

# Jason Gage Valentine

Vanderbilt University, Nashville, TN 37212; (615) 875-5508 (office); [jason.g.valentine@vanderbilt.edu](mailto:jason.g.valentine@vanderbilt.edu)  
Professor of Mechanical Engineering, Professor of Electrical Engineering, Deputy Director of the  
Vanderbilt Institute of Nanoscale Science and Engineering

## EDUCATION

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-University of California, Berkeley	Ph. D.	Mechanical Engineering	2010
<i>Dissertation Title:</i> Bringing Optical Metamaterials to Reality			
<i>Advisor:</i> Prof. Xiang Zhang			
-Purdue University	B.S.	Mechanical Engineering	2005
Graduation with Highest Distinction			

## APPOINTMENTS

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-Full Professor	Vanderbilt University	2023-present
-Deputy Director, Vanderbilt Institute of Nanoscale Science and Engineering	Vanderbilt University	2020-present
-Associate Professor (with tenure)	Vanderbilt University	2017-2023
-Assistant Professor	Vanderbilt University	2010-2017
-Graduate Research Assistant	University of California, Berkeley	2005-2010

## CAREER HIGHLIGHTS

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**Publications and Scholarship:** 43 peer-reviewed journal articles; >13,000 total citations; h-index = 34; 9 ISI “Highly Cited Papers”; Top 2% of Most Cited Scientists (2022 Stanford University Study); 107 conference presentations, 65 of them invited; Keynote at 2021 MRS Fall Meeting.

**Research Activity:** >\$7M in research funding as PI (\$2.5M active); 2 patents awarded; 1 patent pending; 2 provisional patents; NSF CAREER and ONR Young Investigator Awards; Funding from NSF, ONR, ARO, AFOSR.

**Teaching and Mentoring:** Graduated 10 Ph.D. students and 4 Master’s students; Mentored 19 undergraduate students and 5 high school students; Undergraduate courses taught in 2 different subject areas (*Heat Transfer* and *Direct Energy Conversion*); Developed graduate course on *Nanophotonic Materials*; Faculty advisor for Optica student group.

**Service:** Program Committee: Electronic Material Conference (2017 – present), SPIE Europe (2020, 2022), SPIE Photonics West (2023), Nanometa (2018), MRS (2016); Judging Chair, Regeneron Science Talent Search; Vanderbilt liaison to Oak Ridge National Laboratory (2020 – present); Director of Graduate Recruiting, Mechanical Engineering (2020 – 2023); Director of Graduate Studies, Mechanical Engineering (2023-present); Editor, Journal of Physics D (2016 – 2020); Elected to serve as Vice Chair (2024) and Chair (2026) of Gordon Research Conference on Plasmonics and Nanophotonics.

## AWARDS AND HONORS

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Chancellor’s Faculty Fellow, 2018 - 2020

Chancellor’s Research Award, 2017

VINSE High Impact Paper Award, 2016, 17, 18, 19, 20, 21, 22

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

43 peer-reviewed journal articles; >13,000 total citations; h-index = 34; 9 ISI “Highly Cited Papers”; Top 2% of Most Cited Scientists (2022 Stanford University Study). 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).

### Articles Submitted or in Review

1. *Hanyu Zheng*, Quan Liu, Ivan I Kravchenko, *Xiaomeng Zhang*, Yuankai Huo, **Jason Valentine**, “Intelligent Multi-channel Meta-imagers for Accelerating Machine Vision” (in review).
2. *Brandon Swartz*, *Hanyu Zheng*, Gregory T. Forcherio, and **Jason Valentine**, “Broadband and Large-Aperture Metasurface Edge Encoders for Incoherent Infrared Radiation” (in review).
3. *Elena Kovalik*, *Janna Eaves-Rathert*, Cary L. Pint, **Jason G. Valentine**, “Low-Power Electrochemical Modulation of Silicon-based Metasurfaces” (in review).
4. Arseniy I. Kuznetsov, Mark L. Brongersma, Jin Yao, Mu Ku Chen, Uriel Levy, Din Ping Tsai, Nikolay I. Zheludev, Andrei Faraon, Amir Arbabi, Nanfang Yu, Debashis Chanda, Kenneth Crozier, Alexander V. Kildishev, Hao Wang, Joel K.W. Yang, **Jason G. Valentine**, Patrice Genevet, Jonathan A. Fan, Owen D. Miller, Arka Majumdar, Johannes E. Fröch, David Brady, Felix Heide, Ashok Veeraraghavan, Nader Engheta, Andrea Alù, Albert Polman, Harry A. Atwater, Prachi Thureja, Ramon Paniagua-Dominguez, Son Tung Ha, Angela Barreda, Jon Schuller, Isabelle Staude, Gustavo Grinblat, Yuri Kivshar, Samuel Peana, Susanne F. Yelin, Alexander Senichev, Vladimir M. Shalaev, Soham Saha, Alexandra Boltasseva, Junsuk Rho, Dong Kyo Oh, Joohoon Kim, Junghyun Park, Robert Devlin, Ragip Pala, “Roadmap for Optical Metasurfaces” (in review).

