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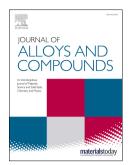
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Development of Sulfide-doped Graphene/Fe₃O₄ Absorber with

Wide Band Electromagnetic Absorption Performance

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Abstract: Graphene has been confirmed as an ideal lightweight and high-performance electromagnetic (EM) absorber if used to deal with increasingly electromagnetic interference issue. However, the actual EM absorption performance of graphene is not desirable in a thin thickness which is due to poor impedance matching behavior and single conductive loss form. To overcome this difficulty, this research employed S doping and magnetic Fe₃O₄ nanoparticles loading strategies to boost EM attenuation ability by introduction of various EM loss forms, e.g. dipolar, interface, and magnetic loss ability *etc.* Besides, the impedance matching ability of SGN/Fe₃O₄ has significant improved as compared to pure graphene, primarily owing to the sharply decrease of relative complex permittivity (ε_r) values. The as-prepared S-doped graphene/Fe₃O₄ (denote as SGN/Fe₃O₄) absorber shows excellent wideband electromagnetic absorption property at a thin thickness of 2.0 mm which the frequency width with a reflection loss <-10 dB reach 5.3 GHz.

Key words: S doped graphene/Fe $_3O_4$ composite, electromagnetic interference, electromagnetic attenuation forms, wideband, dipolar and interface polarization.

1 Introduction:

Nowadays, growing attentions have been focused on the development of electromagnetic (EM)

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