MINKYU JE

Associate Professor

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SUMMARY

Minkyu Je received the M.S. and Ph.D. degrees, both in Electrical Engineering and Computer Science, from Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea, in 1998 and 2003, respectively.

In 2003, he joined Samsung Electronics, Giheung, Korea, as a Senior Engineer and worked on multi-mode multi-band RF transceiver SoCs for GSM/GPRS/EDGE/WCDMA standards. From 2006 to 2013, he was with Institute of Microelectronics (IME), Agency for Science, Technology and Research (A*STAR), Singapore. He worked as a Senior Research Engineer from 2006 to 2007, a Member of Technical Staff from 2008 to 2011, a Senior Scientist in 2012, and a Deputy Director in 2013. From 2011 to 2013, he led the Integrated Circuits and Systems Laboratory at IME as a Department Head. In IME, he led various projects developing low-power 3D accelerometer ASICs for high-end medical motion sensing applications, readout ASICs for nanowire biosensor arrays detecting DNA/RNA and protein biomarkers for point-of-care diagnostics, ultra-low-power sensor node SoCs for continuous real-time wireless health monitoring, and wireless implantable sensor ASICs for medical devices, as well as low-power radio SoCs and MEMS interface/control SoCs for consumer electronics and industrial applications. He was also a Program Director of NeuroDevices Program under A*STAR Science and Engineering Research Council (SERC) from 2011 to 2013, and an Adjunct Assistant Professor in the Department of Electrical and Computer Engineering at National University of Singapore (NUS) from 2010 to 2013. He was an Associate Professor in the Department of Information and Communication Engineering at Daegu Gyenogbuk Institute of Science and Technology (DGIST), Korea from 2014 to 2015. Since 2016, he has been an Associate Professor in the School of Electrical Engineering at Korea Advanced Institute of Science and Technology (KAIST), Korea.

His main research areas are advanced IC platform development including smart sensor interface ICs and ultra-low-power wireless communication ICs, as well as microsystem integration leveraging the advanced IC platform for emerging applications such as intelligent miniature biomedical devices, ubiquitous wireless sensor nodes, and future mobile devices. He is an author of 5 book chapters, and has more than 260 peer-reviewed international conference and journal publications in the areas of sensor interface IC, wireless IC, biomedical microsystem, 3D IC, device modeling and nanoelectronics. He also has more than 40 patents issued or filed. He has served on the Technical Program Committee and Organizing Committee for various international conferences, symposiums and workshops including IEEE International Solid-State Circuits Conference (ISSCC), IEEE Asian Solid-State Circuits Conference (A-SSCC) and IEEE Symposium on VLSI Circuits (SOVC).

MAIN RESEARCH AREAS

Integration-Ready Microelectronics Platform Based on Advanced Circuit Technologies

- Sensors, actuators (through collaboration) and interface circuits
- Data conversion circuits

- Digital signal processing circuits (through collaboration)
- Wireless/wired communication circuits
- Energy sources, storages (through collaboration) and interface/management circuits
- Heterogeneous and biocompatible integration (through collaboration)
- Power scaling toward μW/nW microsystems
- Physical platform diversification and miniaturization toward mm/μm-scale microsystems
- Highly cross-disciplinary R&D: ICs, sensors and actuators, packaging, energy sources and storage devices and process technology

Microsystem Integration for Emerging Applications

Intelligent Miniature Biomedical Devices (Solutions for Real and Important Clinical Needs)

- Implantable medical devices (neurology, cardiology, orthopedics)
- Minimally invasive diagnostic/surgical tools (cardiology, gastroenterology, ophthalmology, obstetrics)
- Point-of-care diagnostics (cardiology, oncology, epidemiology)
- Wireless health monitoring and chronic disease management (cardiology, neurology, pulmonology)
- Translational research, close interaction/collaboration with medical experts and clinicians

Ubiquitous Wireless Sensor Nodes (Solutions for Sensor Cloud toward Internet of Things)

- Smart power grid and energy control
- Smart and green building and home
- Smart and green transportation and logistics
- Environmental monitoring and civil structure monitoring
- Security and surveillance

Future Mobile Devices (Solutions for Wearables and Future Mobile Infrastructure)

- Mobile sensor fusion
- User interface for wearables
- 2.5D/3D ICs for form-factor and power scaling
- Si photonics for sustainable cloud computing infrastructure (green data centers)

PROFESSIONAL EXPERIENCE

Associate Professor, Electrical Engineering, Korea Advanced Institute of Science and Technology (KAIST), Korea, Feb. 2016 – Present

Associate Professor, Information and Communication Engineering, Daegu Gyeongbuk Institute of Science and Technology (DGIST), Korea, Mar. 2014 – Jan. 2016

Deputy Director (May. 2013 – Feb. 2014) / Senior Scientist (Apr. 2012 – Apr. 2013), Institute of Microelectronics (IME), Agency for Science, Technology and Research (A*STAR), Singapore, Apr. 2012 – Feb. 2014

- Head of Department, Integrated Circuits and Systems (ICS) Laboratory (about 50 researchers and 10 supporting engineers)
  - Biomedical IC Design Group
  - Analog & Mixed-Signal IC Design Group
  - Wireless IC Design Group
  - Digital IC Design Group
  - CAD and Design Support Group
  - About 20 public-funded projects mainly in biomedical area and about 10 industry projects in collaboration with industry partners/customers

Adjunct Assistant Professor, Department of Electrical and Computer Engineering, National University of Singapore (NUS), Singapore, Jul. 2010 – Feb. 2014

Member of Technical Staff, IME, A*STAR, Singapore, Apr. 2008 – Mar. 2012

- Principal Investigator, Biomedical IC Design Group (about 20 researchers), ICS Lab.
  - Wireless neural interface ASICs
  - Ultrasound transceiver ICs for clinical applications
  - Wireless implantable sensor ASICs for medical devices
  - Nano-scale biosensor interface ASICs for diagnostics
  - Sensor node SoCs for wireless health monitoring
- Principal Investigator, Analog & Mixed-Signal IC Design Group (about 10 researchers), ICS Lab.
  - MEMS interface & control SoCs for consumer electronics
  - Transceiver ICs for 2.45 GHz IEEE 802.15.4 WPAN
  - Ku-band LNB ICs
  - UHF transceiver ICs for smart metering
  - Sensor interface and telemetry ICs for high temperature operation
  - Power ICs for aerospace and automotive applications

Senior Research Engineer, Integrated Circuits & Systems Laboratory, Institute of Microelectronics, Singapore, Jun. 2006 – Mar. 2008

- Leader of the industry project developing a low-power 3D accelerometer ASIC design for high-end medical motion sensing applications
- Leader of the research project developing a readout ASIC for nanowire biosensor arrays detecting DNA/RNA and protein biomarkers
- Co-Leader of the project developing a PLL-based programmable frequency reference IC using a MEMS resonator replacing a traditional quartz crystal

Senior Engineer, RF Development Team, Samsung Electronics, Korea, Jun. 2003 – Apr. 2006

- Leader of design team developing an innovative digital-intensive multi-mode (GSM/GPRS/EDGE/WCDMA) multi-band transmitter
- Participated in GSM/GPRS/EDGE baseband & RF transceiver SoC design project
- Consultant for ultra deep sub-micron CMOS RF design infra development project
- Developed a tri-band direct up-conversion WCDMA transmitter as a leader
- Developed a quad-band offset-PLL GSM/GPRS transmitter

Visiting Researcher, Berkana Wireless (acquired by Qualcomm), San Jose, CA, USA, Sep. 2001 – Feb. 2002

- Optimized the layout design of CMOS RF devices and developed their models for high performance RF circuit design
- Performed electromagnetic simulations for the on-chip inductors and improved the simulation procedure to enhance the accuracy
- Analyzed and corrected the modeling errors and inaccuracies

Research Assistant, KAIST, Daejeon, Korea, Mar. 1996 – Aug. 2003

- Designed and implemented a TCXO with a new adaptive digital trimming scheme; sponsored by Institute of Information Technology Assessment, Jul. 1998 – Aug. 2003
- Developed a CMOS RF device library for 0.18μm technology; sponsored by Hynix Semiconductor, Mar. 2001 – Feb. 2002
- Designed CAD-compatible macro models for RF CMOS and low-power RF circuits; sponsored by Korea Science and Engineering Foundation, Mar. 2000 – Feb. 2001
- Developed a new modeling approach and devised a simple and accurate parameter extraction procedure for RF MOSFETs; sponsored by SILVACO International, Dec. 1998 – Nov. 1999
- Created low-power devices and circuits using active body-bias technique; sponsored by Korea Science and Engineering Foundation, Jun. 1997 – Feb. 2000
- Designed, fabricated, and characterized single electron memory devices; sponsored by Hyundai Electronics, Aug. 1996 – Jul. 1997

EDUCATION

Ph.D., Electrical Engineering (EE), Korea Advanced Institute of Science & Technology (KAIST), Daejeon, Korea, Aug. 2003.

