

一种新型非 Pt 催化剂在碱性介质中电催化氧还原的研究

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燃料电池和金属空气电池受到了广泛的关注。在电池阴极即空气电极上发生的氧气还原反应很大程度上制约着整个电池的性能^[1]。Pt基催化剂是氧还原的高效催化剂, 然而较高的成本制约了其在电池领域中的应用, 因此有必要发展一种新型的成本较低, 制备过程简单, 催化性能好的催化剂。我们采用水热方法合成了一系列银钼氧化物催化剂, 对氧还原表现出较好的催化活性。通过旋转圆盘电极测试, 发现在银钼催化剂上主要发生的是四电子转移反应。与Pt/C催化剂相比, 银钼催化剂在碱性电解质中表现出较好的稳定性。

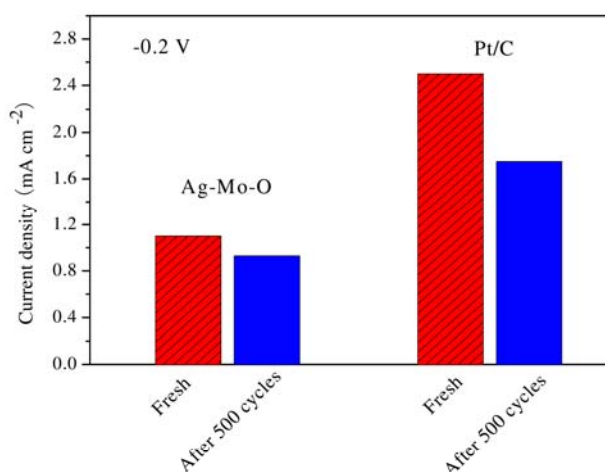


Figure 1 Current densities of Ag-Mo-O and Pt/C before and after 500 cycles in 1 M KOH saturated with pure oxygen

关键词: 氧还原; 银钼氧化物; 碱性介质; 空气电极

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A novel non-Pt catalyst for oxygen reduction reaction in alkaline media

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A novel non-Pt catalyst silver-molybdate material prepared by hydrothermal method was used for the oxygen reduction reaction (ORR) in alkaline solution for the first time. These silver-molybdate electrocatalysts showed high activities for ORR. Rotating disc electrode measurement showed ORR on silver-molybdate catalyst was dominated by a four-electron transfer pathway. Through the stability test, the silver-molybdate catalyst presented higher durability than Pt/C catalyst in alkaline solution.