

### Application of one-column analogue to a four-zone simulated moving bed for amino acids separation

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The separation of binary mixture in an one-column chromatograph with recycle that is analogous to a four-zone simulated moving bed (SMB) was studied. The basic principle of the process is identical to a four-zone SMB. The one-column process consists of one adsorption column and four tanks instead of four columns in four-zone SMB (1-1-1-1). A systematic experiment for one-column process was carried out for the separation of two amino acids, phenylalanine and tryptophan. The operating parameters of one-column process were obtained from equilibrium theory. The computer simulations were done by Aspen Chromatography™. The experimental results of one-column process show good agreements with simulation results. The experimental product purity of the one-column process were 89.9% and 85.1% for phenylalanine and tryptophan, respectively, while 92.1% and 85.7% for the simulation results. The recovery yields of the one-column process were 93.7% and 77.3% for phenylalanine and tryptophan, respectively, while 93% and 84.7% for the simulation results. The one-column process would be useful to reconstruct an existing conventional batch chromatography.