

Viktor A. Podolskiy

Curriculum vitae

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Professional Appointments

2013- Professor, *Department of Physics and Applied Physics, University of Massachusetts Lowell*
2010-2013 Associate Professor, *Department of Physics and Applied Physics, University of Massachusetts Lowell*
2009-2010 Associate Professor, *Physics Department, Oregon State University*
2004-2009 Assistant Professor, *Physics Department, Oregon State University*
2002-2004 Research Associate, *EE Department, Princeton University*
1998-2002 Research/Teaching Assistant, *Physics Department, New Mexico State University*

Education

Ph.D. in **Physics**, *New Mexico State University* 2002 (GPA: 4.0/4)
Thesis: "Optical properties of nanocomposites: percolation films, nanowires and nanoholes",
Advisors: V. M. Shalaev and A. K. Sarychev

M.S. in **Computer Science**, *New Mexico State University* 2001 (GPA: 4.0/4)

B.S. in **Applied Mathematics and Physics**,
Moscow Institute of Physics and Technology 1998 (with highest honors)
Thesis: "Exact numerical renormalization method"
Advisor: A. K. Sarychev

Professional Activities

- Member of editorial board: *Research Letters in Physics* (2008-2013), *Associate Editor: Optics Express* (2010-...)
- Member of nominating committee, *APS NW section* (2008)
- Member of technical committee, *CLEO/IQEC* (2009), *CLEO/QELS* (2010), *CLEO/QELS* (2013)
- Reviewer for *American Physical Society journals*, *Optical Society of America journals*, *IEEE journals*; *Solid State Communications (SSC)*, *American Chemical Society journals*, *Institute of Physics journals*, *Nature group journals*
- Reviewer for *Petroleum Research Fund*, *American Chemical Society*, *U.S. Civilian Research and Development Foundation (CRDF)*, *National Science Foundation (NSF)*, *Department of Energy (DOE)*, *AAAS*

Honors/Awards

- Thomas T. Sugihara young faculty research award, *College of Science, OSU* (2008)
- OSA Fellow (2015)

Research Interests: photonics, plasmonics, and materials science

Nanoscale photonics and plasmonics: metamaterials, sub-diffraction light manipulation, dispersion and diffraction engineering, active nanostructures and nano-systems;

Micro-scale optics: electromagnetic analogs of quantum chaos, optics of microresonators, optical communications, nonlinear optical applications;

Computational optics: Electromagnetism of multi-scale systems, Algorithm analysis, Computation-assisted imaging;

Publication Summary

- 95 papers in refereed journals (1 more in press/under consideration), 3 invited book chapters, 1 book
66 publications in non-refereed journals/conference proceedings
- 2 US patents, 1 provisional patent, 3 invention disclosures
- 3 university press releases

Presentation Summary

- 20 invited colloquia/seminars at academic institutions,
- 32 invited conference presentations (more than 80 conference talks and posters total)

Funding Summary

more than \$2,800,000 in total funding since 2004 (~\$800,000 in current active funding) from NSF, ONR, ARL/ARO, ACS-PRF, and OSU

Full Publication List

Book

1. M.A. Noginov and V.A. Podolskiy (eds) *Tutorials in Metamaterials*, CRC Press (Boca Raton, FL, 2012)

Invited book chapters

1. B Wells, V.A. Podolskiy, P. Ginzburg, A.V. Zayats *Spontaneous Emission in Nonlocal Metamaterials with Spatial Dispersion in Quantum Plasmonics*, Springer (2017), eds. S. Bozhevolnyi, L. Martin Moreno, F. Garcia-Vidal
2. V.A. Podolskiy, *Anisotropic and Hyperbolic Metamaterials*, in *Tutorials in Metamaterials*, CRC Press (2012), eds. M.A. Noginov and V.A. Podolskiy
3. W. Kim, V.P. Safonov, V.P. Drachev, V.A. Podolskiy, V.M. Shalaev, and R.L. Armstrong “Fractal-Microcavity Composites” in: *Optical Properties of Nanostructured Random Media*, Springer Verlag, Topics in Applied Physics, Berlin 2001 ed. V.M. Shalaev

Serial refereed journal articles

1. R. Yao, C.-S. Lee, V. Podolskiy, W. Guo *Electrically pumped single transverse mode coupled waveguide lasers by parity-time symmetry*, under consideration, arXiv:1611.07888
2. B. Wells, Zh.A. Kudyshev, N. Litchinitser, V.A. Podolskiy, *Nonlocal effects in transition hyperbolic metamaterials*, ACS Photonics, **4**, 2470 (2017)
3. L. Nordin, O. Dominguez, C. Roberts, W. Streyer, K. Feng, Z. Fang, V.A. Podolskiy, A.J. Hoffman, D. Wasserman, *Mid-infrared epsilon-near-zero modes in ultra-thin phononic films*, Appl. Phys. Lett. **111**, 091105 (2017)
4. S. Peruch, A. Neira, G.A. Wurtz, B. Wells, V.A. Podolskiy, A.V. Zayats, *Geometry defines ultrafast hot carrier dynamics and Kerr nonlinearity in plasmonic metamaterial waveguides and cavities*, Adv. Opt. Mat **5**, 1700299 (2017)
5. C. Roberts, V.A. Podolskiy *Metasurface-Enhanced Transparency*, J. Opt. Soc. Am B, **34**, D42 (2017), arXiv:1701.05867 **[JOSA B Editor’s Pick; 10-most-downloaded manuscripts in July 2017]**
6. E. K. Tanyi, H. Thuman, N. Brown, S. Koutsares, V. Podolskiy, M. A. Noginov, *Control of the Stokes Shift with the Strong Coupling*, Advanced Optical Materials, **5**, 1600941 (2017); doi: 10.1002/adom.201600941
7. P. Ginzburg, D. Roth, M.E. Nasir, P. Segovia Olvera, A.V. Krasavin, J. Levitt, L.M. Hirvonen, B. Wells, K. Suhling, D. Richards, V.A. Podolskiy, A.V. Zayats, *Spontaneous emission in nonlocal materials*, Nature Light: Science and Applications, **6**, e16273 (2017); arXiv:1605.04950
8. C. Roberts, V.A. Podolskiy *Rigorous Diffraction Interface Theory*, Appl. Phys. Lett. **110**, 171108 (2017), arXiv:1612.07759
9. C.M. Roberts, N. Olivier, W.P. Wardley, S. Inampudi, W. Dickson, A.V. Zayats, and V.A. Podolskiy *Interscale Mixing Microscopy: far field imaging beyond the diffraction limit*, Optica **3**, 803 (2016); arXiv:1604.05134
10. R. Liu, C. Roberts, Y. Zhong, V. Podolskiy, D. Wasserman, *Epsilon-near-zero photonic wires*, ACS Photonics **3**, 1045 (2016); doi:10.1021/acsphotonics.6b00120; arXiv:1604.04576
11. B. Wells, W. Guo, V.A. Podolskiy, *Homogenization of nanowire-based composites with anisotropic unit cell and layered substructure*, MRS communications **6**, 23 (2016)
12. L. Runyu, Z. Xiang, C. Roberts, L. Yu, P. Katal Mohseni, X. Li, V.A. Podolskiy, D. Wasserman, *Enhanced optical transmission through MacEtch-fabricated buried metal gratings*, Advanced Materials **28**, 1441 (2016) **[frontispiece article]**
13. A.P. Slobozhanyuk, P. Ginzburg, D.A. Powell, I. Iorsh, A.S. Shalin, P. Segovia, A.V. Krasavin, G.A. Wurtz, V. A. Podolskiy, P.A. Belov, A.V. Zayats, *Purcell effect in Hyperbolic Metamaterial Resonators*, Phys. Rev. B **92**, 195127 (2015)
14. N. Vasilantonakis, G.A. Wurtz, V.A. Podolskiy, A.V. Zayats, *Refractive index sensing with hyperbolic metamaterials: strategies for biosensing and nonlinearity enhancement*, Opt. Exp. **23**, 14329 (2015) **[selected for Virt.J. for Biomed. Opt v.10(6) 2015]**
15. C. Roberts, S. Inampudi, V.A. Podolskiy, *Diffraction interface theory: Nonlocal susceptibility approach to the optics of metasurfaces*, Optics Express **23**, 2764 (2015); arXiv:1408.3155; see also erratum: Optics Express **25**, 13834 (2017)
16. S. Inampudi, N. Kuhta, V.A. Podolskiy *Interscale Mixing Microscopy: numerically stable imaging of wavelength- scale objects with sub- wavelength resolution and far field measurements*, Optics Express **23**, 2753 (2015); arXiv:1406.6726 **[selected for Virt. J. for Biomed. Opt. v.10(3) 2015]**
17. V.A. Podolskiy, P. Ginzburg, B. Wells, A.V. Zayats, *Light emission in nonlocal plasmonic metamaterials*, Faraday Discussions **178**, 61 (2015); see also Faraday Discussions **178**, 123 (2015)

