Rui Wang, Ph.D. student in Physics
7. Kent Hallman, Ph.D. student in Physics

8. Tu Hong, Ph.D. in Electrical Engineering, *Low dimensional materials for optoelectronic and bioelectronics applications*, May 2017.
9. Wenyi Wang, Ph.D. in Electrical Engineering, *Enhancing light-matter interaction in ultrathin films using optical nanostructures*, May 2016.
10. Wei Li, Ph.D. in Mechanical Engineering, *Photothermal and photoelectrical energy conversion in plasmonic nanostructures*, May 2016.
11. Dhiraj Prasai, Ph.D. in Materials Science, *Monolayer MoS₂ and MoS₂/Quantum Dot Hybrids: Novel Optoelectronic Materials*, December 2015.
12. Parikshit Moitra, Ph.D. in Materials Science, *Mie Resonance Based All-Dielectric Metamaterials at Optical Frequencies*, August 2015.
13. Yuanmu Yang, Ph.D. in Materials Science, *Resonant All-Dielectric Optical Metamaterials*, August 2015.
14. Jason Tucker-Schwartz, Ph.D. in Biomedical Engineering, *Development of Photothermal Optical Coherence Tomography for In Vivo Imaging of Contrast Agents*, August 2015.
15. Ying Zhu, Ph.D. in Chemistry, University of New South Wales, Australia, *Micropatterned Porous Silicon Photonic Crystal towards Microarray-based Cell Sensing*, December 2014.
16. Kyle Zufelt, M.S. in Materials Science, *Highly Efficient Infrared Photodetectors based on Plasmonic Metamaterials and Vanadium Dioxide*, December 2014.
17. Hiram Conley, Ph.D. in Physics, *Straining Two-Dimensional Materials*, August 2014.
18. Kannatassen Appavoo, Ph.D. in Materials Science, *Hybrid Phase-Changing Nanostructures: From Reconfigurable Plasmonic Devices to Ultrafast Dynamics*, December 2012.
19. Melissa Harrison, Ph.D. in Materials Science, *Heterogeneously Alloyed Semiconductor Nanocrystals with Induced Chemical Composition Gradients*, December 2012.
20. Tero Jalkanen, Ph.D. in Mathematics and Natural Sciences, University of Turku, Finland, *Porous Silicon Optical Filters in Gas Sensing Applications*, December 2012.
21. Jed Ziegler, Ph.D. in Physics, *Complex Plasmonic Behavior in Archimedean Nanospirals*, Dec. 2011.
22. Supil Raina, Ph.D. in Materials Science, *Nanodiamond Macroelectrodes and Ultramicroelectrode Arrays for Bio-Analyte Detection*, December 2011.
23. Joyeeta Nag, Ph.D. in Physics, *The Solid-Solid Phase Transition in Vanadium Dioxide Thin Films: Synthesis, Physics and Application*, May 2011.
24. Zhou Xu, Ph.D. in Chemical and Biomolecular Engineering, *Engineered Microarrayed Surfaces for the Detection of Biomolecules*, May 2011.
25. Davon Ferrera, Ph.D. in Physics, *Plasmonic Interactions in Gold:Vanadium Dioxide Hybrid Nanostructures*, May 2011.
26. Xuan-Anh Celestina LeQuan, Ph.D. in Electrical Engineering, *Research and Development of Sub-Micron Gap Nanodiamond Lateral Field Emission Diodes*, December 2010.
27. Peter Ciesielski, Ph. D. in Materials Science, *Photosystem I-Based Systems for Photoelectrochemical Energy Conversion*, December 2010.
28. Jim Burst, Ph.D. in Materials Science, *Permittivity-engineered transparent conducting tin oxide thin films: from deposition to photovoltaic applications*, August 2010.

29. Michael Schreuder, Ph.D. in Chemistry, *Ultrasmall, white-light CdSe nanocrystals: Ligand effects and incorporation into solid-state lighting*, May 2010.
30. Andrej Halabica, Ph.D. in Physics, *Coherent acoustic phonons in metal/dielectric superlattices*, December 2009.
31. Mekha George, Ph.D. in Chemical Engineering, *Studies of ultrahigh temperature ceramic composite components: Synthesis and characterization of HfO_xC_y and Si oxidation in atomic oxygen containing environments*, August 2008.
32. Eugene Donev, Ph.D. in Physics, *Metal-semiconductor transitions in nanoscale vanadium dioxide thin films, subwavelength holes, and nanoparticles*, December 2008.
33. Jarid J. Crochet, Ph.D. in Materials Science, *Charge and energy transfer dynamics in single-wall carbon nanotube ensembles*, December 2007.
34. Yong Mui Wong, Ph.D. in Electrical Engineering, *Aligned carbon nanotubes vacuum field emission devices*, December 2006.

