

Investigation of wear performance of friction stir processed aluminium metal matrix composites

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ABSTRACT

In this work the reference materials used were AA6061 Al alloy. Hence, the wear performance was to be improved by introducing friction stir processing (FSP) aluminium alloy AA6061. Furthermore, FSPed AA6061 was reinforced by rice husk ash (RHA) of 6% volume fraction. The FSP fabrication parameters used were rotation speeds at 1000rpm, 1400rpm and 1600rpm with a constant traversed speed of 25mm/min. Pin-on-disc tribometer was used to investigate the wear properties. The mass loss and specimen materials' wear rate were the final outcomes. It was found that wear properties had improved for FSPed AA6061/6vol% RHA compared to FSPed AA6061 followed by AA6061. The best result was achieved by FSPed AA6061/6vol% RHA fabricated at 1600rpm and 25mm/min, the mass loss was 0.02 g and the rate of wear is $0.97 \times 10^{-3} \text{ mm}^3/\text{Nm}$.

KEYWORDS

Al metal matrix composites; Friction stir processing; Mass loss; Surface composites; Wear performance; Wear rate

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