

288h Effects of Partial Withdrawal on the Performance of Four-Zone Simulated Moving Bed

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In recent years, simulated moving bed (SMB) chromatography has received great attention, and a large number of SMB processes have been applied to the separation of various valuable substances such as biochemicals and pharmaceuticals.

Zang and Wankat (2002) successfully improved the three-zone SMB by introducing partial withdrawal concept. Partial withdrawal operation selectively withdraws the portions of the product streams that have high product concentrations. The remaining portion of each product stream, which is pure or almost pure desorbent, is recycled.

The goal of this research is to improve the separation performances of four-zone SMB system (2-2-2-2) by introducing partial withdrawal. At the conditions of different selectivities, the partial withdrawal SMB system was compared with the conventional SMB system in view point of several separation performance parameters such as purity and recovery.

A simple binary separation within the linear range was selected. An equilibrium-dispersive model for SMB chromatography was applied to the dynamic behaviors and performance simulations by using the simulation package, gPROMS ModelBuilder 2.3.0. (PSE Ltd., UK).