

AMIR ARBABI

113D Knowles Engineering Bldg
University of Massachusetts
151 Holdsworth Way, Amherst, MA 01003

phone: (413) 545-6193
e-mail: arbabi@umass.edu
web: <http://people.umass.edu/arbabi>

Education

- 2009–2013 **University of Illinois at Urbana-Champaign**
Ph.D. in Electrical Engineering
- 2007–2009 **University of Waterloo**
M.Sc. in Electrical Engineering
- 2002–2006 **University of Tehran**
B.Sc. in Electrical Engineering
-

Professional History

- 2017– **University of Massachusetts Amherst**
Assistant Professor of Electrical and Computer Engineering
- 2013–2016 **California Institute of Technology**
T. J. Watson Laboratories of Applied Physics
Postdoctoral Scholar (2013–2014), and Senior Research Scientist (2014–2016)
-

Research Interests

Experimental and theoretical aspects of nanophotonics, flat optics, and photonic integrated circuits with applications in optical data processing, sensors, consumer electronics, optical communications, and imaging.

Honors & Distinctions

- K. C. Yeh Endowed Fellowship of ECE Illinois, 2013.
 - Nick and Katherine Holonyak, Jr. Graduate Student Fellowship, 2012.
 - Nick and Katherine Holonyak, Jr. Outstanding Research Award, 2012.
 - E. A. Reid Fellowship Award of ECE Illinois, 2011.
 - Finalist of the Jean Bennett Memorial Award of the Frontiers in Optics conference, 2010.
 - “Ontario Graduate Scholarship” (\$30,000) and “President’s Graduate Scholarship” (\$20,000). Awarded by the government of Ontario and the University of Waterloo for recognition of academic excellence in graduate studies, 2008 & 2009.
 - Ranked 1st among ~750 graduates of the College of Engineering, University of Tehran, 2002–2006.
 - Ranked 1st in the first stage, and 2nd in the final stage of the 10th Iranian National Electrical Engineering Olympiad among more than 11,000 electrical engineering students, 2005.
 - Faculty of Engineering award for the highest annual GPA in the School of ECE, University of Tehran, for four consecutive years, 2002–2005.
 - Silver medal in the 14th Iranian National Physics Olympiad, 2001.
-

Professional Service

- Associate editor, Journal of Nanophotonics, Nov. 2017-
- Agency Panel Review: National Science Foundation (2017)
- Reviewer, various Nature, OSA, AIP, ACS, and IEEE journals
- Session chair: SPIE Photonics West

Publications, Talks, and Patents

Book Chapters

- [B1] A. Faraon, A. Arbabi, S. M. Kamali, E. Arbabi, and A. Majumdar, “Applications of wavefront control with dielectric metasurfaces,” in *Dielectric Metamaterials: Fundamentals, Designs and Applications*, S. Liu, I. Brenner, I. Staude, J. Valentine, and C. Holloway Ed., Elsevier, in press, 2018.

