

Dr. Sharon M. Weiss

Curriculum Vitae

December 2022

Cornelius Vanderbilt Professor of Electrical
Engineering, Physics, and Materials Science
Director, Vanderbilt Institute of Nanoscale
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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 and Computer Engineering, Nashville, TN

Cornelius Vanderbilt Chair in Engineering, February 2017 – Present

Professor of Electrical Engineering, July 2016 – Present

Associate Professor of Electrical Engineering, September 2011 – June 2016

Assistant Professor of Electrical Engineering, September 2005 – September 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 – September 2011

Vanderbilt University, Interdisciplinary Materials Science Program, Nashville, TN

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

Member, September 2005 - Present

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

Director, July 2019 – Present

Deputy Director, July 2014 – June 2019

Member, September 2005 – June 2014

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

- 2022* SPIE Optics and Photonics Education Scholarship to Simon Ward
- 2022* Honorable mention, Division of Laser Science Student Poster Contest, Kellen Arnold, Conference on Lasers and Electro-Optics, San Jose, CA
- 2022* C. F. Chen Best Paper Award in Electrical Engineering at Vanderbilt Univ., Simon Ward
- 2022* 1st Place Poster Award, K. P. Arnold et al., ECE Day, Vanderbilt Univ., Nashville, TN
- 2022* Lehman Prize for Best Talk of the Conference, Rabeb Layouni et al., Porous Semiconductors – Science and Technology Conference, Lido di Camaiore, Italy
- 2022 Fellow, American Association for the Advancement of Science (AAAS)
- 2021* Best Student Presentation Award, Kellen Arnold et al., Joint Nanoscience and Neutron Scattering User Meeting at Oak Ridge National Laboratory, Oak Ridge, TN
- 2020* Best Student Presentation Award, Joshua Allen et al., Center for Nanophase Materials Sciences User Meeting at Oak Ridge National Laboratory, Oak Ridge, TN
- 2019 Vanderbilt Chancellor's Award for Research
- 2018 Fellow, The International Society for Optical Engineering (SPIE)
- 2018 Fellow, The Optical Society (OSA)
- 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
- 2016 Vanderbilt Institute of Nanoscale Science and Engineering Distinguished Service Award
- 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

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

PUBLICATIONS

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

Refereed Journal Articles

- J1. L. D. Ryder, R. D. Schrimpf, R. A. Reed, and **S. M. Weiss**, “Radiation-induced transient response mechanisms in photonic waveguides,” *IEEE Trans. Nucl. Sci.* **69**, 546 - 557 (2022). doi: 10.1109/TNS.2022.3149993
- J2. S. Hu, M. Khater, E. Kratschmer, S. Engelmann, W. M. J. Green, and **S. M. Weiss**, “Photonic metacrystal: Design methodology and experimental characterization,” *Opt. Express* **30**, 7612-7624 (2022). doi: 10.1364/OE.448151
- J3. K. P. Arnold, S. I. Halimi, J. A. Allen, S. Hu, and **S. M. Weiss**, “Photonic crystals with split ring unit cells for subwavelength light confinement,” *Opt. Lett.* **47**, 661-664 (2022). doi: 10.1364/OL.446489
- J4. R. Layouni, T. Cao, M. B. Coppock, P. E. Laibinis, and S. M. Weiss, “Peptide-based capture of chikungunya virus E2 protein using porous silicon biosensor,” *Sensors* **21**, 8248 (2021). doi: 10.3390/s21248248
- J5. L. D. Ryder, K. L. Ryder, A. L. Sternberg, J. A. Kozub, A. Khachatrian, S. P. Buchner, D. McMorro J. M. Hales, Y. Zhao, L. Wang, C. Wang, R. A. Weller, R. D. Schrimpf, **S. M. Weiss**, and R. A. Reed, “Simulation of pulsed laser-induced testing in microelectronic devices,” *IEEE Trans. Nucl. Sci.* **68**, 2496-2507 (2021). doi: 10.1109/TNS.2021.3111864
- J6. S. Arshavsky-Graham, S. J. Ward, N. Massad-Ivanir, T. Scheper, **S. M. Weiss**, and E. Segal, “Porous silicon-based aptasensors: Toward cancer protein biomarker detection,” *ACS Meas. Sci. Au* **1**, 82-94 (2021). doi: 10.1021/acsmesuresciau.1c00019
- J7. S. J. Ward, R. Layouni, S. Arshavsky-Graham, E. Segal, and **S. M. Weiss**, “Morlet wavelet filtering and phase analysis to reduce the limit of detection for thin film optical biosensors,” *ACS Sens.* **6**, 2967-2978 (2021). doi: 10.1021/acssensors.1c00787
- J8. L. D. Ryder, K. L. Ryder, A. L. Sternberg, J. A. Kozub, E. X. Zhang, D. Linten, K. Croes, R. A. Weller, R. D. Schrimpf, **S. M. Weiss**, and R. A. Reed, “Single event transient response of vertical and lateral waveguide-integrated germanium photodiodes,” *IEEE Trans. Nucl. Sci.* **68**, 801-806 (2021). doi: 10.1109/TNS.2021.3060349

- J9. K. L. Ryder, L. D. Ryder, A. L. Sternberg, J. A. Kozub, E. X. Zhang, S. D. LaLumondiere, D. M. Monahan, J. P. Bonsall, A. Khachatryan, S. P. Buchner, D. P. Mcmorrow, J. M. Hales, Y. Zhao, L. Wang, C. Wang, R. A. Weller, R. D. Schrimpf, **S. M. Weiss**, and R. A. Reed, "Comparison of single event transients in an epitaxial silicon diode resulting from heavy ion-, focused X-ray- and pulsed laser-induced charge generation," *IEEE Trans. Nucl. Sci.* **68**, 626-633 (2021). doi: 10.1109/TNS.2021.3060339
- J10. M. He, S. I. Halimi, T. G. Folland, S. S. Sunku, S. Liu, J. H. Edgar, D. N. Basov, **S. M. Weiss**, J. D. Caldwell, "Guided mid-IR and near-IR light within a hybrid hyperbolic-material/silicon waveguide heterostructure," *Adv. Mater.* **33**, 2004305 (2021). doi: 10.1002/adma.202004305
- J11. K. A. Hallman, K. J. Miller, A. Baydin, **S. M. Weiss**, and R. F. Haglund, "Sub-picosecond response time of a hybrid VO₂:silicon waveguide at 1550 nm," *Adv. Opt. Mater.* **9**, 2001721 (2021). doi: 10.1002/adom.202001721
- J12. R. Layouni, M. Dubrovsky, M. Bao, H. Chung, K. Du, S. V. Boriskina, **S. M. Weiss***, and D. Vermeulen, "High contrast cleavage detection for enhancing porous silicon sensor sensitivity," *Opt. Express* **29**, 412469 (2021). doi: 10.1364/OE.412469 [* co-corresponding author]
- J13. S. I. Halimi, Z. Fu, F. O. Afzal, J. A. Allen, S. Hu, and **S. M. Weiss**, "Controlling the mode profile of photonic crystal nanobeam cavities with mix-and-match unit cells," *J. Opt. Soc. B* **37**, 3401-3408 (2020). doi: 10.1364/JOSAB.398574
- J14. F. O. Afzal, Y. Bian, B. Peng, S. Hu, A. Aboketaf, K. Dezfulian, K. Nummy, A. Stricker, C. Hedges, Z. Sowinski, M. Rakowski, W. S. Lee, R. Augur, D. Riggs, K. Giewont, and **S. M. Weiss**, "O-band subwavelength grating filters in a monolithic photonics technology," *IEEE Photon. Technol. Lett.* **32**, 1207-1210 (2020). doi: 10.1109/LPT.2020.3017096
- J15. I. B. Kelly, R. B. Fletcher, **S. M. Weiss**, and C. L. Duvall, "Tuning composition of polymer and porous silicon composite nanoparticles for early endosome escape of anti-miRNA peptide nucleic acids," *ACS Appl. Mater. Interfaces* **12**, 39602-39611 (2020). doi: 10.1021/acsmi.0c05827
- J16. L. D. Ryder, K. L. Ryder, A. L. Sternberg, J. A. Kozub, H. Gong, E. X. Zhang, D. Linten, J. Mitard, R. A. Weller, R. D. Schrimpf, **S. M. Weiss**, and R. A. Reed, "Polarization dependence of pulsed laser-induced SEEs in SOI FinFETs," *IEEE Trans. Nucl. Sci.* **67**, 38-43 (2020). doi: 10.1109/TNS.2019.2956911
- J17. K. L. Ryder, L. D. Ryder, A. L. Sternberg, J. A. Kozub, E. Zhang, A. Khachatryan, S. P. Buchner, D. P. Mcmorrow, J. M. Hales, Y. Zhao, L. Wang, C. Wang, R. A. Weller, R. D. Schrimpf, **S. M. Weiss**, and R. A. Reed, "Comparison of sensitive volumes associated with ion- and laser-induced charge collection in an epitaxial silicon diode," *IEEE Trans. Nucl. Sci.* **67**, 57-62 (2020). doi: 10.1109/TNS.2019.2943472
- J18. R. Layouni, M. H. Choudhury, P. E. Laibinis, and **S. M. Weiss**, "Thermally carbonized porous silicon for robust label-free DNA optical sensing," *ACS Appl. Bio Mater.* **3**, 622-627 (2020). doi: 10.1021/acsbm.9b01002
- J19. G. A. Rodriguez, D. Aurelio, M. Liscidini, and **S. M. Weiss**, "Bloch surface wave ring resonator based on porous silicon," *Appl. Phys. Lett.* **115**, 011101 (2019). doi: 10.1063/1.5093435 [Selected as an Editor's Pick]
- J20. T. Cao, Y. Zhao, C. A. Nattoo, R. Layouni, and **S. M. Weiss**, "A smartphone biosensor based on analysing structural colour of porous silicon," *Analyst* **144**, 3942-3948 (2019). [Note: C. Nattoo was an undergraduate student] doi: 10.1039/C9AN00022D [Selected for *Analyst* Recent HOT articles collection]