### Peer-Reviewed Journal Articles

1. *Hanyu Zheng*, Mingze He, *You Zhou*, Ivan I Kravchenko, Joshua D. Caldwell, **Jason G Valentine**, “Compound Meta-Optics for Complete and Loss-Less Field Control”, ACS Nano vol. 16, pgs. 15100-15107 (2022).
2. *Hanyu Zheng*, Quan Liu, *You Zhou*, Ivan I Kravchenko, Yuankai Huo, **Jason Valentine**, “Meta-optic Accelerators for Object Classifiers”, Science Advances 8, eabo6410 (2022).
3. *Xiaomeng Zhang*, Benfeng Bai, Hong-Bo Sun, Guofan Jin, **Jason Valentine**, “Incoherent Optoelectronic Differentiation with Optimized Multilayer Films”, Laser and Photonics Reviews, vol. 16, pg. 2200038 (2022).
4. *Janna Eaves-Rathert*, *Elena Kovalik*, *Chibuzor Fabian Ugwu*, Bridget R Rogers, Cary L Pint, **Jason G Valentine**<sup>‡</sup>, “Dynamic Color Tuning with Electrochemically Actuated TiO<sub>2</sub> Metasurfaces”, Nano Letters, vol. 22, pgs. 1626-1632 (2022).
5. Brian Raeker<sup>†</sup>, *Hanyu Zheng*<sup>†</sup>, *You Zhou*, Ivan Kravchenko, **Jason Valentine**<sup>‡</sup>, Anthony Grbic<sup>‡</sup>, “All-Dielectric Meta-Optics for High-Efficiency Independent Amplitude and Phase Manipulation”, Advanced Photonics Research, 2100285 (2021). <sup>†</sup>co-first authors <sup>‡</sup>co-corresponding authors.
6. *Hanyu Zheng*, *You Zhou*, *Chibuzor Ugwu*, *Andy Du*, Ivan Kravchenko, **Jason Valentine**, “Large-scale metasurfaces based on grayscale nanosphere lithography”, ACS Photonics, ACS Photonics, vol. 8, pgs. 1824-1831 (2021).

7. Xiaomeng Zhang, You Zhou, Hanyu Zheng, Alberto Esteban Linares, Fabian Chibuzor Ugwu, Deyu Li, Hong-Bo Sun, Benfeng Bai, **Jason G Valentine**, “Reconfigurable Metasurface for Image Processing”, *Nano Letters*, vol. 21, pgs. 8715-8722 (2021).
8. (\*)You Zhou, Hanyu Zheng, Ivan Kravchenko, **Jason Valentine**, “Flat Optics for Image Differentiation”, *Nature Photonics*, vol. 14, pgs. 316-323 (2020).
9. Austin Howes, Zhihua Zhu, David Curie, Jason R. Avila, Virginia D. Wheeler, Richard F. Haglund, **Jason Valentine**, “Optical Limiting Based on Huygens' Metasurfaces”, *Nano Letters*, vol. 20, pgs. 4638-4644 (2020).
10. Austin Howes, Ryan J. Nolen, Joshua Caldwell, Jason Valentine, “Near-unity and Narrow-Band Thermal Emissivity in Balanced Dielectric Metasurfaces”, *Advanced Optical Materials*, vol. 8, pg 1901470 (2019).
11. 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).
12. 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.
13. 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.
14. **Jason Valentine**, “Bridging the gap with hot electrons”, *Nature Nanotechnology*, vol. 13, pgs. 96-97, 2018.
15. Zachary Coppens and **Jason Valentine** "Spatial and Temporal Modulation of Thermal Emission", *Advanced Materials*, 1701275, 2017.
16. 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.
17. Brian A Slovic, 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.
18. (\*)Wei Li, **Jason Valentine**, “Harvesting the Loss: Surface Plasmon-Based Hot Electron Photodetection”, *Nanophotonics*, vol. 6, pgs. 177-191, 2017.
19. 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.
20. 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.
21. 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.
22. 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.

