

## Bed-to-wall cluster characteristics in a dual circulating fluidized bed reactor

석명원, 서영호, 김상돈\*, 이시훈<sup>1</sup>  
한국과학기술원; <sup>1</sup>한국에너지기술연구원  
(kimsd@kaist.ac.kr\*)

The bed-to-wall cluster characteristics in a dual circulating fluidized bed reactor were determined. The effects of gas velocity to the riser (3.5–4.25 m/s), to the bubbling fluidized bed (0–0.3 m/s), and solid circulation rate (20–100 kg/m<sup>2</sup>s) on the bed-to-wall cluster characteristics have been determined in a dual circulating fluidized bed reactor. The objective of this study is to determine the contacting time fraction of clusters by using a heat flux meter with sensitive T-type thermocouples and the obtained cluster properties can be utilized to interpret the convective heat transfer coefficient in the bed.

The modified Soong's method was adapted to identify the clusters. The proportional dependency of the cluster holdup fraction on the convective heat transfer coefficient was determined at the measuring heights of 1.23m and 2.25m. Due to the entrance and end effects, the effect of cluster holdup on the convective heat transfer coefficient is found to be marginal at heights of 0.69 m and 3.89 m. With the information of contacting time fraction of clusters and the cluster-renewal model, a model is proposed to determine the convective heat transfer coefficient in a dual circulating fluidized bed reactor.