Journals

- [J47] M. Faraji-Dana, E. Arbabi, A. Arbabi, S. M. Kamali, H. Kwon, and A. Faraon, “Compact folded metasurface spectrometer,” *Nature Commun.*, accepted for publication, 2018.
- [J46] E. Arbabi, J. Li, R. Hutchins, S. M. Kamali, A. Arbabi, Y. Horie, P. Van Dorpe, V. Gradinaru, D. Wagenaar, and A. Faraon, “Two-photon microscopy with a double-wavelength metasurface objective lens,” *Nano Lett.*, vol. 18, pp. 4943–4948, 2018.
- [J45] E. Arbabi, S. M. Kamali, A. Arbabi, and A. Faraon, “Full-Stokes imaging polarimetry using dielectric metasurfaces,” *ACS Photonics*, vol. 5, pp. 3132–3140, 2018.
- [J44] S. M. Kamali, E. Arbabi, A. Arbabi, and A. Faraon, “A review of dielectric optical metasurfaces for wavefront control,” *Nanophotonics*, vol. 7, (6), pp. 1041–1068, 2018.
- [J43] E. Arbabi, A. Arbabi, S. M. Kamali, Y. Horie, M. Faraji-Dana, and A. Faraon, “MEMS-tunable dielectric metasurface lens,” *Nat. Commun.*, vol. 9, 812, 2018.
- [J42] M. Jang, Y. Horie, A. Shibukawa, J. Brake, Y. Liu, S. M. Kamali, A. Arbabi, H. Ruan, A. Faraon, and C. Yang, “Wavefront shaping with disorder-engineered metasurfaces,” *Nature Photon.*, vol. 12, pp. 84–90, 2018.
- [J41] Y. Horie, A. Arbabi, E. Arbabi, S. M. Kamali, and A. Faraon, “High-speed, phase-dominant spatial light modulation with silicon-based active resonant antennas,” *ACS Photonics*, vol. 5, pp. 1711–1717, 2017.
- [J40] S. M. Kamali, E. Arbabi, A. Arbabi, Y. Horie, M. Faraji-Dana, and A. Faraon, “Angle-multiplexed metasurfaces: encoding independent wavefronts in a single metasurface under different illumination angles,” *Phys. Rev. X*, vol. 7, 041056, 2017.
- [J39] A. Arbabi, E. Arbabi, Y. Horie, S. M. Kamali, and A. Faraon “Planar metasurface retroreflector,” *Nature Photon.*, vol. 11, pp. 415–420, 2017.
- [J38] E. Arbabi, A. Arbabi, S. M. Kamali, Y. Horie, and A. Faraon, “Controlling the sign of chromatic dispersion in diffractive optics with dielectric metasurfaces,” *Optica*, vol. 4, pp. 625–632, 2017.
- [J37] Y. Horie, S. Han, J. Lee, J. Kim, Y. Kim, A. Arbabi, C. Shin, L. Shi, E. Arbabi, S. M. Kamali, H. Lee, S. Hwang, and A. Faraon, “Visible wavelength color filters using dielectric subwavelength gratings for backside-illuminated CMOS image sensor technologies,” *Nano Lett.*, vol. 17, pp. 3159–3164, 2017.
- [J36] H. Emmer, C. T. Chen, R. Saive, D. Friedrich, Y. Horie, A. Arbabi, A. Faraon, and H. A. Atwater “Fabrication of single crystal gallium phosphide thin films on glass,” *Sci. Rep.* 7, 4643, 2017.
- [J35] Z. Wang, Y. Yan, A. Arbabi, G. Xie, C. Liu, Z. Zhao, Y. Ren, L. Li, N. Ahmed, A. J. Willner, E. Arbabi, A. Faraon, R. Bock, S. Ashrafi, M. Tur, and A. E. Willner “Orbital angular momentum beams generated by passive dielectric phase masks and their performance in a communication link,” *Opt. Lett.*, vol. 42, pp. 2746–2749, 2017.

