

Andrei Faraon

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EDUCATION

- **Stanford University**, Stanford, CA, USA 2009
Ph.D., Applied Physics
Ph.D. Advisor: Prof. Jelena Vuckovic
Dissertation title: “Locally controlled photonic crystal devices with coupled quantum dots: physics and applications.”
Thesis committee: Prof. David A. B. Miller, Prof. Yoshihisa Yamamoto, Prof. Hideo Mabuchi, Prof. Mark Brongersma
- **Stanford University**, Stanford, CA, USA 2009
M.S., Electrical Engineering
- **California Institute of Technology**, Pasadena, CA, USA 2004
B.S., Physics with Honors
Thesis topic: Nano-scale calorimetry
Thesis Advisor: Prof. Michael Roukes

PROFESSIONAL EXPERIENCE

- **California Institute of Technology**, Pasadena, CA, USA 06/2018 - Present
Professor of Applied Physics
- **California Institute of Technology**, Pasadena, CA, USA 10/2012 - 06/2018
Assistant Professor of Applied Physics
- **Hewlett-Packard Laboratories**, Palo Alto, CA, USA 09/2009 - 09/2012
Post-doctoral researcher in the Information and Quantum Systems Laboratory
Advisor: Dr. Raymond Beausoleil (HP fellow)

HONORS AND AWARDS

- 2018 Adolph Lomb Medal from Optical Society of America (OSA), presented to a person who has made a noteworthy contribution to optics at an early career stage.
- 2016 KNI-Wheatley Scholar (Kavli Nanoscience Institute, Caltech)
- 2016 Office of Naval Research (ONR) Young Investigator Award
- 2015 National Science Foundation (NSF) CAREER Award
- 2015 Air Force Office For Scientific Research (AFOSR) Young Investigator Award

PROFESSIONAL AFFILIATIONS

- Optical Society of America (OSA), American Physical Society (APS), The international society for optics and photonics (SPIE)

PROFESSIONAL ACTIVITIES

- Reviewer for journals: *Science*, *Nature Photonics*, *Nature Nanotechnology*, *Nature Physics*, *Nature*

Materials, Nature Communications, Scientific Reports, Light:Science and Applications, Physical Review Letters, Physical Review: Applied, Applied Physics Letters, Physical Review B, Physical Review A, Optica, Optics Express, Optics Letters, IEEE Journal of Lightwave Technology, Optics Communications

- Agency Panel Review: National Science Foundation (2013, 2015)
- Proposal Reviewer: NSF, ARO, DOE-BES, various European Union grants, A*STAR
- Conference organizer (invited speakers, reviewed submission, made program): High Contrast Metastructures conference at SPIE Photonics West (2017, 2018)
- Conference committee (reviewed conference abstracts): Conference of Lasers and Electro-Optics (CLEO) 2014, Conference of Lasers and Electro-Optics (CLEO) 2015, IEEE Photonics 2015

COURSES TAUGHT

- APh 23, Demonstration Lectures in Optics, Winter 2014/2015/2016/2017/2018
- APh 24, Introductory Modern Optics Laboratory, Spring 2014/2015/2016/2017/2018

GRADUATE STUDENTS AND POSTDOCTORAL SCHOLARS SUPERVISED

Former PhD students

1. Dr. Evan Miyazono (2012-2017)
Department: Applied Physics
Thesis Title: “Nanophotonic Resonators Coupled to Rare-Earth-Ions”
Position after leaving Caltech: Engineer at Protocol Labs (<https://protocol.ai/>)
2. Dr. Yu Horie, (2012-2017)
Department: Electrical Engineering
Thesis Title: “Controlling the Flow of Light Using High-Contrast Metastructures.”
Position after leaving Caltech: Engineer at Apple.

Current PhD students

1. Jonathan Kindem (2013-)
Department: Applied Physics
2. Seyedeh Masha Kamali (2014-)
Department: Electrical Engineering
3. Ehsan Arbabi (2014-)
Department: Electrical Engineering
4. Ioana Craiciu (2014-)
Department: Applied Physics
5. Chuting Wang (2014-)
Department: Applied Physics
6. Jake Rochman (2016-)
Department: Electrical Engineering
7. Conner Ballew (2016-)
Department: Electrical Engineering
8. Hyounghan Kwon (2016-)
Department: Electrical Engineering
9. MohhamadSadegh Faraji-Dana (2016-)
Department: Electrical Engineering

10. Andrei Ruskuc (2017-)
Department: Applied Physics
11. Mi Lei (2017-)
Department: Applied Physics
12. Gregory Roberts (2018 -)
Department: Applied Physics
13. Tianzhe Zhen (2018 -)
Department: Applied Physics
14. Tian Xie (2018 -)
Department: Applied Physics

Former postdoctoral scholars

1. Dr. Amir Arbabi (2013-2017)
Postdoctoral Scholar in Applied Physics
Position after leaving Caltech: Assistant Professor at University of Massachusetts at Amherst
2. Dr. Tian Zhong (2013-2019)
Postdoctoral Scholar in Applied Physics
Position after leaving Caltech: Assistant Professor at University of Chicago

Current postdoctoral scholars

1. Dr. John Bartholomew, (2016-)
Postdoctoral Scholar in Applied Physics
2. Dr. Philip Camayd-Munoz, (2017-)
Postdoctoral Scholar in Applied Physics

PATENTS AND INVENTION DISCLOSURES

1. 2016 - “Dispersionless and dispersion-controlled optical dielectric metasurfaces”, US20170212285 A1
2. 2015 - “Imaging apparatus and image sensor including the same”, US20170034500 A1
3. 2015 - “Planar diffractive device with matching diffraction spectrum”, WO2017034995 A1
4. 2015 - “Conformal Optical Metasurfaces”, US20160320531 A1
5. 2015 - “Multi-wavelength optical dielectric metasurfaces”, WO2016168173 A1
6. 2015 - “Optical Shutter Based on Sub-Wavelength Gratings Actuated by Microelectromechanical Systems”, US20160033755 A1
7. 2015 - “Method of manufacturing image sensor including nanostructure color filter”, US20170012078 A1
8. 2015 - “On-chip optical filter comprising fabri-perot resonator structure and spectrometer”, US20170059777 A1
9. 2015 - “Implantable, highly collimated light-emitters for biological applications”, US20170106204 A1
10. 2015 - “Spectrometer including metasurface”, US20170030773 A1
11. 2014 - “Simultaneous Polarization and Wavefront Control Using a Planar Device”, WO2016044104 A1
12. 2014 - “Optical phased array using guided resonance with backside reflectors”, US9482887 B2
13. 2014 - “Controllable planar optical focusing system”, US9482796 B2
14. 2013 - “Flat Retroreflectors”, US9453947 B2
15. 2012 - “Color centers affected by magnetic fields to produce light based on lasing”, US20140072008 A1

16. 2012 - "Micro-ring optical resonators," US20130279849 A1
17. 2012 - "Analyzing light by mode interference," US9176279 B2
18. 2012 - "Optical systems implemented with thermally controlled sub-wavelength gratings," US20120194912
19. 2011 - "Quantum Optical Device," US20130107352 A1
20. 2011 - "Entanglement process," US20130107253 A1
21. 2011 - "Light-detection systems," WO2012144996 A1
22. 2011 - "Light detection system including a chiral optical element and optical elements with sub-wavelength gratings having posts with varying cross-sectional dimensions", US9522819 B2
23. 2010 - "Ultrafast and ultralow threshold single emitter optical switch," US8355606 B2
24. 2008 - "Optical cavity emitter arrangements with spectral alignment and methods therefor," US7994467 B2