Undergraduate Student Research Supervision

1. Crystal Nattoo, Vanderbilt Institute of Nanoscale Science and Engineering (VINSE) REU, Low-cost and portable porous silicon sensors, Summer 2017.
2. Bao Nguyen, Vanderbilt School of Engineering Summer Undergraduate Research Experience, Design of silicon-vanadium dioxide photonic structures for improved optical signal modulation, Summer 2017.
3. Yasmin Graham, Vanderbilt Institute of Nanoscale Science and Engineering (VINSE) REU, Porous silicon annular Bragg resonators, Summer 2016. [Note: 1st place poster prize winner at REU poster session at Vanderbilt]
4. Michael Lucia, Vanderbilt School of Engineering Summer Undergraduate Research Experience and Independent study (EECE 3850), Electrochemically functionalized nickel oxide-porous silicon pseudocapacitors, Summer-Fall 2016.
5. Bradley Bark, Independent study (EECE 3850), Photonic design and thermal management of hybrid silicon-vanadium dioxide optical modulators, Spring 2016, Fall 2016.
6. Alyssa Cartwright, Vanderbilt Institute of Nanoscale Science and Engineering (VINSE) REU, Porous silicon nanobeam biosensors, Summer 2015. [Note: A. Cartwright was awarded a NSF Graduate Fellowship]
7. Nicholas French, Vanderbilt Undergraduate Student Research Program (VUSRP), Analysis of piezoelectric response of multifunctional ZnO-porous silicon nanoparticles, Summer 2015.
8. Edward Lauber, Vanderbilt School of Engineering Summer Undergraduate Research Experience, Design, fabrication and characterization of porous silicon biosensors, Summer 2015.
9. Gabrielle Tate, Independent study (EECE 203, EECE 3851), Nickel oxide and carbon functionalized porous silicon pseudocapacitors, Spring 2015, Fall 2015.
10. Efreem Beraki, Vanderbilt Institute of Nanoscale Science and Engineering (VINSE) REU, Porous silicon membrane biosensors, Summer 2014.
11. Christian Vogel, Independent study (EECE 203), Tuning the dielectric function of nanoporous gold for SERS applications, Spring 2014.
12. Caroline Henley, Independent study (EECE 203), Investigation of nickel oxide functionalized porous silicon for supercapacitor and pseudocapacitor applications, Fall 2013-Fall 2014.

13. John Lonai, Vanderbilt Institute of Nanoscale Science and Engineering (VINSE) REU, Investigation of Bloch sub-surface waves in porous silicon, Summer 2013.
14. Suruj Deka, Vanderbilt Undergraduate Student Research Program (VUSRP), Independent study research, Nanocomposite materials for analogy memory, Summer 2013-Spring 2015.
15. John Lantz, Independent study (EECE 203), Fabrication and characterization of nanoscale silicon / metal oxide composites for variable resistance applications, Fall 2012.
16. Robert Lee Fuller, Vanderbilt Institute of Nanoscale Science and Engineering (VINSE) REU, Real-time sensing measurements using flow-cell integrated nanoscale porous silicon, Summer 2012.
17. Jeremiah Haley, Vanderbilt School of Engineering Summer Undergraduate Research Experience, Fabrication and characterization of stamped porous silicon particles, Summer 2012.
18. Dylan McQuaide, Vanderbilt Undergraduate Student Research Program (VUSRP), Integration of porous silicon diffraction grating with microfluidic system, Summer 2011.
19. Joshua Fain, Independent study (EECE 204) and Vanderbilt School of Engineering Summer Undergraduate Research Experience, NiO sol-gel deposition on porous silicon for gas sensing and memristor applications, Spring 2011-Spring 2012. [Note: J. Fain was awarded a NSF Graduate Fellowship]
20. Tyler Whittle, Vanderbilt Undergraduate Student Research Program (VUSRP), Design and characterization of hybrid silicon-vanadium dioxide active modulators, Summer 2010 – Spring 2011.
21. Matthew Greenhall, Vanderbilt School of Engineering Summer Undergraduate Research Experience, Investigation of porosity and thickness dependence of porous silicon corrosion upon DNA hybridization, Summer 2010.
22. Parker Gould, Independent study (EECE 204), Microcontact printing using porous silicon stamps, Spring 2010-Spring 2011. [Note: P. Gould was awarded a Goldwater Scholarship and a NSF Graduate Fellowship]
23. Abdul Hanis Ramli, Independent study (EECE 204), Characterization of micro-imprinted porous gratings, Spring-Summer 2010.
24. Chris Phare, Independent study (PHYS 291A), FDTD simulations of photonic crystals, Fall 2009, Fall 2010-Spring 2011 (Physics Honors Thesis: “Perturbation Theory for Thin Cladding Layers on Silicon Photonic Systems”). [Note: C. Phare was awarded a NSF Graduate Fellowship while under my supervision].
25. Troy Brown, NSF REU, Interferometric lithography for grating fabrication, Summer 2009.
26. Farah Farhana Iskandar, Vanderbilt Undergraduate Student Research Program (VUSRP) and Independent study (EECE 203), Investigation of binding kinetics in porous silicon biosensors, Summer-Fall 2009.
27. Lutalo Webb, Independent study (EECE 204), Metal-cladded porous silicon waveguides and enhanced surface plasmon resonance sensors, Spring 2009.
28. Amelia Cousins, Independent study (EECE 204), Interferometric lithography for the fabrication of subwavelength gratings, Spring 2009.
29. Clinton Brooke Van Dusen, Communications of Science and Technology Internship, Polishing treatment to enlarge nanoscale pore openings, Fall 2008.
30. Ryan Gunn, Independent study (MSE 209C, EECE 204), Fabrication of porous silicon membranes, Fall 2008 and Spring 2009.

