



**이화여자대학교**  
EWhA WOMANS UNIVERSITY

## **Division of Electronic and Semiconductor Engineering Seminar**

**Nov. 21, 2024 PM 4 ~ 5. Rm. 107, Asan Engineering BLDG.**

**Speaker:** Dr. Soo Gil Kim, Fellow (VP) at SK hynix

**Affiliation:** AI Memory / RnD Division at SK hynix

**Short Biography:** Dr. Soo Gil Kim received his Ph.D. degree at the Department of Materials Science and Engineering at Seoul National University in 2002. He worked as a Research Professor at Kyungwon University from 2002 to 2004, and worked as a Postdoctoral Researcher at University of Pennsylvania from 2004 to 2008. He joined and has worked in the RnD Division at SK Hynix, where he is intensively engaged in development of emerging memories and their AI applications towards the low-power hardware-oriented neuromorphic chip technology.



### **Title: Present and Perspective of Semiconductor Memory Technologies**

#### **Abstract**

Emerging memories such as phase-change memory (PCM), resistive-switching random-access memory (ReRAM), spin-torque-transfer magnetic random-access memory (STT-MRAM), and ferroelectric memory have been improved through various RnD activities in the fields of materials, processes, devices, and circuit design. During the period when interest in emerging memories was skyrocketing, RnD focused on creating large-capacity memory that could replace DRAM and NAND, resulting in the failure to develop a technology that could form a large market despite being in a fierce technological trend.

However, with the change in the computing environment and paradigm, RnD and commercialization are being carried out in various fields such as standalone, embedded, and AI-based devices targeting new application areas. Currently, with the rapid growth in computing technologies including memory-centric and AI computing, which meet high-performance and low-power requirements, various technologies are being proposed to overcome the limitations of existing memories and processors. Additionally, the performance of next-generation memory including emerging memory varies depending on the application, and technologies are required to segment or integrate IC components. Therefore, these technical environments should be reflected in the development strategy and goals of emerging memory.

This presentation introduces the current status and future prospects of emerging memory technologies along with the rapidly changing memory semiconductor trends and emerging memory technologies.

**Contact for queries:** Prof. Seongjae Cho. [felixcho@ewha.ac.kr](mailto:felixcho@ewha.ac.kr); (02) 3277-3512