LIST OF PUBLICATIONS AFTER JOINING CALTECH

* Corresponding author

Selected Publications

- Mooseok Jang, Yu Horie, Atsushi Shibukawa, Joshua Brake, Yan Liu, Seyedeh Mahsa Kamali, Amir Arbabi, Haowen Ruan, **Andrei Faraon***, Changhui Yang, Complex wavefront engineering with disorder-engineered metasurfaces, arXiv:1604.00143 (2017), *Nature Photonics*, 12, 8490 (2018), <https://www.nature.com/articles/s41566-017-0078-z>
- Tian Zhong, Jonathan M. Kindem, John G. Bartholomew, Jake Rochman, Ioana Craiciu, Evan Miyazono, Marco Bettinelli, Enrico Cavalli, Varun Verma, Sae Woo Nam, Francesco Marsili, Matthew D. Shaw, Andrew D. Beyer, **Andrei Faraon***, Nanophotonic rare-earth quantum memory with optically controlled retrieval, *Science*, Vol. 357, Issue 6358, pp. 1392-139, (2017)
- Amir Arbabi, Ehsan Arbabi, Yu Horie, Seyedeh Mahsa Kamali, **Andrei Faraon***, Planar metasurface retroreflector, *Nature Photonics*, 11, 415420 (2017)
- Ehsan Arbabi, Amir Arbabi, Seyedeh Mahsa Kamali, Yu Horie, **Andrei Faraon***, Controlling the sign of chromatic dispersion in diffractive optics with dielectric metasurfaces, *Optica*, Vol. 4, Issue 6, pp. 625-632 (2017)
- Tian Zhong, Jonathan M. Kindem, Jake Rochman, **Andrei Faraon***, Interfacing broadband photonic qubits to on-chip cavity-protected rare-earth ensembles, *Nature Communications*, 8, Article number: 14107 (2017)
- Amir Arbabi, Ehsan Arbabi, Seyedeh Mahsa Kamali, Yu Horie, Seunghoon Han, **Andrei Faraon***, Miniature optical planar camera based on a wide-angle metasurface doublet corrected for monochromatic aberrations, *Nature Communications*, 7, Article number: 13682
- Ehsan Arbabi, Amir Arbabi, Seyedeh Mahsa Kamali, Yu Horie, **Andrei Faraon***, Multiwavelength polarization-insensitive lenses based on dielectric metasurfaces with meta-molecules, *Optica*, Vol. 3, Issue 6, pp. 628-633 (2016)
- Mikael P. Backlund, Amir Arbabi, Petar N. Petrov, Ehsan Arbabi, Saumya Saurabh, **Andrei Faraon***, and W. E. Moerner*, Removing Orientation-Induced Localization Biases in Single Molecule Microscopy Using a Broadband Metasurface Mask, *Nature Photonics*, 10, 459462 (2016)
- Seyedeh Mahsa Kamali, Amir Arbabi, Ehsan Arbabi, Yu Horie, **Andrei Faraon***, Decoupling optical function and geometrical form using conformal flexible dielectric metasurfaces, *Nature Communications*, 7, Article number: 11618 (2016)
- Tian Zhong, Jonathan M. Kindem, Evan Miyazono, **Andrei Faraon***, Nanophotonic coherent light-matter interfaces based on rare-earth-doped crystals, *Nature Communications*, 6, Article

number: 8206, (2015)

- Amir Arbabi, Yu Horie, Mahmood Bagheri, **Andrei Faraon***, Dielectric metasurfaces for complete control of phase and polarization with subwavelength spatial resolution and high transmission, *Nature Nanotechnology*, 10, 937943 (2015)
- Amir Arbabi, Yu Horie, Alexander Ball, Mahmood Bagheri, **Andrei Faraon***, Subwavelength-thick Lenses with High Numerical Apertures and Large Efficiency Based on High Contrast Transmitarrays, *Nature Communications*, 6, Article number: 7069, (2015)

Publications in refereed journals

1. MohammadSadegh Faraji-Dana, Ehsan Arbabi, Amir Arbabi, Seyedeh Mahsa Kamali, Hyoungchan Kwon, Andrei Faraon, Compact Folded Metasurface Spectrometer, accepted in *Nature Communications*, <https://arxiv.org/abs/1807.10985>
2. Hyoungchan Kwon, Ehsan Arbabi, Seyedeh Mahsa Kamali, MohammadSadegh Faraji-Dana, Andrei Faraon, Computational complex optical field imaging using a designed metasurface diffuser, *Optica*, Vol. 5, Issue 8, pp. 924-931 (2018), [doi:10.1364/OPTICA.5.000924], <https://www.osapublishing.org/optica/abstract.cfm?uri=optica-5-8-924>
3. Ehsan Arbabi, Jiaqi Li, Romanus J. Hutchins, Seyedeh Mahsa Kamali, Amir Arbabi, Yu Horie, Pol Van Dorpe, Viviana Gradinaru, Daniel A. Wagenaar, Andrei Faraon, Two-Photon Microscopy with a Double-Wavelength Metasurface Objective Lens, *Nano Letters*, 2018, <https://pubs.acs.org/doi/10.1021/acs.nanolett.8b01737>
4. Jonathan M. Kindem, John G. Bartholomew, Philip J. T. Woodburn, Tian Zhong, Ioana Craiciu, Rufus L. Cone, Charles W. Thiel, Andrei Faraon, Characterization of 171Yb3+:YVO4 for photonic quantum technologies, *Physical Review B*, 98, 024404, 2018, <https://journals.aps.org/prb/abstract/10.1103/PhysRevB.98.024404>
5. Seyedeh Mahsa Kamali, Ehsan Arbabi, Amir Arbabi, Andrei Faraon, A review of dielectric optical metasurfaces for wavefront control, *Nanophotonics*, 2018-05-18, <https://doi.org/10.1515/nanoph-2017-0129>
6. Tian Zhong, Jonathan M. Kindem, John G. Bartholomew, Jake Rochman, Ioana Craiciu, Varun Verma, Sae Woo Nam, Francesco Marsili, Matthew D. Shaw, Andrew D. Beyer, Andrei Faraon, Optically addressing single rare-earth ions in a nanophotonic cavity, <https://arxiv.org/abs/1803.07520>
7. Ehsan Arbabi, Seyedeh Mahsa Kamali, Amir Arbabi, Andrei Faraon, Full Stokes imaging polarimetry using dielectric metasurfaces, *ACS Photonics*, 2018, 5 (8), <https://pubs.acs.org/doi/abs/10.1021/acsp Photonics.8b00362>
8. John G. Bartholomew, Tian Zhong, Jonathan M. Kindem, Raymond Lopez-Rios, Jake Rochman, Ioana Craiciu, Evan Miyazono, Andrei Faraon, Controlling rare-earth ions in a nanophotonic resonator using the ac Stark shift, *Physical Review A*, 97, 063854, 2018, <https://journals.aps.org/pra/abstract/10.1103/PhysRevA.97.063854>
9. Ehsan Arbabi, Amir Arbabi, Seyedeh Mahsa Kamali, Yu Horie, MohammadSadegh Faraji-Dana, Andrei Faraon, MEMS-tunable dielectric metasurface lens, *Nature Communications*, volume 9, Article number: 812 (2018), <https://www.nature.com/articles/s41467-018-03155-6>
10. Mooseok Jang, Yu Horie, Atsushi Shibukawa, Joshua Brake, Yan Liu, Seyedeh Mahsa Kamali, Amir Arbabi, Haowen Ruan, Andrei Faraon, Changhuei Yang, Complex wavefront engineering with disorder-engineered metasurfaces, arXiv:1604.00143 (2017), *Nature Photonics*, 12, 8490 (2018), <https://www.nature.com/articles/s41566-017-0078-z>
11. Ehsan Arbabi, Amir Arbabi, Seyedeh Mahsa Kamali, Yu Horie, MohammadSadegh Faraji-Dana, Andrei Faraon, MEMS-tunable metasurface lens, accepted in *Nature Communications*, <https://arxiv.org/abs/1712.06548>
12. Yu Horie, Amir Arbabi, Ehsan Arbabi, Seyedeh Mahsa Kamali, and Andrei Faraon, High-speed,