23. (\*)*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.
24. *Wenyi Wang, Andrey Klots, Dhiraj Prasai, Yuanmu Yang, Kirill I. Bolotin, and Jason Valentine*, “Hot Electron-Based Near-Infrared Photodetection Using Bilayer MoS<sub>2</sub>”, *Nano Letters*, vol. 15, pgs. 7440–7444, 2015.
25. (\*)*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.
26. 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.
27. (\*)*Parikshit Moitra, Brian A. Slovick, Wei Li, Ivan I. Kravchenko, Dayrl P. Briggs, Srinikrishnamurthy, and Jason Valentine*, "Large-Scale All-Dielectric Metamaterial Perfect Reflectors", *ACS Photonics*, vol. 2, pgs. 692-698, 2015. (*highlighted in Nature Materials*)
28. *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.
29. (\*)*Yuanmu Yang, Ivan I. Kravchenko, Dayrl P. Briggs, Jason Valentine*, “All-dielectric metasurface analogue of electromagnetically induced transparency,” *Nature Communications*, vol. 5, 5753, 2014.
30. (\*)*Wei Li, Jason Valentine*, “Metamaterial Perfect Absorber Based Hot Electron Photodetection,” *Nano Letters*, vol. 14, pgs. 3510-3514, 2014.
31. *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*)
32. (\*)*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.
33. (\*)*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.
34. *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.
35. *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.
36. 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.
37. *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.
38. 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.
39. 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.
40. 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.

41. 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.
42. **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)
43. **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.

## Books

1. Igal Brener, Sheng Liu, Isabelle Staude, **Jason Valentine**, Christopher Holloway, "Dielectric metamaterials: fundamentals, designs and applications" Woodhead Publishing (2019), ISBN: 0081024045

## Refereed Conference Proceedings (including extended abstracts)

1. **Jason Valentine**, "Electrochemically Modulated Metasurfaces", *CLEO*, San Jose, CA (May 10, 2023).
2. Brian Raeker, *Hanyu Zheng, You Zhou, Jason Valentine*, Anthony Grbic, High-Efficiency Compound Metaoptics for Independent Amplitude and Phase Control, *OSA CLEO: QELS Fundamental Science* (2021).
3. Brian Raeker, *Hanyu Zheng, You Zhou, Jason Valentine*, Anthony Grbic, Spatial Amplitude and Phase Control with High-Efficiency Meta-optics, *OSA Flat Optics: Components to Systems* (2021).
4. Gregory T Forcherio, Timothy A Morgan, *Scott G Criswell, Dmitry A Kozak, Jason Valentine, Joshua D Caldwell, Benjamin R Conley*, "Designing Plasmonic Hot Carrier Devices for Uncooled Infrared Photodetection", *IEEE Rapid*, Destin, FL (2020).
5. Brian Raeker, *You Zhou, Jason Valentine*, Tony Grbic, "All-Dielectric Compound Metaoptics" *2019 IEEE International Symposium on Antennas and Propagation*. July 2019. Atlanta, GA, USA.
6. *You Zhou, Ivan I. Kravchenko, Hao Wang, J. Ryan Nolen, Gong Gu and Jason Valentine*, "Noninteracting Multilayer Dielectric Metasurfaces for Multiwavelength Metaoptics" *OSA CLEO*. May 2019. San Jose, CA, USA.
7. *Zhihua Zhu, Philip G. Evans, Richard F. Haglund Jr., Jason Valentine*, Electrically controlled reconfigurable metadvice employing nanostructured vanadium dioxide" *OSA Frontiers in Optics*, Washington, DC (Sept. 18, 2017).
8. *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.
9. *Zhihua Zhu, Philip G. Evans, Richard F. Haglund Jr., Jason Valentine*, "Electrically controlled reconfigurable metadvice employing nanostructured vanadium dioxide" *OSA Frontiers in Optics*. Sept. 20, 2017. Washington, DC, USA.
10. *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.
11. *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.
12. *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.
13. *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.

