

研究论文

K-MnO/ γ -Al₂O₃和Cu/SiO₂催化剂应用于苯甲酸甲酯连续加氢合成无氯苯甲醇

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摘要 以K-MnO/ γ -Al₂O₃和Cu/SiO₂为催化剂,

利用固定床串联反应器实现了苯甲酸甲酯连续加氢合成无氯苯甲醇反应过程. K-MnO/ γ -Al₂O₃和Cu/SiO₂催化剂对于苯甲酸甲酯连续加氢合成苯甲醇具有良好的加氢活性, 反应转化率可达89.2%, 苯甲醇的选择性为84.1%. 在苯甲酸甲酯加氢连续步骤中的氢醛比得到提高, 有效地抑制了副产物甲苯的生成. XRD, SEM和TPR表征结果表明: 采用吸附沉淀法制备的Cu/SiO₂-C15.2催化剂, 氧化铜在载体上具有良好的分散性能, 并且易于还原, 表现出最佳的苯甲醛加氢活性.

关键词 [连续催化加氢](#) [苯甲醇](#) [苯甲酸甲酯](#) [K-MnO/ \$\gamma\$ -Al₂O₃](#) [Cu/SiO₂催化剂](#)

分类号

Consecutive Hydrogenation of Methyl Benzoate to Non-Chloride Benzyl Alcohol over K-MnO/ γ -Al₂O₃ and Cu/SiO₂ Catalysts

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Abstract Consecutive hydrogenation of methyl benzoate to non-chloride benzyl alcohol over K-MnO/ γ -Al₂O₃ and Cu/SiO₂ catalysts was investigated in a fixed-bed stainless-steel reactor. The effects of reaction conditions on catalytic activity were also studied. The results indicated that Cu/SiO₂ prepared by adsorbed-precipitation method owned larger pore diameter and volume than others, CuO dispersed well on the surface of catalyst, and it was easily reduced at relative lower temperature. K-MnO/ γ -Al₂O₃ and Cu/SiO₂-C15.2 exhibited higher activity and selectivity for continuous hydrogenation of methyl benzoate to benzyl alcohol, the conversion of methyl benzoate was 89.2% and the selectivity of benzyl alcohol reached 84.1%. Molar ratio of hydrogen to benzaldehyde was increased in consecutive hydrogenation process, which is beneficial to enhancing the selectivity of benzyl alcohol. Characterization results of XRD, SEM and TPR revealed that CuO dispersed well on Cu/SiO₂-C catalyst which prepared by adsorption-precipitation method, and it showed best activity for hydrogenation of benzaldehyde to benzyl alcohol.

Key words [continuous hydrogenation](#) [benzyl alcohol](#) [methyl benzoate](#) [K-MnO/ \$\gamma\$ -Al₂O₃](#) [Cu/SiO₂ catalyst](#)

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