

## Curriculum vitae: Michal Lipson

### Contact

Eugene Higgins Professor of Electrical Engineering  
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### Education

Technion-Israel Institute of Technology, B.S. Physics, 1992  
Technion-Israel Institute of Technology, M.S. Physics, 1994  
Technion-Israel Institute of Technology, Ph.D., Physics, 1998

### Academic positions

Eugene Higgins Professor of Electrical Engineering, Columbia University, School of Electrical Engineering, Columbia Nano Initiative, 2015-present  
Given Professor of Engineering, Cornell University, School of Electrical and Computer Engineering, 2013-2015  
Associate Professor, Cornell University, School of Electrical and Computer Engineering, 2007-2013  
Assistant Professor, Cornell University, School of Electrical and Computer Engineering, 2001 – 2007  
Postdoctoral Associate, MIT, Department of Material Science, 1999 – 2001

### Honors and Awards

Thomson Reuters top 1% highly cited researcher in the field of Physics, 2015  
Thomson Reuters top 1% highly cited researcher in the field of Physics, 2014  
IEEE Fellow, 2013  
MacArthur Fellow, 2010  
Blavatnik Award, 2010  
Optical Society of America (OSA) Fellow, 2007  
Fulbright Fellowship, 2007  
IBM Faculty Award, 2006  
NSF CAREER Award, 2004

### Professional Activities

#### Advisory Boards

Advisory Board Member, Department of Electrical and Computer Engineering (ECE) at Rice University (2013- )  
Scientific Board Member, the New York Academy of Sciences Blavatnik Award for Young Scientists (2013- )  
Board Member, CRANN Nanoscience Institute, Trinity College Dublin, Ireland (2012-2014)  
Co-Founder and Board Member, PicoLuz, Inc. (2009- )

Journal Editor

Editorial Board Member, Scientific Reports, Nature Publishing Group, 2012-2013

Advisory Board Member, IEEE Photonics Journal, 2008-2012

Guest Editor, IEEE Journal of Selected Topics in Quantum Electronics 2009

Topical Editor, Integrated Optics, Optics Letters, 2005-2006

Selected Society and Conference Organization Leadership

Program Chair, Conference on Lasers and Electro Optics (CLEO), San Jose, CA, 2017.

Optical Society of America, Elected Board member 2016-

Organizer, workshop on Emerging Topics in Optics, Institute for Applied Math and its applications, University of Minnesota, April 24 - 28, 2017

Technical Program Committee Member, Conference on Lasers and Electro Optics (CLEO), San Jose, CA, May 10-15, 2010-2015.

OSA Joseph Fraunhofer Award Committee Member, 2015-

IEEE Young Investigator Award Committee member 2012-2013

IEEE Photonics Board of Governors member 2009-2012.

Technical Program Committee member, Optical Society of America (OSA) Annual Meeting- Frontiers in Optics (FiO), Orlando, FL, October 6-10, 2013.

Subcommittee member, Light-Matter Interactions at the Nanoscale, Conference on Lasers and Electro-Optics Europe(CLEO/Europe) and International Quantum Electronics Conference (IQEC), Munich, Germany, June 16-20, 2013.

Subcommittee member, Latin America Optics and Photonics (LAOP) Conference, Sao Paulo, Brazil, 11-13 November, 2012.

Subcommittee member, Nanophotonics, Conference on Lasers and Electro Optics (CLEO), 2010-2011

Subcommittee member, Nanophotonics Devices and Applications, Integrated Photonics Research and Applications (IPRA), Monterey, California, July 25-28 2010.

Committee member, 2009 NAE Frontiers of Engineering, Beckman Center, Irvine CA September 10-12, 2009.

Subcommittee Chair, Micro- & Nano-Photonics, Conference on Lasers and Electro Optics (CLEO), 2007-2009.

Subcommittee Chair, Optical Society of America (OSA) Integrated Optics Technical Group, 2004-2007.

Technical program committee member, the 21<sup>st</sup> Annual Meeting of the IEEE Lasers and Electro-Optics (IEEE/LEOS) Society, New Port Beach, CA, November 9-13, 2008.

Technical program committee member, 2008 Slow and Fast Light Topical Meeting, Boston, MA, July 13-16, 2008.

Co-Chair, Frontiers in Nanophotonics and Plasmonics, Guarujá, SP Brazil, November 9-14, 2007.

Committee member, Optical Interconnects & Processing Systems Committee, Annual Meeting of the IEEE Lasers and Electro Optics Society, Lake Buena Vista, FL, October 21-25, 2007.

Program Committee member, Frontiers in Optics (FiO) - Optical Society of America (OSA) Annual Meeting, San Jose, California, September 16-20, 2007.

Subcommittee chair, Nanophotonics Devices and Applications Integrated Photonics Research and Applications (IPRA), Salt Lake City, July 9-13, 2007.

Subcommittee member, Nanophotonics Committee, Annual Meeting of the IEEE Lasers and Electro Optics (IEEE/LEOS) Society, Montreal, Quebec, Canada, October 29-November 2, 2006.

Committee Member, International Advisory Committee, Group IV Photonics, Ottawa, Ontario, Canada, September 13-15, 2006.

Subcommittee chair, Nanophotonics Devices and Applications Integrated Photonics Research and Applications (IPRA), Salt Lake City, Utah, July 9-13, 2006.

Subcommittee member, Fundamentals of Metamaterials, Conference on Lasers and Conference on Lasers and Electro-Optics (CLEO), Long Beach, CA, May 21-26, 2006.

Co-Chair, MRS Symposium on Silicon Photonics, March, San Francisco, April 17-21, 2006.

### **Journal Publications [citations: =25,624, H-index: 80]**

1. Austin G Griffith, Mengjie Yu, Yoshitomo Okawachi, Jaime Cardenas, Aseema Mohanty, Alexander L Gaeta, Michal Lipson, "Coherent mid-infrared frequency combs in silicon-microresonators in the presence of Raman effects", **Optics Express** 24 (12), 13044-13050, 2016
2. Chaitanya Joshi, Jae K Jang, Kevin Luke, Xingchen Ji, Steven A Miller, Alexander Klenner, Yoshitomo Okawachi, Michal Lipson, Alexander L Gaeta, "Thermally controlled comb generation and soliton modelocking in microresonators", **Optics Letters** 41 (11), 2565-2568, 2016
3. Alexander Klenner, Aline S Mayer, Adrea R Johnson, Kevin Luke, Michael RE Lamont, Yoshitomo Okawachi, Michal Lipson, Alexander L Gaeta, Ursula Keller, "Gigahertz frequency comb offset stabilization based on supercontinuum generation in silicon nitride waveguides", **Optics Express** 24 (10), 11043-11053, 2016
4. St-Gelais, Raphael, Linxiao Zhu, Shanhui Fan, and Michal Lipson. "Near-field radiative heat transfer between parallel structures in the deep subwavelength regime." **Nature Nanotechnology** 11, 515-519 (2016) 2016.
5. Mohanty, Aseema, Mian Zhang, Avik Dutt, Sven Ramelow, Paulo Nussenzeig, and Michal Lipson. "Quantum Interference between Transverse Spatial Waveguide Modes." **arXiv** 1601.00121 2016.
6. Dutt, Avik, Steven Miller, Kevin Luke, Jaime Cardenas, Alexander L. Gaeta, Paulo Nussenzeig, and Michal Lipson. "Tunable Squeezing Using Coupled Ring Resonators on a Silicon Nitride Chip." **Opt. Lett.** 41 2016: 223
7. Cardenas, J., Yu, M., Okawachi, Y., Poitras, C.B., Lau, R.K.W., Dutt, A., Gaeta, A.L., and Lipson, M., Optical nonlinearities in high-confinement silicon carbide waveguides, **Opt. Lett.**, 40(17), 4138-4141, 2015.
8. Ramelow, S., Farsi, A., Clemmen, S., Orquiza, D., Luke, K., Lipson, M., and Gaeta, A.L., Silicon-Nitride Platform for Narrowband Entangled Photon, **arXiv**: 1508.04358, 2015.
9. Phare, C.T., Lee, Y.H.D., Cardenas, J., and Lipson, M., Graphene electro-optic modulator with 30 GHz bandwidth, **Nat. Photon.**, 9(8), 511-514, 2015.
10. Mayer, A.S., Klenner, A., Johnson, A.R., Luke, K., Lamont, M.R.E., Okawachi, Y., Lipson, M., Gaeta, A.L., and Keller, U., Frequency comb offset detection using supercontinuum generation in silicon nitride waveguides, **Opt. Express**, 23(12), 15440-15451, 2015.
11. Zhang, M., Shah, S., Cardenas, J., and Lipson, M., Synchronization and Phase Noise Reduction in Micromechanical Oscillators Arrays Coupled through Light, **Phys. Rev. Lett.** 115, 163902, 2015.
12. Dutt, A., Luke, K., Manipatrani, S., Gaeta, A.L., Nussenzeig, P., and Lipson, M., On-Chip Optical Squeezing, **Phys. Rev. App.** 3(4), 044005, 2015.

