Jason Gage Valentine

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EDUCATION

Doctor of Philosophy, Mechanical Engineering
University of California, Berkeley, December 2010
Dissertation Title: Bringing Optical Metamaterials to Reality
Thesis Advisor: Prof. Xiang Zhang

Bachelor of Science, Mechanical Engineering
Purdue University, December 2004

APPOINTMENTS

Associate Professor of Mechanical Engineering, *2017 – present (primary appointment)*
Associate Professor of Electrical Engineering, *2017 – present (courtesy appointment)*
Associate Professor of Physics, *2017 – present (courtesy appointment)*
Vanderbilt University, Nashville, TN

Assistant Professor of Mechanical Engineering, *2010 – 2017 (primary appointment)*
Assistant Professor of Electrical Engineering, *2011 – 2017 (courtesy appointment)*
Assistant Professor of Physics, *2016 – 2017 (courtesy appointment)*
Vanderbilt University, Nashville, TN

Graduate Research Assistant, *2005 – 2010*
Department of Mechanical Engineering
University of California, Berkeley, Berkeley, CA

AWARDS AND HONORS

Chancellor's Faculty Fellow, 2018 - 2020

Chancellor's Research Award, 2017

VINSE High Impact Paper Award, 2016, 2017

VINSE Distinguished Service Award, 2016

National Academy of Engineering, US Frontiers in Engineering Invited Participant, 2015

Paper of the Year Award, Vanderbilt School of Engineering, 2015

ONR Young Investigator Award, 2014

NSF CAREER Award, 2013

Vanderbilt Junior Faculty Teaching Fellowship, 2012-2103

Materials Research Society Gold Student Award, 2010

Kleinoeder Scholarship, UC Berkeley, 2009

Time magazine 'Top 10 Scientific Discoveries of 2008', 2008

Time magazine 'Top 50 Inventions of 2008', 2008

Discover magazine 'Top 100 Story of 2008', 2008

Most Outstanding Undergraduate Mechanical Engineer, Purdue University, 2004

Ralph T. Simon Research Scholarship, Purdue University, 2004

PUBLICATIONS AND SCHOLARSHIP

The names of my graduate and undergraduate student advisees are in italics. A (*) indicates that the paper is a "Highly Cited Paper" according to Web of Science (top 1% within the field of physics).

Peer-Reviewed Journal Articles

1. *You Zhou*, Ivan Kravchenko, Hao Wang, *Hanyu Zheng*, Gong Gu, **Jason Valentine**, "Multifunctional metaoptics based on bilayer metasurfaces", Light: Science and Applications vol. 8, pg. 80 (2019).
2. *You Zhou*, Ivan Kravchenko, Hao Wang, *Joshua R Nolen*, Gong Gu, and **Jason Valentine**, "Multilayer Non-interacting Dielectric Metasurfaces For Multiwavelength Metaoptics", Nano Letters, vol. 18, pgs. 7529−7537, 2018.
3. *Austin Howes, Wenyi Wang*, Ivan Kravchenko, and **Jason Valentine** "Dynamic transmission control based on all-dielectric Huygens metasurfaces", Optica, vol. 5, pgs. 787-792, 2018.
4. **Jason Valentine**, "Bridging the gap with hot electrons", Nature Nanotechnology, vol. 13, pgs. 96-97, 2018.
5. *Zachary Coppens* and **Jason Valentine** "Spatial and Temporal Modulation of Thermal Emission", Advanced Materials, 1701275, 2017.
6. *Zhihua Zhu*, Phil Evans, Richard Haglund, and **Jason Valentine**, "Dynamically Reconfigurable Metadevice Employing Nanostructured Phase-Change Materials", Nano Letters, vol. 17, pgs. 4881-4885, 2017.
7. Brian A Slovick, *You Zhou*, Zhi Gang Yu, Ivan I Kravchenko, Dayrl P Briggs, *Parikshit Moitra*, Srini Krishnamurthy, **Jason Valentine**, "Metasurface polarization splitter", Philosophical Transactions of the Royal Society A, vol. 375, 20160072, 2017.
8. *Wei Li*, **Jason Valentine**, "Harvesting the Loss: Surface Plasmon-Based Hot Electron Photodetection", Nanophotonics, vol. 6, pgs. 177-191, 2017.
9. Eric M. Talbert, Holly F. Zarick, Noah J. Orfield, *Wei Li*, William R. Erwin, Zachary R. DeBra, Christopher P. McDonald, Kemar R. Reid, **Jason Valentine**, Sandra J. Rosenthal, and Rizia Bardhan, "Interplay of structural and compositional effects on carrier recombination in mixed-halide perovskites", RSC Advances, vol. 6, pgs. 86947-86954 2016.
10. Augustine M Urbas, Zubin Jacob, Luca Dal Negro, Nader Engheta, A D Boardman, P Egan, Alexander B Khanikaev, Vinod Menon, Marcello Ferrera, Nathaniel Kinsey, Clayton DeVault, Jongbum Kim, Vladimir Shalaev, Alexandra Boltasseva, **Jason Valentine**, Carl Pfeiffer, Anthony

Grbic, Evgenii Narimanov, Linxiao Zhu, Shanhui Fan, Andrea Alù, Ekaterina Poutrina, Natalia M Litchinitser, Mikhail A Noginov, Kevin F MacDonald, Eric Plum, Xiaoying Liu, Paul F Nealey, Cherie R Kagan, Christopher B Murray, Dorota A Pawlak, Igor I Smolyaninov, Vera N Smolyaninova and Debashis Chanda, "Roadmap on optical metamaterials", Journal of Optics, vol. 18, 093005, 2016.

