Special Issue

Advances in Resistive Switching Memory Devices

Message from the Guest Editor

Dear colleagues, Next-generation memory devices have recently become an active area of research, prompted by the physical limitations of charge trap-based non-volatile memory (NVM) devices. Among them, resistive switching memory (RRAM) devices have been considered as the most promising NVM device since the fourth fundamental passive circuit element was postulated in 1971, and can store two distinctive resistance states, namely a high-resistance state (HRS) and low-resistance state (LRS). Ever since, a variety of resistive switching devices have been demonstrated with the hope of finding the next-generation NVM devices offering the advantage of being highly scalable: 4F2 in a single layer, which could be further reduced to 4F2/n, where F is a half of the pitch in a crossbar arrangement and n is the number of stacks of physical layers of resistive switching devices. However, these devices incur several severe issues for commercialization that result in frequent read/write errors and unnecessary power consumption. To fix the issues that affect the performance of RRAM devices, researchers are proposing various approaches regarding new materials, designs, and properties.

Guest Editor

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Deadline for manuscript submissions

closed (30 July 2021)

Micromachines

an Open Access Journal by MDPI

Impact Factor 3.0
CiteScore 6.0
Indexed in PubMed

mdpi.com/si/75911

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