Dissertation: Four-Terminal Modeling and Parameter Extraction of RF MOSFETs
Advisor: Prof. Hyungcheol Shin

Master of Science, EE, KAIST, Feb. 1998.

Thesis: One-Dimensional Subband Effect in Quantum Wire Transistors
Advisor: Prof. Hyungcheol Shin

Bachelor of Science, EE, KAIST, Feb. 1996.

HONORS AND AWARDS

- **Best Paper Award, 16th RF/Analog Circuit Workshop, 2016,** for a paper entitled "A Neural Recording IC with Self-Adaptive SNR Optimization for Long-Term Implantation," Nov. 2012.
- **Best Paper Award, International Symposium on Radio-Frequency Integration Technology (RFIT), 2012,** for a paper entitled "ASIC for Wireless Ambulatory Blood Pressure Monitoring Based On Applanation Tonometry," Nov. 2012.
- **IME Excellence Award, Best Reporting Officer (Merit), 2012,** Apr. 2012.
- **Gold Award in the 1st Chip Design Competition held in conjunction with the 13th International Symposium on Integrated Circuits (ISIC), 2011,** for a paper entitled, "Ultra-Low-Power Wireless Implantable Blood Flow Sensing Microsystem for Vascular Graft Applications," Dec. 2011.
- **IME Excellence Award, Research Accomplishment (Merit), 2009,** for a research work, "3-D Accelerometer ASIC for High-End Medical Motion Sensing," Mar. 2009.
- **The Best Paper of the Year, 2000,** for a paper entitled "A Digital TCXO with New Trimming Method," Telecommunications Review, Dec. 2000.
- **Second Place in the IEEE Region 10 Post Graduate Student Paper Competition, 1998,** for a paper entitled "Fabrication and Characterization of Low Dimensional Quantum Devices: Quantum Wire Transistor and Quantum Dot Memory."
- **First Prize in the IEEE Korea Student Paper Contest, 1998,** for a paper entitled "A Gate-All-Around Silicon Quantum Wire Transistor with One-Dimensional Subband Effects."

PROFESSIONAL ACTIVITIES AND SERVICE

- Technical Program Committee Member, *IEEE Symposium on VLSI Circuits (SOVC)*, 2016 – Present
- Technical Program Committee Member, *IEEE Asian Solid-State Circuits Conference (A-SSCC)*, 2013 – Present
- Organizing Committee Member, *IEEE Asian Solid-State Circuits Conference 2013 (A-SSCC 2013)*, 2011 – 2013
- University LSI Design Contest Committee Chair, *Asia and South Pacific Design Automation Conference 2018 (ASP-DAC 2018)*, 2017 – Present
- University LSI Design Contest Committee Member, *Asia and South Pacific Design Automation Conference 2017 (ASP-DAC 2017)*, 2016 – 2017
- Organizing Committee Member, *IEEE International Symposium on Radio-Frequency Integration Technology 2017 (RFIT 2017)*, 2016 – Present

- Organizing Committee Member/Technical Program Committee Member/Tutorial Chair/Analog and Mixed-Signal IC Subcommittee Chair, *IEEE International Symposium on Radio-Frequency Integration Technology 2012 (RFIT 2012)*, 2011 – 2012
- Organizing Committee Member/ Special Session Chair, *International SoC Design Conference (ISOCC)*, 2014 – Present
- Steering Committee Member, *RF/Analog Circuit Workshop*, 2014 – Present
- "Biomedical and Life-Science Circuits, Systems and Applications" Track Chair (Technical Program Committee), *IEEE Asia Pacific Conference on Circuits and Systems (APCCAS 2016)*, 2015 – 2016
- Technical Program Committee Member, *IEEE International Wireless Symposium (IWS)*, 2012 – 2015
- Organizing Committee Member/ Focus Session Chair/"Wireless Energy Transmission and Harvesting" Subcommittee Chair (Technical Program Committee), *IEEE International Wireless Symposium 2013 (IWS 2013)*, 2012 – 2013
- Special Evening Session Organization Committee Member, "Wearable Wellness Devices: Fashion, Health, and Informatics" *IEEE International Solid-State Circuits Conference 2014 (ISSCC 2014)*, 2013 – 2014
- Special Evening Session Organizer/Chair, "Batteries Not Included. – How Little is Enough for Real Energy Autonomy?" *IEEE International Solid-State Circuits Conference 2013 (ISSCC 2013)*, 2012 – 2013
- Forum Organization Committee Member, "Bioelectronics for Sustainable Healthcare," *IEEE International Solid-State Circuits Conference 2012 (ISSCC 2012)*, 2011 – 2012
- Forum Organization Committee Member, "Towards Personalized Medicine and Monitoring for Healthy Living," *IEEE International Solid-State Circuits Conference 2011 (ISSCC 2011)*, 2010 – 2011
- Analog Subcommittee Far East Coordinator, *IEEE International Solid-State Circuits Conference (ISSCC)*, 2012 – 2014
- International Technical Program Committee Member, *IEEE International Solid-State Circuits Conference (ISSCC)*, 2010 – 2014
- Symposium Chair, *Symposium on Intelligent Sensors at IEEE International Conference on Intelligent Sensors, Sensor Networks and Information Processing 2014 (ISSNIP 2014)*, 2013 – 2014
- Technical Program Committee Member/"MMICs & RFICs" Subcommittee Co-Chair, *Asia-Pacific Microwave Conference 2014 (APMC 2014)*, 2013 – 2014
- Technical Program Committee Co-Chair, *IEEE MTTS International Microwave Workshop Series on RF and Wireless Technologies for Biomedical and Healthcare Applications 2013 (IMWS-Bio 2013)*, 2012 – 2013
- Scientific Committee Co-Chair, *Asia-Korea Conference on Science and Technology 2013 (AKC 2013)*, 2012 – 2013
- Technical Program Committee Member, *International Symposium on Integrated Circuits (ISIC)*, 2011 - Present
- Session Chair, *International Symposium on Integrated Circuits 2011 (ISIC 2011)*, 2011
- Session Chair, *International Symposium on Integrated Circuits 2009 (ISIC 2009)*, 2009
- Vice Chair, *IEEE Singapore Solid-State Circuits Society (SSCS) Chapter*, 2013 – 2014
- Committee Member, *IEEE Singapore Solid-State Circuits Society (SSCS) Chapter*, 2011 – 2012
- Director of Academic Affairs, *Korean Scientists and Engineers Association in Singapore (KSEAS)*, 2013 – 2014

- International Liaison for Student Admissions, *Korea Advanced Institute of Science and Technology*, 2012
- Reviewer, *IEEE Journal of Solid-State Circuits, IEEE Transactions on Biomedical Circuits and Systems, IEEE Transactions on Circuits and Systems I & II, IEEE Transactions on Biomedical Engineering, IEEE Transactions on VLSI Systems*

TEACHING

Korea Advanced Institute of Science and Technology (KAIST)

- EE201 Circuit Theory
- EE304 Electronic Circuits
- EE485 My Life and Career in EE (Co-Teaching)

Daegu Gyeongbuk Institute of Science and Technology (DGIST)

- IC585 Introduction to Integrated Circuits
- IC686 Analog Integrated Circuits
- CR521 Neuroinformatics (Co-Teaching)

