MICHAL LIPSON, PHD

Eugene Higgins Professor, Columbia University
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PROFILE: MacArthur Fellow, pioneer in the field of silicon photonics, 45+ US patents granted; Thomson-Reuters top 1% most highly cited researcher in physics , 300+ technical publications 40,000+ citations; *h*-index: 104

ADDRESS

Department of Electrical Engineering
Columbia University
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EDUCATION

B.S. Physics, Technion, Israel, 1992

M.S. Physics, Technion, Israel, 1994

Ph.D. Physics, Technion, Israel, 1998

ACADEMICS

Eugene Higgins Professor of Electrical Engineering, Columbia University, Columbia University, 2015-present

Given Professor of Engineering, School of Electrical and Computer Engineering, Cornell University, 2013-2015

Associate Professor, School of Electrical and Computer Engineering, Cornell University, 2007-2013

Assistant Professor, School of Electrical and Computer Engineering, Cornell University, 2001 – 2007

Postdoctoral Associate, Department of Material Science, Massachusetts Institute of Technology (MIT) 1999 – 2001

HONORS AND AWARDS

2021 John Tyndall Award, IEEE Photonics Society and OSA, 2020

Elected member of the American Academy of Arts and Sciences, 2020

Erna Hamburger Award, 2020

Comstock Prize in Physics (NAS), 2019

Member of the National Academy of Sciences (NAS), 2019

IEEE Photonics Award, 2019

Honorary Degree of Doctor in Science, Trinity College of Dublin, 2018

R. W. Wood Prize, Optical Society of America (OSA), 2017

Thomson-Reuter, top 1% most highly cited researcher in Physics every year since 2014

IEEE Fellow, 2013

MacArthur Fellow, 2010

Blavatnik Award, NY State Academy of Science, 2010

Optical Society of America (OSA) Fellow, 2007

Fulbright Fellowship, 2007

IBM Faculty Award, 2006

NSF CAREER Award, 2004

ADVISORY BOARD MEMBERSHIP

Vice President, Optical Society of America, (2020-2021)

Elected Member of National Academy of Science (NAS), (2019-)

Scientific board member, The Flagship on Photonics Research and Innovation (PREIN), Finland, (2019)

Evaluation Committee in the Field of Physics - Israel Council for Higher Education (2018)

National Academies AMO Decadal Survey Committee (2018)

Scientific Board Member, the Quantum Valley Ideas Lab (QVIL), Waterloo, CA (2018-)

Elected Board Member, Optical Society of America, (2016-2019)

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-)

Co-Founder and Board Member, PicoLuz, Inc. (2009-)

Board Member, CRANN Nanoscience Institute, Trinity College Dublin, Ireland (2012-)

Editorial advisory Board Member, Advanced Optical Materials (2014-2016)

Elected Member of the Board of Governors, IEEE Photonics (2009-2012).

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

Advisory Board Member, IEEE Photonics Journal, (2008-2012)

SELECTED SOCIETY AND CONFERENCE ORGANIZATION LEADERSHIP

General Chair, Conference on Lasers and Electro Optics (CLEO), San Jose, CA, 2019

{Program, Chair, Conference on Lasers and Electro Optics (CLEO), San Jose, CA, 2018

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

Member, OSA Joseph Fraunhofer Award/Robert M. Burley Prize Committee, 2017

Organizer, Workshop on Emerging Topics in Optics, institute for match 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

Member, IEEE 2013 Young Investigator Award Committee 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

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

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 21st Annual Meeting of the IEEE Lasers and Electro-Optics (IEEE/LEOS) Society, Newport 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, Guaruja, 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.

