

지역혁신 선도연구센터(RLRC) 4차년도 정기세미나

- 일정 : 2024년 1월 31일(수), 16:30~17:30
- 연사 : 한국과학기술원 기계공학과 박인규 교수
- 주제 : 마이크로/나노 기술 기반 차세대 센서 소자 및 시스템
- Abstract :

The importance of smart sensors towards convenient, comfortable and safe life is rapidly increasing in the era of internet of things (IoT) and industry 4.0. Especially, micro and nanotechnologies are enabling new functionalities of ultracompact and low-power sensors that are essential for the IoT era. In this talk, I will present micro/nano-enabled sensors, which have been recently developed at our research group (MINT Lab, KAIST), for high performance environmental, human-machine interface, healthcare, and medical monitoring applications. Various topics on developed sensor materials, devices, and systems will be discussed.

The research themes can be grouped into three categories: The first category is the environmental sensors such as (1) ultra-low-power micro-LED-integrated gas sensors for smart e-nose systems [1,2] and (2) artificial olfactory neuron and machine learning for an in-sensor neuromorphic e-nose [3]. The second category is the wearable sensors including (3) 3D micro/nanostructures for soft pressure sensing applications [4, 5] and (4) optically modulating micro/nano-structures for self-powered physical [6, 7]. The last category is the clinical and biomedical sensors such as (5) battery-free, wireless soft sensors for continuous patient monitoring [8] and thin film, integrated physical and chemical sensor arrays for biomedical needles [9, 10]

References (*: corresponding author)

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- [6] J. Gu, I. Park*, et al., Nano Energy 89, 106447 (2021)
- [7] J. Choi, I. Park*, et al., Nano Energy 74, 104749 (2020)
- [8] Y.S. Oh, I. Park*, et al., Nature Communications 12, 5008 (2021)
- [9] J. Park, I. Park*, et al., Advanced Science 8, 2100725 (2021)
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Short Bio

Prof. Inkyu Park received his B.S., M.S., and Ph.D. from KAIST (1998), UIUC (2003) and UC Berkeley (2007), respectively, all in mechanical engineering. He has been with the department of mechanical engineering at KAIST since 2009 as a faculty and is currently a full professor, vice department head, and KAIST Endowed Chair Professor. His research interests are nanofabrication, smart sensors for healthcare, environmental and biomedical monitoring, nanomaterial-based sensors and flexible & wearable electronics. He has published more than 180 international journal articles (SCI indexed) and holds more than 40 registered domestic and international patents in the area of MEMS/NANO engineering. He is a recipient of HP Open Innovation Research Award (2009–2012), KAIST Prize for Academic Excellence (2021), KAIST Grand Prize for Technology Innovation Award (2019), KAIST Endowed Chair Professorship (2017), Nanotechnologies Top 10 of Korea (2023), and NanoKorea 2023 Research Innovation Award – MIST Minister Award (2023). He is currently an editor for Sensors and Actuators B: Chemical, one of the top SCI journals in the sensor technology field.