INVITED TALKS AND SEMINARS

- Tutorial at International Conference on Electronics, Information, and Communication (ICEIC), Phuket, Thailand, "Smart Sensor Microsystems: Application-Dependent Design and Integration Approaches," Jan. 2017
- Tutorial at International Symposium on Integrated Circuits (ISIC), Singapore, "Smart Sensor Microsystems: Application-Dependent Integration Approaches," Dec. 2016
- Invited Talk at International Conference on Biomedical Engineering (ICMBE), Singapore, "Integrated Circuits and Microsystems for Emerging Biomedical Applications," Dec. 2016
- Technical Seminar, SENSONIA, Seongnam, Korea, "Integrated Circuits and Microsystems for Emerging Biomedical Applications," Sep. 2016
- Lecture, STAR CEO Program, Sogang University, Seoul, Korea, "Evolution of IT: Smartphones to Internet of Things," Sep. 2016
- Technical Seminar, IXYS Korea, Seongnam, Korea, "Ultra-Low-Power and Ultra-Small Integrated Circuits and Systems for Biomedical Applications," Sep. 2016
- Invited Talk at IEEE International Symposium on Radio-Frequency Integration Technology (RFIT), Taipei, Taiwan, "Design Considerations and Approaches for Sensor Interface Circuits in Smart Sensor Microsystems," Aug. 2016
- Invited Talk at URSI Asia-Pacific Radio Science Conference (AP-RASC), Seoul, Korea, "Low-Energy Integrated Circuits and Microsystems for Implantable Wireless Neural Recording," Aug. 2016
- Technical Seminar, Kyungpook National University (KNU), Daegu, Korea, "Microelectronics for Future Medical Devices," Aug. 2016
- Invited Talk at ISSCC 2016 Review Workshop, Ewha Women's University, Seoul, Korea, "Biomedical Circuits and Systems," May. 2016
- Technical Seminar, Samsung Advanced Institute of Technology (SAIT), Suwon, Korea, "Ultra-Low-Power and Ultra-Small Integrated Circuits and Systems for Biomedical Applications," May 2016

- Technical Seminar, Electronics and Telecommunications Research Institute (ETRI), Daejeon, Korea, “Integrated Circuits and Microsystems for Emerging Biomedical Applications,” Apr. 2016
- Short Course, Electronics and Telecommunications Research Institute (ETRI), Daejeon, Korea, “Circuit Techniques for Wearable Devices and IoT,” Apr. 2016
- Technical Seminar, Graduate School of Convergence Science and Technology, Seoul National University (SNU), Suwon, Korea, “Microelectronics for Emerging Biomedical Applications,” Mar. 2016
- Technical Seminar, Korea Institute of Science and Technology (KIST), Seoul, Korea, “Integrated Circuits and Microsystems for Neurotechnology,” Mar. 2016
- Invited Talk at IEEE International Microwave and RF Conference (IMaRC), Hyderabad, India, “Wireless Data Communication and Power Transfer for Biomedical Microsystems,” Dec. 2015
- Invited Talk at DGIST Global Innovation Festival (DGIF), Daegu, Korea, “Smart Sensor Microsystems for IoT and Wearables: Application-Dependent Integration Approaches,” Nov. 2015
- Invited Talk at International SoC Design Conference (ISOCC), Gyeongju, Korea, “Wireless Sensor Microsystems for Medical Devices,” Nov. 2015
- Lecture at Friday Science Program, National Research Foundation (NRF) of Korea, Daegu, Korea, “Future Life with Smart Sensors,” Oct. 2015
- Invited Talk at Wearable/IoT Enabler Technologies Workshop, Suwon, Korea, “Integrated Circuits and Microsystems for Emerging Biomedical Applications,” Oct. 2015
- Invited Talk at Annual Scientific Meeting of the Korean Society of Cardiology (KSC), Goyang, Korea, “Wearable and Implantable Cardiac Devices,” Oct. 2015
- Technical Seminar, Samsung Advanced Institute of Technology (SAIT), Suwon, Korea, “Integrated Circuits and Microsystems for Emerging Biomedical Applications,” Sep. 2015
- Invited Talk at IEEE International Symposium on Radio-Frequency Integration Technology (RFIT), Sendai, Japan, “Wireless Sensor Microsystems for Medical Devices,” Aug. 2015
- Two-Day Short Course, IEEE Singapore Solid-State Circuits Chapter, Singapore, “Integrated Circuit Techniques for Biomedical Microsystems,” Jul. 2015
- Technical Seminar, Pusan National University (PNU), Pusan, Korea, “Integrated Circuits and Microsystems for Emerging Biomedical Applications,” Jul. 2015
- Tutorial at Institute of Electronics and Information Engineers (IEIE) Summer Conference, Jeju, Korea, “Smart Sensor Microsystems: Application-Dependent Integration Approaches,” Jun. 2015
- Invited Talk at ISSCC 2015 Review Workshop, Ewha Women’s University, Seoul, Korea, “Analog Technique and Biomedical Trend,” May 2015
- Invited Talk at IT Convergence Wearable Healthcare Workshop, Institute of Electronics and Information Engineers (IEIE), Korea, “Integrated Circuit Techniques for Wearables,” May 2015
- Invited Talk at SoC Conference, Ulsan National Institute of Science and Technology (UNIST), Ulsan, Korea, “Integrated Circuits for Neural Stimulation and Closed-Loop Neuroprosthetics,” May 2015
- Technical Seminar, Department of Electrical and Computer Engineering, National University of Singapore (NUS), Singapore, “Integrated Circuits and Microsystems for Emerging Biomedical Applications,” May 2015
- Keynote Speech, Asian Workshop on Smart Sensor Systems (AWSSS), Karatsu, Japan, “Smart Sensor Microsystems: Application-Dependent Design and Implementation Approaches,” Mar. 2015
- Invited Talk at Special Day Hot Topic Session on Implantable Medical Applications, Design, Automation and Test in Europe (DATE), Grenoble, France, “Integrated Circuits and Microsystems for

Emerging Biomedical Devices," Mar. 2015

- Invited Talk at Technical Forum on Building the Internet of Everything (IoE): Low-Power Techniques at the Circuit and System Levels, IEEE International Solid-State Circuits Conference (ISSCC), San Francisco, USA, "Smart Sensor Microsystems: Application-Dependent Integration Approaches," Feb. 2015
- Invited Talk at Special Evening Session on Brain-Machine Interfaces: Integrated Circuits Talking to Neurons, IEEE International Solid-State Circuits Conference (ISSCC), San Francisco, USA, "Neural Stimulation and Closed-Loop Prosthetics," Feb. 2015
- Special Lecture at International Conference on IT Convergence Technology (ICICT), Gyeongju, Korea, "Integrated Circuits and Microsystems for Emerging Biomedical Applications," Feb. 2015
- Invited Talk at Workshop on Microwave Biosensing Developments in Asia, IEEE Radio Wireless Week (RWW), San Diego, USA, "Wireless Sensor Microsystems for Medical Devices," Jan. 2015
- Invited Talk at Workshop on Technologies for IoT and Wearables, Soongsuil University, Seoul, Korea, "Integrated Circuit Techniques for IoT and Wearables," Dec. 2014
- Technical Seminar, School of Medicine, Kyungpook National University (KNU), Daegu, Korea, "Integrated Circuits and Microsystems for Emerging Biomedical Applications," Nov. 2014
- Technical Seminar, School of Electronic and Electrical Engineering, Daegu University, Daegu, Korea, "Integrated Circuits for Implantable Wireless Neural Recording Microsystems," Oct. 2014
- Technical Seminar, School of Electronic and Electrical Engineering, Yonsei University, Seoul, Korea, "Integrated Circuits and Microsystems for Emerging Biomedical Applications," Sep. 2014
- Invited Talk at RF/Analog Circuit Workshop, Jeju, Korea, "Integrated Circuits for Implantable Wireless Neural Recording Microsystems," Sep. 2014
- Invited Talk at Symposium on Integrative Human Microbiome Science and Wearable Healthcare Technology, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea, "Integrated Circuits and Microsystems for Emerging Biomedical Applications," Sep. 2014
- Invited Talk at Wearable Healthcare Workshop, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea, "Wearable Devices: Integration Approaches," Jul. 2014
- Technical Seminar, SW-SoC Convergence Research Division, Electronics and Telecommunication Research Institute (ETRI), Daejeon, Korea, "Integrated Circuits and Microsystems for Emerging Biomedical Applications," Jul. 2014
- Technical Seminar, RAONTECH Inc., Seongnam, Korea, "Integrated Circuits and Microsystems for Emerging Biomedical Applications," Jul. 2014
- Monday Lunch Seminar, Daegu Gyeongbuk Institute of Science and Technology (DGIST), Daegu, Korea, "Integrated Circuits and Microsystems for Emerging Biomedical Applications," Jun. 2014
- Technical Seminar, School of Electrical and Computer Engineering, Ulsan National Institute of Science and Technology (UNIST), Ulsan, Korea, "Integrated Circuits and Microsystems for Emerging Biomedical Applications," Apr. 2014
- Invited Talk at Symposium on Grand Challenges in Neural Technology, National University of Singapore (NUS), Singapore, "Neural Recording Front-End IC Design," Dec. 2013
- Invited Talk at Asia-Korea Conference on Science and Technology (AKC), Singapore, "Future Mobile Society beyond Moore's Law," Nov. 2013
- Technical Seminar, Xi'an Jiaotong University, Xi'an, China, "Integrated Circuits and Microsystems for Emerging Biomedical Applications," May 2013
- Keynote Talk at International Symposium on Microchemistry and Microsystems (ISMM), Xiamen,

