

研究论文

水热法合成的 MoVTeNbO_x 多组分氧化物催化剂上异丁烷的选择氧化

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摘要 采用水热法合成了 MoVTeNbO_x 多组分氧化物催化剂, 并用XRD, ICP, BET和SEM等方法对催化剂进行了表征, 考察了 MoVTeNbO_x 多组分氧化物催化剂的组成、反应温度和空速对异丁烷选择氧化反应性能的影响, 其中组成为 $\text{MoV}_{0.3}\text{Te}_{0.17}\text{Nb}_{0.12}\text{O}_x$ 的催化剂显示出最好的催化活性和选择性, 在673 K下, 异丁烷的转化率为10.8%, 甲基丙烯醛(MAL)和甲基丙烯酸(MAA)的收率累积达到6.5%.

关键词 [异丁烷](#) [选择氧化](#) [水热合成](#) [MoVTeNbO_x氧化物](#)

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Selective Oxidation of Isobutane over Hydrothermally Synthesised Mo-V-Te-Nb-O Mixed Oxide Catalyst

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Abstract Various Mo-V-Nb-Te-O mixed oxide catalysts were prepared by hydrothermal synthesis and characterized by means of XRD, ICP, BET and SEM. The catalysts were tested in the selective oxidation of isobutane to methylacrolein(MAL) and methacrylic acid(MAA). The effects of elemental composition of the catalyst, reaction temperature and GHSV on the catalytic performance were investigated. The results indicate that the composition and crystal phase of the catalysts significantly affected the catalytic properties. Under the optimum reaction conditions (673 K, GHSV=3600 h⁻¹), $\text{MoV}_{0.3}\text{Te}_{0.17}\text{Nb}_{0.12}\text{O}_x$ exhibited the highest catalytic performance, the conversion of isobutane was 10.8%, the yield of MAA+MAL was about 6.5%.

Key words [Isobutane](#) [Selective oxidation](#) [Hydrothermal synthesis](#) [MoVTeNbO_x oxide](#)

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