- J21. F. O. Afzal, J. M. Petrin, and **S. M. Weiss**, “Camera detection and modal fingerprinting of photonic crystal nanobeam resonances,” *Opt. Express* **27**, 14623-14634 (2019). [Note: J. M. Petrin was an undergraduate student] doi: 10.1364/OE.27.014623
- J22. G. A. Rodriguez, P. Markov, A. P. Cartwright, M. H. Choudhury, F. O. Afzal, T. Cao, S. I Halimi, S. T. Retterer, I. I. Kravchenko, and **S. M. Weiss** “Photonic crystal nanobeam biosensors based on porous silicon,” *Opt. Express* **27**, 9536-9549 (2019). [Note: A. P. Cartwright was an undergraduate student] doi: 10.1364/OE.27.009536
- J23. F. O. Afzal, S. I. Halimi, and **S. M. Weiss**, “Efficient side-coupling to photonic crystal nanobeam cavities via state-space overlap,” *J. Opt. Soc. B* **36**, 585-595 (2019). doi:10.1364/JOSAB.36.000585
- J24. S. Arshavsky-Graham, N. Massad-Ivanir, E. Segal, and **S. M. Weiss**, “Porous silicon-based photonic biosensors: Current status and emerging applications,” *Anal. Chem.* **91**, 441-467 (2019). doi: 10.1021/acs.analchem.8b05028
- J25. S. I. Halimi, S. Hu, F. O. Afzal, and **S. M. Weiss**, “Realizing high transmission intensity in photonic crystal nanobeams using a side-coupling waveguide,” *Opt. Lett.* **43**, 4260-4263 (2018). doi: 10.1364/OL.43.004260
- J26. G. Gaur, S. Hu, R. L. Mernaugh, I. I. Kravchenko, S. T. Retterer, **S. M. Weiss**, “Label-free detection of Herceptin® using suspended silicon microring resonators,” *Sens. Act. B* **275**, 394-401 (2018). doi: 10.1016/j.snb.2018.07.081
- J27. S. Hu, M. Khater, R. Salas-Montiel, E. Kratschmer, S. Engelmann, W. M. J. Green, and **S. M. Weiss**, “Experimental realization of deep subwavelength confinement in dielectric optical resonators,” *Science Adv.* **4**, eaat2355 (2018). doi: 10.1126/sciadv.aat2355 [Featured in Nature Research Highlight, Aug 31, 2018]
- J28. K. J. Miller, R. F. Haglund, and **S. M. Weiss**, “Optical phase change materials in integrated silicon photonic devices: Review” *Opt. Mater. Express* **8**, 2415-2429 (2018). doi: 10.1364/OME.8.002415 [Highlighted as Editor’s Pick]
- J29. S. M. Lo, J. Y. Lee, **S. M. Weiss**, and P. M. Fauchet, “Bloch mode selection in silicon photonic crystal microring resonators,” *Opt. Lett.* **43**, 2957-2960 (2018). doi: 10.1364/OL.43.002957
- J30. H. Gong, K. Ni, E. X. Zhang, A. L. Sternberg, J. A. Kozub, K. L. Ryder, R. F. Keller, L. D. Ryder, **S. M. Weiss**, R. A. Weller, M. L. Alles, R. A. Reed, D. M. Fleetwood, R. D. Schrimpf, A. Vardi, and J. A. del Alamo, “Scaling effects on single-event transients in InGaAs FinFETs,” *IEEE Trans. Nucl. Sci.* **65**, 296-303 (2018). doi: 10.1109/TNS.2017.2778640
- J31. S. Hu and **S. M. Weiss**, “Extreme light concentration in a dielectric cavity,” *Optics & Photonics News*, **28** (12), 57 (2017). [Selected for *Optics in 2017* special issue]
- J32. K. J. Miller, K.A. Hallman, R. F. Haglund, and **S. M. Weiss**, “Silicon waveguide optical switch with embedded phase change material,” *Opt. Express* **25**, 26527-26536 (2017). doi: 10.1364/OE.25.026527
- J33. 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
- J34. 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

- J35. S. Hu and **S. M. Weiss**, “Design of photonic crystal cavities for extreme light concentration,” *ACS Photon.* **3**, 1647–1653 (2016). doi: 10.1021/acsphotonics.6b00219
- J36. 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
- J37. 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
- J38. 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
- J39. 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
- J40. 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
- J41. 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
- J42. 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
- J43. 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
- J44. 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
- J45. 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/acsphotonics.5b00244
- J46. 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
- J47. 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
- J48. 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

- J49. 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.
- J50. 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
- J51. 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
- J52. 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
- J53. 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
- J54. 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
- J55. 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
- J56. 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
- J57. 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]
- J58. 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
- J59. 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
- J60. 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
- J61. 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
- J62. 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

- J63. 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
- J64. 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
- J65. 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
- J66. 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
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- C46. 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).

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- C48. J. E. Sipe, J. D. Ryckman, **S. M. Weiss**, and M. Liscidini, "Enhancement of diffraction-based biosensing using porous structures and electromagnetic surface states," *Proc. of SPIE* **7553**, 75530M (2010).
- C49. 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.
- C50. 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).
- C51. 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).
- C52. 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).
- C53. 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).
- C54. 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).
- C55. C. Kang and **S. M. Weiss**, "Photonic crystal defect tuning for optimized light-matter interaction," *Proc. of SPIE* **7031**, 70310G (2008).
- C56. G. Rong and **S. M. Weiss**, "Influence of biomolecule size on performance of nanostructured sensing devices" *Proc. of SPIE* **6769**, 676909 1-10 (2007).
- C57. 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).
- C58. 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]
- C59. G. Rong and **S. M. Weiss**, "Optical DNA sensing based on resonant porous silicon structures," *Proc. of SPIE* **6477**, 647717 1-11 (2007).
- C60. 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).
- C61. 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).
- C62. 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).
- C63. **S. M. Weiss**, "Porous silicon waveguide biosensors," *IEEE LEOS*, 310-311 (2006).

- C64. **S. M. Weiss** and P. M. Fauchet, "Active building blocks for silicon photonic devices," *Proc. of SPIE* **6017**, 60170H 1-9 (2005).
- C65. 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).
- C66. 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).
- C67. **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).
- C68. 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).
- C69. **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).
- C70. **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).
- C71. **S. M. Weiss** and P. M. Fauchet, "Electrically tunable silicon-based mirrors," *Proc. of SPIE* **4654**, 36-44 (2002).
- C72. 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).

Proceedings Edited

- E1. Frontiers in Biological Detection: From Nanosensors to Systems XIV, *Prof. of SPIE* **11979**, A. Danielli, B. L. Miller, and **S. M. Weiss**, editors, 2022.
- E2. Frontiers in Biological Detection: From Nanosensors to Systems XIII, *Prof. of SPIE* **11662**, A. Danielli, B. L. Miller, and **S. M. Weiss**, editors, 2021.
- E3. Frontiers in Biological Detection: From Nanosensors to Systems XII, *Prof. of SPIE* **11258**, A. Danielli, B. L. Miller, and **S. M. Weiss**, editors, 2020.
- E4. Frontiers in Biological Detection: From Nanosensors to Systems XI, *Prof. of SPIE* **10895**, A. Danielli, B. L. Miller, and **S. M. Weiss**, editors, 2019.
- E5. Frontiers in Biological Detection: From Nanosensors to Systems X, *Prof. of SPIE* **10510**, A. Danielli, B. L. Miller, and **S. M. Weiss**, editors, 2018.
- E6. Frontiers in Biological Detection: From Nanosensors to Systems IX, *Prof. of SPIE* **10081**, A. Danielli, B. L. Miller, and **S. M. Weiss**, editors, 2017.
- E7. Frontiers in Biological Detection: From Nanosensors to Systems VIII, *Prof. of SPIE* **9725**, B. L. Miller, B. T. Cunningham, A. Danielli, G. L. Liu, and **S. M. Weiss**, editors, 2016.
- E8. Active Photonic Crystals II, *Proc. of SPIE* **7031**, **Sharon M. Weiss**, Ganapathi S. Subramania, and Florencio Garcia-Santamaria, editors, 2008.
- E9. Active Photonic Crystals, *Proc. of SPIE* **6640**, **Sharon M. Weiss**, Ganapathi S. Subramania, and Florencio Garcia-Santamaria, editors, 2007.

- E10. Tuning the Optic Response of Photonic Bandgap Structures III, *Proc. of SPIE* **6322**, Paul V. Braun and **Sharon M. Weiss**, editors, 2006.