China, “Integrated Circuits and Microsystems for Emerging Biomedical Applications,” May 2013

- Technical Seminar, Department of Electronics Engineering, Ewha Women’s University, Seoul, Korea, “Integrated Circuits and Microsystems for Emerging Biomedical Applications,” Dec. 2012
- Technical Seminar, Information and Communication Engineering, Daegu Gyeongbuk Institute of Science and Technology (DGIST), Daegu, Korea, “Integrated Circuits and Microsystems for Emerging Biomedical Applications,” Dec. 2012
- Keynote Talk at International Conference on BioElectronics, BioSensors, BioMedical Devices, BioMEMS/NEMS and Applications (Bio4Apps), National University of Singapore, Singapore, “Challenges and Opportunities of Microelectronics in Emerging Medical Devices,” Nov. 2012
- Invited Talk at Biomedical Engineering Programme (BEP) MedTech Forum – Innovations in Surgical Practice, Duke-NUS, Graduate Medical School, Singapore, “Microelectroincs and Microsystems for Surgical Innovations,” Nov. 2012
- Invited Talk at A*STAR Scientific Conference 2012, Convention Centre, Resorts World Sentosa, Singapore, “Integrated Microelectronics for Miniature Medical Devices,” Oct. 2012
- Technical Seminar, Department of Electrical Engineering, Korea University, Seoul, Korea, “Integrated Circuits and Microsystems for Emerging Biomedical Applications,” May 2012
- Invited Talk at BEP MedTech Forum – Neurotechnology and Rehabilitation, National Neuroscience Institute, Singapore, “Integrated Microelectronics for Miniaturized Neurological Devices,” Sep. 2011
- Technical Seminar, Telecommunication R&D Center, Samsung Electronics, Suwon, Korea, “Integrated Circuit Technology for Biomedical Applications,” Jun. 2011
- Technical Seminar, Department of Electrical Engineering, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea, “Integrated Circuit Technology for Biomedical Applications,” Jun. 2010
- Technical Seminar, Department of Biological Sciences, National University of Singapore (NUS), Singapore, “Integrated Circuit Technology for Biomedical Applications,” Oct. 2009

GRANTS AND CONTRACTS

1. Lead PI, Convergence Technology Development Program for Bionic Arm, “Implantable Bidirectional Multichannel Wireless Neural Signal Processing System,” KRW 1,750,000,000 (USD 1,587,831), 1 PI and 2 Co-PIs in the team, Jul. 2016 – Jun. 2020
2. Lead PI, Global Frontier Program, National Research Foundation of Korea, “Low-Power Smart Gas Sensor Interface IC,” KRW 220,000,000 (USD 199,613), Sep. 2014 – Aug. 2016
3. Co-PI, National R&D Program, National Research Foundation of Korea, “Smartphone-Based Mobile Imaging System for Skin Care,” KRW 1,500,000,000 (USD 1,360,997), 1 PI and 3 Co-PIs in the team, Dec. 2014 – Nov. 2019
4. Co-PI, DGIST R&D Program, Ministry of Science, ICT and Future Planning, “Rehabilitation and Replacement Technology for Damaged Brain Employing Electrical Methods,” KRW 4,800,000,000 (USD 4,355,190), 1 PI and 5 Co-PIs in the team, Jan. 2013 – Dec. 2016
5. Project Leader, Radiopulse Inc., “Development of 2.4GHz Wake-Up Receiver,” KRW 53,900,000 (USD 48,905), Apr. 2015 – Apr. 2016
6. Technical PI, A*STAR–JCO (Joint Council Office) Development Program, “*3D Integrated Circuit Based Microfluidic Cell Analysis Platform*,” 11 PIs in the team, SGD 4,419,000 (USD 3,314,051), Apr. 2013 – Apr. 2016
7. Co-PI, NEA (National Environment Agency) and A*STAR, “*Sensors and Network to Detect Fugitive*

Emissions of Hydrocarbon Emissions," 1 PI and 5 Co-PIs in the team, SGD 2,069,000 (USD 1,551,657), Apr. 2013 – Oct. 2015

8. Program Director, A*STAR–SERC (Science and Engineering Research Council) Neurodevices Program, "*Wireless Fully Implantable Neuroprobe Microsystems for Motor Prosthesis and Neuroscience*," 16 PIs/Co-PIs in engineering team, 8 PIs/Co-PIs in medical/clinical team, SGD 9,999,122 (USD 7,499,342), hiring 30 researchers, May 2011 – Apr. 2014
9. Lead PI, A*STAR–SERC Ruggedized Electronics Program, "*Channel Characterization and Telemetry System Development*," 5 PIs/Co-PIs in the team, SGD 1,373,530 (USD 1,030,146), Feb. 2011 – Feb. 2014
10. Technical PI, A*STAR-CIMIT Collaboration Program, "*Safe Hands: Automated Wireless In-Hospital Hand Hygiene Monitoring & Documentation System*," 6 PIs/Co-PIs in engineering team, 2 PIs/Co-PIs in medical /clinical team, SGD 1,307,270 (USD 980,462), Jan. 2011 – Jun. 2012
11. Technical PI (Lead PI), A*STAR Biomedical Engineering Program, "*Wireless Intracranial Microsystem for Multimodality Neuromonitoring of Severe Head Injury Patients*," 4 PIs/Co-PIs in engineering team, 2 PIs/Co-PIs in medical/clinical team, SGD 498,055 (USD 373,541), Jan. 2011 – Jun. 2012
12. Technical Co-PI, A*STAR Biomedical Engineering Program, "*Ultrasound Imaging Transducers for Precision Needle Intervention*," 4 PIs/Co-PIs in engineering team, 4 PIs/Co-PIs in medical/clinical team, SGD 524,730 (USD 393,548), Jan. 2011 – Jun. 2012
13. Technical Co-PI, A*STAR Biomedical Engineering Program, "*Non-Contact Ultrasound Intraocular Pressure Measurement*," 4 PIs/Co-PIs in engineering team, 2 PIs/Co-PIs in medical/clinical team, SGD 532,859 (USD 399,744), Jan. 2011 – Jun. 2012
14. Technical Co-PI, A*STAR Biomedical Engineering Program, "*3D Digital Ultrasound Bio-Microscope*," 4 PIs/Co-PIs in engineering team, 2 PIs/Co-PIs in medical/clinical team, SGD 519,721 (USD 389,792), Jan. 2011 – Jun. 2012
15. Lead PI, A*STAR Thematic Strategic Research Program, "*Peripheral Nerve Recording and Muscle Stimulation*," SGD 1,254,528 (USD 940,896), 6 PIs/Co-PIs in engineering team, 2 medical/clinical collaborators, May 2010 – May 2013
16. IC Design Team Supervisor, A*STAR MedTech Program, "*Development of a Biosensor Prosthetic Vascular Graft*," SGD 2,055,560 (USD 1,541,670), 2 PIs/Co-PIs in engineering team, 3 PIs/Co-PIs in medical/clinical team, Sep. 2009 – Sep. 2012
17. IC Design Team Supervisor, A*STAR MedTech Program, "*Development of a Pressure Sensor Steerable Endovascular Catheter*," SGD 2,094,030 (USD 1,570,523), 2 PIs/Co-PIs in engineering team, 3 PIs/Co-PIs in medical/clinical team, Sep. 2009 – Sep. 2012
18. IC Design Team Supervisor, A*STAR MedTech Program, "*Wireless Ingestible Capsule: High Resolution Optical Imaging and Real-Time High Rate Image Transmission*," SGD 1,036,550 (USD 777,413), 4 PIs/Co-PIs in engineering team, 2 medical/clinical collaborators, Sep. 2008 – Sep. 2011
19. Project Supervisor, Given Imaging, "Study on Next-Generation Communication System for Capsule Endoscopy: RF Switch and High-Data-Rate Transceiver," SGD 33,333 (USD 25,000), Oct. 2011 – Apr. 2012
20. IC Design Team Leader, Medtronic, "32kHz MEMS-Based Oscillator for Implantable Medical Devices," SGD 80,000 (USD 60,000), Nov. 2010 – Jul. 2011
21. Project Supervisor, Physical Logic, "*MAXL-CL: Ultra High Performance Closed-Loop Accelerometer ASIC Development*," SGD 1,250,000 (USD937,500) plus the cost for fabrication, Apr. 2011 – Mar. 2013
22. Project Supervisor, Cubic Micro Design, "*920MHz Low-Power RF IC Development*," SGD 305,000

