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강연제목: Tissue-Interfaced Organic Bioelectronics

Abstract:

Organic bioelectronics has emerged as a transformative field, leveraging the unique properties of organic semiconductors to seamlessly interface with biological systems, including cells, tissues, and organs. This talk will highlight recent advancements in tissue-interfaced organic bioelectronics, highlighting our latest research findings. First, I will introduce flexible multimodal sensor arrays based on the 3D integration of organic thin-film transistors, enabling independent detection of temperature and pressure. Next, I will present an organic electrochemical transistor (OECT)-based active neural probe designed for electrocorticography, demonstrating its performance in recording local field potentials with high fidelity in animal models exhibiting both spontaneous and seizure-like activity. Finally, I will introduce a non-invasive, tissue-sensing platform consisting of an inkjet-printed large-area OECT integrated with a 3D-bioprinted in-vitro lung tissue, illustrating its potential for real-time drug efficacy testing.

Brief Biosketch

Prof. Sungjune Jung is a tenured professor at the Department of Materials Science and Engineering in Pohang University of Science and Technology (POSTECH). He received his PhD degree in Manufacturing Engineering from the University of Cambridge in 2007 and subsequently joined the Department of Physics, the University of Cambridge. Before his PhD, he worked for Samsung Electronics, Digital Printing Division, for 3 years. Since joining POSTECH in 2013, Prof. Jung has established and led the Bio-Printing and Printed Electronics Laboratory, where he and his team conduct cutting-edge research in bioprinting and printed electronics.