

Accepted Manuscript

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

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

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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.

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