(USD 228,750) plus the background IP licensing (SGD 44,000 (USD 33,000)) and the cost for fabrication, Dec. 2011 – Dec. 2012

23. Project Supervisor, Cubic Micro Design, "*400MHz Low-Power High-Sensitivity RF IC Development*," SGD 900,000 (USD 675,000) plus the cost for fabrication, Feb. 2011 – Dec. 2012
24. Project Supervisor, Maradin Technologies, "*Micro Laser Projector ASIC Development*," SGD 1,000,000 (USD 750,000) plus the cost for fabrication and third party IPs, Jun. 2009 – Nov. 2010
25. Project Supervisor, Physical Logic, "*AXL-M: Ultra High Performance Accelerometer ASIC Development*," SGD 470,000 (USD 352,500) plus the cost for fabrication and third party IPs, May 2009 – Apr. 2010
26. Project Leader, Physical Logic, "*AXL-II: Low Power High Performance Accelerometer ASIC Development*," SGD 575,000 (USD 431,250) plus the cost for fabrication and third party IPs, Mar 2007 – Apr. 2009

STUDENT SUPERVISION

- Doojin Jang, Korea Advanced Institute of Science and Technology (KAIST), School of Electrical Engineering, "Low-Power Biosensor IC for Wearable Healthcare," Ph.D. pre-candidate supervised, Mar. 2015 – Present
- Soonyoung Hong, Daegu Gyeongbuk Institute of Science and Technology (DGIST), Department of Information and Communication Engineering, "Low-Power Wake-Up Receiver and Real-Time Clock Generator for Duty-Cycled Communication at Wireless Sensor Nodes," Ph.D. candidate co-supervised, Mar. 2015 – Present
- Taeju Lee, Korea Advanced Institute of Science and Technology (KAIST), School of Electrical Engineering, "Ultra-Low-Power Low-Noise Neural Recording Amplifier with Input Impedance Boosting," Ph.D. pre-candidate supervised, Mar. 2016 – Present
- Yeseul Jeon, Korea Advanced Institute of Science and Technology (KAIST), School of Electrical Engineering, "Energy-Efficient High-Data-Rate Body Channel Communication Transceiver IC for Implantable Devices," Ph.D. pre-candidate supervised, Mar. 2016 – Present
- Jaesuk Choi, Korea Advanced Institute of Science and Technology (KAIST), School of Electrical Engineering, "High-Efficiency Wireless Power Transfer Circuits and Systems," Ph.D. pre-candidate supervised, Mar. 2016 – Present
- Jehoon Kim, Korea Advanced Institute of Science and Technology (KAIST), School of Electrical Engineering, "Multimodal Neural Stimulator IC Design," M.S. candidate supervised, Sep. 2016 – Present
- Hoyong Seong, Korea Advanced Institute of Science and Technology (KAIST), School of Electrical Engineering, "Time-Domain Sensor Interface IC Design," M.S. candidate supervised, Mar. 2016 – Present
- Cheoljun Park, Korea Advanced Institute of Science and Technology (KAIST), School of Electrical Engineering, "Body Channel Communication Transceiver IC for Implantable Devices," M.S. candidate supervised, Mar. 2016 – Present
- Yoon Tae Jung, Korea Advanced Institute of Science and Technology (KAIST), School of Electrical Engineering, "Circuits and Systems for Minimally Invasive Closed-Loop Neurotherapeutics," M.S. candidate supervised, Mar. 2016 – Present
- Taeju Lee, Daegu Gyeongbuk Institute of Science and Technology (DGIST), Department of Information and Communication Engineering, "Low-Power Neural Recording Amplifier Design Based on Advanced Noise Modeling," M.S. supervised, graduated in Feb. 2016

- Seungyeoub Baik, Daegu Gyeongbuk Institute of Science and Technology (DGIST), Department of Information and Communication Engineering, “Low-Power Wake-Up Receiver Design for Wireless Sensor Nodes,” M.S. co-supervised (NUS supervisor: Jung Hyup Lee), graduated in Feb. 2017
- Minwoo Kim, Daegu Gyeongbuk Institute of Science and Technology (DGIST), Department of Information and Communication Engineering, “Low-Power Wake-Up Receiver Design for Wireless Sensor Nodes,” M.S. co-supervised (NUS supervisor: Jung Hyup Lee), graduated in Feb. 2017
- Bong Sik Choi, Daegu Gyeongbuk Institute of Science and Technology (DGIST), Department of Information and Communication Engineering, “Low-Power Smart Gas Sensor Interface IC Design,” M.S. co-supervised (NUS supervisor: Jung Hyup Lee), graduated in Feb. 2017
- Jaesuk Choi, Daegu Gyeongbuk Institute of Science and Technology (DGIST), Department of Information and Communication Engineering, “Ultrasound Transducer Interface IC Design,” M.S. co-supervised (NUS supervisor: Jung Hyup Lee), graduated in Feb. 2017
- Jonghyeok Park, Daegu Gyeongbuk Institute of Science and Technology (DGIST), Department of Information and Communication Engineering, “Low-Power Smart Gas Sensor Interface IC Design,” M.S. co-supervised (NUS supervisor: Jung Hyup Lee), graduated in Feb. 2017
- Yong Wang, Nanyang Technological University (NTU), School of Electrical and Electronic Engineering, “Temperature Compensated Sensor System For High Temperature Applications In Rugged Environment,” Ph.D. pre-candidate co-supervised (NTU supervisor: Wang Ling Goh), till Feb. 2014
- Puneet Acharya, Nanyang Technological University (NTU), School of Electrical and Electronic Engineering, “Digital Signal Processing Techniques and Their Hardware Efficient ASIC Implementation for Measurement-While-Drilling Acoustic telemetry,” Ph.D. pre-candidate co-supervised (NTU supervisor: Wang Ling Goh), till Feb. 2014
- Yi Chen, Nanyang Technological University (NTU), School of Electrical and Electronic Engineering, “Sensor Signal Conditioning Circuit Design for Multi-Electrode Intra-Cortical Recording,” Ph.D. candidate co-supervised (NTU supervisor: Arindam Basu), till Feb. 2014
- Arup Kocheethra George, Nanyang Technological University (NTU), School of Electrical and Electronic Engineering, “Pressure Sensor Interface IC for Biomedical Applications,” Ph.D. candidate co-supervised (NTU supervisor: Natalie Kong), till Feb. 2014
- Lianhong Zhou, National University of Singapore (NUS), Department of Electrical and Computer Engineering, “100bps Transmitter with Accurate Temperature-Independent On-Chip Frequency,” Ph.D. candidate co-supervised (NUS supervisor: Chun-Huat Heng), till Feb. 2014
- Yao Zhu, Nanyang Technological University (NTU), School of Electrical and Electronic Engineering, “Design of Ultra High Energy Efficiency Radio for Implantable Biomedical Applications,” Ph.D. candidate co-supervised (NTU supervisor: Yuanjin Zheng), till Feb. 2014
- Yejin Chen, Nanyang Technological University (NTU), School of Electrical and Electronic Engineering, “Development of Transmitter/Receiver Sub-systems Based on Custom-Designed ICs and Design of High-Temperature-Capable Analog Circuits on SOI-CMOS for Sensor/Transducer Interface for Acoustic Telemetry,” M.S. candidate co-supervised (NTU supervisor: Wang Ling Goh), till Feb. 2014
- Saoni Banerji, Nanyang Technological University (NTU), School of Electrical and Electronic Engineering, “Ultrasonic Link IC for Wireless Power and Data Transfer Deep In Body,” M.S. candidate co-supervised (NTU supervisor: Wang Ling Goh), till Feb. 2014
- Xiwei Huang, Nanyang Technological University (NTU), School of Electrical and Electronic Engineering, “Signal Conditioning IC Design for Ultrasound Medical Imaging Applications,” Ph.D. candidate co-supervised (NTU supervisor: Hao Yu), till Feb. 2014
- Chiang Liang Kok, Nanyang Technological University (NTU), School of Electrical and Electronic