11. Larousse Khosravi Khorashad, Lucas Vazquez Besteiro, Zhiming Wang, **Jason Valentine**, Alexander Govorov, "Localization of Excess Temperature Using Plasmonic Hot Spots in Metal Nanostructures: Combining Nano-Optical Antennas with the Fano Effect", Journal of Physical Chemistry C, vol. 120, pgs. 13215 – 13226, 2016.

12. *Zachary J. Coppens*, Ivan I. Kravchenko and **Jason Valentine**, "Lithography-Free Large-Area Metamaterials for Stable Thermophotovoltaic Energy Conversion", Advanced Optical Materials, vol. 4, pgs. 671-676, 2016.

13. (*)*Yuanmu, Yang, Wenyi Wang*, Abdelaziz Boulesbaa, Ivan I. Kravchenko, Dayrl P. Briggs, Alexander Puretzky, David Geohegan, **Jason Valentine**, "Nonlinear Fano-Resonant Dielectric Metasurfaces", Nano Letters, vol. 15, pgs. 7388–7393, 2015.

14. *Wenyi Wang*, Andrey Klots, Dhiraj Prasai, *Yuanmu Yang*, Kirill I. Bolotin, and **Jason Valentine**, "Hot Electron-Based Near-Infrared Photodetection Using Bilayer MoS_2", Nano Letters, vol. 15, pgs. 7440–7444, 2015.

15. (*)*Wei Li, Zachary J. Coppens*, Lucas V. Besteiro, Wenyi Wang, Alexander O. Govorov and **Jason Valentine**, "Circularly Polarized Light Detection with Hot Electrons in Chiral Plasmonic Metamaterials", Nature Communications, vol. 6, 8379, 2015.

16. Aditya Jain, *Parikshit Moitra*, Thomas Koschny, **Jason Valentine** and Costas M. Soukoulis, "Electric and Magnetic Response in Dielectric Dark States for Low Loss Subwavelength Optical Meta Atoms", Advanced Optical Materials, vol. 3, pgs. 1431-1438, 2015.

17. (*)*Parikshit Moitra*, Brian A. Slovick, Wei Li, Ivan I. Kravchencko, Dayrl P. Briggs, Srini Krishnamurthy, and **Jason Valentine**, "Large-Scale All-Dielectric Metamaterial Perfect Reflectors", ACS Photonics, vol. 2, pgs. 692-698, 2015. (*highlighted in Nature Materials*)

18. *Wenyi Wang*, Andrey. Klots, *Yuanmu Yang, Wei Li*, Ivan I. Kravchenko, Dayrl P. Briggs, Kirill I. Bolotin, and **Jason Valentine**, "Enhanced Absorption in 2D Materials Via Fano-Resonant Photonic Crystals", Applied Physics Letters, vol. 106, 181104, 2015.

19. (*)*Yuanmu Yang*, Ivan I. Kravchenko, Dayrl P. Briggs, **Jason Valentine**, "All-dielectric metasurface analogue of electromagnetically induced transparency," Nature Communications, vol. 5, 5753, 2014.

20. (*)*Wei Li*, **Jason Valentine**, "Metamaterial Perfect Absorber Based Hot Electron Photodetection," Nano Letters, vol. 14, pgs. 3510-3514, 2014.

21. *Parikshit Moitra*, Brian A. Slovick, Zhi Gang Yu, S. Krishnamurthy, **Jason Valentine**, "Experimental Demonstration of a broadband all-dielectric metamaterial perfect reflector," Applied Physics Letters, vol. 104, 171102, 2014. (*highlighted in Nature Photonics*)

22. (*)*Yuanmu Yang, Wenyi Wang, Parikshit Moitra*, Ivan I. Kravchenko, Dayrl P. Briggs, **Jason Valentine**, "Dielectric Meta-Reflectarray for Broadband Linear Polarization Conversion and Optical Vortex Generation", Nano Letters, vol. 14, pgs. 1394−1399, 2014.

23. (*)*Parikshit Moitra, Yuanmu Yang*, Zachary Anderson, Ivan Kravchenko, Dayrl Briggs, **Jason Valentine**, "Realization of an all-dielectric zero-index optical metamaterial" Nature Photonics, vol 7, pgs. 791-795, 2013.

