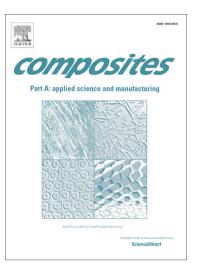
## Accepted Manuscript

Electrical, morphological and thermal properties of microinjection molded polyamide 6/multi-walled carbon nanotubes nanocomposites

Shengtai Zhou, Andrew N. Hrymak, Musa R. Kamal

PII:	S1359-835X(17)30345-7
DOI:	https://doi.org/10.1016/j.compositesa.2017.09.016
Reference:	JCOMA 4785
To appear in:	Composites: Part A
Received Date:	12 July 2017
Revised Date:	19 September 2017
Accepted Date:	23 September 2017



Please cite this article as: Zhou, S., Hrymak, A.N., Kamal, M.R., Electrical, morphological and thermal properties of microinjection molded polyamide 6/multi-walled carbon nanotubes nanocomposites, *Composites: Part A* (2017), doi: https://doi.org/10.1016/j.compositesa.2017.09.016

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**

Electrical, morphological and thermal properties of microinjection molded

polyamide 6/multi-walled carbon nanotubes nanocomposites

Shengtai Zhou<sup>1</sup>, Andrew N. Hrymak<sup>1\*</sup>, Musa R. Kamal<sup>2</sup>

1. Department of Chemical and Biochemical Engineering, The University of Western Ontario, London N6A 5B9, Canada

2. Department of Chemical Engineering, McGill University, Montreal H3A 0C5, Canada

Abstract: A series of polyamide 6/multi-walled carbon nanotubes (PA6/CNT) nanocomposites were prepared using a masterbatch dilution process, followed by microinjection molding of a part with a three-step decrease in thickness along the flow direction. Morphology observations revealed that there was a preferential orientation of CNT in the flow direction, which is attributed to the prevailing high shear rates in µIM. The distribution of CNT after melt processing was evaluated by dissolving experiments. Additionally, the correlation between electrical resistivity and development of microstructure for each section of the microparts was considered. The thermal behavior of PA6/CNT nanocomposites and corresponding microparts was evaluated using differential scanning calorimetry. Results indicated that the addition of CNT had little effect on the melting behavior of PA6/CNT nanocomposites and corresponding microparts. However, the crystallization behavior was changed significantly and a double crystallization peak was observed for samples incorporating CNT.

Keywords: A. Polymer-matrix composites (PMCs); B. Microstructures; D. Thermal analysis; E. Injection molding

## 1. Introduction

The pursuit of high performance polymer/carbon nanotubes (CNT) nanocomposites has

<sup>\*</sup> Corresponding author. E-mail address: <u>ahrymak@uwo.ca</u> (Andrew N. Hrymak)

Download English Version:

## https://daneshyari.com/en/article/5439363

Download Persian Version:

https://daneshyari.com/article/5439363

Daneshyari.com