

### 论文摘要

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## 用阴极极化的方法衡量FeNi42合金 在三氯化铁蚀刻液中的蚀刻速度

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**摘要:** 用电位线扫描对玻美度为30° Bé的三氯化铁溶液中的FeNi 42和Pt 工作电极进行阴极极化。FeNi 42的蚀刻过程由溶液中 $Fe^{3+}$ 向合金界面的扩散传质控制, 其蚀刻电流与还原步骤的极限扩散电流相等。应用Pt 工作电极的动电位阴极极化可以对合金的蚀刻电流密度进行衡量。快速电位扫描获得的Pt 电极极化曲线上有波峰出现, 相应于溶液中 $Fe^{3+}$ 还原为 $Fe^{2+}$ 。波峰缩短了极限电流平台区, 成为利用快扫 描获得合金蚀刻电流密度的限制性因素。FeNi 42自身的阴极极化曲线上也有波峰和曲线转折, 相应于合金表面的金属再沉积。不能利用FeNi 42电极通过快速电位扫描获得其蚀刻电流密度值。

**关键字:** 蚀刻 阴极极化 引线框架

## ESTIMATION OF ETCHING RATE OF FeNi42 ALLOY IN $FeCl_3$ SOLUTION BY USING CATHODIC POLARIZATION

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**Abstract:** The cathodic polarization studies of FeNi42 alloy and Pt in  $FeCl_3$  solution of 30° Bé by using linear sweep of potential showed that the diffusion of  $Fe^{3+}$  to alloy surface controlled the etching rate of the alloy and that the etching current was equal to the limiting current of reduction. The etching current density of the alloy could be estimated by the cathodic polarization of potential sweep applied on Pt working electrode. Peaks on polarization curves of fast sweep of Pt working electrode, which reduced the limiting current region and was the restricting factor to decide the etching current density by high sweep rate of potential, corresponded to the reduction reaction of  $Fe^{3+}$  to  $Fe^{2+}$ . The peak or inflection formed on polarization curves of FeNi42 was related to the deposition processes of metal from solution. Fast sweep of potential performed on FeNi42 alloy was not feasible to measure its etching current density.

**Key words:** etching cathodic polarization lead frame

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