24. *Wei Li, Zachary Coppens*, Greg Walker, and **Jason Valentine**, "Electron beam physical vapor deposition of thin ruby films for remote temperature sensing," Journal of Applied Physics, vol. 113, no. 16, pgs. 163509, 2013.
25. *Zachary Coppens, Wei Li*, Greg Walker, and **Jason Valentine**, "Probing and Controlling Photothermal Heat Generation in Plasmonic Nanostructures," Nano Letters, vol. 13, no. 3, pgs. 1023-1028, 2013.
26. Petr Markov, **Jason Valentine**, and Sharon Weiss, "Fiber-to-chip coupler designed using an optical transformation," Optics Express, vol. 20, no. 13, pgs. 14705-14713, 2012.
27. **Jason Valentine**, Shuang Zhang, Thomas Zentgraf, and Xiang Zhang, "Development of Bulk Optical Negative Index Fishnet Metamaterials: Achieving a Low Loss and Broadband Response Through Coupling", Proceedings of the IEEE, Vol. 99, pgs. 1682-1690, 2011.
28. Majid Gharghi, Christopher Gladden, Thomas Zentgraf, Yongmin Liu, Xiaobo Yin, **Jason Valentine**, and Xiang Zhang, "A Carpet Cloak for Visible Light", Nano Letters, Vol. 11, pgs. 2825-2828, 2011.
29. Thomas Zentgraf, Yongmin Liu, Maiken H. Mikkelsen, **Jason Valentine**, and Xiang Zhang," Plasmonic Luneburg and Eaton lenses", Nature Nanotechnology, Vol. 6, pgs. 151-155, 2011.
30. Thomas Zentgraf, **Jason Valentine**, Jensen Li, Nicholas Tapia, Guy Bartal, and Xiang Zhang, "An Optical 'Janus' Device with Multiple Functions for Integrated Photonics", Advanced Materials**,** Vol. 22, pgs. 2561-2564, 2010.
31. Cheng Sun, Kai-Hung Su, **Jason Valentine**, Yazmin T. Rosa-Bauza, Jonathan A. Ellman, Omeed Elboudwarej, Bipasha Mukherjee, Charles S. Craik, Marc A. Shuman, Fanqing Frank Chen, and Xiang Zhang, "Time Resolved Single-step Protease Activity Quantification Using Nanoplasmonic Resonator Sensors", ACS Nano, Vol. 4, pgs. 978-984, 2010.
32. (*)**Jason Valentine**, Jensen Li, Thomas Zentgraf, Guy Bartal, and Xiang Zhang, "An Optical Cloak Made of Dielectrics", Nature Materials, Vol. 8, pgs. 568-571, 2009. (cover article)
33. (*)**Jason Valentine**, Shuang Zhang, Thomas Zentgraf, Erick Ulin-Avila, Dentcho A Genov, Guy Bartal and Xiang Zhang, "Three Dimensional Optical Metamaterial Exhibiting Negative Refractive Index", Nature, Vol. 455, pgs. 376-379, 2008.

Refereed Conference Proceedings (including extended abstracts)

1. *Zhihua Zhu*, Philip G. Evans, Richard F. Haglund Jr., **Jason Valentine**, Electrically controlled reconfigurable metadevice employing nanostructured vanadium dioxide" *OSA Frontiers in Optics.* Sept. 20, 2017. Washington, DC, USA.
2. *Zachary Coppens*, Ivan Kravchenko, **Jason Valentine**, "Large-Area Lithography-Free Metamaterial Thermophotovoltaic Emitters with Oxygen Tolerance" *OSA Frontiers in Optics.* Oct. 17, 2016. Washington, DC, USA.
3. *Wei Li, Zack Coppens*, Lucas Besterio, *Wenyi Wang*, Alexander Govorov and **Jason** Valentine, "Circularly Polarized Light Detection with Hot Electrons in Chiral Plasmonic Metamaterials" *OSA Frontiers in Optics*. Oct. 17, 2015. San Jose, CA, USA.
4. *Yuanmu Yang*, Ivan. I. Kravchenko, Daryl. P. Briggs, **Jason Valentine**,"Dielectric Metasurface Analogue of Electromagnetically Induced Transparency" *OSA Frontiers in Optics.* Oct. 19, 2014. San Jose, CA, USA.
5. *Parikshit Moitra*, *Yuanmu Yang*, Zachary Anderson, Ivan Kravchenko, Dayrl Briggs, and **Jason**

Valentine, "Realization of All-dielectric Optical Metamaterials" *OSA Conference on Lasers and Electro-Optics (CLEO)*. June 9-14, 2013. San Jose, CA, USA.

