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Preparation of Cobalt based catalysts for Fischer-Tropsch Synthesis

A. Sadeghi Nikou [a], Sh. Moradi dehaghi [a],*; Y. Zamani [b] ; J. Sadeghzadeh Ahari [b]

[a]*Department of Chemistry, North Tehran Branch, Islamic Azad University, Tehran, Iran*

[b] *Gas Research Division, Research Institute of Petroleum Industry, Tehran, Iran*

*E-mail: shm_moradi@iau-tnb.ac.ir

Fischer-Tropsch Synthesis is a process for obtaining second generation biofuels i.e. the BTL process as well as for producing chemical feedstock or motor fuels without the production of the environmentally harmful compounds encountered in direct hydrogenation [1,2]. It has been found that several metals such as nickel, cobalt , ruthenium and iron can be activated for FT reaction [3]. Fe and Co catalysts are the most common commercial FT synthesis catalysts. The Co catalysts are preferred due to their high FT synthesis activity, high selectivity to long chain hydrocarbons , better catalyst stability in hydrogen rich environments and lower selectivity to oxygenated compounds [4,5]. In this study, cobalt based catalyst was prepared by incipient wetness impregnation method. The catalyst was characterized using XRD,BET,H_2-TPR and ICP techniques.The catalyst tested in a fixed-bed reactor under FTS conditions. The results was shown 70.6 % CO conversion, 12.4 % CH_4, 6.5 % C_2-C_4, and 82.1 % C_5^+ selectivity.

Keywords: Cobalt catalyst,CO Hydrogenation,C_5^+ products.

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