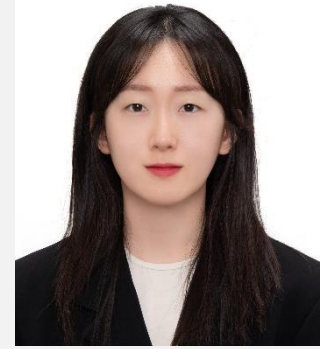


The 19th U.S.–Korea Forum on Nanotechnology

Dr. Hyunjeong Kwak

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Hyunjeong Kwak is a postdoctoral researcher in the Department of Materials Science and Engineering at Pohang University of Science and Technology (POSTECH), South Korea. She received her Ph.D. from POSTECH under the supervision of Professor Seyoung Kim, where her research focused on analog artificial intelligence (AI) hardware based on electrochemical random-access memory (ECRAM).

Her academic work bridges material-level innovation and system-level implementation. During her doctoral and postdoctoral research, she developed novel ECRAM devices and demonstrated their application in analog AI accelerators. Notably, she led the development of the first monolithically integrated 4K ECRAM-based analog AI chip with in-situ training capability, demonstrating energy efficiency of up to 6.17 TOPS/W. Her work contributes to closing the gap between memory device physics and full-stack neuromorphic computing.

Hyunjeong has authored over ten publications and patents spanning from materials characterization to chip-level AI acceleration. She also completed a research internship at IBM T.J. Watson Research Center, where she worked on resistive memory-based computing for AI training and conducted Hall measurements to analyze device-level transport phenomena.

Her research interests include neuromorphic hardware, in-memory computing, materials for energy-efficient AI, and sensor-integrated learning systems. She is particularly interested in bridging physical computing with real-world AI applications at the edge.