18. B. Wells, C. Roberts, V.A. Podolskiy *Metamaterials-based Salisbury Screens with Reduced Angular Sensitivity*, Appl.Phys.Lett. **105**, 161105 (2014)
19. K-T. Tsai, G. Wurtz, J-Y. Chu, T-Y. Cheng, H-H. Wang, A. Krasavin, J-H. He, B. Wells, V.A. Podolskiy, J-K. Wang, Y-L. Wang, A. Zayats, *Looking into "meta-atoms" of plasmonic nanowire metamaterial*, Nano Lett. **14** 4971 (2014)
20. W. Streyer, S. Law, A. Rosenberg, C. Roberts, V.A. Podolskiy, A.J. Hoffman, D. Wasserman *Engineering absorption and blackbody radiation in the far-infrared with surface phonon on gallium phosphide*, Appl.Phys.Lett, **104**, 131105 (2014)
21. M. Mayy, G. Zhu, A. D. Webb, H. Ferguson, T. Norris, V. A. Podolskiy, and M. A. Noginov, *Toward parametric amplification in plasmonic systems: Second harmonic generation enhanced by surface plasmon polaritons*, Opt. Exp. **22**, 7773 (2014)
22. S. Inampudi, D.C. Adams, T. Ribaldo, D. Slocum, S. Vangala, W.D. Goodhue, D. Wasserman, V.A. Podolskiy, *ϵ -near zero enhanced light transmission through a subwavelength slit*, Phys.Rev.B, **89**, 125119 (2014)
23. B. Wells, A.V. Zayats, V.A. Podolskiy, *Nonlocal optics of plasmonic nanowire metamaterials*, Phys Rev B **89**, 035111 (2014); arXiv/1310.6779
24. S. Law, C. Roberts, T. Kilpatrick, L. Yu, T. Ribaldo, E.A. Shaner, V. Podolskiy, D. Wasserman, *All-semiconductor negative index plasmonic absorbers*, Phys.Rev.Lett, **112**, 017401 (2014)
25. S. Inampudi and V.A. Podolskiy, *"Diffractive imaging route to sub-wavelength pixels"* Applied Physics Letters, **102**, 241115 (2013)
26. M. Noginov, M. Lapine, V. Podolskiy, Y.Kivshar, *"Focus Issue Introduction: Hyperbolic Metamaterials"*, Optics Express, **21**, 14895 (2013)
[#3 most downloaded manuscript in Optics Express, Jun 2013]
27. S.M. Prokes, O. J. Glembocki, J. E. Livenere, T. U.Tumkur, J. K. Kitur, G. Zhu, B. Wells, V. A. Podolskiy, M. A. Noginov, *Hyperbolic and Plasmonic Properties of Silicon/Ag aligned nanowire arrays*, Optics Express, **21**, 14962 (2013)
28. V. Drachev, V.A. Podolskiy, A. Kildishev, *Hyperbolic metamaterials: new physics behind a classical problem*, Optics Express, **21**, 15048 (2013)
[#10 most downloaded manuscript in Optics Express, Jun 2013; featured article in Advances in Engineering (2014)]
29. S. Law, V.A. Podolskiy, D.Wasserman, *Towards nano-scale photonics with Micro-scale photons: The opportunities and challenges of mid-infrared plasmonics*, Nanophotonics **2**, 103-130 (2013)
[most downloaded manuscript, De Gruyter, May 2014]
30. V.V. Yakovlev, W.Dickson, A. Murphy, J. McPhillips, R.M. Pollard, V.A. Podolskiy, and A.V. Zayats, *Ultrasensitive nonresonant detection of acoustic waves (ultrasound) with plasmonic metamaterials*, Advanced Materials **25**, 2351 (2013)
[highlighted in Nature Photonics v.7, p.342 (2013)]
31. J.R. Felts, S. Law, C.M. Roberts, V. Podolskiy, D.M. Wasserman, W.P. King, *Near-field infrared absorption of plasmonic semiconductor microparticles studied using atomic force microscope infrared spectroscopy*, Appl. Phys. Lett. **102**, 152110 (2013)
32. L. Alekseyev, V.A. Podolskiy, E. Narimanov, *Homogeneous hyperbolic systems for terahertz and far-infrared frequencies*, Advances in Optoelectronics **2012**, 267564 (2012)
33. M. J. Paul, N. A. Kuhta, J. L. Tomaino, A.D. Jameson, L. P. Maizy, T. Sharf, N.L. Rupesinghe, K. B. K. Teo, S. Inampudi, V. A. Podolskiy, E. D. Minot, and Y.-S. Lee *Terahertz "Transmission Ellipsometry of Vertically-Aligned Multi-Walled Carbon Nanotubes"*, Appl.Phys.Lett. **101**, 111107 (2012)
34. T. U. Tumkur, J. K. Kitur, B. Chu, L. Gu, V.A. Podolskiy, E. E. Narimanov, M.A. Noginov, *Control of reflectance and transmittance in scattering and curvilinear hyperbolic metamaterials*, Appl.Phys.Lett. **101**, 091105 (2012)
35. S. Inampudi, I. Smolyaninov, V.A. Podolskiy *"Low-diffraction beaming in plasmonic crystals"*, Opt.Lett. **37** 2976 (2012)
[highlighted in Nature Photonics v.6, p.419 (2012), selected to Virtual Journal for Biomedical Optics, v.7(9) (2012)]
36. J. A. Mason, G. Allen, V. A. Podolskiy and D. Wasserman, *"Strong Coupling of Molecular Absorption and Mid-Infrared Metamaterial Resonances"*, IEEE Phot.Tech.Lett, **24**, 31 (2012)
37. S.V. Boriskina, M. Povinelli, V.N. Asratov, A.V. Zayats, and V.A. Podolskiy *"Collective phenomena in photonic, plasmonic, and hybrid structures"* Opt. Exp **19**, 22024 (2011)

