Accepted Manuscript

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PII: S0266-3538(17)31275-7

DOI: 10.1016/j.compscitech.2017.07.010

Reference: CSTE 6835

To appear in: *Composites Science and Technology*

Received Date: 26 May 2017

Revised Date: 5 July 2017

Accepted Date: 10 July 2017

Please cite this article as: Movassagh-Alanagh F, Bordbar-Khiabani A, Ahangari-Asl A, Three-phase PANI@nano-Fe_3O_4@CFs heterostructure: Fabrication, characterization and investigation of microwave absorption and EMI shielding of PANI@nano-Fe_3O_4@CFs/epoxy hybrid composite, *Composites Science and Technology* (2017), doi: 10.1016/j.compscitech.2017.07.010.

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Abstract

In this work, a three phase carbon fiber (CF)-based electromagnetic (EM) wave absorbing and EM interference (EMI) shielding heterostructure was fabricated through a layer by layer assembly. The nano-Fe_3O_4 particles were deposited on CFs via a modified multi-step electrophoretic deposition (EPD). The PANI@nano-Fe_3O_4@CFs heterostructures were prepared using an in situ polymerization process of polyaniline (PANI) on nano-Fe_3O_4@CFs in HCl solution. The results showed that the PANI@nano-Fe_3O_4@CFs mats with a layer by layer (LBL) assembly were successfully fabricated. The saturated magnetization (Ms) of the as-synthesized nano-Fe_3O_4 powder decreased from 72.612 emu/g to 8.934 emu/g for the nano-Fe_3O_4@CFs and

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