



## Effect of Zr and Mn promoter on the physicochemical properties and FTS performance of cobalt supported silica catalyst

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Fisher-Tropsch synthesis (FTS) which converted syngas (CO and H<sub>2</sub>) into clean liquid fuels is a key process in Gas-to-liquid (GTL) technology. The Co-based catalysts have been widely used in FTS. However, the efficiency of these catalysts can be improved by adding promoters. In this work, cobalt supported silica catalyst were developed using Mn or Zr in order to investigate the effect of two different promoters on the physicochemical properties as well as a catalytic performance. The catalysts were prepared by co-impregnation and characterized by BET, H<sub>2</sub>-TPR and TEM techniques. The FTS performance of catalysts samples was investigated in a conventional fixed bed reactor using H<sub>2</sub> : CO ratio of 1:2 for 24 hours. The results show that the addition of Zr promoter enhances the metal dispersion, which makes shifted to lower reducing temperature. It was found that the Zr promoter provides C<sub>5+</sub> selectivity higher than Mn promoter because the addition of Zr increases the number of active sites of the cobalt supported catalyst.

**Keywords:** Manganese promoter; Zirconium promoter; Cobalt based catalyst; Fischer-Tropsch synthesis