38. N. A. Kuhta, A. Chen, K. Hasegawa, M. Deutsch, and V.A. Podolskiy "Asymmetric Reflectance and Cluster Size Effects in Silver Percolation Films", *Phys.Rev.B* **84** 165130 (2011), arXiv:1108.1449 (2011)
39. D.C. Adams, S. Inampudi, D. Slocum, S. Vangala, N.A. Kuhta, W.D. Goodhue, V.A. Podolskiy, D. Wasserman, "Funneling Light Through a Subwavelength Aperture with Epsilon-Near-Zero Materials", *Phys.Rev.Lett.* **107**, 133901 (2011), arXiv:1103.6013 (2011)
40. M.D. Escarra, S. Thongrattanasiri, W.O. Charles, A.J. Hoffman, V.A. Podolskiy, C. Gmachl, *Enhanced bandwidth and reduced dispersion through stacking multiple optical metamaterials*, *Opt.Exp.* **19**, 14990 (2011)
41. M. A. Noginov, L. Gu, J. Livenere, G. Zhu, A. K. Pradhan, R. Mundle, M. Bahoura, Yu. A. Barnakov, V. A. Podolskiy, "Transparent conductive oxides: Plasmonic materials for telecom wavelengths", *Appl.Phys.Lett* **99** 021101 (2011)
42. J.K. Kitur, V.A. Podolskiy, M.A. Noginov "Stimulated emission of surface plasmon polaritons in microring cavity", *Phys.Rev.Lett* **106**, 183903 (2011)
43. S. Thongrattanasiri, D. Adams, D. Wasserman, V.A. Podolskiy, *Multiscale beam evolution and shaping in corrugated plasmonic systems*, *Optics Express*, **19(10)**, 9269 (2011)
44. G. A. Wurtz, R. Pollard, W. Hendren, G. P. Wiederrecht, D. J. Gosztola, V. A. Podolskiy, and A. V. Zayats, "Designed nonlocality-enhanced sub-picosecond nonlinearities in plasmonic nanorod metamaterial", *Nature Nanotechnology* **6**, 107 (2011)
45. S. Thongrattanasiri, N.A. Kuhta, M.D. Escarra, A.J. Hoffman, C.F. Gmachl, and V.A. Podolskiy "Analytical technique for subwavelength far field imaging", *Appl.Phys.Lett.* **97**, 101103 (2010)
[one of the top 20 most-downloaded articles; APL, Sep 2010]
46. D.C. Adams, S. Thongrattanasiri, T. Ribaudou, V.A. Podolskiy, D. Wasserman, "Plasmonic mid-infrared beam steering", *Appl.Phys.Lett.* **96**, 201112 (2010)
47. S. Thongrattanasiri, J. Elser, V.A. Podolskiy, "Quasi-planar optics: computing light propagation and scattering in planar waveguide arrays", *J.Opt.Soc.Am B* **v.26(12)**, p.B102 (2009), arXiv:0907.5419 (2009)
48. A. Kabashin, P. Evans, S. Pastkovsky, W. Hendren, G. A. Wurtz, R. Atkinson, R. Pollard, V. Podolskiy, A.V. Zayats "Plasmonic nanorod metamaterials for biosensing", *Nature Materials* **8**, 867 (2009)
[highlighted in OSU press release]
49. A. J. Hoffman, L. Alekseyev, A. Sridhar, P.X. Braun, S. S. Howard, D.L. Sivco, V.A. Podolskiy, E.E. Narimanov, C. Gmachl "Mid-infrared Semiconductor Optical Metamaterials", *J.Appl.Phys.* **105**, 122411 (2009)
50. R.J. Pollard, A. Murphy, W.R. Hendren, P.R. Evans, R. Atkinson, G.A. Wurtz, A.V. Zayats, V.A. Podolskiy "Optical nonlocalities and additional waves in epsilon-near-zero metamaterials" - *Phys.Rev.Lett.* **102**, 127405 (2009)
[selected for Virtual Journal of Nanoscale Science and Tech; v.19(15) 2009]
51. S. Thongrattanasiri, V.A. Podolskiy "Hyper-gratings: nanophotonics in planar anisotropic metamaterials", *Opt.Lett.* **34**, 890 (2009); arXiv:0810.0044 (2008);
[selected for Virtual Journal of Nanoscale Science and Tech; v.19(17) 2009]
52. M.A. Noginov, G. Zhu, M.F. Mayy, B. A. Ritzo, N. Noginova, and V.A. Podolskiy, "Stimulated emission of surface plasmon polaritons" - *Phys.Rev.Lett.* **101**, 226806 (2008); arXiv:0801.4598 (2008);
[editorially selected to Phys.Rev.Lett. suggestions highlighted in OSU press release]
53. A.A. Govyadinov, V.A. Podolskiy, "Enhancement of dispersion modulation in nanoscale waveguides", *J.Opt.Soc.Am. B*, **25(12)**, C127 (2008)
[selected for Virtual Journal of Nanoscale Science and Tech; v.19(1) 2009 selected for Virtual Journal of Ultrafast Science, v.8(1) 2009]
54. A.J. Hoffman, V.A. Podolskiy, D.L. Sivco, C. Gmachl "Sub-diffracted negative and positive index modes in mid-infrared waveguides" - *Optics Express* **16**, 16404 (2008)
55. M.A. Noginov, V.A. Podolskiy, G. Zhu, M. Mayy, M. Bahoura, J.A. Adegoke, B.A. Ritzo, K. Reynolds, "Compensation of loss in propagating surface plasmon polariton by gain in adjacent dielectric medium" - *Optics Express* **16(2)**, 1385 (2008); arXiv:0704.1513 (2007)
56. J. Elser and V.A. Podolskiy, "Scattering-free plasmonic optics with anisotropic metamaterials" - *Phys.Rev.Lett.* **100**, 066402 (2008); arXiv:0711.3470 (2007)
[highlighted in Physical Review Focus v.21, st.5 2008]

57. N.A. Kuhta, V.A. Podolskiy, A.L. Efros, "Far field imaging by a planar lens: diffraction versus superresolution", - Phys.Rev.B **76**, 205102 (2007), arXiv:0705.3266
58. A.A. Govyadinov, V.A. Podolskiy, M.A. Noginov "Active metamaterials: sign of refraction index and gain-assisted dispersion management", - Appl.Phys.Lett. **91**, 191103 (2007), arXiv:0704.3765
[selected for Virtual Journal of Nanoscale Science and Tech; v.16(21) 2007]
59. A. J. Hoffman, L. Alekseyev, S.S. Howard, K.J. Franz, D. Wasserman, V.A. Podolskiy, E.E. Narimanov, D.L. Sivco, C. Gmachl "Negative refraction in semiconductor metamaterials" – Nature Materials **6**, 946 (2007)
[highlighted in OSU press release]
60. J. Elser, A.A. Govyadinov, I. Avrustky, I. Salakhutdinov, V.A. Podolskiy "Plasmonic nanolayer composites: coupled plasmon polaritons, effective-medium response, and subdiffraction light manipulation" - J. Nanomaterials, **2007**, 79469 (2007)
61. I. Avrustky, I. Salakhutdinov, J. Elser, and V.A. Podolskiy "Highly confined optical modes in nanoscale metal-dielectric multi-layers" – Phys.Rev.B **75**, 241402 (R) (2007); arXiv:physics/0703137
62. A. Chen, K. Hasegawa, M. Deutsch, and V. Podolskiy, "Metamaterial coatings for broadband asymmetric mirrors" – Opt.Lett. **v.32**, 1770 (2007); arXiv:physics/0611109 (2006)
[selected for Virtual Journal of Nanoscale Science and Tech; v.17(3) 2008]
63. J. Elser, V.A. Podolskiy, I. Salakhutdinov, I. Avrustky, "Non-local effects in effective-medium response of nano-layered meta-materials" – Appl.Phys.Lett **90**, 191109 (2007); arXiv:physics/0610196
64. V.A. Podolskiy and E.E. Narimanov, "Comment on "All-angle broadband negative refraction of metal waveguide arrays in the visible range: theoretical analysis and numerical demonstration" –Phys.Rev.Lett. **98**, 179401 (2007)
[selected for Virtual Journal of Nanoscale Science and Tech; v.15(19) 2007]
65. V.A. Podolskiy and E.E. Narimanov "Universal level-spacing distribution in quantum systems" – Phys.Lett.A **362**, 412 (2007); arXiv:nlin.CD/0310034
66. A.A. Govyadinov and V.A. Podolskiy, "Gain-assisted slow to superluminal group velocity manipulation in nano-waveguides" – Phys.Rev.Lett **97** 223902 (2006); arXiv:physics/0608097
[selected for Virtual Journal of Nanoscale Science and Tech; v.14(25) 2006; highlighted in OSU press release]
67. J. Elser, R. Wangberg, V.A. Podolskiy, E.E. Narimanov "Nanowire metamaterials with extreme optical anisotropy" – Appl.Phys.Lett. **89**, 261102 (2006), arXiv:physics/0604065 (2006);
[selected for Virtual Journal of Nanoscale Science and Tech; v.15(2) 2007, selected for Virtual Journal of Biological Physics Research; v.13(1) 2007]
68. A.A. Govyadinov and V.A. Podolskiy "Sub-diffraction light propagation in fibers with anisotropic metamaterial cores" – J.Mod.Opt **53**, 2315 (2006); arXiv:physics/0605036 (2006)
69. A.A. Govyadinov and V.A. Podolskiy "Metamaterials photonic funnels for sub-diffraction light compression and propagation" – Phys.Rev.B **73 (15)**, 155108 (2006);
[selected for Virtual Journal of Biological Physics Research; v.11(8) 2006];
arXiv:physics/0512189 (2005)
70. R. Wangberg, J. Elser, E.E. Narimanov, and V.A. Podolskiy "Non-magnetic nano-composites for optical and infrared negative refraction index media" –J.Opt.Soc.Am B **23** 498 (2006); arXiv:physics/0506196
71. E.E. Narimanov and V.A. Podolskiy "Chaos-assisted tunneling in dielectric microdisk resonators" – IEEE journal of selected topics in quantum electronics, **v.12**, p.40 (2006)
72. R. Colombelli, C. Gmachl, A.M. Sergent, D.L. Sivco, E.E. Narimanov, V.A. Podolskiy, A.Y. Cho, and F. Capasso, "Surface plasmon quantum cascade microlasers with highly deformed resonators" – IEEE journal of selected topics in quantum electronics, **v.12**, p.66 (2006)
73. V.A. Podolskiy, N.A. Kuhta, G.W. Milton "Optimizing the superlens: manipulating geometry to enhance the resolution" – Appl. Phys. Lett **87** 231113 (2005); arXiv:physics/0509067 (2005)
[highlighted in OSU press release]
74. G. Milton, N.-A. Nicorovici, R. McPhedran, and V. Podolskiy, "A proof of superlensing in the quasistatic regime, and limitations of superlenses in this regime due to anomalous localized resonance" –Proc.Roy.Soc.Lond.A **461**, 3999 (2005)
75. V.A. Podolskiy, L. Alekseyev, E.E. Narimanov, "Strongly anisotropic media: the THz perspectives of left-handed materials", J. Mod. Opt. **52(16)**, p.2343 (2005); arXiv:physics/0505024

