

## Methanol synthesis process by the hydrogenation of carbon dioxide

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Methanol synthesis by carbon dioxide hydrogenation is very useful for converting greenhouse effect gas into basic chemicals. However, methanol synthesis by carbon dioxide hydrogenation must meet several requirements. One of the most important requirements is that the thermal dynamic limitation is overcome on reaction pathway. It is well known that noble metal catalysts are shown high catalytic performance, but the high market price of noble metals renders their industrial application quite questionable. Therefore, it is more practical from an industrial standpoint to develop an improved non-novel metal-based catalyst. In this work, methanol synthesis by carbon dioxide hydrogenation was examined over a series of Cu/ZnO-based prepared by co-precipitation method at various pH conditions in a continuous flow fixed-bed reactor to evaluate the catalyst performance. The effect of promotor on the performance of Cu/ZnO catalyst was investigated in detail, with an aim of enhancing catalytic activity and improving stability of the catalyst.