Comparative study of PFR (Partial-fractionation and recycle) strategies for SMB

박혁민, Nguyen Nam Trung, 양진효, 김진일, 구윤모*
인하대학교
(ymkoo@inha.ac.kr*)

The Simulated Moving Bed (SMB) often has a limitation of purity, when the late period of extract and the early period of raffinate in a switching time are contaminated by each other component. Several operation strategies for SMB, such as representatively Modicon, and partial discard method, have been developed and reported to overcome this limitation. We had proposed a new strategy, so called PFR (Partial Fractionation and Recycle), by integration of the advantages of Modicon and partial discard. The PFR strategy is operated as followings: 1) storing the contaminate and relatively low purities of extract and raffinate, and 2) re-injecting to the SMB unit with a proper position and time instead of the feed stream. Using this strategy, higher purities of both products without loss of products could be achieved. Two amino acids, tryptophan and phenylalanine, as model components had been used in this study. The PFR simulation result was comparable to the existing strategies. And the effect of the re-injected position and storing ratio from the product ports was comparatively studied.