

Studies on the Zeolite Supported Co Based Hybrid Catalyst for the Application in GTL-FPSO process

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The Gas to Liquid (GTL) process is one of the most promising technologies for clean fuel production. In the GTL process, Fischer-Tropsch synthesis (FTS) reaction is known as a crucial catalytic process which converts the synthesis gas (CO + H₂) to value-added hydrocarbon products. It was reported that the zeolites supported Co based catalysts are desirable candidate for the production of hydrocarbons in a narrow product distribution. In this study, the SAPO-34 was synthesized by the conventional hydrothermal method, other zeolites were used for commercial product, and Co/ γ -Al₂O₃ catalyst was prepared by the impregnation method. The physiochemical properties of all prepared catalysts have been characterized by XRD, N₂-physisorption, SEM, TEM, H₂-TPR and NH₃-TPD techniques. The catalytic performance of the physically mixed hybrid catalyst in the Fischer-Tropsch synthesis has been investigated through a fixed bed reactor. The products were analyzed by on-line and off-line GC. The catalytic performance over the prepared catalysts was compared with Co/ γ -Al₂O₃ catalyst.