

PZC Effects of  $\gamma$ -Al<sub>2</sub>O<sub>3</sub> Supported Cobalt Catalyst for Fischer–Tropsch Synthesis정재선<sup>1</sup>, 박지인<sup>1,2</sup>, 주가영<sup>1</sup>, 홍기훈<sup>1,3</sup>,Janardhan L. Hodala<sup>1</sup>, 문동주<sup>1,3,†</sup><sup>1</sup>한국과학기술연구원; <sup>2</sup>고려대학교;<sup>3</sup>과학기술연합대학원대학교(djmoon@kist.re.kr<sup>†</sup>)

Offshore stranded gas fields have been interesting subject as attractive resources to produce the clean liquid fuels by GTL–FPSO process. Fischer–Tropsch Synthesis (FTS) has been suggested as a key process of GTL process.

In this studies, Cobalt–based catalysts was studied for FTS due to the selectivity towards higher hydrocarbons. The reactivity of cobalt based catalysts depends upon the particle size, reducibility, and dispersion, all of which were largely affected by the concentration of hydroxyl groups on the support. Therefore the PZC of the support was considered as the critical parameter during the preparation of alumina supported catalyst.

In order to investigate the effect of chemical treatment of  $\gamma$ -Al<sub>2</sub>O<sub>3</sub>, the Co based catalyst supported on  $\gamma$ -Al<sub>2</sub>O<sub>3</sub> pretreated with acid. It was found that the interaction between cobalt oxide and  $\gamma$ -Al<sub>2</sub>O<sub>3</sub> was dependent on the types of  $\gamma$ -Al<sub>2</sub>O<sub>3</sub>, solvent and cobalt precursors.

It was found that the Co/  $\gamma$ -Al<sub>2</sub>O<sub>3</sub> catalyst prepared with ethanol and  $\gamma$ -Al<sub>2</sub>O<sub>3</sub> pretreated by HNO<sub>3</sub> showed higher CO conversion and C<sub>5+</sub> selectivity.