6. *Yuanmu Yang* and **Jason Valentine**, "Omnidirectional Light-Focusing Metalens" Maxwell Fisheye Lens as a Waveguide Crossing for Integrated Photonics" *OSA Conference on Lasers and Electro-Optics (CLEO)*. June 9-14, 2013. San Jose, CA, USA.
7. **Jason Valentine**, *Parikshit Moitra*, *Yuanmu Yang*, *Wenyi Wang*, "All Dielectric Zero-Index Metamaterials at Optical Frequencies" *2012 Conference on Optoelectronic and Microelectronic Materials and Devices*. Dec. 12-14, 2012. University of Melbourne, Melbourne, AU.
8. *Joy Garnett* and **Jason Valentine**, "Maxwell Fisheye Lens as a Waveguide Crossing for Integrated Photonics" *OSA Conference on Lasers and Electro-Optics (CLEO).* May 6-12, 2012. San Jose, CA, USA.
9. Petr Markov, **Jason Valentine**, and Sharon Weiss, "Fiber-to-chip Coupler based on Transformation Optics" *OSA Conference on Lasers and Electro-Optics (CLEO).* May 6-12, 2012. San Jose, CA, USA.
10. **Jason Valentine**, Thomas Zentgraf, Yongmin Liu, Maiken H. Mikkelsen and Xiang Zhang, "Gradient Index Plasmonics" *Nanometa 2011*. January 2-6, 2011. Seefeld, Austria.
11. **Jason Valentine**, Thomas Zentgraf, Yongmin Liu, Maiken H. Mikkelsen and Xiang Zhang, "Adiabatic Gradient Index Plasmonics" *Metamaterials 2011*. October 10-13, 2011. Barcelona, Spain.
12. **Jason Valentine**, Jensen Li, Thomas Zentgraf, Guy Bartal, and Xiang Zhang, "Optical Cloaking Using Dielectrics," *OSA Frontiers in Optics*. October 11-15, 2009. San Jose, CA, USA. Paper FTuN2.
13. **Jason Valentine**, Shuang Zhang, Thomas Zentgraf, Erick Ulin-Avila, Dentcho Genov, Guy Bartal, and Xiang Zhang, "Negative Refractive Index in a Bulk Optical Metamaterial," *OSA Plasmonics and Metamaterials Conference*. October 19-14, 2008. Rochester, NY, USA. Paper MTuC6.
14. **Jason Valentine**, Shuang Zhang, Thomas Zentgraf, Erick Ulin-Avila, Dentcho Genov, Guy Bartal, and Xiang Zhang, "Demonstration of Negative Refractive Index in a Three-Dimensional Optical Metamaterial," *OSA Conference on Lasers and Electro-Optics (CLEO).* May 4-9, 2008. San Jose, CA, USA. Paper QPDB2.

Conference Presentations (abstract only, invited talks are highlighted)

1. **Jason Valentine**, "Multifunctional Metaoptics based on Multilayer Dielectric Metasurfaces", IEEE Rapid, Sandestin, FL (August 21, 2019) (**invited**)
2. **Jason Valentine**, "Multifunctional Metaoptics based on Multilayer Dielectric Metasurfaces", SPIE Optics + Photonics, San Diego (August 12, 2019) (**invited**)
3. **Jason Valentine**, "Metasurface Light Sources and Modulators Based on Kerker Effects" META 2019, Lisbon, Portugal (July 25, 2019) (invited)
4. **Jason Valentine**, "Multifunctional Metaoptics based on Multilayer Dielectric Metasurfaces", ICMAT 2019, Singapore (June 25, 2019) (**invited**)
5. **Jason Valentine**, "Dynamic Huygens' Metasurfaces Based on ENZ Media", PQE 2019, Snowbird, UT (January 8, 2019). (**invited**)
6. **Jason Valentine**, "Dynamic Optical Metasurfaces", *Nature Conference on Nanophotonics and Integrated Photonics*, Nanjing, China (November 10, 2018). (**invited**)

7. **Jason Valentine**, "Dynamic All-Dielectric Metasurfaces", *IEEE Rapid*, Miramar Beach, FL (August 24, 2018). (**invited**)

8. *Austin Howes*, **Jason Valentine**, "All-Dielectric Huygens Metasurface Exhibiting ENZ-Assisted Dynamic Absorption Control", *60th Electronic Materials Conference*, Santa Barbara, CA (June 27 – 29, 2018).

9. **Jason Valentine**, "Dynamic Metasurfaces for the Infrared", *2018 MRS Spring Meeting*, Phoenix, AZ (April 5, 2018). (**invited**)

10. **Jason Valentine**, "Dynamic Infrared Metasurfaces", *SPIE Photonics West*, San Francisco, CA (January 31, 2018). (**invited**)

11. **Jason Valentine**, "Dynamic Plasmonic Metasurfaces", *PQE 2018*, Snowbird, UT (January 8, 2018). (**invited**)

12. **Jason Valentine**," Metasurface-Based Approaches For Controlling and Harnessing Heat Flow in Nanostructured Materials", *2017 MRS Fall Meeting*, Boston, MA (November 30, 2017). (**invited**)

13. *Zhihua Zhu*, Philip G. Evans, Richard F. Haglund Jr., **Jason Valentine**, Electrically controlled reconfigurable metadevice employing nanostructured vanadium dioxide" *OSA Frontiers in Optics.* Sept. 20, 2017. Washington, DC, USA.

