

عنوان مقاله:

Role of Etching Process of SiC Particles on the Microstructure and Mechanical Properties of Stir Casted Al₃Si₂-SiC Metal matrix Composite

محل انتشار:

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خلاصه مقاله:

Owing to their high strength-to-weight ratio, aluminum-ceramic composites, are widely used in various industries. In this study, aluminum matrix composite was fabricated with only 2 wt% micron-sized SiC particles as the reinforcing phase using electromagnetic stir casting. Prior to mixing, the surface of SiC particles were chemically etched by HF, NaOH, and KOH at two heat treatment temperatures of 460 and 510 °C for 30 min. The obtained results indicated better wettability and interaction between the etched SiC particles and Al matrix. In addition, etched SiC particle as a ceramic phase at 460 °C enhanced the mechanical properties of Al as a metal matrix, such as enhancing hardness and E about of 6.6 and 26.6%, respectively, mainly due to the increasing inhibition against movement of dislocation .confirmed by the observed brittle behavior of fracture surface

کلمات کلیدی:

Electromagnetic stir casting, Etching, Aluminum Matrix Composites, Micron-sized SiC, Mechanical properties

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