- phase-dominant spatial light modulation with silicon-based active resonant antennas, *ACS Photonics*, <http://pubs.acs.org/doi/abs/10.1021/acsp Photonics.7b01073>
13. Seyedeh Mahsa Kamali, Ehsan Arbabi, Amir Arbabi, Yu Horie, MohammadSadegh Faraji-Dana, Andrei Faraon, Angle-multiplexed metasurfaces: encoding independent wavefronts in a single metasurface under different illumination angles, *Physical Review X*, 7, 041056, 2017, <https://journals.aps.org/prx/abstract/10.1103/PhysRevX.7.041056>
 14. Tian Zhong, Jonathan M. Kindem, John G. Bartholomew, Jake Rochman, Ioana Craiciu, Evan Miyazono, Marco Bettinelli, Enrico Cavalli, Varun Verma, Sae Woo Nam, Francesco Marsili, Matthew D. Shaw, Andrew D. Beyer, Andrei Faraon, Nanophotonic rare-earth quantum memory with optically controlled retrieval, *Science*, Vol. 357, Issue 6358, pp. 1392-1395 (2017), [DOI: 10.1126/science.aan5959], <http://science.sciencemag.org/content/357/6358/1392.full>
 15. Hal Emmer, Christopher T. Chen, Rebecca Saive, Dennis Friedrich, Yu Horie, Amir Arbabi, Andrei Faraon, Harry A. Atwater, Fabrication of Single Crystal Gallium Phosphide Thin Films on Glass, *Scientific Reports*, Article number: 4643, (2017), [doi:10.1038/s41598-017-05012-w], <https://www.nature.com/articles/s41598-017-05012-w>
 16. Zhe Wang, Yan Yan, Amir Arbabi, Guodong Xie, Cong Liu, Zhe Zhao, Yongxiong Ren, Long Li, Nisar Ahmed, Asher J. Willner, Ehsan Arbabi, Andrei Faraon, Robert Bock, Solyman Ashrafi, Moshe Tur, Alan E. Willner, Orbital angular momentum beams generated by passive dielectric phase masks and their performance in a communication link, *Optics Letters*, Vol. 42, Issue 14, pp. 2746-2749 (2017), [<https://doi.org/10.1364/OL.42.002746>], <https://www.osapublishing.org/ol/abstract.cfm?uri=ol-42-14-2746>
 17. Amir Arbabi, Ehsan Arbabi, Yu Horie, Seyedeh Mahsa Kamali, Andrei Faraon, Planar metasurface retroreflector, *Nature Photonics*, 11, 415420 (2017), [doi:10.1038/nphoton.2017.96], <https://www.nature.com/articles/nphoton.2017.96>
 18. Ehsan Arbabi, Amir Arbabi, Seyedeh Mahsa Kamali, Yu Horie, Andrei Faraon, Controlling the sign of chromatic dispersion in diffractive optics with dielectric metasurfaces, *Optica*, Vol. 4, Issue 6, pp. 625-632 (2017), [<https://doi.org/10.1364/OPTICA.4.000625>], (arXiv:1701.07178), <https://www.osapublishing.org/optica/abstract.cfm?uri=optica-4-6-625>
 19. Yu Horie, Seunghoon Han, Jeong-Yub Lee, Jaekwan Kim, Yongsung Kim, Amir Arbabi, Changgyun Shin, Lilong Shi, Ehsan Arbabi, Seyedeh Mahsa Kamali, Hong-Seok Lee, Sungwoo Hwang, Andrei Faraon, Visible Wavelength Color Filters Using Dielectric Subwavelength Gratings for Backside-Illuminated CMOS Image Sensor Technologies, *Nano Letters*, 17(5), pp 31593164, (2017), [doi:10.1021/acs.nanolett.7b00636], <http://pubs.acs.org/doi/full/10.1021/acs.nanolett.7b00636>
 20. Amir Arbabi, Andrei Faraon, Fundamental limits of ultrathin metasurfaces, *Scientific Reports*, 7, Article number: 43722 (2017), [doi:10.1038/srep43722], (arXiv:1411.2537), <https://www.nature.com/articles/srep43722>
 21. Evan Miyazono, Ioana Craiciu, Amir Arbabi, Tian Zhong, Andrei Faraon, Coupling erbium dopants in yttrium orthosilicate to silicon photonic resonators and waveguides, *Optics Express*, Vol. 25, Issue 3, pp. 2863-2871 (2017), [<https://doi.org/10.1364/OE.25.002863>], <https://www.osapublishing.org/oe/abstract.cfm?uri=oe-25-3-2863>
 22. Tian Zhong, Jonathan M. Kindem, Jake Rochman, Andrei Faraon, Interfacing broadband photonic qubits to on-chip cavity-protected rare-earth ensembles, *Nature Communications*, 8, Article number: 14107 (2017), [DOI: 10.1038/ncomms14107], (arXiv:1604.00143), <https://www.nature.com/articles/ncomms14107>
 23. Eran Segev, Jacob Reimer, Laurent C. Moreaux, Trevor M. Fowler, Derrick Chi, Wesley D. Sacher, Maisie Lo, Karl Deisseroth, Andreas S. Tolias, Andrei Faraon, Michael L. Roukes, Patterned photostimulation via visible-wavelength photonic probes for deep brain optogenetics, *Neurophotonics*, 4(1), 011002 (2016), [DOI: 10.1117/1.NPh.4.1.011002], <https://www.spiedigitallibrary.org/journals/Neurophotonics/volume-4/issue-01/011002/>

Patterned-photostimulation-via-visible-wavelength-photonic-probes-for-deep-brain/10.1117/1.NPh.4.1.011002.full?SS0=1

