Curriculum Vitae

Kapil Debnath, PhD

Department of Electronics and Electrical Communication Engineering
Indian Institute of Technology Kharagpur
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Summary of Qualification

Over 13 years of experience in silicon photonics, optoelectronics and semiconductor nano-fabrication. Core competencies:

- Optoelectronic and nano-photonic device design, simulation, fabrication and characterization.
- Process integration and development for wafer/die level micro/nano-fabrication.
- Project management skill by guiding several doctoral, postgraduate and undergraduate students in various projects.
- Organizational, communication and planning skills for handling multifaceted and collaborative projects.

Educational Qualification

2009-2013 **Doctor of Philosophy (PhD) in Physics**
University of St Andrews, Scotland
Thesis Supervisor: Prof. Thomas F. Krauss
PhD Thesis Title: "*Photonic Crystal Cavity Based Architecture for Optical Interconnects*"

2007-2009 **Master of Technology (MTech) in Applied Optics**
First class with CGPA 9.55 (10 point scale), Batch topper
Indian Institute of Technology, Delhi, India
Master Thesis Title: "*Fabrication of Photonic Crystals using Holographic Lithography*"

2000-2004 **Bachelor of Technology (BTech) in Electronics and Telecommunication Engineering**
First class with 72.65%
National Institute of Technology, Silchar, India

Employment History

2018-Present **Assistant Professor**
Indian Institute of Technology Kharagpur, India

2017-2018 **Senior Research Fellow**
University of Southampton, UK

2015-2017	**Postdoctoral Research Fellow** University of Southampton, UK
2013-2015	**Postdoctoral Research Fellow** University of St Andrews, UK
2006-2007	**Lecturer in Electronics and Communication Engineering Department** Sri Venkateshwara College of Engineering, Bangalore, India
2004-2005	**Officer Trainee** Bharat Petroleum Corporation Ltd., Ratnagiri LPG Import Terminal, India

Awards and Achievements

2019	Early Career Research Award, Science and Engineering Research Board (SERB), Department of Science and Technology, India
2018	Faculty Research Initiation Grant award, Institute Scheme for Innovative Research and Development
2013	EPSRC Doctoral Prize Fellowship
2012	One of the finalists in the "UK ICT Pioneers" competition held by EPSRC in London, UK
2012	Winner of the prize for best student poster presentation during the "Group Four Photonics" conference in San Diego, USA
2011	2nd Prize for 2nd year School of Physics and Astronomy PhD student talk
2007	Graduate Aptitude Test in Engineering (GATE) jointly organized by IISc and IITs All India rank 397 with 600 GATE score (Among top 1%).
2000	Secured 20th rank in state level Joint Entrance Examination (JEE)

Research Interests

Silicon Photonics

Optical Biosensors

Photonic Crystals

Graphene Photonics

Integrated Optomechanics

CMOS Process Technology

Research Fund Raising

Sectioned projects

1. Title of the research proposal: High-resolution broadband on-chip micro-spectrometer
   Sponsoring Organization: IIT Kharagpur
   Period of Funding: August2018 to December2022
   Amount of Grant: ₹28,00,000
2. Title of the research proposal: Fabrication method of photonic crystals for three-dimensional manipulation of photons

Sponsoring Organization: Science and Engineering Research Board, Department of Science and Technology, Government of India

Period of Funding: May2019 to December2022

Amount of Grant: ₹44,82,000

3. Title of the research proposal: Transistor Compatible Optical Interconnects

   Sponsoring Organization: Engineering and Physical Sciences Research Council (EPSRC)

   Period of Funding: June2013 to May2014

   Amount of Grant: £38,000

Proposal under review

1. Title of the research proposal: Development and Demonstration of Lab-on-a-Chip Optical Biosensors for Point-Of-Care diagnostic systems

   Sponsoring Organization: Department of Health Research, Government of India
2. Title of the research proposal: Development of novel wearable Non-invasive multiple bio-marker detection system
   Sponsoring Organization: Department of Biotechnology, Government of India