13. Shah, S.Y., Zhang, M., Rand, R., and Lipson, M., Master-Slave Locking of Optomechanical Oscillators Over A Long Distance, **Phys. Rev. Lett.** 114(11), 113602, 2015.
14. Fridman, M., Okawachi, Y., Clemmen, S., Ménard, M., Lipson, M., and Gaeta, A.L., Waveguide-based Single-shot Temporal Cross-Correlator, **J. Optics**, 17(3), 035501, 2015.
15. Griffith, A., Lau, R.K.W., Cardenas, J., Okawachi, Y., Mohanty, A., Fain, R., Ho, Y., Lee, D., Yu, M., Phare, C.T., Poitras, C.B., Gaeta, A.L., and Lipson, M., Silicon-chip Mid-infrared Frequency Comb Generation, **Nat. Comm.** 6, 6299, 2015.
16. Stern, B., Zhu, X., Chen, C.P., Tzuang, L.D., Cardenas, J., Bergman, K., and Lipson, M., Integrated Switch for Simultaneous Mode-division Multiplexing (MDM) and Wavelength-division Multiplexing (WDM), **arXiv**: 1502.04692, 2015.
17. Soltani, M., Ye, F., Killian, J.L., Lin, J., Lipson, M., and Wang, M.D., Precise Partition of Micro/Nanoparticles in an Electro-Optofluidic Platform, **Biophys. J.**, 108(2), 167a, 2015.
18. Guha, B., and Lipson, M., Controlling thermo-optic response in microresonators using bi-material cantilevers, **Opt. Lett.**, 40, 103-106, 2015.
19. St-Gelais, R., Guha, B., Zhu, L., Fan, S., and Lipson, M., Demonstration of strong near-field radiative heat transfer between integrated nanostructures, **Nano Lett.**, 14(12), 6971-6975, 2014.
20. Phare, C. T., Lee, Y-H. D., Cardenas, J., and Lipson, M., 30 GHz Zeno-based Graphene Electro-Optic Modulator, **arXiv**: 1411.2053, 2014.
21. Miller, S., Luke, K., Okawachi, Y., Cardenas, J., Gaeta, A. L., and Lipson, M., On-chip frequency comb generation at visible wavelengths via simultaneous second-and third-order optical nonlinearities, **Opt. Express**, 22(22), 26517-26525, 2014.
22. Mouradian, S. L., Schroder, T., Poitras, C. B., Li, L., Goldstein, J., Chen, E. H., Cardenas, J., Markham, M. L., Twitchen, D. J., Lipson, M., and Englund, D., The Scalable Integration of long-lived quantum memories into a photonic circuit, **arXiv**:1409.7965, 2014.
23. Cardenas, J., Poitras, C. B., Luke, K., Luo, L.-W., Morton, P. A., and Lipson, M., High coupling efficiency etched facet tapers in silicon waveguides, **IEEE Phot. Tech. Lett.**, 26, 2380, 2014.
24. Ramelow, S., Farsi, A., Clemmen, S., Levy, J.S., Johnson, A.R., Okawachi, Y., Lamont, M.R.E., Lipson, M., and Gaeta, A.L., Strong polarization mode coupling in microresonators, **Opt. Lett.** 39, 5134, 2014, 2014.
25. Zhang, M., Luiz, G., Shah, S., Wiederhecker, G., and Lipson, M., Eliminating anchor loss in optomechanical resonators using elastic wave interference, **Appl. Phys. Lett.**, 105, 051904, 2014.
26. Griffith, A.G., Lau, R.K.W., Cardenas, J., Okawachi, Y., Mohanty, A., Fain, R., Lee, Y.H.D., Yu, M., Phare, C.T., Poitras, C.B., Gaeta, A.L., and Lipson, M., Silicon-chip mid-infrared frequency comb generation, **arXiv**:1408.1039, 2014.
27. Tzuang, L. D., Fang, K., Nussenzeveg, P., Fan, S., and Lipson M., Non-reciprocal phase shift induced by an effective magnetic flux for light, **Nature Photonics** 8, 701–705, 2014.
28. Soltani, M., Lin, J., Forties, R. A., Inman, J. T., Saraf, S. N. Fullbright, R. M. Lipson, M. and Wang, M. D., Nanophotonic trapping for precise manipulation of biomolecular arrays, **Nat. Nanotech.**, 9, 448–452, 2014.
29. Padmaraju, K., Zhu, X., Chen, L., Lipson, M., and Bergman, K., Intermodulation crosstalk characteristics of WDM silicon microring modulators, **IEEE Phot. Tech. Lett.**, 26, 1478, 2014.
30. Johnson, A. R., Okawachi, Y., Lamont, M. R. E., Levy, J. S., Lipson, M. and Gaeta, A. L., Microresonator-based comb generation without an external laser source, **Opt. Express**, 22, 1394, 2014.

31. Lin, J., Soltani, M., Forties, R. A., Sara, S. N., Inman, J. T., Fullbright, R. M., Lipson, M. and Wang, M. D., On-chip optical manipulation of biomolecule arrays with Nm resolution, **Biophys. J.**, 106(2), 394a, 2014.
32. Tzuang, L. D., Soltani, M., Lee, Y. H. D., and Lipson, M., High RF carrier frequency modulation in silicon resonators by coupling adjacent free-spectra-range modes, **Opt. Lett.**, 39, 1799, 2014.
33. Luo, L.-W., Ophir, N., Chen, C. P., Gabrielli, L., Poitras, C. B., Bergman, K., and Lipson, M., WDM-compatible mode-division multiplexing on a silicon chip, **Nat. Comm.** 5, 3069, 2014.
34. Guha, B., Cardenas, J., and Lipson, M., Athermal silicon microring resonators with titanium oxide cladding, **Opt. Express** 21, 26557, 2013.
35. Lee, Y.H.D., Thompson, M. O., and Lipson, M., Deposited low temperature silicon GHz modulator, **Opt. Express** 21, 26688, 2013.
36. Luke, K., Dutt, A., Poitras, C.B. and Lipson, M., Overcoming Si<sub>3</sub>N<sub>4</sub> film stress limitations for high quality factor ring resonators, **Opt. Express** 21, 22829, 2013.
37. Cardenas, J., Morton, P. A., Khurgin, J. B., Griffith, A., Poitras, C. B., Preston, K, and Lipson, M., Linearized silicon modulator based on a ring assisted Mach Zehnder inteferometer, **Opt. Express** 21, 22549, 2013.
38. Moss, D. J., Morandotti, R., Gaeta, A. L., and Lipson, M., New CMOS-compatible platforms based on silicon nitride and Hydex for nonlinear optics, **Nat. Photon.** 7, 597, 2013.
39. Cardenas, J., Zhang, M., Phare, C. T., Shah, S. Y., Poitras, C. B., Guha, B., and Lipson, M., High Q SiC microresonators. **Opt. Express** 21, 16882, 2013.
40. Liu, D., Gabrielli, L. H., Lipson, M., and Johnson, S. G., Transformation inverse design, **Opt. Express** 21, 14223, 2013.
41. Lee, Y.H.D., and Lipson, M., Back-end deposited silicon photonics for monolithic integration on CMOS, **IEEE J. Sel. Top. Quant.** 19, 8200207, 2013.
42. Manipatruni, S., Lipson, M., and Young, I. A.; Device Scaling Considerations for Nanophotonic CMOS Global Interconnects, **IEEE J. Sel. Top. Quant.** 19, 8200109, 2013.
43. Saha, K., Okawachi, Y., Shim, B., Levy, J. S., Salem, R., Johnson, A. R., Foster, M. A., Lamont, M. R. E, Lipson, M., and Gaeta, A. L., Modelocking and femtosecond pulse generation in chip-based frequency combs, **Opt. Express** 21, 1335, 2013.
44. Padmaraju, K., Chan, J., Chen, L., Lipson, M. and Bergman, K., Thermal stabilization of a microring modulator using feedback control, **Opt. Express** 20, 27899, 2012.
45. Zhang, M., Wiederhecker, G.S., Manipatruni, S., Barnard, A., McEuen, P. and Lipson, M., Synchronization of micromechanical oscillators using light, **Phys. Rev. Lett.** 109, 233906, 2012.
46. Gabrielli, L., Liu, D., Johnson, S.G. and Lipson, M., On-chip transformation optics for multimode waveguide bends, **Nat. Comm.** 3, 1217, 2012.
47. Soltani, M., Inman, J.T., Lipson, M. and Wang, M.D., Electro-optofluidics: achieving dynamic control on-chip, **Opt. Express** 20, 22314, 2012.
48. Griffith, A., Cardenas, J., Poitras, C.B. and Lipson, M., High quality factor and high confinement silicon resonators using etchless process, **Opt. Express** 20, 21341, 2012.
49. Zhu, X., Li, Q., Chan, J., Ahsan, A., Lira, H.L.R., Lipson, M. and Bergman, K., 4 x 44 Gb/s packet-level switching in a second-order microring switch, **IEEE Photonics Technol. Lett.** 24, 1555, 2012.

