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Nanfang Yu is a permanent resident of the US

PROFESSIONAL PREPARATION

B.S. in Electrical Engineering, Jun. 2004

Peking University, Department of Electronics, Beijing, P. R. China

Ph.D. in Engineering Sciences, Jun. 2009

Harvard University, School of Engineering and Applied Sciences, Cambridge, MA, USA

Postdoctoral research on nanophotonics and optoelectronics, Jun. 2009 – Dec. 2012

Harvard University, School of Engineering and Applied Sciences, Cambridge, MA, USA

APPOINTMENTS

Assistant Professor of Applied Physics Columbia University	Jan. 1 2013 – present
Adjunct Associate Research Scientist Columbia University	Jul.2012 – Dec.2012
Research Associate Harvard University	Jul.2010 – Dec.2012
Postdoctoral Researcher Harvard University	Jun.2009 – Jun.2010

RESEARCH INTERESTS

Optics, Plasmonics and Metamaterials, Semiconductor Physics and Devices, Infrared Optics and Optoelectronic Devices, Reconfigurable Metainterfaces Based on Phased Optical Antenna Arrays, Mid-Infrared and Terahertz Quantum Cascade Lasers, Infrared Imaging and Spectroscopy, Graphene Optoelectronic Devices, Phase-Transition Material

AWARDS

2015 Defense Advanced Research Projects Agency Young Faculty Award (DARPA YFA)

2016 Office of Naval Research Young Investigator Program (ONR YIP) Award

PEER-REVIEWED JOURNAL PUBLICATIONS**2016**

1. Z. Li, M.-H. Kim, Z. Han, S. Shrestha, M. Lu, A. Stein, A. M. Agarwal, and **N. Yu**, “Controlling propagation and coupling of waveguide modes using phase-gradient metasurfaces,” under review
2. Z. Li, Y. Zhou, H. Qi, Q. Pan, Z. Zhang, N. N. Shi, M. Lu, A. Stein, C. Y. Li, S. Ramanathan, and **N. Yu**, “Correlated perovskites as a new platform for super broadband tunable photonics,” *Advanced Materials* DOI: 10.1002/adma.201601204 (2016).

3. Zhang, M. Kim, F. Aieta, A. She, T. Mansuripur, I. Gabay, M. Khorasaninejad, D. Rousso, X. Wang, M. Troccoli, **N. Yu**, and F. Capasso, “High efficiency near diffraction-limited mid-infrared flat lenses based on metasurface reflectarrays,” *Optics Express* vol. 24, 18024 (2016).
4. H.-T. Chen, A. J. Taylor, and **N. Yu**, “A review of metasurfaces: physics and applications,” *Reports on Progress in Physics* vol. 79, 076401 (2016).

2015

5. N. N. Shi, C.-C. Tsai, F. Camino, G. D. Bernard, **N. Yu***, R. Wehner*, “Keeping cool: Enhanced optical reflection and radiative heat dissipation in Saharan silver ants,” *Science* vol. 349, 298–301 (2015) (*co-corresponding authors)
6. **N. Yu** and F. Capasso, “Optical metasurfaces and prospect of their applications including fiber optics,” *IEEE Journal of Lightwave Technology* vol. 33, 2344 (2015)

2014

7. **N. Yu** and F. Capasso, “Flat optics with designer metasurfaces,” *Nature Materials* vol. 13, 139–150 (2014)

2013

8. Z. Li and **N. Yu**, “Modulation of mid-infrared light using graphene-metal plasmonic antennas,” *Applied Physics Letters* vol. 102, 131108 (2013)
9. **N. Yu**, P. Genevet, F. Aieta, M. A. Kats, R. Blanchard, G. Aoust, J.-P. Tetienne, Z. Gaburro, and F. Capasso, “Flat optics: Controlling wavefronts With optical antenna metasurfaces,” *IEEE Journal of Selected Topics in Quantum Electronics* vol. 19, 4700423 (2013)
10. R. Blanchard, T. S. Mansuripur, B. Gokden, **N. Yu**, M. Kats, P. Genevet, K. Fujita, T. Edamura, M. Yamanishi, and F. Capasso, “High-power low-divergence tapered quantum cascade lasers with plasmonic collimators,” *Applied Physics Letters* vol. 102, 191114 (2013)
11. Y. Yao, M. A. Kats, P. Genevet, **N. Yu**, Y. Song, J. Kong, and F. Capasso, “Broad electrical tuning of graphene-loaded plasmonic antennas,” *Nano Letters* vol. 13, pp. 1257–1264 (2013)

