Mean drop diameter in a rotating sieved disc contactor

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Abstrak

A correlation has been proposed for mean drop diameter in a Rotating Sieved Disc Contactor (RSDC) considering drops break up, as well as drops coalescence with static holdup in the case of no mass transfer. The proposed correlation is a function of a number of stages, rotating speed in the form of Reynolds number, static hold-up and mother drop size. The effects of the last two terms have not been considered by other researchers. Therefore, the results are compared with two reported correlations to show how these two important terms influence the size of drops. Distilled water was used as a continuous phase and toluene was applied as a dispersed phase in the experiments. The absolute average relative error and standard deviation for the correlation were 14.74% and 10.08%, respectively.