24. Amir Arbabi, Ehsan Arbabi, Seyedeh Mahsa Kamali, Yu Horie, Seunghoon Han, Andrei Faraon, Miniature optical planar camera based on a wide-angle metasurface doublet corrected for monochromatic aberrations, *Nature Communications*, 7, Article number: 13682, (2016), [DOI: 10.1038/ncomms13682], (arXiv:1604.06160), <https://www.nature.com/articles/ncomms13682>
25. Seyedeh Mahsa Kamali, Ehsan Arbabi, Amir Arbabi, Yu Horie, Andrei Faraon, Highly tunable elastic dielectric metasurface lenses, *Laser and Photonics Reviews*, Volume 10, Issue 6, November 2016, Pages 10021008, (2016), [DOI: 10.1002/lpor.201600144], (arXiv:1604.03597), <http://onlinelibrary.wiley.com/doi/10.1002/lpor.201600144/full>
26. Chris O'Brien, Tian Zhong, Andrei Faraon, Christoph Simon, Nondestructive photon detection using a single rare-earth ion coupled to a photonic cavity, *Physical Review A*, 94, 043807, (2016), [<https://doi.org/10.1103/PhysRevA.94.043807>], <https://journals.aps.org/pr/abstract/10.1103/PhysRevA.94.043807>
27. Yongxiong Ren, Long Li, Zhe Wang, Seyedeh Mahsa Kamali, Ehsan Arbabi, Amir Arbabi, Zhe Zhao, Guodong Xie, Yinwen Cao, Nisar Ahmed, Yan Yan, Cong Liu, Asher J. Willner, Solyman Ashrafi, Moshe Tur, Andrei Faraon, Alan E. Willner, Orbital Angular Momentum-based Space Division Multiplexing for High-capacity Underwater Optical Communications, *Scientific Reports*, (2016), [DOI:10.1038/srep33306], (arXiv:1604.06865), <https://www.nature.com/articles/srep33306>
28. Ehsan Arbabi, Amir Arbabi, Seyedeh Mahsa Kamali, Yu Horie, Andrei Faraon, Multiwavelength metasurfaces through spatial multiplexing, *Scientific Reports*, 6, Article number: 32803, (2016), [DOI:10.1038/srep32803], <https://www.nature.com/articles/srep32803>
29. Ehsan Arbabi, Amir Arbabi, Seyedeh Mahsa Kamali, Yu Horie, Andrei Faraon, High efficiency double-wavelength dielectric metasurface lenses with dichroic birefringent meta-atoms, *Optics Express*, Vol. 24, Issue 16, pp. 18468-18477 (2016), [<https://doi.org/10.1364/OE.24.018468>], <https://www.osapublishing.org/oe/abstract.cfm?uri=oe-24-16-18468>
30. Thomas Bttger, C. W. Thiel, R. L. Cone, Y. Sun, Andrei Faraon, Spectroscopy and decoherence studies of Yb³⁺:YAG at 968 nm, *Physical Review B*, Vol. 94, Issue 4, pp. 045134 (2016), [<https://doi.org/10.1103/PhysRevB.94.045134>], <https://journals.aps.org/prb/abstract/10.1103/PhysRevB.94.045134>
31. Ashwin Gopinath, Evan Miyazono, Andrei Faraon, Paul W. K. Rothmund, Engineering and mapping nanocavity emission via precision placement of DNA origami, *Nature*, 535, 401405, 21 July, (2016), [DOI:10.1038/nature18287], <http://www.nature.com/nature/journal/v535/n7612/full/nature18287.html>
32. Ehsan Arbabi, Amir Arbabi, Seyedeh Mahsa Kamali, Yu Horie, Andrei Faraon, Multiwavelength polarization-insensitive lenses based on dielectric metasurfaces with meta-molecules, *Optica*, Vol. 3, Issue 6, pp. 628-633 (2016), [<https://doi.org/10.1364/OPTICA.3.000628>], (arXiv:1601.05847), <https://www.osapublishing.org/optica/abstract.cfm?uri=optica-3-6-628>
33. Yu Horie, Amir Arbabi, Ehsan Arbabi, Seyedeh Mahsa Kamali, Andrei Faraon, Wide bandwidth and high resolution planar filter array based on DBR-metasurface-DBR structures, *Optics Express*, Vol. 24, Issue 11, pp. 11677-11682 (2016), [<https://doi.org/10.1364/OE.24.011677>], (arXiv:1604.03167), <https://www.osapublishing.org/oe/abstract.cfm?uri=oe-24-11-11677&origin=search>
34. Seyedeh Mahsa Kamali, Amir Arbabi, Ehsan Arbabi, Yu Horie, Andrei Faraon, Decoupling optical function and geometrical form using conformal flexible dielectric metasurfaces, *Nature Communications*, 7, Article number: 11618 (2016), [DOI:10.1038/ncomms11618], (arXiv:1511.04824), <https://www.nature.com/articles/ncomms11618>
35. Mikael P. Backlund, Amir Arbabi, Petar N. Petrov, Ehsan Arbabi, Saumya Saurabh, Andrei Faraon, W. E. Moerner, Removing orientation-induced localization biases in single-molecule microscopy using a broadband metasurface mask, *Nature Photonics*, 10, 459462 (2016),

[DOI:10.1038/nphoton.2016.93], <https://www.nature.com/articles/nphoton.2016.93>

36. Evan Miyazono, Tian Zhong, Ioana Craiciu, Jonathan M Kindem, [Andrei Faraon](#), Coupling of erbium dopants to yttrium orthosilicate photonic crystal cavities for on-chip optical quantum memories, *Applied Physics Letters*, 108, 011111 (2016), [doi: <http://dx.doi.org/10.1063/1.4939651>], arXiv:1512.07389, <http://aip.scitation.org/doi/10.1063/1.4939651>
37. Tian Zhong, Jake Rochman, Jonathan M Kindem, Evan Miyazono, [Andrei Faraon](#), High quality factor nanophotonic resonators in bulk rare-earth doped crystals, *Optics Express*, Vol. 24, Issue 1, pp. 536-544 (2016), [<https://doi.org/10.1364/OE.24.000536>], arXiv:1512.03947, <https://www.osapublishing.org/oe/abstract.cfm?uri=oe-24-1-536>
38. Amir Arbabi, Ryan M. Briggs, Yu Horie, Mahmood Bagheri, [Andrei Faraon](#), Efficient Dielectric Metasurface Collimating Lenses for Mid-Infrared Quantum Cascade Lasers, *Optics Express*, Vol. 23, Issue 26, pp. 33310-33317 (2015), [<https://doi.org/10.1364/OE.23.033310>], <https://www.osapublishing.org/oe/abstract.cfm?uri=oe-23-26-33310>
39. Yu Horie, Amir Arbabi, Seunghoon Han, [Andrei Faraon](#), High resolution on-chip optical filter array based on double subwavelength grating reflectors, *Optics Express*, Vol. 23, Issue 23, pp. 29848-29854, (2015), [<https://doi.org/10.1364/OE.23.029848>], <https://www.osapublishing.org/oe/abstract.cfm?uri=oe-23-23-29848>
40. Tian Zhong, Jonathan M. Kindem, Evan Miyazono, [Andrei Faraon](#), Nanophotonic coherent light-matter interfaces based on rare-earth-doped crystals, *Nature Communications*, 6, Article number: 8206, (2015), [], ArXiv , arXiv:1507.00977 [quant-ph], <https://www.nature.com/articles/ncomms9206>
41. Amir Arbabi, Yu Horie, Mahmood Bagheri, [Andrei Faraon](#), Dielectric metasurfaces for complete control of phase and polarization with subwavelength spatial resolution and high transmission, *Nature Nanotechnology*, 10, 937943 (2015), [doi:10.1038/nnano.2015.186], <https://www.nature.com/articles/nnano.2015.186>
42. Amir Arbabi, Yu Horie, Alexander J. Ball, Mahmood Bagheri, [Andrei Faraon](#), Subwavelength-thick Lenses with High Numerical Apertures and Large Efficiency Based on High Contrast Transmitarrays, *Nature Communication*, 6:7069, 2015, (also arXiv:1410.8261 [physics.optics]), <https://www.nature.com/articles/ncomms8069>
43. Z. Huang, W.-D. Li, C. Santori, V. M. Acosta, [A. Faraon](#), T. Ishikawa, W. Wu, D. Winston, R. S. Williams, and R. G. Beausoleil, Diamond nitrogen-vacancy centers created by scanning focused helium ion beam and annealing, *Applied Physics Letters*, 103, 081906 (2013), http://apl.aip.org/resource/1/applab/v103/i8/p081906_s1
44. [Andrei Faraon](#), Charles Santori, Zhihong Huang, Kai-Mei C Fu, Victor M Acosta, David Fattal and Raymond G Beausoleil, Quantum photonic devices in single-crystal diamond, *New Journal of Physics* 15 025010 (2013), <http://iopscience.iop.org/article/10.1088/1367-2630/15/2/025010/meta>

