

研究论文

高分散的炭载Au纳米催化剂的制备、表征和催化活性

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摘要 采用柠檬酸钠还原-胶体负载法, 制备了高分散的炭载Au纳米催化剂, 并以液相催化氧化葡萄糖为葡萄糖酸钠的反应评价了Au/C催化剂的活性. 研究表明, 金溶胶制备过程中柠檬酸钠的用量对粒子尺寸以及所获催化剂的催化活性有重要影响; 催化剂在多次使用之后活性的降低可能是由于在活性炭表面金粒子活性位点上形成的 $\text{Au}^{\delta+}-\text{O}^{\delta-}$ 化合态减少的缘故. 同时比较了制备的Au/C和商业Pd/C催化剂对葡萄糖的液相催化氧化反应, 证明Au/C催化剂明显优于Pd/C催化剂.

关键词 [Au/C催化剂](#) [制备](#) [表征](#) [催化活性](#) [葡萄糖](#)

分类号

Preparation, Characterization and Catalytic Activity of Highly Dispersed Gold Nanoparticle Supported on Carbon Catalyst

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Abstract The catalyst of highly dispersed gold nanoparticle supported on active carbon was prepared by sodium citrate reduction-colloid gold immobilization method, and its catalytic activity was evaluated by the liquid phase catalytic oxidation reaction of glucose to gluconic acid. The research results show that the sodium citrate amounts have important influence on the size of gold particles in gold colloidal preparation and the catalytic activity of Au/C catalyst obtained. The decrease of the activity for repeatedly used Au/C catalyst may be attributed to the decrease of the $\text{Au}^{\delta+}-\text{O}^{\delta-}$ binding state on the catalyst surface. At the same time the catalytic activity for the liquid phase oxidation of glucose was compared between the prepared Au/C catalyst and the commercial Pd/C catalyst, and the results indicated that the Au/C catalyst was advantageous over Pd/C catalyst.

Key words [Au/C catalyst](#) [preparation](#) [characterization](#) [catalytic activity](#) [glucose](#)

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