

论文

Ti6Al4V合金氢致脆性磨损机制

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摘要:

用自制的高精度单摆划痕装置, 分别测量了Ti6Al4V合金在空气以及0.5 mol/L H₂SO₄溶液中于不同腐蚀电位下腐蚀和腐蚀磨损过程中的比能耗, 材料流失量, 摩擦系数和动态硬度等。

关键词: 腐蚀磨损 氢致磨损 单摆划痕

BEHAVIOUR OF HYDROGEN INDUCED CORROSION WEAR OF Ti6Al4V ALLOY

Abstract:

The changes of specific energy consumption, material losses, friction coefficient and dynamic hardness of Ti6Al4V during corrosive wear process in 0.5 mol/L H₂SO₄ solution at different potentials and in air were investigated using a pendulum scratching apparatus, the hydrogen contents in scratching tracks was measured with SIMS, and the morphologies of scratching tracks were observed by SEM. The results showed that the wear process induced the hydrogen concentrating at wear subsurface, which decreased the energy consumption per unit volume of material loss and facilitated the nucleation and propagation of the surface cracks.

Keywords: corrosive wear Ti6Al4V hydrogen induced wear pendulum scratching

收稿日期 1900-01-01 修回日期 1900-01-01 网络版发布日期 1999-05-25

DOI:

基金项目:

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