Publications in non-refereed journals

1. [Andrei Faraon](#), Amir Arbabi, Yu Horie, Ehsan Arbabi, Seyedeh Mahsa Kamali, Flat free-space optical elements based on dielectric metasurfaces, *SPIE Newsroom*, (2016), [DOI: 10.1117/2.1201604.006375]
2. Marko Loncar and [Andrei Faraon](#), Quantum photonic networks in diamond, *MRS Bulletin / Volume 38 / Issue 02 / February 2013*, pp 144-148 (2013)

TALKS

Department Seminars

1. Princeton University, EE Seminar, 2017/11/08, “Nano-photonic quantum light-matter interfaces based on rare-earth-doped crystals”
2. MIT, Optics and Quantum Electronics Seminar, 2017/11/01, “Flat and Conformal Optics with

Dielectric Metasurfaces”

3. Harvard University, CUA - Center for Ultracold Atoms- Seminar, 2017/10/31, “Nano-photonic quantum light-matter interfaces based on rare-earth-doped crystals”
4. UCLA, Condensed Matter Seminar, 2017/10/24, “Quantum Nano-Photonic Devices Based on Rare-Earth Ions”
5. Stanford University, Ginzton Seminar, 2017/10/09, “Quantum Nano-Photonic Devices Based on Rare-Earth Ions”
6. University of Geneva, Applied Physics, Switzerland, 2017/08/31, “Quantum light-matter interfaces based on rare-earth-doped crystals and nano-photonics”
7. Max Plank Institute for Quantum Optics, Garching, 2017/07/31, “Quantum light-matter interfaces based on rare-earth-doped crystals and nano-photonics”
8. University of Cambridge, Cavendish Laboratory, UK, 2017/07/17, “Quantum light-matter interfaces based on rare-earth-doped crystals and nano-photonics”
9. Cal State LA, Department of Physics, 2016/12/01, “Flat and Conformal Optics With Dielectric Metasurfaces”
10. Northrop Grumman, NG Next, 2016/10/26, “Quantum light-matter interfaces based on rare-earth-doped crystals and nano-photonics”
11. University of Washington, Seattle, Electrical Engineering Seminar, 2016/10/11, “Flat and Conformal Optics With Dielectric Metasurfaces”
12. Montana State University, Department of Physics, 2016/10/06, “Quantum light-matter interfaces based on rare-earth-doped crystals and nano-photonics”
13. University of Stuttgart, 3. Physikalisches Institut, 2016/06/25, “Quantum light-matter interfaces based on rare-earth-doped crystals and nano-photonics”
14. National Institute of Physics and Nuclear Engineering, Bucharest, Romania, 2016/06/15, “Quantum light-matter interfaces based on rare-earth-doped crystals and nano-photonics”
15. DARPA, 2016/05/05, “Flat optics with dielectric metasurfaces”
16. Stanford University, Materials Science Colloquium, 2016/01/29, “Flat Optics with Dielectric Metasurfaces”
17. Hughes Research Labs, Malibu, CA, 2015/11/19, “Flat Optics with Dielectric Metasurfaces”
18. University of Calgary, Department of Physics, 2015/07/22, “Nano-photonic quantum light-matter interfaces based on rare-earth-doped crystals”
19. UC San Diego, Condensed Matter Seminar, 2015/04/29, “Quantum light-matter interfaces based on rare-earth-doped crystals and nano-photonics”
20. UC Riverside, Department of Bioengineering, 2015/02/25, “Optical components thinner than a free-space wavelength and their application for microscopy”
21. University of Southern California, Electrical Engineering Department Seminar, 2015/02/23, “Quantum light-matter interfaces based on rare-earth-doped crystals and nano-photonics”

Outreach Presentations

1. Caltech, Watson Lecture, 2018/01/17, “Flat Metasurface Optics”
2. Caltech, Reunion Weekend, 2017/05/20, “Flat Metasurface Optics”
3. University of Southern California, Undergraduate Seminar, 2015/10/02, “Controlling Light on a Chip at the Single-Photon Level”
4. Caltech, Watson Lecture, 2014/12/17, “Controlling Light on a Chip at the Single-Photon Level”

Invited Presentations at Conferences and Workshops

1. Winter Colloquium on the Physics of Quantum Electronics (PQE), Snowbird, UT, 2018/01/08, "Quantum nanophotonic devices based on rare-earth-doped crystals"
2. AFOSR Young Investigator Meeting, Arlington, VA, 2017/11/17, "On-chip quantum memories at telecom wavelengths"
3. Rare Earth Ion Workshop, NanoQTech Karlsruhe, Germany, 2017/09/28, "Quantum light-matter interfaces based on rare-earth ions and nano-photonics"
4. IEEE Photonics, Orlando, FL, 2017/10/06, "Quantum light-matter interfaces based on rare-earth ions and nano-photonics"
5. Metamaterials, Marseilles, France, 2017/08/30, "Flat and Conformal Optics with Dielectric Metasurfaces"
6. 2017 International Conference on Optical MEMS and Nanophotonics (OMN2017), Santa Fe, 2017/08/17, "Flat and Conformal Optics with Dielectric Metasurfaces"
7. SPIE Optics and Photonics, San Diego, 2017/08/06, "Quantum Nano-Photonic Devices Based on Rare-Earth Ions"
8. SPIE Optics and Photonics, San Diego, 2017/08/05, "Flat and Conformal Optics with Dielectric Metasurfaces"
9. META 2017, 2017/07/25, "Flat and Conformal Optics with Dielectric Metasurfaces"
10. 9th International Conference for Materials for Advanced Technologies (ICMAT), Singapore, 2017/06/17, "Flat and Conformal Optics with Dielectric Metasurfaces"
11. Conference of Lasers and Electro Optics (CLEO), San Jose, CA, 2017/05/15, "Quantum Nano-Photonic Devices Based on Rare-Earth Ions"
12. APS March Meeting, New Orleans, LA, 2017/03/15, "Flat and Conformal Optics With Dielectric Metasurfaces"
13. Photonics West, San Francisco, CA, 2017/02/02, "Quantum nano-photonics devices based on rare-earth-doped crystals"
14. Photonics West, San Francisco, CA, 2017/01/30, "Flat and Conformal Optics With Dielectric Metasurfaces"
15. Photonics West, San Francisco, CA, 2017/02/02, "Quantum nano-photonics devices based on rare-earth-doped crystals"
16. Winter Colloquium on the Physics of Quantum Electronics (PQE), Snowbird, UT, 2017/01/10, "Quantum light-matter interfaces based on rare-earth-doped crystals and nano-photonics"
17. 5th International Conference and Exhibition on Lasers, Optics and Photonics, Atlanta, 2016/11/28, "Flat and conformal optics with dielectric metasurfaces"
18. Advanced Photonics, Vancouver, Canada, 07/18/2016, "Flat and Conformal Optics With Dielectric Metasurfaces,"
19. "Flat optics with dielectric metasurfaces," *SPIE Defence and Security*, 2016
20. SPIE Photonics West, San Francisco, CA, 2016, "Flat free-space optical components and systems based on sub-wavelength high contrast gratings"
21. Winter Colloquium on the Physics of Quantum Electronics (PQE), Snowbird, UT, 01/03/2016, "Dielectric Metasurface Devices Based on SubWavelength High Index Structures"
22. Quantum Light-Matter Interactions in Solid State Systems, QLIMS 2015, Barcelona, Spain, 11/09/2015, "Nano-photonics quantum light-matter interfaces based on rare-earth-doped crystals"
23. META 2015, New York, 08/07/2015, "Nano-photonics quantum light-matter interfaces based on rare-earth-doped crystals"

