CHEOLBOK KIM

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EDUCATION:

Ph.D.	Electrical and Computer Engineering University of Florida, Gainesville, FL, USA	Aug. 2010-present
	Electrical Engineering University of Buffalo, the State University of New York, Buffalo, NY, USA ▪ Transfer to University of Florida	Aug. 2009- Aug. 2010
M.S.	Electrical Engineering Gyeongsang National University, Jinju, South Korea ▪ Thesis: "Design of a randomly excited and randomly spaced linear array using the modified particle swarm optimization"	Feb. 2008
B.S.	Electrical Engineering Gyeongsang National University, Jinju, South Korea ▪ Teacher's certificate ▪ Minor: Mathematics	Feb. 2006

HONORS:

Apr. 2013 **IEEE Antennas and Propagation Society Doctoral Research Award Grant**
Nov. 2012 Outstanding International Student Award, University of Florida.

RESEARCH INTERESTS AND EXPERIENCE:

Design, fabrication and characterization of micromachined and metamaterial based antennas in microwave, millimeter wave and Terahertz bands for wireless communication systems.

- **THz antenna array and system**: Design three dimensional antennas for 1~3THz, fabricate them using micromachining, and characterize the antenna arrays using FTIR 113v Burker Fourier transform infrared spectrometer (FTIR) system.
- **High gain antenna and metamaterials**: Improve the antenna/filter performance such as gain, efficiency and bandwidth.
- **Optimization of the array antenna:** Optimize a linear antenna array using particle swarm optimization (PSO)
- **Ultra wideband antenna (UWB) and Super Wideband antenna (SWA)**: Increase the bandwidth of the antenna from 3.1 to up to 35.6 GHz
- **High frequency material characterization**: Characterize the high dielectric material, through glass via (TGA), thin-film $(Ba_{0.6},Sr_{0.4})TiO_3$ at a high frequency for RF application.
- **Microfabrication techniques**: Multidirectional 3D UV lithography, E-beam lithography, electroplating, Sputtering, Thermal evaporation, Reactive ion etching (RIE), Chemical etching, Liftoff process, PDMS process, Scanning electron microscopy, Profilometer, Spin Coater, Mask Aligner (MA6)

TEACHING EXPERIENCE:

Teaching assistant	Department of Electrical Engineering University at Buffalo, the State University of New York • Electronic Circuits Lab	Jan. 2010-May.2010
Student assistant	Department of Electrical Engineering University at Buffalo, the State University of New York • RF/Microwave Circuit I	Aug. 2009-Dec.2009
Lecturer	Department of Avionics Korea Aviation Polytechnic College, South Korea • Aviation Antenna Engineering • Aviation Antenna Engineering Experiment	Mar. 2009-Jun.2009
Lecturer	Department of Electronic Information Communication Dong-Pusan College University, South Korea • Information Communication Circuit Experiment	Mar. 2009-Jun. 2009
Teacher	Department of Electronic Engineering Hadong High School, South Korea • Electronic Circuits • Electrical and Electronic Measurement	Mar. 2008-Feb.2009
Teaching assistant	Department of Electronic Engineering Gyeongsang National University, South Korea • Basic Electric Circuit Experiment I (2006) • Basic Electric Circuit Experiment II (2006) • Electronic Experiment I (2007)	Mar. 2006-Feb.2008

MENTORING:

- Onkar Bhende (MS student), "Multi-directional 3D UV lithography," Spring 2012.
- Taesong Hwang (PhD student), "UV lithography process to fabricate the power amplifier," Fall 2011.
- Kevin T. Rosenberg (Undergraduate): "PDMS process," Fall 2011.
- Hyochun Ahn (MS, Fall 2009), "Electriomagnatically steerable directional antenna with floating pillar array," Fall 2009.

