

论文

Ti6Al4V合金离子渗Mo组织结构及其腐蚀性能研究

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摘要:

利用等离子表面合金化技术在Ti6Al4V合金基体上制备渗Mo改性层,并与Ti6Al4V基材对比考察在 0.5 mol/L HCl溶液中的电化学腐蚀性能及在沸腾的37%HCl中的化学腐蚀性能.结果表明,与基材相比Mo改性层在0.5 mol/L HCl溶液中的自腐蚀电位提高,腐蚀速率增大;在37%HCl中腐蚀速率明显降低.

关键词: Ti6Al4V Mo改性层 腐蚀性能

Study on Structure and Corrosion Behavior of Mo Diffusion Layers on Ti-6Al-4V Alloy with Plasma Surface Alloying Technique

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Abstract:

The Mo surface modified layer on Ti6Al4V substrate was obtained by the plasma surface alloying technique. The structure and composition of the Mo surface modified layer were investigated by X-ray diffraction (XRD) and glow discharge optical emission spectroscopy (GDOES). The duplex Mo modified layer contains a pure Mo coating on subsurface and diffusion layers between the subsurface and substrate. The X-ray diffraction analysis of the Mo modified layer reveals that a Mo phase exists in the modified layer with <110> and <211> orientations in the subsurface. The electrochemical corrosion behavior in 0.5 mol/L HCl solution of the Mo modified layer was investigated and compared with that of Ti6Al4V substrate material. The chemical corrosion behavior in boiling 37% HCl solution of the Mo modified layer was investigated and compared with that of Ti6Al4V substrate material. Results indicate that self-corroding electric potentials and corrosion rate of the Mo modified layer are higher than those of Ti6Al4V substrate in 0.5 mol/L HCl solution. Corrosion rate of the Mo modified layer is lower than that of Ti6Al4V substrate material in 37% HCl.

Keywords: Ti6Al4V Mo modified layer corrosion behaviors

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