50. Xu, L., Li, Q., Ophir, N., Padmaraju, K., Luo, L.-W., Chen, L., Lipson, M., and Bergman, K., Colorless optical network unit based on silicon photonic components for WDM PON, **IEEE Phot. Technol. Lett.**, 24, 1372, 2012
51. Levy, J.S., Saha, K., Okawachi, Y., Foster, M.A., Gaeta, M.A. and Lipson, M., High-performance silicon-nitride-based multiple-wavelength source, **IEEE Photonics Technol. Lett.**, 24, 1375, 2012.
52. Guha, B., Otey, C., Poitras, C.B., Fan, S. and Lipson, M., Near-field radiative cooling of nanostructures, **Nanolett.** 12, 4546, 2012.
53. Lira, H., Yu, Z., Fan, S. and Lipson, M., Electrically driven nonreciprocity induced by interband photonic transition on a silicon chip, **Phys. Rev. Lett.** 109, 033901, 2012.
54. Guha, B., Preston, K. and Lipson, M., Athermal silicon microring electro-optic modulator, **Opt. Lett.** 37, 2253, 2012.
55. Wen, Y.H., Kuzucu, O., Fridman, M., Gaeta, A.L., Luo, L.-W. and Lipson, M., All-optical control of an individual resonance in a silicon microresonator, **Phys. Rev. Lett.**, 108, 223907, 2012.
56. Halir, R., Okawachi, Y., Levy, J.S., Foster, M.A., Lipson, M. and Gaeta, A.L., Ultrabroadband supercontinuum generation in a CMOS-compatible platform, **Opt. Lett.** 37, 1685, 2012.
57. Padmaraju, K., Ophir, N., Xu, Q., Schmidt, B., Shakya, J., Manipatruni, S., Lipson, M. and Bergman, K., Error-free transmission of microring-modulated BPSK., **Opt. Express**, 20, 8681, 2012.
58. Y. Okawachi, A. L. Gaeta, and M. Lipson, Breakthroughs in nonlinear silicon photonics 2011, **IEEE Photon. J.** 4, 601, 2012. **(invited)**
59. Morton, P.A., Cardenas, J., Khurgin, J.B. and Lipson, M., Fast thermal switching of wideband optical delay line with no long-term transient, **IEEE Photonics Technol. Lett.**, 24, 512, 2012.
60. Ophir, N., Lau, R. K. W., Menard, M., Zhu, X., Padmaraju, K., Okawachi, Y., Salem, R., Lipson, M., Gaeta, A., and Bergman, K., Wavelength conversion and unicast of 10-Gb/s data spanning up to 700 nm using a silicon waveguides, **Opt. Express**, 20, 6488, 2012.
61. Xu, L., Zhang, W., Li, Q., Chan, J., Lira, H.L.R., Lipson, M. and Bergman, K., 40-Gb/s DPSK data transmission through a silicon microring switch, **IEEE Photonics Technol. Lett.**, 24, 473, 2012.
62. Johnson, A.R., Okawachi, Y., Levy, J.S., Cardenas, J., Saha, K., Lipson, M. and Gaeta, A.L., Chip-based frequency combs with sub-100 GHz repetition rates , **Opt. Lett.**, 37, 875, 2012.
63. Luo, L.-W., Wiederhecker, G., Preston, K. and Lipson, M., Power insensitive silicon microring resonators, **Opt. Lett.**, 37, 590, 2012.
64. Yue, Y., Huang, H., Zhang, L., Wang, J., Yang, J.-Y., Yilmaz, O.F., Levy, J.S., Lipson, M. and Willner, A.E., UWB monocycle pulse generation using two-photon absorption in a silicon waveguide, **Opt. Lett.**, 37, 551, 2012.
65. Ophir, N., Lau, R.K.W., Menard, M., Salem, R., Padmaraju, K., Okawachi, Y., Lipson, M., Gaeta, A.L. and Bergman, K., First demonstration of a 10-Gb/s RZ end-to-end four-wave-mixing based link at 1884 nm using silicon nanowaveguides, **IEEE Photonics Technol. Lett.**, 24, 276, 2012.
66. Okawachi, Y., Kuzucu, O., Foster, M.A., Salem, R., Turner-Foster, A.C., Biberman, A., Ophir, N., Bergman, K., Lipson, M. and Gaeta, A.L., Characterization of nonlinear optical crosstalk in silicon nanowaveguides, **IEEE Photonics Technol. Lett.**, 24, 185, 2012.
67. Gabrielli, L.H. and Lipson, M., Integrated Luneburg Lens via ultra-strong index gradient on silicon, **Opt. Express**, 19, 20122, 2011.
68. Lira, H.L.R., Poitras, C.B. and Lipson, M., CMOS compatible reconfigurable filter for high bandwidth non-blocking operation, **Opt. Express**, 19, 20115, 2011.

69. Robinson, J.T. and Lipson, M., Direction-dependent optical modes in nanoscale silicon waveguides, **Opt. Express**, 19, 18380, 2011.
70. Sherwood-Droz, N. and Lipson, M., Scalable 3D dense integration of photonics on bulk silicon, **Opt. Express**, 19, 17758, 2011.
71. Xu, L., Chan, J., Biberman, A., Lira, H.L.R., Lipson, M. and Bergman, K., DPSK transmission through silicon microring switch for photonic interconnection networks, **IEEE Photonics Technol. Lett.**, 23, 1103, 2011.
72. Foster, M.A., Levy, J.S., Kuzucu, O., Saha, K., Lipson, M. and Gaeta, A.L., Silicon-based monolithic optical frequency comb source, **Opt. Express** 19, 14233, 2011.
73. Xu, L., Padmaraju, K., Chen, L., Lipson, M. and Bergman, K., 10-Gb/s access network architecture based on micro-ring modulators with colorless ONU and mitigated rayleigh backscattering, **IEEE Photonics Technol. Lett.** 23, 914, 2011.
74. Levy, J.S., Foster, M.A., Gaeta, A.L. and Lipson, M., Harmonic generation in silicon nitride ring resonators, **Opt. Express** 19, 11415, 2011.
75. Biberman, A., Preston, K., Hendry, G., Sherwood-Droz, N., Chan, J., Levy, J., Lipson, M. and Bergman, K., Photonic network-on-chip architectures using multilayer deposited silicon materials for high-performance chip multiprocessors, **ACM J. Emerg. Technol.** 7, 2011.
76. Wen, Y.H., Kuzucu, O., Hou, T., Lipson, M. and Gaeta, A.L., All-optical switching of a single resonance in silicon ring resonators, **Opt. Lett.** 36, 1413, 2011.
77. Xu, L., Ophir, N., Menard, M., Kin Wah Lau, R., Turner-Foster, A.C., Foster, M.A., Lipson, M., Gaeta, A.L. and Bergman, K., Simultaneous wavelength conversion of ASK and DPSK signals based on four-wave-mixing in dispersion engineered silicon waveguides, **Opt. Express** 19, 12172, 2011.
78. Biberman, A., Lira, H.L.R., Padmaraju, K., Ophir, N., Chan, J., Lipson, M. and Bergman, K., Broadband Silicon Photonic Electrooptic Switch for Photonic Interconnection Networks, **IEEE Photonics Technol. Lett.** 23, 504, 2011.
79. Lau, R.K.W., Menard, M., Okawachi, Y., Foster, M.A., Turner-Foster, A.C., Salem, R., Lipson, M. and Gaeta, A.L., Continuous-wave mid-infrared frequency conversion in silicon nanowaveguides, **Opt. Lett.** 36, 1263, 2011.
80. Luo, L.-W., Wiederhecker, G.S., Cardenas, J., Poitras, C.B. and Lipson, M., High quality factor etchless silicon photonic ring resonators, **Opt. Express** 19, 6284, 2011.
81. Wiederhecker, G.S., Manipatruni, S., Lee, S. and Lipson, M., Broadband tuning of optomechanical cavities, **Opt. Express** 19, 2782, 2011.
82. Olaosebikan, D., Yerci, S., Gondarenko, A., Preston, K., Li, R., Dal Negro, L. and Lipson, M., Absorption bleaching by stimulated emission in erbium-doped silicon-rich silicon nitride waveguides, **Opt. Letters** 36, 4, 2011.
83. Preston, K., Lee, Y.H.D., Zhang, M. and Lipson, M., Waveguide-integrated telecom-wavelength photodiode in deposited silicon, **Opt. Lett.** 36, 52, 2011.
84. Djordjevic, S. S., Luo, L-W., Ibrahim, S., Fontaine, N. K., Poitras, C. B., Guan, B., Zhou, L., Okamoto, K., Ding, Z., Lipson, M., and Yoo, S. J. B., Fully reconfigurable silicon photonic lattice filters with four cascaded unit cells, **IEEE Phot. Technol. Lett.**, 23, 42, 2011.
85. Ophir, N., Chan, J., Padmaraju, K., Biberman, A., Foster, A. C., Foster, M. A., Lipson, M., Gaeta, A. L., and Bergman, K., Continuous wavelength conversion of 40-GB/s data over 100 nm using a dispersion-engineered silicon waveguide, **IEEE Phot. Technol. Lett.**, 23, 73, 2010.
86. Gabrielli, L.H. and Lipson, M., Transformation optics on a silicon platform, **J. Optics** 13, 024010, 2010 (invited).