14. **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.
15. 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.
16. 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.
17. **Jason Valentine**, Thomas Zentgraf, Yongmin Liu, Maiken H. Mikkelsen and Xiang Zhang, “Gradient Index Plasmonics” *Nanometa 2011*. January 2-6, 2011. Seefeld, Austria.
18. **Jason Valentine**, Thomas Zentgraf, Yongmin Liu, Maiken H. Mikkelsen and Xiang Zhang, “Adiabatic Gradient Index Plasmonics” *Metamaterials 2011*. October 10-13, 2011. Barcelona, Spain.
19. **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.
20. **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.
21. **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, “Intelligent Meta-imagers”, DINAMO, Svolvær , Norway (June 12, 2023) **(invited)**
2. Jason Valentine, “Intelligent Meta-imagers”, SPP10, Houston, TX (May 26, 2023) **(invited)**
3. Jason Valentine, “Electrochemically Modulated Metasurfaces”, CLEO, San Jose, CA (May 10, 2023)
4. Hanyu Zheng, Brandon Swartz, Quan Liu, Xiaomeng Zhang, Ivan Kravchenko, Yuankai Huo, Greg Forcherio, **Jason Valentine**, “Meta-optic Accelerators for Image Processing and Object Classification”, SPIE DCS, Orlando, FL (May 2, 2023) **(invited)**
5. **Jason Valentine**, “Meta-optics for Image Processing and Object Classification”, MRS Spring Meeting, San Francisco, CA (April 13, 2023) **(invited)**
6. **Jason Valentine**, “Electrochemically Actuated Metasurfaces”, MRS Spring Meeting, San Francisco, CA (April 11, 2023) **(invited)**
7. **Jason Valentine**, “Meta-optic Accelerators for Image Processing”, PQE 2023, Snowbird, UT (January 9, 2023) **(invited)**
8. **Jason Valentine**, “Meta-optics for Image Processing and Object Classification”, MRS Fall Meeting, Boston, MA (December 1, 2022). **(invited)**
9. **Jason Valentine**, “Novel Nanophotonic Devices and Future Applications in Electronics”, ASME Interpack, Orange County, CA (Oct. 26. 2022) **(invited tutorial)**
10. **Jason Valentine**, “Meta-optic Accelerators for Image Processing”, *Metamaterials 2022*, Siena, Italy (Sept. 14, 2022) **(invited)**
11. **Jason Valentine**, “Meta-optics for Image Processing”, *GRC: Plasmonics and Nanophotonics*, Newry, ME (July 12, 2022) **(invited)**

12. **Jason Valentine**, “Dynamic Electrochemically Actuated Metasurfaces”, *SPIE Europe*, Strasbourg, FR (April 6, 2022) **(invited)**
13. **Jason Valentine**, “Meta-optics for Image Processing”, *SPIE Photonics West*, San Francisco, CA (January 27, 2022) **(invited)**
14. **Jason Valentine**, “Dynamic Electrochemically Actuated Metasurfaces”, *PQE 2022*, Snowbird, UT (January 10, 2022) **(invited)**
15. **Jason Valentine**, “Meta-optics for Image Processing”, *MRS Fall Meeting*, Boston, MA (November 30, 2021) **(keynote talk)**
16. **Jason Valentine**, “Dynamic Infrared Metasurfaces Based on Phase Change Media”, *MRS Fall Meeting*, Boston, MA (November 30, 2021) **(invited)**
17. **Jason Valentine**, “Meta-optics for Image Processing”, *Northrop Grumman University Research Symposium*, virtual (October 2021). **(invited)**
18. **Jason Valentine**, “Dynamic Optical Metasurfaces Based on Phase Change Media”, *Metamaterials 2021*, virtual (September 22, 2021). **(invited)**
19. *Scott Criswell*, Timothy A Morgan, Gregory T Forcherio, Samantha R Koutsares, Dmitry A Kozak, Joshua D Caldwell, **Jason G Valentine**, “Engineering three-dimensional Schottky interfaces towards efficient extraction of plasmonic hot electrons”, *SPIE Optics + Photonics*, San Diego, CA (August 5, 2021).
20. **Jason Valentine**, “Meta-optics for Image Processing” *OSA Optical Design and Fabrication Congress 2021*, virtual (June 2021). **(invited)**
21. Brian O Raeker, *Hanyu Zheng*, *You Zhou*, **Jason Valentine**, Anthony Grbic,” Spatial Amplitude and Phase Control with High-Efficiency Meta-optics” *OSA Optical Design and Fabrication Congress 2021*, virtual (June 2021).
22. **Jason Valentine**, “Dynamic Optical Metasurfaces Based on Phase Change Media”, *2021 IEEE Photonics Society Summer Topical Meeting Series*, virtual (June 2021). **(invited)**
23. Brian O Raeker, *Hanyu Zheng*, *You Zhou*, **Jason Valentine**, Anthony Grbic,” High-Efficiency Compound Metaoptics for Independent Amplitude and Phase Control”, *OSA CLEO*, virtual (April 9, 2021).
24. **Jason Valentine**, “Optical Image Processing with Meta-optics” *SPIE Photonics West*, virtual (February 11, 2021). **(invited)**
25. **Jason Valentine**, “Meta-optics for Image Processing” *Photonics Online Meetup*, virtual (January 14, 2021). **(plenary talk)**
26. **Jason Valentine**, “Flat Optics for Optical Image Differentiation” *MRS Spring + Fall Meeting*, virtual (November 10, 2020). **(invited)**
27. **Jason Valentine**, “Flat Optics for Optical Image Differentiation” *SPIE Optics + Photonics*, virtual (August 24, 2020). **(invited)**
28. Gregory T Forcherio, Timothy A Morgan, *Scott G Criswell*, Dmitry A Kozak, **Jason Valentine**, Joshua D Caldwell, Benjamin R Conley,” Designing Plasmonic Hot Carrier Devices for Uncooled Infrared Photodetection”, *IEEE Rapid*, online (August 10, 2020)
29. Brian O Raeker, Anthony Grbic, *You Zhou*, *Hanyu Zheng*, **Jason Valentine**, “Measurements of All-Dielectric Compound Metaoptics for Wavefront Transformation” *IEEE International Symposium on Antennas and Propagation and North American Radio Science Meeting*, virtual (July 5, 2020).
30. **Jason Valentine**, “Compound Metaoptics For Image Processing” *OSA CLEO*, online (May 11, 2020). **(invited)**
31. **Jason Valentine**, “Compound Metaoptics For Image Processing” *SPIE Europe*, online (April 6, 2020). **(invited)**
32. *You Zhou*, *Hanyu Zheng*, Ivan I. Kravchenko, and **Jason Valentine**, “Flat Optics for Image Differentiation” *SPIE Photonics West*, San Francisco, CA (February 3, 2020).
33. **Jason Valentine**, “Compound Metaoptics For Image Processing” *PQE 2020*, Snowbird, UT (January 7, 2020). **(invited)**
34. **Jason Valentine**, “Dynamically Reconfigurable Metamaterials” *Northrop Grumman University*

