

## 活性炭对含铅废水吸附特性研究

### Study on adsorption characteristics of activated carbon to lead wastewater

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英文关键词: [activated carbon](#) [lead wastewater](#) [adsorption isotherm](#) [adsorption dynamics](#) [adsorption thermodynamic](#)

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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°C), 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:  $\Delta H^\theta$  大于零、 $\Delta G^\theta$  小于零, 证实该吸附过程是一个自发吸热过程。 $\Delta S^\theta$  大于零, 表明铅离子在固液界面有序性减小、混乱度增大。 $\Delta H^\theta$  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°C), 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  $\Delta H^\theta > 0$  and  $\Delta G^\theta < 0$  at different temperatures; and the order reduced and the chaos increased of the divalent lead ions in the solid-liquid interface with  $\Delta S^\theta > 0$ . In addition, small value of  $\Delta H^\theta$  showed that the absorption was a physical process.

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