

## Effect of Co dispersion on the catalytic properties of Co/Al<sub>2</sub>O<sub>3</sub> in Fischer-Tropsch synthesis

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The Fischer-Tropsch (FT) synthesis on cobalt-based catalysts has been a promising route to synthesize clean and environmentally benign fuels. Alumina is one of the most employed supports for cobalt FT catalysts due to its favorable mechanical properties and adjustable surface properties. The present study focuses on the development of simple dispersion method of cobalt on Al<sub>2</sub>O<sub>3</sub> by changing the pH of solution during the catalyst preparation, and correlating cobalt particle size with the activity. Our results suggest that the control of cobalt particle sizes during preparation of catalysts plays an important role in the catalytic properties on FT reaction. The activity and selectivity of FTS depend on the reducibility of cobalt particles with different size. The increase of C<sub>5</sub>+ selectivity is found on the catalyst with larger cobalt particles, which are easily reduced at much lower temperature. This would be mainly due to easy readsorption of formed molecules on larger cobalt particles.