BACKGROUND COURSES INCLUDE (GRADUATE):

Antenna Analysis and Design	RF/Microwave Circuit
Adaptive Array Antenna	RF/Microwave Lab
Electromagnetic Theory I	Electromagnetic wave propagation and scattering
Advanced Electromagnetic Field Theory	Wired and wireless home networking technology
Microwave IC design	DSP system Design
Nanophotonic	Nanostructure Materials
Bio MEMs	Microelectric Device Fabrication
Design of MEMS Transducer I	Advanced Microsystem Technology
Design of MEMS Transducer II	

COMPUTER SKILLS:

- EM simulators: CST Microwave studio, HFSS
- Circuit simulators: Ansoft Designer, Cadence, P-spice
- Programming: Visual C++, Matlab
- Others: Microsoft Office, autoCAD, Adobe photoshop

AFFILIATIONS AND CERTIFICATIONS

- Student Member, IEEE (2010-present)
- Member, IEEE Antennas and Propagation Society (2010-present)
- Member, IEEE Communication Society (2012-present)
- Reviewer in IEEE Antennas and Wireless Propagation Letter (2011-present)
- Reviewer in Journal of Electrical Engineering & Electronic Technology (2012-present)
- Reviewer in 10th International Conference on Electrical Engineering, Computing Science and Automatic Control (CCE) 2013

TRAINING AND PARTICIPATION:

Apr. 2013	Volunteer on the IEEE Wireless and Microwave Technology Conference (WAMICON) 2013
Aug. 2010	COMSOL Multiphysics workshop
Mar. 2009	Completion of the Design of LNA (Low Noise Amplifier) course
Mar. 2009	Completion of the Design of Mixer course
Oct. 2006	Completion of the ADS Layout and Momentum
Aug. 2006	Participation in the 2006 IT tour (Visit to QUALCOMM Headquarter in San Diego) hosted by Qualcomm Incorporated.
Jul. 2006	Completion of the 1st Intelligence home Academy-Short-distance wireless communications (UWB, Zigbee, Binary CDMA, Bluetooth, Zigbee, Tiny OS)
July 2006	Completion of the Design and Analysis of the Antenna & filter Using the CST Microwave Studio.

PUBLICATIONS: One book chapter, one patent, 16 journals and 28 conferences

- **BOOK CHAPTER PUBLICATION**

1. ***Cheolbok Kim***, *"Chapter 2. Ultra-Wideband Antenna"*, in *Microwave and Millimeter Wave Technologies Modern UWB antennas and equipment*, ISBN: 978-953-7619-67-1, IN-TECH March 2010.

- **PATENT PUBLICATION**

1. ***Cheolbok Kim***, Jong Kyu Kim and Yong-Kyu Yoon. 2013. Spherical Monopole Antenna. U.S. Patent 61/842631, filed July 03, 2013.

- **JOURNAL PUBLICATIONS (9 AS LEADING AUTHOR AND 7 AS SECOND AUTHOR)**

16. ***Cheolbok Kim***, Daniel Arenas, David Tanner, and Yong-Kyu Yoon, "Micromachined air-lifted terahertz monopole antenna arrays: Design, Fabrication and Characterization," *IEEE Antennas and Wireless Propagation Letters*, (on review).
15. ***Cheolbok Kim***, Kyung-Hoon Lee, Sangrok Lee and Yong-Kyu Yoon, "Gain improvement of the GPS ceramic patch antenna with a four-leaf clover shape metamaterial slab," *IEEE Transaction on Antennas and Propagation* (on review).
14. ***Cheolbok Kim***, Xiaoyu Cheng, David E. Senior, and Yong-Kyu Yoon, "High efficiency compact folded monopole antennas using mushroom structures for 5.8GHz WLAN applications," *IEEE Antennas and Wireless Propagation Letters* (on review).
13. ***Cheolbok Kim***, Xiaoyu Cheng, David E. Senior, and Yong-Kyu Yoon, "Compact frequency and bandwidth tunable stropband filters using split ring resonators and varactors coupled transmission line," *AEU-International Journal of Electronics and Communications*, vol. 66, no. 11, pp. 865-870, 2012.
12. Xiaoyu Cheng, David E. Senior, ***Cheolbok Kim***, and Yong-Kyu Yoon, "A Compact omnidirectional self-packaged patch antenna with complementary split ring resonator loading for wireless endoscope applications," *IEEE Antennas and Wireless Propagation Letters*, vol. 10, pp. 1532-1535, 2011.
11. ***Cheolbok Kim***, Jaesam Jang, Youngho Jung, Hosang Lee, Dongki Cho, Seongbae Park, Mun Soo Lee, "A Wideband Planar Surface Wave Antenna for the WLAN Router," *AEU-International Journal of Electronics and Communications*, vol. 64, no. 9, pp. 888-894, July 2010.