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

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: =49118, H-INDEX: 111 (GOOGLE SCHOLAR)]

1. You-Chia Chang, Min Chul Shin, Christopher T Phare, Steven A Miller, Euijae Shim, and Michal Lipson, “2D beam steerer based on metalens on silicon photonics”, Optics Express, vol. 29, pp. 854-864, 2021

2. Renato R. Domeneguetti, Yun Zhao, Xingchen Ji, Marcelo Martinelli, Michal Lipson, Alexander L. Gaeta, and Paulo Nussenzveig, “Parametric sideband generation in CMOS-compatible oscillators from visible to telecom wavelengths”, Optica, vol. 8, pp. 316-322, 2021

3. Min Chul Shin, Aseema Mohanty, Kyle Watson, Gaurang R Bhatt, Christopher T Phare, Steven A Miller, Moshe Zadka, Brian S Lee, Xingchen Ji, Ipshita Datta, and Michal Lipson, “Chip-scale blue light phased array”, Optics Letters, vol. 45, pp. 1934-1937, 2020

4. Chaitali Joshi, Alessandro Farsi, Avik Dutt, Bok Young Kim, Xingchen Ji, Yun Zhao, Andrew M Bishop, Michal Lipson, and Alexander L Gaeta, “Frequency-Domain Quantum Interference with Correlated Photons from an Integrated Microresonator”, Physical Review Letters, vol. 124, pp. 143601, 2020

5. Gaurang R Bhatt, Bo Zhao, Samantha Roberts, Ipshita Datta, Aseema Mohanty, Tong Lin, Jean-Michel Hartmann, Raphael St-Gelais, Shanhui Fan, and Michal Lipson, “Integrated near-field thermo-photovoltaics for heat recycling”, Nature Communications, vol. 11, pp. 1-7, 2020

6. Yun Zhao, Yoshitomo Okawachi, Jae K Jang, Xingchen Ji, Michal Lipson, and Alexander L Gaeta, “Near-degenerate quadrature-squeezed vacuum generation on a silicon-nitride chip”, Physical Review Letters, vol. 124, pp. 193601, 2020

7. Yoshitomo Okawachi, Mengjie Yu, Jae K Jang, Xingchen Ji, Yun Zhao, Bok Young Kim, Michal Lipson, and Alexander L Gaeta, “Demonstration of chip-based coupled degenerate optical parametric oscillators for realizing a nanophotonic spin-glass”, Nature Communications, vol. 11, pp. 1-7, 2020

8. Yun Zhao, Xingchen Ji, Bok Young Kim, Prathamesh S. Donvalkar, Jae K. Jang, Chaitanya Joshi, Mengjie Yu, Chaitali Joshi, Renato R. Domeneguetti, Felippe A. S. Barbosa, Paulo Nussenzveig, Yoshitomo Okawachi, Michal Lipson, and Alexander L. Gaeta, “Visible nonlinear photonics via high-order-mode dispersion engineering”, Optica, vol.7, pp. 135-141,2020
9. Ipshita Datta, Sang Hoon Chae, Gaurang R Bhatt, Mohammad Amin Tadayon, Baichang Li, Yiling Yu, Chibeom Park, Jiwoong Park, Linyou Cao, DN Basov, James Hone, Michal Lipson, “Low-loss composite photonic platform based on 2D semiconductor monolayers”, Nature Photonics, pp. 1-7, 2020
10. Aseema Mohanty, Qian Li, Mohammad Amin Tadayon, Samantha P Roberts, Gaurang R Bhatt, Euijae Shim, Xingchen Ji, Jaime Cardenas, Steven A Miller, Adam Kepecs, Michal

Lipson, “Reconfigurable nanophotonic silicon probes for sub-millisecond deep-brain optical stimulation”, Nature Biomedical Engineering, vol. 4, pp. 1-9,2020

