

研究简报

超重力场中水溶液的电化学反应特性

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摘要 以 $\text{Fe}^{3+}/\text{Fe}^{2+}$ 电对体系和铁氰酸根离子为研究对象, 分别采用循环伏安法、线性扫描伏安法和计时电流法等考察了在超重力条件下 $\text{Fe}^{3+}/\text{Fe}^{2+}$ 电对体系和铁氰化钾离子的电化学反应行为, 为认识和发展超重力场中电化学反应过程的研究提供了一定的理论及实验依据。

关键词 [超重力场](#) [离子扩散](#) [平衡电极电位](#) [电化学行为](#)

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Electrochemical Behavior of Aqueous Electrochemical Reactions in Super Gravity Field

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Abstract The electrochemical behavior of $\text{Fe}^{3+}/\text{Fe}^{2+}$ system and ferricyanide ion were investigated by cyclic voltammetry, linear sweep voltammetry, and chronoamperometry in the super gravity field. The results show that diffusion coefficient of ferricyanide ion increased in the super gravity field, and diffusion coefficient under gravity coefficient 125 is almost two times of that in the natural gravity field. The peaks of oxidation and the reduction of $\text{Fe}^{3+}/\text{Fe}^{2+}$ disappeared gradually with the increase of the gravity coefficients, and the limiting current densities appeared at 0.10 and 0.80 V(vs. SCE), with increasing super gravity coefficients. When $G=30$, the limiting current density is 0.100 A/cm^2 at 0.10 V, while it is up to 0.196 A/cm^2 under $G=280$.

Key words [Super gravity field](#) [Ion diffusion](#) [Equilibrium electrode potential](#) [Electrochemical behavior](#)

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