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含钛**USY**沸石的制备与表征

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摘要 采用钛酸丁酯/无水乙醇溶液与USY沸石浸渍及采用氟钛酸铵溶液与USY沸石二次合成等方法，制备了一系列含钛USY沸石。通过XRD，FT-Raman光谱，正庚烷吸附等温线，UV-DRS及FT-IR光谱等手段的表征，表明在所制备的含钛USY沸石样品中，当Ti含量较小(≤4.8%TiO~2)时，Ti是以高分散状态分布在沸石表面。不同制备方法所得含钛USY沸石样品中，Ti的状态是各不相同的。UV-DRS和FT-IR证实，以二次合成法制备的含钛USY沸石样品中，Ti主要处于沸石骨架位；而以钛酸丁酯/无水乙醇溶液浸渍法制备的样品，Ti是以单齿(monofunctional)和双齿(bifunctional)形式与沸石的表面羟基相结合。

关键词 钛 沸石 X射线衍射分析 拉曼光谱法 钛酸丁酯 乙醇

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Preparation and characterizationof Ti containing USY zeolites

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Abstract Ti containing USY Zeolites were prepared by impregnation with titanium tetra-butoxide and by the secondary synthesis method with (NH~4)~2TiF~6. The samples were characterized by X-ray diffraction, Raman spectroscopy, n-heptane adsorption isothermal, UV-DRS, and FT- IR. The results indicated that the titanium species were highly dispersed on the surface of USY zeolites when Ti content was below 4. 8% TiO~2. The states of titanium in zeolites were different depending in the preparation conditions. The Ti species in the samples prepared by the secondary synthesis method are mainly located in the framework of zeolites. While the Ti species in the samples prepared by impregnation are in the states of monofunctional and bifunctional bonding to the hydroxyl groups of zeolites.

Key words TITANIUM ZEOLITE X-RAY DIFFRACTION ANALYSIS RAMAN SPECTROMETRY ETHANOL

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