14. **Jason Valentine**, "Dynamic Metasurfaces for the Near to Long-wave Infrared", SPIE Optics + Photonics 2017, San Diego, CA (Aug. 7, 2017). (**invited**)

15. **Jason Valentine**, "Near-infrared Dielectric Metasurfaces, *ICMAT 2017*, Singapore (June, 22, 2017). (**invited**)

16. **Jason Valentine**, "Silicon-based Optical Metasurfaces", *SPIE Photonics West*, San Francisco, CA (February 2, 2017). (**invited**)

17. **Jason Valentine**, "Harnessing Loss in Plasmonic Metamaterials", *Nanometa*, Seefeld, Austria (January 7, 2017). (**invited**)

18. *Zachary Coppens*, **Jason Valentine**, "Pixel-less Spatial Modulation of Thermal Emissivity in Active Infrared Metamaterials", *2016 MRS Fall Meeting*, Boston, MA (Dec. 2, 2016).

19. *Zhihua Zhu*, Philip Evans, Richard Haglund, **Jason Valentine**, "Tunable Metasurfaces Based on Vanadium Dioxide", *2016 MRS Fall Meeting*, Boston, MA (November 29, 2016).

20. *Zachary Coppens*, Ivan Kravchenko, **Jason Valentine**, "Large-Area Lithography-Free Metamaterial Thermophotovoltaic Emitters with Oxygen Tolerance", *OSA Frontiers in Optics,* Washington, DC (Oct. 17, 2016).

21. **Jason Valentine**, Yuanmu Yang, Abdelaziz Boulesbaa, Ivan I. Kravchenko, Dayrl P. Briggs, Alexander Puretzky, David Geohegan, "High Quality Factor Silicon-Based Metasurfaces", *International Conference on Modern Materials and Technologies (CIMTEC)*, Perugia, Italy (June 7, 2016). (**invited**)

22. **Jason Valentine**, "Silicon-Based Metasurfaces For Near-infrared Optics", *Royal Society Meeting on New Horizons in Nanophotonics*, Buckinghamshire, UK (May 24, 2016). (**invited**)

23. *Wei Li*, **Jason Valentine**, "Circularly Polarized Light Detection with Hot Electrons in Chiral Plasmonic Metamaterials", *2016 MRS Spring Meeting*, Phoenix, AZ (April 1, 2016).

24. **Jason Valentine**, "Hot Electron Photodetection Based on Bulk and 2D Semiconductors", *2016 MRS Spring Meeting*, Phoenix, AZ (March 30, 2016). (**invited**)

25. *Yuanmu Yang, Parikshit Moitra, Wenyi Wang*, Brian Slovick, Ivan Kravchenko, Dayrl Briggs, Srini Krishnamurthy, **Jason Valentine**, "Dielectric Metasurfaces", *APS March Meeting*, Baltimore, MD (March 15, 2016). (**invited**)

26. *Wei Li, Wenyi Wang, Zack Coppens*, Lucas Vázquez, Andrey Klots, Dhiraj Prasai, *Yuanmu Yang*, Kirill I. Bolotin, Sasha Govorov, and **Jason Valentine**, "Hot Electron Detection Based on Bulk and 2D Semiconductors" *PQE 2016*, Snowbird, UT (Jan. 8, 2016). (**invited**)

27. *Wenyi Wang*, Andrey Klots, Kirill I. Bolotin, **Jason Valentine**, "Hot Electron-Based near Infrared Photodetection with Bilalyer MoS_2" *2015 MRS Fall Meeting*, Boston, MA (December, 3 2015).

28. *Yuanmu Yang*, Abdelaziz Boulesbaa, Ivan I. Kravchenko, Dayrl P. Briggs, Alexander Puretzky, David Geohegan, **Jason Valentine**, "Large Third-order Nonlinearity in a Fano-resonant Silicon Metasurface" *2015 MRS Fall Meeting*, Boston, MA (Dec 2, 2015).

29. *Wei Li, Zack Coppens*, Lucs Besterio, *Wenyi Wang*, Alexander Govorov and **Jason Valentine** "Circularly Polarized Light Detection with Hot Electrons in Chiral Plasmonic Metamaterials" *2015 MRS Fall Meeting*, Boston, MA (Dec. 2, 2015).

30. *Wei Li, Zack Coppens*, Lucas Besterio, *Wenyi Wang*, Alexander Govorov and **Jason** Valentine "Circularly Polarized Light Detection with Hot Electrons in Chiral Plasmonic Metamaterials" *2015 Frontiers in Optics / Laser Science*, San Jose, CA (Oct. 17, 2015).

31. *Yuanmu Yang*, Abdelaziz Boulesbaa, Ivan Kravchenko, Dayrl Briggs, Alexander Puretzky, David Geohegan, **Jason Valentine**, "Nonlinear Conversion Using Fano-Resonant All-Dielectric Metasurfaces", *OSA Nonlinear Metamaterial Incubator*, Washington D.C. (Sept. 30 – Oct. 2, 2015). (**invited**)

32. *Yuanmu Yang*, Ivan I. Kravchenko, Dayrl P. Briggs, and **Jason Valentine**, "Fano-resonant All-Dielectric Metasurfaces", *Metamaterials 2015*, Oxford, UK (September 8, 2015).

