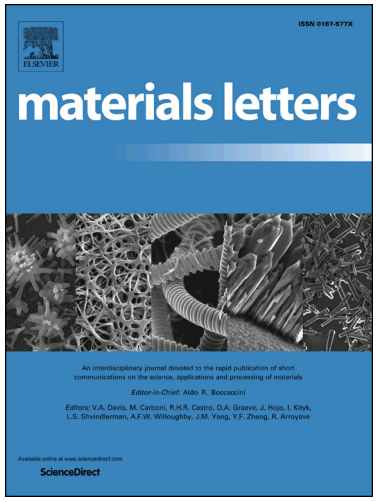
Accepted Manuscript



Fabrication of Cu-graphite metal matrix composites by ball milling and spark plasma sintering

Barbara Lasio, Francesco Torre, Roberto Orrù, Giacomo Cao, Marcello Cabibbo, Francesco Delogu

PII: S0167-577X(18)31161-3
DOI: https://doi.org/10.1016/j.matlet.2018.07.120
Reference: MLBLUE 24686

To appear in: *Materials Letters*

Received Date: 6 June 2018
Revised Date: 11 July 2018
Accepted Date: 26 July 2018

Please cite this article as: B. Lasio, F. Torre, R. Orrù, G. Cao, M. Cabibbo, F. Delogu, Fabrication of Cu-graphite metal matrix composites by ball milling and spark plasma sintering, *Materials Letters* (2018), doi: https://doi.org/10.1016/j.matlet.2018.07.120

Fabrication of Cu-graphite metal matrix composites by ball milling and spark plasma sintering

Barbara Lasio[1], Francesco Torre[1], Roberto Orrù[1], Giacomo Cao[1], Marcello Cabibbo[2], Francesco Delogu[1*]

[1] Dipartimento di Ingegneria Meccanica, Chimica, e dei Materiali,
Università degli Studi di Cagliari, via Marengo 2, 09123 Cagliari, Italy
[2] Dipartimento di Ingegneria Industriale e Scienze Matematiche,
Università Politecnica delle Marche, via Brecce Bianche 12, 60131 Ancona, Italy

Abstract

This work reports on the use of graphite as dispersoid to strengthen Cu. Material processing involved two-stage cycles of ball milling and spark plasma sintering, respectively for the dispersion of graphite nanoparticles into nanostructured Cu and the formation of dense compacts with relatively large Cu grains. The 3 wt% of graphite allows progressive hardening and stiffening of the Cu-graphite composite, showing the potential of graphite as effective dispersoid upon suitable processing.

Keywords: Metallurgy; Powder technology; Metallic composites; Nanocomposites; Indentation and hardness.

[*] Corresponding author:
Francesco Delogu
francesco.delogu@unica.it