Engineering, “High-Temperature Linear Regulators for Acoustic Telemetry IC,” Ph.D. candidate co-supervised (NTU supervisor: Liter Siek), till Feb. 2014

- Bo Wang, Nanyang Technological University (NTU), School of Electrical and Electronic Engineering, “Low-Power, Low-Voltage Circuits for Digital Neural Signal Processing,” Ph.D. candidate co-supervised (NTU supervisor: Tony Kim), till Feb. 2014
- Lei Liu, Nanyang Technological University (NTU), School of Electrical and Electronic Engineering, “Wireless Implantable Neural Recording IC for Motor Prosthesis,” Ph.D. candidate co-supervised (NTU supervisor: Wang Ling Goh), till Feb. 2014
- Xu Liu, National University of Singapore (NUS), Department of Electrical and Computer Engineering, “Highly-Efficiency Multi-Channel Peripheral Nerve/Muscle Stimulation Circuits,” Ph.D. candidate co-supervised (NUS supervisor: Yong Ping Xu), till Feb. 2014
- Dong Han, Nanyang Technological University (NTU), School of Electrical and Electronic Engineering, “Multi-Channel Wireless Ultra-High-Energy-Efficiency Ultra-Low-Noise Implantable Neural Recording and Neural Stimulation Circuits,” Ph.D. candidate co-supervised (NTU supervisor: Yuanjin Zheng), graduated in Aug. 2013
- Rangarajan Jegadeesan, National University of Singapore (NUS), Department of Electrical and Computer Engineering, “High-Efficiency Wireless Power Transfer for Implantable Biomedical Devices,” Ph.D. co-supervised (NUS supervisor: Yong Xin Guo), graduated in Aug. 2013
- Zhu Duan, National University of Singapore (NUS), Department of Electrical and Computer Engineering, “Implantable/Wearable Antennas and Human Body Propagation Modeling for Bio-medical applications,” Ph.D. co-supervised (NUS supervisor: Yong Xin Guo), graduated in Aug. 2013
- Xiaojun Bi, National University of Singapore (NUS), Department of Electrical and Computer Engineering, “Analysis and Techniques for Silicon-Based Millimeter-Wave Amplifiers,” Ph.D. co-supervised (NUS supervisor: Yong Xin Guo), graduated in Apr. 2013
- Zhuochao Sun, Nanyang Technological University (NTU), School of Electrical and Electronic Engineering, “High-Temperature High-Efficiency DC/DC Converter for Acoustic Telemetry IC,” Ph.D. co-supervised (NTU supervisor: Liter Siek), graduated in Feb. 2013
- Jun Yu, Nanyang Technological University (NTU), School of Electrical and Electronic Engineering, “High Voltage Driver Amplifier for Piezoelectric Acoustic Transducers,” Ph.D. co-supervised (NTU supervisor: Wang Ling Goh), graduated in Aug. 2012
- Jingzhi An, Imperial College London, Department of Biomedical Engineering, A*STAR Scholar Attachment Program, “Electrical Modeling of Intracortical Recording Interface,” B.Eng. supervised, Jul. 2010 – Jul. 2011
- Supervised undergraduate students from NUS and NTU through Industrial Attachment Program and Final Year Projects

PUBLICATIONS

Book Chapters

1. **Minkyu Je**, “Smart Sensor Microsystems: Application-Dependent Design and Integration Approaches,” in a book titled “Smart Sensors and Systems: Innovations for Medical, Environmental, and IoT Applications,” Springer, 2017
2. Wei Mong Tsang, **Minkyu Je**, “Flexible Electrode for Implantable Neural Devices,” in a book titled “Neural Computation, Neural Devices, and Neuroprosthesis,” Springer, 2014.
3. Yuan Gao, Xin Liu, Yuanjin Zheng, Shengxi Diao, Weida Toh, Yisheng Wang, Bin Zhao, **Minkyu Je**, Chun-Huat Heng, “A Low Power Interference Robust IR-UWB Transceiver SoC for WBAN

Applications," in a book titled "Ultra-Wideband and 60 GHz Communications for Biomedical Applications," Springer, 2014.

4. Anupama Vijay Govindarajan, Woo-Tae Park, **Minkyu Je**, A. H. Achyuta, "MEMS as Implantable Neuroprobes," in a book titled "MEMS for Biomedical Applications," Woodhead Publishing, Jul. 2012.
5. **Minkyu Je**, Ickjin Kwon, Hyungcheol Shin, Kwyro Lee, "MOSFET Modeling and Parameter Extraction for RF IC's," in a book titled "CMOS RF Modeling, Characterization and Applications," World Scientific Publishing, Apr. 2002.

Journal Publications

1. Jaeyeong Park, Jun-Young Kim, Hyun Deok Kim, Young Cheol Kim, Anna Seo, **Minkyu Je**, Jong Uk Mun, Bia Kim, Il Hyung Park, Shin-Yoon Kim, "Analysis of acetabular orientation and femoral anteversion using images of three-dimensional reconstructed bone models," *International Journal of Computer Assisted Radiology and Surgery*, Published online, Jan. 2017.
2. Camilo Libedinsky, Rosa So, Zhiming Xu, Toe K. Kyar, Duncun Ho, Clement Lim, Louiza Chan, Yuanwei Chua, Lei Yao, Jia Hao Cheong, Jung Hyup Lee, Kulkarni Vinayak Vishal, Yongxin Guo, Zhi Ning Chen, Lay K. Lim, Peng Li, Lei Liu, Xiaodan Zou, Kai K. Ang, Yuan Gao, Wai Hoe Ng, Boon Siew Han, Keefe Chng, Cuntai Guan, **Minkyu Je**, Shih-Cheng Yen, "Independent Mobility Achieved through a Wireless Brain-Machine Interface," *PLOS ONE*, vol. 11, no. 11, Nov. 2016.
3. Arup K. George, Junghyup Lee, Zhi Hui Kong, **Minkyu Je**, "A 0.8 V Supply- and Temperature-Insensitive Capacitance-to-Digital Converter in 0.18-μm CMOS," *IEEE Sensors Journal*, vol. 16, no. 13, pp. 5354–5364, Jul. 2016.
4. Yong Wang, Wang Ling Goh, Kevin T.-C. Chai, Xiaojing Mu, Yan Hong, Piotr Kropelnicki, **Minkyu Je**, "Parasitic analysis and π-type Butterworth-Van Dyke model for complementary-metaloxide-semiconductor Lamb wave resonator with accurate two-port Y-parameter characterizations," *Review of Scientific Instruments*, vol. 87, no. 4, Apr. 2016.
5. Lei Zou, Jerrin Pathrose, **Minkyu Je**, "A 9-bit Successive Approximation ADC in SOI CMOS Operating Up To 300 °C," *International Journal of Circuit Theory and Applications*, vol. 44, no. 2, pp. 418–427, Feb. 2016.
6. Jianming Zhao, Lei Yao, Rui-Feng Xue, Peng Li, **Minkyu Je**, Yong Ping Xu, "An Integrated Wireless Power Management and Data Telemetry IC for High-Compliance-Voltage Electrical Stimulation Applications," *IEEE Transactions on Biomedical Circuits and Systems*, vol. 10, no. 1, pp. 113–124, Feb. 2016.
7. Xiaojun Bi, M. Annamalai Arasu, Yao Zhu, **Minkyu Je**, "A Low Switching-Loss W-Band Radiometer Utilizing a Single-Pole-Double-Throw Distributed Amplifier in 0.13-μm SiGe BiCMOS," *IEEE Transactions on Microwave Theory and Techniques*, vol. 64, no. 1, pp. 226–238, Jan. 2016.
8. Xin Liu, Jun Zhou, Chao Wang, Kah-Hyong Chang, Jianwen Luo, Jingjing Lan, Lei Liao, Yat-Hei Lam, Yongkui Yang, Bo Wang, Xin Zhang, Wang Ling Goh, Tony Tae-Hyoung Kim, **Minkyu Je**, "An Ultralow-Voltage Sensor Node Processor With Diverse Hardware Acceleration and Cognitive Sampling for Intelligent Sensing," *IEEE Transactions on Circuits and Systems II*, vol. 62, no. 12, pp. 1149–1153, Dec. 2015.
9. Lianhong Zhou, Muthukumaraswamy Annamalai, **Minkyu Je**, Libin Yao, Chun-Huat Heng, "A Fully Integrated Temperature-Independent Reconfigurable Acoustic Transmitter with Digital On-Chip Resistor Temperature Coefficient Calibration for Oil Drilling Application," *IEEE Transactions on Circuits and Systems II*, vol. 62, no. 6, pp. 553–557, Jun. 2015.
10. Yao Zhu, Yuanjin Zheng, Yuan Gao, Darmayuda I Made, Chengliang Sun, **Minkyu Je**, Alex

