

Catalytic conversion of ethanol to higher alcohols over Mg-Ni-Mo/AC catalyst under supercritical conditions

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The research and development of improved processes for the synthesis of bio-based chemicals is one of the challenges. Ethanol, which can be produced from renewable resources, is a promising chemical for the production of transportation bio-fuels and valuable chemicals. In particular, production of higher alcohols (>C₃) directly from ethanol is an attractive chemical process because of the high value of alcohols as fuel additives. Despite several decades of research, the industrial application of such method is limited due to lack of suitable catalysts or appropriate synthesis processes. In this study, Mg-Ni-Mo/AC catalyst was improved to synthesize the higher alcohols such as 1-butanol, 1-hexanol and its derivatives from ethanol under supercritical system. The effect of reaction parameters including reaction temperature and time was investigated to further increase the catalytic activity for the formation of higher alcohols. The production of higher alcohols was strongly dependent on the catalytic activity and reaction conditions in supercritical ethanol.

Keywords: Catalytic conversion, Ethanol, higher alcohols, Mg-Ni-Mo/AC catalyst, Supercritical condition