

Seung Kim

Associate Professor
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Professional Experience

Associate Professor, 08/2016 – present

Dept. of Electrical and Computer Engineering, Baylor University

- Research topic:
 - o A low cost optical cavity based biosensors using differential detection for a point-of-care medical diagnosis

Associate Professor, 08/2015 – 07/2016

Assistant Professor, 08/2010 – 07/2015

Dept. of Engineering, LeTourneau University

- Key courses taught: Electromagnetic Fields and Waves, Communications Engineering, Circuits, Capstone Senior design courses, Microfabrication, Circuits and Measurement lab, Intro to Engineering Practice II, and Advanced Engineering Analysis.
- Research topics:
 - o A low cost optical cavity based biosensors using differential detection for a point-of-care medical diagnosis
 - o Microwave joining of Ceramic and Metal using closed loop controlled system

Research Associate, 12/2005 – 07/2010

Dept. of Electrical and Computer Engineering, Brigham Young University

- Si photonic microcantilever biological and chemical sensor array development.
- Design and fabrication of compact Si rib waveguide based bend, splitter, and ring resonator.
- Compact polymer waveguide bend, splitter, and devices (Arrayed waveguide grating, ring resonator, and Mach-zender interferometer).
- Design and fabricate compact silicon nitride photonic microcantilever biological and chemical sensor.

Research Scientist, 5/2005 – 12/2005

Post Doctoral Research Associate, 5/2004 – 4/2005

Nano and Micro Devices Center (NMDC), University of Alabama in Huntsville.

- Si photonic microcantilever biological and chemical sensor array development.
- Compact polymer waveguide bend, splitter, and devices (ring resonator and Mach-zender interferometer).
- High aspect ratio polymer etch with inductively coupled plasma reactive ion etcher (ICP-RIE) for compact polymer waveguide bend and splitter structures.
- Compact Si rib waveguide bend and splitter design and fabrication.

Research Assistant, 6/1999 – 4/2004

Nano and Micro Devices Lab., Dept. of Electrical and Computer Engineering, University of Alabama in Huntsville.

- Design hybrid photonic crystal and conventional waveguide structure to realize high efficiency and compact waveguide 90 degree bend, splitter, polarizing beam splitter, Mach-zender interferometer, and ring resonator.

- Fabrication and test stratified volume diffractive optical elements (SVDOEs).
- Fabrication and test a fast spatial light modulators (SLMs)

Education

Doctorate of Philosophy, May 2004

Optical Science and Engineering, University of Alabama in Huntsville, USA

Dissertation: "Hybrid photonic crystal and conventional waveguide structures".

Advisor: Professor Gregory P. Nordin

Master of Science, May 2004

Electrical and Computer Engineering, University of Alabama in Huntsville, USA

Advisor: Professor Gregory P. Nordin

Bachelor of Science, March 1998

Physics, University of Suwon, South Korea

Advisor: Professor Bae-Sik Park

Honors

- NSF CAREER recipient (2014)

Research Grants

1. June 1, 2014 - May 31, 2019: NSF CAREER grant (PI, \$400k)
 - o Title: CAREER: A low cost, label-free, multiplexable optical cavity biosensor with high sensitivity, high selectivity, and a large dynamic range using chained differential detection
2. September 1, 2015 – August 31, 2018: NSF CCSS grant (PI, LETU portion: \$220,913)
 - o Title: Collaborative Research: A self-contained microfluidic optical cavity biosensing platform for multiplex label-free molecular diagnostics.

Teaching

At Baylor University (August, 2016 – present)

EGR4390 Engineering Design II

Fa 16

At LeTourneau University (July, 2010 – July, 2016)

ENGR1523 Intro to Engineering Practice II, freshman engineering course

Sp 11, Sp 12, Sp 13

EEGR2051 Circuits and Measurements Lab

Fa 12, Fa 13

EEGR2053 Electric Circuits

Sp 11, Sp 12, Sp 13, Sp 14

ENGR4223 Advanced Engineering Analysis, Senior & dual credit Graduate engineering course (ENGR6223)

Fa 11, Fa 13, Fa 14

EEGR4433 Electrical Power Systems (for Welding Engineers), Senior & dual credit Graduate engineering course (EEGR5433)

Fa 10, Fa 11, Fa 12, Fa 13

EEGR4513 Electromagnetic Fields and Waves, Senior & dual credit Graduate engineering course (EEGR5513)