Administrative responsibility

- Member of faculty search committee, Department of E&ECE, IIT Kharagpur
- Assistant Warden of Nehru Hall of Residence, IIT Kharagpur
- Lab in charge of electronic circuit lab, Department of E&ECE, IIT Kharagpur
- Faculty advisor, BTech Batch 2022-26, Department of E&ECE, IIT Kharagpur

Professional membership

- Member of Institute of Electrical and Electronics Engineers (IEEE)
- Member of Optica

Research Experience

Research as a PI:

Total amount of research funding raised ₹7.2M (≈ £75K)

Major research activities:

- Designed miniature CMOS-compatible spectrometer (currently at tape-out phase)
- Designed waveguide based miniature spectrometer (currently at characterization phase)
- Designed several ultra-low power modulators for on-chip optical interconnects
- Developing 3D Photonic crystal based optical sensors
- Developing graphene-based MEMS structure for meta-surface applications.
- Developing optomechanical frequency comb generator.

Postdoctoral research

1. Research funded by EPSRC through Doctoral prize (2013-2014).

   Major achievements:

   - Demonstrated a patented novel silicon modulator structure based on a bulk silicon platform.
   - Developed wet-etching technique for silicon photonic components.
   - Developed Photonic crystal devices in silicon-rich nitride platform for nonlinear photonic applications.

2. Research funded by a Proof of Concept project 'Frontier' from Scottish Enterprise (2013-2015).

   Major achievements:
   - Demonstrated electro-optic modulator using photonic crystal cavity operating in depletion mode.
   - Demonstrated a patented design of an external cavity laser using photonic crystal cavity
   - Developed a passive optical platform using inverted rib waveguide structure.

3. Research funded by EPSRC to develop energy efficient Si modulators (2015-2018).

   Major achievements:

   - Design and development of a patented MZI Si optical modulator.
   - Realization of passive optical components using anisotropic wet etching process
   - Demonstrated Photonic crystal structures on a silicon rich nitride platform.

Doctoral research

Research funded by UK Silicon Photonics consortium from EPSRC.

Major achievements:

- Designed and developed a patented and efficient optical filter using vertically coupled photonic crystal cavity-waveguide system.
- Demonstrated silicon based electro-optic modulator with record low power consumption.
- Demonstrated silicon based wavelength selective photo-detector.
- Demonstrated multiplexing and demultiplexing architectures for dense WDM applications.

Teaching Experience

Subjects Taught	Session	Student Feedback (out of 5)
RF and Microwave Engineering	Autumn2022-23	-
Digital Electronics Circuit	Spring2021-22	4.65
Optical Communication	Autumn2021-22	4.69
Optical Fibers, Components and Devices	Autumn2020-21	4.23
	Autumn2019-20	4.29
	Autumn2018-19	4.60
Basic Electronics	Spring2018-19	4.13
	Spring2020-21	4.24

Academic Supervision Experience for PhD:

1. Ipsita Chakraborty (2018-2022) *Thesis Submitted*
2. Shuvajit Roy (2019-)
3. Rina Mudi (2019-)
4. Souvik Mondal (2021-)
5. Atreyee Sen (2021-)
6. Joy Ghosh (2021-)

Technical Skills

Fabrication based

Micro/nano-fabrication process at die and wafer-level.

Expertise involve:

- Photo-mask designing, GDS tape out and mask ordering procedure.
- Resist patterning with E-beam lithography and UV photo-lithography.
- Dry etching using RIE, ICP and CAIBE.
- Deposition using PECVD.
- Wet processes, such as sample cleaning, resist spinning and development, wet etching, lift off, spin on doping etc.
- Metal evaporation using thermal evaporator and electron beam evaporator.
- Metrological inspection with Optical microscope, SEM, AFM, Profilometer, Ellipsometer.

Characterization based

- Experience in optical characterization of integrated photonic devices, such as waveguides, filters, photonic crystal structures etc.
- Experience in electro-optic characterization of silicon based modulators and photo-detectors using DC and high speed measurement setups.