2012

12. **N. Yu**, F. Aieta, P. Genevet, M. A. Kats, Z. Gaburro, and F. Capasso, “A Broadband, background-free quarter-wave plate based on plasmonic metasurfaces,” *Nano Letters* vol. 12, pp. 6328–6333 (2012)
13. F. Aieta, A. Kabiri, P. Genevet, **N. Yu**, M. A. Kats, Z. Gaburro, and F. Capasso, “Reflection and refraction of light from metasurfaces with phase discontinuities,” *Journal of Nanophotonics* vol. 6, 063532 (2012)
14. F. Aieta, P. Genevet, M. A. Kats, **N. Yu**, R. Blanchard, Z. Gaburro, and F. Capasso, “Aberration-free ultrathin flat lenses and axicons at telecom wavelengths based on plasmonic metasurfaces,” *Nano Letters* vol. 12, pp. 4932–4936 (2012)
15. M. A. Kats, P. Genevet, G. Aoust, N. Yu, R. Blanchard, F. Aieta, Z. Gaburro, and F. Capasso, “Giant birefringence in optical antenna arrays with widely tailorable optical anisotropy,” *Proceedings of the National Academy of Sciences of the United States of America* vol. 109, pp. 12364–12368 (2012)
16. R. Blanchard, G. Aoust, P. Genevet, N. Yu, M. A. Kats, Z. Gaburro, and F. Capasso, “Modeling nanoscale V-shaped antennas for the design of optical phased arrays,” *Physical Review B* vol. 85, 155457 (2012)

17. P. Genevet, **N. Yu**, F. Aieta, J. Lin, M. A. Kats, R. Blanchard, M. O. Scully, Z. Gaburro, and F. Capasso, “Ultra-thin plasmonic optical vortex plate based on phase discontinuities,” *Applied Physics Letters* vol. 100, 13101 (2012)
- Featured as the cover of the Jan. 2, 2012 issue of *Applied Physics Letters*
18. F. Aieta, P. Genevet, **N. Yu**, M. A. Kats, Z. Gaburro, and F. Capasso, “Out-of-plane reflection and refraction of light by anisotropic optical antenna metasurfaces with phase discontinuities,” *Nano Letters* vol. 12, pp. 1702-1706 (2012)
19. **N. Yu**, Q. J. Wang, and F. Capasso, “Beam engineering of quantum cascade lasers,” *Laser & Photonics Reviews* vol. 6, pp. 24-46 (2012)
- Featured as the cover of the Jan. 2012 issue of *Laser & Photonics Reviews*

2011

20. **N. Yu**, P. Genevet, M. A. Kats, J.-P. Tetienne, F. Aieta, F. Capasso, and Z. Gaburro, “Light propagation with phase discontinuities: Generalized laws of reflection and refraction,” *Science* vol. 334, pp. 333-337 (2011)
- Featured as the cover of the Oct. 21, 2011 issue of *Science*;
 - “Antenna-guided light,” *Science Perspectives* vol. 334, pp. 317-318 (2011);
 - “Phase-shifting surfaces bend the rules of ray optics,” *Physics Today* Nov. 2011 issue
21. M. A. Kats, **N. Yu**, P. Genevet, Z. Gaburro, and F. Capasso, “Effect of radiation damping on the spectral response of plasmonic components,” *Optics Express* vol. 19, pp. 21748-21753 (2011)
22. R. Blanchard, S. V. Boriskina, P. Genevet, M. A. Kats, J.-P. Tetienne, **N. Yu**, M. O. Scully, L. Dal Negro, and F. Capasso, “Multi-wavelength mid-infrared plasmonic antennas with single nanoscale focal point,” *Optics Express* vol. 19, pp. 22113-22124 (2011)
23. M. A. Kats, D. Woolf, R. Blanchard, **N. Yu**, F. Capasso, “Spoof plasmon analogue of metal-insulator-metal waveguides,” *Optics Express* vol. 19, pp. 14860-14870 (2011)
24. A. K. Wójcik, **N. Yu**, F. Capasso, and A. Belyanin, “Nonlinear optical interactions of laser modes in quantum cascade lasers,” *Journal of Modern Optics* vol. 58, pp. 727-742 (2011)
25. A. K. Wójcik, **N. Yu**, L. Diehl, F. Capasso, and A. Belyanin, “Self-synchronization of laser modes and multistability in quantum cascade lasers,” *Physical Review Letters* vol. 106, 133902 (2011)
26. J. P. Tetienne, R. Blanchard, **N. Yu**, P. Genevet, M. A. Kats, J. A. Fan, T. Edamura, S. Furuta, M. Yamanishi, H. Kan, and F. Capasso, “Dipolar modeling and experimental demonstration of multi-beam plasmonic collimators,” *New Journal of Physics* vol. 13, 53057 (2011)