Fa 10, Fa 11, Fa 12, Fa 13, Fa 14, Fa 15

EEGR4613 Communications Engineering, Senior & dual credit Graduate engineering course (EEGR5613)

Sp 11, Sp 12, Sp 13, Sp 14, Sp 15, Sp 16

ENGR4813 Senior Design I

Fa 14, Fa 15

ENGR4823 Senior Design II

Sp 15, Sp 16

ENGR4973 ST: Microfabrication, Junior/Senior & dual credit Graduate engineering course (ENGR5953)

Sp 15, Sp 16

Master's Thesis Advising

2016

1. DongGee Rho: Design and experimental demonstration of an optical cavity sensor for refractive index measurements
2. Cody Joy: Design and Analysis of a Fabry-Perot based biosensor using a scaled differential calculation towards biological detection
3. Tony Bujana: Investigation on simultaneous detection methods for an optical cavity based biosensor
4. Peter Cowles: Functionalization Processes for a Low Cost Fabry-Perot Based Optical Biosensor Using Scaled Differential Detection

2015

5. Derek Hoyt: Development of a ceramic-to-metal microwave soldering process using numerical simulation.
6. SaiHim Cho: Experimental Demonstration of Optical Cavity based Biosensor using Differential Detection through Index Fluid Measurement.

2014

7. Josh Brake: Design and experimental demonstration of a low-cost, multiplexable optical cavity based biosensor for point of care diagnosis.

2013

8. Allen C. Worcester: Feedback Controlled Microwave Joining of Ceramics to Metals.

2012

9. Chris Mounce: A Low Cost, High Sensitivity, Multiplexable Optical Cavity-Based Biosensor Utilizing Chained Differential Detection.

Professional Services

Reviewer for IEEE Photonics Technology Letters
Reviewer for IEEE Journal of Lightwave Technology
Reviewer for Journal of Nanophotonics
Reviewer for Optical Engineering
Reviewer for Optics Express
Reviewer for Optics communications
Ad hoc reviewer for NIH Exploratory/Developmental Research Grant Award (R21) – 2015
Panel reviewer for NSF nano-biosensing – 2016

Professional Affiliations

Member of the IEEE
Member of the OSA
Member of the BMES

Patents

1. Y. Adonyi, **S. Kim**, A. Worcester, and I. Glumac, “A method for joining two dissimilar materials and a microwave system for accomplishing the same,” U.S. Patent No. 9,374,853 (2016)
2. Y. Lin, G. P. Nordin, and **S. Kim**, “Shared Slab AWG Circuits and Systems,” U.S. Patent No. 7,876,986 (2011).
3. G. P. Nordin, Y. Lin, and **S. Kim**, “Ultra-Compact Planar AWG Circuits and Systems,” U.S. Patent No. 7,492,988 (2009).
4. G. P. Nordin, **S. Kim**, J. Cai, and J. Jiang, “Waveguide Including at Least One Photonic Crystal Region for Directing Signals Propagating Therethrough,” U.S. Patent No. 6,804,446 (2004).

Publications

Refereed Journal Papers

1. D. Hoyt, Y. Adonyi, and **S. Kim**, “Microwave Joining — Part 1: Closed Loop Controlled Microwave Soldering of Lead Telluride to Copper,” *Welding Journal*, vol. 95, pp. 141s-145s (April, 2016).
2. B. Haslam, L.-F. Tsai, R. R. Anderson, **S. Kim**, W. Hu, and G. P. Nordin, “Microfluidic reflow pumps,” *Biomicrofluidics* **9**, 044104 (2015).
3. S. J. Ness, R. R. Anderson, W. Hu, D. C. Richards, J. Oxborrow, T. Gustafson, B. Tsai, **S. Kim**, B. Mazzeo, A. Woolley, and G. P. Nordin, “Weak Adsorption-Induced Surface Stress for Streptavidin Binding to Biotin

