

Two Dimensional Graphene and One Dimensional Magnetite@Polyaniline Reinforced Epoxy Nanocomposites with Excellent Electromagnetic Wave Absorption Performance Prepared by Hot Pressing Method

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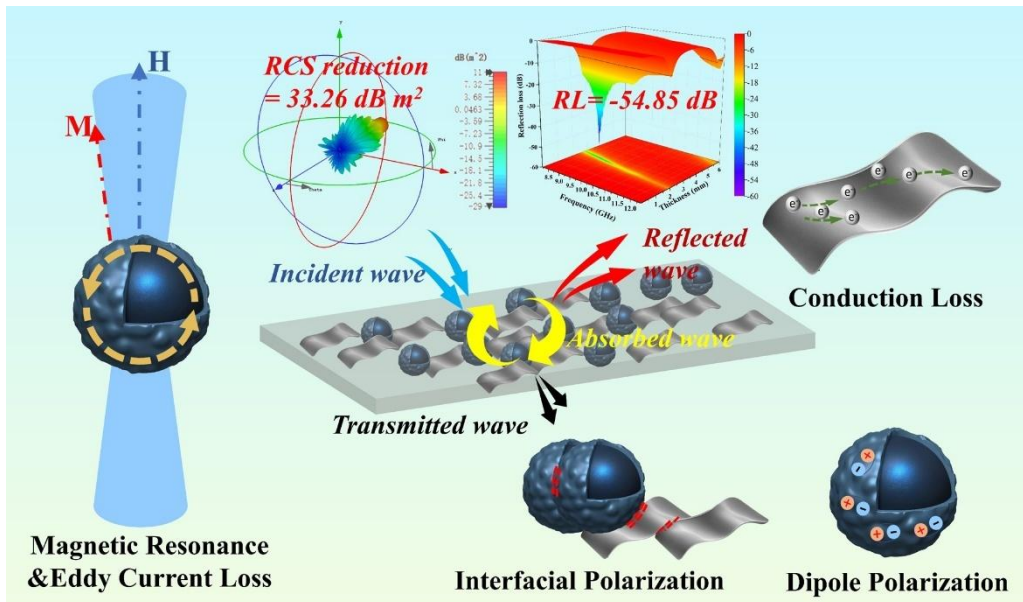
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Abstract

To reduce escalating electromagnetic pollution from modern technologies, advanced composites exhibiting thinness, light weight, broad bandwidth, and strong electromagnetic wave absorption (EWA) are urgently required. In this work, epoxy nanocomposites incorporating 0-D Fe₃O₄@PANI and 2-D graphene (Gr) as functional fillers were prepared via hot-pressing method. When the mass ratio of 120:1 (Fe₃O₄@PANI: Gr) nanocomposite exhibits a minimum reflection loss of - 54.86 dB and an effective absorption bandwidth of 2.27 GHz. Meanwhile, Radar Cross Section (RCS) reduction value can even reach 33.26 dB m². This work provides a scalable idea for preparing epoxy nanocomposites with excellent EWA performance.

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Innovative Description: In this work, epoxy nanocomposites incorporating 0-D $\text{Fe}_3\text{O}_4@\text{PANI}$ and 2-D graphene (Gr) as functional fillers were prepared via hot-pressing method.