2010

27. **N. Yu**, Q. J. Wang, M. A. Kats, J. A. Fan, S. P. Khanna, L. Li, A. G. Davies, E. H. Linfield, and F. Capasso, “Designer spoof-surface-plasmon structures collimate terahertz laser beams,” *Nature Materials* vol. 9, pp. 730-735 (2010)
28. **N. Yu**, and F. Capasso, “Wavefront engineering for mid-infrared and terahertz quantum cascade lasers,” *Journal of the Optical Society of America B* vol. 27, pp. B18-B35 (2010) (invited paper)
29. **N. Yu**, Q. J. Wang, M. A. Kats, J. A. Fan, S. P. Khanna, L. Li, A. G. Davies, E. H. Linfield, and F. Capasso, “Terahertz plasmonics,” *Electronics Letters* vol. 46, pp. S52-S57 (2010)

30. Q. J. Wang, C. Yan, **N. Yu**, J. Unterhinninghofen, J. Wiersig, C. Pflügl, L. Diehl, T. Edamura, M. Yamanishi, H. Kan, and F. Capasso, “Whispering gallery mode resonators for highly unidirectional laser action,” *Proceedings of the National Academy of Sciences of the United States of America* vol. 107, pp. 22407-22412 (2010)
31. A. K. Wójcika, **N. Yu**, L. Diehl, F. Capasso, and A. Belyanin, “Nonlinear dynamics of coupled transverse modes in quantum cascade lasers,” *Journal of Modern Optics* vol. 57, pp. 1892-1899 (2010)
32. **N. Yu**, R. Blanchard, J. Fan, Q. J. Wang, C. Pflügl, L. Diehl, T. Edamura, M. Yamanishi, H. Kan, and F. Capasso, “Plasmonics for laser beam shaping,” *IEEE Transactions on Nanotechnology* vol. 9, pp. 11-29 (2010) (invited paper)
- Featured as the cover of the Jan. 2010 issue of *IEEE Transactions on Nanotechnology*
33. M. Geiser, C. Pflügl, A. Belyanin, Q. J. Wang, **N. Yu**, T. Edamura, M. Yamanishi, H. Kan, M. Fischer, A. Wittmann, J. Faist, and F. Capasso, “Gain competition in dual wavelength quantum cascade lasers,” *Optics Express* vol. 18, pp. 9900-9908 (2010)
34. M. Geiser, C. Pflügl, A. Belyanin, Q. J. Wang, **N. Yu**, M. A. Belkin, T. Edamura, H. Kan, M. Fischer, A. Wittmann, J. Faist, and F. Capasso, “Surface-emitting THz sources based on difference-frequency generation in mid-infrared quantum cascade lasers,” *Proceedings of SPIE* vol. 7616, 76160R (2010)

2009

35. **N. Yu**, L. Diehl, E. Cubukcu, D. Bour, S. Corzine, G. Höfler, A. K. Wojcik, K. B. Crozier, A. Belyanin, and F. Capasso, “Coherent coupling of multiple transverse modes in a quantum cascade laser,” *Physical Review Letters* vol. 102, 013901 (2009)
36. **N. Yu**, M. A. Kats, C. Pflügl, M. Geiser, Q. J. Wang, M. A. Belkin, F. Capasso, M. Fischer, A. Wittmann, J. Faist, T. Edamura, S. Furuta, M. Yamanishi, and H. Kan, “Multi-beam multi-wavelength semiconductor lasers,” *Applied Physics Letters* vol. 95, 161108 (2009)
- Featured as the cover of the Dec. 7, 2009 issue of *Applied Physics Letters*
37. C. Yan, Q. J. Wang, L. Diehl, M. Hentschel, J. Wiersig, **N. Yu**, C. Pflügl, F. Capasso, M. Belkin, T. Edamura, M. Yamanishi, and H. Kan, “Directional emission and universal far-field behavior from semiconductor lasers with Limaçon-shaped microcavity,” *Applied Physics Letters* vol. 94, 251101(2009)
- Featured as the cover of the Jun. 22, 2009 issue of *Applied Physics Letters*
38. F. Capasso, **N. Yu**, E. Cubukcu, and E. Smythe, “Using plasmonics to shape light beams,” *Optics and Photonics News* May issue, pp. 22 (2009) (invited article)
- Featured as the cover of the May 2009 issue of *Optics and Photonics News*
39. **N. Yu**, A. Belyanin, J. Bao, and F. Capasso, “Controlled modification of Erbium lifetime by near-field coupling to metallic films,” *New Journal of Physics* vol. 11, 015003 (2009) (invited paper)
40. **N. Yu**, Q. J. Wang, C. Pflügl, L. Diehl, T. Edamura, M. Yamanishi, H. Kan, and F. Capasso, “Semiconductor lasers with integrated plasmonic polarizers,” *Applied Physics Letters* vol. 94, 151101 (2009)
- Featured as the cover of the Apr. 13, 2009 issue of *Applied Physics Letters*