- Tethered to Silicon Microcantilever Arrays,” *Sensors Journal, IEEE* , vol.13, no.3, pp.959-968 (2013).
4. S. J. Ness, **S. Kim**, A. T. Woolley, and G. P. Nordin, “Single-sided inkjet functionalization of silicon photonic microcantilevers,” *Sensors and Actuators B: Chemical*, 161 (1), 80-87 (2012).
<http://www.sciencedirect.com/science/article/pii/S0925400511008288>
 5. L. Tsai, W. C. Dahlquist, **S. Kim**, and G. P. Nordin, “Bonding of polydimethylsiloxane microfluidics to silicon-based sensors,” *J. Micro/Nanolith. MEMS MOEMS*, 10(4), 043009 (2011).
http://spiedigitallibrary.org/jm3/resource/1/jmmm/v10/i4/p043009_s1?isAuthorized=no
 6. **S. Kim**, T. Gustafson, D. C. Richards, W. Hu, and G. P. Nordin, “Microcantilever deflection compensation with focused ion beam exposure,” *J. Micromech. Microeng.* **21**, 085007 (2011).
 7. R. R. Anderson, W. Hu, J. W. Noh, W. C. Dahlquist, S. J. Ness, T. M. Gustafson, D. C. Richards, **S. Kim**, B. A. Mazzeo, A. T. Woolley and G. P. Nordin, “Transient deflection response in microcantilever array integrated with polydimethylsiloxane (PDMS) microfluidics,” *Lab Chip*, **11**, 2088-2096 (2011).
 8. J. W. Noh, R. Anderson, **S. Kim**, W. Hu, and G. P. Nordin, “Sensitivity enhancement of differential splitter-based transduction for photonic microcantilever arrays,” *Nanotechnology*, **21**, 155501 (2010).
<http://iopscience.iop.org/0957-4484/21/15/155501>
 9. Y. Qian, **S. Kim**, J. Song, W. Hu, G. L. Wojcik, and G. P. Nordin, “Compact Trench-Based SOI Rib Waveguide Ring Resonator with Large Free Spectral Range,” *Opt. Eng.*, **48**(12), 124602 (2009).
http://spie.org/x648.html?product_id=859292
 10. J. W. Noh, R. Anderson, **S. Kim**, W. Hu, and G. P. Nordin, “In-plane all-photonic transduction with differential splitter using double-step rib waveguide for photonic microcantilever arrays,” *Opt. Express* **17**, 20012-20020 (2009). <http://www.opticsinfobase.org/oe/abstract.cfm?URI=oe-17-22-20012>
 11. W. Hu, R. Anderson, Y. Qian, J. Song, J. W. Noh, **S. Kim**, and G. P. Nordin, “Demonstration of microcantilever array with simultaneous readout using an in-plane photonic transduction method,” *Rev. Sci. Instrum.* **80**(8), 085101-7 (2009). http://rsi.aip.org/resource/1/rsinak/v80/i8/p085101_s1?isAuthorized=no
 12. Y. Lin, **S. Kim**, G. P. Nordin, C. Topping, D. W. Smith, and J. Ballato, “Ultra-compact AWG using air-trench bends with perfluorocyclobutyl polymer waveguides,” *IEEE J. Lightwave Technol.* **26**(17), 3062-3070 (2008). http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=4738503
 13. J. W. Noh, R. Anderson, **S. Kim**, J. Cardenas, and G. P. Nordin, “In-plane photonic transduction of silicon-on-insulator microcantilevers,” *Opt. Express* **16**, 12114-12123 (2008).
<http://www.opticsinfobase.org/abstract.cfm?URI=oe-16-16-12114>
 14. Y. Qian, J. Song, **S. Kim**, W. Hu, and G. P. Nordin, “Compact waveguide splitter networks,” *Opt. Express* **16**, 4981-4990 (2008). <http://www.opticsinfobase.org/abstract.cfm?URI=oe-16-7-4981>
 15. N. Rahmanian, **S. Kim**, and G. P. Nordin, “Ultra-Compact Ring Resonators in Low Refractive Index Contrast Waveguides,” *Opt. Express* , 16(1), 456-465 (2008).
<http://www.opticsinfobase.org/abstract.cfm?URI=oe-16-1-456>
 16. Y. Qian, J. Song, **S. Kim**, and G. P. Nordin, “Compact 90° trench-based splitter for silicon-on-insulator rib waveguides,” *Opt. Express*, **15**(25), 16712-16718 (2007).
<http://www.opticsinfobase.org/abstract.cfm?URI=oe-15-25-16712>
 17. Y. Lin, J. Cardenas, **S. Kim**, and G. P. Nordin, “Reduced loss through improved fabrication for single air interface bends in polymer waveguides,” *Opt. Express*, **14**(26), 12803-12813 (2006).
<http://www.opticsinfobase.org/abstract.cfm?URI=oe-14-26-12803>.
 18. N. Rahmanian, **S. Kim**, and G. P. Nordin, “Anisotropic high aspect ratio etch for fluorinated polymers with stress relief technique,” *J. Vac. Soc. Techn. B*, **24**(6) 2572-2577 (2006).
http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=4975198
 19. Y. Qian, **S. Kim**, J. Song, and G. P. Nordin, “Compact and low loss silicon-on-insulator ridge waveguide 90° Bend,” *Opt. Express*, **14**(13), 6020-6028 (2006). <http://www.opticsinfobase.org/abstract.cfm?URI=oe-14-13-6020>.
 20. **S. Kim**, J. Jiang, and G. P. Nordin, “Design of compact ring resonator and Mach-Zender interferometer with air trenches,” *Opt. Eng.*, **45**(5), 054602 (2006).

