Prof. Junhwan Choi

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Dr. Junhwan Choi is an Assistant Professor in the Department of Chemical Engineering at Dankook University and an Adjunct Professor in the Department of Foundry Engineering at the Graduate School of Dankook University. He received his Ph.D. in Chemical and Biomolecular Engineering from the Korea Advanced Institute of Science and Technology (KAIST).

His doctoral research centered on the design and vapor-phase synthesis of functional polymer dielectric materials, including high-*k* polymer dielectrics and organic-inorganic hybrid dielectric layers for low-voltage organic field-effect transistors. Through systematic control of polymer chemistry and interfacial properties, he investigated charge transport behavior, dielectric reliability, and operational as well as environmental stability. These polymer dielectric materials were further applied to nonvolatile flash memory devices and integrated logic circuits, demonstrating their applicability to advanced electronic systems.

During his doctoral training, he worked as a visiting scholar at the Materials Research Science and Engineering Center (MRSEC) at Northwestern University, where he expanded his expertise to device fabrication based on van der Waals self-assembly and electrical characterization of 2D semiconductor field-effect transistors. He later joined the Querrey Simpson Institute for Bioelectronics (QSIB) at Northwestern University, where he pursued postdoctoral research on biodegradable electronic devices based on silicon transistors and phototransistors, gaining extensive experience in microfabrication and device integration.

At Dankook University, Dr. Choi leads research on functional polymer materials tailored for flexible and stretchable electronic devices. His group also develops field-effect transistors based on a broad range of organic and inorganic semiconductors. His research spans polymer thin-film synthesis, dielectric patterning and electronic device integration, and high-performance transistor architectures, with emerging applications in multi-valued logic, probabilistic computing, and neuromorphic electronics.