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碳酸盐熔盐燃料电池的NiO阴极溶解

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摘要: 碳酸盐熔盐燃料电池阴极材料NiO在熔盐电解质中的溶解, 是该技术能否实用的关键之一。实验表明, NiO在 $\text{Li}_2\text{CO}_3\text{-Na}_2\text{CO}_3$ 熔盐中的溶解度在 CO_2 气氛和 650°C 条件下约为 5×10^{-6} (摩尔分数)。LiFeO₂或NaFeO₂的添加虽能降低NiO浓度, 但在 CO_2 气氛下会分解生成 $\alpha\text{-Fe}_2\text{O}_3$ 。

关键字: 熔盐燃料电池; NiO; 溶解度

Dissolution of NiO cathode in molten carbonate fuel cells

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Abstract: The dissolution of NiO cathode is one of the "bottleneck" problems in the commercialization of molten carbonate fuel cell. It has been found that the solubility of NiO in $\text{Li}_2\text{CO}_3\text{-Na}_2\text{CO}_3$ melt is around 5×10^{-6} (mole fraction) under CO_2 atmosphere and 650°C . And the additives LiFeO₂ or NaFeO₂ for the hindrance of NiO dissolution in MCFC tend to react with CO_2 to form the $\alpha\text{-Fe}_2\text{O}_3$ in the operation of MCFC.

Key words: molten carbonate fuel cell; NiO; solubility

