

Accepted Manuscript

Influence of dispersion state of carbon nanotubes on electrical conductivity of copper matrix composites

Ping Yang, Xin You, Jianhong Yi, Dong Fang, Rui Bao, Tao Shen, Yichun Liu, Jingmei Tao, Caiju Li



PII: S0925-8388(18)31430-0

DOI: [10.1016/j.jallcom.2018.04.129](https://doi.org/10.1016/j.jallcom.2018.04.129)

Reference: JALCOM 45767

To appear in: *Journal of Alloys and Compounds*

Received Date: 28 December 2017

Revised Date: 9 April 2018

Accepted Date: 10 April 2018

Please cite this article as: P. Yang, X. You, J. Yi, D. Fang, R. Bao, T. Shen, Y. Liu, J. Tao, C. Li, Influence of dispersion state of carbon nanotubes on electrical conductivity of copper matrix composites, *Journal of Alloys and Compounds* (2018), doi: 10.1016/j.jallcom.2018.04.129.

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.

Influence of dispersion state of carbon nanotubes on electrical conductivity of copper matrix composites

Ping Yang¹, Xin You^{1*}, Jianhong Yi^{1*}, Dong Fang¹ Rui Bao¹, Tao Shen¹, Yichun Liu¹,
Jingmei Tao¹, Caiju Li¹

1. Faculty of Materials Science and Engineering, Kunming University of Science and Technology, Kunming, 650093, China

*Corresponding author: nissalor@gmail.com (X. You), yijianhong2007@sohu.com (J. Yi)

Abstract

In this paper, effect of dispersion state of carbon nanotubes (CNTs) on electrical conductivity of copper (Cu)-matrix composites was investigated. While, it is interestingly found that composite with homogeneous dispersion CNTs has the lowest electrical conductivity (90.47 ± 0.34 IACS% (International Annealed Copper Standard)) and that one with aggregation CNTs has the best conductivity (93.45 ± 0.17 IACS%). This phenomenon was attributed to interconnected conductive networks of Cu damaged by adding dispersed CNTs through interface scattering between CNTs and Cu. Thus, it can be concluded that the dispersion of CNTs is not the key point to obtain high electrical conductivity of CNT/Cu composites.

Keywords: Metal-matrix composites, Carbon nanotubes, Electrical properties

1. Introduction

Copper (Cu) is one of the most important functional materials and plays an irreplaceable role during the process of human development. It is used in aeronautics, space and power transportation. However, poor mechanical property limits its application. Strengthening Cu is usually obtained by alloying, incorporating another

Download English Version:

<https://daneshyari.com/en/article/7991590>

Download Persian Version:

<https://daneshyari.com/article/7991590>

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