

研究简报

微乳法合成可控粒径纳米Pt/Al₂O₃电催化CO氧化的尺寸效应

耿东生, 吕功煊*, 毕玉水, 毕迎普

(中国科学院兰州化学物理研究所 羰基合成与选择氧化国家重点实验室 兰州 730000)

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摘要 采用微乳法室温下合成了粒径可控Pt/Al₂O₃催化剂(1~10 nm),

以CO电催化氧化为探针反应考察了Pt微粒尺寸与催化反应性能之间的关系. 利用透射电镜(TEM), 扫描电镜(SEM), 循环伏安法(CV)等手段对催化剂进行表征, 结果表明催化剂性能与Pt粒径之间存在明显的尺寸效应, 催化剂存在最佳活性尺寸.

关键词 [微乳](#) [Pt/Al₂O₃](#) [纳米微粒](#) [尺寸效应](#)

分类号

Particle Size Effect of Alumina-supported Platinum Catalysts Synthesized by Microemulsion on the Electrocatalytic Oxidation of CO

GENG Dong-Sheng, LÜ, Gong-Xuan*, BI Yu-Shui, BI Ying-Pu

(State Key Laboratory for Oxo Synthesis and Selective Oxidation, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, Lanzhou 730000)

Abstract Alumina-supported Pt catalysts, the sizes of which were between one and ten nanometer, were synthesized by water-in-oil microemulsion method. The effect of the Pt particle size on the electrocatalytic oxidation of CO was studied in detail. Transmission electron microscopy (TEM), scanning electron micrograph (SEM) and cyclic voltammetry (CV) were used for the characterization of the catalysts. It has been found that the catalytic activity obviously depended on the size of Pt nanoparticle, and the range of the optimum particle size was 5~6 nm, which may result from the number of adsorption sites and the relative coverages of CO_{ad} and OH_{ad} species.

Key words [microemulsion](#) [Pt/Al₂O₃](#) [nanoparticle](#) [size effect](#)

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通讯作者 吕功煊 gxlu@ns.lzb.ac.cn

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