- Research Symposium*, California (October 24, 2019) **(invited)**
35. **Jason Valentine**, “Multifunctional Metaoptics based on Multilayer Dielectric Metasurfaces”, *IEEE Rapid*, Sandestin, FL (August 21, 2019) **(invited)**
  36. **Jason Valentine**, “Multifunctional Metaoptics based on Multilayer Dielectric Metasurfaces”, *SPIE Optics + Photonics*, San Diego (August 12, 2019) **(invited)**
  37. **Jason Valentine**, “Metasurface Light Sources and Modulators Based on Kerker Effects” *META 2019*, Lisbon, Portugal (July 25, 2019) **(invited)**
  38. Brian O Raeker, Anthony Grbic, *You Zhou*, **Jason Valentine**, “All-Dielectric Compound Metaoptics”, *IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting*, Atlanta, GA (July 7, 2019).
  39. **Jason Valentine**, “Multifunctional Metaoptics based on Multilayer Dielectric Metasurfaces”, *ICMAT 2019*, Singapore (June 25, 2019) **(invited)**
  40. *You Zhou*, Ivan I Kravchenko, Hao Wang, J Ryan Nolen, Gong Gu, **Jason Valentine**, “Noninteracting Multilayer Dielectric Metasurfaces for Multiwavelength Metaoptics” *OSA CLEO*, San Jose, CA (April 5, 2019).
  41. Richard F Haglund Jr, Joshua Caldwell, **Jason Valentine**, Sharon Weiss, “Capitalizing on the Mott transition in vanadium dioxide for ultrafast modulators” *SPIE Photonics West*, San Francisco, CA (March 8, 2019).
  42. **Jason Valentine**, “Dynamic Huygens’ Metasurfaces Based on ENZ Media”, *PQE 2019*, Snowbird, UT (January 8, 2019). **(invited)**
  43. **Jason Valentine**, “Dynamic Optical Metasurfaces”, *Nature Conference on Nanophotonics and Integrated Photonics*, Nanjing, China (November 10, 2018). **(invited)**
  44. **Jason Valentine**, “Dynamic All-Dielectric Metasurfaces”, *IEEE Rapid*, Miramar Beach, FL (August 24, 2018). **(invited)**
  45. *Austin Howes*, **Jason Valentine**, “All-Dielectric Huygens Metasurface Exhibiting ENZ-Assisted Dynamic Absorption Control”, *60<sup>th</sup> Electronic Materials Conference*, Santa Barbara, CA (June 27 – 29, 2018).
  46. **Jason Valentine**, “Dynamic Metasurfaces for the Infrared”, *2018 MRS Spring Meeting*, Phoenix, AZ (April 5, 2018). **(invited)**
  47. **Jason Valentine**, “Dynamic Infrared Metasurfaces”, *SPIE Photonics West*, San Francisco, CA (January 31, 2018). **(invited)**
  48. **Jason Valentine**, “Dynamic Plasmonic Metasurfaces”, *PQE 2018*, Snowbird, UT (January 8, 2018). **(invited)**
  49. **Jason Valentine**, “Metasurface-Based Approaches For Controlling and Harnessing Heat Flow in Nanostructured Materials”, *2017 MRS Fall Meeting*, Boston, MA (November 30, 2017). **(invited)**
  50. *Zhihua Zhu*, Philip G. Evans, Richard F. Haglund Jr., **Jason Valentine**, “Electrically controlled reconfigurable metadevice employing nanostructured vanadium dioxide” *OSA Frontiers in Optics*, Washington, DC (Sept. 18, 2017).
  51. **Jason Valentine**, “Dynamic Metasurfaces for the Near to Long-wave Infrared”, *SPIE Optics + Photonics*, San Diego, CA (Aug. 7, 2017). **(invited)**
  52. **Jason Valentine**, “Near-infrared Dielectric Metasurfaces”, *ICMAT 2017*, Singapore (June, 22, 2017). **(invited)**
  53. **Jason Valentine**, “Silicon-based Optical Metasurfaces”, *SPIE Photonics West*, San Francisco, CA (February 2, 2017). **(invited)**
  54. **Jason Valentine**, “Harnessing Loss in Plasmonic Metamaterials”, *Nanometa*, Seefeld, Austria (January 7, 2017). **(invited)**
  55. *Zachary Coppens*, **Jason Valentine**, “Pixel-less Spatial Modulation of Thermal Emissivity in Active Infrared Metamaterials”, *2016 MRS Fall Meeting*, Boston, MA (Dec. 2, 2016).
  56. *Zhihua Zhu*, Philip Evans, Richard Haglund, **Jason Valentine**, “Tunable Metasurfaces Based on Vanadium Dioxide”, *2016 MRS Fall Meeting*, Boston, MA (November 29, 2016).
  57. *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.
58. **Jason Valentine**, Yuanmu Yang, Abdelaziz Boulesbaa, Ivan I. Kravchenko, Dayrl P. Briggs, Alexander Poretzky, David Geohegan, “High Quality Factor Silicon-Based Metasurfaces”, *International Conference on Modern Materials and Technologies (CIMTEC)*, Perugia, Italy (June 7, 2016). **(invited)**
  59. **Jason Valentine**, “Silicon-Based Metasurfaces For Near-infrared Optics”, *Royal Society Meeting on New Horizons in Nanophotonics*, Buckinghamshire, UK (May 24, 2016). **(invited)**
  60. *Wei Li*, **Jason Valentine**, “Circularly Polarized Light Detection with Hot Electrons in Chiral Plasmonic Metamaterials”, *2016 MRS Spring Meeting*, Phoenix, AZ (April 1, 2016).
  61. **Jason Valentine**, “Hot Electron Photodetection Based on Bulk and 2D Semiconductors”, *2016 MRS Spring Meeting*, Phoenix, AZ (March 30, 2016). **(invited)**
  62. *Yuanmu Yang*, *Parikshit Moitra*, *Wenyi Wang*, Brian Slovick, Ivan Kravchenko, Dayrl Briggs, Srinikrishnamurthy, **Jason Valentine**, “Dielectric Metasurfaces”, *APS March Meeting*, Baltimore, MD (March 15, 2016). **(invited)**
  63. *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)**
  64. *Wenyi Wang*, Andrey Klots, Kirill I. Bolotin, **Jason Valentine**, “Hot Electron-Based near Infrared Photodetection with Bilayer MoS<sub>2</sub>” *2015 MRS Fall Meeting*, Boston, MA (December, 3 2015).
  65. *Yuanmu Yang*, Abdelaziz Boulesbaa, Ivan I. Kravchenko, Dayrl P. Briggs, Alexander Poretzky, David Geohegan, **Jason Valentine**, “Large Third-order Nonlinearity in a Fano-resonant Silicon Metasurface” *2015 MRS Fall Meeting*, Boston, MA (Dec 2, 2015).
  66. *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).
  67. *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).
  68. *Yuanmu Yang*, Abdelaziz Boulesbaa, Ivan Kravchenko, Dayrl Briggs, Alexander Poretzky, 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)**
  69. *Yuanmu Yang*, Ivan I. Kravchenko, Dayrl P. Briggs, and **Jason Valentine**, “Fano-resonant All-Dielectric Metasurfaces”, *Metamaterials 2015*, Oxford, UK (September 8, 2015).
  70. *Yuanmu Yang*, *Parikshit Moitra*, Ivan Kravchenko, Dayrl Briggs, **Jason Valentine**, “All-Dielectric Metasurfaces”, *CLEO Pacific Rim*, Busan, South Korea (August 24-28, 2015). **(invited)**
  71. *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)**
  72. *Wei Li*, *Zachary Coppens*, and **Jason Valentine**, “Metamaterial Perfect Absorber Based Hot Electron Photodetection”, *META 2015*, New York, NY (August 4-7, 2015).
  73. *Yuanmu Yang*, Abdelaziz Boulesbaa, Ivan I. Kravchenko, Dayrl P. Briggs, Alexander Poretzky, David Geohegan, and **Jason Valentine**, “Nonlinear Conversion Using Fano-Resonant All-Dielectric Metasurfaces”, *OSA Nonlinear Optics Conference*, Kauai, Hawaii (July 17-21, 2015)
  74. *Yuanmu Yang*, *Parikshit Moitra*, Ivan Kravchenko, Dayrl Briggs, **Jason Valentine**, “Silicon-Based Optical Metasurfaces”, *ICMAT (Singapore MRS)*, Singapore (June 28 – July 3<sup>rd</sup>, 2015). **(invited)**
  75. *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)**
  76. *Wei Li* and **Jason Valentine**, “Hot electron photodetectors based on metamaterial perfect absorbers” *SPIE Photonics West*, San Francisco, CA (Feb. 13-18, 2015). **(invited)**
  77. *Wei Li* and **Jason Valentine**, “Metamaterial Perfect Absorber Based Hot Electron Photodetection”