87. Cardenas, J., Foster, M.A., Sherwood-Droz, N., Poitras, C.B., Lira, H.L.R., Zhang, B., Gaeta, A.L., Khurgin, J.B., Morton, P. and Lipson, M., Wide-bandwidth continuously tunable optical delay line using silicon microring resonators, **Opt. Express** 18, 26525, 2010.
88. Luo, L. W., Ibrahim, S., Nitkowski, A., Ding, Z., Poitras, C.B., Yoo, B.S.J., Lipson, M., High bandwidth on-chip silicon photonic interleaver, **Opt. Express** 18, 23079, 2010.
89. Manipatruni, S., Preston, K., Chen, L., Lipson, M., Ultra-low voltage, ultra-small mode volume silicon microring modulator, **Opt. Express** 18, 18235, 2010.
90. Biberman, A., Lee, B.G., Turner-Foster, A.C., Foster, M.A., Lipson, M., Gaeta, A.L. Bergman, K., Wavelength multicasting in silicon photonic nanowires, **Opt. Express**, 18, 17, 18047, 2010.
91. Manipatruni, S., Chen, L., Lipson, M., Ultra high bandwidth WDM using silicon microring modulators, **Opt. Express**. 18, 16858, 2010.
92. Broaddus, D.H., Foster, M.A., Kuzucu, O., Turner-Foster, A.C., Koch, K.W., Lipson, M. Gaeta, A.L., Temporal-imaging system with simple external-clock triggering, **Opt. Express** 18, 14262, 2010.
93. Biberman, A., Manipatruni, S., Ophir, N., Chen, L., Lipson, M. Bergman, K., First demonstration of long-haul transmission using silicon microring modulators, **Opt. Express** 18, 15544, 2010.
94. Biberman, A., Lee, B.G., Sherwood-Droz, N., Lipson, M. Bergman, K., Broadband Operation of Nanophotonic Router for Silicon Photonic Networks-on-Chip, **IEEE Photonics Technol. Lett.** 22, 926, 2010.
95. Nitkowski, A., Gondarenko, A., Lipson, M., On-chip supercontinuum optical trapping and resonance excitation of microspheres, **Opt. Lett.** 35, 1626, 2010.
96. Sherwood-Droz, N., Gondarenko, A., Lipson, M., Oxidized Silicon-On-Insulator (OxSOI) from bulk silicon: a new photonic platform, **Opt. Express** 18, 5785, 2010.
97. Turner-Foster, A.C., Foster, M.A., Levy, J.S., Poitras, C.B., Salem, R., Gaeta, A.L., Lipson, M., Ultrashort free-carrier lifetime in low-loss silicon nanowaveguides, **Opt. Express** 18, 3582, 2010.
98. Guha, B., Kyotoku, B.B.C., Lipson, M., CMOS-compatible athermal silicon microring resonators, **Opt. Express** 18, 3487, 2010.
99. Guha, B., Gondarenko, A., Lipson, M., Minimizing temperature sensitivity of silicon Mach-Zehnder interferometers, **Opt. Express**, 18, 1879, 2010.
100. Spadoti, D.H., Gabrielli, L.H., Poitras, C.B., Lipson, M., Focusing light in a curved-space, **Opt. Express** 18, 3181, 2010.
101. Lipson, M., Osgood, Jr. R.M., Shin, J.H., Wada, K., Introduction to the Special Issue on Silicon Photonics, **IEEE J. Sel. Topics Quantum Electron** 16, 4, 2010.
102. Turner-Foster, A.C., Foster, M.A., Salem, R., Gaeta, A.L., Lipson, M., Frequency conversion over two-thirds of an octave in silicon nanowaveguides, **Opt. Express**, 18, 3, 1904, 2010.
103. Kyotoku, B.B.C., Chen, L., Lipson, M., Sub-nm resolution cavity enhanced microspectrometer, **Opt. Express** 18, 102, 2010.
104. Dai, Y., Okawachi, Y., Turner-Foster, A.C., Lipson, M., Gaeta, A.L., Xu, C., Ultralong continuously tunable parametric delays via a cascading discrete stage, **Opt. Express** 18, 333, 2010.
105. Levy, J.S., Gondarenko, A., Foster, M.A., Turner-Foster, A.C., Gaeta, A.L., Lipson, M., CMOS-compatible multiple-wavelength oscillator for on-chip optical interconnects, **Nat. Photonics** 4, 37, 2009.



106. Lira, H.L.R., Manipatruni, S., Lipson, M., Broadband hitless silicon electro-optic switch for on-chip optical networks, **Opt. Express** 17, 25, 2009.
107. Wiederhecker, G.S., Chen, L., Gondarenko, A., Lipson, M., Controlling photonic structures using optical forces, **Nature** 462, 633, 2009.
108. Kuzucu, O., Okawachi, Y., Salem, R., Foster, M.A., Turner-Foster, A.C., Lipson M., Gaeta A.L., Spectral phase conjugation via temporal imaging, **Opt. Express** 17, 20605, 2009.
109. Thomas, T., Guo, X.M., Chandrashekar, M.V.S., Poitras, C.B., Shaff, W., Dreibelbis, M., Reiherzer, J., Li, K.W., DiSalvo, F.J., Lipson, M., Spencer M.G., Purification and mechanical nanosizing of Eu-doped GaN, **J. Crystal Growth** 311, 4402, 2009.
110. Foster, M.A., Salem, R., Okawachi, Y., Turner-Foster, A.C., Lipson M., Gaeta, A.L., Ultrafast waveform compression using a time-domain telescope, **Nat. Photonics** 3, 581, 2009.
111. Dai, Y.T., Chen, X.P., Okawachi, Y., Lipson, M., 1  $\mu$ s tunable delay using parametric mixing and optical phase conjugation in Si waveguides, **Opt. Express** 17, 16029, 2009.
112. Chen, L., Preston, K., Manipatruni, S., Lipson, M., Integrated GHz silicon photonic interconnect with micrometer-scale modulators and detectors, **Opt. Express** 17, 15428, 2009.
113. Dong, P., Chen, L., Xu, Q., Lipson, M., On-chip generation of high-intensity short optical pulses using dynamic microcavities, **Opt. Lett.** 34, 2315, 2009.
114. Gabrielli, L.H., Cardenas, J., Poitras, C.B., Lipson, M., Silicon nanostructure cloak operating at optical frequencies, **Nature Photonics** 3, 461, 2009.
115. Lee, B.G., Biberman, A., Sherwood-Droz, N., Poitras, C.B., Lipson, M., Bergman, K., High-Speed 2x2 Switch for Multiwavelength Silicon-Photonic Networks-On-Chip, **IEEE J. Lightwave Technol.** 27, 2900, 2009.
116. Lipson, M., Silicon Photonics: the optical spice rack, **Electron. Lett.** 45, 2009. (invited)
117. Cardenas, J., Poitras, C., Robinson, J., Preston, K., Chen, L., Lipson, M., Low Loss etchless silicon photonic waveguides, **Opt. Express**, 17, 4752, 2009.
118. Gondarenko, A., Levy, J.A., Lipson, M., High confinement micron-scale silicon nitride high Q ring resonator, **Opt. Express** 17, 11366, 2009.
119. Manipatruni, S., Robinson, J.T., Lipson, M., Optical nonreciprocity in optomechanical structures, **Phys. Rev. Lett.** 102, 213903, 2009.
120. Chen, L., Lipson, M., Ultra-low capacitance and high speed germanium photodetectors on silicon, **Opt. Express**, 17, 7901, 2009.
121. Dai, Y., Chen, X., Okawachi, Y., Turner-Foster, A.C., Foster, M.A., Lipson, M., Gaeta, A.L., Xu, C., 1 microsecond tunable delay using parametric mixing and optical phase conjugation in Si waveguides, **Opt. Express**, 17, 7004, 2009.
122. Broaddus, D.H., Foster, M.A., Agha, I.H., Robinson, J.T., Lipson, M., Gaeta, A.L., Silicon-waveguide-coupled high-Q chalcogenide microspheres, **Opt. Express** 17, 5998, 2009.
123. Syed, W., Hammer, D.A., Lipson, M., Study of nanosecond pulsed magnetic fields using temporally resolved Faraday rotation through a magneto-optical waveguide, **Opt. Lett.** 34, 1009, 2009.
124. Okawachi, Y., Salem, R., Foster, M.A., Turner-Foster, A.C., Lipson, M., Gaeta, A.L., High-resolution spectroscopy using a frequency magnifier, **Opt. Express**, 17, 5691, 2009.
125. Preston, K., Manipatruni, S., Gondarenko, A., Poitras, C.B., Lipson, M., Deposited silicon high-speed integrated electro-optic modulator, **Opt. Express**, 17, 5118, 2009.
126. Salem, R., Foster, M.A., Turner-Foster, A.C., Geraghty, D.F., Lipson, M., Gaeta, A.L., High-speed optical sampling using a silicon-chip temporal magnifier, **Opt. Express** 17, 4324, 2009.

