

Accepted Manuscript

Development of sulfide-doped Graphene/Fe₃O₄ absorber with wide band electromagnetic absorption performance

Cong Chen, Shouzhen Bao, Baoshun Zhang, Yuanyuan Zhou, Shimei Li



PII: S0925-8388(18)32930-X

DOI: [10.1016/j.jallcom.2018.08.057](https://doi.org/10.1016/j.jallcom.2018.08.057)

Reference: JALCOM 47145

To appear in: *Journal of Alloys and Compounds*

Received Date: 5 May 2018

Revised Date: 29 July 2018

Accepted Date: 6 August 2018

Please cite this article as: C. Chen, S. Bao, B. Zhang, Y. Zhou, S. Li, Development of sulfide-doped Graphene/Fe₃O₄ absorber with wide band electromagnetic absorption performance, *Journal of Alloys and Compounds* (2018), doi: 10.1016/j.jallcom.2018.08.057.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Development of Sulfide-doped Graphene/Fe₃O₄ Absorber with Wide Band Electromagnetic Absorption Performance

Cong Chen^{a, b*}, Shouzhen Bao^d, Baoshun Zhang^d, Yuanyuan Zhou^c, Shimei Li^a

^a State Key Laboratory of Complex Nonferrous Metal Resources Clean Utilization, Faculty of Land Resource Engineering, Kunming University of Science and Technology, Kunming 650093, China

^b School of Physics and Electronic information Engineering, Qinghai University for Nationalities, Xining 810007, China

^c School of Mechatronics Engineering, Zhengzhou University of Aeronautics, Zhengzhou, Henan 450046, China

^d Asia Silicon (Qinghai) Co., Ltd, Xining, Qinghai 810007, China

*Corresponding authors. E-mail addresses: 272859482@qq.com (Cong Chen)

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/Fe₃O₄ 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)

Download English Version:

<https://daneshyari.com/en/article/8943257>

Download Persian Version:

<https://daneshyari.com/article/8943257>

[Daneshyari.com](https://daneshyari.com)