10. Seungbae Park, ***Cheolbok Kim***, Youngho Jung, Hosang Lee, , Dongki Cho, and Mun Soo Lee, "Gain Enhancement of a Microstrup Patch Antenna Using a Circularly Periodic EBG Structure and Air Layer," *AEU-International Journal of Electronics and Communications*, vol. 64, no. 7, pp. 607-613, July 2010.
9. ***Cheolbok Kim***, Jae-Sam Jang, Young-Ho Jung, Ho-Sang Lee, Seung-Bae Park, Jae-Hoon Kim and Mun-Soo Lee, "Design of a Frequency Notched UWB Antenna Using a Slot-type SRR," *AEU-International Journal of Electronics and Communications*, vol. 63, no. 12, pp. 1087-1093, Dec. 2009.
8. Hosang Lee, Dongki Cho, Youngho Jung, ***Cheolbok Kim***, Mun Soo Lee "A Study on the Enhancement of Gain Axial Ratio Bandwidth of Multi-Layer CP-DRAs," *Journal of The Institute of Electronics Engineers of Korea*, vol. 46-TC, no. 7, pp. 52-60, July. 2009.
7. Jae Sam Jang, Youngho Jung, Hosang Lee, Dongki Lee, Seongbae Park, ***Cheolbok Kim*** and Mun Soo Lee, "A Study on the Bandwidth Enhancement of a Microstip Surface Wave Antenna with a Monopole Like Pattern," *Journal of The Institute of Electronics Engineers of Korea*, vol. 45-TC, no. 12, pp. 139-145, Dec. 2008.
6. ***Cheolbok Kim***, Jung-Sum Lim, Jae-Sam Jang, Young-Ho Jung, Ho-Sang Lee, Dong-Ki Jo and Mun-Soo Lee, "Performance Improvement of a Randomly Excited and Spaced Linear Array Using the PSO Algorithm," *Journal of The Institute of Electronics Engineers of Korea*, vol. 45-TC, no. 11, pp. 45-54, Nov. 2008.
5. ***Cheolbok Kim***, Jung-Sup Lim, Jae-Sam Jang, Young-Ho Jung, Ho-Sang Lee and Mun-Soo Lee, "Wideband Notched Compact UWB Antenna," *International Journal of Applied Electromagnetics and Mechanics*, vol. 28, no. 1-2, pp.101-110, 2008.
4. Hosang Lee, Jaesam Jang, Youngho Jung, ***Cheolbok Kim***, Jaehoon Kim, Seungbae Park, Mun Soo Lee, "Design of a U-type Planar UWB Antenna Composed of Monopole Pair," *Journal of The Institute of Electronics Engineers of Korea*, vol. 45-TC, no. 9, pp. 60-66, Sep. 2008.
3. Jae-Sam Jang, ***Cheolbok Kim***, Ho-Sang Lee, Young-Ho Jung, Dong-Ki Jo and Mun-Soo Lee, "Design of a Microstrip Linear Tapered Slot Antenna," *Journal of The Institute of Electronics Engineers of Korea*, vol. 45-TC, no. 5, pp. 40-45, May 2008.
2. Jung-Sup Lim, ***Cheolbok Kim***, Jae-Sam Jang, Ho-Sang Lee, Young-Ho Jung, Dong-Ki Jo and Mun-Soo Lee, "Design of the CPW-Fed Triple-Band Internal Planar Monopole Antenna," *Journal of The Institute of Electronics Engineers of Korea*, vol. 44-TC, no. 12, pp. 73-78, Dec. 2007.
1. ***Cheolbok Kim***, Jung-Sup Lim, Ho-Sang Lee, Jae-Sam Jang, Young-Ho Jung, Dong-Ki Jo and Mun-Soo Lee, "Design of the Wideband Notched Compact UWB Antenna," *Journal of The Institute of Electronics Engineers of Korea*, vol. 44-TC, no. 9, pp. 54-62, Sep. 2007.