21. J. Cardenas, L. Li, **S. Kim**, and G. P. Nordin, "Compact low loss single air interface bends in polymer waveguides," *Opt. Express*, **12**(22), 5314-5324 (2004).
<http://www.opticsexpress.org/abstract.cfm?URI=OPEX-12-22-5314>.
22. **S. Kim**, G. P. Nordin, J. Jiang, and J. Cai, "Micro-genetic algorithm design of hybrid conventional waveguide and photonic crystal structures," *Opt. Eng.*, **43**(9), 2143-2149 (2004).
23. **S. Kim**, G. P. Nordin, J. Jiang, and J. Cai, "High efficiency 90 degree silica waveguide bend using an air hole photonic crystal region," *IEEE Photon. Technol. Lett.*, **16**(8), 1846-1848 (2004).
24. J. Cai, G. P. Nordin, **S. Kim**, and J. Jiang, "Three dimensional analysis of hybrid photonic crystal-conventional waveguide 90° bend," *Appl. Opt.*, **43**(21), 4244-4249 (2004).
25. **S. Kim**, J. Cai, J. Jiang, and G. P. Nordin, "New ring resonator configuration using hybrid photonic crystal and conventional waveguide structures," *Opt. Express*, **12**(11), 2356-2364 (2004).
<http://www.opticsexpress.org/abstract.cfm?URI=OPEX-12-11-2356>.
26. **S. Kim**, G. P. Nordin, J. Cai, and J. Jiang, "Ultracompact high-efficiency polarizing beam splitter with a hybrid photonic crystal and conventional waveguide structure," *Opt. Lett.*, **28**(23), 2384-2386 (2003).
27. D. M. Chambers, G. P. Nordin, and **S. Kim**, "Fabrication and analysis of a three-layer stratified volume diffractive optical element high-efficiency grating," *Opt. Express*, **11**(1), 27-38 (2003).
<http://www.opticsexpress.org/abstract.cfm?URI=OPEX-11-1-27>
28. G. P. Nordin, **S. Kim**, J. Cai, and J. Jiang, "Hybrid integration of conventional waveguide and photonic crystal structures," *Opt. Express*, **10**(23), 1334-1341 (2002).
<http://www.opticsexpress.org/abstract.cfm?URI=OPEX-10-23-1334>

