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Special Issue Reprint

Two-Dimensional Materials

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Building on the success of the first edition, “Two-Dimensional Materials: From Synthesis to Applications, 2nd Edition” presents a focused collection of recent advances in the science and engineering of low-dimensional materials. This reprint brings together original research and reviews that span fundamental electronic and magnetic properties, controlled synthesis, heterostructure design, energy storage, optoelectronics, catalysis, environmental remediation, and advanced characterization techniques. The volume highlights how atomic-scale structure, defects, interfaces, and dimensional confinement can be exploited to tailor transport, optical response, electrochemical activity, and surface reactivity. By integrating theoretical modeling with experimental realization and device-level demonstrations, this collection illustrates the rapid transition of two-dimensional materials from laboratory concepts to functional components in electronics, sensing, energy, and environmental technologies. Intended for researchers, graduate students, and engineers working in materials science, physics, chemistry, and nanotechnology, this reprint offers both a snapshot of the current state of the field and a guide to emerging directions shaping future applications of two-dimensional materials.

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