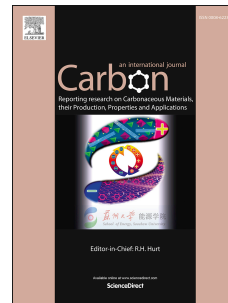


Accepted Manuscript

Deformation and strengthening mechanisms of a carbon nanotube reinforced aluminum composite

F. Mokdad, D.L. Chen, Z.Y. Liu, B.L. Xiao, D.R. Ni, Z.Y. Ma



PII: S0008-6223(16)30228-7

DOI: [10.1016/j.carbon.2016.03.038](https://doi.org/10.1016/j.carbon.2016.03.038)

Reference: CARBON 10860

To appear in: *Carbon*

Received Date: 15 January 2016

Revised Date: 12 March 2016

Accepted Date: 17 March 2016

Please cite this article as: F. Mokdad, D.L. Chen, Z.Y. Liu, B.L. Xiao, D.R. Ni, Z.Y. Ma, Deformation and strengthening mechanisms of a carbon nanotube reinforced aluminum composite, *Carbon* (2016), doi: 10.1016/j.carbon.2016.03.038.

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.

Deformation and strengthening mechanisms of a carbon nanotube reinforced aluminum composite

F. Mokdad and D.L. Chen*

*Department of Mechanical and Industrial Engineering, Ryerson University,
350 Victoria Street, Toronto, Ontario M5B 2K3, Canada*

Z.Y. Liu, B.L. Xiao, D.R. Ni, and Z.Y. Ma*

*Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese
Academy of Sciences, 72 Wenhua Road, Shenyang 110016, China*

Abstract

The objective of this study was to characterize microstructure, texture, and deformation behavior of a carbon nanotube (CNT) reinforced aluminum composite via electron backscatter diffraction (EBSD), X-ray diffraction (XRD), scanning and transmission electron microscopy. The addition of 2.0 wt.% CNTs in a 2024Al alloy led to considerable grain refinement, with a bi-modal distribution of grain misorientation angles positioned at $\sim 7^\circ$ for low-angle grain boundaries and $\sim 50^\circ$ for high-angle grain boundaries. The CNTs were observed to be uniformly dispersed in the matrix while some CNT shortening occurred during ball milling.

*Corresponding authors – Tel: (416) 979-5000 ext. 6487; Fax: (416) 979-5265; Email: dchen@ryerson.ca (D.L. Chen); Tel./fax: +86-24-83978908. E-mail: zyma@imr.ac.cn (Z.Y. Ma).

Download English Version:

<https://daneshyari.com/en/article/7849519>

Download Persian Version:

<https://daneshyari.com/article/7849519>

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