Invited Talks

- IT1. “Integration of optical phase change materials in on-chip silicon photonic devices,” *Materials Research Society (MRS) Spring Meeting*, San Francisco, CA, April 2023.
- IT2. “Nanoscale porous silicon optical biosensors: The role of the bioreceptor,” Chemistry & Biochemistry Department Seminar, Texas Christian University, Fort Worth, TX, Nov. 2022.
- IT3. “Exploring light-matter interaction using on-chip photonics with subwavelength engineered features,” *The College of Optics and Photonics (CREOL) Colloquium*, University of Central Florida, Orlando, Florida, Oct. 2022.
- IT4. “Exploring light-matter interaction using on-chip photonics with subwavelength engineered features: from optical interconnects to optical trapping and biosensing applications,” *NNCI Nano + Additive Manufacturing Summit*, Louisville, KY, Aug. 2022.
- IT5. “Photonic crystals with deep subwavelength features fabricated in a monolithic silicon photonics technology for integrated photonics applications,” *GLOBALFOUNDRIES Technical Community Talk*, virtual presentation, June 2022.
- IT6. “Silicon-based optical biosensors: From on-chip to portable diagnostics,” *University of Houston ECE Seminar*, virtual presentation, Nov. 2021.
- IT7. “Porous silicon optical biosensors: Advances to achieve lower detection limits in complex media,” *IEEE Research and Applications of Photonics in Defense Conference (RAPID)*, virtual presentation, Aug. 2021.
- IT8. “Advances in integrated photonics through subwavelength engineering and integration of phase change materials,” *AIM Photonics Seminar Series*, virtual presentation, July 2021.
- IT9. “Advances in integrated photonics through subwavelength engineering,” *Electron, Ion, and Photon Beam Technology and Nanofabrication Conference (EIPBN, 3-Beams)*, virtual presentation, June 2021. [**Keynote**]
- IT10. “Silicon-based optical biosensors,” *Student-selected Stanford University OSA/SPIE Chapter Seminar*, virtual presentation, Dec. 2020.
- IT11. “Exploiting subwavelength engineering and optical phase change materials for improved performance metrics in integrated photonics,” *GLOBALFOUNDRIES Technical Community Talk*, virtual presentation, Oct. 2020.
- IT12. “Advances in integrated photonics through subwavelength engineering and integration of phase change materials,” *National Institute of Standards and Technology (NIST)*, virtual presentation, Sept. 2020.
- IT13. “Integrating optical phase change materials on silicon photonic components for improved performance,” *SPIE Optics & Photonics*, virtual presentation, Aug. 2020. [**Keynote**]
- IT14. “Control of light through the addition of deep subwavelength features in photonic crystals,” *Conference on Lasers and Electro-Optics (CLEO)*, virtual presentation, May 2020.
- IT15. “Exploring the degrees of freedom in photonic crystal unit cell design and their impact,” *SPIE Photonics West*, San Francisco, CA, Feb. 2020.
- IT16. “Use of peptide capture agents in porous silicon biosensors,” *SPIE Photonics West*, San Francisco, CA, Feb. 2020. (Authors: S. M. Weiss, R. Layouni, T. Cao, M. B. Coppock, and P. E. Laibinis)

- IT17. Subwavelength engineering of photonic crystal unit cell to enable advanced functionality,” *IEEE RAPID*, Miramar Beach, FL, Aug. 2019. (Authors: S. M. Weiss and S. Hu)
- IT18. “Silicon optical biosensors: Opportunities and challenges in integration, sensitivity, and robustness,” *Russell Berrie Nanotechnology Institute Seminar*, Technion – Israel Institute of Technology, Haifa, Israel, April 2019.
- IT19. “Enabling extreme light-matter interaction in silicon through subwavelength engineering,” *Bar-Ilan Institute of Nanotechnology and Advanced Materials Seminar*, Bar-Ilan University, Ramat Gan, Israel, April 2019.
- IT20. “On-chip silicon photonic biosensors,” *OASIS 7*, Tel Aviv, Israel, April 2019.
- IT21. “Achieving ultra-high energy density in on-chip photonic resonators,” *Institute of Optics Colloquium*, University of Rochester, Rochester, NY, March 2019.
- IT22. “Optical phase change materials in integrated silicon photonic devices,” *SPIE Photonics West*, San Francisco, CA, Feb. 2019 (Authors: S. M. Weiss and R. F. Haglund).
- IT23. “Porous silicon sensors: From on-chip to mobile diagnostics,” *SPIE Photonics West*, San Francisco, CA, Feb. 2019.
- IT24. “Leveraging optical phase change materials on silicon photonic devices,” *Laboratory for Physical Sciences Seminar*, Laboratory for Physical Sciences and University of Maryland, College Park, MD, Nov. 2018.
- IT25. “Deep-subwavelength confinement in dielectric optical resonators,” *Applied Physics Seminar*, University of Georgia, Athens, GA, Oct. 2018.
- IT26. “Leveraging optical phase change materials on silicon photonic devices,” *Department of Physics and Astronomy Colloquium*, University of Georgia, Athens, GA, Oct. 2018.
- IT27. “Exploiting light-matter interaction in silicon photonics for biosensing,” *Fitzpatrick Institute for Photonics Seminar Series*, Duke University, Durham, NC, Sept. 2018.
- IT28. “Optical signal modulation in hybrid silicon-vanadium dioxide photonic structures,” *SPIE Photonics West*, San Francisco, CA, Jan. 2018 (Authors: S. M. Weiss and R. F. Haglund).
- IT29. “Exploiting light-matter interaction in silicon photonics for biosensing,” *Physics Department Seminar Series*, University of Pavia, Pavia, Italy, Nov. 2017.
- IT30. “Exploiting light-matter interaction in silicon photonics for biosensing,” *IEEE Photonics Society Seminar Series*, Sapienza University of Rome, Rome, Italy, Nov. 2017.
- IT31. “Engineering light-matter interaction in silicon,” *IBM Physical Sciences Seminar*, Yorktown Heights, NY, Sept. 2017.
- IT32. “Engineering light-matter interaction in silicon,” *Air Force Research Laboratory*, Wright-Patterson Air Force Base, OH, Aug. 2017.
- IT33. “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).
- IT34. “Nanostructured silicon optical biosensors: A versatile platform for molecular detection,” *Army Research Lab*, Adelphi, MD, May 2017.
- IT35. “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.

- IT36. “Exploiting light-matter interaction in silicon photonics for biosensing,” *Physics Seminar Series*, Sewanee The University of the South, Sewanee, TN, Mar. 2017.
- IT37. “Control of light through photonic crystal unit cell design,” *SPIE Photonics West*, San Francisco, CA, Jan. 2017.
- IT38. “Exploiting light-matter interaction in silicon photonics for biosensing,” *IEEE Photonics Society Seminar Series*, University of Texas at Austin, Austin, TX, Nov. 2016.
- IT39. “Exploiting light-matter interaction in silicon photonics for biosensing,” *IEEE Photonics Society Seminar Series*, University of Texas at Arlington, Arlington, TX, Nov. 2016.
- IT40. “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.
- IT41. “Ultrafast optical switching in hybrid silicon-vanadium dioxide photonic structures,” *SPIE Optics & Photonics*, San Diego, CA, Aug. 2016.
- IT42. “Advanced photonic structures in porous silicon,” *1st International Symposium on Functional Porous Materials*, San Luis Potosí, Mexico, April 2016.
- IT43. “Silicon photonics for sensing,” *Interdisciplinary Distinguished Seminar Series*, North Carolina State University, Raleigh, NC, Oct. 2015.
- IT44. “Nanostructured silicon biosensors,” *SPIE Optics & Photonics*, San Diego, CA, Aug. 2015.
- IT45. “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).
- IT46. “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.
- IT47. “Cost-effective and high enhancing SERS substrates based on imprinted nanoporous gold,” *SPIE Photonics West*, San Francisco, CA, Feb. 2015.
- IT48. “Enhancing light-matter interaction in optical biosensors,” *Department of Physics Colloquium Series*, University of Alabama- Birmingham, Birmingham, AL, Nov. 2014.
- IT49. “Application of resonant porous silicon photonic structures for biosensing,” *American Chemical Society National Meeting*, San Francisco, CA, Aug. 2014.
- IT50. “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.
- IT51. “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**).
- IT52. “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**).
- IT53. “Nanoscale porous materials for application in chemical and biomolecular detection” *Materials Research Science and Engineering Center Speaker Series*, Northwestern University, Evanston, IL, April 2013.

- IT54. “Biosensors based on nanoscale porous silicon waveguides and silicon photonic crystals,” *SPIE Photonics West*, San Francisco, CA, Feb. 2013.
- IT55. “Patterned nanoporous gold: A highly efficient and cost-effective SERS substrate,” *Army Research Lab*, Adelphi, MD, Dec. 2012.
- IT56. “Low mode volume active regions in silicon photonic cavities for low power, ultrafast switching,” *Materials Research Society*, Boston, MA, Nov. 2012.
- IT57. “Light-matter interactions in nanoporous materials for biosensing applications,” *Dept. of Physics and Astronomy Seminar Series*, Middle Tennessee State University, Murfreesboro, TN, Oct. 2012.
- IT58. “Porous materials for optical detection of chemicals, biological molecules, and high energy radiation,” *SPIE Defense Security and Sensing*, Baltimore, MD, April 2012.
- IT59. “Nanoscale porous materials for optical biosensing,” *NSF Workshop on Micro, Nano, Bio Systems*, Arlington, VA, March 2012.
- IT60. “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.
- IT61. “A career path in academia,” Job Information Forum, *American Vacuum Society Annual Meeting*, Nashville, TN, Nov. 2011.
- IT62. “Design and characterization of high surface area nanoscale porous materials for small molecule chem-bio sensing,” *NanoTechnology for Defense Conference*, Bellevue, Washington, Oct. 2011.
- IT63. “Porous silicon for chemical and biomolecular sensing,” *4th International Conference on Micro-Nanoelectronics, Nanotechnology, and MEMS*, Athens, Greece, Dec. 2010.
- IT64. “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.
- IT65. “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.
- IT66. “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.
- IT67. “Using silicon photonic components as highly sensitive biosensors,” UCLA, Los Angeles, CA, Jan. 2010.
- IT68. “Size-dependent infiltration and optical detection of nucleic acids in nanoscale pores,” *Berkeley Sensor & Actuator Center Seminar Series*, UC Berkeley, Berkeley, CA, Jan. 2010.
- IT69. “Tuning the feature size of nanostructured materials for improved infiltration and detection of small molecules,” *SPIE Photonics West*, San Francisco, CA, Jan. 2010.
- IT70. “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.
- IT71. “Silicon nanophotonics for biosensing applications,” *ECE Seminar Series*, University of Texas at Austin, Austin, TX, Nov. 2009.

