عنوان مقاله:

Effect of $ZrSiO_4$ particles on the wear properties of as-cast Al matrix particulate composites fabricated via various casting routes

محل انتشار:

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خلاصه مقاله:

This study deals with the effects of ZrSiO۴ particles addition on the abrasive wear behavior of aluminum based metal matrix composites. The Al-A۳۵۶/۵ vol% ZrSiO۴ specimens were prepared by the injection of particles in the as-received form or Al-ZrSiO۴ milled composite powder. The injection of composite powder caused remarkable improvement in ZrSiO۴ distribution within the Al-۳۵۶ matrix alloy. The composites were fabricated by two different routes: semisolid-liquid state (SL) and liquid-liquid state (LL). According to the results, a better distribution of reinforcing particles was observed when the stirring was conducted in the semisolid state. Based on the wear test results, the composite with ball-milled Al-ZrSiO۴ particles (A۳۵۶/(Al-ZrSiO۴)cp) processed in the SL state exhibited the highest wear resistance in terms of wear rate and friction coefficient. The worn surfaces of specimens were examined to identify the possible mechanisms.

کلمات کلیدی:

Al-based composite, ZrSiO۴, Distribution, Wear properties