- [J34] E. Miyazono, I. Craiciu, A. Arbabi, T. Zhong, and A. Faraon, “Coupling erbium dopants in yttrium orthosilicate to silicon photonic resonators and waveguides,” *Opt. Express*, vol. 25, pp. 2863–2871, 2017.
- [J33] A. Arbabi, and A. Faraon, “Fundamental limits of ultrathin metasurfaces,” *Sci. Rep.*, vol. 7, 43722, 2017.
- [J32] A. Arbabi, E. Arbabi, S. M. Kamali, Y. Horie, S. Han, and A. Faraon “Miniature optical planar camera based on a wide-angle metasurface doublet corrected for monochromatic aberrations,” *Nat. Commun.*, vol. 7, 13682, 2016.
- [J31] S. M. Kamali, E. Arbabi, A. Arbabi, Y. Horie, and A. Faraon, “Highly tunable elastic dielectric metasurface lenses,” *Laser Photon. Rev.*, vol. 10, pp. 1002–1008, 2016.
- [J30] E. Arbabi, A. Arbabi, S. M. Kamali, Y. Horie, and A. Faraon, “Multiwavelength metasurfaces through spatial multiplexing,” *Sci. Rep.*, vol. 6, 32803, 2016.
- [J29] Y. Ren, L. Li, Z. Wang, S. M. Kamali, E. Arbabi, A. Arbabi, Z. Zhao, G. Xie, Y. Cao, N. Ahmed, Y. Yan, C. Liu, A. J. Willner, S. Ashrafi, M. Tur, A. Faraon, A. E. Willner “Orbital angular momentum-based space division multiplexing for high-capacity underwater optical communications,” *Sci. Rep.* 6, 33306, 2016.
- [J28] E. Arbabi, A. Arbabi, S. M. Kamali, Y. Horie, A. Faraon, “High efficiency double-wavelength dielectric metasurface lenses with dichroic birefringent meta-atoms,” *Opt. Express*, vol. 24, pp. 18468–18477, 2016.
- [J27] Y. Horie, A. Arbabi, E. Arbabi, S. M. Kamali, and A. Faraon, “Wide bandwidth and high resolution planar filter array based on DBR-metasurface-DBR structures,” *Opt. Express*, vol. 24, pp. 11677–11682, 2016.
- [J26] A. Faraon, A. Arbabi, Y. Horie, E. Arbabi, and S. M. Kamali “Flat free-space optical elements based on dielectric metasurfaces,” *SPIE Newsroom*, April 2016, doi: 10.1117/2.1201603.006375.
- [J25] E. Arbabi, A. Arbabi, S. M. Kamali, Y. Horie, and A. Faraon “Multiwavelength polarization insensitive lenses based on dielectric metasurfaces with meta-molecules,” *Optica*, vol. 3, pp. 628–633, 2016.
- [J24] M. P. Backlund, A. Arbabi, P. N. Petrov, E. Arbabi, S. Saurabh, A. Faraon, and W. E. Moerner, “Removing orientation-induced localization biases in single molecule microscopy using a wideband metasurface mask,” *Nature Photon.*, vol. 10, pp. 459–462, 2016.
- [J23] S. M. Kamali, A. Arbabi, E. Arbabi, Y. Horie, and A. Faraon, “Decoupling optical function and geometrical form using conformal flexible dielectric metasurfaces,” *Nat. Commun.*, vol. 7, 2016.
- [J22] A. Arbabi, R. Briggs, Y. Horie, M. Bagheri, and A. Faraon, “Efficient dielectric metasurface collimating lenses for mid-infrared quantum cascade lasers,” *Opt. Express*, Vol. 23, No. 26, 2015.
- [J21] Y. Horie, A. Arbabi, S. Han, and A. Faraon, “High resolution on-chip optical filter array based on double subwavelength grating reflectors,” *Opt. Express*, Vol. 23, No. 23, pp. 29848–29854, 2015.
- [J20] A. Arbabi, M. Bagheri, Y. Horie, and A. Faraon, “Dielectric metasurfaces for complete control of phase and polarization with subwavelength spatial resolution and high transmission,” *Nature Nanotech.*, Vol. 10, pp. 937–943, 2015.
- [J19] C. Edwards, A. Arbabi, B. Bhaduri, X. Wang, R. Ganti, P. J. Yunker, A. G. Yodh, G. Popescu, and L. L. Goddard, “Measuring the non-uniform evaporation dynamics of sprayed sessile microdroplets with quantitative phase imaging,” *Langmuir*, Vol. 31, No. 40, pp. 11020–11032, 2015.
- [J18] A. Arbabi, M. Bagheri, A. J. Ball, Y. Horie, and A. Faraon, “Subwavelength-thick lenses with high numerical apertures and large efficiency based on high-contrast transmitarrays,” *Nat. Commun.*, Vol. 6, 7069, 2015.
- [J17] A. Arbabi, S. M. Kamali, E. Arbabi, B. G. Griffin, and L. L. Goddard, “Grating integrated single mode microring laser,” *Opt. Express*, Vol. 23, No. 4, pp. 5335–5347, 2015.
- [J16] Y. M. Kang, M. Xue, A. Arbabi, J. Jin, L. L. Goddard, “Modal expansion approach for accurately computing resonant modes in a high-Q optical resonator,” *Microw. Opt. Technol. Lett.*, Vol. 56, No. 2, pp. 278–284, 2014.

