عنوان مقاله:

The Effect of Milling Time on the Microstructural Features of Al-10%Al3Mg2 Nanocomposite Fabricated by Mechanical Alloying

محل انتشار:

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خلاصه مقاله:

In current research, pure Al and Mg were used to produce Al3Mg2 intermetallic compound. Then, Al3Mg2 alloy ingot was milled in an attrition ball mill to obtain fine Al3Mg2 powder. Al-10wt. %Al3Mg2 nanocomposite was fabricated at different milling time (2 to 20 h). The effect of milling time on the properties of the obtained powders was studied. X-ray diffraction analysis was used to investigate phase composition and crystal size of the milled powders. Phase identification and the microstructure of the milled powders were investigated by using field emission scanning electron microscopy (FESEM) as well as energy dispersive spectrometer (EDS). The results showed that the size of Al3Mg2 powders reduces significantly with milling time (<100 nm) with noticeable ultrafine grains of Al matrix. Uniform distribution of nano-sized Al3Mg2 particles in the aluminum matrix was also achieved with increasing milling time.

کلمات کلیدی:

Nanocomposite, mechanical milling, Al3Mg2, crystallite size