76. W. Fang, H. Cao, V.A. Podolskiy, and E.E. Narimanov "Dynamical localization in microdisk lasers" – Optics Express **13(15)**, 5641 (2005)
77. V.A. Podolskiy, E.E. Narimanov, "Strongly anisotropic waveguide as a nonmagnetic left-handed system", Phys. Rev. B **71** 201101(R) (2005); arXiv:physics/0405077
78. V.A. Podolskiy, E.E. Narimanov, "Chaos-Assisted Tunneling in dielectric microresonators," Optics Letters, **30**, 474 (2005)
79. V.A. Podolskiy, A.K. Sarychev, E.E. Narimanov, V.M. Shalaev, "Resonant light interaction with plasmonics nanowire systems," J. Optics A: Pure Appl. Opt. **7**, S32 (2005)
[selected for J.Opt.A highlights 2005]; arXiv:physics/0406068
80. V.A. Podolskiy, E.E. Narimanov "Near-sighted superlens", Optics Letters, **30**, 75 (2005)
81. V.A. Podolskiy, E.E. Narimanov, W. Fang, H. Cao "Chaotic microlasers based on dynamical localization", Proceedings of National Academy of Sciences, **101**, 10498 (2004)
[cover paper]
82. H. Leung and V.A. Podolskiy "The limitedness problem on distance automata: Hashiguchi's method revisited" – Theoretical Computer Science, **310** 147-158 (2004)
83. V.A. Podolskiy, E.E. Narimanov "Semiclassical description of chaos-assisted tunneling", Phys.Rev.Lett. **91**, 263601 (2003)
84. V.A. Podolskiy, A.K. Sarychev and V.M. Shalaev "Plasmon modes and negative refraction in metal nanowire composites" Optics Express **11**, 735-745 (2003)
[selected for Virtual Journal of Nanoscale Science and Tech; v.11(7) 2003]
85. V.A. Podolskiy, A.K. Sarychev, and V.M. Shalaev "Plasmon Modes in Metal Nanowires", Journal of Nonlinear Optical Physics and Materials, **11** vol. 1, p. 65 (2002).
86. V.A. Podolskiy, A.K. Sarychev, and V.M. Shalaev "Temporal Dynamics of Local Optical Responses and sub-fs Pulse Generation in Semicontinuous Metal Films" Laser Physics vol. **12**, no.2, 292 (2002)
87. A.K. Sarychev, V.A. Podolskiy, A.M. Dykhe and V.M. Shalaev "Resonance Transmittance through Metal Film with Subwavelength Holes", IEEE J. of Quantum Electronics **38**, 956-963 (2002).
88. V. P. Drachev, W. Kim, V. P. Safonov, V. A. Podolskiy, N. S. Zakovryazhin, V. M. Shalaev, and R. A. Armstrong, "Low-threshold lasing and broad-band multiphoton-excited light emission from Ag aggregate-adsorbate complexes in microcavity", J. of Modern Optics **49**, 645 (2002).
89. V.P. Drachev, W.D. Bragg, V.A. Podolskiy, V.P.Safonov, W.-T.Kim, Z.C.Ying, R.L.Armstrong, V.M.Shalaev "Large local optical activity in Fractal Aggregates of Nanoparticles" - J.Opt.Soc.Am.B **18**, 1896 (2001)
90. S. Ducourtieux, V.A. Podolskiy, S. Gresillon, S. Buil, P. Gadenne, A.C. Boccara, J.C. Rivoal, W.A. Bragg, K. Banerjee, V.P. Safonov, V.P. Drachev, Z.C. Ying, A.K. Sarychev, and V.M. Shalaev "Near-Field Optical Studies of Semicontinuous Metal Films", Phys.Rev.B **64**, 165403 (2001)
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[selected for Virtual Journal of Nanoscale Science and Tech; v.4(13) 2001]
92. V.A.Podolskiy, A.K.Sarychev, V.M.Shalaev "Percolation Composites: Localization of Surface Plasmons and Enhanced Optical Nonlinearities", in: Photonic Crystals and Light Localization in the 21st Century, 567-575 ed. C.M.Soukoulis
93. M. Gadenne, V. Podolskiy, P. Gadenne, P. Sheng and V.M. Shalaev "Plasmon-Enhanced Absorption by Optical Phonons in Metal-Dielectric Composites", Europhysics Letters, **53**, pp.364-370 (2001)
94. V.A.Podolskiy, V.M.Shalaev "Giant Optical Responses in Microcavity-Fractal Composites" Laser Physics, **11**, 26 (2001)
95. J.P.Clerc, V.A.Podolskiy, A.K.Sarychev "Precise Determination of the conductivity exponent of 3D percolation using exact numerical renormalization", European Physical Journal B, v. **15** pp. 507-516 (2000)
96. S.Ducourtieux, S.Gresillon, A.C.Boccara, J.C.Rivoal, X.Quelin, P.Gadenne, V.P.Drachev, W.D.Bragg, V.P.Safonov, V.A.Podolskiy, Z.C.Ying, R.L.Armstrong, and V.M. Shalaev "Percolation and fractal composites: Optical Studies" Journal of Nonlinear Optical Physics and Materials v. **9** pp. 105-116 (2000)

Serial conference proceedings and other publications

1. [invited] V.A. Podolskiy et.al. *Engineering optical density of states with nonlocal metamaterials*, CLEO/QELS 2017, paper number FTh1G

2. B. Fan et.al., *Interscale mixing microscopy: far field imaging beyond the diffraction limit*, CLEO/QELS 2017, paper number Fth4H
3. B. Fan et.al., *Magneto-optical nanowire metamaterials* CLEO/QELS 2017, paper number FTh1G.
4. V.A. Podolskiy et.al. *Second harmonic generation in nonlocal plasmonic nanowire metamaterials*, SPIE Optics and Photonics 2016, paper number 9918-17
5. C. Roberts, et.al, *Buried Extraordinary Optical Transmission* CLEO/QELS 2016, paper number JTh2A.111
6. R. Liu, C. Roberts, Y. Zhong, V.A. Podolskiy, D. Wasserman, *Epsilon-near-zero photonic wires*, CLEO/QELS 2016, paper #FTh3D.1
7. B. Wells, W. Guo, V.A. Podolskiy, *Homogenization of nanowire-based composites with anisotropic unit cell and layered substructure*, CLEO/QELS 2016, paper #FTh3D.6
8. C. Roberts, V.A. Podolskiy, *Multiscale metasurfaces for enhanced light extraction*, CLEO/QELS 2016, paper # FM2D.1
9. C. Roberts, S. Inampudi, V. Podolskiy *Diffraction interface theory: a nonlocal approach to metasurfaces*, CLEO/QELS 2015 paper number FTh1C.3
10. B. Wells, P. Ginzburg, A. Zayats, V.A. Podolskiy, *Light emission in nonlocal plasmonic nanowire metamaterials*, CLEO/QELS 2015 paper number FM2C.4
11. B. Wells, A. Zayats, V.A. Podolskiy, *Analytical approximation of dispersion of longitudinal waves in plasmonic nanowire metamaterials*, MRS meeting (2014)
12. V. Podolskiy, *Nonlocal polarization approach to metasurfaces*, SPIE proc. (2014)
13. C. Roberts et.al. *All-semiconductor negative index plasmonic absorbers*, CLEO:QELS 2014
14. S. Inampudi, N. Kuhta, V.A. Podolskiy *Numerically stable reconstruction of wavelength-scale objects with subwavelength resolution* CLEO:QELS 2014
15. B. Wells, C. Roberts, V.A. Podolskiy, *Angle-independent Salisbury screens based on nonlocal nanowire metamaterials*, CLEO: QELS 2014 paper: FW1K.3
16. B. Wells, A. Zayats, V.A. Podolskiy, *Nonlocal optics of plasmonic nanorod metamaterials*, MRS fall meeting 2013, talk SS1.05
17. V.A. Podolskiy, B. Wells, A. Zayats, *Analytical description of Optical Nonlocalities*, SPIE (2013)
18. B. Wells, A. Zayats, V.A. Podolskiy, *Nonlocal optics of plasmonic nanowire metamaterials*, CLEO/QELS 2013, QTu2A.2
19. S. Inampudi, V.A. Podolskiy, *Meta-gratings for highly compact holographic imaging systems*, CLEO/QELS 2013, QM4A.3
20. S. Law; C. Roberts; T. Kilpatrick; L. Yu; T. Ribaudou; E. Shaner; V. A. Podolskiy; D. Wasserman, *All-Semiconductor Plasmonic Perfect Absorber*, CLEO/QELS 2013, CM2F.6.
21. V.A. Podolskiy, B. Wells, G. A. Wurtz, R. Pollard, W. Hendren, G. Wiederrecht, D. Goztola, A.V. Zayats, *Nonlocal optical phenomena in metamaterials*, proc.SPIE (2012)
22. B. Wells, A.V. Zayats, V.A. Podolskiy *Nonlocal response of plasmonic nanorod metamaterials*, CLEO/QELS 2012 JTh2A81
23. V.A. Podolskiy, B. Wells, G. A. Wurtz, R. Pollard, W. Hendren, G. Wiederrecht, D. Goztola, A.V. Zayats, *Nonlocal optical phenomena in metamaterials*, CLEO/QELS 2012 QTu1G1
24. S. Inampudi, I. Smolyaninov, V.A. Podolskiy *Low-diffraction modes in plasmonic crystals*, CLEO/QELS 2012, QM4F3
25. M. J. Paul, N.A. Kuhta, J.L. Tomaino, A.D. Jameson, T. Sharf, N.L. Rupesinghe, K.B. Teo, V.A. Podolskiy, E.D. Minot, Y-S. Lee *"Terahertz Ellipsometry of Vertically Grown Carbon Nanotubes"*, CLEO/QELS 2012, CM1L3
26. S. Inampudi, D. Slocum, D.C. Adams, S. Vangala, W.D. Goodhue, D. Wasserman, V.A. Podolskiy *ENZ-enhanced transmission through subwavelength slits*, CLEO/QELS 2011, JTU156
27. D. Slocum, D.C. Adams, S. Inampudi, S. Vangala, W.G. Goodhue, V.A. Podolskiy, D. Wasserman, *Funneling light through a subwavelength aperture using epsilon-near-zero materials*, CLEO/QELS 2011, JThA3
28. S. Thongrattanasiri, D. Adams, D. Wasserman, V.A. Podolskiy, *Evolution of beaming pattern in corrugated mid-IR plasmonic structures*, CLEO/QELS 2010, QMF5
29. S. Thongrattanasiri, J. Elser, V.A. Podolskiy, *Quasi-planar optics: computing light propagation and scattering in planar waveguide arrays*, CLEO/QELS 2010, JWA12
30. S. Thongrattanasiri, A.J. Hoffman, M. Escarra, C.F. Gmachl, V.A. Podolskiy, *Analytical technique for determining the size of subwavelength focal spots in far field*, CLEO/QELS 2010, QWB5
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34. V.A. Podolskiy, R.J. Pollard, A. Murphy, W.R. Hendren, P.R. Evans, R. Atkinson, G. Wurtz, A.V. Zayats, *"Optical nonlocalities and additional waves in epsilon-near-zero metamaterials"*, in CLEO/IQEC 2009 (OSA, Washington DC 2009), JWC3