- [J15] M. Xue, Y. M. Kang, A. Arbabi, S. J. McKeown, L. L. Goddard, and J. Jin, “Fast and accurate finite element analysis of large-scale three-dimensional photonic devices with a robust domain decomposition method,” *Opt. Express*, Vol. 22, No. 4, pp. 4437–4452, 2014.
- [J14] A. Arbabi, and L. L. Goddard, “Measurements of the refractive indices and thermo-optic coefficients of Si_3N_4 and SiO_x using microring resonances,” *Opt. Lett.*, Vol. 38, No. 19, pp. 3878–3881, 2013.
- [J13] R. Zhou, C. Edwards, A. Arbabi, G. Popescu, and L. L. Goddard, “Detecting 20 nm defects in large area nano-patterns using interferometric microscopy,” *Nano Lett.*, Vol. 13, No. 8, pp. 3716–3721, 2013.
- [J12] B. G. Griffin, A. Arbabi, L. L. Goddard, “Engineering the sensitivity and response time of edge-emitting laser hydrogen sensors,” *IEEE Sens. J.*, Vol. 13, No. 8, pp. 3098–3105, 2013.
- [J11] B. G. Griffin, A. Arbabi, M. P. Tan, A. M. Kasten, K. D. Choquette, and L. L. Goddard, “Demonstration of enhanced side mode suppression in metal filled photonic crystal vertical cavity lasers,” *Opt. Lett.*, Vol. 38, No. 11, pp. 1936–1938, 2013.
- [J10] A. Arbabi and L. L. Goddard, “Dynamics of self-heating in microring resonators,” *IEEE Photon. J.*, Vol. 4, No. 5, pp. 1702–1711, 2012.
- [J9] A. Arbabi and L. L. Goddard, “Integrated optical resonators: progress in 2011,” (invited) *IEEE Photon. J.*, Vol. 4, No. 2, pp. 574–577, 2012.
- [J8] C. Edwards, A. Arbabi, G. Popescu, and L. L. Goddard, “Optically monitoring and controlling nanoscale topography during semiconductor etching,” *Light Sci. Appl.*, Vol. 1, No. 9, 2012.
- [J7] B. G. Griffin, A. Arbabi, A. Kasten, K. Choquette, and L. L. Goddard, “Hydrogen detection using a functionalized photonic crystal vertical cavity laser,” (invited) *IEEE J. Quantum Electron.*, Vol. 48, No. 2, pp. 160–168, 2012.
- [J6] A. Arbabi and S. Safavi-Naeini, “Maximum gain of a lossy antenna,” *IEEE Trans. Antennas and Propag.*, Vol. 60, No. 1, pp. 2–7, 2012.
- [J5] A. Arbabi, Y. M. Kang, C. Lu, E. Chow, and L. L. Goddard, “Realization of a narrowband single wavelength microring mirror,” *Appl. Phys. Lett.*, Vol. 99, No. 9, 2011.
- [J4] A. Arbabi, Y. M. Kang, and L. L. Goddard, “Cylindrical coordinates coupled mode theory,” *IEEE J. Quantum Electron.*, Vol. 46, No. 12, pp. 1769–1774, 2010.
- [J3] A. Arbabi, E. Arbabi, and S. Safavi-Naeini, “A fundamental limit on subwavelength guided waves,” *Progress In Electromagnetic Research M*, Vol. 17, pp. 253–265, 2011.
- [J2] Y. M. Kang, A. Arbabi, and L. L. Goddard, “Engineering the spectral reflectance of microring resonators with integrated reflective elements,” *Opt. Express*, Vol. 18, No. 16, pp. 16813–16825, 2010.
- [J1] Y. M. Kang, A. Arbabi, and L. L. Goddard, “A microring resonator with an integrated Bragg grating: a compact replacement for a sampled grating distributed Bragg reflector,” *Opt. Quantum Electron.*, Vol. 41, No. 9, pp. 689–697, 2009.

Conferences

- [C55] M. Mansouree and A. Arbabi, “Large-scale metasurface design using the adjoint sensitivity technique,” *Conference on Lasers and Electro-Optics (CLEO)*, 2018.
- [C54] E. Arbabi, A. Arbabi, S. M. Kamali, Y. Horie, M. Faraji-Dana, and A. Faraon, “MEMS-tunable dielectric metasurface lens,” *Conference on Lasers and Electro-Optics (CLEO)*, 2018.
- [C53] S. M. Kamali, E. Arbabi, A. Arbabi, Y. Horie, M. Faraji-Dana, and A. Faraon, “Angle-multiplexed metasurfaces,” *Conference on Lasers and Electro-Optics (CLEO)*, 2018.
- [C52] M. Faraji-Dana, E. Arbabi, A. Arbabi, S. M. Kamali, H. Kwon, and A. Faraon, “Folded planar metasurface spectrometer,” *Conference on Lasers and Electro-Optics (CLEO)*, 2018.
- [C51] A. Arbabi, M. Mansouree, E. Arbabi, S. M. Kamali, Y. Horie, and A. Faraon, “Flat optics with dielectric metasurfaces (invited),” *SPIE Photonics West*, 2018.

