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국문 강연제목: 뇌-기계교합을 위한 소프트 바이오일렉트로닉스

영문 강연제목: Soft Bio-integrated Electronics for Unconventional Brain-machine  
Interfaces

#### Abstract

My current research focuses on flexible and stretchable biocompatible electronics in the forms of wearable and implantable platforms. Conventional rigid systems have limitations in forming tissue interfaces due to a Young's modulus mismatch, resulting in poor device capabilities and noise. To overcome these limitations, we have been developing flexible and stretchable electronics with a low modulus to establish intimate contact with the skin, enabling the acquisition of high-quality signals and tissue actuation. Among the various soft bio-integrated electronics that we are developing, in this talk, I will primarily introduce recent advances on soft neural interfaces for unconventional brain-machine interfaces. Specifically, I will discuss our efforts on (1) 3D neural interfaces, (2) mri compatible neural interfaces, (3) space unrestricted optogenetics, and (4) bioresorbable hybrid neural interfaces for diverse applications, including the diagnosis and treatment of disorders, paving the way for the next generation of neuroscience and medical science.

#### Brief Biosketch

Dr. Ki Jun Yu is an Associate Professor of School of Electrical and Electronic Engineering at Yonsei University. He obtained his B.S., M.S., and Ph.D. degrees in Electrical and Computer Engineering from the University of Illinois at Urbana-Champaign in 2008, 2012, and 2015 respectively under the guidance of Prof. John A. Rogers. Subsequently, he pursued a postdoctoral training in the Department of Materials Science and Engineering at the University of Illinois at Urbana-Champaign, also under the guidance of Professor John A. Rogers. His research primarily focuses on developing soft electronics for biomedical applications. He has published 65 journal papers with an h-index of 41 and has accumulated more than 12,000 citations to date. In recognition of his research accomplishments, he received the Outstanding Achievement Professor Award (Research Category) from Yonsei University in 2023. Since 2019, he has held the position of Hwalchun Distinguished Professor and currently serves in that capacity.