11. Yun Zhao, Jae K Jang, Xingchen Ji,Michal Lipson, Alexander L Gaeta,“Near-degenerate quadrature-squeezed vacuum generation on a silicon-nitride chip”, arXiv preprint arXiv:2002.01082, 2020
12. Steven A. Miller, You-Chia Chang, Christopher T. Phare, Min Chul Shin, Moshe Zadka, Samantha P. Roberts, Brian Stern, Xingchen Ji, Aseema Mohanty, Oscar A. Jimenez Gordillo, Utsav D. Dave, and Michal Lipson, “Large-scale optical phased array using a low-power multi-pass silicon photonic platform”, Optica, vol. 7, pp. 3-6, 2020.
13. A.L. Gaeta, M Lipson, T.J. Kippenberg “Photonic-chip-based frequency combs” Nature Photonics, Vol. 13, pp. 158-159, 2019.
14. D. Waldburger, A.S. Mayer, C.G.E. Alfieri, J. Nürnberg, A.R. Johnson, X. Ji, A. Klenner, Y. Okawachi, M. Lipson, A.L. Gaeta, U. Keller “Tightly locked optical frequency comb from a semiconductor disk laser” Optics Express, Vol. 27, No. 3, pp. 1786-1797, 2019.
15. Jae K. Jang, Xingchen Ji ,Chaitanya Joshi, Yoshitomo Okawachi, Michal Lipsonand Alexander L. Gaeta, “Observation of Arnold Tongues in Coupled Soliton Kerr Frequency Combs”, American Physical Society, Phys. Rev. Lett. 123, 153901, 2019.
16. Sven Ramelow, Alessandro Farsi, Zachary Vernon, Stephane Clemmen, Xingchen Ji, J. E. Sipe, Marco Liscidini, Michal Lipson and Alexander L. Gaeta, “Strong Nonlinear Coupling in a Si3N4 Ring Resonator”, American Physical Society, Phys. Rev. Lett. 122, 153906, 2019.
17. Mohammad Amin Tadayon, Shriddha Chaitanya, Kelly Marie Martyniuk, Josephine Cecelia McGowan,Samantha, Pamela Roberts, Christine Ann Denny and Michal Lipson,“3D microphotonic probe for high resolution deep tissue imaging,"Optics Express, Vol. 27, No.16, pp.22352-22362,2019.
18. Xingchen Ji, Xinwen Yao, Alexander Klenner, Yu Gan, Alexander L. Gaeta, Christine P. Hendon, and Michal Lipson,“Chip-based frequency comb sources for optical coherence tomography," Optics Express, Vol. 14, pp.19896-19905,2019.
19. Gaurang R. Bhatt, Avik Dutt, Steven A. Miller, Raphael St-Gelais, Felippe A. S. Barbosa, Paulo A. Nussenzveig, and Michal Lipson, “Broadband enhancement of thermal radiation”, Optics Express, Vol. 27, pp.A818-A828, 2019.
20. Bok Young Kim, Yoshitomo Okawachi, Jae K. Jang, Mengjie Yu, Xingchen Ji, Yun Zhao, Chaitanya Joshi, Michal Lipson, and Alexander L. Gaeta, “Turn-key, high-efficiency Kerr comb source”, Optics Letters, Vol. 44, pp.4475-4478, 2019.
21. A.P. Schlaus, M. S. Spencer, K. Miyata, F. Liu, X. Wang, I. Datta, M. Lipson, A. Pan and X. Y. Zhu “How lasing happens in $CsPbBr_3$ perovskite nanowires” Nature Communications vol.10, 2019.
22. A. W. Barnard, M. Zhang, G. S. Wiederhecker, M. Lipson, P. L. McEuen “ Real-time vibrations of a carbon nanotube” Nature, 566, 89–93, 2019.
23. X. Zheng, A. Calo, E. Albisetti, X. Liu, A.S.M. Alharbi, G. Arefe, X. Liu, M. Spieser, W.J. Yoo, T. Taniguchi, K. Watanabe, C.Aruta, A. Ciarrocchi, A. Kis, B. S. Lee, M. Lipson, J. Hone, D. Shahrjerdi and E. Riedo “Patterning metal contacts on monolayer MoS_2 with vanishing Schottky barriers using thermal nanolithography”, Nature Electronics 2, 17–25, 2019.
24. L. Koehler, P. Chevalier, E. Shim, B. Desiatov, A. Shams-Ansari, M. Piccardo, Y.