33. *Yuanmu Yang, Parikshit Moitra*, Ivan Kravchenko, Dayrl Briggs, **Jason Valentine**, "All-Dielectric Metasurfaces", *CLEO Pacific Rim*, Busan, South Korea (August 24-28, 2015). (**invited**)

34. *Yuanmu Yang, Parikshit Moitra*, Ivan Kravchenko, Dayrl Briggs, **Jason Valentine,** "High-Q All-dielectric Metasurfaces", *META 2015*, New York, NY (August 4-7, 2015). (**invited**)

35. *Wei Li, Zachary Coppens*, and **Jason Valentine**, "Metamaterial Perfect Absorber Based Hot Electron Photodetection", *META 2015*, New York, NY (August 4-7, 2015).

36. *Yuanmu Yang*, Abdelaziz Boulesbaa, Ivan I. Kravchenko, Dayrl P. Briggs, Alexander Puretzky, David Geohegan, and **Jason Valentine**, "Nonlinear Conversion Using Fano-Resonant All-Dielectric Metasurfaces", *OSA Nonlinear Optics Conference*, Kauai, Hawaii (July 17-21, 2015)

37. *Yuanmu Yang, Parikshit Moitra*, Ivan Kravchenko, Dayrl Briggs, **Jason Valentine**, "Silicon-Based Optical Metasurfaces", *ICMAT (Singapore MRS)*, Singapore (June 28 – July 3rd, 2015). (**invited**)

38. *Yuanmu Yang, Parikshit Moitra*, Ivan Kravchenko, Dayrl Briggs, **Jason Valentine**, "Realization of 2D and 3D All-Dielectric Optical Metamaterials", *EIPBN (3-beams) Conference*, San Diego, CA (May 26-29, 2015). (**invited**)

39. *Wei Li* and **Jason Valentine**, "Hot electron photodetectors based on metamaterial perfect absorbers" *SPIE Photonics West*, San Francisco, CA (Feb. 13-18, 2015). (**invited**)

40. *Wei Li* and **Jason Valentine**, "Metamaterial Perfect Absorber Based Hot Electron Photodetection" *PQE 2015*, Snowbird, UT (Jan. 4-8, 2015). (**invited**)

41. *Wenyi Wang*, Andrey Klots, *Yuanmu Yang, Wei Li*, Kirill I. Bolotin, **Jason Valentine**," Enhanced Photodetection in 2D Materials via Fano-Resonant Photonic Crystals" *2014 MRS Fall Meeting*,

Boston, MA (Nov. 30 – Dec 5, 2014).

42. *Parikshit Moitra*, Brian A. Slovick, Zhi Gang Yu, S. Krishnamurthy, and **Jason Valentine**," Realization of All-Dielectric Metamaterial Perfect Reflectors" *2014 MRS Fall Meeting*, Boston, MA (Nov. 30 – Dec 5, 2014). (**best poster nominee**)

43. *Wei Li* and **Jason Valentine**," Metamaterial Perfect Absorber Based Hot Electron Photodetection" *2014 MRS Fall Meeting*, Boston, MA (Nov. 30 – Dec 5, 2014).

44. *Yuanmu Yang*, Ivan Kravchenko, Daryl Briggs, **Jason Valentine**," All-Dielectric Metamaterial Analogue of Electromagnetically Induced Transparency" *2014 MRS Fall Meeting*, Boston, MA (Nov. 30 – Dec 5, 2014).

45. **Jason Valentine**, "Manipulating Light with All-dielectric Metasurfaces" *EMN Fall 2014 Meeting*, Orlando, FL (Nov. 22-25, 2014). (**invited**)

46. *Yuanmu Yang*, Ivan. I. Kravchenko, Daryl. P. Briggs, **Jason Valentine**, "Dielectric Metasurface Analogue of Electromagnetically Induced Transparency" *OSA Frontiers in Optics / Laser Science,* San Jose, CA (Oct. 19, 2014).

47. **Jason Valentine**, "Manipulating Light with All-dielectric Metasurfaces" *CINT User Meeting & 6th International Workshop on Electromagnetic Metamaterials*, Santa Fe, NM (September 22-23, 2014). (**invited**)

48. *Wei Li* and **Jason Valentine**," Metamaterial Perfect Absorber for Plasmon-induced Hot Electron Photodetection", *2014 Gordon Research Conference on Plasmonics*, Sunday River Resort, Newry, Maine, (July 6-11, 2014).

49. *Yuanmu Yang, Parikshit Moitra, Wenyi Wang, Zachary Anderson*, Ivan Kravchenko, Dayrl Briggs, **Jason Valentine**, "Realization of 2D and 3D Optical Dielectric Metamaterials" *META 2014*, Singapore, Singapore (May 20-23, 2014). (**invited**)

50. **Jason Valentine**, "All-Dielectric Optical Metamaterials" *LANL Mesoscale Science Frontiers Conference*, Santa Fe, NM (May 12-16, 2014). (**invited**)

51. *Wei Li, Zachary Coppens*, Greg Walker and **Jason Valentine**, "Probing and Controlling Photothermal Heat Generation with Plasmonic Nanostructures" *2013 MRS Fall Meeting*, Boston, MA (December 1-6, 2013).