- [C50] A. Faraon, S. M. Kamali, E. Arbabi, Y. Horie, Amir Arbabi, and M. Faraji-Dana “Flat optics with sub-wavelength high-contrast grating metasurfaces (invited),” *SPIE Photonics West*, 2018.
- [C49] S. M. Kamali, E. Arbabi, A. Arbabi, Y. Horie, M. Faraji-Dana, and Andrei Faraon, “Angle-multiplexed metasurfaces,” *SPIE Photonics West*, 2018.
- [C48] E. Arbabi, A. Arbabi, S. M. Kamali, Y. Horie, and A. Faraon, “Dispersion-controlled diffractive devices with dielectric metasurfaces,” *IEEE Photonics Conference (IPC)*, 2017.
- [C47] S. M. Kamali, E. Arbabi, A. Arbabi, Y. Horie, M. Faraji-Dana, and Andrei Faraon, “Dielectric metasurfaces with independent angular control,” *IEEE Photonics Conference (IPC)*, 2017.
- [C46] E. Arbabi, A. Arbabi, S. M. Kamali, Y. Horie, M. Faraji-Dana, and A. Faraon, “Microelectromechanically tunable metasurface lens,” *SPIE Photonics West*, 2018.
- [C45] A. Arbabi, E. Arbabi, S. M. Kamali, Y. Horie, S. Han, and A. Faraon, “Increasing efficiency of high-NA metasurface lenses,” *SPIE Photonics West*, 2017.
- [C44] E. Arbabi, A. Arbabi, S. M. Kamali, Y. Horie, and A. Faraon, “Independent control of function and chromatic dispersion in diffractive optical devices with metasurfaces,” *SPIE Photonics West*, 2017.
- [C43] S. M. Kamali, E. Arbabi, A. Arbabi, Y. Horie, and A. Faraon, “Metasurfaces with controlled angular phase dispersion,” *SPIE Photonics West*, 2017.
- [C42] S. M. Kamali, E. Arbabi, A. Arbabi, Y. Horie, and A. Faraon, “Conformal and tunable optical dielectric metasurfaces based on flexible stretchable substrates,” *IEEE Photonics Conference (IPC)*, 2016. Was awarded the second **Best Paper Award**.
- [C41] N. Davoudzadeh, A. Arbabi, and L. L. Goddard, “Thermal nonlinearity based optical pulse generation in microrings,” *Progress in Electromagnetic Research Symposium*, 2016.
- [C40] A. Arbabi, E. Arbabi, Y. Horie, S. M. Kamali, S. Han, and A. Faraon, “Aberration corrected metasurface doublet lens,” *Conference on Lasers and Electro-Optics (CLEO)*, 2016.
- [C39] Y. Horie, A. Arbabi, E. Arbabi, S. M. Kamali, and A. Faraon, “Dielectric metasurface narrowband filter array,” *Conference on Lasers and Electro-Optics (CLEO)*, 2016.
- [C38] Y. Horie, A. Arbabi, E. Arbabi, S. M. Kamali, and A. Faraon, “Active dielectric antenna for phase only spatial light modulation,” *Conference on Lasers and Electro-Optics (CLEO)*, 2016.
- [C37] S. M. Kamali, E. Arbabi, A. Arbabi, Y. Horie, and A. Faraon, “Tunable dielectric metasurfaces using elastic substrates,” *Conference on Lasers and Electro-Optics (CLEO)*, 2016.
- [C36] E. Arbabi, A. Arbabi, S. M. Kamali, Y. Horie, and A. Faraon, “Dispersionless metasurfaces using dispersive meta-atoms,” *Conference on Lasers and Electro-Optics (CLEO)*, 2016.
- [C35] N. Davoudzadeh, A. Arbabi, J. Zhu, and L. L. Goddard “Optical clock pulse generation using thermal nonlinearity in microring resonators,” *Conference on Lasers and Electro-Optics (CLEO)*, 2016.
- [C34] Z. Wang, Y. Yan, A. Arbabi, C. Liu, G. Xie, Y. Ren, Z. Zhao, L. Li, N. Ahmed, A. J. Willner, E. Arbabi, A. Faraon, N. Ashrafi, S. Ashrafi, R. D. Linquist, M. Tur, and A. E. Willner, “Demonstration of using passive integrated phase masks to generate orbital-angular-momentum beams in a communications link,” *Conference on Lasers and Electro-Optics (CLEO)*, 2016.
- [C33] A. Arbabi, E. Arbabi, Y. Horie, S. M. Kamali, and A. Faraon, “Experimental demonstration of a metasurface planar retroreflector,” *SPIE Photonics West*, 2016.
- [C32] E. Arbabi, A. Arbabi, S. M. Kamali, Y. Horie, A. Faraon, “Polarization insensitive multi-wavelength metasurface lens,” *SPIE Photonics West*, 2016.
- [C31] S. M. Kamali, A. Arbabi, E. Arbabi, Y. Horie, and A. Faraon “Dielectric metasurfaces on thin flexible substrates,” *SPIE Photonics West*, 2016.
- [C30] S. Han, Y. Horie, C. Shin, A. Arbabi, E. Arbabi, S. Hwang, and A. Faraon “Dielectric metasurface filters for backside illuminated CMOS image sensors,” *MRS Spring Meeting*, 2016.
- [C29] A. Arbabi, Y. Horie, M. Bagheri, and A. Faraon, “Simultaneous and complete control of light polarization and phase using high contrast transmitarrays,” *Conference on Lasers and Electro-Optics (CLEO)*, 2015.