- **CONFERENCE PUBLICATIONS (13 AS LEADING AUTHOR AND 15 AS SECOND AUTHOR)**

28. ***Cheolbok Kim***, Jong Kyu Kim, and Yong-Kyu Yoon, "Spherical super wideband monopole antenna with micromachined tapered feeding line," *IEEE Antennas and Propagation Society International Symposium 2013*, Orlando, FL, USA, July 7-13, 2013.
27. ***Cheolbok Kim***, Jong Kyu Kim, Kyoung Tae Kim and Yong-Kyu Yoon, "Micromachined wearable /Foldable super wideband (SWB) monopole antenna based on a flexible liquid crystal polymer (LCP) substrate toward Imaging/Sensing/Health monitoring systems," *63nd Electronic Components and Technology Conference (ECTC) 2012*, Las Vegas, NV, USA, May 28 - 31, 2013.
26. ***Cheolbok Kim*** and Yong-Kyu Yoon, "High frequency characterization and analytical modeling of through glass via (TGV) for 3D thin-film interposer and MEMS packaging," *63nd Electronic Components and Technology Conference (ECTC) 2012*, Las Vegas, NV, USA, May 28 - 31, 2013.
25. Chang Long, Luyi Yan, ***Cheolbok Kim***, Daniel J. Arenas, Yong-Kyu Yoon and David B. Tanner, "Characterization of micromachined air-lifted terahertz antenna arrays," *American Physical Sociaty (APS) March Meeting 2013*, Baltimore, MD, USA, March 18 - 22, 2013.
24. ***Cheolbok Kim***, Xiaoyu Cheng, David E. Senior, Kyoung Tae Kim, and Yong-Kyu Yoon, "A surface micromachined high gain dielectric lens antenna for millimeter wave applications," *IEEE Antennas and Propagation Society International Symposium 2012*, Chicago, IL, USA, July 8-13, 2012.
23. ***Cheolbok Kim***, Kyoung-Hoon Lee, Sangrock Lee, Kyung Tae Kim, and Yong-Kyu Yoon, "A surface micromachined high directivity GPS patch antenna with a four-leaf clover shape metamaterial slab," *62nd Electronic Components and Technology Conference (ECTC) 2012*, San Diego, CA, USA, May 29 - June 1, 2012.

