

Active bimetallic compound of iron and cobalt metal inside functionalized CNT for CO<sub>2</sub>  
Hydrogenation

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Global warming and energy problem comes from fossil fuel have accelerated diverse energy research, reforming, CO<sub>2</sub> hydrogenation and F-T reaction (fischer-tropsch) to produce liquid product or light hydrocarbon. CO<sub>2</sub> hydrogenation consists of RWGS (reverse water gas shift) and F-T reaction. 3mol of H<sub>2</sub> and 1mol of CO<sub>2</sub> are reacted with each other in proper reaction condition.

In this work, we present cobalt, indicating any RWGS activity, and iron catalyst showed improved CO<sub>2</sub> conversion and light hydrocarbon selectivity (C<sub>2</sub>-C<sub>4</sub>) compared to bare iron catalyst. Especially, by adding 1 percent of cobalt, iron loaded on inside of CNT has upper properties. Cobalt metal acted as promoter to help iron reduced and CO<sub>2</sub> adsorption. Furthermore, to convert selectivity into higher hydrocarbon, potassium loaded on functionalized CNT with modified impregnation methods.