52. *Parikshit Moitra, Yuanmu Yang, Zachary Anderson*, and **Jason Valentine**, "Realization of All-dielectric Optical Metamaterials" *OSA Conference on Lasers and Electro-Optics (CLEO)*, San Jose, CA (June 9-14, 2013). (**invited**)

53. *Yuanmu Yang* and **Jason Valentine**, "Omnidirectional Light-Focusing Metalens" Maxwell Fisheye Lens as a Waveguide Crossing for Integrated Photonics" *OSA Conference on Lasers and Electro-Optics (CLEO)*, San Jose, CA (June 9-14, 2013).

54. *Wei Li*, *Zachary Coppens*, Greg Walker, **Jason Valentine**," Probing and Controlling Photothermal Energy Conversion in Plasmonic Nanostructures" *2013 MRS Spring Meeting*, San Francisco, CA (April 1-5, 2013).

55. *Parikshit Moitra, Yuanmu Yang, Zachary Anderson*, and **Jason Valentine**, "Zero-index All-Dielectric Metamaterials at Optical Frequencies" *2013 MRS Spring Meeting*, San Francisco, CA (April 1-5, 2013).

56. **Jason Valentine**, *Zachary Coppens, Wei Li*, and Greg Walker, "Probing and Controlling Photothermal Heat Generation with Plasmonic Nanostructures" *2013 South Eastern Ultrafast Conference*, Georgia Institute of Technology, Atlanta, GA (Jan. 10-11, 2013). (**invited**)

57. **Jason Valentine**, "All Dielectric Zero-index Metamaterials at Optical Frequencies" *2012 Conference on Optoelectronic and Microelectronic Materials and Devices*, Melbourne University, Melbourne, AU (Dec. 12-14, 2012). (**invited)**

58. **Jason Valentine**, *Parikshit Moitra, Yuanmu Yang, Wenyi Wang*, "All Dielectric Optical Metamaterials" *SPIE Optics and Photonics, San Diego, CA* (August 11-16, 2012). (**invited**)

59. **Jason Valentine**, Thomas Zentgraf, Yongmin Liu, Maiken H. Mikkelsen and Xiang Zhang, "Adiabatic Gradient Index Plasmonics" *Metamaterials 2011*. October 10-13, 2011. Barcelona, Spain. (**invited**)

60. **Jason Valentine**, Thomas Zentgraf, Yongmin Liu, Maiken H. Mikkelsen and Xiang Zhang, "Plasmonic Luneburg and Eaton Lenses" *PIERS 2011 Suzhou*. September 12-16, 2011. Suzhou, China. (**invited**)

61. **Jason Valentine**, "Transforming Optical Space Using Nanomaterials" *Southeastern Ultrafast Conference*. January 13-14, 2011. Oak Ridge, TN, USA. (**invited**)

62. **Jason Valentine**, Thomas Zentgraf, Yongmin Liu, Maiken H. Mikkelsen and Xiang Zhang, "Gradient Index Plasmonics" *Nanometa 2011*. January 2-6, 2011. Seefeld, Austria.

63. **Jason Valentine**, Jensen Li, Thomas Zentgraf, Guy Bartal, and Xiang Zhang, "An Optical Cloak Using Dielectrics" *MRS Spring Meeting*. April 5-9, 2010. San Francisco, CA, USA. (**MRS Gold Award talk, poster award winner**).

64. **Jason Valentine**, Jensen Li, Thomas Zentgraf, Guy Bartal, and Xiang Zhang, "Optical Cloaking Using Dielectrics" *OSA Frontiers in Optics*. October 11-15, 2009. San Jose, CA, USA.

65. **Jason Valentine**, Jensen Li, Thomas Zentgraf, Guy Bartal and Xiang Zhang, "An Optical Cloak Made of Dielectrics." *Berkeley Nano Forum*. April 26, 2009. Berkeley, CA, USA. (poster award winner)

66. **Jason Valentine**, Shuang Zhang, Thomas Zentgraf, Erick Ulin-Avila, Dentcho Genov, Guy Bartal, and Xiang Zhang, "Negative Refractive Index in a Bulk Optical Metamaterial." *MRS Spring Meeting*. April 13-19, 2009. San Francisco, CA, USA.

67. **Jason Valentine**, Shuang Zhang, Thomas Zentgraf, Erick Ulin-Avila, Dentcho Genov, Guy Bartal, and Xiang Zhang, "Negative Refractive Index in a Bulk Optical Metamaterial." *LBNL Molecular Foundry Users' Meeting*. November 10-11, 2008. Berkeley, CA, USA.

