

Exploration of Microstructure and Wear Behaviour of Laser Metal Deposited Ti6Al4V/Cu Composites

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Abstract

This paper presents the explorations conducted on the evolving microstructures and the dry sliding wear of the laser deposited Ti6Al4V/Cu composites. The laser powers between 1300 W and 1600 W; scanning speeds between 0.30 and 0.72 m/min were selected for this experiment while other parameters are as specified in the experimental matrix. All the deposited composites exhibited good microstructures with very low fusion zones. The Ti6Al4V/Cu composite produced at a laser power of 1397 W and a scanning speed of 0.30 m/min was found to show the lowest percentage of wear volume/loss and the coefficient of friction; these were attributed to the martensitic structure formed during cooling. The obtained results show that the poor abrasive wear of Ti-alloy has been improved with the addition of Cu into their lattices.