Kotchakorn Rungruang 2011: Effect of Recycling on the Separation of Glucose/Fructose Mixture Using Simulated Moving Bed. Master of Engineering (Chemical Engineering), Major Field: Chemical Engineering, Department of Chemical Engineering. Thesis Advisor: Assistant Professor Attasak Jaree, Ph.D. 81 pages.

Simulated moving bed (SMB), a continuous multi-column chromatographic process, was used to separate glucose and fructose. Through a computational study, a recycle stream was added to the SMB in order to compare the separation performance with that of the conventional SMB. Effects of process parameters were studied including column length, switching time, and the number of columns. Results showed that both extract recycling and raffinate recycling provided higher productivity and lower product purity. For the effect of column length (0.3-1.2 m) and switching time (68-273 s) without recycling, the highest purity was obtained when the column length =1.2 m and switching time=273 s. On the other hand, the highest productivity was obtained when the column length=0.3 m and switching time=68 s. Finally, for the effect of number of columns, 4-column SMB gave the highest productivity and 12-column SMB gave the highest product purity.

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