

The Effect of Flow rate of Feed, Desorbent, Raffinate, Extract, and Recycle on a Four-Zone SMB Unit at Shut-Down

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Simulated moving bed (SMB) is a continuous counter-current chromatographic technology for separation of petrochemicals, sugars, and fine chemicals in industries. With the recent development of biotechnology, SMB is being attempted to separate valuable bio-products and bio-pharmaceuticals. In the previous study, the retention behaviors of solutes (raffinate and extract) in a conventional (1-1-1-1) SMB unit were studied with varying the time to discontinue the Feed-feeding. The previous results showed that the retention time of solutes was shorter as the discontinuing the Feed-feeding was earlier in a switching period. An efficient shut-down of a SMB unit after the operation is necessary to decrease the overall operation cost and time. In this study, the elution time of solutes from the SMB unit was surveyed with changing the flow rate of Feed, Desorbent, Raffinate, Extract, and Recycle in order to suggest an efficient shut-down method. Based on the previous study, D-psicose and D-fructose were used as model components and the operating parameters for the SMB were used. The results were analyzed comparing the elution history of extract and raffinate port.