Yuandong Gu, "An Energy Autonomous 400 MHz Active Wireless SAW Temperature Sensor Powered by Vibration Energy Harvesting," *IEEE Transactions on Circuits and Systems I*, vol. 62, no. 4, pp. 976–985, Apr. 2015.

11. Jun Zhou, Chao Wang, Xin Liu, Xin Zhang, **Minkyu Je**, "An Ultra-Low Voltage Level Shifter Using Revised Wilson Current Mirror for Fast and Energy-Efficient Wide-Range Voltage Conversion from Sub-Threshold to I/O Voltage," *IEEE Transactions on Circuits and Systems I*, vol. 62, no. 3, pp. 697–706, Mar. 2015.
12. Bo Wang, Truc Quynh Nguyen, Anh Tuan Do, Jun Zhou, **Minkyu Je**, Tony Tae-Hyoung Kim, "Design of an Ultra-Low Voltage 9T SRAM with Equalized Bitline Leakage and CAM-Assisted Energy Efficiency Improvement," *IEEE Transactions on Circuits and Systems I*, vol. 62, no. 2, pp. 441–448, Feb. 2015.
13. Yong Wang, Kevin T. C. Chai, Xiaojing Mu, **Minkyu Je**, Wang Ling Goh, "A 1.5±0.39 ppm/^{o}C Temperature-Compensated LC Oscillator Using Constant-Biased Varactors," *IEEE Microwave and Wireless Components Letters*, vol. 25, no. 2, pp. 130–132, Feb. 2015.
14. Jun Zhou, Chao Wang, Xin Liu, **Minkyu Je**, "Fast and Energy-Efficient Low-Voltage Level Shifters," *Microelectronics Journal*, vol. 46, no. 1, pp. 75–80, Jan. 2015.
15. Chao Wang, Jun Zhou, Roshan Weerasekera, Bin Zhao, Xin Liu, Philippe Royannez, **Minkyu Je**, "BIST Methodology, Architecture and Circuits for Pre-Bond TSV Testing in 3D Stacking IC Systems," *IEEE Transactions on Circuits and Systems I*, vol. 62, no. 1, pp. 139–148, Jan. 2015.
16. Chao Wang, Jun Zhou, Lei Liao, Jingjing Lan, Jianwen Luo, Xin Liu, **Minkyu Je**, "Near-Threshold Energy and Area Efficient Reconfigurable DWPT/DWT Processor for Healthcare Monitoring Applications," *IEEE Transactions on Circuits and Systems II*, vol. 62, no. 1, pp. 70–74, Jan. 2015.
17. Xin Liu, Jun Zhou, Yongkui Yang, Bo Wang, Jingjing Lan, Chao Wang, Jianwen Luo, Wang Ling Goh, Tony Tae-Hyoung Kim, **Minkyu Je**, "A 457-nW Near-Threshold Cognitive Multi-Functional ECG Processor for Long-Term Cardiac Monitoring," *IEEE Journal of Solid-State Circuits*, vol. 49, no. 11, pp. 2422–2434, Nov. 2014.
18. Wai Pan Chan, Margarita Narducci, Yuan Gao, Ming-Yuan Cheng, Jia Hao Cheong, Arup K. George, Daw Don Cheam, Siew Chong Leong, Maria Ramona B. Damalerio, Ruiqi Lim, Ming-Ling Tsai, Abdur R. A. Rahman, Mi Kyoung Park, Zhi Hui Kong, Rao Jai Prashanth, **Minkyu Je**, "A Monolithically Integrated Pressure/Oxygen/Temperature Sensing SoC for Multimodality Intracranial Neuromonitoring," *IEEE Journal of Solid-State Circuits*, vol. 49, no. 11, pp. 2449–2461, Nov. 2014.
19. Vishal V. Kulkarni, Junghyup Lee, Jun Zhou, Chee Keong Ho, Jia Hao Cheong, Wei-Da Toh, Peng Li, Xin Liu, **Minkyu Je**, "A Reference-less Injection-Locked Clock Recovery Scheme for Multilevel-Signaling-Based Wideband BCC Receivers," *IEEE Transactions on Microwave Theory and Techniques*, vol. 62, no. 9, pp. 1856–1866, Sep. 2014.
20. Chee Keong Ho, Jia Hao Cheong, Junghyup Lee, Vishal Kulkarni, Peng Li, Xin Liu, **Minkyu Je**, "High Bandwidth Efficiency and Low Power Consumption Walsh Code Implementation Methods for Body Channel Communication," *IEEE Transactions on Microwave Theory and Techniques*, vol. 62, no. 9, pp. 1867–1878, Sep. 2014.
21. Yi Chen, Arindam Basu, Lei Liu, Xiaodan Zou, Rajkumar Ramamoorthy, Gavin Dawe, **Minkyu Je**, "A Digitally Assisted, Signal Folding Neural Recording Amplifier," *IEEE Transactions on Biomedical Circuits and Systems*, vol. 8, no. 4, pp. 528–542, Aug. 2014.
22. Sanming Hu, Cheng Jin, Hongyu Li, Rui Li, Ser Choong Chong, Ming Ching Jong, Leong Ching Wai, Keng Hwa Teo, **Minkyu Je**, Patrick Guo Qiang Lo, "Fast Location of Opens in TSV-based 3D Chip Using Simple Resistor Chain," *IEEE Transactions on Electron Devices*, vol. 61, no. 7, pp. 2584–2587, Jul. 2014.
23. Jerrin Pathrose, Lei Zou, Kevin T. C. Chai, **Minkyu Je**, Yong Ping Xu, "Temperature Sensor Front

End in SOI CMOS Operating up to 250 ºC," *IEEE Transactions on Circuits and Systems II*, vol. 61, no. 7, pp. 496–500, Jul. 2014.