- PQE 2015*, Snowbird, UT (Jan. 4-8, 2015). (**invited**)
78. *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).
  79. *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**)
  80. *Wei Li* and **Jason Valentine**, "Metamaterial Perfect Absorber Based Hot Electron Photodetection" *2014 MRS Fall Meeting*, Boston, MA (Nov. 30 – Dec 5, 2014).
  81. *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).
  82. **Jason Valentine**, "Manipulating Light with All-dielectric Metasurfaces" *EMN Fall 2014 Meeting*, Orlando, FL (Nov. 22-25, 2014). (**invited**)
  83. *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).
  84. **Jason Valentine**, "Manipulating Light with All-dielectric Metasurfaces" *CINT User Meeting & 6<sup>th</sup> International Workshop on Electromagnetic Metamaterials*, Santa Fe, NM (September 22-23, 2014). (**invited**)
  85. *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).
  86. *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**)
  87. **Jason Valentine**, "All-Dielectric Optical Metamaterials" *LANL Mesoscale Science Frontiers Conference*, Santa Fe, NM (May 12-16, 2014). (**invited**)
  88. *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).
  89. *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**)
  90. *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).
  91. *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).
  92. *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).
  93. **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**)
  94. **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**)
  95. **Jason Valentine**, *Parikshit Moitra*, *Yuanmu Yang*, *Wenyi Wang*, "All Dielectric Optical Metamaterials" *SPIE Optics and Photonics, San Diego, CA* (August 11-16, 2012). (**invited**)

