

The investigation of Water Gas shift reaction activity of simulated coal gas using Fluidized Bed Reactor

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Water gas shift reaction(WGSR) is well known catalytic process in the chemistry industry. In the reforming of fossil fuel, WGSR is adopted for the removal of CO and the additional production of hydrogen. Currently fixed-bed reactors are used in commercial system with two different types of catalysts, which are named as HTS and LTS in order to produce high yields of hydrogen by steam reforming of natural gases. Gasification of coal will be another promising option for produce hydrogen due the large amount of coal deposits. However, the concentration of CO is about 30~50 % much larger than that of CO from reforming of natural gas, which is about 10 %. Therefore, new type of WGSR catalytic reactor should be devised for the CO conversion in reformat from coal gasification. In this paper, WGSR was carried out using fluidized bed reactor in order to investigate the CO conversion performance with coal gas which had a large amount of CO in reformat gas. LTS catalyst from Sud Chemie and HTS catalyst from Johnson Matthey (KATALCO 83-3X) was used.