

稀土金属氧化物对Y分子筛吸附脱硫性能的影响

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Effects of rare-earth metal oxides on the desulfurization of Y zeolite

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摘要 以Y分子筛为母体,采用浸渍法制备了Y₂O₃/Y、CeO₂/Y和La₂O₃/Y三种吸附剂.以脱除正辛烷中的苯并噻吩为探针反应,考察了稀土金属氧化物负载量、吸附温度、吸附时间和剂油比对吸附剂脱硫性能的影响.结果表明,稀土金属氧化物最佳负载量(质量分数),所得吸附剂在50℃、1h、剂油比1:30条件下,脱硫率均达到60%以上.甲苯的存在明显降低了吸附剂的脱硫率.稀土金属氧化物在吸附过程中发生流失,在相同的条件下,三种稀土金属氧化物中,Y₂O₃的流失量最小,而CeO₂的流失量最大,CeO₂的流失量是Y₂O₃的10倍.

关键词: [吸附脱硫](#) [Y分子筛](#) [稀土金属氧化物](#) [苯并噻吩](#) [甲苯](#)

Abstract: Y₂O₃/Y, CeO₂/Y and La₂O₃/Y samples were prepared by impregnation with Y zeolites as precursor. Removal of benzothiophene from octane was employed as probe reaction. The effects of loading amount of rare-earth metal oxide, adsorption temperature, adsorption time and ratio of adsorbent to oil on desulfurization have been investigated. The results showed that the optimum loading amount of the rare-earth metal oxide was 5%. More than 60% of benzothiophene was removed over the obtained samples at conditions of 50℃, 1 h and 1:30 of adsorbent to oil ratio. Addition of toluene to the mixture of octane and benzothiophene depressed obviously the desulfurization capability of the samples. The rare-earth metal oxides were washed away during the desulfurization process. The loss amount of Y₂O₃ was the least, while CeO₂ was the largest. The loss amount of CeO₂ was 10 times larger than that of Y₂O₃.

Key words: [desulfurization](#) [Y zeolites](#) [rare-earth metal oxide](#) [benzothiophene](#) [toluene](#)

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