96. **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)**
97. **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)**
98. **Jason Valentine**, “Transforming Optical Space Using Nanomaterials” *Southeastern Ultrafast Conference*. January 13-14, 2011. Oak Ridge, TN, USA. **(invited)**
99. **Jason Valentine**, Thomas Zentgraf, Yongmin Liu, Maiken H. Mikkelsen and Xiang Zhang, “Gradient Index Plasmonics” *Nanometa 2011*. January 2-6, 2011. Seefeld, Austria.
100. **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)**.
101. **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.
102. **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)
103. **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.
104. **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.
105. **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.
106. **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.
107. **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**, “Meta-optic Accelerators for Image Processing” Journal of Optics Webinar (December 13, 2022).
2. **Jason Valentine**, Yuankai Huo, “Meta-optics for Analog Image Processing” Analog Devices (ADI) Presentation (August 30, 2021).
3. **Jason Valentine**, “Compound Meta-optics for Wavefront Control and Information Processing”, Air Force Research Laboratory (July 9, 2021).
4. **Jason Valentine**, “Flat Meta-optics: From Wavefront Control to Optical Computing”, Applied Materials (April 16, 2021).
5. **Jason Valentine**, “Flat Optics: From Dynamic Control to Optical Computing”, *University of Delaware*, Newark, DE (October 16, 2019).
6. **Jason Valentine**, “All-Dielectric Optical Metamaterials”, *University of Wisconsin*, Madison, WI (October 12, 2017).
7. **Jason Valentine**, “Optical Metamaterials: From Ultra-thin Optical Elements to Invisibility Cloaks”, *Alabama A&M University*, Huntsville, AL (June 28, 2017).

