

1 **Highly dispersed graphene oxide electrodeposited carbon fiber**
2 **reinforced cement-based materials with enhanced mechanical**
3 **properties**

4 Zeyu LU¹, Asad AHANIF^{2,*}, Guoxing SUN¹, Rui LIANG¹, Pavithra
5 PARTHASARATHY², Zongjin LI¹

6

7 *1. Institute of Applied Physics and Materials Engineering, University of Macau,*
8 *Macau, China*

9 *2. Department of Civil and Environmental Engineering, The Hong Kong*
10 *University of Science and Technology, Hong Kong, China.*

11

12 Tel.: +853-6280-3177; Fax: +853-8822-2454.

13

14 * Corresponding author: Asad AHANIF; E-mail: ahanif@connect.ust.hk

15

16

Abstract

17 Mechanical behavior of carbon fiber (CF) reinforced cement-based materials greatly
18 depends on the dispersion of CF and interfacial properties between the CF and cement
19 matrix. In this study, graphene oxide (GO) was utilized to modify the surface
20 properties of CF, including the roughness, wettability and chemical reactivity, and the
21 graphene oxide/carbon fiber (GO/CF) hybrid fibers were fabricated by a newly
22 designed electrophoretic depositing method. The scanning electron microscopy and
23 contact angle measurement results indicated that GO/CF hybrid fibers not only had a
24 rougher surface which was expected to improve the physical friction when CF was
25 pulled out from cement matrix, but also had a higher wettability surface that made it
26 easier to contact with cement hydrates as nucleation sites. In addition, GO/CF hybrid
27 fibers were capable of high chemical reactivity due to the introduction of GO with

Download English Version:

<https://daneshyari.com/en/article/7884033>

Download Persian Version:

<https://daneshyari.com/article/7884033>

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