

## Application of mesoporous SiO<sub>2</sub>-TiO<sub>2</sub> system as an acid catalysts for esterification

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The esterification of acetic acid with ethanol was carried out with SiO<sub>2</sub>-TiO<sub>2</sub> networked solid acid catalyst as proton donating materials. This catalyst has hydrophilic and acidic surface due to immobilized sulfonic acid moiety in the SiO<sub>2</sub>-TiO<sub>2</sub> network. This catalyst is able to absorb the water formed by esterification so that the equilibrium of this reaction was shifted to the formation of corresponding ester. The shift of esterification equilibrium to right side was owing to continuous removal of water due to the high water absorption capability of catalyst. The morphology of catalyst was determined using small angle X-ray diffraction, BET, TEM and EDAX. The well ordered mesoporous structure with about 10 nm of uniform pores was confirmed by XRD and TEM and as expected from the pore size, this catalyst was turned to have very large surface area.