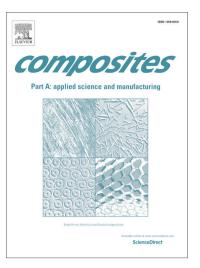
### Accepted Manuscript

Influence of chain transfer agent on structure/property relation of polymer nanocomposites with functionalized carbon nanotubes

Miftah U. Khan, Vincent G. Gomes

PII:	S1359-835X(17)30254-3
DOI:	http://dx.doi.org/10.1016/j.compositesa.2017.06.029
Reference:	JCOMA 4716
To appear in:	Composites: Part A
Received Date:	6 January 2017
Revised Date:	21 June 2017
Accepted Date:	24 June 2017



Please cite this article as: Khan, M.U., Gomes, V.G., Influence of chain transfer agent on structure/property relation of polymer nanocomposites with functionalized carbon nanotubes, *Composites: Part A* (2017), doi: http://dx.doi.org/ 10.1016/j.compositesa.2017.06.029

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.

### ACCEPTED MANUSCRIPT

# Influence of chain transfer agent on structure/property relation of polymer nanocomposites with functionalized carbon nanotubes

Miftah U. Khan<sup>a</sup> and Vincent G. Gomes<sup>a,b</sup>

<sup>a</sup>The University of Sydney, School of Chemical & Biomolecular Engineering, NSW 2006, Australia
<sup>b</sup>Corresponding Author, E-mail: <u>vincent.gomes@sydney.edu.au</u>, Tel: +61 2 9351 4868, Fax: +61 2 9351 2854

#### Abstract

Nanocomposites comprising polystyrene/ carbon nanotube (PS/CNT) were synthesized via *insitu* emulsion polymerization, where the CNTs were functionalized by an unsaturated organic fatty acid. The effect of chain transfer agent (CTA) on nanocomposite synthesis and structureproperty relationships were investigated. The presence of CTA affected the polymer molar mass and subsequently the structure of the nanocomposites was altered as a result of the chain length variation. The TEM images showed structural modification of the nanocomposite matrix, and in particular the effect on CNT orientation on using CTA. The composites without CTA (PS/CNT) and with CTA (PS/CNT@CTA) showed significant influence of CTA not only in terms of polymerization kinetics and monomer conversion, but also on the final thermomechanical properties. The mechanical and thermal properties of the PS/CNT nanocomposites were found to be substantially altered when CTA was used during the polymerization process, which were explained in the light of composite structural changes on using CTA.

**Keywords**: A. Nanocomposites; A. Nano-structures; B. Mechanical properties; B. Thermal properties;

Download English Version:

## https://daneshyari.com/en/article/5439417

Download Persian Version:

https://daneshyari.com/article/5439417

Daneshyari.com