Conference Proceedings

1. P. Cowles, C. Joy, A. Bujana, D. Rho, and **S. Kim**, "Preliminary measurement results of biotinylated BSA detection of a low cost optical cavity based biosensor using differential detection", *Proc. SPIE 9725, Frontiers in Biological Detection: From Nanosensors to Systems VIII*, 972509 (March 7, 2016); doi:10.1117/12.2212904; <http://dx.doi.org/10.1117/12.2212904>
2. D. Rho, S. Cho, C. Joy, and **S. Kim**, "Demonstration of an optical cavity sensor with a differential detection method by refractive index measurements," in *Wireless and Microwave Circuits and Systems (WMCS), 2015 Texas Symposium on*, vol., no., pp.1-4, 23-24 April 2015.
3. S. Cho, J. Brake, C. Joy and **S. Kim**, "Refractive index measurement using an optical cavity based biosensor with a differential detection ", *Proc. SPIE 9332, Optical Diagnostics and Sensing XV: Toward Point-of-Care Diagnostics*, 93320Z (March 9, 2015).
4. J. Brake and **S. Kim**, "An optical cavity based biosensor with chained differential detection to improve sensitivity and fabrication tolerance," *Proc. SPIE 8951, Optical Diagnostics and Sensing XIV: Toward Point-of-Care Diagnostics*, 89510C (February 28, 2014); doi:10.1117/12.2038621.
5. G. P. Nordin, R. R. Anderson, S. J. Ness, W. Hu, T. M. Gustafson, J. W. Noh, D. C. Richards, **S. Kim**, "Demonstration of Microcantilever-Based Sensor Array with Integrated Microfluidics," *Proc. SPIE 8018, Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) Sensing XII*, 80180X (June 03, 2011); doi:10.1117/12.884928.
6. Y. Lin, N. Rahmanian, **S. Kim**, and G. P. Nordin, "Fabrication of Compact Polymer Waveguide Devices Using Air-trench Bends and Splitters," *Southeastcon, 2008. IEEE*, vol., no., pp.421,426, 3-6 April 2008 doi: 10.1109/SECON.2008.4494331.
7. G. P. Nordin, J. W. Noh, and **S. Kim**, "In-plane photonic transduction for microcantilever sensor arrays," in *Nanoscale Imaging, Spectroscopy, Sensing, and Actuation for Biomedical Applications IV*, Alexander N. Cartwright, Dav V. Nicolau, and Paul L. Gourley, Editors, *Proceedings of SPIE Vol. 6447*, pp. 64470J-1 to -8 (2007).
8. Y. Lin, N. Rahmanian, **S. Kim**, and G. P. Nordin, "Compact and high efficiency polymer air-trench waveguide bends and splitters," *Proc. SPIE 6462, Micromachining Technology for Micro-Optics and Nano-Optics V and Microfabrication Process Technology XII*, 64620V (March 07, 2007); doi:10.1117/12.701359.

9. Y. Qian, **S. Kim**, J. Song, G. P. Nordin, and J. Jiang, "Efficient and compact silicon-on-insulator rib waveguide 90 degree bends and splitters," *Proc. SPIE* 6477, Silicon Photonics II, 64770I (February 09, 2007); doi:10.1117/12.700932.
10. G. P. Nordin, J. Cardenas, **S. Kim**, and J. Cai, "Compact Single Air Interface Bends in PFCB Polymer Waveguides," *Proc. SPIE* 5728, Integrated Optics: Devices, Materials, and Technologies IX, (31 March 2005); doi: [10.1117/12.591124](https://doi.org/10.1117/12.591124).
11. **S. Kim**, J. Cai, J. Jiang, and G. P. Nordin, "Design and Analysis of Small-Area Air Trench Bends and Splitters," *Proc. SPIE* 5729, Optoelectronic Integrated Circuits VII, (25 March 2005); doi: [10.1117/12.591148](https://doi.org/10.1117/12.591148) (**Invited Paper**)
12. G. P. Nordin, **S. Kim**, L. Li, J. Cai, and J. Jiang, "Photonic crystal and air trench approaches to realize small-area bends and splitters in low index contrast waveguides", in *Linear and Nonlinear Optics of Organic Materials IV*, Robert A. Norwood, Manfred Eich, and Mark G. Kuzyk, Editors, Proceedings of SPIE Vol. 5517, pp. 187-198 (2004). (**Invited Paper**)
13. G. P. Nordin, **S. Kim**, J. Cai, and J. Jiang, "Hybrid Photonic Crystal and Conventional Waveguide Structures", in *Quantum Sensing and Nanophotonic Devices*, Manijeh Razeghi, Gail J. Brown, Editors, Proceedings of SPIE Vol. 5359, p. 324 (2004). (**Invited Paper**)
14. G. P. Nordin, J. Jiang, **S. Kim**, and J. Cai "Micro-genetic algorithm-based design of combined conventional waveguide and photonic crystal devices", in *Photonic Crystal Materials and Devices*, Ali Adibi, Axel Scherer, and Shawn-Yu Lin, Editors, Proceedings of SPIE Vol. 5000, p. 152-160, (2003).