Computer based

- Programming in MATLAB for numerical simulations, data analysis and Mask designing.
- Finite Difference Time Domain (FDTD) method in RSoft and Lumerical for simulations of 2D/3D optical components.
- Analysis of Photonic Crystal structures using Plane Wave Expansion (PWE) method in MPB.
- Finite Element Method (FEM) modelling in COMSOL and Lumerical mainly for 2D/3D highly dispersive structures (e.g. metal).
- Basic knowledge of optical mode analysis using FIMMWAVE.

List of Patents

1. Granted: The University of Southampton, K. Debnath, G. T. Reed, S. Saito, “Optical structure and method of fabricating an optical structure,” US 11256113 B2, Date of Patent: 22.02.2022
2. Granted: The University of St Andrews, K. Debnath, L. O’Faolain, “External cavity laser comprising a photonic crystal resonator,” US10205299B2, Date of Patent: 02.12.2019
3. Granted: The University of St Andrews, L. O’Faolain, T. F. Krauss, K. Debnath, K. Welna, “Wave vector matched resonator and bus waveguide system,” US9322999B2, Date of Patent: 26.04.2016
4. Published: The University of St Andrews, K. Debnath, L. O’Faolain, “Optical Modulator with Plasmon Based Coupling,” UK Application No. 1313592.6, Publication date: 05.02.2015
5. Published: The University of St Andrews, K. Debnath, L. O’Faolain, “Frontend integration of electronics and photonics,” EP3523685A1, Publication date: 14.08.2019

List of Journal Publications (*31 published*)

1. K. Debnath, L. O'Faolain, F. Y. Gardes, A. G. Steffan, G. T. Reed, and T. F. Krauss, "Cascaded modulator architecture for WDM applications," Optics Express 20, 27420-27428 (2012).
2. K. Debnath, K. Welna, M. Ferrera, K. Deasy, D. G. Lidzey, and Liam O'Faolain, "Highly efficient optical filter based on vertically coupled photonic crystal cavity and bus waveguide," Optics Letters 38, 154-156 (2013).
3. K. Debnath, F. Y. Gardes, A. P. Knights, G. T. Reed, T. F. Krauss, and L. O'Faolain, "Dielectric waveguide vertically coupled to all-silicon photodiodes operating at telecommunication wavelengths," Applied Physics Letters 102, 171106 (2013).
4. A. Debnath, K. Debnath, and L. O'Faolain, "Extraction of group index of lossy photonic crystal waveguides," Optics Letters 40, 193-196 (2015).
5. K. Debnath, R. Moore, A. Liles, and L. O'Faolain, "Toolkit for photonic integrated circuits based on inverted rib waveguides," IEEE Journal of Lightwave Technology 33, 4145-4150 (2015).
6. K. Welna, K. Debnath, T. F. Krauss, and L. O'Faolain, "High Q photonic crystal cavities realised using deep ultraviolet lithography," Electronics Letters 51, 1277-1279 (2015).
7. A. Liles, K. Debnath, L. O'Faolian, "Lithographic wavelength control of an external cavity laser with a silicon photonic crystal cavity-based resonant reflector," Optics Letters 41, 894-897 (2016).
8. K. Debnath, P. Damas, L. O'Faolain, "Electro-optic modulation in bulk silicon using surface plasmon resonance," Photonics and Nanostructures-Fundamentals and Applications 18, 31-35 (2016).
9. K. Debnath, H. Arimoto, M. K. Husain, A. Prasmusinto, A. Al-Attili, R. Petra, H. M. H. Chong, G. T. Reed, and Shinichi Saito, "Low-loss silicon waveguides and grating couplers fabricated using anisotropic wet etching technique," Frontiers in Materials 3, 10 (2016).
10. K. Debnath, A. Z. Khokhar, S. A. Boden, H. Arimoto, S. Z. Oo, H. M. H. Chong, G. T. Reed, and S. Saito, "Low-loss slot waveguides with silicon (111) surfaces realized using anisotropic wet etching," Frontiers in Materials 3, 51 (2016).
11. K. Debnath, T Dominguez Bucio, A Z Al-Attili, A. Z. Khokhar, S. Saito, F. Y. Gardes, "Photonic crystal waveguides on silicon rich nitride platform," Optics Express 25, 3214-3221 (2017).
12. Prasmusinto, M. Sotto, A. Z. Al-Attili, K. Debnath, and S. Saito, "Theoretical Designs for Novel Photonic Crystal Nanocavities with Si (111) Interfaces," Photonics and Nanostructures-Fundamentals and Applications 26, 1-7 (2017).
13. K. Debnath, A. Z. Khokhar, G. T. Reed, and S. Saito, "Fabrication of Arbitrarily Narrow Vertical Dielectric Slots in Silicon Waveguides" IEEE Photonics Technology Letters 29, 1269-1272 (2017).
14. K. Debnath, M. Clementi, T. Dominguez Bucio, M. Galli, A. Z. Khokhar, S. Saito, F. Y. Gardes, "Ultra-high Q silicon rich nitride photonic crystal cavities" Optics Express 25, 27334-27340 (2017).
15. K. Debnath, D. J. Thomson, W. Zhang, A. Z. Khokhar, C. Littlejohns, J. Byers, L. Mastronardi, M. K. Husain, K. Ibukuro, F. Y. Gardes, and S. Saito, "All-silicon carrier accumulation modulator based on a lateral metal-oxide-semiconductor capacitor," Photonics Research 6, 373-379 (2018).
16. M. Sotto, I. Tomita, K. Debnath, and S. Saito, "Polarization rotation and mode splitting in photonic crystal line-defect waveguides," Frontiers in Physics 6, 85 (2018).

