

Effect of liquid properties and column diameter on Mass Transfer Area

이상윤, 손용호, 김희용, 한송희, 양동현, 이광순[†]

서강대학교

(kslee@sogang.ac.kr[†])

The purpose of this research is focused on analyzing how liquid properties and column diameter affect the effective surface area in a packed column. Thin film is made by liquid flowing on packing and mass transfer between liquid and gas phases occurs at the liquid film. Since liquid properties affect film's width and thickness, their effects on mass transfer area should be correctly analyzed. And we are carried out pilot scale experiment but real packed column size is plant scale. So we should conduct scale up experiment. In this study, we employed the NaOH/CO₂ reaction because its reaction is fast and simple chemical mechanism and has well-known correlations which allow us to calculate the mass transfer area. We conducted this study under several liquid viscosity, surface tension and column diameter conditions. We obtained the effective surface area from a proper data processing method using CO₂ in/out concentration and packed height, etc. After conducting our experiments, we compared our experimental data with other effective surface area correlations in literature. Finally, we will propose new correlation for effective surface area in a packed column with structured packing.