

## Liquid fuel production over bi-functional hybrid FTS catalyst

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The Gas to Liquid (GTL) process is one of the most promising technologies for ecofriendly fuel production. In the GTL process, Fischer-Tropsch synthesis (FTS) reaction is known as a catalytic process which converts synthesis gas ( $\text{CO} + \text{H}_2$ ) to value-added hydrocarbon products.

In this study, the zeolite and metal incorporated zeolite were synthesized by a conventional hydrothermal method, and  $\text{Co}/\gamma\text{-Al}_2\text{O}_3$  catalyst was prepared by an impregnation method. The cobalt/ $\gamma$ -alumina for producing hydrocarbons is mixed with zeolite for the selectivity of the long chain hydrocarbon. The physicochemical properties of all prepared catalysts have been characterized by XRD, BET and  $\text{NH}_3$ -TPD techniques.

The catalytic performance of the physically mixed bi-functional hybrid catalyst was evaluated in a fixed bed reactor. The products were analyzed by on-line and off-line GC. The catalytic performance over bi-functional catalysts was compared with  $\text{Co}/\gamma\text{-Al}_2\text{O}_3$  catalyst.