- IT72. "Silicon-based building blocks for integrated small-molecule biosensors," *Naval Research Laboratory*, Washington, DC, July 2009.
- IT73. "Silicon nanophotonics for biosensing applications," *IBM T.J. Watson Research Center*, Yorktown Heights, NY, June 2009.
- IT74. "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.
- IT75. "Nanostructured Materials for Biosensors," *Nanotechnology in Biology and Medicine Workshop*, University of Buffalo, Buffalo, NY, May 2009.
- IT76. "Efficient capture and detection of nanoscale biomolecules using optically resonant porous silicon structures," *SPIE Photonics West*, San Jose, CA, Jan. 2009.
- IT77. "Detection of small molecules using porous silicon optical waveguides" *Materials Research Society*, Boston, MA, Dec. 2008.
- IT78. "Insights on the transition to an academic career," *Careers in Research Forum, IEEE-LEOS*, Newport Beach, CA, Nov. 2008.
- IT79. "Detection of nanoscale molecules in nanoscale holes," *Institute of Optics colloquium*, University of Rochester, Rochester, NY, Sept. 2008.
- IT80. "Current status and outlook for silicon-based optical biosensors," *European Materials Research Society*, Strasbourg, France, May 2008.
- IT81. "Porous materials for enhanced nanoscale biological and chemical detection," *SPIE Photonics West*, San Jose, CA, Jan. 2008.
- IT82. "CdSe white light nanophosphors for solid state lighting," *Central Research and Services Laboratory seminar*, OSRAM-SYLVANIA, Beverly, MA, Sept. 2007.
- IT83. "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.
- IT84. "Nanostructures for solid-state lighting and optical biosensing," *EECS Department seminar*, Ohio University, Athens, OH, Apr. 2007.
- IT85. "Small molecule detection with porous silicon waveguides," *Department of Biomedical Engineering*, Vanderbilt University, Nashville, TN, March 2007.
- IT86. "Nanophotonic devices for DNA detection and white-light generation," *ECE and IEEE co-sponsored seminar*, Georgia Institute of Technology, Atlanta, GA, Mar. 2007.
- IT87. "Optical DNA sensing based on resonant porous silicon structures," *SPIE Photonics West*, San Jose, CA, Jan. 2007.
- IT88. "Photonics, materials, and biology-inspired research at the nanoscale: An overview of Vanderbilt University initiatives," *CUDOS colloquium*, University of Sydney, Sydney, Australia, Dec. 2006.
- IT89. "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.
- IT90. "Porous silicon waveguide biosensors," *IEEE LEOS Annual Meeting*, Montreal, Quebec, Canada, Oct. 2006.

- IT91. "A new platform for silicon-based biosensing," *Department of Physics and Laboratory for Surface Modification seminar*, Rutgers University, Piscataway, NJ, July 2006.
- IT92. "Porous Silicon Waveguide Biosensors," *Department of Physics*, Vanderbilt University, Nashville, TN, May 2006.
- IT93. "Bioanalytical systems: Engineering of sensors, interfaces, and lab-on-a-chip devices," *Wright-Patterson Air Force Base*, OH, April 2006.
- IT94. "New applications for silicon in photonics and biomedicine," *APS Annual Meeting*, Baltimore, MD, Mar. 2006.
- IT95. "Resonant porous silicon devices for photonics and biosensing applications," *Physics Department colloquium*, University of Toronto, Toronto, Ontario, Canada, Mar. 2006.
- IT96. "Silicon Nanostructures for Optical Switching and Biosensing," *Vanderbilt Institute of Nanoscale Science and Engineering NanoDay*, Vanderbilt University, Nashville, TN, Oct. 2005.
- IT97. "Active building blocks for silicon photonic devices," *SPIE Optics East*, Boston, MA, Oct. 2005.
- IT98. "Control and elimination of the effect of ambient temperature fluctuations on photonic bandgap device operation," *SPIE Annual Meeting*, Denver, CO, Aug. 2004.
- IT99. "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. "Paper-based diagnostics incorporating porous silicon," *R. Layouni, J. Yang, S. J. Ward, P. E. Laibinis, and S. M. Weiss*; SPIE Photonics West, San Francisco, CA, Jan. 2023.
- OT2. "Improved molecular detection sensitivity through photonic crystal unit cell design," *Y. Zhang, R. Layouni, S. I Halimi, and S. M. Weiss*; SPIE Photonics West, San Francisco, CA, Jan. 2023.
- OT3. "Porous silicon optical biosensors for malaria," *R. Layouni, B. A. Baker, P. E. Laibinis, and S. M. Weiss*; IEEE Research and Applications of Photonics in Defense (RAPID), Miramar Beach, FL, Sept. 2022.
- OT4. "Multiplexed long-range electrohydrodynamic transport and near-field optical trapping with cascaded bowtie photonic crystal nanobeams," *S. Yang, J. A. Allen, C. Hong, K. P. Arnold, S. M. Weiss, and J. C. Ndukaife*; SPIE Optics and Photonics, San Diego, CA, Aug. 2022.
- OT5. "Photonic metacrystal: Design and experimental results," *S. Hu, M. Khater, E. Kratschmer, S. Engelmann, K. P. Arnold, W. M. J. Green, S. M. Weiss*; Conference on Lasers and Electro-Optics (CLEO), San Jose, CA, May 2022.
- OT6. "Porous silicon optical biosensor using peptide-based capture agent," *R. Layouni, T. Cao, M. B. Coppock, P. E. Laibinis, and S. M. Weiss*; Porous Semiconductors – Science and Technology Conference, Lido di Camaiore, Tuscany, Italy, Mar. 2022. [invited]
- OT7. "Reducing detection limits of optical thin film sensors using signal processing," *S. J. Ward, R. Layouni, S. Arshavsky-Graham, E. Segal, and S. M. Weiss*; SPIE Photonics West, virtual presentation, Mar. 2021.
- OT8. "Exploiting the VO₂ metal-insulator transition in nanoscale optical devices," *R. F. Haglund and S. M. Weiss*; SPIE Photonics West, virtual presentation, Mar. 2021. [invited]

- OT9. “Expanding bandwidth through coupled silicon and hyperbolic waveguides in the near- and mid-infrared,” *M. He, S. Halimi, T. G. Folland, S. Sunku, S. Liu, J. Edgar, D. Basov, S. Weiss, and J. Caldwell*; American Physical Society (APS) March Meeting, virtual presentation, Mar 2021.
- OT10. “High contrast reporter cleavage detection for enhancing porous silicon sensor sensitivity,” *R. Layouni, M. Dubrovsky, M. Bao, H. Chung, K. Du, S. V. Boriskina, S. M. Weiss, and D. Vermeulen*, in Conference on Lasers and Electro-Optics (CLEO), virtual presentation, May 2021.
- OT11. “Camera-based modal fingerprinting of cavity resonances in a photonic crystal nanobeam,” *F. O. Afzal, J. M. Petrin, and S. M. Weiss*; Conference on Lasers and Electro-Optics (CLEO), virtual presentation, May 2020.
- OT12. “Monolithically fabricated subwavelength grating filters for O-band MUX/DEMUX applications,” *F. O. Afzal, B. Peng, S. Hu, K. Dezfulian, K. Nummy, A. Stricker, A. Aboketaf, C. Hedges, D. Riggs, K. Giewont, and S. M. Weiss*; Conference on Lasers and Electro-Optics (CLEO), virtual presentation, May 2020.
- OT13. “Ultrafast optical switching of femtosecond 1550 nm pulses in silicon modulators,” *R. F. Haglund and S. M. Weiss*; SPIE Photonics West, San Francisco, CA, Feb. 2020. [invited]
- OT14. “CRISPR/Cas9 ribonucleoprotein delivery with polymer / porous Si nanoparticles,” *B. Fletcher, B. Evans, J. Ayers, K. Henderson, S. Bedingfield, S. Weiss, C. Gersbach, and C. Duvall*; Biomedical Engineering Society (BMES) Annual Meeting, Philadelphia, PA, Oct. 2019.
- OT15. “Thermally carbonized porous silicon for robust label-free DNA optical sensing,” *R. Layouni, M. H. Choudhury, P. E. Laibinis, and S. M. Weiss*; American Chemical Society (ACS) National Meeting, San Diego, CA, Aug. 2019.
- OT16. “Polarization dependence of pulsed laser induced SEEs in a finFET structure,” *L. D. Ryder, K. L. Ryder, A. L. Sternberg, J. A. Kozub, H. Gong, E. Zhang, D. Linten, E. Simoen, R. A. Weller, R. D. Schrimpf, S. M. Weiss, and R. A. Reed*; IEEE Nuclear and Space Radiation Effects Conference (NSREC), San Antonio, TX, July 2019.
- OT17. “Correlation of sensitive volumes associated with ion- and laser-induced charge collection in an epitaxial silicon diode,” *K. L. Ryder, L. D. Ryder, A. L. Sternberg, J. A. Kozub, E. Zhang, B. Sierawski, A. Khachatryan, S. P. Buchner, D. P. McMorro, J. M. Hales, Y. Zhao, L. Wang, C. Wang, R. A. Weller, S. M. Weiss, R. D. Schrimpf, and R. A. Reed*; Single Event Effects (SEE) Symposium, San Diego, CA, May 2019.
- OT18. “Photonic crystal design with mix and match unit cell for mode manipulation,” *S. I. Halimi, Z. Fu, F. O. Afzal, J. A. Allen, S. Hu, and S. M. Weiss*; Conference on Lasers and Electro-Optics (CLEO), San Jose, CA, May 2019.
- OT19. “Picosecond optical switching in silicon photonics using phase-changing vanadium dioxide,” *R. F. Haglund, K. A. Hallman, K. J. Miller, and S. M. Weiss*; Conference on Lasers and Electro-Optics (CLEO), San Jose, CA, May 2019. [invited]
- OT20. “Capitalizing on the Mott transition in vanadium dioxide for ultrafast modulators,” *R.F. Haglund, J. Caldwell, J. Valentine, and S. M. Weiss*; SPIE Photonics West, San Francisco, CA, Feb. 2019. [invited]
- OT21. “Porous silicon devices and applications,” *G. Gaur, D. Koktysh, S. Weiss, and S. Hu*; SPIE Optics & Photonics, San Diego, CA, August 2018.[invited]
- OT22. “High-contrast resonance excitation in photonic crystal nanobeams via side-coupling and wave-vector matching,” *F. O. Afzal, S. I. Halimi, and S. M. Weiss*; Conference on Lasers and Electro-Optics (CLEO), San Jose, CA, May 2018.