24. 12th Annual Congress of Society for Brain Mapping and Therapeutics, Los Angeles, CA, 03/06/2015, "Optical components thinner than a free-space wavelength and their application for microscopy"
25. SPIE Photonics West, San Francisco, CA, 02/09/2015, "Flat free-space optical components and systems based on sub-wavelength high-index dielectric structures"
26. Advanced Imaging Methods Workshop, Berkeley, CA, 02/06/2015, "Optical components thinner than a free-space wavelength and their application for microscopy"
27. Samsung Advanced Technology Forum, Seoul, South Korea, 2014, "Flat free-space optical components and systems based on sub-wavelength high-index dielectric structures"
28. Quantum Sensing, Metrology, and Algorithms Workshop at Northrup Grumman, 11/17/2014, "Quantum Nano-Photonic Devices Based on Rare-Earth Doped Crystals"
29. Frontiers In Optics, Tucson, AZ, 2014, "Quantum Nano-Photonic Devices Based on Rare-Earth Doped Crystals"
30. Plasmonics and Nanophotonics Workshop at Northrup Grumman, 10/14/2014, "Flat free-space optical components and systems based on sub-wavelength high index dielectric structures,"
31. Coherent Information Processing in Rare-Earth Ion Doped Solids, Summer School - Marie Curie Initial Training Network, Hoor, Sweden, 2014, "Coupling of rare-earth ions to nano-photonic optical resonators"
32. QDiamond, Hefei, China, 2013, "Towards Integrated Optical Quantum Networks in Diamond"
33. The Kavli Nanoscience Nexus Conference, Puerto Rico, 2013, "Solid state quantum nano-photonics,"

Conference Presentations given by my group members

A list of my invited conference talks can be found above

1. John G. Bartholomew, Raymond Lopez-Rios, Jonathan M. Kindem, Jake Rochman, Tian Zhong, and Andrei Faraon, Toward all-optical control of rare-earth ions for on-chip quantum technology, *CLEO 2017*.
2. T. Zhong, J. Kindem, J. Bartholomew, A. Faraon, Nanophotonic atomic-frequency-comb quantum memory based on a rare-earth doped photonic crystal cavity, *CLEO 2017*, FW1E.3, San Jose CA, USA.
3. T. Zhong, J. Kindem, J. Rochman, and A. Faraon, Broadband nanophotonic quantum interface with cavity-protected rare-earth ensembles, Southwest Quantum Information Technology *SQuInt 2017*, Feb. 23 2017, Barton Rouge, LA USA.
4. Tian Zhong, Jonathan Kindem, John Bartholomew, Jake Rochman, and Andrei Faraon, A nanophotonic platform integrating quantum memories and single qubits based on rare-earth ions *SQuINT 2017*
5. Tian Zhong, Jonathan M. Kindem, John G. Bartholomew, Jake H. Rochman, Ioana Craiciu, Evan Miyazono, Andrei Faraon, Towards an efficient nanophotonic platform integrating quantum memories and single qubits based on rare-earth ions, *Photonics West 2017*
6. Tian Zhong, Jonathan M. Kindem, Jake H. Rochman, Andrei Faraon, Broadband photonic quantum interface based on a cavity-protected rare-earth ensemble, *Photonics West 2017*
7. 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*
8. S. M. Kamali, E. Arbabi, A. Arbabi, Y. Horie, and A. Faraon, "Dielectric metasurfaces with independent angular control," *IEEE Photonics Conference, 2017*.
9. S. M. Kamali, E. Arbabi, A. Arbabi, Y. Horie, and A. Faraon, "Metasurfaces with controlled angular phase dispersion," *SPIE Photonics West, 2017*.

10. E. Arbabi, A. Arbabi, S. M. Kamali, Y. Horie, and A. Faraon, Dispersion-controlled diffractive devices with dielectric metasurfaces, *IEEE Photonics Conference, 2017*
11. 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*
12. T. Zhong, J. Kindem, E. Miyazono, and A. Faraon, 50 GHz quantum photonic storage in a cavity-protected rare-earth ensemble, *CLEO 2016*, Jun. 9-11 2016, San Jose CA, USA.
13. T. Zhong, J. Kindem, J. Rochman, and A. Faraon, Broadband nanophotonic quantum interface with cavity-protected rare-earth ensembles, Southwest Quantum Information Technology *SQuInt 2016*, Feb. 18-20 2015, Albuquerque, NM, USA.
14. T. Zhong, J. Kindem, J. Rochman, E. Miyazono, A. Ferrier, P. Goldner, and A. Faraon, On-chip quantum storage in a rare-earth-doped photonic nanocavity, *SPIE Photonics West 2016*, Feb. 15-18 2016, San Francisco CA, USA.
15. 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*.
16. E. Arbabi, A. Arbabi, S. M. Kamali, Y. Horie, and A. Faraon, Polarization insensitive multi-wavelength metasurface lens, *SPIE Photonics West, 2016*
17. S. M. Kamali, E. Arbabi, A. Arbabi, Y. Horie, and A. Faraon, "Conformal and tunable optical dielectric metasurfaces based on exible stretchable substrates," *IEEE Photonics Conference, 2016*.
18. 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*.
19. S. M. Kamali, A. Arbabi, E. Arbabi, Y. Horie, and A. Faraon, "Dielectric metasurfaces on thin flexible substrates," *SPIE Photonics West, 2016*.
20. Z. Wang, Y. Yan, A. Arbabi, C. Liu, G. Xie, Z. Zhao , et al., "Demonstration of using passive integrated phase masks to generate orbital-angular-momentum beams in a communications link," Conference on Lasers and Electro-Optics *CLEO2016*
21. 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*.
22. 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*.
23. A. Arbabi, E. Arbabi, Y. Horie, S. M. Kamali, and A. Faraon, "Experimental demonstration of a metasurface planar retroreflector," *SPIE Photonics West 2016*.
24. 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*.
25. Y. Horie, A. Arbabi, E. Arbabi, S. M. Kamali, and A. Faraon, "Active dielectric antenna for phase only spatial light modulation," in Conference on Lasers and Electro-Optics, *CLEO 2016*
26. Y. Horie, A. Arbabi, E. Arbabi, S. M. Kamali, and A. Faraon, "Dielectric metasurface narrowband filter array," in Conference on Lasers and Electro-Optics, *CLEO 2016*
27. T. Zhong, Nanophotonic quantum memory based on rare earth doped crystals, Southwest Quantum Information Technology *SQuInt 2015*, Feb. 17-19 2015, Berkeley CA, USA.
28. Zhong, Tian; Kindem, Jonathan; Miyazono, Evan; Faraon, Andrei, Nanophotonic Quantum Memory Based on Rare-Earth-Ions Coupled to an Optical Resonator, *CLEO 2015*
29. Zhong, Tian; Kindem, Jonathan; Miyazono, Evan; Faraon, Andrei, Towards Detection of Single Rare-Earth-Ions in a Nanophotonic Resonator, *CLEO 2015*
30. Arbabi, Amir; Horie, Yu; Bagheri, Mahmood; Faraon, Andrei, Simultaneous and Complete Control of Light Polarization and Phase using High Contrast Transmitarrays, *CLEO 2015*
31. Tian Zhong, Jonathan Kindem, Evan Miyazono, Andrei Faraon, Nanophotonic photon echo memory based on rare-earth-doped crystals, *APS March Meeting 2015*,

