

## Modeling of Liquid Hold-up in Fixed-bed Reactor for Fischer-Tropsch Synthesis

박찬샘, 박성호, 정익환, 나종걸, Krishnadash, 한종훈\*,

이종열<sup>1</sup>, 정종태<sup>1</sup>

서울대학교; <sup>1</sup>한국가스공사

(chhan@snu.ac.kr\*)

Fischer-Tropsch synthesis mainly produces a wax which is a viscous liquid for long carbon chain. When a catalytic fixed-bed reactor is used for Fischer-Tropsch synthesis, the wax generated on a catalyst surface can keep adsorbing on the catalyst surface. This liquid hold-up causes significant pressure drop and clogging problems through the reactor. Thus, the model for liquid hold-up is required to design the size of reactor and catalyst particles. In this study, the liquid hold-up model considering structural and operational conditions was proposed based on empirical equations for convective mass transfer between the syngas flow and the wax-adsorbed catalyst. The developed model was validated by comparing with the experimental data from Knochen's work (2010).