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### KOH活化法制备牛粪活性炭的研究

#### Preparation of activated carbon from cow dung by chemical activation with potassium hydroxide

关键词: [牛粪](#) [活性炭](#) [Cr\(VI\)](#) [吸附](#)

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摘要: 以牛粪为原料,采用KOH活化法制备活性炭,并考察了浸渍比、活化剂浓度、活化时间和活化温度等不同制备条件对牛粪活性炭样品性能的影响.实验结果表明,在浸渍比1:4、KOH质量分数35%、活化时间60 min、活化温度700 °C条件下制备的活性炭性能最佳,制得的活性炭比表面积为 $979.8 \text{ m}^2 \cdot \text{g}^{-1}$ ,碘吸附值可达 $796.37 \text{ mg} \cdot \text{g}^{-1}$ ,亚甲基蓝吸附值可达 $150.30 \text{ mg} \cdot \text{g}^{-1}$ .最后,将制备的牛粪活性炭应用于对Cr(VI)的吸附,研究了最佳工艺条件下制备的活性炭吸附Cr(VI)的适宜条件.结果表明,在投加量为 $8 \text{ g} \cdot \text{L}^{-1}$ 时、吸附时间90 min、pH值为5和较低温度的适宜条件下,自制牛粪活性炭对Cr(VI)的吸附量最大.

**Abstract.** Activated carbon was prepared from cow dung using KOH as the activator in this study. Different conditions on the performance of the cow dung activated carbon samples were studied, which included the impregnation ratio, the concentration of activators, the activation time and the activation temperature. The results showed that the preparation of the activated carbon have the best performance under the optimum conditions of impregnation ratio 1:4, KOH mass fraction 35%, activation time 60 min, and activation temperature 700 °C. Under this condition, the relative surface area can reach  $979.82 \text{ m}^2 \cdot \text{g}^{-1}$ , the adsorption of iodine gets up to  $796.37 \text{ mg} \cdot \text{g}^{-1}$ , and the adsorption of methylene blue can be up to  $150.30 \text{ mg} \cdot \text{g}^{-1}$ . In addition, the appropriate conditions for Cr(VI) adsorption were studied using cow dung activated carbon which was prepared under the optimum conditions. The results show that homemade cow dung of activated carbon have the maximum adsorption capacity for Cr(VI) under the dosage of  $8 \text{ g} \cdot \text{L}^{-1}$ , adsorption time 90 min, pH value is 5 and lower temperature suitable conditions.

**Key words:** [cow dung](#) [activated carbon](#) [Cr\(VI\)](#) [adsorption](#)

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