17. M. Sotto, K. Debnath, A. Z. Khokhar, I. Tomita, D. Thomson, and S. Saito, "Anomalous zero-group-velocity photonic bonding states with local chirality," JOSA B 35, 2356-2363 (2018).
18. Osman, M. Nedeljkovic, J. S. Penades, Y. Wu, Z. Yangbo, A. Z. Khokhar, K. Debnath, G. Z. Mashanovich, "Suspended low-loss germanium waveguides for the longwave infrared," Optics letters 43, 5997-6000 (2018).
19. J. Byers, K. Debnath, H. Arimoto, M. K. Husain; M. Sotto, Z. Moise, F. Liu, K. Kouta, A. Z. Khokhar, and S. Saito, "Silicon slot fin waveguide on bonded double-SOI for a low-power accumulation modulator fabricated by an anisotropic wet etching technique," Optics Express 26, 33180-33191 (2018).
20. M. Clementi, K. Debnath, M. Sotto, A. Barone, A. Z. Khokhar, T. D. Bucio, S. Saito, F. Gardes, D. Bajoni, and M. Galli, "Cavity-enhanced harmonic generation in silicon rich nitride photonic crystal microresonators," Applied Physics Letters 114, 131103 (2019).
21. M. Sotto, K. Debnath, I. Tomita, and S. Saito, Shinichi, "Spin-orbit coupling of light in photonic crystal waveguides," Physical Review A 99, 53845 (2019).
22. I. Chakraborty, K. Debnath, and V. Dixit, "Low-energy high-speed graphene modulator for on-chip communication," OSA Continuum 2, 1273-1284 (2019).
23. T. D. Bucio, C. Lacava, M. Clementi, J. Faneca, I Skandalos, A. Baldycheva, M. Galli, K. Debnath, P. Petropoulos, and F. Gardes, "Silicon nitride photonics for the near-infrared," IEEE Journal of Selected Topics in Quantum Electronics 26, 1-13 (2019).
24. S. Saito, I. Tomita, M. Sotto, K. Debnath, J. Byers, A. Z. Al-Attili, D. Burt, M. K. Husain, H. Arimoto, and K. Ibukuro, "Si photonic waveguides with broken symmetries: Applications from modulators to quantum simulations," Japanese Journal of Applied Physics 59, SO SO0801 (2020).
25. W. Zhang, M. Ebert, B. Chen, J. Reynolds, X. Yan, H. Du, M. Banakar, D. T. Tran, K. Debnath, C. G. Littlejohns, "Integration of low loss vertical slot waveguides on SOI photonic platforms for high efficiency carrier accumulation modulators," Optics Express 28, 23143-23153 (2020).
26. W. Zhang, K. Debnath, B. Chen, L. Ke; S. Liu, M. Ebert, J. D. Reynolds, A. Z. Khokhar, C. Littlejohns, J. Byers, "High bandwidth capacitance efficient Silicon MOS modulator," Journal of lightwave technology 39, 201-207 (2021).
27. I. Chakraborty, S. Roy, V. Dixit, and K. Debnath, "Atto-joule energy-efficient graphene modulator using asymmetric plasmonic slot waveguide," Photonics and Nanostructures-Fundamentals and Applications 43, 100865 (2021).
28. Vishnoi, R. Mudi, and K. Debnath, "Systematic design study of waveguides and waveguide bends in diamond-structured photonic crystals," JOSA B 38, 907-913 (2021).
29. J. Byers, K. Debnath, H. Arimoto, Hideo, M. K. Husain, M. Sotto, J. Hillier, K. Kiang, D. J. Thomson, G. T. Reed, M. Charlton, and S. Saito, "10 nm SiO_2 TM Slot Mode in Laterally Mismatched Asymmetric Fin-Waveguides," Frontiers in Physics 9, 659585 (2021).
30. A. Mondal, and K. Debnath, "Design of Resolution-Tunable Neural Network-Based Integrated Reconstructive Spectrometer," IEEE Sensors Journal 22, 2630-2636 (2021).
31. S. S. M. Lis, K. Rajasimha, K. Debnath, V. K. Chaitanya, and B. N. S. Bhaktha, "Femtosecond laser micromachined one-dimensional photonic crystal channel waveguides" Optical Materials 126, 112114 (2022).
32. S. Roy and K. Debnath, "Graphene-based Electromechanically Tunable Subwavelength THz Absorber and Modulator" *Manuscript submitted*.
33. S. Roy and K. Debnath, "Graphene-based Chiral Metasurface for Generation of Tunable Circular Dichroism - Design and Sensor Applications" *Under revision*.