- OT23. “A smartphone biosensor based on colorimetric analysis of porous silicon filters,” T. Cao, Y. Zhao, C. A. Nattoo, and **S. M. Weiss**; Porous Semiconductors – Science and Technology Conference, La Grande Mottte, France, Mar. 2018. [Note: C. A. Nattoo was an undergraduate at the time of this presentation]
- OT24. “Enhancing the sensitivity of slow light MZI biosensors through multi-hole defects,” K. Qin, Y. Zhao, S. Hu, and **S. M. Weiss**; SPIE Photonics West, San Francisco, CA, Jan. 2018.
- OT25. “Porous silicon nanoparticle fabrication optimization toward siRNA loading and delivery,” E. J. Curvino, I. B. Kelly, J. S. Fain, M. A. Jackson, **S. M. Weiss**, and C. L. Duvall; Biomedical Engineering Society Annual Meeting, Phoenix, AZ, Oct. 2017.
- OT26. “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.
- OT27. “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.
- OT28. “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.
- OT29. “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.
- OT30. “Black phosphorous photodetectors for detecting light scattering properties in silicon waveguides,” T. Wang, S. Hu, B. Chamlagain, T. Hong, Z. Zhou, **S. Weiss**, and Y. Xu; Meeting of the American Physical Society, New Orleans, LA, Mar. 2017.
- OT31. “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.
- OT32. “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.
- OT33. “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.
- OT34. “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.
- OT35. “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]
- OT36. “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]
- OT37. “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.

- OT38. “Dielectric photonic crystal resonator design with extreme subwavelength mode confinement,” S. Hu and **S. M. Weiss**; Materials Research Society Spring Meeting, Phoenix, AZ, Apr. 2016.
- OT39. “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.
- OT40. “‘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]
- OT41. “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]
- OT42. “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]
- OT43. “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]
- OT44. “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.
- OT45. “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.
- OT46. “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]
- OT47. “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]
- OT48. “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.
- OT49. “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.
- OT50. “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]

- OT51. "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]
- OT52. "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]
- OT53. "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.
- OT54. "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.
- OT55. "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.
- OT56. "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]
- OT57. "An improved strategy for the loading, characterization, and controlled delivery of peptide nucleic acid therapeutics," K. R. Beavers, J. W. Mares, B. C. Evans, **S. M. Weiss**, and C. L. Duvall; Biomedical Engineering Society Annual Meeting, Seattle, WA, Sept. 2013.
- OT58. "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, Sept. 2013.
- OT59. "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.
- OT60. "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]
- OT61. "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]
- OT62. "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.
- OT63. "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.
- OT64. "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.

- OT65. “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.
- OT66. “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]
- OT67. “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.
- OT68. “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.
- OT69. “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]
- OT70. “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]
- OT71. “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.
- OT72. “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.
- OT73. “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.
- OT74. “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.
- OT75. “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.
- OT76. “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.
- OT77. “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.
- OT78. “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]
- OT79. “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.

- OT80. “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.
- OT81. “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.
- OT82. “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.
- OT83. “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]
- OT84. “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.
- OT85. “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.
- OT86. “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.
- OT87. “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.
- OT88. “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.
- OT89. “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.
- OT90. “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**).
- OT91. “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.
- OT92. “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.
- OT93. “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.
- OT94. “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.

- OT95. "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.
- OT96. "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.
- OT97. "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.
- OT98. "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.
- OT99. "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.
- OT100. "Photonic crystal defect tuning for optimized light-matter interaction," *C. Kang* and *S. M. Weiss*; SPIE Optics & Photonics, San Diego, CA, Aug. 2008.
- OT101. "Influence of biomolecule size on performance of nanostructured sensing devices," *G. Rong* and *S. M. Weiss*; SPIE Optics East, Boston, MA, Sept. 2007.
- OT102. "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.
- OT103. "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.
- OT104. "Porous silicon waveguides for small molecule detection," *G. Rong* and *S. M. Weiss*; American Chemical Society National Meeting, Boston, MA, Aug. 2007.
- OT105. "Porous Silicon Waveguides for Biosensing Applications," *G. Rong*, A. Najmaie, J. E. Sipe, and *S. M. Weiss*; OSA Annual Meeting, Rochester, NY, Oct. 2006.
- OT106. "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.
- OT107. "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.
- OT108. "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. "Using machine learning with porous silicon to determine IgG concentrations in human serum," *G. Paier*, *S. J. Ward*, and *S. M. Weiss*; Biomedical Engineering Society (BMES) Annual Meeting, San Antonio, TX, Oct. 2022. [Note: G. Paier was an undergraduate at the time of this presentation]
- PO2. "Photonic crystals with split ring unit cells for subwavelength light confinement," *K. P. Arnold*, *S. I. Halimi*, *J. A. Allen*, S. Hu, and *S. M. Weiss*; Conference on Lasers and Electro-Optics (CLEO), San Jose, CA, May 2022. [Note: K. P. Arnold received an Honorable Mention award in the Division of Laser Science Student Poster Contest]

- PO3. “Realizing subwavelength featured photonic crystals: Tailoring to specific applications and foundry scale processing,” K. P. Arnold, J. A. Allen, S. I. Halimi, F. O. Afzal, S. Hu, Y. Bian, and **S. M. Weiss**; Inaugural ECE Day, Vanderbilt University, Nashville, TN, April 2022. [Note: K. P. Arnold received 1st place poster award]
- PO4. “Signal processing techniques to improve signal-to-noise and lower the limit of detection for porous silicon biosensors,” S. J. Ward, R. Layouni, S. Arshavsky-Graham, E. Segal, and **S. M. Weiss**; Porous Semiconductors – Science and Technology Conference, Lido di Camaiore, Tuscany, Italy, Mar. 2022.
- PO5. “Design and analysis of photonic crystals with split ring unit cells,” K. P. Arnold, S. I. Halimi, J. A. Allen, S. Hu, and **S. M. Weiss**; Joint Nanoscience and Neutron Scattering User Meeting, virtual meeting, Aug. 2021.
- PO6. “Photonics in extreme environments: High energy radiation-induced optical response in silicon waveguides,” L. D. Ryder, R. A. Reed, and **S. M. Weiss**; Conference on Lasers and Electro-Optics (CLEO), virtual meeting, May 2021.
- PO7. “Inverse design of bowtie photonic crystal to achieve increased light-matter interaction,” J. A. Allen, F. O. Afzal, S. I. Halimi, C. Hong, J. C. Ndukaife, and **S. M. Weiss**; Center for Nanophase Materials Sciences Annual Users Meeting, virtual meeting, Aug. 2020.
- PO8. “Porous silicon based optical sensing in complex media: Antifouling coating,” H. Abdurahman, R. Layouni, B. A. Baker, T. Cao, P. E. Laibinis, and **S. M. Weiss**; IEEE MIT Undergraduate Research Technology Conference, Cambridge, MA, Oct. 2019.
- PO9. “Elucidating the interplay of polymer composition and Si surface chemistry to yield optimal porous Si / polymer hybrid nanoparticles for endosome escape and intracellular biologic delivery,” I. Kelly III, R. Fletcher, K. Beavers, **S. Weiss**, and C. Duvall; Biomedical Engineering Society (BMES) Annual Meeting, Philadelphia, PA, Oct. 2019.
- PO10. “Engineering ultrasound-activated porous silicon nanoparticles for enhanced siRNA delivery,” C. Krolak, I. Kelly, B. Fletcher, A. Singh, J. Kusunose, **S. Weiss**, C. Duvall, and C. Caskey; Biomedical Engineering Society (BMES) Annual Meeting, Philadelphia, PA, Oct. 2019.
- PO11. “Photonic crystal design with mix and match unit cells for mode manipulation,” S. I. Halimi, Z. Fu, F. O. Afzal, J. A. Allen, S. Hu, and **S. M. Weiss**; Center Center for Nanophase Materials Sciences Annual Users Meeting, Oak Ridge National Laboratory, Oak Ridge, TN, Aug. 2019.
- PO12. “Correlation of sensitive volumes associated with ion- and laser-induced charge collection in an epitaxial silicon diode,” K. L. Ryder, L. D. Ryder, A. L. Sternberg, J. A. Kozub, E. Zhang, B. Sierawski, A. Khachatryan, S. P. Buchner, D. P. McMorrow, J. M. Hales, Y. Zhao, L. Wang, C. Wang, R. A. Weller, **S. M. Weiss**, R. D. Schrimpf, and R. A. Reed; IEEE Nuclear and Space Radiation Effects Conference (NSREC), San Antonio, TX, July 2019.
- PO13. “High-contrast resonance excitation and mode order identification in photonic crystal nanobeams,” F. O. Afzal, S. I. Halimi, and **S. M. Weiss**; Center for Nanophase Materials Sciences Annual Users Meeting, Oak Ridge National Laboratory, Oak Ridge, TN, Aug. 2018.
- PO14. “Enhanced light-matter interaction and optical modulation with silicon photonics,” F. O. Afzal, K. J. Miller, and **S. M. Weiss**; Center for Nanophase Materials Sciences Annual Users Meeting, Oak Ridge National Laboratory, Oak Ridge, TN, Aug. 2017.

