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研究论文

Mg中间层对纳米钛表面TiO2薄膜微结构和动态凝血时间的影响

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摘要: 采用直流磁控溅射技术在纳米钛表面沉积Mg/TiO2双层薄膜, 研究了Mg中间层对纳米钛表面TiO2薄膜微结构、动态凝血时间和界面结合力的影响。结果表明, Mg中间层对纳米钛表面TiO2薄膜微结构、动态凝血时间和界面结合力有显著影响。预制Mg中间层后, 纳米钛表面TiO2薄膜由金红石相(含少量锐钛矿)转变为MgTiO3、Ti2O3和少量金红石相; 纳米钛表面TiO2薄膜沿Mg膜晶界生长成微米级团簇, 而团簇内部具有纳米畴特征; 纳米钛表面TiO2薄膜的凝血时间由17 min提高到40 min; 纳米钛表面TiO2薄膜的界面结合力由17N提高到36 N。

关键词: Mg/TiO2双层薄膜 直流磁控溅射 纳米钛 动态凝血时间 界面结合力

Influence of Mg Interlayer Film on Microstructures and Kinetic Clotting Time of TiO2 Film on Nano-grained Ti

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Abstract: Influences of the Mg interlayer film on microstructures, kinetic clotting time and interface bonding force of TiO2 film deposited on nano-grained Ti (NG-Ti) by DC magnetron sputtering technology were researched. The results show that Mg interlayer film has significant influences on the microstructures, kinetic clotting time and interface bonding force of TiO2 film. Mg interlayer film makes the structure of TiO2 film on NG-Ti transform from rutile phase containing a few anatases to MgTiO3,Ti2O3 and a few rutile phases. It makes TiO2 film grow into the micro-scale clusters with the nano-scale domains along the grain boundaries of the Mg film. These lead to the increases of the clotting time of TiO2 film from 17min to 40min and of the interface bonding force from 17N to 36N also.

Keywords: Mg/TiO2 double films DC magnetron sputtering nano-grained Ti kinetic clotting time interface bonding force

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