

Accepted Manuscript

Wear and friction behavior of self-lubricating hybrid Cu-(SiC + x CNT) composites

M.R. Akbarpour, S. Alipour, A. Safarzadeh, H.S. Kim

PII: S1359-8368(18)31999-1

DOI: [10.1016/j.compositesb.2018.09.039](https://doi.org/10.1016/j.compositesb.2018.09.039)

Reference: JCOMB 6009

To appear in: *Composites Part B*

Received Date: 30 June 2018

Revised Date: 10 September 2018

Accepted Date: 18 September 2018

Please cite this article as: Akbarpour MR, Alipour S, Safarzadeh A, Kim HS, Wear and friction behavior of self-lubricating hybrid Cu-(SiC + x CNT) composites, *Composites Part B* (2018), doi: <https://doi.org/10.1016/j.compositesb.2018.09.039>.

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.



Wear and Friction Behavior of Self-lubricating Hybrid Cu-(SiC + x CNT) Composites

M. R. Akbarpour^{*a}, S. Alipour^a, A. Safarzadeh^a, H. S. Kim^b

^aDepartment of Materials Engineering, University of Maragheh, Maragheh, P.O. Box 83111-55181, Iran

^bDepartment of Materials Science and Engineering, Pohang University of Science and Technology, Pohang 790-784, South Korea

*M.R.Akbarpour (Corresponding author): Email: Akbarpour@maragheh.ac.ir

Tel: +98 4137273068, Fax: +98 4137276060

Abstract

In the present study, wear and friction behavior of Cu matrix composites reinforced with simultaneous SiC-nanoparticle and multi-wall carbon nanotube (CNT) reinforcements were investigated and a relationship for the theoretical calculation of the friction coefficient of the hybrid composites was presented. The hybrid composites showed higher wear resistance and lower friction coefficients compared to monolithic copper. The results indicate that among the synthesized composites, Cu-(2 vol% SiC + 4 vol% CNT) represented the highest wear resistance as well as relatively high hardness. In addition, a lower friction coefficient and a lower oscillation were observed with this sample, compared to other hybrid composite samples. This was attributed to the formation of a continuous and uniform lubricant layer on the wear surface. Flake formation-spalling were detected as the dominant wear mechanism for the hybrid composites.

Keywords: Composites; Carbon nanotube; Hybrid; Self-lubrication; Wear.

Download English Version:

<https://daneshyari.com/en/article/11020684>

Download Persian Version:

<https://daneshyari.com/article/11020684>

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