127. Lee, B.G., Biberman, A., Turner-Foster, A.C., Foster, M.A., Lipson, M., Gaeta, A.L., Bergman, K., Demonstration of broadband wavelength conversion at 40 Gb/s in silicon waveguides, **IEEE Photonics Technol. Lett.** 21, 182, 2009.
128. Marconi, J.D., Arismar Cerqueira Jr., A., Robinson, J.T., Sherwood-Droz, N., Okawachi, Y., Hernandez-Figueroa, H.E., Lipson, M., Gaeta, A.L., Fragnito, H.L., Performance investigation of microphotonic-silicon devices in a field-trial all-optical network, **Opt. Commun.** 282, 849, 2009.
129. Preston, K., Lipson, M., Slot waveguides with polycrystalline silicon for electrical injection, **Opt. Express** 17, 1527, 2009.
130. Yang, A.H.J., Moore, S.D., Schmidt, B.S., Klug, M., Lipson, M., Erickson, D., Optical manipulation of nanoparticles and biomolecules in sub-wavelength slot waveguides, **Nature** 457, 71, 2009.
131. Foster, M.A., Salem, R., Geraghty, D.F., Turner-Foster, A.C., Lipson, M., Gaeta, A.L., Silicon-chip-based ultrafast optical oscilloscope, **Nature** 456, 81, 2008.
132. Manipatruni, S., Dong, P., Xu, Q., Lipson, M., Tunable superluminal propagation on a silicon micro-chip, **Opt. Lett.** 33, 2928, 2008.
133. Gondarenko, A., Lipson, M., Low modal volume dipole-like dielectric slab resonator, **Opt. Express** 16, 17689, 2008.
134. Robinson, J., Preston, K., Painter, O., Lipson, M., First-principle derivation of gain in high-index-contrast waveguides, **Opt. Express** 16, 16659, 2008.
135. Sherwood-Droz, N., Wang, H., Chen, L., Lee, B.G., Biberman, A., Bergman, K. and Lipson, M., Optical 4x4 hitless silicon router for optical Networks-on-Chip (NoC), **Opt. Express** 16, 15915, 2008.
136. Lee, B.G., Biberman, A., Dong, P., Lipson, M., Bergman, K., All-optical comb switch for multiwavelength message routing in silicon photonic networks, **IEEE Photonics Technol. Lett.** 20, 1041, 2008.
137. Manipatruni, S., Poitras, C. B., Xu, Q., Lipson, M., High speed electro-optic tuning of the optical quality factor of a silicon micro-cavity, **Opt. Lett.** 33, 1644, 2008.
138. Salem, R., Foster, M. A., Turner, A. C., Geraghty, D. F., Lipson, M., Gaeta, A. L., Optical time lens based on four-wave mixing on a silicon chip, **Opt. Lett.**, 33, 1047, 2008.
139. Turner, A. C., Foster, M. A., Gaeta, A. L., Lipson, M., Ultra-low power parametric frequency conversion in a silicon microring resonator, **Opt. Express** 16, 4881, 2008.
140. Preston, K., Dong, P., Schmidt, B., Lipson, M., High-speed all-optical modulation using polycrystalline silicon microring resonators, **Appl. Phys. Lett.** 92, 151104, 2008.
141. Robinson, J.T., Chen, L., Lipson, M., On-chip gas detection in silicon optical microcavities, **Opt. Express** 16, 4296, 2008.
142. Robinson, J.T., Lipson, M., Far-field control of radiation from an individual optical nanocavity: analogue to an optical dipole, **Phys. Rev. Lett.** 100, 043902, 2008.
143. Dong, P., Preble, S.F., Robinson, J.T., Manipatruni, S., Lipson, M., Inducing photonic transitions between discrete modes in a silicon optical microcavity, **Phys. Rev. Lett.** 100, 033904, 2008.
144. Foster, M.A., Turner, A.C., Lipson, M., Gaeta, A. L., Nonlinear optics in photonic nanowires, **Opt. Express** 16, 2, 2008.
145. Salem, R., Foster, M. A., Turner, A. C., Geraghty, D. F., Lipson, M., Gaeta, A. L., Signal regeneration using low-power four-wave mixing on silicon chip, **Nat. Photonics** 2, 35, 2008.

146. Preston, K., Schmidt, B., Lipson, M., Polysilicon photonic resonators for large-scale 3D integration of optical networks, **Opt. Express** 15, 17283, 2007.
147. Rong, S., Dong, P., Feng, N., Hong, C., Jurgen M., Lipson, M., Kimerling, L., Horizontal single and multiple slot waveguides: Optical transmission at  $\lambda = 1550$  nm, **Opt. Express** 15, 17967, 2007.
148. Schmidt, B.S., Yang, A.H., Erickson, D., Lipson, M, Optofluidic trapping and transport on solid core waveguides within a microfluidic device, **Opt. Express** 15, 14322, 2007.
149. Chen, L., Sherwood-Droz, N., Lipson, M., Compact bandwidth-tunable microring resonators, **Opt. Lett.** 32, 3361, 2007.
150. Foster, M.A., Turner, A.C., Salem, R., Lipson, M. and Gaeta, A.L., Broad-band continuous-wave parametric wavelength conversion in silicon nanowaveguides, **Opt. Express** 15, 12949, 2007.
151. Manipatruni, S., Xu, Q., and Lipson, M., PINIP based high-speed high-extinction ratio micron-size silicon electro-optic modulator, **Opt. Express** 15, 13035, 2007.
152. Dong, P., Preble, S.F., and Lipson, M., All-optical compact silicon comb switch, **Opt. Express**, 15, 9600, 2007.
153. Xu, Q., Dong, P., and Lipson, M., Breaking the delay-bandwidth limit in a photonic structure, **Nat. Phys.** 3, 406, 2007.
154. Salem, R., Foster, M.A., Turner, A.C., Geraghty, D.F., Lipson, M., and Gaeta, A.L., All-optical regeneration on a silicon chip, **Opt. Express** 15, 7802, 2007.
155. Preble, S., Xu, Q., and Lipson, M., Changing the color of light in a silicon resonator, **Nat. Phys.** 1, 293, 2007.
156. Lee, B.G., Small, B.A., Xu, Q., Lipson, M., and Bergman, K., Characterization of a 4x4 Gb/s parallel electronic bus to WDM optical link silicon photonic translator, **IEEE Photonics Technol. Lett.** 19, 456, 2007.
157. Schmidt, B., Xu, Q., Shakya, J., Manipatruni, S., and Lipson, M., Compact electro-optic modulator on silicon-on-insulator substrates using cavities with ultra-small modal volumes, **Opt. Express** 15, 3140, 2007.
158. Xu, Q., and Lipson, M., All-optical logic based on silicon micro-ring resonators, **Opt. Express**, 15, 924, 2007.
159. Lipson, M., Silicon photonics: An exercise in self-control, **Nat. Photonics** 1, 18, 2007.
160. Xu, Q., Manipatruni, S., Schmidt, B., Shakya, J., and Lipson, M., 12.5 Gbit/s carrier-injection-based silicon micro-ring silicon modulators, **Opt. Express** 15, 430, 2007.
161. Sharping, J.E., Lee, K.F., Foster, M.A., Turner, A.C., Schmidt, B.S., Lipson, M., Gaeta, A.L., and Kumar, P., Generation of correlated photons in nanoscale silicon waveguides, **Opt. Express** 14, 12388, 2006.
162. Robinson, J.T., Preble, S.F., and Lipson, M., Imaging highly confined modes in sub-micron scale silicon waveguides using transmission-based near-field scanning optical microscopy, **Opt. Express** 14, 10588, 2006.
163. Xu, Q., Schmidt, B., Shakya, J., and Lipson, M., Cascaded silicon micro-ring modulators for WDM optical interconnection, **Opt. Express** 14, 9430, 2006.
164. Guo, L., Krauss, T.D, Poitras C.B., and Lipson, M., Energy transfer between colloidal semiconductor nanocrystals in an optical microcavity, **Appl. Phys. Lett.** 89, 061104, 2006.
165. Poitras, C.B., Wu, H., Turner, A., Spencer, M.G., and Lipson, M., Luminescence dynamics and waveguide applications of europium doped gallium nitride powder, **Appl. Phys. Lett.** 89, 111912, 2006.

