

The catalytic performance of Ru/Co/Zr/Al₂O₃-SiO₂ during Fischer-Tropsch synthesis

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Fischer-Tropsch (FT) synthesis is a promising route to synthesize clean and environmentally benign fuels in the near future. Cobalt is considered as the most favorable catalyst for the formation of high molecular weight and long-chain hydrocarbons from synthesis gas (syngas) which can further produce lubricants and diesel fuel by hydrocracking. The influence of surface modification of SiO₂ with alumina and zirconia in Ru/Co/SiO₂ on the activity of Fischer-Tropsch catalysts has been studied. The characterization tools such as TPR, XRD and surface area measurement are used on Ru/Co/Zr/Al₂O₃-SiO₂ catalyst. The optimum concentration of Zr and Al are found to be 15 wt.% and 10 wt.% respectively. The variation in the catalytic activity of the modified catalysts is attributed to the changes in dispersion and reducibility of cobalt oxides.