Okawachi, M. Yu, M. Loncar, M. Lipson, A. L. Gaeta, F. Capasso “Direct thermo-optical tuning of silicon microresonators for the mid-infrared” Optics Express, Vol. 26, No. 26, pp. 34965-34976, 2018.

25. B. Stern, X. Ji, Y. Okawachi, A. L. Gaeta, M. Lipson “Battery-operated integrated frequency comb generator” Nature, Vol. 562, No. 7727, pp. 401, 2018.
26. Y. Okawachi, M. Yu, J. Cardenas, X. Ji, A. Klenner, M. Lipson, A. L. Gaeta “Carrier envelope offset detection via simultaneous supercontinuum and second-harmonic generation in a silicon nitride waveguide” Optics letters, vol.43, No. 19, pp 4627- 4630, 2018.
27. T.J. Kippenberg, A.L. Gaeta, M. Lipson, M.L. Gorodetsky “Dissipative Kerr solitons in optical microresonators” Science, Vol. 361,No. pp 6402, 2018.
28. M. A. Tadayon, I. Pavlova, K. M. Martyniuk, A. Mohanty, S. P. Roberts, F. Barbosa, C. A. Denny, M. Lipson “Microphotonic needle for minimally invasive endoscopic imaging with sub-cellular resolution” Scientific reports, Vol. 8, No.1, pp 10756, 2018.
29. G. Kovacevic, C. Phare, S.Y. Set, M. Lipson, S. Yamashita, “Ultra-high-speed graphene optical modulator design based on tight field confinement in a slot waveguide” Applied Physics Express, Vol. 11, No. 6, pp 065102, 2018.
30. M. Yu, Y. Okawachi, A. G. Griffith, N. Picqué, M. Lipson and A. L. Gaeta, “Silicon-chip-based mid-infrared dual-comb spectroscopy” Nature Communications, Vol. 9, 2018.
31. S. Ramelow, A. Farsi, A. Vernon, S. Clemmen, X. Ji, J. E. Sipe, M. Liscidini, M. Lipson and A. L. Gaeta, “ Strong Nonlinear Coupling due to induced Photon Interaction on Si_3N_4 Chip” arXiv:1802.10072, 2018.
32. C. T. Phare, M. C. Shin, S. a. Miller, B. Stern, and M. Lipson “ Silicon Optical Phase Array with high-efficiency Beam Formation over 180 Degree Field of View”, arXiv:1802.04624, 2018.
33. A. Mohanty, Q. Li, M.A. Tadayon, G. Bhatt, E. Shim, X. Ji, J. Cardenas, S. A. Miller, A. Kepecs, M. Lipson. “A reconfigurable nanophotonics platform for sub-millisecond, deep brain neural stimulation” arXiv:1805.11663, 2018.
34. M. Yu, Y. Okawachi, C. Joshi, X. Ji, M. Lipson, and A. L. Gaeta. “Gas-Phase microresonator-based comb spectroscopy without an external pump laser” ACS Photonics Article ASAP, 2018.
35. J.K. Jang, A Klenner, X. Ji, Y. Okawachi, M. Lipson, A. L. Gaeta. “Synchronization of coupled optical microresonators” arXiv:1806.02328, 2018.
36. M. Zadka, Y. Chang, A. Mohanty, C. T. Phare, S. P. Roberts, and M. Lipson. “On-chip platform for a phased array with minimal beam divergence and wide field-of-view.” Opt. Express 26, 2528–2534, 2018.
37. A. Dutt, C. Joshi, X. Ji, J. Cardenas, Y. Okawachi, K.Luke, A. L. Gaeta, and M. Lipson. “On-chip dual-comb source for spectroscopy.” Science Advances 4, no. 3, 2018.
38. C.Joshi, M.Yu, K. Luke, X. Ji, A.Klenner, Y. Okawachi, M. Lipson, and A. L. Gaeta. “Counter-rotating cavity solitons in a silicon nitride microresonator.” Optics Letters 43, no. 3, 2018.
39. C. Wang, M. Zhang, B. Stern, M. Lipson, and M. Lončar. “Nanophotonic lithium niobate electro-optic modulators.” Optics Express vol. 26, no. 2, pp. 1547, 2018

