活性炭对含铅废水吸附特性研究

Study on adsorption characteristics of activated carbon to leaded wastewater

作者	单位
雒和敏	中国石油长庆油田分公司第八采油厂，西安 710021
曹国璞	中国石油长庆油田第二采油处巨力工程建设公司，庆阳 745100

中文摘要：

采用静态法用活性炭吸附处理含铅废水，考察了活性炭对含铅废水的吸附特性。结果表明：活性炭对铅离子吸附平衡时间为100 min；吸附等温方程为：C_e/q_e=0.4298+0.0594C_e（25℃），该方程符合Langmuir型吸附模式，不同温度下吸附平衡参数0<R_L<1，表示该吸附为有利吸附。实验数据应用数学模型拟合，二级相关系数R_2=0.9998，显示吸附过程动力学与二级动力学模型相关性较好；计算不同温度下各热力学参数：$\triangle H^\theta$大于零、$\triangle G^\theta$小于零，证实该吸附过程是一个自发吸热过程。$\triangle S^\theta$大于零，表明铅离子在固液界面有序性减小、混乱度增大。$\triangle H^\theta$值很小，说明该过程为物理吸附。

英文摘要：

Activated carbons were used to adsorb the divalent lead ions in wastewater by a static method in order to study the absorption characteristics. The results showed that the absorption equilibrium time was 100 min. The adsorption isotherm equation was C_e/q_e=0.4298+0.0594C_e (25℃), and the equation was consistent with the Langmuir absorption model. The adsorption equation parameters (R_L), which were between 0 and 1 at different temperatures, proved that adsorption was beneficial to process. The experiment was well fitted by mathematical model with the secondary correlation coefficient (R_2) being 0.9998. Meanwhile the adsorption was confirmed as a spontaneous endothermic process by the results of $\triangle H^\theta$>0 and $\triangle G^\theta$<0 at different temperatures; and the order reduced and the chaos increased of the divalent lead ions in the solid-liquid interface with $\triangle S^\theta$>0. In addition, small value of $\triangle H^\theta$ showed that the absorption was a physical process.