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MICROSTRUCTURE AND TRIBOLOGICAL PROPERTIES OF NANOPARTICULATE WC/AL METAL MATRIX COMPOSITES

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Abstract

The tribological property of Al metal matrix composites, reinforced with WC Nanoparticles is presented. Sliding tests were performed on a pin-on-disk apparatus under different contact loads. It was found that the reinforced Nano-WC particles could effectively reduce the frictional coefficient and wear rate, especially under higher normal loading conditions. In order to further understand the wear mechanisms, the worn surfaces were examined under the scanning electron microscope. A positive rolling effect of the nanoparticles between the material pairs was proposed which contributes to the remarkable improvement of the load carrying capacity of metal matrix nanocomposites.

Author Keywords

Frictional coefficient, Metal matrix nanocomposite, positive rolling effect, property wear rate, tribological

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Composites, loading conditions, electron, microscope

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