- PO15. “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]
- PO16. “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.
- PO17. “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]
- PO18. “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]
- PO19. “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.
- PO20. “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.
- PO21. “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.
- PO22. “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.
- PO23. “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.
- PO24. “Photonic crystal microring resonator based sensors,” S. M. Lo, S. Hu, **S. M. Weiss**, and P. M. Fauchet; CLEO, San Jose, CA, June 2014.
- PO25. “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.
- PO26. “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.
- PO27. “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.

- PO28. "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.
- PO29. "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.
- PO30. "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.
- PO31. "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.
- PO32. "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.
- PO33. "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.
- PO34. "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.
- PO35. "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.
- PO36. "Grating coupled waveguide biosensor based on porous silicon," *X. Wei* and **S. M. Weiss**; Materials Research Society Fall Meeting, Boston, MA, Nov. 2010.
- PO37. "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.
- PO38. "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.
- PO39. "Nanoscale porous silicon biosensors," **S. M. Weiss (invited)**; German-American Frontiers of Science Symposium, Potsdam, Germany, June 2010.
- PO40. "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.
- PO41. "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.

- PO42. “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.
- PO43. “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.
- PO44. “Biomolecule size-dependent sensitivity of porous silicon sensors,” *G. Rong* and **S. M. Weiss**; Porous Semiconductors – Science and Technology Conference, Mallorca, Spain, Mar. 2008.
- PO45. “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**, *J. D. Ryckman*, and *Y. Jiao*, “Porous nanomaterials having three-dimensional patterning and methods of making and using the same,” *US Patent No.: 9889504* (issued Feb. 2018).
- P2. **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).
- P3. **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).
- P4. J. W. Mares and **S. M. Weiss**, “Nanocomposite material, tunable resistor device, and method,” *US Patent No.: 9231209* (issued January 2016).
- P5. *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).
- P6. **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).
- P7. **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).

SPONSORED RESEARCH ACTIVITIES

The Weiss group has received support from the National Science Foundation, Army Research Office, Air Force Office of Scientific Research, Defense Threat Reduction Agency, Defense Advanced Research Projects Agency, and National Institutes of Health.

NATIONAL AND INTERNATIONAL SERVICE

Advisory Boards and Professional Society Leadership

- 2022-present *Member*, SPIE Symposia Committee
- 2022-2023 *Guest editor* for themed collection, “Celebrating the 150th Anniversary of Vanderbilt University,” published in *Nanoscale Horizons*; *Nanoscale*; *Nanoscale Advances* journals
- 2021-present *Associate Editor* for *Optica* journal
- 2021-2022 *Member*, Optica (formerly OSA) Fellow Committee
- 2021-2022 *Guest editor* for *Analyst* journal’s themed collection on “Smartphone-based sensors”

- 2020-present *Advisory Board Member* of the *Nanoscale Horizons* journal
 2018-2021 *Member*, Oak Ridge Associated Universities Joint Council/Board Nominating Committee
 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

- 2022 *Co-chair*, “Materials and Devices for Biosensing,” IEEE RAPID, Miramar Beach, FL, Sept. 2022
 2017-present *Program Committee Member*, “Active Photonic Platforms,” SPIE Optics & Photonics, San Diego, CA, Aug. 2017-2022
 2016-present *Conference Co-chair*, “Frontiers in Pathogen Detection: From Nanosensors to Systems,” SPIE Photonics West, San Francisco, CA, Feb. 2016-2022
 2012-present *International Scientific Committee*, Porous Semiconductors – Science and Technology, Malaga, Spain, March 2012; Benidorm-Alicante, Spain, March 2014; Tarragona, Spain, March 2016; Montpellier, France, March 2018; Lido di Camaiore, Italy, Oct. 2022
 2014-2020 *Program Committee Member*, “Nanoscale Imaging, Sensing, and Actuation for Biomedical Applications,” SPIE Photonics West, San Francisco, CA, Feb. 2014-2020
 2019-2020 *Program Committee Member*, Optical, Opto-Atomic, and Entanglement-Enhanced Precision Metrology,” SPIE Photonics West, San Francisco, CA, Feb. 2019-2020
 2017-2019 *Program Committee Member*, “Micro- and Nano-Photonic Devices,” CLEO, San Jose, CA, May 2017-2019
 2016-2019 *Program Committee Member*, “Optical Interconnects,” IEEE Photonics Conference, Waikoloa, HI, Oct. 2016; Orlando, FL, Oct. 2017; Reston, VA, Oct. 2018; Santa Fe, NM, Oct. 2019
 2018 *Program Committee Member*, “Steep Dispersion Engineering and Opto-Atomic Precision Metrology,” SPIE Photonics West, San Francisco, CA, Feb. 2018
 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
 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
 2009-2010 *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, ACS Sensors, Advanced Functional Materials, Advanced Materials, Advanced Optical Materials, Analytical Chemistry, Analyst, Applied Physics Letters, Biosensors and Bioelectronics,

IEEE Journal of Selected Topics in Quantum Electronics, IEEE Transactions on Nuclear Science, Journal of Applied Physics, Journal of the Optical Society of America B, Nano Letters, Nature Communications, Nature Nanotechnology, Nature Photonics, Optics Express, Optics Letters, Scientific Reports, Sensors, 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)
 European Research Council (2019, 2020)
 Freiburg Institute for Advanced Studies Marie Curie Fellowships (2015)
 Hong Kong Research Grants Council (2012)
 Israel Science Foundation proposal reviewer (2012, 2017, 2021)
 National Science Foundation proposal reviewer (2006-2013, 2018-2020)
 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

2022 – 2024 Internal Awards Review Committee (IARC)
 2022 Reviewer for Limited Submission Opportunities
 2022 Reviewer for Vanderbilt internal grants
 2021 Trans-Institutional Programs Task Force
 2021 Judge for Three-Minute Thesis (3MT) competition
 2021 Reviewer for Limited Submission Opportunities
 2020 Reviewer for Limited Submission Opportunities
 2019 – present Director of Vanderbilt Institute of Nanoscale Science and Engineering
 2018 – 2020 Trans-institutional Programs (TIPs) Council
 2018 – 2019 Advisory Committee Member, Trans-Institutional Capital Planning for Sciences and Engineering
 2018 – 2019 Advisory Committee Member, Lewis-Burke Consulting Initiative
 2018 Leveraged Proposal Organization & Development Panelist (“Best Practices for Applying to DoD Funding”)
 2017 Faculty INSIGHTS Panelist (“Promotion to Full: Finding a Service Balance”)
 2017 Panelist for Graduate School’s Office of Postdoctoral Affairs professional development workshop “Introduction to Research Funding and Grant Writing”
 2017 Provost’s Ad Hoc Committee on Graduate Education and Research Endowment
 2016 – 2019 Vanderbilt University Research Council
 2016 Reviewer for Discovery Grants
 2015 – present Vanderbilt’s Representative on Oak Ridge Associated Universities Council
 2015 – present Vanderbilt Institute of Nanoscale Science and Engineering REU Advisory Board
 2015 – 2016 Chancellor’s Biomedical Sciences Advisory Committee
 2015 Ad Hoc Grievance Committee

- 2014 – 2019 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 – 2019 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

- 2021 – present ECE representative on School of Engineering Endowed Chair Committee
 2021 – 2022 ECE faculty search committee
 2021 – 2022 MechE faculty search committee
 2017 – 2019 EECS representative on School of Engineering Consultative Committee
 2017 – 2018 BME faculty search committee
 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 – 2019 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. Moinul Choudhury (8/2017 – 8/2018)
Current Employment: Postdoctoral Research Associate, Rice University
2. Jeremy Mares (9/2010 – 9/2012)
Current Employment: Researcher, imec USA

Doctoral Students Graduated

1. Guoguang Rong, Ph.D. in Electrical Engineering, *Label-free nanoscale biosensing using a porous silicon waveguide*, August 2008.
Current Employment: Senior Researcher, CENBRAIN, Westlake 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: R&D Manager, 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: Lead Machine Learning Engineer, Nike

4. Xing Wei, Ph.D. in Electrical Engineering, *Porous silicon waveguide biosensors with a grating coupler*, May 2012.
Current Employment: Machine Learning/Software Engineer, Permobil
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: Assistant Professor, Clemson University
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: Principal Etch Process Engineer, 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: Optical Scientist, Meta
10. Girija Gaur, Ph.D. in Electrical Engineering, *Quantum dot integrated silicon photonic devices for optical sensor applications*, December 2015.
Current Employment: Project Manager and Patent Officer, SiLC Technologies
11. Gilbert Rodriguez, Ph.D. in Electrical Engineering. *Advanced porous silicon photonic devices for biosensing applications*, May 2016.
Current Employment: Director of AI, Camgian Microsystems
12. Kelsey Mayo (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: Chief Executive Office, Armor Medical Inc.
13. Shuren Hu, Ph.D. in Physics. *Engineering light-matter interaction in dielectric nanophotonic resonators*, May 2017.
Current Employment: LiDAR Systems Engineer, Aurora
14. Yiliang Zhao, Ph.D. in Materials Science, *Engineering porous silicon photonic structures towards fast and reliable optical biosensing*, May 2017.
Current Employment: Hardware Development Engineer, Western Digital
15. Kevin Miller, Ph.D. in Materials Science, *Hybrid silicon-vanadium dioxide photonic devices for optical modulation*, May 2018.
Current Employment: Senior Service Engineer, Access Laser
16. Joshua Fain, Ph.D. in Electrical Engineering, *Fabrication, characterization, and applications of porous silicon - metal oxide nanocomposites*, May 2019.
Current Employment: Presales Engineer, OSIsoft
17. Francis Afzal, Ph.D. in Electrical Engineering, *Investigation of photonic crystal nanobeams for resonator coupling, modal fingerprinting and wavelength filtering*, December 2020.
Current Employment: Principle Device Engineer in Integrated Photonics, Photonic Inc.

