

OSS-PF strategy for minimizing pressure fluctuation in Simulated Moving Bed Chromatography

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Simulated Moving Bed (SMB) chromatography has been used in fields that need highly pure product even though the separation is difficult (low selectivity). Many operating strategies have been suggested to further improve the separation performance of SMB. However, checking the applicability of those suggested strategies can be another important issue.

The OSS-PF strategy is the outlet streams swing (OSS) strategy combined with partial-feed (PF) strategy. Even though the strategy can improve separation efficiency, it can lead to internal pressure fluctuation, exceeding the maximum allowable pressure drop, due to internal flow variation. The OSS-PF strategy with the range of acceptable pressure fluctuation was compared with conventional SMB and OSS operations. In the OSS-PF strategy, all performance parameters were better than those of conventional SMB, but only extract purity was higher than that from OSS strategy. The control of feed inlet stream in the OSS-PF strategy kept total pressure drop from exceeding the maximum allowable value of the system by lessening the internal flow rate fluctuations caused by the control of product outlet streams.