<http://meeting.aps.org/Meeting/MAR15/Session/M37.3>

32. Yu Horie, Amir Arbabi, Andrei Faraon, Guided resonance reflective phase shifters, *SPIE Photonics West, 2015*
33. Amir Arbabi, Yu Horie, Mahmood Bagheri, Andrei Faraon, Highly efficient polarization control using subwavelength high contrast transmitarrays, *SPIE Photonics West, 2015*
34. Eran Segev, Trevor Fowler, Andrei Faraon, Michael L. Roukes, Visible array waveguide gratings for applications of optical neural probes, *SPIE Photonics West, 2015*
35. Amir Arbabi, Yu Horie, Alexander J. Ball, Mahmood Bagheri, Andrei Faraon, Flat free-space optical components and systems based on sub-wavelength high-index dielectric structures, *SPIE Photonics West, 2015*
36. Tian Zhong, Jonathan Kindem, Evan Miyazono, Alex Hartz, Andrei Faraon, Coupling of rare-earth ions to a YSO nanophotonic resonator for efficient quantum memory, *SPIE Photonics West, 2015*
37. Yu Horie, Amir Arbabi, Andrei Faraon, On-chip broadband spectral filtering using planar double high-contrast grating reflectors, *SPIE Photonics West, 2015*
38. Amir Arbabi, Yu Horie, Alexander J. Ball, Mahmood Bagheri, Andrei Faraon, Efficient high NA flat micro-lenses realized using high contrast transmitarrays, *SPIE Photonics West, 2015*
39. Evan Miyazono, Alex Hartz, Tian Zhong, Andrei Faraon, Hybrid quantum nanophotonic devices for coupling to rare-earth ions, *SPIE Photonics West, 2015*
40. Tian Zhong, Alex Hartz, Evan Miyazono, and Andrei Faraon, Towards Coupling Rare Earth Ions to a Y2SiO5 Nanophotonic Resonator, *CLEO*, San Jose, 2014, http://dx.doi.org/10.1364/CLEO_QELS.2014.FTh1B.5
41. Evan Miyazono, Alex Hartz, Tian Zhong, and Andrei Faraon, Hybrid Quantum Nanophotonic Devices for Coupling to Rare-Earth Ions, *CLEO*, San Jose, 2014, http://dx.doi.org/10.1364/CLEO_QELS.2014.FTu3A.5
42. Andrei Faraon, Tian Zhong, Alex Hartz, Evan Miyazono, Towards Coupling Rare Earth Ions to a Y2SiO5 Nanophotonic Resonator, *International Conference on Luminescence*, Wroclaw, Poland, 2014, http://dx.doi.org/10.1364/CLEO_QELS.2014.FTh1B.5
43. Amir Arbabi, Mahmood Bagheri, Alexander J. Ball, Yu Horie, David Fattal, and Andrei Faraon, Controlling the Phase Front of Optical Fiber Beams using High Contrast Metastructures, *CLEO*, San Jose, 2014, http://dx.doi.org/10.1364/CLEO_SI.2014.STu3M.4
44. Yu Horie, Amir Arbabi, and Andrei Faraon, Reflective Optical Phase Modulator Based on High-Contrast Grating Mirrors, *CLEO*, San Jose, 2014, http://dx.doi.org/10.1364/CLEO_SI.2014.STh4M.8
45. Amir Arbabi, Yu Horie, and Andrei Faraon, Planar Retroreflector, *CLEO*, San Jose, 2014, http://dx.doi.org/10.1364/CLEO_SI.2014.STu3M.5

PUBLICATIONS AND TALKS BEFORE CALTECH

Publications in Peer Reviewed Journals Before Caltech

1. **Andrei Faraon**, Charles Santori, Zhihong Huang, Victor M. Acosta, Raymond G. Beausoleil, Coupling of Nitrogen-Vacancy Centers to Photonic Crystal Cavities in Monocrystalline Diamond, *Physical Review Letters*, Vol. 109, 033604 (2012), (arXiv:1202.0806)
2. K-M C Fu, P E Barclay, C Santori, **A Faraon** and R G Beausoleil, Low-temperature tapered-fiber probing of diamond nitrogen-vacancy ensembles coupled to GaP microcavities, *New J. Phys.* , 13 055023 (2012),(arxiv:1102.5372)
3. VM Acosta, C Santori, **A Faraon**, Z Huang, K Fu, A Stacey, DA Simpson, S Tomljenovic-Hanic, AD Greentree, S Praver, RG Beausoleil, Dynamic stabilization of the optical resonances of single nitrogen-vacancy centers in diamond, *Phys. Rev. Lett.*, 108, 206401 (2012),(arXiv:1112.5490)

4. Dirk Englund, Arka Majumdar, Michal Bajcsy, **Andrei Faraon**, Pierre Petroff, Jelena Vuckovic, Ultrafast photon-photon interaction in a strongly coupled quantum dot-cavity system, *Phys. Rev. Lett.* 108, 093604 (2012), (arXiv:1107.2956v1)
5. P.E. Barclay, K-M.C. Fu, C. Santori, **A. Faraon**, R.G. Beausoleil, Hybrid Nanocavity Resonant Enhancement of Color Center Emission in Diamond, *Physical Review X* 1 (1), 011007, 2011
6. **Andrei Faraon**, Arka Majumdar, Dirk Englund, Erik Kim, Michal Bajcsy, Jelena Vuckovic, “Integrated quantum optical networks based on quantum dots and photonic crystals,” *New Journal of Physics*, 13, 055025, 2011
7. Kai-Mei C. Fu, Paul E. Barclay, Charles Santori, **Andrei Faraon**, Raymond G. Beausoleil , “Low-temperature tapered-fiber probing of diamond NV ensembles coupled to GaP microcavities,” *New Journal of Physics*, 13, 055023, 2011
8. **Andrei Faraon**, Paul E. Barclay, Charles Santori, Kai-Mei C. Fu, and Raymond G Beausoleil “Resonant enhancement of the zero-phonon emission from a colour centre in a diamond cavity,” *Nature Photonics*, 5, 301-205, 2011, <http://arxiv.org/abs/1012.3815>
9. Zhen Peng, David A. Fattal, **Andrei Faraon**, Marco Fiorentino, Jingjing Li, and Raymond G. Beausoleil, “Reflective silicon binary diffraction grating for visible wavelengths,” *Optics Letters*, Vol. 36 Issue 8, pp.1515-1517 (2011)
10. Arka Majumdar, Ziliang Lin, **Andrei Faraon**, Jelena Vuckovic, “Proposal for high-speed and high-fidelity electron-spin initialization in a negatively charged quantum dot coupled to a microcavity in a weak external magnetic field”, *Phys. Rev. A*, 82, 022301 (2010). (arXiv:0907.3187)
11. Arka Majumdar, **Andrei Faraon**, Erik Kim, Dirk Englund, Hyochul Kim, Pierre Petroff, and Jelena Vuckovic, “Linewidth broadening of a quantum dot coupled to an off-resonant cavity”, *Physical Review B*, 045306 (2010)(arXiv:1003.2350)
12. **Andrei Faraon**, Arka Majumdar, and Jelena Vuckovic, “Generation of nonclassical states of light via photon blockade in optical nanocavities”, *Phys. Rev. A*, Vol 81, 033838 (2010). (arXiv:0908.4303)
13. Dirk Englund, Arka Majumdar, **Andrei Faraon**, Mitsuru Toishi, Nick Stoltz, Pierre Petroff, and Jelena Vuckovic, “Resonant excitation of a quantum dot strongly coupled to a photonic crystal nanocavity”, *Physical Review Letters* , Vol 104, 073904 (2010)
14. Arka Majumdar, Nicolas Manquest, **Andrei Faraon**, Jelena Vuckovic, “Theory of Electro-optic Modulation via a Quantum Dot Coupled to a Nano-resonator”, *Optics Express*, Vol 18, pp. 3974-3984 (2010) (arXiv:0911.5207)
15. **Andrei Faraon**, Arka Majumdar, Hyochul Kim, Pierre Petroff, Jelena Vuckovic, “Fast Electrical Control of a Quantum Dot Strongly Coupled to a Photonic Crystal Cavity”, *Physical Review Letters*, Vol 104, 047402 (2010)
16. Dirk Englund, **Andrei Faraon**, Arka Majumdar, Nick Stoltz, Pierre Petroff, Jelena Vuckovic, “An optical modulator based on a single strongly coupled quantum dot - cavity system in a p-i-n junction”, *Optics Express*, Vol 17, pp 18651-18658 (2009)
17. **Andrei Faraon**, Jelena Vuckovic, “Local temperature control of photonic crystal devices via micron-scale electrical heaters”, *Applied Physics Letters* 95, 043102 (2009)
18. Dirk Englund, Mitsuru Toishi, **Andrei Faraon**, Jelena Vuckovic, “High-brightness single photon source from a quantum dot in a directional-emission nanocavity”, *Optics Express*, Vol 17, pp 14618-14626 (2009), (arXiv:0904.1262)
19. Dirk Englund, Ilya Fushman, **Andrei Faraon**, Jelena Vuckovic, “Quantum dots in photonic crystals: From quantum information processing to single photon nonlinear optics”, *Photonics and Nanostructures - Fundamentals and Applications*, Volume 7, Issue 1 (2009)
20. **Andrei Faraon***, Ilya Fushman*, Dirk Englund*, Nick Stoltz, Pierre Petroff and Jelena Vuckovic, “Coherent generation of nonclassical light on a chip via photon-induced tunneling and blockade”, *Nature Physics*, Vol 4, pp 859-863 (2008)