40. M. Yu, J. K. Jang, Y. Okawachi, A. G. Griffith, K. Luke, S. A. Miller, X. Ji, M. Lipson, and A. L. Gaeta, “Breather soliton dynamics in microresonators,” Nature Communications, vol. 8, 2017.
41. B. S. Lee, M. Zhang, F. A. Barbosa, S. A. Miller, A. Mohanty, R. St-Gelais, and M. Lipson, “On-chip thermo-optic tuning of suspended microresonators,” Opt. Express, vol. 25, no. 11, pp. 12109–12120, 2017.
42. Y. Okawachi, M. Yu, J. Cardenas, X. Ji, M. Lipson, and A. L. Gaeta, “Coherent, directional supercontinuum generation,” Opt. Lett., vol. 42, no. 21, pp. 4466–4469, 2017.
    a. M. Yu, Y. Okawachi, A. G. Griffith, M. Lipson, and A. L. Gaeta, “Microresonator-based high-resolution gas spectroscopy,” Opt. Lett., vol. 42, no. 21, pp. 4442–4445, 2017.
43. A.Mohanty, M. Zhang, A. Dutt, S. Ramelow, P. Nussenzveig, and M. Lipson, “Quantum interference between transverse spatial waveguide modes,” Nature Communications, vol. 8, p. 14010, 2017.
44. R. St-Gelais, G. R. Bhatt, L. Zhu, S. Fan, and M. Lipson, “Hot Carrier-Based Near-Field Thermophotovoltaic Energy Conversion,” ACS Nano, vol. 11, no. 3, pp. 3001–3009, 2017.
45. R. Fain, F. Barbosa, J. Cardenas, and M. Lipson, “Photonic Needles for Light Delivery in Deep Tissue-like Media,” Sci. Rep., vol. 7, no. 1, p. 5627, 2017.
46. X. Ji, F. A. Barbosa, S. P. Roberts, A. Dutt, J. Cardenas, Y. Okawachi, A. Bryant, A. L. Gaeta, and M. Lipson, “Ultra-low-loss on-chip resonators with sub-milliwatt parametric oscillation threshold,” Optica, vol. 4, no. 6, pp. 619–624, 2017.
47. B. Stern, X. Ji, A. Dutt, and M. Lipson, “Compact narrow-linewidth integrated laser based on a low-loss silicon nitride ring resonator,” Opt. Lett., vol. 42, no. 21, pp. 4541–4544, 2017.
48. B. Zhao, K. Chen, S. Buddhiraju, G. Bhatt, M. Lipson, and S. Fan, “High-performance near-field thermophotovoltaics for waste heat recovery,” Nano Energy, vol. 41, pp. 344–350, 2017.
49. C. Joshi, J. K. Jang, K. Luke, X. Ji, S. A. Miller, A. Klenner, Y. Okawachi, M. Lipson, and A. L. Gaeta, “Thermally controlled comb generation and soliton modelocking in microresonators,” Opt. Lett., vol. 41, no. 11, pp. 2565–2568, 2016.
50. J. K. Jang, Y. Okawachi, M. Yu, K. Luke, X. Ji, M. Lipson, and A. L. Gaeta, “Dynamics of mode-coupling-induced microresonator frequency combs in normal dispersion,” Opt. Express, vol. 24, no. 25, pp. 28794–28803, 2016.
51. M. Yu, Y. Okawachi, A. G. Griffith, M. Lipson, and A. L. Gaeta, “Mode-locked mid-infrared frequency combs in a silicon microresonator,” Optica, vol. 3, no. 8, pp. 854–860, 2016.
52. Y. Okawachi, M. Yu, K. Luke, D. O. Carvalho, M. Lipson, and A. L. Gaeta, “Quantum random number generator using a microresonator-based Kerr oscillator,” Opt. Lett., vol. 41, no. 18, pp. 4194–4197, 2016.
53. A. Klenner, A. S. Mayer, A. R. Johnson, K. Luke, M. R. Lamont, Y. Okawachi, M. Lipson, A. L. Gaeta, and U. Keller, “Gigahertz frequency comb offset stabilization based on supercontinuum generation in silicon nitride waveguides,” Opt. Express, vol. 24, no. 10, pp. 11043–11053, 2016.
54. A. S. Mayer, C. R. Phillips, C. Langrock, A. Klenner, A. R. Johnson, K. Luke, Y.

