Local static hold-up in a rotary sieved disc contactor for a butyl acetate-water system

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Abstrak

Considering the importance of liquid static holdup in liquid-liquid extraction columns, a novel experimental approach for predicting the mentioned parameter in a rotary sieved disc contactor has is presented in this research. One chemical system without mass transfer was used, in which distilled water and butyl acetate were employed as the continuous and the dispersed phase, respectively. The static holdup has been measured using the draining method. Based on the experimental results, one correlation was proposed to predict the static holdup as a function of stage position in the column and rotating speed in the form of Reynolds numbers and also the dimensionless mother drop size. Changes in static holdup caused by each factor have been discussed and graphically illustrated. It was revealed that an increase in mother drop size will cause the growth of static holdup, while the rise of rotating speed will decrease the amount of static holdup. Furthermore, it was proven that static holdups in upper positions in the column are less than those in the lower positions.