성균관대학교 에너지과학과
DEPARTMENT OF ENERGY SCIENCE

[Energy Distinguished Lecture Series]

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Ambipolar Photodetectors for IR Sensing

N Center #86120, Sungkyunkwan University, Suwon

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Abstract

Ambipolar phototransistors based on organic semiconductors offer a promising platform for next-generation NIR/SWIR sensing owing to their tunable optoelectronic properties and versatile device architectures. In this seminar, I will present our recent work on organic and quantum-dot hybrid phototransistors, focusing on ambipolar charge transport, broadband photoresponse, and spectral-selective detection. I will discuss the underlying device physics and strategies for enhancing sensitivity and functionality across the NIR/SWIR range. Finally, I will highlight emerging opportunities for multispectral sensing and integrated optoelectronic applications enabled by ambipolar phototransistor technologies.

Brief Bio



Hyeok Kim is a full professor at the School of Electrical and Computer Engineering, University of Seoul (UoS). He received B.S from Korea Advanced Institute of Science and Technology (KAIST) and got M.S at the school of electrical engineering and computer science from Seoul National University.
Then he performed research focused on organic electronic devices, such as field-effect transistors and diodes, during his Ph.D. from the University of Paris 7 with Professor Gilles Horowitz.
Afterward, he joined the Samsung Advanced Institute of Technology (SAIT) and then led the sensor research team at the Korea Institute of Industrial Technology (KITECH).
Prior to joining UoS, he was with the Department of Electrical Engineering at Gyeongsang National University in Jinju, Korea. His research interests include flexible optoelectronic devices and nanogenerators.
Since 2021, Prof. Hyeok Kim is the director of center for smart sensor system of Seoul (CS4) while serving as a vice-provost of academic affairs from 2023 to 2024 and now the president of institute of information technology.
He is also an adjunct professor of Terasaki Institute, Los Angeles since 2023. He has more than 160 publications and has received best paper awards 28 times. In particular, he has been operating a number of international collaborations while doing PHC Star program with CNRS in France twice.

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