Conferences (published Abstracts or Summaries)

1. A. Bujana, D. Rho, P. Cowles, C. Joy, and **S. Kim**, "Improved optical cavity based biosensor with differential detection method using linear polarizers and a polarization beam splitter," Pittcon2016, Atlanta, GA, USA, March 6-10, 2016.
2. A. Worcester, Y. Adonyi, **S. Kim**, and T. Privitt, "Closed-Loop Controlled Microwave Design for Ceramics to Metal Joining," FABTECH 2013, Chicago, IL, USA, November 18-21, 2013.
3. C. Mounce and **S. Kim**, "Optical Cavity-based Biosensor Utilizing Differential Detection," IEEE Photonics Conference 2012, San Francisco, USA, September 23-27, 2012.
4. R. R. Anderson, W. Hu, J. W. Noh, S. J. Ness, T. M. Gustafson, D. C. Richards, **S. Kim**, B. A. Mazzeo, A. T. Woolley and G. P. Nordin, "Demonstration of Transient Deflection Response for Microcantilever Arrays Integrated With Polydimethylsiloxane (PDMS) Microfluidics," International Workshop on Nanomechanical Cantilever Sensors 2011, Dublin, Ireland, May 11-13, 2011.
5. G. P. Nordin, **S. Kim**, R. Anderson, J. W. Noh, S. J. Ness, W. C. Dahlquist, and D.C. Richards, "Microcantilever arrays with in-plane photonic readout for biosensing," Paper J3 2323, 218th Meeting of the Electrochemical Society, October 10-15, 2010. (**Invited Paper**)
6. G. P. Nordin, **S. Kim**, W. Hu, R. Anderson, J. W. Noh, S. Ness, W. Dahlquist, and D.C. Richards, "Demonstration of microcantilever biosensor array with in-plane photonic transduction mechanism," microTAS, Groningen, Netherlands, October 3-7, 2010.
7. G. P. Nordin, **S. Kim**, J. W. Noh, W. Hu, R. Anderson, S. J. Ness, W. C. Dahlquist, and D.C. Richards, "Flow rate detection and preliminary biological molecule sensing results with photonic microcantilever arrays," International Workshop on Nanomechanical Cantilever Sensors 2010, Banff, Canada, May 26-28, 2010.
8. G. P. Nordin, **S. Kim**, J. W. Noh, W. Hu, R. Anderson, S. Ness, W. Dahlquist, B. Haslam, and J. Dong, "In-plane photonic readout of microcantilever arrays integrated with microfluidics for biosensing," microTAS, Jeju, Korea, November 1-5, 2009.
9. B. Haslam, **S. Kim**, W. Hu, and G. P. Nordin, "Microfluidic closed volume reflow pump," microTAS, Jeju, Korea, November 1-5, 2009.
10. J. W. Noh, R. Anderson, **S. Kim**, and G. P. Nordin, "In-plane all-photonic transduction of microcantilever arrays by a differential splitter using a double-step rib waveguide," Frontiers in Optics 2009, OSA's 93rd Annual meeting, San Jose, USA, October 11-15, 2009.

