عنوان مقاله:

Effect of Ni Addition On Microstructure and Tensile Properties of In-Situ Aluminium Metal Matrix Composite Containing Al4Sr After Hot-Extrusion

محل انتشار:

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خلاصه مقاله:

This study was undertaken to investigate the effects of Ni addition (0.3wt.%-3wt.%) on the microstructure and tensile properties of aluminum metal matrix composite (MMC) containing 10 wt.% long and bulky Al4Sr intermetallics after hot-extrusion process. Microstructural observation was assessed by the use of optical microscope (OM) at different magnification. The results showed that Ni addition under hot-extrusion with the ratio of 12:1 at 420 ˚C not only increased the length size of Al4Sr particles drastically, but also the distribution of these intermetallics decreased. The maximum length of Al4Srparticles changes from 148 μm to 79 μm. Due to the increment content of coarse particles and intrinsic brittleness of Ni-rich intermetallics by increasing Ni addition value (most likely NiAl3 phase) after hot extrusion, reaching to suitable mechanical properties is not optimistic. After hot extrusion with optimumparameters, Al3Ni particles alter from coarse to fine; moreover, the distribution mode of precipitates (Al4Sr particles and Ni-rich intermetallics mainly NiAl3) becomes uniform.

کلمات کلیدی:

Metal matrix composite (MMC), Microstructure, Tensile properties, Hot-extrusion