

催化、动力学与反应器

对二甲苯液相催化氧化动力学(III) 催化剂配比与浓度的影响

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收稿日期 2002-12-11 修回日期 2003-3-7 网络版发布日期 2008-9-1 接受日期

摘要 对二甲苯(PX) 高温液相催化氧化过程采用Co-Mn-Br三元复合催化剂, 对该催化体系的机理作了深入探讨, 针对催化剂总浓度、溴浓度以及钴锰比对主反应的影响规律进行了系统的动力学实验, 获得了各步反应速率随催化剂浓度与配比的变化关系. 研究发现, 在实验所考察的温度与催化剂组成条件下该催化体系存在一最佳钴锰配比(1:1), 溴浓度和催化剂总浓度对反应速率都有显著的影响, 其中以溴浓度最为敏感.

关键词 [对二甲苯](#) [氧化](#) [催化剂](#)

分类号

KINETICS OF *p*-XYLENE LIQUID PHASE CATALYTIC OXIDATION(III) CATALYST COMPOSITION AND CONCENTRATION

Abstract

The catalyst system of cobalt, manganese and bromine was used in the process of *p*-xylene (PX) liquid phase oxidation. The catalysts exhibited a synergistic effect during reaction. To investigate the distinctive role of each catalyst component, a series of PX oxidation experiments in different catalyst conditions such as Co/Mn ratios, bromine and total catalyst concentrations were carried out. The fractional kinetic model was used to fit the data and the rate constant for each oxidation step was obtained. The result showed that, in the experimental conditions under consideration, there existed an optimum ratio of cobalt vs manganese (Co/Mn=1) and the process was more sensitive to the change of bromine concentration than that of cobalt or manganese.

Key words [p-xylene](#) [oxidation](#) [catalyst](#)

DOI:

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