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材料化学工程与纳米技术

氯化体系中环硫氯丙烷交联壳聚糖树脂对Au（Ⅲ）的吸附特性

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摘要 以环硫氯丙烷为交联剂，合成了环硫氯丙烷交联壳聚糖（CCCS）树脂，并对其进行了SEM和FTIR表征，研究了该树脂对Au（Ⅲ）的吸附动力学、吸附平衡等吸附特性。结果表明，环硫氯丙烷在交联过程中发生开环反应，产生了巯基—HS，在吸附过程中CCCS树脂中的—NH2和—HS参加了与Au（Ⅲ）的配位;吸附反应速率遵循Lagergren二级速率方程所描述的规律，表观活化能为16.039 kJ·mol-1;其等温吸附符合Langmuir方程和Freundlich方程，吸附过程为物理吸附的放热吸附。

关键词 壳聚糖 树脂 金 吸附

分类号

Adsorption of Au（Ⅲ）on chloromethylthiirane crosslinked chitosan resin in chlorating system

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Abstract

Chloromethylthiirane was used as crosslinking agent to synthesize chloromethylthiirane crosslinked chitosan (CCCS) resin,which was characterized with SEM and FTIR.The adsorption kinetics and adsorption equilibrium of Au（Ⅲ）on CCCS resin were also studied.The results showed that chloromethylthiirane had a ring-opening reaction during the crosslinking process in which sulfhydryl was formed, —NH2 and —HS of CCCS had a share in coordination with Au（Ⅲ）in the adsorption, the adsorption rate followed the second-order kinetics model of Legergren,and the apparent energy of activation was 16.039 kJ·mol-1. The isothermal adsorption followed the isothermal adsorption equations of Freundlich and Langmuir.The adsorption process was a exothermic physical adsorption.

Key words chitosan resin gold adsorption

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