- [C28] A. Arbabi, Y. Horie, M. Bagheri, and A. Faraon, “Highly efficient polarization control using subwavelength high contrast transmitarrays,” *SPIE Photonics West*, 2015.
- [C27] A. Arbabi, Y. Horie, A. J. Ball, M. Bagheri, and A. Faraon, “Efficient high NA flat micro-lenses realized using high contrast transmitarrays,” *SPIE Photonics West*, 2015.
- [C26] Y. Horie, A. Arbabi, and A. Faraon, “On-chip broadband spectral filtering using planar double high-contrast grating reflectors,” *SPIE Photonics West*, 2015.
- [C25] Y. Horie, A. Arbabi, and A. Faraon, “Guided resonance reflective phase shifters,” *SPIE Photonics West*, 2015.
- [C24] C. Edwards, A. Arbabi, B. Bhaduri, R. Ganti, P. J. Yunker, G. Yodh, G. Popescu, and L. L. Goddard, “Characterizing microdroplet evaporation using diffraction phase microscopy,” *IEEE Photonics Conference (IPC)*, 2014.
- [C23] A. Arbabi, M. Bagheri; A. J. Ball, Y. Horie, D. Fattal, and A. Faraon, “Controlling the phase front of optical fiber beams using high contrast metastructures,” *Conference on Lasers and Electro-Optics (CLEO)*, 2014.
- [C22] A. Arbabi, and A. Faraon, “Planar retroreflector,” *Conference on Lasers and Electro-Optics (CLEO)*, 2014.
- [C21] Yu Horie, A. Arbabi, and A. Faraon, “Reflective optical phase modulator based on high-contrast grating mirrors,” *Conference on Lasers and Electro-Optics (CLEO)*, 2014.
- [C20] A. Arbabi, and L. L. Goddard, “Single wavelength microring laser,” *Conference on Lasers and Electro-Optics (CLEO)*, 2013.
- [C19] A. Arbabi, and L. L. Goddard, “Grating assisted mode coupling in microring resonators,” (invited) *IEEE Photonics Conference (IPC)*, 2013.
- [C18] A. Arbabi, B. G. Griffin, and L. L. Goddard, “An active-passive monolithic integration platform with low loss passive section,” *IEEE Photonics Conference (IPC)*, 2013.
- [C17] B. G. Griffin, A. Arbabi, and L. L. Goddard, “Functionalized distributed feedback lasers for hydrogen sensing applications,” *IEEE Photonics Conference (IPC)*, 2013.
- [C16] A. Arbabi, and L. L. Goddard, “Determination of waveguide core and cladding refractive indices using single wavelength microring reflectors,” *IEEE Photonics Conference (IPC)*, 2012.
- [C15] Y. M. Kang, A. Arbabi, and L. L. Goddard, “Resolving split resonant modes in microrings,” *IEEE Photonics Conference (IPC)*, 2012.
- [C14] A. Arbabi, P. Lu, B. G. Griffin, and L. L. Goddard, “Thermally-induced nonlinearity and optical bistability in Si_3N_4 microring resonators,” *Conference on Lasers and Electro-Optics (CLEO)*, 2012.
- [C13] M. Raval, S. McKeown, A. Arbabi, and L. L. Goddard, “Palladium based Fabry-Pérot etalons for hydrogen sensing,” *Optical Sensors*, 2012.
- [C12] B. Griffin, A. Arbabi, and L. L. Goddard, “Coupled mode analysis of a distributed Bragg reflector laser for hydrogen detection,” *Optical Sensors*, 2012.
- [C11] B. G. Griffin, A. Arbabi, and L. L. Goddard, “Mode suppression in metal filled photonic crystal vertical cavity lasers,” *SPIE Photonics West*, 2012.
- [C10] A. Arbabi, Y. M. Kang, and L. L. Goddard, “Realization of small footprint microring reflectors,” *Conference on Lasers and Electro-Optics (CLEO)*, 2011.
- [C9] A. Arbabi, Y. M. Kang, and L. L. Goddard, “Analysis and design of a microring inline single wavelength reflector,” *Frontiers in Optics (FiO)*, 2010.
- [C8] B. G. Griffin, C. Chang, A. Arbabi, and L. L. Goddard, “Pd coated Edge-emitting lasers for hydrogen sensing applications,” *IEEE Sensors Conference*, 2010.
- [C7] A. Arbabi, A. Rohani, D. Saeedkia, and S. Safavi-Naeini, “A terahertz plasmonic metamaterial structure for near-field sensing applications,” *Int. Conf. Infrared and Millimeter Waves (IRMMW-THz)*, 2008.

