

Effect of Pretreatment on the Activity of Fe-Cu-K-Al Fischer-Tropsch Catalyst for BTL Technology

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The effect of calcination and reduction temperatures on the activity of Fe-Cu-K-Al catalyst for the CO hydrogenation reaction has been studied. The catalyst was prepared by the Co-precipitation method and calcined and reduced at various temperatures. Catalyst characterization techniques such as XRD, TPR, TGA, hydrogen chemisorption, O₂-titration were also used. The calcination temperature was found to have a pronounced effect on the overall activity of the catalyst but not on the intrinsic activity of the catalyst sites. On the other hand, the reduction temperature had only a negligible effect on the overall and intrinsic activities. The decrease in rate at high calcination temperatures was caused by a decrease in the number of surface active sites due to a decrease in the reducibility of the catalyst. Neither the reduction nor the calcination conditions had any effect on chain growth probability.