

## Steam Reforming of Dimethyl Ether for Production of Hydrogen for Fuel Cells

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The steam reforming of dimethyl ether (DME) is scientific and technological interest as a hydrogen source for fuel cells. The reaction proceeded via a successive two step mechanism: hydration of DME to methanol over solid acids, followed by steam reforming of methanol to produce  $H_2$  and  $CO_2$  over copper oxide based catalysts. In this study, the catalysts which is appreciate for the producing much  $H_2$  and less CO was prepared.  $\gamma$ -Alumina, especially Lewis acid sites for DME hydrolysis into methanol, and active metals such as copper for methanol steam reforming to  $H_2$  and  $CO_2$  are mixed. Adding Zn to  $Cu/Al_2O_3$  not only improved  $H_2$  production, but also reduced CO production. The appropriate weight ratio of active metals and solid acids catalysts was optimized. Furthermore, DME conversion was not influenced by  $H_2O/DME$  ratio in the feed gas, while CO formation was suppressed with a rise in  $H_2O/DME$  ratio.