

“Recycling Partial-Discard” strategy for High Purity Separation in the Simulated Moving Bed Chromatography

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In this study, the “Recycling Partial-Discard (RPD)” strategy was developed as an improved operation of “Partial-Discard (PD)” strategy. In the RPD operation, each discarded portion was collected in each storage tank and recycled as a part of the feed. The ratio of recycled portion to original feed worked as a key factor in the RPD operation.

In this study, the new operating variables, ‘recycle length’ and ‘recycle ratio’ were suggested for controlling the recycle operation. These two variables played key roles to improve the performance parameters (purity, recovery, productivity and eluent consumption) in the RPD operation. In this study, PDR strategy was applied to binary separation with nonlinear isotherm of four-zone SMB with two columns per zone. Compared to the PD operation, the extract and raffinate with higher purity could be produced from the RPD operation. Furthermore, the loss of the other performance parameters by the partial-discard operation was favorably reduced.