34. I. Chakraborty, G. D. Paoli, T. Rutirawut, T. D. Bucio, Y. Hou, V. Dixit, K. Debnath, and F. Gardes, "High-Performance ITO integrated Hybrid Plasmonic Modulator on Si_3N_4 platform" *Manuscript submitted.*
35. A. Mondal and K. Debnath, "On-chip reconstructive spectrometer using disordered waveguide array" *Manuscript under preparation*.
36. S. Mondal and K. Debnath, "Frequency comb generation by breaking $\mathcal{PT}$-symmetry in a coupled optoemechanical system" *Manuscript under preparation*.

List of Conferences Proceedings

1. K. Debnath, L. O'Faolain, and T. F. Krauss, "Slowlight enhanced photonic crystal modulators," Group IV Photonics (GFP), 98-100 (2011).
2. K. Debnath, L. O'Faolain, F. Y. Gardes, D. Thomson, G. T. Reed, and T. F. Krauss, "Low insertion loss modulator based on a vertically coupled photonic crystal resonator," Proc. SPIE 8267, 82670I (2012).
3. K. Debnath, K. Welna, M. Ferrera, K. Deasy, D. Lidzey, T. F. Krauss, and L. O'Faolain, "Highly efficient coupling between a monolithically integrated Photonic Crystal Cavity and a Bus Waveguide," Proc. of SPIE 8264, 82640F-1 (2012).
4. G.T. Reed, D.J. Thomson, F.Y. Gardes, Y. Hu, N. Owens, X. Yang, P. Petropoulos, K. Debnath, L. O'Faolain, T.F. Krauss, L. Lever, "High performance silicon optical modulators," Proc. of SPIE 8564, (2012).
5. K. Debnath, K. Welna, M. Ferrera, K. Deasy, D. Lidzey, and L. O'Faolain, "Highly efficient coupling between a nanocavity and monolithic bus waveguide," Group IV Photonics (GFP), 102-104 (2012).
6. K. Debnath, L. O'Faolain, F. Gardes, D. Thomson, J. Gellata, A. P. Knights, G. Reed, and T. F. Krauss, "Photonic Crystal Cavity Based WDM Components," Group IV Photonics (GFP), 270-272 (2012).
7. G. Reed, F.Y. Gardes, D.J. Thomson, Y. Hu, S. Liu, P. Petropoulos, J.M. Fedeli, L. O'Faolain, K. Debnath, T.F. Krauss, L. Lever, "High Speed Silicon based optical modulators," European Conference and Exhibition on Optical Communication, pp. Tu-1 (2012).
8. F.Y. Gardes, D.J. Thomson, G.T. Reed, J.M. Fedeli, L. O'Faolain, K. Debnath, T.F. Krauss, L. Lever, Z. Ikonic, R.W. Kelsall, "Silicon on insulator modulator structures for data rates of 40 Gb/s and above," Proc. Asia Communications and Photonics Conference, AS3B-6 (2012).
9. L. O'Faolain, K. Debnath, and T.F. Krauss, "Low insertion loss Nanocavity optical modulators," IEEE Photonics Conference (IPC), 772-773 (2012).
10. G. T. Reed, D. Thomson, F. Y. Gardes, G. Z. Mashanovich, Y. Hu, K. Li, P.R. Wilson, L. Zimmermann, H. Porte, B. Goll, S.W. Chen, S.H. Hsu, J.-M. Fedeli, Z. Horst, K. Debnath, T. F. Krauss, L. O'Faolain, "Silicon optical modulators for integrated transceivers," Proc. CLEO, CTu2F-1 (2013).
11. F.Y. Gardes, D. Thomson, Y. Hu, G.T. Reed, L. O'Faolain, K. Debnath, T.F. Krauss, J.M. Fedeli, L. Lever, R.W. Kelsall, Z. Ikonic, "Optical modulation using the silicon platform," Proc. SPIE 8629, 86290X (2013).
12. L. O'Faolain, K. Debnath, F.Y. Gardes, A. Steffan, E. Tasyurek, D.A. Miller, G. Reed, T.F. Krauss, "Scalable optical transmitter and receiver based on cascaded nanoresonator modulators and multiwavelength laser," Proc. SPIE 8630, 86300P (2013).
13. K. Debnath, A. Shakoor, K. Welna, F. Gardes, G. T. Reed, M. Ferrera, K. Deasy, D. Lidzey , R. L. Savio, P. Cardile, S. Portalupi, D. Gerace, S. Boninelli, G. Franzó, F. Priolo, A. P.

Knights, M. Galli, T. F. Krauss, L.O'Faolain, "Silicon Photonic Crystals: Light emission, modulation and detection," Proc. of SPIE 8990, 89900C (2014).