2008

41. N. Yu, J. Fan, Q. J. Wang, C. Pflügl, L. Diehl, T. Edamura, M. Yamanishi, H. Kan, and F. Capasso, “Small-divergence semiconductor lasers by plasmonic collimation,” *Nature Photonics* vol. 2, pp. 564-570 (2008)
- Featured as the cover of the Sept. 2008 issue of *Nature Photonics*;
 - “Plasmonics: A sharper approach,” *Nature Photonics News & Views* vol. 2, pp. 524-525 (2008)
42. N. Yu, R. Blanchard, J. Fan, T. Edamura, M. Yamanishi, H. Kan, and F. Capasso, “Small divergence semiconductor lasers with two-dimensional plasmonic collimators,” *Applied Physics Letters* vol. 93, 181101 (2008)
- Featured as the cover of the Nov. 3, 2008 issue of *Applied Physics Letters*
43. N. Yu, R. Blanchard, J. Fan, Q. J. Wang, C. Pflügl, L. Diehl, T. Edamura, M. Yamanishi, H. Kan, and F. Capasso, “Quantum cascade lasers with integrated plasmonic antenna-array collimators,” *Optics Express* vol. 16, pp. 19447-19461 (2008)
44. E. Cubukcu, N. Yu, E. J. Smythe, L. Diehl, K. B. Crozier, and Federico Capasso, “Plasmonic laser antennas and related devices,” *IEEE Journal of Selected Topics in Quantum Electronics* vol. 14, pp. 1448-1461 (2008)
45. M. Troccoli, L. Diehl, D. P. Bour, S. W. Corzine, N. Yu, C. Y. Wang, M. A. Belkin, G. Höfler, R. Lewicki, G. Wysocki, F. K. Tittel, and F. Capasso, “High performance quantum cascade lasers grown by metal-organic vapor phase epitaxy and their applications to trace gas sensing,” *IEEE Journal of Lightwave Technology* vol. 26, pp. 3534-3555 (2008) (invited paper)

2007

46. N. Yu, E. Cubukcu, L. Diehl, M. A. Belkin, K. B. Crozier, D. Bour, S. Corzine, and G. Höfler, and F. Capasso, “Plasmonic quantum cascade laser antenna,” *Applied Physics Letters* vol. 91, 173113 (2007)
- Featured as the cover of the Oct. 22, 2007 issue of *Applied Physics Letters*
47. N. Yu, E. Cubukcu, L. Diehl, D. Bour, S. Corzine, J. Zhu, G. Höfler, K. B. Crozier, and F. Capasso, “Bowtie plasmonic quantum cascade laser antenna,” *Optics Express* vol. 15, pp. 13272-13281 (2007)
48. N. Yu, L. Diehl, E. Cubukcu, C. Pflügl, D. Bour, S. Corzine, J. Zhu, G. Höfler, K. B. Crozier, and F. Capasso, “Near-field imaging of quantum cascade laser transverse modes,” *Optics Express* vol. 15, pp. 13227-13235 (2007)
49. J. Bao, N. Yu, F. Capasso, T. Mates, M. Troccoli, and A. Belyanin, “Controlled modification of erbium lifetime in silicon dioxide with metallic overlayers,” *Applied Physics Letters* vol. 91, 131103 (2007).
50. B. Tian, X. Zheng, T. J. Kempa, Y. Fang, N. Yu, G. Yu, J. Huang, and C. M. Lieber, “Coaxial silicon nanowires as solar cells and nanoelectronic power sources,” *Nature* vol. 449, pp. 885-889 (2007)

BOOK CHAPTERS

N. Yu, P. Genevet, M. A. Kats, J.-P. Tetienne, F. Aieta, Z. Gaburro, and F. Capasso, “Controlling Light Propagation Using Phase Discontinuities,” in *Active Plasmonics and Tuneable Metamaterials*, edited by A. Zayats and S. Maier, to be published by Wiley