166. Lee, B., Xu Q., Lipson, M., and Bergman, K., Transmission of high data rate optical signals through a micron-scale silicon ring resonator, **Opt. Lett.**, 31, 2701, 2006.
167. Lipson, M., Compact electro-optic modulators on a silicon chip, **IEEE J. Sel. Top. Quantum Electron**, 12, 1520, 2006. (Invited).
168. Barrios, C., and Lipson, M., Silicon photonic read only memory, **IEEE J. Lightwave Technol.**, 24, 2898, 2006.
169. Foster, M. A, Turner, A. C, Sharpening J. F., Schmidt B. S., Lipson, M., and Gaeta A., Broadband optical parametric gain on a silicon photonic chip, **Nature** 441, 960, 2006.
170. Xu Q., Shakya, J., and Lipson, M., Direct measurement of tunable optical delays on chip analogue to electromagnetically induced transparency, **Opt. Express** 14, 6463, 2006.
171. Martinez, L., and Lipson, M. High confinement suspended micro-ring resonators in silicon-on-insulator, **Opt. Express** 14, 6259, 2006.
172. Chen, L., Shakya, J., and Lipson, M., Subwavelength light confinement in integrated metal slot waveguide on silicon, **Opt. Lett.** 31, 2133, 2006.
173. Turner, A. C., Manolatou, C., Schmidt, B., Lipson, M., Foster, M. A., Sharping, J. E., and Gaeta, A. L., Tailored anomalous group-velocity dispersion in silicon channel waveguides, **Opt. Express**, 14, 4362, 2006.
174. Gondarenko, A., Preble, S., Robinson, J., Chen, L., Lipson, H., and Lipson, M., Spontaneous emergence of periodic patterns in a biologically-inspired simulation of photonic structures, **Phys. Rev. Lett.** 96, 143904, 2006.
175. Okawachi, Y., Foster, M., Sharping, J., Gaeta, A., Xu, Q., and Lipson, M., All-optical slow-light on a photonic chip, **Opt. Express** 14, 2317, 2006.
176. Manolatou, C., and Lipson, M., All-optical silicon modulators based on carrier injection by two-photon absorption, **IEEE J. Lightwave Technol.** 24, 1433, 2006.
177. Xu, Q., Sandhu, S., Povinelli, M.L., Shakya, J., Fan, S., and Lipson, M., Experimental realization of an on-chip all-optical analogue to electromagnetically induced transparency , **Phys. Rev. Lett.** 96, 123901, 2006. (reviewed by R. Boyd and D. Gauthier Nature News and Views, 2006)
178. Xu, Q., and Lipson, M., Carrier-induced optical visibility in silicon ring resonators, **Opt. Lett.**, 31, 341, 2006.
179. DeFranco, J., Schmidt, B.S., Lipson, and M., Malliaras, G., Photolithographic Patterning of Organic Electronic Materials, **J. Org. Electron.** 7, 22, 2006.
180. Wu, H., Poitras, C. B., Lipson, M., and Spencer, M.G., [Photoluminescence and cathodoluminescence analyses of GaN powder doped with Eu](#), **Appl. Phys. Lett.** 88, 011921, 2006.
181. Bhatnagar, P., Mark, S.S., Kim, I., Chen, H., Schmidt, B.S., Lipson, M., and Batt, C., Dendrimer scaffold based electron beam patterning of biomolecules, **Adv. Mat.**, 18, 315, 2006.
182. Barrios, C., and Lipson, M., Electrically-driven silicon resonant light emitting device based on slot-waveguide, **Opt. Express**, 13, 10092, 2005.
183. Preble, S. F., Xu, Q., Schmidt, B. S., and Lipson, M., Ultrafast all-optical modulation on a silicon chip, **Opt. Lett.**, 30, 2891, 2005.
184. Robinson, J. T., Manolatou, C., Chen, L., and Lipson, M., Ultra small mode volumes in dielectric optical microcavities, **Phys. Rev. Lett.** 95, 143901, 2005.
185. Lipson, M., Guiding, modulating and emitting light on silicon - challenges and opportunities, **IEEE J. Lightwave Technol.** 23, 4222, 2005 (Invited).
186. Almeida, V., Xu, Q., and Lipson, M., Ultrafast integrated semiconductor optical modulator based on the plasma-dispersion effect, **Opt. Lett.** 30, 2403, 2005.

187. Xu, Q., Almeida, V., and Lipson, M., Micrometer-scale all-optical wavelength converter on silicon, **Opt. Lett.** 30, 2733, 2005.
188. Xu, Q., Schmidt, B., Pradhan, S., and Lipson, M., Micrometer-scale silicon electro-optic modulator, **Nature** 435, 325, 2005.
189. Wu, H., Poitras, C.B., Lipson, M., Spencer, M. G., Hunting, J., and DiSalvo, F.J., Green emission from Er-doped GaN powder, **Appl. Phys. Lett.** 86, 191918, 2005.
190. Preble, S.F., Lipson, H., and Lipson, M., Novel two-dimensional photonic crystals designed by evolutionary algorithms, **Appl. Phys. Lett.** 86, 6111, 2005. (*GECCO 2005 Gold Medal for Human Competitive Automated Invention*)
191. Q. Xu, Almeida, V.R., and Lipson, M., Demonstration of high Raman gain in a submicrometer-size silicon-on-insulator waveguide, **Opt. Lett.** 30, 35, 2005.
192. Barrios, C., and Lipson, M., Modeling and analysis of high-speed electro-optic modulation in high confinement silicon waveguides using metal-oxide-semiconductor configuration, **J. Appl. Phys.** 96, 6008, 2004.
193. Almeida, V. R., Barrios, C. A., Panepucci, R. R., and Lipson, M., All-optical control of light on a silicon chip, **Nature** 431, 1081, 2004.
194. Almeida, V.R., and Lipson, M., Optical bistability on a silicon chip, **Opt. Lett.** 29, 2387, 2004.
195. Xu, Q., Almeida, V.R., and Lipson, M., Time-resolved study of Raman gain in highly confined silicon-on-insulator waveguides, **Opt. Express** 12, 4437, 2004.
196. Xu, Q., Almeida, V.R., Panepucci, R.R., and Lipson, M., Experimental demonstration of guiding and confining light in nanometer-size low-refractive-index material, **Opt. Lett.** 29, 1626, 2004.
197. Schmidt, B.S., Almeida, V., Manolatu, C., Preble, S., and Lipson, M., Nano-cavity in a silicon waveguide for ultra-sensitive detection, **Appl. Phys. Lett.** 85, 4854, 2004.
198. Almeida, V. R., Xu, Q., Barrios, C. A., and Lipson, M., Guiding and confining light in void nanostructure, **Opt. Lett.** 29, 1209, 2004.
199. Almeida, V. R., Barrios, C. A., Panepucci, R. R., Lipson, M., Foster, M.A., Quzounov, D. G., and Gaeta, A.L., All-optical switching on a silicon chip, **Opt. Lett.** 29, 2867, 2004.
200. Barrios, C. A., Almeida, V., Panepucci, R.R., Schmidt, B. S., and Lipson, M., Compact silicon tunable Fabry-Pérot resonator with low power consumption, **IEEE Photonics Technol. Lett.**, 16, 506, 2004.
201. Barrios, C. A., Almeida, V. R., Panepucci, R. R., and Lipson, M., Electro-optic modulation of silicon-on-insulator submicron-size waveguide devices, **IEEE J. Lightwave Technol.** 21, 2332, 2003.
202. Barrios, C.A., Almeida, V. R., and Lipson, M., Low-power-consumption short-length and high-modulation-depth silicon electro-optic modulator, **IEEE J. Lightwave Technol.** 21, 1089, 2003.
203. Poitras, C. B., Lipson, M., Hahn, M. A, Du, H., and Krauss, T.D., Photoluminescence enhancement of colloidal quantum dots embedded in a monolithic microcavity, **Appl. Phys. Lett.** 82, 4032, 2003.
204. Almeida, V. R., Panepucci, R. R., and Lipson, M., Nano-taper for compact mode conversion, **Opt. Lett.** 28, 1302, 2003.
205. Lipson, M., Chen, T., Chen, K., Duan, K., and Kimerling, L.C., Erbium in Si-based light confining structures, **Mat. Sci. Eng. B** 81, 36, 2001.

206. Lipson, M., and Kimerling, L. C., Strong Er/sup 3+/-photon Interaction, **Opt. Mat.** 16, 47, 2001.
207. Lipson, M, Chen, T.D., Lim, D.R., and Kimerling, L. C., Er/sup 3+/-photon interaction, **J. Lumin.** 87, 323, 2000.
208. Lipson, M., and Kimerling, L., Er<sup>3+</sup> in strong light-confining microcavity, **Appl. Phys. Lett.** 77, 1150, 2000.
209. Levy, E., Peles, D., Opher-Lipson, M., and Lipson, S. G., Random target method of measuring modulation transfer function, **Appl. Opt.** 38, 679, 1999.
210. Opher-Lipson, M., Cohen, E., Armitrage, A., Skolnick, M.S., Fischer, T. A., and Roberts, J. S., Confined excitons, landau transitions and cavity mode coupling in GaAs microcavities, **Phys. Rev. B** 59, 10261, 1999.
211. Chen, T. D., Platero, M., Opher-Lipson, M., Palm, J., Michel, J., and Kimerling, L.C., The temperature dependence of radiative and non-radiative processes at Er-O centers in Si, *Phys. Rev. B: Conden. Matter*, 273, 322, 1999.
212. Opher-Lipson, M., Cohen, E., Fischer, T. A., Skolnick, M.S., Linder, E., and Roberts, J. S., Photoluminescence in GaAs/AlGAs microcavities, **J. Lumin.** 72, 386, 1997.
213. Opher-Lipson, M., Cohen, E., and Pfeiffer, L.N., Spectral line splitting due to exciton-photon interaction in GaAs/AlAs multiple quantum wells, **Phys. Rev. B** 55, 13778, 1997.

#### **Books**

1. Gregorkiewickz, T., Fujiwara, Y., Lipson, M., and Zavada, J. Editor(s), Rare earth doping for optoelectronic applications, MRS Symposium Proceedings, 866 Spring 2005.
2. Lipson, M., Barbastathis, G., Dutta, A.K., and Asakawa, K., Editor(s), Nanophotonics for communication: materials and devices, Proceedings of SPIE, Vol 5597, Oct. 2004.
3. Pollock, C., and Lipson, M., Integrated Photonics, Kluwer Academic Publishers, Boston, MA, Nov. 2003, ISBN 1402076355.

#### **Invited, Keynote, Plenary Talks (2010-2016)**

##### Conferences

Tel Aviv University Center for Light-Matter Interaction Opening Ceremony “Next Generation Photonics”, Tel Aviv, October 27<sup>th</sup>, 2016 (**Keynote**)

Frontiers in Optics/Laser Science 2014, “Next Generation Photonics”, Rochester, New York, October 17-21 2016 (**Plenary**)

European Optical Society Annual Meeting (EOSAM),” Next Generation Photonics”, Berlin - Germany September 26<sup>th</sup> 2016 (**Plenary**)

SPIE Photonic West 2017 Conference: International Symposium on Ultrafast Phenomena and Nanophotonics XXI, “Silicon photonics” San Francisco, CA January 28 – Feb 2 2017 (**Keynote**)

UNICAMP-University of Campinas, São Paulo School of Advanced Science, “Silicon photonics”, Campinas, Brazil, July 17-29, 2016.

