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DRY SLIDING WEAR BEHAVIOR OF CR_3C_2-NICR COATED TI6AL4V IMPLANT ALLOY THROUGH DETONATION SPRAY METHOD

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Abstract

Ti6Al4V alloys are widely used in medical and aerospace applications due to their high specific strength. But, Ti6Al4V alloys are poor in wear. Poor wear resistance results in formation of wear debris in implants and causing inflammation and pain. In this work, Cr3C2-NiCr coatings were applied to improve the wear resistance and hardness. Cr3C2-NiCr coatings are deposited on the substrate with 100µm, 200µm , 300µm , 400µm thickness using detonation spray(DS). Pin on disc wear tests have been carried out with ASTM G-99 standard specimens. Wear and surface roughness were studied using Taguchi design of experiments. Improvement was observed in hardness, surface roughness and wear resistance for the Cr3C2-NiCr coated Ti6Al4V alloy.

Author Keywords

Detonation Sray, Ti6Al4V, Surface Coatings, Wear, Surface Roughness, Taguchiâ??s orthogonal array, ANOVA.

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