

GAS-PHASE HIGHER ALCOHOL SYNTHESIS AND FISCHER TROPSCH SYNTHESIS

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Studies of the Fischer Tropsch synthesis (FTS) reaction have gained popularity in recent years for its possible application in biofuel technology and special chemical production from syngas produced by the gasification process. This particular experiment set contained several major objectives in relation to the study of FTS: conducting a higher alcohol synthesis reaction (a very comparable reaction to FTS) to study the effects of altering the syngas composition to find an optimal ratio of H₂ to CO for the synthesis of the desired higher alcohol product, preparing and promoting catalyst for future FTS experiments using both the incipient wetness and wetness impregnation methods, energy dispersive x-ray spectroscopy (EDS) testing the newly promoted catalyst to judge the effectiveness of the loadings, and analyzing the product sample from a past FTS reaction performed two months earlier to test for aldehyde and ketone content. Compositional testing showed incipient wetness was overall less effective (in this case) than wetness impregnation. Analysis also hinted that the FTS sample tested contained a negligible amount of aldehydes and no ketones, but further studies are necessary to confirm this conclusion. This presentation will discuss the results obtained from the FTS reaction for higher alcohol synthesis and the lessons learned during the 10-week summer internship as a SEED fellow.