2016 IEEE International Frequency Control Symposium, “High Quality On-Chip Resonators for Frequency Combs” New Orleans, Louisiana, May 9-12 2016

Heat Transfer and Heat Conduction on the Nanoscale: WE-Heraeus-Seminar, “Radiative Heat Transfer Investigated by Means of Micro Structured Devices”, Bad Honnef, Germany, April 10-15, 2016

George Stegeman Memorium Symposium, “On-chip Nanophotonics”, University of Central Florida College of Optics and Photonics, January 7, 2016

The Fio-International Year of Light 2015 Celebration, University of Sydney, “Public lecture that looks forward and imagines the future”, Sydney, Australia, December 8, 2015 **(Keynote)**

Micro + Nano Materials, Devices, and Applications Conference, SPIES, “Strong Interaction between Photons, Phonons, and Electrons Enabled, by Silicon Photonics”, Sydney, Australia, December 7, 2015. **(Plenary)**

International Symposium on Photonic and Electronic Convergence 2015, “Silicon Photonics”, Tokyo, Japan, November 30-December 2, 2015.

The 2015 Optical Society Annual Meeting, International Year of Light Session, “Frontiers in Optics”, San Jose, CA, October 18-22, 2015 .

The 39<sup>th</sup> Annual Conference of the Division of Atomic, Molecular, and Optical Physics, The Dutch Physical Society AMO Meeting, “Extreme Manipulation of Light Using Nano Photonics”, Lunteren, Netherlands, October 13-14, 2015. **(Keynote)**

The 2015 Blavatnik Science Symposium, “Computing at the Speed of Light” The New York Academy of Science, New York, NY, August 6, 2015 **(Keynote)**

Advances in Photonics of Quantum Computing, Memory, and Communication: SPIE Photonics West, “Breaking reciprocity on-chip”, San Francisco, CA, February 7-12, 2015.

Slow Light, Fast Light, and Opto-Atomic Precision Metrology VIII: SPIE Photonics West, “Materials for on-chip optical combs”, San Francisco, CA, February 7-12, 2015.

Topological Phenomena in Optics and Photonics, “Effective magnetic field for light on a chip”, Snowbird, UT, January 4-8, 2015.

Frontiers in Optics/Laser Science 2014 (FiO/LS), “Nonlinear Optics in Micro and Nano-Optical Structures”, Tucson, AZ, October 19-23, 2014.

The 8<sup>th</sup> International Congress on Advanced Electromagnetic Materials in Microwaves and Optics, “Inducing photonic transitions for enabling next generation Silicon Photonics”, Copenhagen, Denmark, August 25-30, 2014.

Integrated Photonics Research, Silicon and Nanophotonics, “Photonic transitions enabling novel silicon photonics devices”, San Diego, CA, July 13-17, 2014.

IEEE Photonics Society Summer Topicals, “Nonlinear silicon photonics”, Montreal, Canada, July 14-16, 2014.

OptoElectronics and Communications Conference and Australian Conference on Optical Fibre Technology, “Breaking the limitations of silicon photonics”, Melbourne, Australia, July 6-10, 2014.

ASML Technology Conference, “Manipulating light on chip”, Stamford, CT., June 18, 2014. **(Plenary)**

The 58<sup>th</sup> International Conference on Electron, Ion, and Photon Beam Technology and Nanofabrication, “Silicon photonics: the optical spice rack”, Washington, DC, May 27-30, 2014.

SPIE Europe 2014, “Pushing the boundaries of silicon photonics”, Brussels, Belgium, April 14-17, 2014. **(Plenary)**

2014 Mechanical Systems in the Quantum Regime Gordon Research Conference, “Synchronization of mechanical oscillators using light”, Ventura, CA, March 9-14, 2014.

SPIE- Photonics West OPTO “Pushing the boundaries of silicon photonics”, San Francisco, CA, February 1-6, 2014. **(Plenary)**

Optical Society of America (OSA) Annual Meeting- (FiO), “Silicon photonics”, Orlando, FL, October 6-10, 2013.

Progress In Electromagnetics Research Symposium (PIERS), “Photonic transitions for enabling non reciprocity in silicon”, Stockholm, Sweden, August 12-15, 2013. **(Keynote)**

Progress In Electromagnetics Research Symposium (PIERS), “Control of near-field heat transfer in nanostructures”, Stockholm, Sweden, August 12-15, 2013.

Conference on Lasers and Electro Optics (CLEO) Pacific Rim, “Inducing photonic transitions for enabling next generation silicon photonics”, Kyoto, Japan, June 30-July 4, 2013.

Atomic Physics Gordon Conference, “Fundamental phenomena in high confinement photonics”, Salve Regina University, Newport, RI, June 23-28, 2013.

Rochester Conferences on Coherence and Quantum Optics, “Silicon photonic platform for quantum optics”, Rochester, NY June 16-20, 2013.

Conference on Lasers and Electro Optics (CLEO), “Silicon photonics devices and applications”, San Jose, CA, June 9-14, 2013.

Workshop on Optical Nanofiber Applications: Quantum and Bio Technologies, “Nonlinear silicon photonics”, Okinawa, Japan, June 1-7, 2013.

The Royal Society discussion meeting: e-Futures: beyond Moore’s Law, “Ultra high speed photonics on-chip”, London, England, May 13-14, 2013.

SPIE- Photonics West OPTO, “Resonant multimode photonic structures on-chip”, San Francisco, CA, February 2-7, 2013.

14<sup>th</sup> International Meeting on Optical Engineering and Science in Israel, “Manipulating light on chip”, Tel Aviv, Israel, February 18-20, 2013.

Symposium on Nanophotonics for Detection and Sensing, Israel, “Fundamental phenomena in high confinement photonics”, Institute of Technology, Israel, January 20-21, 2013. **(Keynote)**

European Physical Society International Topical Meeting on Nanophotonics and Metamaterials, “Si nanophotonics for manipulating light in curved spaces in the optical domain”, Seefeld, Austria, January 3-6, 2013.

Photonics Global Conference, “Silicon photonics”, Singapore, December 13-16, 2012.

Optics and Photonics Taiwan, International Conference, “High confinement silicon photonics”, Taipei, Taiwan, December 6-8, 2012. **(Plenary)**

OptoElectronics and Communications Conference, “Silicon photonics”, Busan, Korea, July 2-6, 2012. **(Plenary)**

Centre for Advanced Systems and Technologies in Communications Summer School, McGill University, “Silicon photonics”, Montreal, Quebec, June 14-15, 2012. **(Keynote)**

Tri-Service Metamaterials Applications Conference, “Transformation optics”, Norfolk, VA, May 22-25, 2012.

Optical Society of America (OSA) Mesoscale Photonics Incubator Meeting, “Photonic circuits and optomechanical structures for sensing”, Washington, DC, May 2-4, 2012.

NSF Workshop on Micro, Nano and Bio, “Photonics on a silicon chip”, Washington, DC, March 30-31, 2012.

NSA/DOE Photonics and Electronics Technology for Extreme Scale Computing (PETE), “Microring technology”, DC, March 19 -20, 2012.

NSF Workshop on Emerging Technologies for Interconnects, “Nanophotonic technologies”, Arlington, VA, February 2 -3, 2012.

Workshop on Laser Dynamics and Nonlinear Photonics, “Optomechanics in silicon Nanostructures”, Colonia del Sacramento, Uruguay, December 6 – 9, 2011.

Optical Society of America (OSA) Annual Meeting-Frontiers in Optics (FiO), “Silicon photonics”, San Jose, CA, October 16 – 20, 2011.



Optical Society of America (OSA) Annual Meeting-Frontiers in Optics (FiO), “High confinement photonics for on-chip sensing”, San Jose, CA, October 16 – 20, 2011.

Conference on Lasers and Electro-Optics (CLEO) Pacific Rim 2011, “Nonlinear silicon photonics”, Sydney, Australia, August 28 – September 1, 2011.

IEEE International Conference on Optical MEMS & Nanophotonics, “Silicon Optomechanics”, Istanbul, Turkey, August 8 – 11, 2011.

Nonlinear Optics - Optical Society of America (OSA) Topical Meeting, “Tunable optomechanical cavities”, Kauai, Hawaii, July 17 – 22, 2011.

Conference on Lasers and Electro-Optics (CLEO) Europe, “Manipulating light on chip”, Munich, Germany, May 22 – 26, 2011. (**Keynote**)

The International Conference Nanoscale Materials and Devices for Energy Conversion, “Manipulating light on chip”, Natal, Brazil, April 4 – 6, 2011 (**Plenary**)

Optical Fiber Communications Conference (OFC), “silicon photonics”, Los Angeles, CA, March 8 – 10, 2011.

#### Selected Invited Seminars

Brookhaven National Laboratory, “Manipulating Light on Chip”, May 19, 2016

The ECE Distinguished Lectures Series of the University of Toronto, “Silicon Photonics: The Optical Spice Rack”, Toronto, Canada, November 19, 2015

ETH Zurich Physics Colloquium, Zurich, Switzerland, “On-chip Nanophotonics - The Optical Spice Rack”, September 30, 2015

Harvard University, “Inducing photonics transitions for enabling next generation silicon photonics”, November 5, 2014.

University of Delaware, “Silicon Photonics: the optical spice rack”, October 29, 2014.