- [C6] A. Arbabi, "Slotted ground microstrip line," *UTECE Symposium 2005*, Tehran, March 2005. Was awarded the **Best Paper Award**.
- [C5] A. Arbabi, A. Boutejdar, M. Mahmoudi and A. S. Omar, "Increase of characteristic impedance of microstrip line using a simple slot in metallic ground plane," *Int. Conf. Commun. Electron. (ICCE'06)*, 2006.

Invited Talks and Seminars

- [T21] Flat optics with dielectric metasurfaces. SPIE Photonics West, Jan. 2018.
- [T20] Planar free-space optical components and systems based on dielectric metasurfaces. Springfield IEEE Section, Oct. 2017.
- [T19] Planar optical components and systems based on dielectric metasurfaces. SPIE Photonics West, Feb. 2017.
- [T18] Flat and conformal optics with dielectric metasurfaces. 5th International Conference on Lasers, Optics & Photonics, Nov. 2016.
- [T17] Planar free-space optical components and systems based on dielectric metasurfaces. EE Department, Sharif University of Technology, July 2016.
- [T16] Planar free-space optical components and systems based on dielectric metasurfaces. ECE Department, University of Tehran, July 2016.
- [T15] Planar optical components and systems based on dielectric metasurfaces. ECE Department Seminar, University of Massachusetts Amherst, April 2016.
- [T14] Flat optics with dielectric metasurfaces. Invited talk at SPIE Micro- and Nanotechnology Sensors, Systems, and Applications VIII, April 2016.
- [T13] Planar optical components and systems based on dielectric metasurfaces. ECE Department Seminar, University of Alberta, April 2016.
- [T12] Planar free-space optical components and systems based on dielectric metasurfaces. Colloquium, Institute of Optics, University of Rochester, March 2016.
- [T11] Planar free-space optical components and systems based on dielectric metasurfaces. Graduate Seminar, Department of Electrical and Electronic Engineering, Nanyang Technological University, March 2016.
- [T10] Planar free-space optical components and systems based on dielectric metasurfaces. ECE Graduate Seminar, University of Pittsburgh, Feb. 2016.
- [T9] Planar free-space optical components and systems based on dielectric metasurfaces. ESE Department Seminar, Washington University in St. Louis, Jan. 2016.
- [T8] Optical components thinner than a wavelength and their application for microscopy. 11th Annual Advanced Imaging Methods (AIM) Workshop, UC Berkeley, Feb. 2015.
- [T7] Micron-thick optical devices for microscopy. Medical Eng. Industry Day 2014, Caltech 2014.
- [T6] Micron-thick efficient optical components. APhMS in the 21st Century, Caltech Nov. 2014.
- [T5] Shaping beam profile of optical fibers using planar high contrast structures. 2014 Frontiers of Nano Science and Technology Conference, Caltech Jan. 2014.
- [T4] Optimum phase mask design and implementation for coupling light between two waveguides. KNI-MDL Seminar, Caltech Dec. 2013.
- [T3] Reflective microring resonators: compact narrow-band reflectors for photonic integrated circuits. Applied Physics Seminar, Caltech, March 2013.
- [T2] Selective mode coupling in microring resonators. CNST Nanotechnology Workshop 2013, University of Illinois at Urbana-Champaign, May 2013.
- [T1] Reflective microring resonators: compact narrow-band reflectors for photonic integrated circuits. Nanohour Seminar, University of Illinois at Urbana-Champaign, Nov. 2011.