Okawachi, M. Lipson, A. L. Gaeta, and M. M. Fejer, “Offset-free gigahertz mid-infrared frequency comb based on optical parametric amplification in a periodically poled lithium niobate waveguide,” Physical Review Applied, vol. 6, no. 5, p. 054009, 2016.

55. R. St-Gelais, L. Zhu, S. Fan, and M. Lipson, “Near-field radiative heat transfer between parallel structures in the deep subwavelength regime,” Nature Nanotech, vol. 11, no. 6, pp. 515–519, 2016.
56. A. G. Griffith, M. Yu, Y. Okawachi, J. Cardenas, A. Mohanty, A. L. Gaeta, and M. Lipson, “Coherent mid-infrared frequency combs in silicon-microresonators in the presence of Raman effects,” Opt. Express, vol. 24, no. 12, pp. 13044–13050, 2016.
57. A. Dutt, S. Miller, K. Luke, J. Cardenas, A. L. Gaeta, P. Nussenzveig, and M. Lipson, “Tunable squeezing using coupled ring resonators on a silicon nitride chip,” Opt. Lett., vol. 41, no. 2, pp. 223–226, 2016.
58. A. R. Johnson, A. S. Mayer, A. Klenner, K. Luke, E. S. Lamb, M. R. Lamont, C. Joshi, Y. Okawachi, F. W. Wise, and M. Lipson, “Octave-spanning coherent supercontinuum generation in a silicon nitride waveguide,” Opt. Lett., vol. 40, no. 21, pp. 5117–5120, 2015.
59. B.Guha and M. Lipson, “Controlling thermo-optic response in microresonators using bimaterial cantilevers,” Opt. Lett., vol. 40, no. 1, pp. 103–106, 2015.
60. M. Zhang, S. Shah, J. Cardenas, and M. Lipson, “Synchronization and phase noise reduction in micromechanical oscillator arrays coupled through light,” Phys. Rev. Lett., vol. 115, no. 16, p. 163902, 2015.
61. S. A. Miller, Y. Okawachi, S. Ramelow, K. Luke, A. Dutt, A. Farsi, A. L. Gaeta, and M. Lipson, “Tunable frequency combs based on dual microring resonators,” Opt. Express, vol. 23, no. 16, pp. 21527–21540, 2015.
62. S. L. Mouradian, T. Schröder, C. B. Poitras, L. Li, J. Goldstein, E. H. Chen, M. Walsh, J. Cardenas, M. L. Markham, and D. J. Twitchen, “Scalable integration of long-lived quantum memories into a photonic circuit,” Physical Review X, vol. 5, no. 3, p. 031009, 2015.
63. Y. Okawachi, M. Yu, K. Luke, D. O. Carvalho, S. Ramelow, A. Farsi, M. Lipson, and A. L. Gaeta, “Dual-pumped degenerate Kerr oscillator in a silicon nitride microresonator,” Opt. Lett., vol. 40, no. 22, pp. 5267–5270, 2015.
64. K. Luke, Y. Okawachi, M. R. Lamont, A. L. Gaeta, and M. Lipson, “Broadband mid-infrared frequency comb generation in a Si 3 N 4 microresonator,” Opt. Lett., vol. 40, no. 21, pp. 4823–4826, 2015.
65. M. Fridman, Y. Okawachi, S. Clemmen, M. Ménard, M. Lipson, and A. L. Gaeta, “Waveguide-based single-shot temporal cross-correlator,” Journal of Optics, vol. 17, no. 3, p. 035501, 2015.
66. J. Cardenas, M. Yu, Y. Okawachi, C. B. Poitras, R. K. Lau, A. Dutt, A. L. Gaeta, and M. Lipson, “Optical nonlinearities in high-confinement silicon carbide waveguides,” Opt. Lett., vol. 40, no. 17, pp. 4138–4141, 2015.
67. Stern, X. Zhu, C. P. Chen, L. D. Tzuang, J. Cardenas, K. Bergman, and M. Lipson, “On-chip mode-division multiplexing switch,” Optica, vol. 2, no. 6, pp. 530–535, 2015.
68. S. Y. Shah, M. Zhang, R. Rand, and M. Lipson, “Master-slave locking of optomechanical oscillators over a long distance,” Phys. Rev. Lett., vol. 114, no. 11, p. 113602, 2015.
69. C.T. Phare, Y.-H. D. Lee, J. Cardenas, and M. Lipson, “Graphene electro-optic modulator

