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研究论文

金复合介孔**SBA-15**吸附血红蛋白在H_2O_2电催化反应中的应用

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摘要 以P123嵌段共聚物表面活性剂为模板剂制备介孔氧化硅SBA-15, 并用沉积-沉淀(DP)法在SBA-15介孔表面负载纳米Au颗粒制备得到金复合介孔SBA-15材料(Au-SBA-15). 再以Au-SBA-15材料制备玻碳修饰电极, 将血红蛋白固定于修饰电极上用循环伏安法考察其对不同浓度H_2O_2溶液的电催化反应.

在固定了血红蛋白的Hb/Au-SBA-15/GC修饰电极上, H_2O_2在＋0.95 V处出现了氧化峰, 且随着H_2O_2浓度的增大峰电流不断增加, 说明金复合介孔氧化硅材料具有良好的生物兼容性, 有利于血红蛋白的固定, 其修饰电极对H_2O_2溶液具有一定的电催化作用.

关键词 介孔SBA-15 金 血红蛋白 H_2O_2 电催化反应

分类号

Adsorption of Hemoglobin on Au-modified Mesoporous SBA-15 and Application in Electrocatalysis of H_2O_2 Solution

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Abstract Mesoporous SBA-15 was prepared by using Pluronic P123 triblock copolymer as structure-directing agents and Au-modified mesoporous SBA-15 (Au-SBA-15) was synthesized by a Deposition-Precipitation methods. The surface of glass carbon was modified with Au-SBA-15 material (named Au-SBA-15/GC electrode), then hemoglobin (Hb) was immobilized on Au-SBA-15/GC electrode (named Hb/Au- SBA-15/GC electrode). The Hb/Au-SBA-15/GC electrode was applied to electrochemical determination of different concentration of H_2O_2 solution. An oxidation peak at 0.95 V was observed, and the peak current was found to be increased with H_2O_2 concentration increasing. The results indicate that the Hb/Au-SBA-15/GC modified electrode exhibited certain electrocatalytic activity.

Key words mesoporous SBA-15 gold Hb H_2O_2 electrocatalysis

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