

## Accepted Manuscript

Title: Enhanced mechanical properties and viscoelastic characterizations of nanonecklace-reinforced carbon nanotube/copper composite films

Author: Ping-Chi Tsai Yeau-Ren Jeng

PII: S0169-4332(14)02520-3  
DOI: <http://dx.doi.org/doi:10.1016/j.apsusc.2014.11.055>  
Reference: APSUSC 29100

To appear in: *APSUSC*

Received date: 31-7-2014  
Revised date: 1-10-2014  
Accepted date: 10-11-2014



Please cite this article as: P.-C. Tsai, Y.-R. Jeng, Enhanced mechanical properties and viscoelastic characterizations of nanonecklace-reinforced carbon nanotube/copper composite films, *Applied Surface Science* (2014), <http://dx.doi.org/10.1016/j.apsusc.2014.11.055>

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.

# Enhanced mechanical properties and viscoelastic characterizations of nanonecklace-reinforced carbon nanotube/copper composite films

Ping-Chi Tsai\* and Yeau-Ren Jeng\*

Department of Mechanical Engineering, National Chung Cheng University, Chia-Yi 621, Taiwan

Advanced Institute of Manufacturing with High-Tech Innovations, National Chung Cheng University, Chia-Yi 621, Taiwan

## ABSTRACT

Necklace-shaped (NS) reinforced carbon nanotube/copper (CNT/Cu) composites are fabricated using the molecular-level decoration and consolidation techniques. The results show that the CNT/Cu composite with NS structures enhances the mechanical interlocking between the CNT arrays and the surrounding Cu matrix and yields a higher critical load, hardness and elastic modulus than conventional CNT-reinforced composites with a straight-shaped (SS) morphology. The mechanical properties and viscoelastic characterizations of the NS-reinforced CNT/Cu composites are examined via nanoindentation and dynamic mechanical analysis testing. It is shown that the embedded CNTs play a key role in raising the damping properties of the CNT/Cu composites by acting as a “load transfer” mechanism in releasing the excess stress within the Cu matrix.

---

\*Corresponding author.

E-mail address: [pctjbenchen@yahoo.com.tw](mailto:pctjbenchen@yahoo.com.tw) (P.C. Tsai); [imeyrj@ccu.edu.tw](mailto:imeyrj@ccu.edu.tw) (Y. R. Jeng)

Fax: +886-5-2720589

Download English Version:

<https://daneshyari.com/en/article/5350907>

Download Persian Version:

<https://daneshyari.com/article/5350907>

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