

A study on Cu-catalysts over anodic aluminum oxide supports for steam reforming of methanol

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Metal monolith type catalyst has been suggested for steam reforming of methanol (SRM). However, these type catalysts were suffered from peeling of the catalyst layer caused by the weak bonding between the metal plate and the catalyst. In this study, in order to improve the catalyst bonding on Al plate, the anodic aluminum oxide (AAO) layer was prepared on Al plate by anodizing in oxalic acid electrolyte solution. Cu/AAO and Cu-Zn/AAO catalysts were prepared by impregnating Cu-alone salt solution or Cu-Zn combined salt solution. With increasing concentration of the Cu salt solution in the range of 1-3 M during the impregnation, the activity of the prepared catalyst increased. The catalyst activity has increased further when the impregnation procedure repeated up to 3 times. Also, the catalytic activity of Cu/AAO catalysts rapid decreased, caused by the poor thermal stability. The Cu-Zn/AAO catalysts exhibited higher activity and stability due to the effect of Zn.