



新型介孔分子筛Sr-MCM-41的合成及其吸附性能的研究

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Study on the synthesis adsorption of mesoporous molecular sieve Sr-MCM-41

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摘要 在碱性条件下,以十六烷基三甲基溴化铵为模板剂,正硅酸乙酯为硅源,硝酸锶为无机源,用水热法合成了新型介孔分子筛Sr-MCM-41,对其用AFM,XRD进行了表征,结果表明:产物在小角散射区内出现衍射峰,可以确认其中存在介孔结构.产物中大部分是海绵状的介孔物质,属于缺乏长程有序的晶相排列.并研究了其对2种水溶性染料甲基紫和碱性品红的吸附性能.介孔分子筛Sr-MCM-41对甲基紫和碱性品红溶液的吸附均符合Freundlich吸附等温式.最大吸附量分别为186mg/g和172mg/g,具有较好的脱色能力.

关键词: 介孔分子筛 表征 水热法 吸附

Abstract: In basic condition,mesoporous sieve Sr-MCM-41 is synthesized successfully through mixing cetyltrimethylammonium bromide (CTAB) as a template with strontium nitrate(Sr(NO₃)₂) as the inorganic source and ethyl silicate as the silica source by hydrothermal synthesis.The products are characterized by XRD and SEM techniques and the adsorption abilities are studied by the adsorption of dyes of methylviolet and fuchsine.The results indicate that the products display the diffraction peak in the low-range angle,the evidence of the mesoporous structure.And the most of the products are of sponge state that is short of the long-range ordered crystal structure.The adsorption of the dyes of methylviolet and fuchsine is in accordance to Freundlich isothermal equation.The biggest adsorption amount of methylviolet is 186mg/g and of fuchsine is 172mg/g respectively.

Key words: mesoporous sieve characterize hydrothermal synthesis adsorption

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