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36. S. Thongrattanasiri, V.A. Podolskiy, "Design of hyper-gratings for far field subwavelength focusing in planar geometry", in CLEO/IQEC 2009 (OSA, Washington DC 2009), JThE111
37. G. Zhu, H. Li, C. Clavero, K. Yang, A. Lukaszew, V.A. Podolskiy, M. Noginov, "Surface plasmon polaritons in silver-gold sandwich structure" in CLEO/IQEC 2009 (OSA, Washington DC 2009), IFC4
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53. V.A. Podolskiy, E.E. Narimanov "Nanoplasmonic approach to strongly anisotropic optical materials"- in CLEO/QELS/PhAST 2005 (OSA, Washington DC 2005), JThC3
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56. E.E. Narimanov, A.A. Govyadinov, V.A. Podolskiy "Optical ratchet resonators" – in CLEO/QELS/PhAST 2005 (OSA, Washington DC 2005), QThE5
57. E.E. Narimanov and V.A. Podolskiy "Dynamical localization in spiral microresonators" – proceedings of OSA annual meeting (2004)
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59. V.A. Podolskiy, A.K. Sarychev, E.E. Narimanov, and V.M. Shalaev "Light manipulation with plasmonic nanoantennas" – proceedings of IEEE AP-S/URSI conference; 0-7803-8302-8 (June 2004)
60. E.E. Narimanov and V.A. Podolskiy "Dynamical localization in spiral microlasers with unidirectional emission" – proceedings of CLEO/IQEC (May 2004)
61. V.A. Podolskiy and E.E. Narimanov "Chaos-assisted tunneling in whispering-gallery resonators" – proceedings of CLEO/IQEC (May 2004)
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63. A.K. Sarychev, V.A. Podolskiy, and V.M. Shalaev "Optical properties of plasmonic nanowires: surface plasmon modes and negative refraction", PIERS (2003)
64. V.A. Podolskiy, E.E. Narimanov "Chaotic light scattering by asymmetric particles" – PIERS (2003)
65. V.A. Podolskiy and E.E. Narimanov "Level spacing distribution in small asymmetric particles", Frontiers in Optics (2003)
66. E.E. Narimanov, V.A. Podolskiy "Chaos-assisted tunneling in whispering-gallery resonators" – Frontiers in Optics (2003)
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73. R.L. Armstrong, W.T. Kim, V.A. Podolskiy, V.M. Shalaev, V.P. Drachev, V.P. Safonov "Giant enhancement of spectral emissions from molecules adsorbed on fractal/microcavity composite media" Proc. SPIE Vol. **4577**, p. 49-52 (2002)
74. V. M. Shalaev, A. K. Sarychev, D. Genov, E. N. Khaliullin, V. P. Drachev, V. A. Podolskiy, R. L. Armstrong, V. P. Safonov, S. G. Rautian, P. Gadenne, "Plasmonic Nanophotonics: Manipulating Light and Sensing Molecules", IQEC 2002 Technical Digest, International Quantum Electronics Conference, June 22-27, 2002, Moscow, Russia, p.413.
75. A. M. Dykhne, A. K. Sarychev, V. A. Podolskiy, and V. M. Shalaev, "Light-Controlled Extraordinary Optical Transmittance and Photonic Circuits in Plasmonic Nanomaterials", IQEC 2002 Technical Digest, International Quantum Electronics Conference, June 22-27, 2002, Moscow, Russia, p.403.
76. V. M. Shalaev, A. K. Sarychev, V.A. Podolskiy, "Plasmons in Nano-Wires and Left-Handed Plasmonic Materials", Progress in Electromagnetics Research Symposium, Proceedings, July 1-5, 2002, Cambridge, Massachusetts, USA, p.912 (2002)
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78. M. Gadenne, V. Podolskiy, V. M. Shalaev, P. Gadenne, P. Sheng, "Plasmon-enhanced absorption by optical phonons in cermets", Proceeding of SPIE's 46 Annual Meeting (29 July to 3 August, 2001)
79. V. A. Podolskiy, A. K. Sarychev, and V. M. Shalaev, "Temporal dynamics of giant local fields in metal-dielectric percolation films", Proceedings of 10th Annual International Laser Workshop (LPHYS'01), Moscow, Russia, July 3-7, 2001; p. 44
80. M. Gadenne, V. Podolskiy, P. Gadenne, P. Sheng, and V. M. Shalaev, "Optical phonons in metal-dielectric composites", Proceedings of 10th Annual International Laser Workshop (LPHYS'01), Moscow, Russia, July 3-7, p. 15 (2001)
81. P. Gadenne, B. Berini, S. Ducourtieux, S. Gresillon, J. C. Rivoal, M. Breit, V. Shalaev, A. Sarychev, V. Podolskiy, "Nonlinear response enhanced by surface plasmons of fractal metal thin films", Proceedings of 10th Annual International Laser Workshop (LPHYS'01), Moscow, Russia, July 3-7, p. 16 (2001).
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Patent applications

1. V.A. Podolskiy, A.A. Govyadinov "Photonic funnels and anisotropic waveguides for subdiffraction light compression and pulse management at the nanoscale"
US Provisional patent application (filed Sep. 20 2006)
US patent 07623745 (filed Sep 13 2007)
2. V.A. Podolskiy and E.E. Narimanov "Left-handed materials and structures based on strong dielectric anisotropy",
US Provisional patent application No 60/681,077 (filed May 13 2005)
US Patent 7,421,178 (filed May 12 2006)
3. A. Sarychev, V.M. Shalaev, A.M. Dykhne, V.A. Podolskiy "Plasmonic nanophotonic methods, materials and aparatuses ",
US patent 6,977,767 B2 (filed Apr. 25 2002)