N. Yu and F. Capasso, “Wavefront Engineering of Quantum Cascade Lasers Using Plasmonics,” in *Plasmonics and Plasmonic Metamaterials*, edited by I. Tsukerman and G. Shvets, **World Scientific**

CONFERENCE PRESENTATIONS

- Metamaterials'2016: The 10th International Congress on Advanced Electromagnetic Materials in Microwaves and Optics (Crete, Greece, September 17 – 22, 2016)
N. Yu “Optical and optoelectronic devices based on metasurfaces,” **invited talk**
- 37th Progress In Electromagnetics Research Symposium (Shanghai, China, August 8 – 11, 2016)
N. Yu “Optical and optoelectronic devices based on metasurfaces,” **invited talk**
- META’16, the 7th International Conference on Metamaterials, Photonic Crystals and Plasmonics (Malaga, Spain July 25 – July 28, 2016)
N. Yu “Active photonic devices based on metasurfaces integrated with phase-transition correlated perovskites,” **invited talk**
N. Yu “Natural and biomimetic radiative cooling nano-photonic structures,” **invited talk**
- Conference on Lasers and Electro-Optics (CLEO) (San Jose, CA, June 5-10, 2016)
M.-H. Kim, Z. Li, and **N. Yu**, “Experimental demonstration of waveguide mode converters based on phase-gradient metasurfaces,” **oral presentation**
Z. Li, Y. Zhou, H. Qi, C. Li, S. Ramanathan, and **N. Yu**, “Correlated Perovskites as a New Platform for Super Broadband Tunable Photonics,” **oral presentation**
N. N. Shi, C.-C. Tsai, F. Camino, G. D. Bernard, R. Wehner, N. Pierce, and **N. Yu**, “Radiative cooling nano-photonic structures discovered in Saharan silver ants and related biomimetic metasurfaces,” **oral presentation**
- 18th Photonics North Conference 2016 (Quebec City, Canada, May 24-26, 2016)
N. Yu “Correlated perovskites for super broadband tunable photonics,” **invited talk**
- 6th Symposium on Metamaterials organized by the University-Industry Cooperative Research Committee on Metamaterials (University of Tokyo, March 4-5, 2016)
N. Yu “Molding optical space using metasurfaces,” **plenary talk on March 4**
N. Yu “Optical and optoelectronic devices based on metasurfaces,” **plenary talk on March 5**
- META’15, the 6th International Conference on Metamaterials, Photonic Crystals and Plasmonics (City College of New York, New York City, NY, USA, August 4-7, 2015)
N. Yu “Controlling light propagation in integrated photonic circuits using optical metasurfaces,” **invited talk**
- Conference on Lasers and Electro-Optics (CLEO) (San Jose, CA, May 10-15, 2015)
Z. Li, M.-H. Kim, and **N. Yu**, “Controlling guided waves in telecom waveguides using one-dimensional phased antenna array,” **oral presentation**
- Seminar talk in Laboratory for Surface Modification seminar series (February 12, 2015, Rutgers University)
N. Yu “Controlling light propagation in integrated photonic circuits using optical metasurfaces,” **invited talk**
- 2014 IEEE Photonics Conference (San Diego, California, USA, October 12-16, 2014)
N. Yu “Controlling light propagation in optical waveguides using one dimensional phased antenna arrays,” **invited talk**
- 6th International Workshop on Electromagnetic Metamaterials (IWEM-VI) (Santa Fe, New Mexico, USA, September 22-23, 2014)
N. Yu “Controlling light propagation in optical waveguides using one dimensional phased antenna arrays,” **invited talk**

