Developments of Al-12Si Alloys by Reinforcing TiN Particles.

Abstract

This study presents the mechanical properties of Al–12% Si matrix composite reinforced (which can used in light devices and energy storage) by various amounts of Titanium Nitride (TiN) particles. Macrostructural studies have shown near uniform distribution of TiN particles in the matrix. The mechanical properties such as hardness and wear resistance are observed to be increased considerably compared to the matrix composite. The wear behaviour was investigated using a pin-on-disc wear testing machine with varying parameters such as normal load, reinforcement's percentage and track velocity. The results suggested that the reinforced Al-12Si matrix composites showed significant improvement in their wear resistance accordingly with increasing the reinforcement's percentage at different conditions. The microstructural study of the composites before wear test showed uniform distribution through the cross-section of the specimens and finer surfaces than matrix composite after wear test.

Authors: MALEK ALI, ALI SAMER MUHSAN , M.I. FADHEL , M.A. ALGHOUL , K. SOPIAN & A. ZAHARIM, (2012), Developments of Al-12Si Alloys by Reinforcing TiN Particles, , 6th WSEAS International Conference on Renewable Energy Sources (RES '12) Portugal, July 1-3, 2012,

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