University of Maryland, “Silicon Photonics: the optical spice rack”, September 15, 2014.

University of Sao Paulo, Brazil, “Silicon Photonics: the optical spice rack”, August 5, 2014.

2014 CREOL Distinguished Seminar Series, University of Central Florida, “Silicon photonics: the optical spice rack”, April 11, 2014.

Vanderbilt University, “Silicon photonics: the optical spice rack”, April 4, 2014.

McGill University, “Silicon photonics: the optical spice rack, March 28, 2014.

Massachusetts Institute of Technology, “On-chip Nanophotonics – The Optical Spice Rack” March 19, 2014

University of Texas at Austin, Center for Nano and Molecular Science, “Silicon photonics: the optical spice rack”, January 15, 2014.

Stanford University, “Silicon photonics: the optical spice rack”, October 28, 2013.

MIT, “Pushing the boundaries of silicon photonics”, October, 16, 2013.

University of Trento, “Pushing the boundaries of silicon photonics”, March 25, 2013.

Ben-Gurion University, “Manipulating light on chip”, February 18, 2013.

University of Louisville, “Optics on the nanoscale”, January 11, 2013.

Duke University, “Silicon photonics”, October 10, 2012.

Center for Ultracold Atoms (CUA) at MIT and Harvard University, “Fundamental phenomena in photonics”, October 2, 2012.

Stanford University, “Silicon photonics”, September 17, 2012.

University of Pennsylvania, “Silicon photonics”, November 11, 2011.

GE Global Research, “Silicon photonics”, September 30, 2011.  
Princeton University, “Manipulating light on chip”, September 21, 2011.  
JILA Colorado University, “Manipulating light on chip”, Boulder, April 15, 2011.  
MIT, “Manipulating light on chip”, March 30, 2011.  
University of Illinois at Urbana-Champaign, “Manipulating Light on Chip”, March 15, 2011.  
University of Connecticut, “Manipulating light on chip”, March 14, 2011.  
University of Pennsylvania, Wharton School Emerging Technology Days, “Invisibility cloaks: controlling & manipulating light”, February 25, 2011.

Invited short Courses

Conference on Lasers and Electro Optics (CLEO), San Jose, CA, “Silicon photonic devices and applications”, May 10-15, 2015.  
International School of Physics “Enrico Fermi”, Varenna, Lake Como, Italy, “Frontiers in Modern Optics”, June 30-July 5, 2014.  
Conference on Lasers and Electro Optics (CLEO), San Jose, CA, “Silicon photonic devices and applications”, June 8-13, 2014.  
Conference on Lasers and Electro Optics (CLEO), San Jose, CA, “Silicon photonic devices and applications”, June 9-14, 2013.  
7<sup>th</sup> Optoelectronics and Photonics Winter School, Trento, Italy, “Silicon photonics”, March 16-22, 2013.  
International Center for Theoretical Physics (ICTP) Workshop on Nanophotonics, Trieste, Italy, “Silicon nanophotonics”, December 3-7, 2012.  
EPS Europhoton Conference on Solid-State and Fiber and Waveguide Coherent Light Sources, Stockholm, Sweden, “Silicon photonics”, August 26-31, 2012.  
Conference on Lasers and Electro Optics (CLEO), San Jose, CA, “Silicon photonics”, May 6-11, 2012.

**Patents Awarded**

1. Michal Lipson, Paul McEuen, Arthur Barnard, Sasikanth Manipatruni, Mian Zhang, Gustavo Wiederhecker, Optomechanical oscillator network, control and synchronization methods, and applications **Patent number:** 9389413 (2016)
2. David Erickson, Michal Lipson, Allen Yang, Brad Schmidt, Sean Moore, Optical force based biomolecular analysis in slot waveguides, **Patent number:** 9322995 (2016)
3. Mark Foster, Alexander Gaeta, David Geraghty, Michal Lipson, Reza Salem, Amy Foster, Apparatus for imparting phase shift to input waveform, **Patent No.** 9323284 (2016)
4. Lipson, M., Gaeta, A., Salem, Reza., Foster, Mark., Geraghty, David., Park, Menlo., Foster, Amy., Glencoe, Sparks., High-speed Optical Sampling by Temporal Stretching Using Four-wave Mixing **Patent No.** 9291509 (2016)
5. Lipson, M., Manipatruni, S., Chen, Long., Preston, K., Electro-optic Modulator Structures, Related Methods and Applications, **Patent No.** 9217830 (2015)
6. Lipson, M., Manipatruni, S., Wiederhecker, G., Tunable Optical Apparatus, Method and Applications, **Patent No.** 9057829 (2015)
7. Lipson, M., Preble, S., Dynamic Wavelength Converter, **Patent No.** 9086584 (2015)
8. Foster, Mark., Gaeta, A., Geraghty, D., Lipson, M., Salem, R., Foster, A., Apparatus for Imparting Phase Shift to Input Waveform, **Patent no.** 9182776 (2015)

9. Lipson, M., Preston, K., Polysilicon Photodetector, Methods and Application, **Patent No. 9153715** (2015)
10. Lipson, M., Gabrielli, S.G., Johnson, S.G., and Liu, D., Controlled inter-mode cross-talk in optical waveguides, **Patent No. 9031362** (2015).
11. Nitkowski, A., and Lipson, M., Cavity-enhanced on-chip absorption spectroscopy, **Patent No. 8992836** (2015).
12. Manipatruni, S., Dokania, R., Apse, A., and Lipson, M., Apparatus and methods for wide temperature range operation of micrometer-scale silicon electro-optic modulators, **Patent No. 8824036** (2015).
13. Lipson, M., and Preston, K., Polysilicon photodetector, methods and applications, **Patent No. 8861909** (2014).
14. Lipson, M., Manipatruni, S., Preston, K., and Schmidt, B., Semiconductor high-speed integrated electro-optic devices and methods, **Patent No. 8805130** (2014).
15. Xu, Q., Lipson, M., Optical logic device, **Patent No. 8731355** (2014).
16. Lipson, M., Gondarenko, A., Sherwood, N., Waveguide structure and related fabrication method, **Patent No. 8655138** (2014).
17. Kimerling, L. C., Atwater, H., Brongersma, M. L., Dal Negro, L., Koch, T. L., Fauchet, P., Lipson, M., Michel, J., Barrios, C. A., Electrically pumped extrinsic semiconductor optical amplifier with slot waveguide, **Patent No. 8619358** (2013).
18. Lipson, M., Manipatruni, S., Lira, H. L., Pin diode tuned multiple ring waveguide resonant optical cavity switch and method, **Patent No. 8606055** (2013).
19. Manipatruni, S., Lipson, M., Electro-optic modulator, **Patent No. 8488917** (2013).
20. Lipson, M., Guha, B., Passively-thermally-stabilized photonic apparatus, method and applications, **Patent No. 8457453** (2013).
21. Manipatruni, S., Xu, Q., Lipson, M., Electro-optical Modulator, **Patent No. 8295655** (2012).
22. Foster, M., Gaeta, A., Lipson, M., Sharping, J., Turner, A., Silicon integrated photonic optical parametric amplifier oscillator and wavelength converter, **Patent No. 8041157** (2011).
23. Lipson, M., Schmidt, B., Pradhan, S., Xu, Q., Electro-optic modulation, **Patent No. 7751654** (2010).
24. Barrios, C. A., Lipson, M., Light emitting slot-waveguide device, **Patent No. 7606455** (2009).
25. Lipson, M., Barrios, C., Rosa De Almeida, V., Waveguide structure for guiding light in low-index material, **Patent No. 7519257** (2009)
26. Rosa De Almeida; V., Barrios, C., Panepucci, R., Lipson, M., Light scattering optical resonator, **Patent No. 7536070** (2009).
27. Barrios, C., Lipson, M., Rosa De Almeida, V., Electro-optic modulator on rib waveguide, **Patent No. 7555173** (2009).
28. Rosa De Almeida, V., Barrios, C., Panepucci, R., Lipson, M., Optically controlled photonic switch, **Patent No. 7400798** (2008).
29. Rosa De Almeida, V., Barrios, C. A., Panepucci, R., Lipson, M., Light scattering optical
30. Resonator, **Patent No. 7184632** (2007).
31. Loo, L., Lipson, M., Gleason, K., Kimerling, L., Air gaps for optical applications, **Patent No. 7227678** (2007).
32. Panepucci, R., Ilic, B., Lipson, M., Rosa De Almeida, V., Optical waveguide displacement sensor, **Patent No. 7274835** (2007).

33. Joannopoulous, J., Fan, S., Lipson, M., Chen, K., Kimerling, L., Tunable Chromatic Dispersion Compensation, **Patent No. 7190853** (2007).
34. Lipson, M., Rosa De Almeida, V., Barrios, C., High-index contrast distributed Bragg reflector, **Patent No. 7113673** (2006).
35. Lipson, M., Kimerling, L., All optical switch for optical integrated circuits, **Patent No. 6684003** (2004).
36. Lipson, M., Kimerling, L., Microcavity amplifiers, **Patent No. 6567209** (2003).
37. Fan, S., Joannopoulos, J., Kenney, G., Lipson, M., Chen, K., Kimerling, L., Thin film filters using omnidirectional reflectors, **Patent No. 6624945** (2003).
38. Lipson, M., Kimerling, L., Resonant microcavities, **Patent No. 6627923** (2003).