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Abstract

Flexible natural rubber/magnetic iron oxide (Fe_3O_4)@reduced graphene oxide (NRMG) composites with segregated structure were prepared by a self-assembly method in latex. Various characterization techniques were employed to verify the successful preparation of Fe_3O_4@rGO and the formation of segregated structure within the bulk composites. Compared with natural rubber/reduced graphene oxide (NRG) composites, the presence of Fe_3O_4 enhances the electromagnetic interference shielding effectiveness (EMI SE) of NRMG composites. The EMI SE value of NRMG composite with 10 phr (part per hundred parts of rubber) rGO is 1.4 times higher than that of NRG composite with the same rGO content in the frequency range of 8.2-12.4 GHz. The specific EMI SE of NRMG composite reaches 26.4 dB mm^{-1}, outperforming the ever-reported polymer/Fe_3O_4@rGO composites with low rGO content. Excitingly, the EMI SE of

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