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Developments in Semiconductor Materials

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Editorial

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INTRODUCTION

Semiconductors are at the heart of the electronics industry. With the demand for faster, smaller, and more efficient devices, semiconductor materials research continues to thrive. This article focuses on five research domains: silicon technology, compound semiconductors, wide-bandgap semiconductors, organic semiconductors, and two-dimensional semiconductors.

Key Research Areas in Semiconductor Materials

Silicon Technology: Silicon remains the backbone of integrated circuits and photovoltaic devices [1].

Compound Semiconductors: Materials such as GaAs and InP are critical for high-frequency communication devices [2].

Wide-Bandgap Semiconductors: SiC and GaN enable high-power and high-temperature applications [3].

Organic Semiconductors: Applied in flexible displays, sensors, and organic solar cells [4].

Two-Dimensional Semiconductors: Materials like MoS_2 show promise for next-generation nanoelectronics [5].

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