Press releases

- OSU press release Dec. 2008
reprinted by photonics.com, gazette times, daily barometer, Norfolk State press, physorg.com, laser focus world.com, scienceblog.com, and others
- OSU press release Dec. 2006
reprinted by MSN Money, Portland Business Journal, Pacific Business News; yahoo business news, OSU Today, photonics.com, optics.org, KEZI 9 news, ONAMI, Salem News, Gazette Times, Democrat Herald [front page]
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Full conference and seminars lists:

1. **[invited] Correlation Optics 2017 Light manipulation with diffractive interfaces, (Sep 2017)**
2. **[invited] SPIE Optics and Photonics 2017 Interscale mixing microscopy: far field imaging beyond the diffraction limit, (Aug 2017)**
3. SPIE Optics and Photonics 2017 – coauthored 2 contributed presentations
4. **[invited] Engineering optical density of states with nonlocal metamaterials, CLEO/QELS 2017, paper number FTh1G**
5. CLEO/QELS 2017 – coauthored 2 contributed presentations
6. **(invited) DOD TriService review: Quantum and Nonlinear optics in nonlocal nanowire metamaterials (Sep 2016)**
7. **(invited) SPIE optics and photonics Second harmonic generation in nonlocal plasmonic nanowire metamaterials (Aug 2016)**
8. CLEO/QELS 2016 – coauthored 5 presentations
9. **(invited) OSA incubator on nonlinear metamaterials Towards engineering bulk nonlinear polarizability with nonlocal plasmonic metamaterials (Oct 2015)**
10. **(invited) Correlation Optics Diffractive interface theory: nonlocal polarization approach to metasurfaces (Sep 2015)**
11. **(invited) SPIE optics and photonics Light emission in nonlocal plasmonic metamaterials (Aug 2015)**
12. CLEO/QELS 2015 coauthored 2 presentations
13. Faraday Discussions on Plasmonics, *Light emission in nonlocal plasmonic metamaterials* (Feb 2015)
14. **(invited) Tri-service review meeting Nonlocal homogenization of metamaterials and metasurfaces (Nov 2014)**
15. MRS meeting 2014, coauthored 2 presentations
16. **(invited) UCSD Light manipulation with multiscale composites (Aug 2014)**
17. **(invited) SPIE optics and photonics Nonlocal polarization approach to metasurfaces (Aug 2014)**
18. **(invited) IEEE Summer Topicals Additional waves in nonlocal nanowire metamaterials (Jul 2014)**
19. CLEO:QELS 2014 coauthored 3 presentations, presided a session
20. **(invited) King's College London Subwavelength focusing and imaging with multiscale composites (May 2014)**
21. MRS 2013 coauthored 3 presentations
22. **(invited) University of Buffalo, Subwavelength focusing and imaging with multiscale composites (Nov. 2013)**
23. **(invited) OSA Incubator Structured Light in Structured Media Optical Nonlocalities and Additional Waves in Uniaxial Metamaterials (Sep. 2013)**
24. **(invited) Correlation optics – 2013, Chernivtsy, Ukraine, Nonlocal optical metamaterials for sensing and nonlinear applications (Sep. 2013)**
25. **(invited) SPIE optics and Photonics, San Diego, CA, Analytical description of optical nonlocalities in nanowire metamaterials (Aug. 2013)**
26. CLEO/QELS 2013, coauthored 3 presentations
27. **(invited) Physics of Quantum Electronics (PQE 2013), Snowbird UT Interscale Mixing for High Resolution and Highly-Compact Imaging Systems (Jan. 2013)**
28. **(invited) Frontiers in Optics, Rochester, NY, Interscale Mixing for High Resolution and Highly-Compact Imaging Systems (Oct. 2012)**
29. **(invited) SPIE optics and photonics, San Diego, CA, Nonlocal optical phenomena in metamaterials (Aug 2012)**
30. **(invited) Workshop on Linear and Nonlinear Interactions in Metamaterials and Plasmonic Nanostructures, Huntsville, AL, Nonlocal ENZ metamaterials: novel optics, supersensing, and enhanced nonlinear response (Jun 2012)**
31. **(invited) CLEO/QELS 2012, San Jose, CA Nonlocal optical phenomena in metamaterials (May 2012)**
32. **(invited) META-2012, Paris, France Low-diffracting beaming in plasmonic crystals (Apr 2012)**

33. (invited) Physics of Quantum Electronics (PQE 2012), Snowbird UT Low-diffracting surface modes in plasmonic metamaterials (Jan 2012)
34. (invited) Workshop on metamaterials and plasmonics, Buffalo, NY, Nonlocal electromagnetism in plasmonic epsilon-near-zero metamaterials (May 2011)
35. CLEO/QELS 2011 – co-authored one talk and one poster
36. (invited) APS-NE annual meeting, Bending the laws of diffraction with hyperbolic metamaterials (Apr. 2011)
37. (invited) Department of Physics and Applied Physics, U Mass Lowell, Quantum Chaos in Dielectric Microresonators (Mar 2011)
38. (invited) Physics of Quantum Electronics (PQE 2011), Optics without lenses: analytical technique for subwavelength far field imaging, Snowbird, UT
39. (invited) SPIE-2010, Optical nonlocalities and additional waves in epsilon-near-zero metamaterials San Diego, CA (Aug 2010)
40. CLEO 2010 – co-authored 5 oral talks, one posted, presided a session
41. (invited) Physics of Quantum Electronics (PQE 2009), Snowbird, UT “Eliminating losses and out-of-plane scattering of surface plasmon polaritons with active metamaterials” (Jan 2009)
42. (invited) IEEE/LEOS lecture, Portland, OR “Management of optical pulses at the nanoscale with active anisotropic metamaterials” (Nov 2008)
43. (invited) SPIE, San Diego, CA, “Scattering-free planar optics with anisotropic metamaterials” (Aug 2008)
44. (invited) Gordon Conference on Plasmonics, Tilton, NH “Semiconductor metamaterials: towards high-performance imaging and truly plasmonic optics” (July 2008)
45. CLEO/QELS 2008 (May 2008) - presented two talks; coauthored another talk and a poster presentation and presided a session
46. (invited) Dept. of Chemistry, U. Washington, Seattle, WA “Controlling the diffraction limit and group velocity with active anisotropic metamaterials” (Mar. 2008)
47. (invited) Dept. of Physics, UT Dallas, Richardson, TX - “Controlling the diffraction limit and group velocity with active anisotropic metamaterials” (Jan. 2008)
48. (invited) ONAMI/FENA workshop, UCLA , Los Angeles, CA - “Plasmonic metamaterials: from far-field superimaging to optical cloaking” (Nov. 2007)
49. (invited) First International congress on metamaterials, Rome, Italy, - “Diffraction and dispersion management in anisotropic metamaterials” (Oct. 2007)
50. (invited) SPIE, San Diego, CA - “Diffraction and dispersion management in anisotropic metamaterials” (Aug. 2007)
51. CLEO/QELS 2007 (May. 2007)
52. IMA "hot topics" workshop on Negative Index Materials, Minneapolis, MN (Oct. 2006) – presented invited poster
53. (invited) IEEE AP-S/URSI, Albuquerque, NM – “Manipulating the diffraction limit with optical anisotropy”, Jul. 2006
54. CLEO/QELS 2006 (May. 2006)
55. (invited) Dept. of Physics, Norfolk State U., Norfolk, VA – “Strongly anisotropic metamaterials for negative refraction and sub-diffraction light manipulation”, Apr. 2006
56. (invited) Dept. of Mechanical Engineering, UC Berkeley, Berkeley CA – “Using optical anisotropy to manipulate light beyond the diffraction limit”, Feb. 2006
57. PQE 2006 – poster presentation
58. (invited) Physics of Quantum Electronics (PQE 2006) winter colloquium, Snowbird, UT – “Photonic funnels: using anisotropy to compress and propagate light beyond the diffraction limit”, Jan. 2006
59. (invited) Intel, Portland OR – “Super-imaging and non-magnetic negative refractive index materials”, Nov. 2005
60. (invited) Optics East 2005, Boston MA – “Left-handed high energy density waveguides: nano-light propagation and focusing”, Oct. 2005
61. (invited) Electrical and Computer Engineering Dept., Wayne State U., Detroit, MI – “Controlling light propagation beyond the diffraction limit: photonic funnels, negative refraction and planar waveguide imaging”, Oct. 2005
62. JCIS/PNC, Salt Lake City, UT, July (2005) presented a talk
63. (invited) IEEE AP-S/URSI, Washington DC – “Nanostructured non-magnetic left-handed composites”, July 2005
64. CLEO/QELS 2005, Baltimore MD – presented one talk and poster, coauthored another two talks, and presided the session
65. (invited) Physics Department, Portland State University, Portland, OR – “Bringing light to nano-domain: super-sensing, light nano-guiding, and negative refraction”, May 2005
66. (invited) Physics Department, University of Utah, Salt Lake City, UT – “Towards optical negative refractive index material”, Apr. 2005