with 30 GHz bandwidth," Nat Photon, vol. 9, no. 8, pp. 511–514, 2015.

70. A. Dutt, K. Luke, S. Manipatruni, A. L. Gaeta, P. Nussenzveig, and M. Lipson, "On-chip optical squeezing," Physical Review Applied, vol. 3, no. 4, p. 044005, 2015.
71. Austin G. Griffith, Ryan K.W. Lau, Jaime Cardenas, Yoshitomo Okawachi, Aseema Mohanty, Romy Fain, Yoon Ho Daniel Lee, Mengjie Yu, Christopher T. Phare, Carl B. Poitras, Alexander L. Gaeta and Michal Lipson,"Silicon-chip mid-infrared frequency comb generation", Nature Communications volume 6, 6299 (2015)
72. A. S. Mayer, A. Klenner, A. R. Johnson, K. Luke, M. Lamont, Y. Okawachi, M. Lipson, A. L. Gaeta, and U. Keller, "Frequency comb offset detection using supercontinuum generation in silicon nitride waveguides," Opt. Express, vol. 23, no. 12, pp. 15440–15451, 2015.
73. J. Cardenas, C. B. Poitras, K. Luke, L.-W. Luo, P. A. Morton, and M. Lipson, "High coupling efficiency etched facet tapers in silicon waveguides," IEEE Photon. Technol. Lett., vol. 26, no. 23, pp. 2380–2382, 2014.
74. Y. Okawachi, M. R. Lamont, K. Luke, D. O. Carvalho, M. Yu, M. Lipson, and A. L. Gaeta, "Bandwidth shaping of microresonator-based frequency combs via dispersion engineering," Opt. Lett., vol. 39, no. 12, pp. 3535–3538, 2014.
75. R. K. Lau, M. R. Lamont, A. G. Griffith, Y. Okawachi, M. Lipson, and A. L. Gaeta, "Octave-spanning mid-infrared supercontinuum generation in silicon nanowaveguides," Opt. Lett., vol. 39, no. 15, pp. 4518–4521, 2014.
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TEXTBOOKS AND CHAPTERS

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SELECTED KEYNOTE AND PLENARY TALKS

157TH NAS Online Conference, April 25-27, 2020 (**Invited talk)**

Photonics North Virtual Conference, May 26-28, 2020 (**Plenary)**

Nano Photonics of 2D Materials, Spain, Virtual Conference, July 13-16, 2020 (**Plenary)**

Metamaterial Virtual Conference, September 28-October 1, 2020 (**Plenary)**

U.S. Army Workshop on Quantum, Virtual, November 4-6, 2020 (**Invited talk)**

Max Planck-New York Center for Nonequilibrium Quantum Phenomena: Signing Ceremony, Symposium and Workshop, November 19-20, New York (**Plenary**)

