

## 碱性分子筛作用下甘油与碳酸二甲酯反应制碳酸甘油酯

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**摘要** 报道了温和条件下甘油和碳酸二甲酯在一系列碱性催化剂作用下合成碳酸甘油酯的活性规律和构效关系。结果表明, 在所选择的催化剂中, NaY 分子筛对目标反应具有较高的活性和最高的目的产物选择性; 另外, 甘油和碳酸二甲酯的反应对催化剂的孔道结构具有特殊的要求, 3A, 4A 和 NaZSM-5 等孔径较小 (< 0.6 nm) 的分子筛没有催化活性, 而孔径较大的 NaY 和 Naβ 则表现出较高的催化活性。

**关键词:** 碳酸甘油酯 甘油 碳酸二甲酯 分子筛 NaY 酯交换

**Abstract:** Glycerol carbonate (GC) was synthesized via transesterification of glycerol with dimethyl carbonate under mild conditions over a series of base zeolites. It was found that the NaY zeolite exhibited a higher selectivity for GC (100%) than heterogeneous bases (such as CaO and SrO) or homogeneous catalysts (such as NaOH and K<sub>2</sub>CO<sub>3</sub>). Further experiments over different base zeolites disclosed that this transesterification reaction depended strongly on catalyst structure. Base zeolites with small pore diameter such as 3A, 4A, and NaZSM-5 were inactive, while NaY and Naβ with larger pore diameter exhibited excellent GC yields under mild conditions.











**Keywords:** glycerol carbonate, glycerol, dimethyl carbonate, zeolite, NaY, transesterification

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