

Accepted Manuscript

Full Length Article

Enhanced interfacial properties of carbon fiber reinforced polyamide 6 composites by grafting graphene oxide onto fiber surface

Yunyun Ma, Chun Yan, Haibing Xu, Dong Liu, Pengcheng Shi, Yingdan Zhu, Junlong Liu

PII: S0169-4332(18)31271-6
DOI: <https://doi.org/10.1016/j.apsusc.2018.04.274>
Reference: APSUSC 39273

To appear in: *Applied Surface Science*

Received Date: 11 December 2017
Revised Date: 23 March 2018
Accepted Date: 30 April 2018

Please cite this article as: Y. Ma, C. Yan, H. Xu, D. Liu, P. Shi, Y. Zhu, J. Liu, Enhanced interfacial properties of carbon fiber reinforced polyamide 6 composites by grafting graphene oxide onto fiber surface, *Applied Surface Science* (2018), doi: <https://doi.org/10.1016/j.apsusc.2018.04.274>

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.



**Enhanced interfacial properties of carbon fiber reinforced polyamide 6
composites by grafting graphene oxide onto fiber surface**

Yunyun Ma^{a,b}, Chun Yan^{a,*}, Haibing Xu^a, Dong Liu^a, Pengcheng Shi^a, Yingdan Zhu^{a,*}, Junlong Liu^b

^a Zhejiang Provincial Key Laboratory of Robotics and Intelligent Manufacturing Equipment
Technology, Ningbo Institute of Material Technology and Engineering, Chinese Academy of
Sciences, Ningbo 315201, China

^b School of Textile & Material Engineering, Dalian Polytechnic University, Dalian 116034,
Liaoning

Abstract: Graphene oxide (GO) was grafted onto the surface of carbon fiber (CF) by two synthetic routes with hexamethylene diisocyanate (HDI) tripolymer as the coupling agent. The first one was to use HDI tripolymer to modify the surface of GO, named GO-NCO, and then graft GO-NCO onto the oxidized carbon fiber surface. The other route was to use HDI tripolymer to modify the oxidized carbon fiber surface, named CFO-NCO, and then graft GO onto the CFO-NCO surface. The chemical compositions of the CF surface were confirmed by infrared spectroscopy (FTIR) and X-ray photoelectron spectra (XPS). The surface morphologies of CF after modification and debonding from matrix were examined by scanning electron microscopy (SEM). The interfacial shear strength (IFSS) of CF/PA6 composites was also investigated by microbond test. It is found that the interfacial properties of GO modified carbon fiber reinforced polyamide 6 (CF-g-GO/PA6) composites are better by using the first route. The IFSS of CF-g-GO/PA6 composites reaches 61.4 MPa, is an increase of 40.2% compared with that of

* Corresponding authors.

E-mail addresses: y.zhu@nimte.ac.cn (Y. Zhu), yanchun@nimte.ac.cn (C. Yan).

Download English Version:

<https://daneshyari.com/en/article/7833448>

Download Persian Version:

<https://daneshyari.com/article/7833448>

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