# Flow Regimes in a Circulating Fluidized Bed for Heavy Naphtha Catalytic Cracking Process

김국희, 김상돈*, 김지민[1], 박덕수[1], 김용승[1]
한국과학기술원; [1]SK 기술원
(kimsd@kaist.ac.kr*)

Understanding of flow regimes in a Circulating Fluidized Bed (CFB) riser is important because different flow regimes cause different gas-solid mixing that may governs different chemical reaction conversion. To determine the optimum operating conditions for the scale-up of the heavy naphtha catalytic cracking process, the effects of gas velocity (1.5-3.5 m/s) and solids circulation rate (20-100 kg/m$^2$s) on solid phase holdup were determined in a 5 cm-ID and 6 m-height circulating fluidized bed. By analyzing the time required to empty out all solids from the riser of the CFB, the transport velocity was determined which is the minimum gas velocity required to develop a stable fast fluidization flow regime. In the transition between the dense and dilute regions, the S-shaped solid phase holdup profiles were measured as a function of solids circulation rate and gas velocity.