Patents

- [P23] A. Arbabi, B. Mirzapourbeinekalaye, S. Han, and B. Na, “Metasurface mirrors and cavities,” filed July 2018.
- [P22] B. Na, S. Han, M. Mansouree, and A. Arbabi ‘Addressable VCSEL array and VCSEL with dielectric metasurface mirror,” filed June 2018.
- [P21] S. M. Kamali, Y. Horie, E. Arbabi, A. Arbabi, and A. Faraon, “Tunable elastic dielectric metasurface lenses,” filed Apr. 2018.
- [P20] M. Faraji-Dana, E. Arbabi, A. Arbabi, and A. Faraon, “Design and fabrication of a compact folded metasurface spectrometer,” filed Dec. 2017.
- [P19] A. Arbabi, L. C. Ding, E. Arbabi, and A. Faraon “Incoherent holographic imaging with metasurfaces,” filed Oct. 2016.
- [P18] E. Arbabi, A. Arbabi, S.M. Kamali, Y. Horie, and A. Faraon, “Dispersionless and dispersion-controlled optical dielectric metasurfaces,” filed Jan. 2016.
- [P17] S. Han, Y. Kim, S. M. Kamali, A. Arbabi, Y. Horie, A. Faraon, and S. Hwang “Method of manufacturing image sensor including nanostructure color filter,” filed July 2015.
- [P16] A. Arbabi, A. Faraon, and S. Han, “Imaging apparatus and image sensor including the same,” filed July 2015.
- [P15] A. Faraon and A. Arbabi, “Planar diffractive device with matching diffraction spectrum,” filed July 2015.
- [P14] A. Arbabi, E. Arbabi, S. Han, and A. Faraon, “Spectrometer including metasurface,” filed July 2015.
- [P13] S. Han, Y. Horie, A. Arbabi, S. M. Kamali, A. Faraon, S. Hwang, and Y. Kim, ‘Method of manufacturing image sensor including nanostructure color filter,” filed July 2015.
- [P12] E. Arbabi, A. Arbabi, and A. Faraon, “Multi-wavelength optical dielectric metasurfaces,” filed Apr. 2015.
- [P11] S. M. Kamali, E. Arbabi, A. Arbabi, and A. Faraon, “Conformal optical metasurfaces,” Patent No. US 9,995,859.
- [P10] S. Han, Y. Horie, A. Faraon, and A. Arbabi, “On-chip optical filter comprising Fabri-Perot resonator structure and spectrometer ” Patent No. US 9,939,587.
- [P9] A. Arbabi, A. Faraon, and S. Han, “Focusing device comprising a plurality of scatterers and beam scanner and scope device,” Patent No. US 9,995,930.
- [P8] S. Han, A. Arbabi, S. Hwang, A. Faraon, B. L. Choi, and J. You, “Imaging apparatus and image sensor including the same,” Patent No. US 9,946,051.
- [P7] A. Arbabi, and A. Faraon, “Simultaneous polarization and wavefront control using a planar device,” Patent No. US 9,739,918.
- [P6] Y. Horie, A. Arbabi, and A. Faraon, “Optical phased array using guided resonance with backside reflectors,” Patent No. US 9,915,832.
- [P5] Y. Horie, A. Arbabi, and A. Faraon, “Optical shutter based on MEMS actuated sub-wavelength gratings,” filed July 2014.
- [P4] A. Arbabi, and A. Faraon, “Controllable planar optical focusing system,” Patent No. US 9,989,680.
- [P3] A. Arbabi, and A. Faraon, “Flat retroreflectors,” Patent No. US 9,453,947.
- [P2] G. Popescu, L. L. Goddard, C. Edwards, and A. Arbabi, “Optically monitoring and controlling nanoscale topography,” Patent No. US 9,255,791.
- [P1] L. L. Goddard, Y. M. Kang, and A. Arbabi, “Distributed Bragg reflector in a microring resonator,” Patent No. US 8,670,476.