

Study on the different reaction conditions for one-step synthesis of methylal via methanol oxidation

Yuanyu Tian¹, Meng Yuan², Shen Li³, Ruiyuan Tang⁴, Yanpeng Zhang³, Zhimei Zhang⁵, Yingyun Qiao⁵, Jingong Zhang⁵, and Qing Liu³

¹China University of Petroleum Huadong - Qingdao Campus

²Affiliation not available

³Shandong University of Science and Technology

⁴Xi'an Shiyou University

⁵China University of Petroleum East China - Qingdao Campus

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Abstract

Based on the previous research on the Fe-Mo based bifunctional catalyst, the team explored the effects of reaction temperature, reaction space velocity and the feed ratio of methanol to air on the catalytic effect of the process, and found out the optimal reaction conditions for the process. The results show that too high reaction temperature is not conducive to the formation of the target product DMM, and this phenomenon is verified by thermodynamic analysis. At the same time, it was found from the analysis of the catalyst's microstructure and surface characteristics that an excessively high reaction temperature would not only cause metal oxides to accumulate on the catalyst surface, blocked channels and reduced specific surface area, but also it will destroy the acid active sites on the catalyst surface, weaken the acidity of the catalyst and reduce the catalytic activity.

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