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# Enhanced Electromagnetic Interference Shielding Properties of Silicon Carbide Composites with Aligned Graphene Nanoplatelets

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## Abstract

Graphene nanoplatelets (GNPs) were successfully incorporated into silicon carbide (SiC) ceramic matrix in a self-aligned pattern and the obtained materials displayed extremely high value of shielding effectiveness (SE) over 40 dB by adding only 3 wt.% GNPs, which was the highest SE value in all SiC-based composites reported in literature up to now. It was found that the texture distribution of GNPs was crucial to achieve the high electromagnetic interference shielding performance of SiC/GNPs composites, which can contribute to the significant improvement of both absorption and reflection. The improved absorption originated from the formation of network of mini capacitors comprised of self-aligned GNPs and multiple reflections. The improvement of reflection was attributed to the high electrical conductivity of the composite due to the introduction of GNPs. These results indicate that SiC/GNPs composites can be used as high-performance ceramic-based EMI shielding materials.

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