Nature Conference, 2D Materials: Visions of Future Research and Applications,”Next generation photonics based on 2D materials”, Xi’an, China, November 6-8, 2019 **(Invited)**

Asia Communications and Photonics conference, “Next Generation Photonics”, Chengdu, China, November 2-5, 2019 **(Plenary)**

Schawlow-Townes Symposium of Photonics, “Next Generation Silicon Photonic”, Ottawa, Canada, October 16-18, 2019 **(Keynote)**

SBFoton International Optics and Photonics Conference 2019, “Photonics on Chip”, Sâo Paulo, Brazil, October 7-10, 2019 **(Plenary)**

CLEO/EUROPE-EQEC, Silicon photonics, Munich, Germany, June 24-25 **(Plenary)**

IEEE International Frequency Control Symposium and the European Frequency and Time Forum, “Photonics on Chip” Orlando, Florida, April 14-19 2019, **(Keynote)**

Physics and Simulations Conference of the SPIE Optics and Optoelectronics Symposium, “Photonics on Chip” Prague, Czech Republic, April 1-4 2019, **(Keynote)**

APS CUWIP at William and Mary, “Photonics on Chip”, Richmond, Virginia, January 18-20 2019 **(Plenary)**

EPFL Photonics Day, “Photonics on Chip”, Lausanne, Switzerland, December 8-11, 2018 **(Keynote)**

Latin America Optics and Photonics Conference (LAOP 2018) “Next Generation Photonics based on 2D materials” Lima, Peru, November 12-15, 2018 **(Plenary)**

Nature Conference on Nanophotonics and Integrated Photonics, “Next Generation Photonics based on 2D materials” Nanjing, Jiangsu, China, November 7 -11, 2018 **(Plenary)**

7th conference on Advances in Optoelectronics and Micro/nano-optics (AOM 2018), “Next Generation Silicon Photonics”, Xi'an, China, October 9 -12, 2018 **(Plenary)**

International Quantum Cascade Laser School and Workshop, “Photonics on Chip”, Cassis, France, September 2-7 2018 **(Keynote)**

NFO-15 The 15th International Conference on Near Field Optics, nanophotonics & Related Techniques, Troyes France August 26-31 2018 **(Plenary)**

SIAM Conference on Mathematical Aspects of Materials Science, “Photonics on Chip”, Portland, Oregon, July 9-11 2018 **(Plenary)**

2018 OSA Advanced Photonics Congress, “Photonics on Chip”, Zurich, Switzerland, July 2-5 2018 **(Keynote)**

2018 XLI Brazilian Physical Society, “ Next Generation Silicon Photonics” Foz do Iguaçu, Brazil, May 6 -11, 2018 **(Plenary)**

The “Technology Innovation Science Match”. , “Photonics on Chip”, Franhaufer Institute, Berlin, Germany, February 22 2018 **(Keynote)**

The IEEE Photonics Annual Meeting, “Photonics on Chip” , Orlando, Florida, October 1-5, 2017 **(Plenary)**

International Conference on Optical MEMS and Nanophotonics (OMN2017) INCP 2017 Santa Fe NM, Aug 1-4, 2017 **(Keynote)**

10th International Conference on Nanophotonics, “Photonics on Chip” Recife-PE, Brazil, July 2-5, 2017 **(Keynote)**

EOSAM 2016, “Next Generation Silicon Photonics” Berlin, Germany, Sept 26-30, 2016 **(Plenary)**

FiO-Optical Society of America Annual Meeting, Rochester, NY October 10, 2016 **(Plenary)**

International Conference on Computer-Aided Design, “Manipulating Light on Chip”, Irvine, CA November 13-17 2016 **(Keynote)**

The Device Research Conference, University of Delaware, “Novel Materials for Photonics” Newark, Delaware, June 19-22 2016 (**Plenary)**

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

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

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

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

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

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

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