- 8th International Congress on Advanced Electromagnetic Materials in Microwaves and Optics – Metamaterials 2014 (Copenhagen, Denmark, August 25-30, 2014)
N. Yu “Controlling light propagation in optical waveguides using one dimensional phased antenna arrays,” **invited talk**
- The 2014 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting (Memphis, Tennessee, USA, July 6-11, 2014)
Myoung-Hwan Kim, Zhaoyi Li, and **Nanfang Yu**, “Controlling Light Propagation and Mode Coupling in Optical Waveguides Using One Dimensional Phased Antenna Arrays,” **oral presentation**
- Conference on Lasers and Electro-Optics (CLEO) (San Jose, CA, June 8-13, 2014)
N. Yu, “Controlling light propagation in optical waveguides using one dimensional phased antenna arrays,” **invited talk**
- Workshop on Structural Color organized by The Aizenberg and Manoharan labs (Harvard University, May 21, 2014)
Nanfang Yu, Cheng-Chia Tsai, Thomas Dai, Norman Nan Shi, Zhaoyi Li, Myoung-Hwan Kim, and Naomi Pierce, “Perfect blackbodies on butterfly wings,” **oral presentation**
Norman Nan Shi, Cheng-Chia Tsai, Zhaoyi Li, Myoung-Hwan Kim, Gary D. Bernard, Rüdiger Wehner, and **Nanfang Yu**, “Thermal and optical properties of Saharan silver ants,” **oral presentation**
- 2014 Materials Research Society Spring Meeting (San Francisco, California April 21-25, 2014)
N. Yu “Controlling light propagation in waveguides using phased antenna arrays,” **invited talk**
- PQE 2014: the 44th Winter Colloquium on the Physics of Quantum Electronics (Snowbird, Utah, January 5-9, 2014)
N. Yu “Controlling light propagation in free space and in waveguides with metasurfaces,” **plenary talk**
- 2013 IEEE International Symposium on Antennas and Propagation (Orlando, Florida, July 7-13, 2013)
N. Yu “Controlling optical wavefronts with active plasmonic meta-surfaces,” **invited talk**
- Conference on Lasers and Electro-Optics (CLEO) (San Jose, CA, June 9-14, 2013)
N. Yu “Large modulation of mid-infrared light using graphene-metal plasmonic antennas,” **oral presentation**
- PQE 2013: the 43rd Winter Colloquium on the Physics of Quantum Electronics (Snowbird, Utah, Jan. 6-10, 2013)
N. Yu “Flat optics: Controlling wavefronts with optical antenna metasurfaces,” **invited talk**
- Sixth International Conference on Nanophotonics (Peking University, Beijing, China, May 27-30, 2012)
N. Yu “Broadband polarizing meta-interface: Combining beaming with polarization control in an ultra-thin interface,” **invited talk**
- Conference on Lasers and Electro-Optics (CLEO) (San Jose, CA, May 6-11, 2012)
N. Yu “Broadband polarizing meta-interface,” **oral presentation**
- META 2012: the 3rd International Conference on Metamaterials, Photonic Crystals and Plasmonics (Paris, France, Apr. 19-22, 2012)
N. Yu “Broadband birefringent metainterfaces,” **invited talk**
- Harvard Applied Physics Colloquium (Harvard University, Mar. 23, 2012)
N. Yu “Controlling light propagation using metainterfaces,” **invited talk**
- PQE 2012: the 42nd Winter Colloquium on the Physics of Quantum Electronics (Snowbird, Utah, Jan. 2-6, 2012)

- N. Yu “Broadband birefringent metainterfaces,” **invited talk**
- FiO/LS: Frontiers in Optics 2011/ Laser Science XXVII (San Jose, CA, Oct. 2011)
N. Yu “Molding optical wavefronts using phase discontinuities,” **oral presentation (post-deadline)**
- Harvard Center for Nanoscale Systems Seminar (Harvard University, Oct. 12, 2011)
N. Yu “Molding optical wavefront using phase discontinuities (or How to let a flat mirror have the effect of a fun-house mirror),” **invited talk**
- SPIE Photonics West (San Francisco, CA, Jan. 2011)
N. Yu “Designer plasmonic structures collimate terahertz laser beams,” **invited talk**
- International Quantum Cascade Lasers School and Workshop (IQCLSW) (Florence, Italy, Sept. 2010)
N. Yu “Wavefront engineering of terahertz quantum cascade lasers using designer plasmonics,” **invited talk**
- Gordon Research Conference on Plasmonics (Colby College, Waterville, ME, Jun. 2010)
N. Yu “Terahertz quantum cascade lasers with integrated plasmonic collimators,” **poster presentation**
- Conference on Lasers and Electro-Optics, and Quantum Electronics and Laser Science conference (CLEO/QELS) (San Jose, CA, May 2010)
N. Yu “Terahertz quantum cascade lasers with integrated plasmonic collimators,” **oral presentation**
- IEEE International NanoElectronics Conference (INEC) (Hong Kong, China, Jan. 2010)
N. Yu “Wavefront engineering of semiconductor lasers using plasmonics,” **invited talk**
- The 10th International Conference on Intersubband Transitions in Quantum Wells (ITQW) (Montreal, Canada, Sept. 2009)
N. Yu “Wavefront engineering using plasmonics,” **invited talk**
N. Yu “Directional emission from limaçon-shaped microcavity lasers,” **invited talk**
- SPIE Optics and Photonics conference (San Diego, CA, Aug. 2009)
N. Yu “Beam shaping of semiconductor lasers using plasmonics,” **invited talk**
- Conference on Lasers and Electro-Optics, and International Quantum Electronics Conference (CLEO/IQEC) (Baltimore, MD, Jun. 2009)
N. Yu “Semiconductor lasers with integrated plasmonic polarizers,” **oral presentation**
- SPIE Photonics West (San Jose, CA, Feb. 2009)
N. Yu “Beam shaping of semiconductor lasers using plasmonics,” **invited talk**
- Gordon Research Conference on Plasmonics: Optics at the Nanoscale (Tilton College, NH, Jul. 2008)
N. Yu “Small divergence semiconductors by plasmonic collimation,” **poster presentation**
- Conference on Lasers and Electro-Optics, and Quantum Electronics and Laser Science conference (CLEO/QELS) (San Jose, CA, May 2008)
N. Yu “Coherent coupling of multiple transverse modes in a quantum cascade laser,” **oral presentation**
- Air Force Office of Scientific Research (AFOSR) Nano-Structure and Nano-Photonics Multidisciplinary University Research Initiative (MURI) Review Conference (Cambridge, MA, Nov. 2007)
N. Yu “Mid-infrared plasmonic laser antenna,” **poster presentation**
N. Yu “Controlled modification of erbium lifetime in silicon dioxide film with metal coatings,” **poster presentation**
- Conference on Lasers and Electro-Optics, and Quantum Electronics and Laser Science (CLEO/QELS) (Baltimore, MD, May 2007)
N. Yu “Plasmonic quantum cascade laser antenna,” **oral presentation**

