

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

Yuanyu Tian<sup>1</sup>, Meng Yuan<sup>2</sup>, Shen Li<sup>3</sup>, Ruiyuan Tang<sup>4</sup>, Yanpeng Zhang<sup>3</sup>, Zhimei Zhang<sup>5</sup>, Yingyun Qiao<sup>5</sup>, Jingong Zhang<sup>5</sup>, and Qing Liu<sup>3</sup>

<sup>1</sup>China University of Petroleum Huadong - Qingdao Campus

<sup>2</sup>Affiliation not available

<sup>3</sup>Shandong University of Science and Technology

<sup>4</sup>Xi'an Shiyou University

<sup>5</sup>China 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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