Accepted Manuscript

Preparation and properties of carbon nanotubes/carbon fiber/poly (ether ether ketone) multiscale composites

Yanan Su, Shouchun Zhang, Xinghua Zhang, Zhenbo Zhao, Deqi Jing

PII: S1359-835X(18)30079-4
DOI: https://doi.org/10.1016/j.compositesa.2018.02.030
Reference: JCOMA 4944

To appear in: *Composites: Part A*

Received Date: 14 October 2017
Revised Date: 2 February 2018
Accepted Date: 20 February 2018

Please cite this article as: Su, Y., Zhang, S., Zhang, X., Zhao, Z., Jing, D., Preparation and properties of carbon nanotubes/carbon fiber/poly (ether ether ketone) multiscale composites, *Composites: Part A* (2018), doi: https://doi.org/10.1016/j.compositesa.2018.02.030

Preparation and properties of carbon nanotubes/carbon fiber/poly (ether ether ketone) multiscale composites

Yanan Su [a,b], Shouchun Zhang [a], Xinghua Zhang[a], Zhenbo Zhao[a], Deqi Jing [a,*]

[a] *National Engineering Laboratory for Carbon Fiber Technology, Institute of Coal Chemistry, Chinese Academy of Sciences, Taiyuan 030001, China*

[b] *University of Chinese Academy of Sciences, Beijing 100049, China*

Abstract: The carbon nanotubes/carbon fiber/poly (ether ether ketone) (CNTs /CF/PEEK) multiscale composites with excellent properties were prepared by introducing treated CNTs (t-CNTs) into CF/PEEK composites using prepreg spraying method. The effect of t-CNTs content on the mechanical performance of composites such as interlaminar shear strength (ILSS), flexural strength and flexural modulus were investigated. The results indicated that the ILSS, flexural strength and flexural modulus of CNTs/CF/PEEK composites were increased by 35.8%, 25.4% and 23.7% after 0.5wt% t-CNTs introducing. The surface of prepregs and cross-section of the composites displayed evenly t-CNTs dispersion and strong fiber-resin adhesion by scanning electron microscope observation. With the addition of t-CNTs, the electrical conductivity and thermal conductivity of CNTs/CF/PEEK composites were also markedly improved, in comparison with that of CF/PEEK composites. This suggested that the prepreg spraying method was an effective approach to coat t-CNTs on

* Corresponding author.
E-mail: jingdq@sxicc.ac.cn, Deqi Jing. Associate Professor.