

铈离子改性Y型分子筛吸附剂对苯中噻吩动态吸附及其主要影响因素的研究

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Effect of operation parameters on adsorption of thiophene from benzene over CeY sorbent

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摘要 通过固定床吸附实验考察了吸附剂的粒径、空速与浓度及床层温度等操作参数对苯中噻吩吸附的影响。结果表明,上述因素分别通过改变内、外扩散过程的传质阻力以及其物理吸附行为来影响噻吩的脱除。最佳的参数是,吸附剂粒径为0.2~0.3 mm,空速为 0.85 h^{-1} ,床层温度为室温。在此条件下,CeY吸附剂能将噻吩浓度为500 mg/L苯溶液中的噻吩完全脱除,其噻吩的穿透时间和吸附量可达400 min和4.61 mg/g以上。

关键词: CeY吸附剂 噻吩 苯 吸附 操作参数

Abstract: The effect of operation parameters, such as particle size of the CeY sorbent, space velocity, and concentration of the solution and temperature of the fixed bed, on the adsorption of thiophene from benzene was investigated. The results show that this effect can be ascribed to the change of the inner and external diffusion process of the mass transfer resistance and the adsorption type, which are affected by those operation parameters respectively. The suitable operation parameters were the particle sizes of 0.2~0.3 mm, space velocity of the solution of 0.85 h^{-1} . At the conditions of room temperature and atmospheric pressure, CeY sorbent can entirely remove the thiophene from benzene with the breakthrough time and adsorption capacity of thiophene of above 400 min and 4.61 mg/g in the benzene containing thiophene 500 mg/L, respectively.

Key words: CeY sorbent thiophene benzene adsorption operation parameter

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