

丝光沸石负载 $\text{SO}_4^{2-}/\text{ZrO}_2$ 超强酸的研究

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摘要 制备了一系列丝光沸石(HM)负载 $\text{SO}_4^{2-}/\text{ZrO}_2$ (SZ)超强酸催化剂,并研究了它们比表面、孔容、硫含量及超强酸性的变化规律。结果发现, HM在负载SZ后超强酸性显著提高,可以在35℃条件下催化正丁烷异构化反应。吡啶吸附红外结果表明,适量负载SZ可增加HM的Lewis酸量和总酸量,从而使甲苯歧化和邻二甲苯异构化反应等酸催化反应活性显著提高。XRD结果证实,在HM上负载适量SZ不会破坏HM的结构,但负载量过大(>60%,质量分数)则会引起沸石结构的塌毁。

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Studies on H-mordenite (HM) supported $\text{SO}_4^{2-}/\text{ZrO}_2$ solid superacid catalysts

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Abstract A series of new superacid catalysts the H-mordenite (HM) supported $\text{SO}_4^{2-}/\text{ZrO}_2$ (SZ) were prepared successfully. The variation roles of their surface area, pore volume and sulfur contents as well as superacidity were investigated in detail. It was found that, the superacidity of HM was greatly enhanced after introducing SZ on its surface, so that it could catalyze n-butane isomerization even at 35℃. The IR spectrum of the adsorbed pyridine shows that both the amount of Lewis acid and the total acid on some of the SZ/HM samples were improved comparing to pure HM when their contents of zirconia were proper. As a result, their catalytic activities for some acid catalyzed reactions, such as toluene disproportionation and oxylene isomerization, were increased remarkably. The result of XRD confirmed that the construction of mordenite kept well when the content of SZ was proper. However, high amount of SZ (> 60%, mass fraction) could result damage of the construction of HM.

Key words [MORDENITE](#) [SULFURIC ACID](#) [ZIRCONIUM OXIDE](#) [SUPERACID](#) [X-RAY DIFFRACTION ANALYSIS](#) [METHYLBENZENE](#) [DIMETHYLBENZENE](#)

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