22. Xiaoyu Cheng, Jun Shi, Jungkwun Kim, ***Cheolbok Kim***, David E. Senior, and Yong-Kyu Yoon, "A compact self-packaged patch antenna folded in rectangular waveguide shape," *IEEE Antennas and Propagation Society International Symposium 2011*, Spokane, WA, July 3-8, 2011.
21. Xiaoyu Cheng, Jun Shi, ***Cheolbok Kim***, David E. Senior and Yong-Kyu Yoon, "A Compact self-packaged patch antenna with non-planar complimentary split ring resonator," *IEEE Antennas and Propagation Society International Symposium 2011*, Spokane, WA, July 3-8, 2011.
20. Kyoung-Tae Kim, Xiaoyu Cheng, David E. Senior, ***Cheolbok Kim***, and Yong-Kyu Yoon, "Dielectric properties of Ag-Doped (Ba0.6,Sr0.4)TiO3 thin films using Sol-Gel method for RF applications," *20th International Symposium on Applications of Ferroelectrics & The international symposium force microscopy and nanoscale phenomena in polar materials 2011*, Vancouver, BC, Canada, June 23-27, 2011.
19. Kyoung-Tae Kim, Xiaoyu Cheng, David E. Senior, ***Cheolbok Kim***, and Yong-Kyu Yoon, "Improvement of dielectric and tunability properties in heterolayered structure of $(Pb_{0.1},Sr_{0.9})TiO_3/(Pb_{0.1},Sr_{0.9})TiO_3$ thin films," *20th International Symposium on Applications of Ferroelectrics & The international symposium force microscopy and nanoscale phenomena in polar materials 2011*, Vancouver, BC, Canada, June 23-27, 2011.
18. David E. Senior, ***Cheolbok Kim***, and Yong-Kyu Yoon, "Wireless passive sensing application using a cavity loaded evanesant wave half mode substrate integrated waveguide resonator," *30th Tranducers 2011*, Beijing, China, June 5-9, 2011.
17. Jungkwun Kim, Pitfee Jao, ***Cheolbok Kim***, and Yong-Kyu Yoon, "Dispense and self-planarization process on a modifed surface for multiple height 3-D microfabrication," *30th Tranducers 2011*, Beijing, China, June 5-9, 2011.
16. Xiaoyu Cheng, ***Cheolbok Kim***, David E. Senior, Melory Machado, and Yong-Kyu Yoon, "A self-packaged Omnidirectial folded patch rectenna system for wireless RF energy harvesting," *30th Tranducers 2011*, Beijing, China, June 5-9, 2011.
15. Xiaoyu Cheng, David E. Senior, Jungkwun Kim, ***Cheolbok Kim***, Jun Shi and Yong-Kyu Yoon, "Compact self-packaged Active folded patch antenna with Omni-directional radiation patterns," *IEEE 61st Electronic Components and Technology Conference (ECTC) 2011*, Lake Buena Vista, Florida, USA, May 31- June 3, 2011.
14. ***Cheolbok Kim***, Hyochun Ahn, David Senior Elles, Melroy Machado, and Yong-Kyu Yoon, "A High Gain Circular Polarization Antenna Using Metamaterial Slabs," *IEEE Antennas and Propagation Society International Symposium 2010*, Toronto, Ontario, Canada, July 11-17, 2010.
13. ***Cheolbok Kim***, Hyochun Ahn, Jungkwun Kim, Xiaoyu Cheng and Yong-Kyu Yoon, "A Compact 5GHz WLAN Notched Bluetooth/UWB Antenna," *IEEE Antennas and Propagation Society International Symposium 2010*, Toronto, Ontario, Canada, July 11-17, 2010.
12. ***Cheolbok Kim***, Jaesam Jang, Youngho Jung, Hosang Lee, Dongki Cho, Seongbae Park, Mun Soo Lee, "A Wideband Planar Surface Wave Antenna for the WLAN Router," *Proceedings of the 39th European Microwave Conference (EuMW2009)*, Nuova Fiera di Roma, Rome, Italy, pp. 1527-1530, Sep. 28-Oct. 2, 2009.
11. Seungbae Park, ***Cheolbok Kim***, Youngho Jung, Hosang Lee, , Dongki Cho, and Mun Soo Lee, "Gain Enhancement of a Microstrup Patch Antenna Using a Circularly Periodic EBG Structure and Air Layer," *UKC2009 (US-Korea Conference on Science, Technology, and Entrepreneurship)*, RALEIGH NC, USA, July. 16-19, 2009.
10. Jung-Sum Lim, ***Cheolbok Kim***, Jae-Sam Jang, Ho-Sang Lee, Young-Ho Jung, Jae-Hoon Kim, Seung-Bae Park, B. H. Lee and Mun-Soo Lee, "Design of a Subwavelength Patch Antenna Using Metamaterials," *EuMW2008 (European Microwave Week 2008)*, Amsterdam, Netherland, Oct. 27-31, 2008.
9. ***Cheolbok Kim***, Jae Sam Jang, Ho Sang Lee, Jae Hoon Kim, Seong Bae Park and Mun Soo Lee, "Design of a Frequency Notched UWB Antenna Using a Slot-type SRR," *UKC2008 (US-Korea Conference on Science, Technology, and Entrepreneurship)*, San Diego, USA, Aug. 14-17, 2008.
8. ***Cheolbok Kim***, Jae Sam Jang, Hosang Lee, Young Ho Jung, Jae Hoon Kim, Seung Bae Park and Mun Soo Lee, "Design of a Frequency Notched UWB Antenna Using a Slot-Type SRR," *2nd International Conference on Wireless Communications in Underground and Confined Areas*, Val-d'Or, Quebec, Canada, Aug. 25-27, 2008.

