Special Issue

Advances in Application of Two-Dimensional Materials and Devices

Message from the Guest Editors

Two-dimensional (2D) materials, such as graphene, MXenes, transition metal dichalcogenides (TMDs), and hexagonal boron nitride, have emerged as pivotal platforms in advancing materials science and electronic device engineering. Their extraordinary characteristics, including atomic-scale thickness, high surface-to-volume ratio, and tunable electrical and optical properties, render them highly suitable for a broad spectrum of applications. Such properties hold significant promise for enabling future innovations in low-power memory technologies, reconfigurable electronics, and next-generation optoelectronic systems, potentially exceeding the limitations of conventional semiconductors. This Special Issue aims to showcase recent progress in synthesizing, characterizing, and implementing 2D materials in functional devices. Areas of interest include, but are not limited to, nanoelectronics, optoelectronics, neuromorphic computing, sensors, and energy-related applications. Particular emphasis is placed on research that bridges fundamental materials science with scalable and practical device integration.

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