

### A novel $\text{TiO}_2\text{-ZrO}_2$ solid acid catalyst for the vapour phase reaction of methanol to dimethyl ether (DME)

전기원\*, Venkataraman Vishwanathan, 노현석, 김재우  
한국화학연구원  
(kwjun@kriect.re.kr\*)

Dehydration of methanol to dimethylether (DME) is an acid catalysed reaction of a commercial importance. Several solid acid catalysts have been studied (a) to minimize the formation of hydrocarbons during reaction; and (b) to have higher resistance against water when crude methanol containing water (~ 20 mol %) is used as a main feedstock.

In our present investigation, a series of  $\text{TiO}_2\text{-ZrO}_2$  binary oxides with molar ratios of  $\text{TiO}_2$  to  $\text{ZrO}_2$ , has been synthesized, characterized and tested for the title reaction in a fixed-bed reactor under normal atmospheric pressure. The objective of the presentation is to bring out the novelty of this new solid acid system with respect to catalytic activity, selectivity for DME and resistance against water during dehydration reaction. Based on our results, a mechanism is proposed as a possible reaction pathway for DME synthesis.