68. **Jason Valentine**, Shuang Zhang, Thomas Zentgraf, Erick Ulin-Avila, Dentcho Genov, Guy Bartal, and Xiang Zhang, "Demonstration of Negative Refractive Index in a Three-Dimensional Optical Metamaterial*." Gordon Research Conference on Plasmonics*, July 27 to August 1, 2008. Tilton, NH, USA.

69. **Jason Valentine**, Shuang Zhang, Thomas Zentgraf, Erick Ulin-Avila, Dentcho Genov, Guy Bartal, and Xiang Zhang, "Demonstration of Negative Refractive Index in a Three-Dimensional Optical Metamaterial." *OSA Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference*. May 4-9, 2008. San Jose, CA, USA.

70. **Jason Valentine**, Kyle Su, Cheng Sun, Xiang Zhang, Marc Shuman, Fanqing Chen, "Nanoplasmonic resonator-based detection of proteolytically active PSA." *SPIE West*. January 19-23, 2007. San Jose, CA, USA.

Invited Seminars at Universities and Research Centers

1. **Jason Valentine**, "All-Dielectric Optical Metamaterials", *University of Wisconsin*, Madison, WI

(October 12, 2017).

2. **Jason Valentine**, "Optical Metamaterials: From Ultra-thin Optical Elements to Invisibility Cloaks", *Alabama A&M University*, Huntsville, AL (June 28, 2017).
3. **Jason Valentine**, "Harnessing and Avoiding Loss in Optical Metamaterials", *Argonne National Laboratory*, Chicago, IL (March 8, 2017).
4. **Jason Valentine**, "Harnessing and Avoiding Loss in Optical Metamaterials", *Ohio University*, Athens, OH (November 4, 2016).
5. **Jason Valentine**, "Harnessing and Avoiding Loss in Optical Metamaterials", *Naval Surface Warfare Center*, Crane, IN (October 18, 2016).
6. **Jason Valentine**, "Metamaterial Basics: How to Create a Material With a Negative Refractive Index" and "Metamaterial Applications: From Ultra-thin Optical Elements to Invisibility Cloaks", *Alabama A&M University*, Huntsville, AL (June 28, 2016).
7. **Jason Valentine**, "Harnessing, and Avoiding, Loss in Optical Metamaterials", *Imperial College London*, London, England (May 26, 2016).
8. **Jason Valentine**, "Harnessing, and Avoiding, Loss in Optical Metamaterials", *Naval Research Laboratory*, Washington, DC (March 16, 2016).
9. **Jason Valentine**, "Harnessing, and Avoiding, Loss in Optical Metamaterials", *University of Memphis*, Memphis, TN (January 29, 2016).
10. **Jason Valentine**, "Harnessing, and Avoiding, Loss in Optical Metamaterials", *Emory University*, Atlanta, GA (January 25, 2016).
11. **Jason Valentine**, "Harnessing, and Avoiding, Loss in Optical Metamaterials" *Purdue University*, West Lafayette, IN, October 20, 2015.
12. **Jason Valentine**, "Optical All-Dielectric Metamaterials", *1st International POSTEC Nanophotonics Workshop*, Pohang, South Korea (August 24, 2015).
13. **Jason Valentine**, "All-Dielectric Metasurfaces: Molding the Flow of Light" Bio-Photonics Seminar Series, *Vanderbilt University* (September 9th, 2014).
14. **Jason Valentine**, "Manipulating Light with All-Dielectric Metasurfaces" *Australian National University*, Australia (July 18th, 2014).
15. **Jason Valentine**, "Dielectric Metamaterials Go Optical" *IMRE Metamaterials Workshop,* Singapore, Singapore (May 19th, 2014).
16. **Jason Valentine**, "Dielectric Metamaterials Go Optical", *California Institute of Technology*, Pasadena, CA, USA (Feb. 7th, 2014).
17. **Jason Valentine**, "All Dielectric Optical Metamaterials", *Technion University*, Haifa, Israel (Oct. 8th, 2013).
18. **Jason Valentine,** "All-Dielectric Optical Metamaterials for Controlling Light Emission", *Stanford Research Institute (SRI)*, Palo Alto, CA (June 13, 2013).
19. **Jason Valentine**, "All Dielectric Optical Metamaterials", *University of Georgia*, Athens, GA, USA (Nov. 8th, 2012).
20. **Jason Valentine**, "On-chip Transformation Optics and Dielectric Metamaterials", *Sandia National Laboratory*, Albuquerque, NM, USA (July 28th, 2011).
21. **Jason Valentine**, "Metamaterials: Controlling Light at Will", *Austin Peay State University*,

Clarksville, TN, USA (April 16th, 2011).

22. **Jason Valentine**, "Flat Land Transformation Optics", *Air Force Research Laboratory*, Akron, OH, USA (March 8th, 2011).
23. **Jason Valentine**, Jensen Li, Thomas Zentgraf, Guy Bartal, and Xiang Zhang, "Cancer Detection Using SERS and an Optical Cloak." *Agilent Technologies Research Meeting*, Berkeley, CA, USA (June 10th, 2009).