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**Curriculum Vitae**

2020~present: Professor, UNIST  
 2019~2020: (Tenured) Associate Professor, UNIST  
 2014~2019: Associate Professor UNIST  
 2010~2014: Assistant Professor UNIST  
 2006~2010: Senior Engineer, Samsung Electronics, Semiconductor Research Center, CAE/TCAD  
 2004~2006: Postdoctoral Fellow, Stanford University, CIS TCAD group

**Academic Credential**

2004: Ph. D. Electrical Engineering and Computer Science, Seoul National University  
 2001: M. S. Electrical Engineering and Computer Science, Seoul National University  
 1999: B. S. Electrical Engineering, Seoul National University

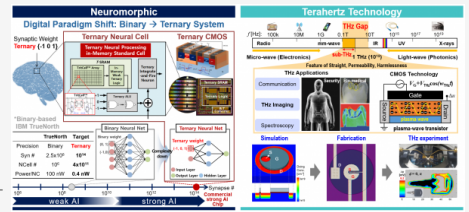
**Awards/Honors/Memberships**

2020: Samsung Paper Prize (26th KCS)  
 2019: UNIST Young Distinguished Professor  
 2019: Best Chip Design Contest Prize (26th KCS/CDC)  
 2019: 25th HumanTech Paper Award (Samsung)  
 2017: 23rd HumanTech Paper Award (Samsung)  
 2016: 22nd HumanTech Paper Award (Samsung)  
 2015: Nanoscale Horizons Poster Prize (15th IEEE-NANO)  
 2012~Present: Editor, JSTS (IEEK)  
 2010~2012: Editing Committee of ITRS  
 Member of IEEE, Electron Device Society

**I Nano-Electronic Emerging Devices Lab.**  
**차세대 나노 전자 소자 연구실**

Development of nano-electronic emerging devices (NEEDs) is main research focus to achieve ultra-low power peta-scale digital and RF applications in THz bandwidth. Our laboratory research about novel “beyond CMOS” devices as well as high-performance /low-power nano-CMOS for multi-valued logic and memory applications, neuromorphic devices, plasma wave transistor (PWT) THz emitter and detectors based on nano-scale structures using Si/Ge/C-based and III-V novel materials as well as nano-electronic circuit design.

차세대 나노 전자소자는 페타스케일 초저전력 디지털 및 THz 아날로그 반도체 시스템을 구현하는데 필수적인 연구 분야로서, 현재 기가급 CMOS 기반 반도체 시스템의 성능을 개선하면서 소모전력을 감소하는 반도체 소자 기술이 중요한 이슈이다. 우리 실험실은 초고성능/초저전력 동작의 새로운 소자를 나노구조의 신물질 및 나노전자회로 연구와 병행하여, 다차로직 및 메모리, 뇌신경모방소자, 플라즈마파 소자 기반 THz 신호원 및 검출기 응용연구를 하고 있다.



**관심분야**

Nano-CMOS, Neuromorphic Device, Multi-Value Logic, THz Plasma-Wave Transistor (PWT), Monolithic Transistor-Antenna (Trantenna), THz Imaging

**희망분야**

Neuromorphic Processing-in-Memory Architecture, THz Spectroscopy, Near-Field THz Imaging

**I Research Keywords and Topics**

- Multi-pixel plasmonic THz detector for real-time THz imaging application 실시간 테라헤르츠 영상구현을 위한 다중-픽셀 테라헤르츠파 검출기
- Nano-CMOS based terahertz (THz) plasma-wave transistor technology research 나노 CMOS 기반 테라헤르츠 플라즈마파 소자 기술 연구 (신호원 및 검출기)
- Multi-valued logic/memory devices and neuromorphic devices for artificial neural network 초저전력 인공신경망을 위한 다차로직/메모리 소자 및 뇌신경모방 소자 (Samsung's Future Tech Fostering Project: Next-generation semiconductor)

**I Research Publications**

- Nature Electronics, Tunnelling-based ternary metal - oxide - semiconductor technology, Jae Won Jeong/ Young-Eun Choi/ Woo-Seok Kim/ Jee-Ho Park/ Sunmean Kim/ Sunhae Shin/ Kyuho Lee/ Jiwon Chang/ Seong-Jin Kim/ Kyung Rok Kim, (2019.07)
- Symposium on VLSI Technology and Circuits, Record-High Performance Trantenna based on Asymmetric Nano-Ring FET for Polarization-Independent Large-Scale/Real-Time THz Imaging, E-San Jang/ Min Woo Ryu/ Ramesh Patel/ Sang Hyo Ahn/ Hyeong Ju Jeon/ Ki Jin Han/ Kyung Rok Kim, (2019.06)
- Symposium on VLSI Technology, Trantenna: Monolithic transistor-antenna device for real-time THz imaging system, Min Woo Ryu/ Ramesh Patel/ E-San Jang/ Sang Hyo Ahn/ Hyeong Ju Jeon/ Mun Seok Choe/ Eunmi Choi/ Ki Jin Han/ Kyung Rok Kim, (2017.06)

**I Patents**

- [국외] TERNARY DIGIT LOGIC CIRCUIT, 김경록/신선해/장이산/정재원 (2018. 11)
- [국외] RING-TYPE FIELD EFFECT TRANSISTOR FOR TERAHERTZ WAVE DETECTION, WHICH USES GATE METAL AS ANTENNA, 김경록/류민우/안상효 (2018. 07)