- Materials Research Society (MRS) Fall Meeting (Boston, MA, Nov. 2007)
N. Yu “Controlled modification of erbium lifetime in silicon dioxide film with chromium or titanium coatings,” **oral presentation**
- AFOSR Plasmonics MURI Review Conference (San Francisco, CA, Nov. 2006)
N. Yu “Mid-infrared plasmonic laser antenna,” **poster presentation**

PATENTS

N. Yu, J. Mandal, A. Overvig, N. N. Shi, “Methods and systems for radiative cooling and heating,” provisional patent filed on June 18, 2015

N. Yu, Zhaoyi Li, Myoung-Hwan Kim, “Integrated photonic devices based on waveguide patterned with optical antenna arrays,” PCT application filed on June 24 2014.

N. Yu, “System, apparatus and computer-accessible medium for providing a modulation of mid-infrared light using one or more graphene-metal plasmonic antennas,” PCT application filed on January 30, 2014.

N, Yu, “Lightweight, miniature isolators and circulators,” provisional patent filed on July 2, 2013

N. Yu, F. Capasso, Z. Gaburro, P. Genevet, M. A. Kats, and F. Aieta, “Amplitude, phase and polarization plate for photonics,” provisional patent filed on Aug. 31, 2011

Q. J. Wang, N. Yu, F. Capasso, J. Wiersig, and J. Unterhinninghofen, “Highly unidirectional microcavity lasers,” provisional patent filed on Nov. 29, 2010

N. Yu, and F. Capasso, “Methods and apparatus for wavefront engineering,” provisional patent filed on Aug. 6, 2010

F. Capasso, N. Yu, and R. Blanchard, “Active plasmonic polarizer,” provisional patent filed on Mar. 10, 2009

F. Capasso, N. Yu, and J. Fan, “Methods and apparatus for improving collimation of radiation beams,” United States Patent No.: 20100226134, Publication Date: Sept. 9, 2009

F. Capasso, K. Crozier, E. Cubukcu, E. Kort, N. Yu, and E. Smythe, “Active optical antenna,” United States Patent No.: 20070058686, Publication Date: Mar. 15, 2007

TEACHING EXPERIENCE

Laser Physics (Columbia graduate course)	spring 2014, 2015, 2016
Modern Optics (Columbia graduate course)	fall 2013, 2014, spring 2016
Engineering Sciences 174 (Harvard undergraduate course): Photonic and Electronic Device Laboratory Teaching assistant for Prof. Kenneth B. Crozier	spring 2007
Engineering Sciences 275 (Harvard graduate course): Nanophotonics Teaching assistant for Prof. Kenneth B. Crozier	fall 2006
Engineering Sciences 274 (Harvard graduate course): Quantum Technology Teaching assistant for Prof. Federico Capasso	fall 2005

