

عنوان مقاله:

INVESTIGATIONSON THIEAL-CUODREINFORCEDCOMPOSITE FABRCTED BY TWST EXTRUSION

محل انتشار:

سومین کنفرانس بین المللی مواد فوق ریزدانه و نانوساختار (سال: 1390)

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خلاصه مقاله:

Twist Extrusion (TE) is one of SPD (Severe Plastic Deformation) method to fabricate ultrafine grain bulk materials. In this paper, Twist Extrusion was introduced to fabricate the Al-Cubar reinforced composite. The microstructural evolution and phase constitution near the joining interface of Al/Cu composites were evaluated using optical and scanning electron microscope as well as X-ray diffraction (XRD). Microhardness testing was used to evaluate the hardness of Al, Cu and the interface of composite after each passes of TE. Shear test was used to measure the bonding strength of interface in fabricated composites. Shear tests show that the strength and hardness of interface is lower than that of copper rod and higher than that of Al matrix. XRD results show that after 2 passes of deformation CuAl₂ and CuAl₄ intermetallics were produced at the interface of composite. Fine grains of intermetallics with sizes less than 800 nm were seen at the surface of detached interfaces. The grain size of copper rod near the interface is lower than that of the center.

کلمات کلیدی:

SPD, Twist Extrusion, Microstructure, Composite, Scanning electron microscopy, Intermetallics

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