8. **Jason Valentine**, “Harnessing and Avoiding Loss in Optical Metamaterials”, *Argonne National Laboratory*, Chicago, IL (March 8, 2017).
9. **Jason Valentine**, “Harnessing and Avoiding Loss in Optical Metamaterials”, *Ohio University*, Athens, OH (November 4, 2016).
10. **Jason Valentine**, “Harnessing and Avoiding Loss in Optical Metamaterials”, *Naval Surface Warfare Center*, Crane, IN (October 18, 2016).
11. **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).
12. **Jason Valentine**, “Harnessing, and Avoiding, Loss in Optical Metamaterials”, *Imperial College London*, London, England (May 26, 2016).
13. **Jason Valentine**, “Harnessing, and Avoiding, Loss in Optical Metamaterials”, *Naval Research Laboratory*, Washington, DC (March 16, 2016).
14. **Jason Valentine**, “Harnessing, and Avoiding, Loss in Optical Metamaterials”, *University of Memphis*, Memphis, TN (January 29, 2016).
15. **Jason Valentine**, “Harnessing, and Avoiding, Loss in Optical Metamaterials”, *Emory University*, Atlanta, GA (January 25, 2016).
16. **Jason Valentine**, “Harnessing, and Avoiding, Loss in Optical Metamaterials” *Purdue University*, West Lafayette, IN, October 20, 2015.
17. **Jason Valentine**, “Optical All-Dielectric Metamaterials”, *1<sup>st</sup> International POSTEC Nanophotonics Workshop*, Pohang, South Korea (August 24, 2015).
18. **Jason Valentine**, “All-Dielectric Metasurfaces: Molding the Flow of Light” Bio-Photonics Seminar Series, *Vanderbilt University* (September 9<sup>th</sup>, 2014).
19. **Jason Valentine**, “Manipulating Light with All-Dielectric Metasurfaces” *Australian National University*, Australia (July 18<sup>th</sup>, 2014).
20. **Jason Valentine**, “Dielectric Metamaterials Go Optical” *IMRE Metamaterials Workshop*, Singapore, Singapore (May 19<sup>th</sup>, 2014).
21. **Jason Valentine**, “Dielectric Metamaterials Go Optical”, *California Institute of Technology*, Pasadena, CA, USA (Feb. 7<sup>th</sup>, 2014).
22. **Jason Valentine**, “All Dielectric Optical Metamaterials”, *Technion University*, Haifa, Israel (Oct. 8<sup>th</sup>, 2013).
23. **Jason Valentine**, “All-Dielectric Optical Metamaterials for Controlling Light Emission”, *Stanford Research Institute (SRI)*, Palo Alto, CA (June 13, 2013).
24. **Jason Valentine**, “All Dielectric Optical Metamaterials”, *University of Georgia*, Athens, GA, USA (Nov. 8<sup>th</sup>, 2012).
25. **Jason Valentine**, “On-chip Transformation Optics and Dielectric Metamaterials”, *Sandia National Laboratory*, Albuquerque, NM, USA (July 28<sup>th</sup>, 2011).
26. **Jason Valentine**, “Metamaterials: Controlling Light at Will”, *Austin Peay State University*, Clarksville, TN, USA (April 16<sup>th</sup>, 2011).
27. **Jason Valentine**, “Flat Land Transformation Optics”, *Air Force Research Laboratory*, Akron, OH, USA (March 8<sup>th</sup>, 2011).
28. **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 10<sup>th</sup>, 2009).

## Patents

1. **Jason G Valentine**, Richard F Haglund, Zhihua Zhu, Austin Howes, “High-efficiency optical limiter using metasurface and phase-change material” US Patent 11,209,716, 2021
2. **Jason G Valentine**, Cary L Pint, Zachary J Coppens, Adam P Cohn, “Electrochemically Actuated Optical Modulator” US Patent 11,287,642, 2022

3. **Jason G Valentine**, You Zhou, Hanyu Zheng, “Flat Optics for Image Differentiation” US Patent App. 17/012,189, 2021.
4. **Jason G Valentine**, Brandon Swartz, Hanyu Zheng, Gregory Forcherio, “Incoherent Edge Detection”, Disclosure filed 4/28/2023.
5. **Jason G Valentine**, Hanyu Zheng, Quan Liu, You Zhou, Yuankai Huo, “Meta-optic Accelerators for Machine Vision", Disclosure filed 4/19/2023.