NEWS COVERAGE

- “Yu Receives DURIP Grant from AFOSR,” Columbia APAM news, March 8, 2016.
- “Yu Wins 2016 Young Investigator Award from the Office of Naval Research,” Columbia APAM news, March 4, 2016.
- “Nanfang Yu Wins DARPA Young Faculty Award for his Research on Optoelectronics,” Columbia APAM news, October 2, 2015.
- “Staying Cool: Saharan Silver Ants,” Columbia SEAS news, June 18, 2015. Also featured in New York Times, Washington Post, Christian Science Monitor, Columbia Engineering Magazine, Columbia Magazine, Microscopy Today, New Scientist, etc.
- “Professor Yu and Team Receive Air Force MURI Grant,” Columbia SEAS news, May 14, 2014
- “Yu Wins NSF Grant to Study the Perception and Use of Infrared Radiation by Insects,” Columbia Department of Applied Physics and Applied Mathematics news, May 13 2014.
- “From a flat mirror, designer light,” Harvard School of Engineering and Applied Sciences (SEAS) news release (Sept. 1, 2011). Also featured in Harvard Gazette, Nano Werk, National Science Foundation news, msnbc.com, Xinhua Net (P. R. China), PhysOrg, IOP Physics World, *Physics Today* (Nov. 2011), etc.
- “Researchers demonstrate highly directional terahertz laser rays,” Harvard SEAS news release (Aug. 8, 2010). Also featured in Harvard Gazette, IOP Physics World, Xinhua Net (P. R. China), University of Leeds news release, New Scientist, EureAlert!, PhysOrg, NanoWerk, Science Daily, Bioscience Technology, Compound Semiconductor, *Laser Focus World* (Oct. 2010), etc.
- “Scientists demonstrate multibeam, multi-functional lasers,” Harvard SEAS news release (Nov. 30, 2009). Also featured in *Harvard Magazine* (Mar. 2010), PhysOrg, OptoIQ, NanoWerk, EureAlert!, *Laser Focus World* (Jan. 2010), etc.
- “Scientists demonstrate laser with controlled polarization,” Harvard SEAS news release (Apr. 13, 2009). Also featured in Harvard Crimson, DailyTech, EureAlert!, Photonics.com, Science Daily, etc.
- “Scientists demonstrate highly directional semiconductor lasers,” Harvard SEAS news release (Jul. 28, 2008). Also featured in Harvard Gazette, Nature Asia-Pacific, IOP Physics World, MIT Technology Review, OptoIQ, EE Times, New Scientist, EureAlert!, Science Daily, Nanotechnology Today, Nano Werk, *Laser Focus World* (Sep. 2008), Xinhua Net (P. R. China), Le Scienze (Italy), Der Standard (Austria), Wissenschaft-Aktuell (Germany), etc.
- “Harvard University engineers demonstrate quantum cascade laser nanoantenna,” Harvard SEAS news (Oct. 22, 2007). Also featured in Harvard Gazette, National Science Foundation news, IOP Physics World, Royal Society of Chemistry (UK), MRS (Materials Research Society) news, MIT Technology Review, Science Daily, OptoIQ, IOP Nanotechweb.org, PhysOrg, EureAlert!, Nano Werk, EE Times, *Laser Focus World* (Dec. 2007), etc.

PROFESSIONAL ASSOCIATIONS

2007 – Present Optical Society of America (OSA), member
 2007 – Present Institute of Electrical and Electronics Engineers (IEEE), member
 2009 – Present IEEE Photonics Society, member
 2009 – Present American Physical Society (APS), member
 2007 – Present Materials Research Society (MRS), member
 2010 – Present IEEE Communications Society, member

PROFESSIONAL SERVICE

2011– Present *Nano Letters*, reviewer
 2011– Present *IEEE Journal of Selected Topics in Quantum Electronics*, reviewer
 2011– Present *IEEE Journal of Quantum Electronics*, reviewer
 2011– Present *AIP Advances*, reviewer
 2011– Present *IEEE Transaction on Nanotechnology*, reviewer
 2009 – Present *Physical Review Letters*, reviewer
 2009 – Present *Optics Letters*, reviewer
 2009 – Present *IEEE Photonics Technology Letters*, reviewer
 2007 – Present *Applied Physics Letters*, reviewer
 2007 – Present *Optics Express*, reviewer
 2008 – Present *Journal of Electromagnetic Waves and Applications* and *Progress in Electromagnetic Research*, reviewer

JOURNAL COVERS