14. F. Gardes, K. Debnath, L. O'Faolain, "Silicon photonics for optical interconnects," 16th International Conference on Transparent Optical Networks (ICTON), 1-3 (2014).
15. G. T. Reed, D. J. Thomson, F. Y. Gardes, G. Z. Mashanovich, Y. Hu, L. Ke, P. W. Wilson, L. Zimmermann, D. Knoll, S. Lischke, H. Porte, B. Goll, H. Zimmermann, S-W. Chen, S. H. Hsu, J-M. Fedeli, K. Debnath, L. O'Faolain, T. F. Krauss, M. Aamer, A. Brimont, P. Sanchis, A. Hakansson, "Silicon on insulator optical modulators for integration in photonic optical circuits," Proc. SPIE 8991, 8991K (2014).
16. K. Welna, K. Debnath, P. Dumon, A. Khanna, T. F. Krauss, L. O'Faolain, "High Q photonic crystal cavities realised using Deep Ultraviolet Lithography," Group IV Photonics (GFP), 161-162 (2014).
17. H. Arimoto, M. K. Husain, A. Prasmusinto, K. Debnath, A. Al-Attili, R. Petra, H. M. H. Chong, G. T. Reed, S. Saito, "Low-loss silicon rectangular waveguides fabricated by anisotoropic wet etching for roughness reduction," Group IV Photonics (GFP), 90-91 (2015).
18. A. A. Liles, K. Debnath, L. O'Faolain, "External-cavity hybrid laser with silicon photonic crystal cavity-based resonant reflector," Group IV Photonics (GFP), 143-144 (2015).
19. A. A. Gonzalez-Fernandez, A. A. Liles, S. Persheyev, K. Debnath, and L. O'Faolain, "Wavelength controlled external cavity laser with a silicon photonic crystal resonant reflector," Proc. SPIE 9753, 975317-975317 (2016).
20. T. Domínguez Bucio, A. Z. Al-Attili, K. Debnath, S. Saito, G. Mashanovich, A. Sánchez-Postigo, G. Wangüemert-Pérez, A. Ortega-Moñux, R. Halir, P. Cheben and F. Y. Gardes, "Silicon Nitride for Integrated Photonic Applications," Meta Conference, 875 (2016).
21. K. Debnath, A. Z. Khokhar, G. T. Reed, S. Saito, "Low-loss silicon slot waveguide realized by surface roughness reduction," Group IV Photonics (GFP), 162-163 (2016).
22. K. Debnath, T. Dominguez Bucio, M. Galli, D. Bajoni, A. Al-Attili, A. Z Khokhar, S. Z Oo, S. Saito, F. Gardes, "2D Photonic Crystal Structures in Silicon Rich Nitride Platform," Proc. CLEO, STh4N.8 (2017).