24. Hyouk-Kyu Cha, **Minkyu Je**, "A Single-input Dual-Output 13.56 MHz CMOS AC-DC Converter with Comparator-Driven Rectifiers for Implantable Devices," *Microelectronics Journal*, vol. 45, no.3, pp. 277–281, Mar. 2014.
25. Dong Han, Yuanjin Zheng, Ramamoorthy Rajkumar, Gavin Stewart Dawe, **Minkyu Je**, "A 0.45V 100-Channel Neural-Recording IC with Sub-μW/Channel Consumption in 0.18μm CMOS," *IEEE Transactions on Biomedical Circuits and Systems*, vol. 7, no. 6, pp. 735–746, Dec. 2013.
26. Yuan Gao, San-Jeow Cheng, Wei-Da Toh, Yuen Sam Kwok, Kay-Chuan Benny Tan, Xi Chen, Wai-Meng Mok, Htun Htun Win, Bin Zhao, Shengxi Diao, Cabuk Alper, Yuanjin Zheng, Sumei Sun, **Minkyu Je**, Chun-Huat Heng, "An Asymmetrical QPSK/OOK Transceiver SoC and 15:1 JPEG Encoder IC for Multifunction Wireless Capsule Endoscopy," *IEEE Journal of Solid-State Circuits*, vol. 48, no. 11, pp. 2717–2733, Nov. 2013.
27. Anh Tuan Do, **Minkyu Je**, Kiat Seng Yeo, "Improved Inverter-Based Read-Out Scheme for Low-Power ISFET Sensing Array," *Electronics Letters*, vol. 49, no. 24, pp. 1517–1518, Nov. 2013.
28. Lei Zou, Jerrin Pathrose, Kevin T. C. Chai, **Minkyu Je**, Yong Ping Xu, "Sample-and-Hold Circuit with Dynamic Switch Leakage Compensation," *Electronics Letters*, vol. 49, no. 21, pp. 1323–1325, Oct. 2013.
29. Xiaodan Zou, Lei Liu, Jia Hao Cheong, Lei Yao, Peng Li, Ming-Yuan Cheng, Wang Ling Goh, Rajkumar Ramamoorthy, Gavin Dawe, Kuang-Wei Cheng, **Minkyu Je**, "A 100-Channel 1-mW Implantable Neural Recording IC," *IEEE Transactions on Circuits and Systems I*, vol. 60, no. 10, pp. 2584–2596, Oct. 2013.
30. Lianhong Zhou, Muthukumaraswamy Annamalai, Jeongwook Koh, **Minkyu Je**, Libin Yao, Chun-Huat Heng, "A Crystal-Less Temperature-Independent Reconfigurable Transmitter Targeted for High-Temperature Wireless Acoustic Telemetry Applications," *IEEE Transactions on Circuits and Systems II*, vol. 60, no. 9, pp. 542–546, Sep. 2013.
31. Dale A. Fisher, Theresa Seetoh, Helen Oh May-Lin, Sivakumar Viswanathan, Yanling Toh, Wong Chiang Yin, Loh Siw Eng, Tan Shire Yang, Steve Schiefen, **Minkyu Je**, Ruey Feng Peh, Fiona Wei Ling Loke, Michael Dempsey, "Automated Measures of Hand Hygiene Compliance among Healthcare Workers Using Ultrasound: Validation and a Randomized Controlled Trial," *Infection Control and Hospital Epidemiology*, vol. 34, no. 9, pp. 919–928, Sep. 2013.
32. Ming-Yuan Cheng, **Minkyu Je**, Kwan Ling Tan, Ee Lim Tan, Ruiqi Lim, Lei Yao, Peng Li, Woo-Tae Park, Eric Jian Rong Phua, Chee Lip Gan, Aibin Yu, "A Low-Profile Three-Dimensional Neural Probe Array Using a Silicon Lead Transfer Structure," *Journal of Micromechanics and Microengineering*, vol. 23, no. 9, 095013, Sep. 2013.
33. Tao Sun, Woo-Tae Park, John Wei Mong Tsang, Tack Boon Yee, **Minkyu Je**, "Cytocompatibility Assessment of Si, Plasma Enhanced Chemical Vapor Deposition-Formed SiO2 and Si3N4 Used for Neural Prosthesis: A Comparative Study," *Nanoscience and Nanotechnology Letters*, vol. 5, no. 8, pp. 916–920, Aug. 2013.
34. Xiaojun Bi, Yongxin Guo, **Minkyu Je**, "Analysis and Design of Gain Enhanced Cascode Stage Utilizing a New Passive Compensation Network," *IEEE Transactions on Microwave Theory and Techniques*, vol. 61, no. 8, pp. 2892–2900, Aug. 2013.
35. Ming-Yuan Cheng, Woo-Tae Park, Aibin Yu, Rui-Feng Xue, Kwan Ling Tan, Daquan Yu, Sang-Hyun Lee, Chee Lip Gan, **Minkyu Je**, "A Flexible Polyimide Cable for Implantable Neural Probe Arrays," *Microsystem Technologies*, vol. 19, no. 8, pp. 1111–1118, Aug. 2013.
36. Hyouk-Kyu Cha, Dongning Zhao, Jia Hao Cheong, Bin Guo, Hongbin Yu, **Minkyu Je**, "A CMOS High-Voltage Transmitter IC for Ultrasound Medical Imaging Applications," *IEEE Transactions on*

Circuits and Systems II, vol. 60, no. 6, pp. 316–320, Jun. 2013.

37. **Minkyu Je**, "Batteries Not Included? How Little Is Enough for Real Energy Autonomy? (Conference Reports)," *IEEE Solid-State Circuits Magazine*, vol. 5, no. 2, pp. 80–82, Jun. 2013.
38. Xiaojun Bi, Yongxin Guo, Yong Zhong Xiong, Muthukumaraswamy Annamalai Arasu, **Minkyu Je**, "A 19.2 mW, >45 dB Gain and High-Selectivity 94 GHz LNA in 0.13 μm SiGe BiCMOS," *IEEE Microwave and Wireless Components Letters*, vol. 23, no. 5, pp. 261–263, May 2013.
39. Rui-Feng Xue, Kuang-Wei Cheng, **Minkyu Je**, "High-Efficiency Wireless Power Transfer for Biomedical Implants by Optimal Resonant Load Transformation," *IEEE Transactions on Circuits and Systems I*, vol. 6, no. 4, pp. 867–874, Apr. 2013.
40. Kuang-Wei Cheng, **Minkyu Je**, "A Current-Switching and gm-Enhanced Colpitts Quadrature VCO," *IEEE Microwave and Wireless Components Letters*, vol. 23, no. 3, pp. 143–145, Mar. 2013.
41. Sanming Hu, Germaine Hoe Yen Yi, Keng Hwa Teo, Dan Zhao, Jinglin Shi, Yong Zhong Xiong, Xiaowu Zhang, **Minkyu Je**, Mohammad Madihian, "A Thermal Isolation Technique Using Through-Silicon Vias for Three-Dimensional ICs," *IEEE Transactions on Electron Devices*, vol. 60, no.3, pp. 1282–1287, Mar. 2013.
42. Roshan Weerasekera, Hong Yu Li, Guruprasad Katti, Wei Yi Lim, Sanming Hu, Jingling Shi, **Minkyu Je**, Keng Hwa Teo, "On the Impact of Through-Silicon-Via-Induced Stress on 65-nm CMOS Devices," *IEEE Electron Device Letters*, vol. 34, no. 1, pp. 18–20, Jan. 2013.
43. Zhu Duan, Yong-Xin Guo, Rui-Feng Xue, Kuang-Wei Cheng, **Minkyu Je**, Dim-Lee Kwong, "Differentially-Fed Dual-Band Implantable Antenna for Biomedical Applications," *IEEE Transactions on Antennas and Propagation*, vol. 60, no. 12, pp. 5587–5595, Dec. 2012.
44. Hyouk-Kyu Cha, Dan Lei Yan, Muthusamy Kumarasamy Raja, **Minkyu Je**, "A 1-V 1.2-mW CMOS MedRadio Receiver for Biomedical Applications," *Microwave Optical Technology Letters*, vol. 54, pp. 2821–2825, Dec. 2012.
45. Jun Yu, Wang Ling Goh, Muthukumaraswamy Annamalai Arasu, **Minkyu Je**, "A 60-V, > 225 °C Half-Bridge Driver for Piezoelectric Acoustic Transducer, on SOI-CMOS," *IEEE Transactions on Circuits and Systems II*, vol. 59, no. 11, pp. 771–775, Nov. 2012.
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49. Jia Hao Cheong, Simon Sheung Yan Ng, Xin Liu, Rui-Feng Xue, Huey Jen Lim, Pradeep Basappa Khannur, Kok Lim Chan, Andreas Astuti Lee, Kai Kang, Li Shiah Lim, Woo-Tae Park, **Minkyu Je**, "An Inductively Powered Implantable Blood Flow Sensor Microsystem for Vascular Grafts," *IEEE Transactions on Biomedical Engineering*, vol. 59, pp. 2466–2475, Sep. 2012
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Kai Tay, Andy Eu-Jin Lim, **Minkyu Je**, "Multiplexed Detection of Cardiac Biomarkers in Serum with Nanowire Arrays Using Readout ASIC," *Biosensors and Bioelectronics*, vol. 35, no. 1, pp. 218–223, May 2012.

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