Special Issue

Nanomaterials-Based Memristors for Neuromorphic Systems

Message from the Guest Editors

Neuromorphic computing, inspired by the architecture and efficiency of biological neural networks, holds immense potential to revolutionize artificial intelligence and energy-efficient computing. Memristors, as emerging non-volatile memory devices, are pivotal to this paradigmatic shift due to their ability to emulate synaptic plasticity and enable neural behavior. This Special Issue of *Nanomaterials* focuses on cutting-edge advancements in nanomaterials-based memristors for neuromorphic systems and applications, including optimization in nanomaterial synthesis, innovations in device design and fabrication, and the design of neuromorphic architectures and systems for the hardware implementation of biological behaviors. So far, multifarious nanomaterial-based neuromorphic devices have been proposed and utilized in applications in constructing bio-inspired artificial systems with complex biological functions. We invite researchers to contribute original research and review articles, highlighting the synergy between nanomaterials science and neuromorphic engineering and bridging material innovation with system-level applications.

Guest Editors

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Message from the Editor-in-Chief

Nanoscience and nanotechnology are exciting fields of research and development, with wide applications to electronic, optical, and magnetic devices, biology, medicine, energy, and defense. At the heart of these fields are the synthesis, characterization, modeling, and applications of new materials with lower nanometer-scale dimensions, which we call "nanomaterials". These materials can exhibit unusual mesoscopic properties and include nanoparticles, coatings and thin films, metal–organic frameworks, membranes, nano-alloys, quantum dots, self-assemblies, 2D materials such as graphene, and nanotubes. Our journal, *Nanomaterials*, has the goal of publishing the highest quality papers on all aspects of nanomaterial science to an interdisciplinary scientific audience. All of our articles are published with rigorous refereeing and open access.

Editor-in-Chief

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