* These authors contributed equally to this work

21. Kelley Rivoire, **Andrei Faraon**, Jelena Vuckovic, “Gallium Phosphide Photonic Crystal Nanocavities in the Visible”, *Applied Physics Letters*, 93(063103) 2008
22. Ilya Fushman, Dirk Englund, **Andrei Faraon**, Jelena Vuckovic, “Probing the interaction between a single quantum dot and a photonic crystal cavity”, *Physica Status Solidi C*, Vol 5, No. 9, pp 2808-2815 (2008)
23. **A. Faraon**, I. Fushman, D. Englund, N. Stoltz, P. Petroff and J. Vuckovic, “Dipole induced transparency in waveguide coupled photonic crystal cavities”, *Optics Express*, Vol 16, pp 12154-12162 (2008)
24. Ilya Fushman*, Dirk Englund*, **Andrei Faraon***, Nick Stoltz, Pierre Petroff and Jelena Vuckovic, “Controlled phase shifts with a single quantum dot”, *Science* 320, 769-772 (9 May 2008)
* These authors contributed equally to this work
25. **Andrei Faraon**, Dirk Englund, Douglas Bulla, Barry Luther-Davies, Benjamin Eggleton, Nick Stoltz, Pierre Petroff, Jelena Vuckovic, “Local tuning of photonic crystal cavities using chalcogenide glasses”, *Applied Physics Letters*, 92(043123) 2008
26. Dirk Englund*, **Andrei Faraon***, Ilya Fushman*, Nick Stoltz, Pierre Petroff and Jelena Vuckovic, “Controlling cavity reflectivity with a single quantum dot”, *Nature* 450, 857-861 (6 December 2007)
* These authors contributed equally to this work
27. **Andrei Faraon**, Dirk Englund, Ilya Fushman, Jelena Vuckovic, Nick Stoltz and Pierre Petroff, “Local quantum dot tuning on photonic crystal chips,” *Applied Physics Letters*, 90(213110) 2007
28. D. Englund, **A. Faraon**, B. Zhang, Y. Yamamoto, and J. Vuckovic, “Generation and transfer of single photons on a photonic crystal chip,” *Optics Express*, 15(9) 5550-5558, April 2007
29. **Andrei Faraon**, Edo Waks, Dirk Englund, Ilya Fushman, and Jelena Vuckovic, “Efficient photonic crystal cavity-waveguide couplers,” *Applied Physics Letters*, 90(073102), February 2007

Publications in Non-Refereed Journals Before Caltech

1. Dirk Englund, Arka Majumdar, **Andrei Faraon**, Mitsuru Toishi, Nick Stoltz, Pierre Petroff, Jelena Vuckovic, “Coherent excitation of a strongly coupled quantum dot-cavity system”, arXiv:0902.2428
2. Dirk Englund, **Andrei Faraon**, Ilya Fushman, Jelena Vuckovic, “Single photon nonlinear optics on photonic crystal chips”, *SPIE Newsroom* (2009)
3. Dirk Englund, **Andrei Faraon**, Ilya Fushman, Jelena Vuckovic, “Quantum information processing on photonic crystal chips”, *SPIE Newsroom* (2008)

Invited Talks Before Caltech

1. **Andrei Faraon**, “Fabrication of micro and nano photonic devices in mono-crystalline diamond,” *EtchTech*, Caltech, Pasadena, CA, 2012
2. **Andrei Faraon**, Charles Santori, Zhihong Huang, Paul E. Barclay, Kai-Mei C. Fu, Victor Acosta, and Raymond. G. Beausoleil, “Towards integrated optical quantum networks in diamond,” *SPIE - Photonics West*, San Francisco, CA, 2012
3. **Andrei Faraon** “Towards Integrated Optical Quantum Networks in Diamond ,” *XX International Material Research Congress*, Cancun, Mexico, August 2011
4. **Andrei Faraon** “Solid state nano-photonic quantum technologies ,” *Yale University, Applied Physics Seminar*, New Haven, CT, May 2011
5. **Andrei Faraon** “Solid state nano-photonic quantum technologies ,” *University of California at Berkeley, EECS Seminar*, Berkeley, CA, May 2011
6. **Andrei Faraon** “Solid state nano-photonic quantum technologies ,” *California Institute of Technology, Applied Physics Seminar*, Pasadena, CA, May 2011
7. **Andrei Faraon** “Solid state nano-photonic quantum technologies ,” *University of Pennsylvania*,

Electrical and Systems Engineering Dept. Colloquia Series, Philadelphia, PA, April 2011

8. **Andrei Faraon** “Solid state nano-photon quantum technologies ,” *MIT, Department of Electrical Engineering and Computer Science, Boston, MA, March 2011*
9. **Andrei Faraon** “Nano-photon Quantum Technologies in GaAs and Diamond,” *University of Maryland, Department of Electrical and Computer Engineering, College Park, MD, February 2011*
10. **Andrei Faraon** “Solid State Cavity Quantum Electrodynamics with Single Emitters in Nano-Scale Optical Resonators,” *University of Pennsylvania, Department of Physics, Philadelphia, PA, February 2011*
11. **Andrei Faraon**, Kelley Rivoire, Arka Majumdar, Sonia Buckley, Jelena Vuckovic, “Nonlinear Optics (At a Single Photon Level) in Photonic Crystal Nanocavities ,” *2010 SIAM Conference on Nonlinear Waves and Coherent Structures , Philadelphia, 2010*
12. **Andrei Faraon**, “Quantum dots in photonic crystals: from quantum information processing to single photon nonlinear optics,” *Seminar talk in the Electrical Engineering department, Princeton University, 2010*
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