

分离工程

## 改性活性炭脱除二氧化碳中的微量苯

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收稿日期 2008-11-14 修回日期 2009-3-4 网络版发布日期 2009-6-17 接受日期

**摘要** 将工业废气中的CO<sub>2</sub>回收利用,使之变废为宝具有重要的意义。研究了活性炭(AC)分别经湿氧化和N<sub>2</sub>还原改性后对苯吸附性能,并测定了改性活性炭的孔结构和表面官能团。结果表明,AC经N<sub>2</sub>还原改性能增大其比表面积,减少表面含氧官能团,增强其表面非极性,有利于苯的吸附。孔径分布是影响苯吸附的主要因素,吸附剂的孔径分布在0.6nm范围内时,有利于对苯的吸附。

**关键词**

[活性炭](#) [苯](#) [吸附](#) [湿氧化改性](#)

分类号

## Removal of trace amount of benzene from CO<sub>2</sub> by adsorption with modified activated carbon

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### Abstract

It is significant to recover CO<sub>2</sub> from industrial tail gases. Adsorption of low concentration benzene on activated carbon was studied. Activated carbon was treated with wet oxidized reagent and N<sub>2</sub> reduction. Pore structure of modified activated carbon was characterized by N<sub>2</sub> (77 K) adsorption isotherm. Boehm titration, Fourier transform infrared spectroscopy (FTIR) were used to characterize the surface properties. N<sub>2</sub> reduction increased the surface area of AC and total pore volume, reduced the amount of surface groups and improved benzene adsorption. With CO<sub>2</sub> regeneration at 150°C, the capability of activated carbon adsorbents had a little decrease at the beginning but remained unchanged with recycling.

### Key words

[activated carbon](#) [benzene](#) [adsorption](#) [wet oxidation modification](#)

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