31. Aminah Hamzah, Vanderbilt Undergraduate Student Research Program (VUSRP) and Independent study (EECE 203, EECE 204), Quantum dot infiltration dynamics in porous silicon, Summer 2008 - Fall 2009.
32. Dayana Abd Rahman, Vanderbilt School of Engineering Summer Undergraduate Research Experience and Independent Study (EECE 203), Investigation of DNA synthesis in porous silicon biosensors, Summer 2008 – Fall 2008.
33. Miguel Roncal, Independent study (EECE 204), Optimization of lithographically defined silicon waveguides, Spring 2008.
34. Judson Ryckman, Vanderbilt School of Engineering Summer Undergraduate Research Experience, Porous silicon-based CdSe nanocrystal LED; Independent study (EECE 203, EECE 204), Development of porous alumina mask for n-type porous silicon, Summer 2007 - Spring 2008. [Note: J. Ryckman was awarded a NSF Graduate Fellowship]
35. Anne Killough, Independent study (EECE 203), Enhanced light extraction from light emitting nanocrystals, Fall 2007.
36. Nicolas Bouchonville (France), Research internship, Chemical modification of porous silicon, Summer 2007.
37. Azreena Ahmad Shukri, Vanderbilt Undergraduate Student Research Program (VUSRP), Encapsulated CdSe nanocrystals as white-light phosphors, Summer 2007.
38. Brian Auerbach, Independent study (EECE 204), Design of LabView interface for spectroscopy equipment, Spring 2007.
39. Talbot Hansum, Independent study (BME 240), Structuring porous silicon for drug delivery applications; Vanderbilt Undergraduate Student Research Program (VUSRP) and Independent study (EECE 204), Characterization, structuring, and applications of n-type porous silicon, Spring 2006 - Spring 2007.
40. Alex Stramel, Independent study (EECE 204, EECE 203, MSE 209C), Fabrication and optimization of porous silicon-based LED structures using efficient light emitting nanocrystals, Spring 2006 - Spring 2007.
41. David Harju, Vanderbilt School of Engineering Summer Undergraduate Research Experience and Independent study (EECE 203), Fabrication, characterization, and testing of silicon-based LEDs with nanocrystals, Summer 2006 – Fall 2006.
42. Joseph Zadrozny (Virginia Tech), NSF-IGERT REU, Investigation of non-complementary binding in porous silicon biosensors, Summer 2006.
43. William Blake Hooper, Independent study (PHYS 291), Polycrystalline diamond as a photonic band gap material, Spring 2006.

High School Student/Teacher Research Supervision

1. James Kyne, Cost-effective SERS substrates using stamped nanoporous gold, Spring 2015-Fall 2015.
2. Caleb Swartz, Investigation of PNA bioreceptors for porous silicon biosensing applications, Summer 2013 (teacher).
3. Nishant Biswas, Colorful porous silicon Bragg reflectors for K-12 outreach, Summer 2011.

TEACHING EXPERIENCE

- EECE 233/3233
Electromagnetics This course is an advanced undergraduate course that is mandatory for all Electrical Engineering majors. The course covers concepts in electrostatics, magnetostatics, and electromagnetics that are derived from Maxwell's equations.
Fall 2009, Fall 2010, Fall 2012, Fall 2013, Fall 2014, Fall 2015
- EECE 252
Signal Processing & Communications This course is an advanced undergraduate course. The course covers fundamental principles of analog, digital, and optical communications systems.
Spring 2006, Spring 2007, Spring 2008, Spring 2009
- EECE 291/292/288
EECE 4288/5288
Optoelectronics This senior level undergraduate/graduate class was developed in Fall 2006 to add diversity to the EECS curriculum at the intersection of electronic and photonic devices. The course covers electromagnetics fundamentals, waveguides, dispersion, attenuation, coupling mechanisms and methods, lasers, modulators, detectors, and other electro-optic devices.
Fall 2006, Fall 2008, Spring 2010, Spring 2011, Spring 2013, Spring 2015, Spring 2017
- EECE 395
Photonic Crystals This graduate course was developed in Fall 2005 to add diversity to the EECS curriculum in the area of photonics. The course covers photonic crystal theory, fabrication techniques (semiconductor lithography and chemical self-assembly), and device applications including optical switches, lasers, and biosensors.
Fall 2005, Fall 2007
- EECE 395/8396
Nanophotonic Structures This graduate course was developed in Spring 2012 to add depth to the EECS curriculum in the area of photonics. The course covers basic concepts and applications of nano- and micro-scale photonic components, including thin film optical structures, waveguide-based structures, and photonic crystals for photonic and optoelectronic circuits, biotechnology, and photovoltaic applications.
Spring 2012, Spring 2016