A study on the characteristics of Co/SiO_2 catalysts

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The whole world has seen the adverse effect caused by our dependence on crude oil. So much effort has been made to develop renewable energy technologies, such as solar, wind and biofuel. Fischer-Tropsch (FT) is one of the most promising ways for coal, crude oil and natural gas conversion to clean fuels at economically feasible cost. And iron and cobalt are relatively inexpensive metals which have been used as catalysts for the Fischer-Tropsch. Cobalt is one of the most studied metals in Fischer-Tropsch because of its higher activity compared to commercially used iron catalysts. However, reducibility of the catalysts is not sufficient characteristic in ensuring good activity. Silica is used as the most common supports because its high surface area and its inertness. The surface of silica have significant influence on cobalt dispersion, reducibility and catalytic performance. In this study, the Co/SiO_2 catalysts were synthesized via a sol-gel method and were characterised by the analysis using XRD and TPR.