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电沉积条件对Pd-Co合金微观相结构和耐蚀性的影响

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摘要: 利用X射线衍射分析和动电位扫描技术等测试手段, 考察电沉积工艺条件对Pd-Co合金镀层微观相结构和耐蚀性的影响。结果表明: 钯钴合金沉积层的晶粒尺寸 $D_{(111)}$ 随电流密度、pH值和沉积时间的增加呈先减小后增大的变化趋势, 随着镀液温度的升高而不断增大; 当电流密度为 1.0 A/dm^2 , pH值为8.3, 沉积时间为30 min时, 其晶粒尺寸最小, 为 8.239 6 nm ; 当电流密度为 1.0 A/dm^2 , 镀液温度为 $35 \text{ }^\circ\text{C}$, pH值为8.3时, 钯钴合金沉积层的耐蚀性最强; 而沉积时间对合金耐蚀性的影响不大。

关键字: Pd-Co合金; 电沉积; 微观结构; 耐蚀性

Effects of process conditions on microstructure and corrosion-resistance of electrodepositing Pd-Co alloy

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Abstract: The influence of process parameters on the microstructure and corrosion-resistance of Pd-Co alloy was studied by X-ray diffractometry and potentiodynamic polarization techniques. The results show that with the increase of current density, pH value and electrodeposited time, the crystallite size of Pd-Co alloy decreases firstly whereas increases subsequently. With

the increase of bath temperature, the crystallite size increases. When the current density is 1.0 A/cm², pH is 8.3, and deposited time is 30 min, the crystallite size of Pd-Co alloy reaches the minimum value, which is 8.239 6 nm. When the current density is 1.0 A/cm², temperature is 35 °C, pH is 8.3, Pd-Co alloy exhibits the maximum corrosion-resistance, but the electrodeposited time has little influence on it.

Key words: Pd-Co alloy; electrodepositing; microstructure; corrosion-resistance

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