67. **(invited) Physics of Quantum Electronics (PQE 2005) winter colloquium, Snowbird, UT – "Nanostructured non-magnetic left-handed composites", Jan. 2005**
68. PQE 2005, Snowbird, UT, Jan 2005 poster presentation
69. **(invited) Physics Department, University of Oregon, Eugene OR – "Resonant light interaction with nano-plasmonic structures: field enhancement, nano-light guiding, and left-handed media", Oct. 2004**
70. **(invited) Physics Department, Oregon State U., Corvallis OR, "Steering light with negative refraction", Oct. 2004**
71. Frontiers in Optics 2004, Rochester NY, (2004) – presented one talk, coauthored poster presentation
72. **(invited) IEEE AP-S/URSI, San Jose CA "Light manipulation with plasmonics nanoantennas", Jun. 2004**
73. CLEO/IQEC 2004, San Francisco CA, May 2004 – presented two talks
74. **(invited) Physics Department, New Mexico State U., Las Cruces, NM – "Optical properties of nanostructured plasmonic media," Nov. 2003**
75. **(invited) Queens College, City University of New York – "Novel optical phenomena in metallic nanostructures: plasmon modes localization and left-handed media," Oct. 2003**
76. Progress in Electromagnetics Research Symposium (PIERS) – Honolulu, HI (2003) – presented one talk and coauthored two contributed papers
77. Frontiers in Optics, Tucson, AZ (2003) – presented two papers, coauthored another two talks, and presided the session
78. SPIE annual meeting (2003) – coauthored presented paper
79. **(invited) EE Department, Princeton University – "Optical Properties of Plasmonic Nanowires: strong local field enhancement and left-handed media," Jun. 2003**
80. CLEO/QELS meeting, Baltimore, 1-6 Jun. 2003 – presented two papers,
81. APS march meeting, Austin, TX, Mar 2003 – presented two talks, coauthored another presented talk
82. **(invited) Princeton Plasma Physics Laboratory – "Light scattering by Metal-Dielectric Percolation Films: Plasmon Modes Localization, and Enhanced Optical Response," Jan. 2003**
83. SPIE Photonics West 2003 – coauthored presented paper
84. OSA meeting 2002 – presented two talks
85. SPIE meeting 2002
86. IQEC 2002
87. Progress in Electromagnetics Research Symposium 2002
88. APS – four corners section 2001 – presented one paper
89. CLEO meeting 2001
90. ICONO 2001
91. SPIE meeting 2001
92. OSA annual meeting - 2001, Long Beach CA, USA – presented two talks.
93. **(invited) 10-th annual laser workshop (Laser Physics 2001), Moscow, Russia**
94. APS March meeting - 2001, Seattle WA, USA – presented one talk
95. **(invited) ESPCI, Paris, France "Local Field Enhanced Optical Phenomena," Dec.2000**
96. Optical Society of America annual meeting - 2000, Providence RI, USA – presented a poster

Session organizer/committee chair:

- Chair of technical program committee: "Fundamentals of metamaterials, periodic and random systems", QELS 2015,2016
- Member of the technical program committee: "Fundamentals of metamaterials, periodic and random systems", QELS 2009, 2010, 2013
- Member of International Program Committee, Correlation Optics-2013 (2013)
- Session organizer: Physics of Quantum Electronics workshop 2006 – Negative index materials, and metamaterials

Editorial activities:

- 2010-2016 Associate Editor, Optics Express
- 2013 Guest Editor, Special issue on hyperbolic materials, Optics Express
- 2011 Guest Editor, Special issue on collective phenomena, Optics Express
- 2008-2013 Member of editorial board: Research Letters in Physics

Funding

Current awarded grants

1. 10/2016-4/2018 **NSF I-Corps Composite Photonics** **\$50,000**
2. 04/2016-04/2019 **ARO "Plasmon-phonon and plasmon-magnon interaction in metamaterials: multi-physics paradigm for acousto-optical and magneto-optical technologies"** **\$517,473**
3. 10/2016-09/2020 **NSF "DMREF: Collaborative research: semiconductor heterostructure platform for active nonlocal plasmonic and hyperbolic materials"** **\$298,000** (full DMREF program: \$1,150,000)

Past awarded grants

1. 08/2012-08/2015 **NSF "Materials World Network: Collaborative Proposal: Understanding the Optical Response of Designer Epsilon Near Zero Materials"**, **\$240,000**
2. 09/2012-08/2015 **ARO "Nonlocal plasmonic metamaterials for ultrafast nonlinear optics"**, **\$449,339**
3. 06/2012-06/2014 **UML Healey Public Service Award "Understanding Optics of Quasi-Random Systems by Merging Transformation Optics and Random Matrix Theory"** **\$8,824**
4. 05/2011-04/2014 **NSF "QMHP: Multichannel interscale mixing: towards highly-parallel subwavelength imaging and focusing of light,"** **\$261,265**
5. 05/2012-08/2013 **NSF "Collaborative Research: Active Plasmonics for Mid-Infrared Sensing"**, PI transfer **\$108,062**
6. 11/2010-10/2012 **MDA/Triton Sys. Development of a tuneable infrared optical filter** (with D. Wasserman [PI]), **\$136,000**
7. 02/2011-07/2011 **AFRL/Triton Sys. Frequency agile narrow-band infrared absorber** (with D. Wasserman [PI]), **\$28,000**
8. 01/2010-01/2011 **ONR "ONAMI nanometrology and nanoelectronics initiative: THz nanoantenna array based on carbon nanotubes"** (with Y-S Lee, E. Minot [PI], Oregon State U), **\$199,500**
9. 01/2010-01/2011 **ONR "ONAMI nanometrology and nanoelectronics initiative: plasmonic focusing on a tip: optical scanning probes for spatio-temporal imaging on the nanoscale"**, (with M. Raschke, U. Washington) **\$110,000**
10. 11/2008-11/2009 **DARPA/AFOSR "Long-wave infrared semiconductor negative refraction meta-materials for high-resolution imaging"**, **\$150,000**
[OSU amount \$39,000; UML amount \$23,000]
11. 10/2007-10/2009 **ONR "ONAMI nanometrology and nanoelectronics initiative: Electroplasmonics: Merging nanoplasmonics with electrooptics"** (with M. Deutsch, UO) **\$115,000** (OSU part \$50,000)
12. 10/2007-10/2009 **ONR "ONAMI nanometrology and nanoelectronics initiative: Low-loss macroscopic negative index materials in the visible: sub-diffraction light manipulation and dispersion management"** (with X. Zhang, UC Berkeley) **\$112,000**
13. 09/2007-08/2010 **NSF "Nanoscale photonic circuits in negative-refraction waveguides"** **\$230,000** [UML amount \$121,000]
14. 09/2007-09/2008 **ARL "ONAMI research center: electromagnetically induced transparency"** (with Miriam Deutsch, UO), **\$40,000** (OSU part \$19,245)
15. 07/2007-08/2007 **OSU/TRF "Acquisition of COMSOL multiphysics software for enhancing Physics education"** **\$4,980**
16. 04/2007-06/2008 **ONR "ONAMI nanometrology and nanoelectronics initiative: Active plasmonic materials"** (with M. Deutsch, UO) **\$103,700** (OSU part \$48,717)
17. 12/2006-06/2007 **ARO "ONAMI research center: electromagnetically induced transparency"** (with Miriam Deutsch, UO), **\$40,000** (OSU part \$19,245)
18. 09/2006-12/2006 **OSU/URISC (by G. Mitchell) "Chaotic light scattering from dielectric microparticles"** **\$1,000**
19. 09/2006-09/2008 **ACS/PRF "Plasmonics of composite materials: new avenues of light management on nanoscale"** **\$35,000**
20. 12/2005-05/2007 **OSU/GRF "Strongly anisotropic composites: new types of artificial materials"** **\$9,800**

21. 05/2005-05/2006 **OSU/TRF** "*Replacement of obsolete computers in computational physics lab*" (with R. Landau, OSU)
\$54,532
22. 04/2005-06/2005 **OSU/FRT** "*Non-magnetic left-handed materials*"
\$6,000

Service to the University

Supervised Students:

Undergraduate students

- | | |
|---|------------------------------|
| 1. Kevin Tyrell | 2016 |
| 2. James Orlando | 2014 |
| 3. Robert Martin | 2012 [honors thesis advisor] |
| 4. Scott Norton | 2011 |
| 5. Ken Lett | 2006-2008 |
| Thesis: Modeling the superlens | |
| 6. Zachary Haines | 2006-2007 |
| Thesis: Light propagation in a photonic crystal | |
| 7. Gabriel Mitchell | 2006-2007 |
| 8. Nicholas A. Kuhta | 2005-2007 |
| 9. Benjamin Weston | 2005-2007 |

M.S. Students

- | | |
|-----------------------------|--------------|
| 1. Paul Catalano | 2015-present |
| 2. Christopher Roberts | 2012-2014 |
| 3. Brian Wells | 2011-2014 |
| 4. Sandeep Inampudi | 2010-2012 |
| 5. Rahul Khanna | 2011 |
| 6. Sukosin Thongrattanasiri | 2006-2007 |
| 7. Dona Hertel | 2006-2007 |

Ph.D. Students

- | | |
|-----------------------------|--------------|
| 1. Evan Simmons | 2017-present |
| 2. Bo Fan | 2014-present |
| 3. Christopher Roberts | 2014-2017 |
| 4. Brian Wells | 2014-2015 |
| 5. Sandeep Inampudi | 2012-2014 |
| 6. Nicholas Kuhta | 2007-2012 |
| 7. Sukosin Thongrattanasiri | 2007-2009 |
| 8. Alexander A Govyadinov | 2004-2007 |
| 9. Justin Elser | 2004-2008 |
| 10. Robyn Wangberg | 2004-2008 |

Teaching:

- | | | | |
|----|-------------|-------------------------------------|--|
| 1. | 2017 Fall | Phys 6570
Phys 1410
Phys 7110 | Electromagnetic Theory I, 3 credits
Physics I (recitation), 3 credits
Graduate Seminar |
| 2. | 2017 Spring | Phys 6580
Phys 1410 | Electromagnetic Theory II, 3 credits
Physics I (recitation), 3 credits |
| 3. | 2016 Fall | Phys 6570 | Electromagnetic Theory I, 3 credits |
| 4. | 2016 Spring | Phys 6580
Phys 6060 | Electromagnetic Theory II, 3 credits
Math Methods of Physics II, 3 credits |

5.	2015 Fall	Phys 1410 Phys 6050 Phys 7130	Physics I (recitation), 3 credits Math Methods of Physics, 3 credits Seminar: theoretical research	
6.	2015 Spring	95.606.201 95.141.209 95.454.817 95.713.717	Math Methods of Physics II, 3 credits Physics I (recitation), 3 credits Physics Capstone Project Seminar: Theoretical Research	
7.	2014 Fall	95.605.201 95.141.201 95.713.717	Math Methods of Physics, 3 credits Physics I (recitation), 3 credits Seminar: Theoretical Research	
8.	2014 Spring	95.606.201 95.141.209 95.713.717	Math Methods of Physics II, 3 credits Physics I (recitation), 3 credits Seminar: Theoretical Research	
9.	2013 Fall	95.605.201 95.141.201 95.713.717	Math Methods of Physics, 3 credits Physics I (recitation), 3 credits Seminar: Theoretical Research	
10.	2013 Spring	95.606.201 95.141.209 95.454.817 95.713.717	Math Methods of Physics II, 3 credits Physics I (recitation), 3 credits Physics Capstone Project Seminar: Theoretical Research	
11.	2012 Spring	95.606.201 95.141.209 95.454.817 95.727.201 95.713.717	Math Methods of Physics II, 3 credits Physics I (recitation), 3 credits Physics Capstone Project Selected topics: theoretical physics Seminar: Theoretical Research	
12.	2011 Fall	95.605.201 95.141.201	Math Methods of Physics I physics I (recitation), 3 credits	
13.	2011 Spring	95.144.201 95.606.201	Physics II (recitation) Math Methods of Physics II (recitation)	
14.	2010 Fall	95.141.209 95.605.201 95.727.201	Physics I (recitation) Math Methods of Physics I (recitation) Sel.Top: theoretical Physics (recitation)	
15.	2010 Spring	95.144.201 95.144.807 95.144.201	Physics II (recitation) Physics II (laboratory) Physics II (laboratory)	
16.	2009 Fall	Ph 681	Selected Topics in Modern Optics	
17.	2009 Winter	Ph 621 Ph 465 Ph 565	Nonlinear Dynamics Scientific Computing (1 student)	4.2/6.0; 4.5/6.0 4.0/6.0; 5.0/6.0 4.0/6.0; 4.3/6.0
18.	2008 Fall	Ph 431	Electromagnetism	3.6/6.0; 3.6/6.0
19.	2008 Spring	Ph 682	Ultrafast Optics (Topics in Modern Optics)	4.3/6.0; 4.5/6.0
20.	2008 Winter	Ph 621	Nonlinear Dynamics	4.7/6.0; 4.3/6.0
21.	2007 Fall	Ph 431	Electromagnetism	4.2/6.0; 4.1/6.0
22.	2007 Spring	Ph 464 Ph 564	Scientific Computing II (1 student)	4.5/6.0; 5.0/6.0 3.0/6.0; 4.0/6.0
23.	2007 Winter	Ph/CS 265	Introduction to Scientific Computing	4.0/6.0; 4.5/6.0
24.	2006 Fall	Ph 621	Nonlinear Dynamics	4.1/6.0; 4.3/6.0
25.	2006 Spring	Ph 464 Ph 564	Scientific Computing II	4.5/6.0; 5.0/6.0 4.8/6.0; 4.3/6.0
26.	2006 Winter	Ph/CS 265	Introduction to Scientific Computing	3.9/6.0; 4.3/6.0
27.	2005 Fall	Ph 621	Nonlinear Dynamics	4.7/6.0; 5.3/6.0
28.	2005 Winter	Ph/CS/Mth 265	Introduction to Scientific Computing	3.3/6.0; 3.5/6.0
29.	2004 Fall	Ph 621	Nonlinear Dynamics	2.6/6.0; 2.8/6.0

Graduate Committees:

- K. Tanyi (M.S. committee) Norfolk State U, external committee member (2015-present)
- D. DiGiovanni (Ph.D. committee) U Mass Lowell (2015)
- Kuravi Hawewasam (M.S. committee) U Mass Lowell (2015)
- Olga Kononova (Ph.D. committee) U Mass Lowell (2014-present)
- Richard Williams (M.S. committee) U Mass Lowell (2014)
- Artem Zhmurov (Ph.D. committee) U Mass Lowell (2013)
- Tal Gaftsky (Ph.D. committee) Queens College, CUNY (2013-present)
- Hamzeh Jaradat (Ph.D. Committee) U Mass Lowell (2013)
- Mohammad Mayy (Ph.D. committee) Norfolk State U, external committee member (2010-2013)
- Neelima Chandrayan (Ph.D committee) U Mass Lowell (2011-2012)
- Joshua Mason (Ph.D. committee) U Mass Lowell (2012)
- James Cramer (Ph.D. committee) U Mass Lowell (2012)
- Heng Li (Ph.D. committee) Norfolk State U, external committee member (2011-2012)
- Philip Slingerland (Ph.D. committee) U Mass Lowell (2011)
- Andriy Danylov (Ph.D. Committee) U Mass Lowell (2010)
- Landon Prisbey (Ph.D. committee) Oregon State U (2007-2010)
- Jared Stenson (Ph.D. committee) Oregon State U (2007-2010)
- Andy Jameson (Ph.D. committee) Oregon State U (2007-2010)
- Mark Kendrick (Ph.D. committee) Oregon State U (2007-2010)
- KC Walsh (Ph.D. committee) Oregon State U (2006-2010)
- Kirk Rowe (Ph.D. committee) Oregon State U (2004)

Other Committees:

- Faculty Search Spring 2012
- Personnel committee Fall 2011 present
- Graduate committee Fall 2011 present
- Undergraduate committee Spring 2011
- Comprehensive exam committee (chair) Spring 2007 2009
- Web committee Fall 2006 2010
- Graduate taskforce Fall 2006 2010
- Comprehensive exam (chair) Spring 2006 Fall 2006
- Solid State/Optics seminar Spring 2006
- Faculty Search Winter 2006
- Promotional committee Fall 2005
- Comprehensive exam committee Spring 2005 Fall 2005

Other:

- UML early acceptance day Spring 2012
 - UML open house Fall 2011
 - UML open house Fall 2010
 - EMG awareness week Oct. 2008
 - ENG open house Oct. 2007
 - ENG open house Oct. 2006
 - COS open house Oct. 2005
- presented two student posters