Special Issue

High-Performance Semiconductor Memory: Capacitor-Less DRAM and Emerging Architectures

Message from the Guest Editor

The rapid evolution of AI and data-centric computing demands unprecedented capabilities from memory devices. To overcome the physical scaling limitations and integration complexities of conventional memory technologies, the exploration of innovative architectures, particularly capacitor-less DRAM, embedded memory systems and novel materials is critical. This Special Issue aims to highlight recent breakthroughs and future directions in high-performance memory technologies.

We invite researchers to contribute original research articles and comprehensive reviews covering advanced memory concepts. Specific areas of interest include, but are not limited to, capacitor-less DRAM architectures (e.g., 1T-DRAM, 2T-DRAM, thyristor-based memory, oxide channel-based memory), embedded memory solutions and emerging non-volatile memory systems. We also welcome studies on next-generation channel materials, advanced thin-film deposition techniques, 3D stackable integration and comprehensive TCAD simulation methodologies. This Special Issue will provide a platform to share cutting-edge developments and foster discussion on the future trajectory of high-performance memory systems.

Guest Editor

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