11. G. P. Nordin, **S. Kim**, J. W. Noh, R. Anderson, W. Hu, S. J. Ness, B. Haslam, and J. Dong, "Photonic Microcantilever Arrays With Integrated Microfluidics," International Workshop on Nanomechanical Cantilever Sensors 2009, Jeju, Korea, May 20-22, 2009.
12. S. J. Ness, **S. Kim**, and G. P. Nordin, "Deposition of Functionalizing Materials on Photonic Microcantilever Chemical/Biological Sensors using Inkjet Technology," Nanotech, Houston, USA, May 3-7, 2009
13. G.P. Nordin, **S. Kim**, J.W. Noh, W. Hu, R. Anderson, B. Haslam, W. Dahlquist, and H.B. Dong, "Microcantilever arrays with photonic readout for biosensing," Microtechnologies in Medicine and Biology, Quebec City, Canada, April 1-9, 2009.
14. **S. Kim**, Y. Qian, J. Song, and G. P. Nordin, "Compact 1 x 32 Splitter Network and Ring Resonator for Silicon-On-Insulator Rib Waveguide," Frontiers in Optics 2008, OSA's 92nd Annual meeting, Rochester, USA, October 21-22, 2008.
15. G. P. Nordin, **S. Kim**, J. Noh, W. Hu, R. Anderson, Y. Qian, J. Song, B. Haslam, S. Ness, "Progress toward parallel microcantilever array readout enabled by in-plane photonic transduction," International Workshop on Nanomechanical Cantilever Sensors 2008, Mainz, Germany, May 19-21, 2008. (**Invited Paper**)
16. G. P. Nordin, J. Noh, Y. Qian, J. Song, R. Anderson, and **S. Kim**, "Photonics-Enabled Microcantilever Arrays for Sensor Applications," Integrated Photonics and Nanophotonics Research and Applications (IPNRA), Salt Lake City, UT, May 9-11, 2007.
17. Y. Qian, **S. Kim**, J. Song, G. P. Nordin, and J. Jiang, "Compact 90° Bends and Splitters for Silicon-on-Insulator Rib Waveguide," Integrated Photonics and Nanophotonics Research and Applications (IPNRA), Salt Lake City, UT, May 9-11, 2007.
18. G. P. Nordin, **S. Kim**, J. Noh, Y. Qian, and J. Song, "In-Plane Transduction of Nanomechanical Microcantilever Motion to Enable Sensor Arrays," NSTI Nanotech 2007, Santa Clara, CA, May 20-24, 2007.
19. G. P. Nordin, J. W. Noh, Y. Qian, and **S. Kim**, "Silicon photonics for microcantilever-based chemical and biological sensors," 210th Electrochemical Society's Third International Symposium on Integrated Optoelectronics, Cancun, Mexico, October 29 – November 3, 2006. (**Invited Paper**)
20. N. Rahmanian, **S. Kim**, and G. P. Nordin, "Fabrication and characterization of air-trench waveguide beamsplitters in perfluorocyclobutyl polymers," in *Frontiers in Optics 2006*, OSA Technical Digest, (Optical Society of America, Washington DC, 2006), Paper FWM1.
21. G. P. Nordin, **S. Kim**, Y. Qian, J. W. Noh, and J. Jiang, "In-Plane Photonic Transduction of SOI Microcantilever Sensors," 3rd International Conference on Group IV Photonics, Ottawa, Canada, September 13-15, 2006. Paper WA3.
22. G. P. Nordin, **S. Kim**, J. W. Noh, and Y. Qian, "In-Plane Photonic Transduction for Microcantilever Arrays," International Workshop on Nanomechanical Sensors, Copenhagen, Denmark, May 7-10, 2006.
23. G. P. Nordin, **S. Kim**, N. Rahmanian, and Y. Lin, "Compact Photonic Devices in Low Index Contrast Waveguides," in *Symposium on Organic Thin Films for Photonic Applications*, OSA Technical Digest, (Optical Society of America, Washington DC, 2005), Paper SWB3, (**Invited Paper**).
24. G. P. Nordin, J. Cardenas, and **S. Kim**, "Compact High Efficiency Bends in Perfluorocyclobutyl Polymer Waveguides," Optical Fiber Communications (OFC), Paper OFD2, 2005.
25. G. P. Nordin, **S. Kim**, L. Li, J. Cai, and J. Jiang, "Air Trench and Photonic Crystal Structures for Compact Waveguide Devices in Low Index Contrast Waveguides," Paper N1 1433, 206th Meeting of the Electrochemical Society, October 3-8, 2004. (**Invited Paper**)
26. **S. Kim**, J. Cai, J. Jiang, and G. P. Nordin, "Low refractive index contrast waveguide 90 degree bend and a ring resonator design using hybrid photonic crystal and conventional waveguide structures," in *Integrated Photonics Research Topical Meetings on CD-ROM* (The Optical Society of America, Washington, DC, 2004), Presentation IthG3.
27. **S. Kim**, G. P. Nordin, J. Jiang, and J. Cai, "Hybrid photonic crystal and low refractive index contrast waveguide structures," in *Integrated Photonics Research*, OSA Technical Digest, (Optical Society of America, Washington DC, 2003), pp. 46-48.

28. D. Chambers, **S. Kim**, and G. P. Nordin, "Fabrication and evaluation of stratified volume diffractive optical elements with three grating layers", in *OSA Annual Meeting and Exhibit 2000* (October 22-26, Optical Society of America, Providence, RI, 2000), p. 113.
29. D. Chambers, **S. Kim**, and G. P. Nordin, "Fabrication and evaluation of two-layer stratified volume diffractive optical elements", *Diffractive Optics and Micro-Optics*, OSA Technical Digest (June 18-22, Optical Society of America, Quebec City, Canada, 2000), postdeadline paper.