7. Jae-Sam Jang, Ho-Sang Lee, Young-Ho Jung, Dong-Ki Jo, Kyung-Tae Park, ***Cheolbok Kim*** and Mun-Soo Lee, "Design of a Microstrip Linear Papered Slot Antenna," *ICEIC 2008 (The 9th International Conference on Electronics, Information, and Communication)*, Tashkent, Uzbekistan, Jun. 24-27, 2008.
6. ***Cheolbok Kim***, Jung-Sum Lim, Jae-Sam Jang, Young-Ho Jung, Ho-Sang Lee and Mun-Soo Lee, "Design of the Wideband Notched Compact UWB antenna," *APMC 2007 (2007 Asia-Pacific Microwave Conference)*, Bangkok, Thailand, Dec 11-14, 2007.
5. ***Cheolbok Kim***, Jung-Sum Lim, Jae-Sam Jang, Young-Ho Jung, Ho-Sang Lee, Dong-Ki Jo and Mun-Soo Lee, "Wideband Notched Compact UWB Antenna," *ISEM 2007(13th International Symposium on Applied Electromagnetics and Mechanics)*, Michigan, USA, Sep. 9-12, 2007.
4. ***Cheolbok Kim***, Jung Sup Lim, Jae Sam Jang and Mun Soo Lee, "Design of the wideband Notched Compact UWB Antenna," *The 3rd National Defense Information and Control Technology Conference*, Youngju, Korea, Aug. 9-10, 2007.
3. Jang-Guen Lee, Young-Ho Jung, Chi-Woon Kang, Woo Soo Kim, Seing-Geon Jeon, Ho-Soon Hwang, Jung-Sup Lim, ***Cheolbok Kim*** and Mun-Soo Lee, "Design of Broadband Microstrip Patch Antenna Using L-Probe Feed," *Proceedings of KICS, IEEK and ICROS Spring Conference* 2006.
2. Je Young tae, Ho Sang Lee, Chi Woon Kang, Woo Soo Kim, Seo Toung Yoon, Ho Soon Hwang, Jae Sam Jang, Jung Sup Lim, ***Cheolbok Kim*** and Mun Soo Lee, "Design of a CPW-Feed Broadband Monopole Antenna," *Proceedings of KICS (Korea Information and Communications Society) Summer Conference* 2006.
1. Chang-Heon Seok, Jae-Sam Chang, Jung-Sup Lim, Ho-Sang Hwang, Ho-Sang Lee, ***Cheolbok Kim*** and Mun-Soo Lee, "A Microstrip Bandpass Filter Using Dual-Behavior Resonators Integrated with an EBG Structure," *ITC-CSCC 2006 (The International Technical Conference on Circuits/Systems, Computers and Communications)*, Chiang Mai, Thailand, July 10-13, 2006.