عنوان مقاله:

EFFECTS OF HOT EXTRUSION ON THE MICROSTRUCTURE AND TENSILE PROPERTIES OF Al - 25 WT.% NiAl3 IN-SITU METAL MATRIX COMPOSITE

محل انتشار:

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خلاصه مقاله:

The effects of hot extrusion on the microstructure of cast aluminum metal matrix composite (MMC) containing 25 wt.% NiAl3 intermetallic were studied. Microstructural examinations were assessed by the use of optical microscope (OM) and scanning electron microscope (SEM). The results showed that the composite microstructure consists of star-like primary NiAl3 particles with average size of 32 μm and fine, dot-like eutectic NiAl3 known as secondary particles. Hot extrusion reduces the size of primary NiAl3 particles from 32 μm to 17 μm. Moreover, during hot extrusion at 480°C, NiAl3 intermetallics loose stability following by diffusion of the atoms causes secondary NiAl3 particle coarsening mostly at the grain boundaries. In the present study the ultimate tensile strength (UTS) and elongation values are 246 MPa and 15.4% in the case of hot-extruded Al-25wt.%NiAl3 which used to be 185 MPa and 7.2% in as-cast condition

کلمات کلیدی:

Metal matrix composite (MMC); NiAl3 intermetallic; Microstructure; Tensile properties