23. K. Debnath, A. Z. Khokhar, G. T. Reed, and S. Saito, "Fabrication of silicon slot waveguides with 10nm wide oxide slot," Group IV Photonics (GFP), 37-38 (2017).
24. F. Y. Gardes, C. Lacava, K. Debnath, T. D. Bucio, M. Banakar, S. Stankovic, A. Alattili, A. Z. Khokhar, S. Saito, and P. Petropoulos, "Tunable index back end of line platform for enhanced integrated photonics," Group IV Photonics (GFP), 85-86 (2017).
25. K. Debnath, D. J. Thomson, W. Zhang, A. Z. Khokhar, C. Littlejohns, J. Byers, L. Mastronardi, M. K. Husain, F. Y. Gardes, G. T. Reed, and S. Saito, "20Gbps silicon lateral MOS-Capacitor electro-optic modulator," Proc. CLEO, SM3B. 5 (2018).
26. M. Clementi, K. Debnath, M. Sotto, T. D. Bucio, M. Liscidini, D. Bajoni, F. Gardes, and M. Galli, "Harmonic Generation in Silicon Rich Nitride Photonic Crystal Cavities," Proc. CLEO, STu3F. 2 (2018).
27. D. J. Thomson, K. Debnath, W. Zhang, K. Li, S. Liu, F. Meng, A. Z. Khokhar, C. Littlejohns, Callum, J. Byers, and L. Mastronardi, "Towards high speed and low power silicon photonic data links," Proc. ICTON (2018).
28. M. Sotto, K. Debnath, A. Z. Khokhar, I. Tomita, D. Thomson, and S. Saito, "Photonic bonding modes with circular polarization at zero-group-velocity points," Group IV Photonics (GFP) (2018).

29. J. Byers, K. Debnath, H. Arimoto, M. K. Husain, M. Sotto, Z. Li, F. Liu, A. Khokhar, K. Kiang, K, S. A. Boden, and S. Saito, "3D Fin Waveguide on 10nm Gate Oxide Bonded Double-SOI for Low $V_\pi L_\pi$ Accumulation Modulator," Group IV Photonics (GFP) (2018).
30. I. Tomita, K. Debnath, K. Ibukuro, M. K. Husain, J. Byers, Z. Zhang, and S. Saito, "$LiNbO_3$/Si-Hybrid Slot-Waveguide Electro-Optic Modulators," Group IV Photonics (GFP) (2018).
31. T. D. Bucio, S. L. Scholl, S. T. Ilie, C. Lacava, K. Debnath, A. Z. Khokhar, M. Banakar, M. Sotto, K. M. Grabska, and M. Clementi, "Low-temperature NH_3-free silicon nitride platforms for integrated photonics," Group IV Photonics (GFP) (2018).
32. M. Sotto, K. Debnath, A. Z. Khokhar, I. Tomita, Y. Ishikawa, and S. Saito, "Photonic Antiferromagnetic Analogue," JSAP, 992-992 (2019).
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