Special Issue

Resistive Switches: Understanding Device Mechanisms, Performance Enhancement, and Memory/Computing Applications

Message from the Guest Editors

Resistive switches are two-terminal electronic devices with tunable conductance that depends on the history of the applied external electric field. Such devices meet the general definition of a memristor, conceptualized by Prof. Leon Chua back in 1970s and discovered by HP lab in 2008. The resistive switches can be powered by various underlying physical mechanisms including redox reaction, phase transition, magnetoresistance, and ferroelectric tunneling resistance, among others. These devices feature superior scalability, 3D-stackability, and low fabrication cost, and bear a wide spectrum of applications to the next generation of nonvolatile memory (e.g., resistive random access memory or RRAM/ReRAM), in-memory processing to accelerate machine learning and neuromorphic computing, as well as cybersecurity. In this Special Issue, we seek to showcase research papers and review articles that focus on (1) fabrication, characterization, and modeling of resistive switches; and (2) circuit or system level applications involving resistive switches.

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Editor-in-Chief

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