18. Tengfei Cao, Ph.D. in Materials Science, *Porous silicon optical biosensors towards point-of-care applications*, May 2021.
Current Employment: Product Development Engineer, KLA
19. Landen Ryder, Ph.D. in Electrical Engineering, *Investigation of light-matter interactions for single event effects testing in microelectronic and photonic devices*, June 2021.
Current Employment: Radiation Effects Engineer, NASA
20. Sami Halimi, Ph.D. in Electrical Engineering, *Investigation of coupling strategies and subwavelength features in photonic crystal cavities for optical modulators*, February 2022.
Current Employment: Integrated Photonics Research and Development Engineer, PsiQuantum

Doctoral Students

1. Rabeb Layouni, Ph.D. student in Chemical and Biomolecular Engineering.
2. Xiaosi Zhang, Ph.D. student in Electrical Engineering (co-advised by Yaqiong Xu, EE, and Deyu Li, MechE)
3. Simon Ward, Ph.D. student in Electrical Engineering.
4. Kellen Arnold, Ph.D. student in Material Science.
5. Yanrong Zhang, Ph.D. student in Electrical Engineering.
6. Juliana Yang, Ph.D. student in Chemical and Biomolecular Engineering.

Visiting Students

1. Zhongyuan Fu, Beijing University of Posts and Telecommunications, China (10/2017 – 10/2019)

M.S. Students Graduated

1. Ran Yan, M.S. in Electrical Engineering, August 2008.
Current Employment: Sr. Marketing Manager and Strategic Planning, Leica Biosystems
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: Senior Software Engineer, Microsoft
4. Suruj Deka, M.S. in Electrical Engineering, *Memristance Phenomenon in TiO₂-Porous Silicon Nanocomposites*, May 2015.
Current Employment: Senior Laser Design Engineer, NeoPhotonics
5. M. B. Balakrishnan, M.S. in Electrical Engineering, May 2015.
6. Vijayashree Parsi Sreenivas, M. S. in Physics, August 2017.
7. Joshua Allen, M.S. in Materials Science, May 2022.
Current Employment: Data Analyst, HORNE

Thesis Committee Member

1. Yunqin Zhao, Ph.D. student in Biomedical Engineering

2. Mingze He, Ph.D. student in Mechanical Engineering
3. Chuchuan Hong, Ph.D. student in Electrical Engineering
4. Ronald (Brock) Fletcher, Ph.D. student in Biomedical Engineering
5. Sen Yang, Ph.D. student in Materials Science
6. Hanyu Zheng, Ph.D. student in Electrical Engineering
7. Justin Malave, Ph.D. student in Physics
8. Elena Kovalik, Ph.D. student in Materials Science
9. Alberto Esteban Linares, Ph.D. student in Mechanical Engineering
10. Janna Eaves, Ph.D. in Mechanical Engineering, *Optimization of ionic transport in electrochemical devices*, June 2022.
11. Isom Kelly, Ph.D. in Biomedical Engineering, *Developing endosomolytic polymer porous silicon nanocomposites for delivery of diverse gene therapies*, June 2022.
12. Tommaso Perani, Ph.D. in Physics, University of Pavia, Italy, *Bloch surface waves for integrated optics: a complete architecture*, 2022.
13. Kaitlyn Ryder, Ph.D. in Electrical Engineering, *Heavy ion pulsed laser and focused x-ray-induced single event transients: an exploration of charge collection mechanisms in an epitaxial silicon diode*, May 2021.
14. Thayer Walmsley, Ph.D. in Physics, *Two-dimensional transition metal dichalcogenides for near infrared photodetection with an eye toward retinal electrophysiology*, June 2021.
15. Yuxi Jiang, M.S. in Electrical Engineering, *Anapole-assisted low-power optical trapping*, May 2021.
16. Joshua Ryan Nolen, Ph.D. in Materials Science, *Realizing directional, narrowband thermal emission through control of spectral dispersion and strong coupling*, May 2021.
17. Yuchen Zhang, Ph.D. in Electrical Engineering, *Two-dimensional material optoelectronics and biomedical applications*, May 2021.
18. Sofia Arshavsky-Graham, Doctor of Science, Leibniz University Hannover, Germany, *Porous silicon biosensors for protein targets: Modelling and sensitivity enhancement*, 2021.
19. You Zhou, Ph.D. in Materials Science, *Multilayer flat optics*, June 2000.
20. Tianjiao Wang, Ph.D. in Electrical Engineering, *Low-dimensional van der Waals Material based Electronics and Optoelectronics*, May 2020.
21. Austin Howes, Ph.D. in Physics, *Dielectric metasurfaces with overlapped modes: An ultrathin platform for infrared optics*, May 2020.
22. Kent Hallman, Ph.D. in Physics, *Picosecond optical modulation of vanadium dioxide incorporated into silicon photonics*, December 2018.
23. Zhihua Zhu, Ph.D. in Electrical Engineering, *Dynamic optical metamaterials based on vanadium dioxide*, October 2018.
24. Neta Arad-Vosk, Ph.D. in Physics, The Hebrew University of Jerusalem, Israel, *Optical properties of semiconductor nanostructures*, 2018.
25. Keith Share, Ph.D. in Materials Science, *Engineering high capacity alternative ion battery electrodes through mechanistic insight*, July 2018.

26. Rui Wang, Ph.D. in Physics, *Hybrid nanostructured materials for bioengineering application*, July 2018.
27. Stanley Lo, Ph. D. in Electrical Engineering, *Ring-shaped silicon photonic crystal structures for bio-sensing and optical interconnects*, February 2018.
28. Tu Hong, Ph.D. in Electrical Engineering, *Low dimensional materials for optoelectronic and bioelectronics applications*, May 2017.
29. Wenyi Wang, Ph.D. in Electrical Engineering, *Enhancing light-matter interaction in ultrathin films using optical nanostructures*, May 2016.
30. Wei Li, Ph.D. in Mechanical Engineering, *Photothermal and photoelectrical energy conversion in plasmonic nanostructures*, May 2016.
31. Dhiraj Prasai, Ph.D. in Materials Science, *Monolayer MoS₂ and MoS₂/Quantum Dot Hybrids: Novel Optoelectronic Materials*, December 2015.
32. Parikshit Moitra, Ph.D. in Materials Science, *Mie Resonance Based All-Dielectric Metamaterials at Optical Frequencies*, August 2015.
33. Yuanmu Yang, Ph.D. in Materials Science, *Resonant All-Dielectric Optical Metamaterials*, August 2015.
34. Jason Tucker-Schwartz, Ph.D. in Biomedical Engineering, *Development of Photothermal Optical Coherence Tomography for In Vivo Imaging of Contrast Agents*, August 2015.
35. Ying Zhu, Ph.D. in Chemistry, University of New South Wales, Australia, *Micropatterned Porous Silicon Photonic Crystal towards Microarray-based Cell Sensing*, December 2014.
36. Kyle Zufelt, M.S. in Materials Science, *Highly Efficient Infrared Photodetectors based on Plasmonic Metamaterials and Vanadium Dioxide*, December 2014.
37. Hiram Conley, Ph.D. in Physics, *Straining Two-Dimensional Materials*, August 2014.
38. Kannatassen Appavoo, Ph.D. in Materials Science, *Hybrid Phase-Changing Nanostructures: From Reconfigurable Plasmonic Devices to Ultrafast Dynamics*, December 2012.
39. Melissa Harrison, Ph.D. in Materials Science, *Heterogeneously Alloyed Semiconductor Nanocrystals with Induced Chemical Composition Gradients*, December 2012.
40. Tero Jalkanen, Ph.D. in Mathematics and Natural Sciences, University of Turku, Finland, *Porous Silicon Optical Filters in Gas Sensing Applications*, December 2012.
41. Jed Ziegler, Ph.D. in Physics, *Complex Plasmonic Behavior in Archimedean Nanospirals*, Dec. 2011.
42. Supil Raina, Ph.D. in Materials Science, *Nanodiamond Macroelectrodes and Ultramicroelectrode Arrays for Bio-Analyte Detection*, December 2011.
43. Joyeeta Nag, Ph.D. in Physics, *The Solid-Solid Phase Transition in Vanadium Dioxide Thin Films: Synthesis, Physics and Application*, May 2011.
44. Zhou Xu, Ph.D. in Chemical and Biomolecular Engineering, *Engineered Microarrayed Surfaces for the Detection of Biomolecules*, May 2011.
45. Davon Ferrera, Ph.D. in Physics, *Plasmonic Interactions in Gold:Vanadium Dioxide Hybrid Nanostructures*, May 2011.
46. Xuan-Anh Celestina LeQuan, Ph.D. in Electrical Engineering, *Research and Development of Sub-Micron Gap Nanodiamond Lateral Field Emission Diodes*, December 2010.

