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高温氯化物熔体参比电极

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摘 要: 在等摩尔的KCl和NaCl熔体中研究了Ag/AgCl、金属Pt丝和石墨等参比电极的性能。Ag/Ag⁺半电池置于带侧部支管一端封闭的石英管内, 分别以石棉、惰性石墨和Pt作为隔膜盐桥; 金属Pt丝和光谱纯石墨外套石英管直接插入熔体。实验测试结果表明石墨或Pt作盐桥可有效地防止熔体混熔, 所制备的Ag/AgCl参比电极具有不对称电势小、稳定性和互换性好等优点, 是高温氯化物熔体电化学研究用理想的可逆参比电极; 裸Pt丝和石墨棒在高温氯化物熔体中具有良好的长期稳定性, 是高温氯化物熔体电极过程动力学研究中简单实用的准参比电极。

关键字: 参比电极 氯化物融体 融盐电化学

REFERENCE ELECTRODE FOR ELECTROCHEMICAL STUDIES IN FUSED CHLORIDE

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Abstract: The behaviors of Ag/AgCl (10%), Pt wire and graphite rod in fused equimolar NaCl-KCl as reference electrodes were investigated at 700 °C. Quartz glass is served to isolate the electrode compartment of Ag/AgCl half cell, with graphite or Pt to maintain electrolytic contact. The bare Pt and graphite rod were immersed in chloride melt directly. The testing result showed that the Ag/AgCl electrode is well electrochemically reversible and reproducible, with asymmetrical potential less than 5 mV over a period of 6~8 h. It can be employed as a convenient and stable reversible reference electrode. The Pt wire and graphite rod dipped in melt can keep steady electrode potential for more than 12 hours, but show electrochemically irreversible; both of them can be used as pseudo reference electrodes for the study of electrode reaction kinetics as their simpleness, convenience and easy operation.

Key words: reference electrode chloride melts molten salts electrolysis

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