

Special Issue

Micro/Nanofabrication of Silicon Metal–Oxide–Semiconductor Devices

Message from the Guest Editors

The silicon metal–oxide–semiconductor (MOS) is the core structure of modern-day integrated circuit (IC) chips. Due to the demand for high-performance and high-density ICs, MOS devices have been continuously scaled down for the past five decades. However, the increasing miniaturisation will eventually hit fundamental limitations such as heat dissipation, scalability and, more prominently, the quantum mechanical effects. To overcome these issues, we should leverage on the quantum phenomenon to engineer MOS-based quantum devices. Such technology relies on the exploration of advanced micro- and nanofabrication technologies, processes, structures and new materials. As the semiconductor industries and foundries have been well developed for many decades, it is extremely beneficial to develop quantum technology based on silicon MOS fabrication processes, for instance, silicon quantum dots for quantum computing and single electron transistors for quantum metrology.

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