

## عنوان مقاله:

Effect of reinforcement particle size and weight percent on the compressive strength of Al-4.5 wt.% Cu + TiC nanocomposite

## محل انتشار:

دومین کنفرانس بین المللی آلومینیوم (سال: 1391)

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## خلاصه مقاله:

The aim of this study is to investigate the effect of TiC particle size and its amount on the relative density, hardness, yield and compressive strength in Al-4.5wt.%Cu-TiC composites. To this end, the amount of 0–10 wt.% TiC with average particle sizes 48  $\mu\text{m}$  and 40 nm were used along with pre alloyed matrix powder of average particle size of 500 nm. Powder metallurgy is a method used in the fabrication of this composite in which the powders were mixed using a planetary ball mill. Consolidation was conducted by uniaxial pressing at 650 MPa. Sintering procedure was done at 400 °C for 90 min. The results indicated that as the TiC particle size is reduced to nanometre scale and the amount is increased, hardness and compressive strength increase and relative density, elongation, microstructure grain size and distribution homogeneity in matrix decrease. Using micron size reinforcing particulates from 5 to 10 wt.%, results in significant hardness reduction of the composite from 168 to 98 HVN. Compressive test results revealed great enhancement of UTS but poor elongation of the TiC reinforced nanocomposites.

## کلمات کلیدی:

Aluminium Metal Matrix Composites (AMMCs); Nanocomposite; Mechanical alloying; Compressive strength, Electron microscopy; Hardness

## لینک ثابت مقاله در پایگاه سیویلیکا:

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