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Image Article
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Promising Elemental Two-Dimensional Materials beyond Graphene

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Image Article

Following the rapid development of graphene, a group of elemental two-dimensional (2D) materials, whose characteristics and atomic structures are shown in Figure 1 [1-3] with superior physical properties, has emerged in the field of science. Recently, these materials have been theoretically and experimentally investigated for their synthesis/growth techniques and potential applications. Herein, we classify these materials into group III, IV, and V of the periodic table (Figure 2). Nowadays, the production methods of them include ultrahigh vacuum (UHV) growth, high-pressure synthesis, chemical vapor deposition (CVD), and plasma/ion beam-assisted process. However, the quality of them is not high enough for the potential applications such as transistors, photodetectors, sensors, and ion batteries so far. There are many issues needing to be overcome and we look forward to see the improvement in the near future.

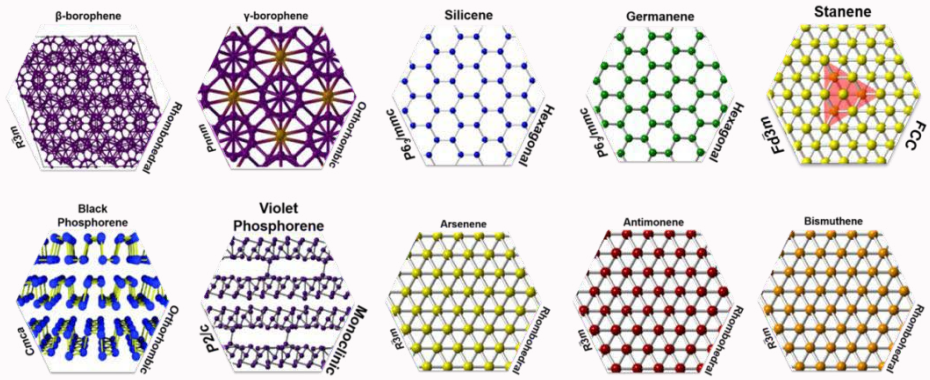

Figure 1: The characteristics and atomic structures of elemental 2D materials [1-3].

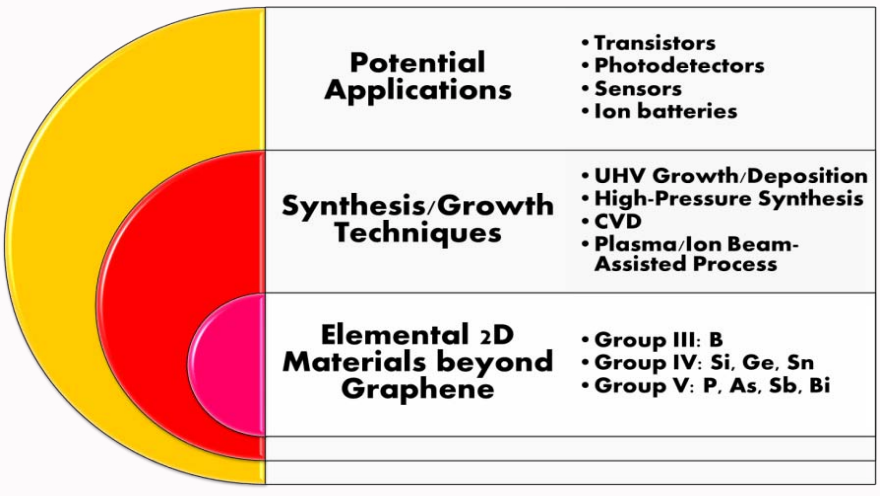

Figure 2: Classification of elemental 2D materials, their synthesis/growth techniques and potential applications.

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