47. Peter Ciesielski, Ph. D. in Materials Science, *Photosystem I-Based Systems for Photoelectrochemical Energy Conversion*, December 2010.
48. Jim Burst, Ph.D. in Materials Science, *Permittivity-engineered transparent conducting tin oxide thin films: from deposition to photovoltaic applications*, August 2010.
49. Michael Schreuder, Ph.D. in Chemistry, *Ultrasmall, white-light CdSe nanocrystals: Ligand effects and incorporation into solid-state lighting*, May 2010.
50. Andrej Halabica, Ph.D. in Physics, *Coherent acoustic phonons in metal/dielectric superlattices*, December 2009.
51. 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.
52. Eugene Donev, Ph.D. in Physics, *Metal-semiconductor transitions in nanoscale vanadium dioxide thin films, subwavelength holes, and nanoparticles*, December 2008.
53. Jarid J. Crochet, Ph.D. in Materials Science, *Charge and energy transfer dynamics in single-wall carbon nanotube ensembles*, December 2007.
54. Yong Mui Wong, Ph.D. in Electrical Engineering, *Aligned carbon nanotubes vacuum field emission devices*, December 2006.

Undergraduate Student Research Supervision

1. Anh Quang Nguyen, Undergraduate research (EECE 3860), Investigation of paper-based diagnostics with smartphone readout, Spring 2023.
2. David Limpus, Undergraduate research (EECE 3860), Investigation of porous silicon biosensor with smartphone, Fall 2022-Spring 2023.
3. Gianna Paier, Vanderbilt Institute of Nanoscale Science and Engineering (VINSE) REU, Investigation of porous silicon sensors towards point-of-care diagnostics, Summer 2022.
4. Siyuan (Sissy) Chen, Vanderbilt School of Engineering Summer Undergraduate Research Experience, Characterization of integrated photonic components, Summer 2022.
5. Xiang (Ryan) Zhou, Undergraduate research (EECE 3860) and Vanderbilt School of Engineering Summer Undergraduate Research Experience, Design and implementation of GUI for signal processing analysis of biosensors, Spring 2021 and Summer 2021.
6. Zibo Gong, Vanderbilt School of Engineering Summer Undergraduate Research Experience, Investigation of low mode volume dielectric photonic resonators, Summer 2019.
7. Hayat Abdurahman, Vanderbilt Institute of Nanoscale Science and Engineering (VINSE) REU, Investigation of porous silicon sensors operating in complex media, Summer 2019.
8. Mohammad Ahsanul Kabir, Vanderbilt Undergraduate Student Research Program (VUSR) and Undergraduate research (EECE 3860), Hybrid silicon-vanadium dioxide photonic structures, Summer 2019 and Spring 2020.
9. Emre Kanli, Undergraduate research (EECE 3860), Characterization of on-chip photodetectors, Spring 2019.
10. Yuelin Deng, Undergraduate research (EECE 3860), Investigation of machine learning to detect molecules within porous silicon microcavities, Fall 2018-Spring 2019.

11. Caitlin Carfano, Vanderbilt Institute of Nanoscale Science and Engineering (VINSE) REU, Smartphone compatible porous silicon sensors, Summer 2018.
12. Joshua Petrin, Undergraduate research (EECE 3860), Slotted photonic crystal devices, Spring 2018 and Fall 2018.
13. Crystal Nattoo, Vanderbilt Institute of Nanoscale Science and Engineering (VINSE) REU, Low-cost and portable porous silicon sensors, Summer 2017. [Note: C. awarded a NSF Graduate Fellowship]
14. Bao Nguyen, Vanderbilt School of Engineering Summer Undergraduate Research Experience and Undergraduate Research, Design of silicon-vanadium dioxide photonic structures for improved optical signal modulation, Summer-Fall 2017.
15. 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]
16. 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.
17. Bradley Bark, Independent study (EECE 3850), Photonic design and thermal management of hybrid silicon-vanadium dioxide optical modulators, Spring 2016, Fall 2016.
18. 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]
19. Nicholas French, Vanderbilt Undergraduate Student Research Program (VUSRP), Analysis of piezoelectric response of multifunctional ZnO-porous silicon nanoparticles, Summer 2015.
20. Edward Lauber, Vanderbilt School of Engineering Summer Undergraduate Research Experience, Design, fabrication and characterization of porous silicon biosensors, Summer 2015.
21. Gabrielle Tate, Independent study (EECE 203, EECE 3851), Nickel oxide and carbon functionalized porous silicon pseudocapacitors, Spring 2015, Fall 2015.
22. Efreem Beraki, Vanderbilt Institute of Nanoscale Science and Engineering (VINSE) REU, Porous silicon membrane biosensors, Summer 2014.
23. Christian Vogel, Independent study (EECE 203), Tuning the dielectric function of nanoporous gold for SERS applications, Spring 2014.
24. Caroline Henley, Independent study (EECE 203), Investigation of nickel oxide functionalized porous silicon for supercapacitor and pseudocapacitor applications, Fall 2013-Fall 2014.
25. John Lonai, Vanderbilt Institute of Nanoscale Science and Engineering (VINSE) REU, Investigation of Bloch sub-surface waves in porous silicon, Summer 2013.
26. Suruj Deka, Vanderbilt Undergraduate Student Research Program (VUSRP), Independent study research, Nanocomposite materials for analogy memory, Summer 2013-Spring 2015.
27. John Lantz, Independent study (EECE 203), Fabrication and characterization of nanoscale silicon / metal oxide composites for variable resistance applications, Fall 2012.
28. 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.
29. Jeremiah Haley, Vanderbilt School of Engineering Summer Undergraduate Research Experience, Fabrication and characterization of stamped porous silicon particles, Summer 2012.

30. Dylan McQuaide, Vanderbilt Undergraduate Student Research Program (VUSR), Integration of porous silicon diffraction grating with microfluidic system, Summer 2011.
31. 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]
32. Tyler Whittle, Vanderbilt Undergraduate Student Research Program (VUSR), Design and characterization of hybrid silicon-vanadium dioxide active modulators, Summer 2010 – Spring 2011.
33. 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.
34. 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]
35. Abdul Hanis Ramli, Independent study (EECE 204), Characterization of micro-imprinted porous gratings, Spring-Summer 2010.
36. 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].
37. Troy Brown, NSF REU, Interferometric lithography for grating fabrication, Summer 2009.
38. Farah Farhana Iskandar, Vanderbilt Undergraduate Student Research Program (VUSR) and Independent study (EECE 203), Investigation of binding kinetics in porous silicon biosensors, Summer-Fall 2009.
39. Lutalo Webb, Independent study (EECE 204), Metal-cladded porous silicon waveguides and enhanced surface plasmon resonance sensors, Spring 2009.
40. Amelia Cousins, Independent study (EECE 204), Interferometric lithography for the fabrication of subwavelength gratings, Spring 2009.
41. Clinton Brooke Van Dusen, Communications of Science and Technology Internship, Polishing treatment to enlarge nanoscale pore openings, Fall 2008.
42. Ryan Gunn, Independent study (MSE 209C, EECE 204), Fabrication of porous silicon membranes, Fall 2008 and Spring 2009.
43. Aminah Hamzah, Vanderbilt Undergraduate Student Research Program (VUSR) and Independent study (EECE 203, EECE 204), Quantum dot infiltration dynamics in porous silicon, Summer 2008 - Fall 2009.
44. 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.
45. Miguel Roncal, Independent study (EECE 204), Optimization of lithographically defined silicon waveguides, Spring 2008.

46. 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]
47. Anne Killough, Independent study (EECE 203), Enhanced light extraction from light emitting nanocrystals, Fall 2007.
48. Nicolas Bouchonville (France), Research internship, Chemical modification of porous silicon, Summer 2007.
49. Azreena Ahmad Shukri, Vanderbilt Undergraduate Student Research Program (VUSRP), Encapsulated CdSe nanocrystals as white-light phosphors, Summer 2007.
50. Brian Auerbach, Independent study (EECE 204), Design of LabView interface for spectroscopy equipment, Spring 2007.
51. 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.
52. Alex Stramel, Independent study (EECE 204, EECE 203, MSE 209C), Investigation of porous silicon-based LED structures using efficient light emitting nanocrystals, Spring 2006 - Spring 2007.
53. 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.
54. Joseph Zadrozny (Virginia Tech), NSF-IGERT REU, Investigation of non-complementary binding in porous silicon biosensors, Summer 2006.
55. 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 <i>Electromagnetics</i>	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. <u>Fall 2009, Fall 2010, Fall 2012, Fall 2013, Fall 2014, Fall 2015, Fall 2017, Fall 2018</u>
EECE 252 <i>Signal Processing & Communications</i>	This course is an advanced undergraduate course. The course covers fundamental principles of analog, digital, and optical communications systems. <u>Spring 2006, Spring 2007, Spring 2008, Spring 2009</u>

- 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, Spring 2019, Spring 2021, Spring 2023
- 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
EECE 6303
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, waveguides, photonic crystals, and metamaterials.
Spring 2012, Spring 2016, Spring 2018, Spring 2020, Spring 2022
- EECE 3891
Nanoscale Innovation & Making
- This undergraduate course was developed in Fall 2022 to offer immersive education at the intersection of nanotechnology and entrepreneurship. Open to all majors, the course covers basic nanoscience concepts, nanotechnology in commercial products, the process of transitioning nanoscience research into commercial technology, and related business strategy. Students carry out hands-on labs in the VINSE facilities and develop a product pitch for a nanotechnology-related product. This course is taught with colleagues in the Wond'ry, Center for Technology Transfer & Commercialization, and Engineering Management.
Fall 2022