

## Separation of L-Phenylalanine from a Ternary Amino Acid Mixture Using Two-Zone SMB/Chromatography Hybrid System

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For a center-cut separation, which is separation of only the middle (intermediate retained) component from a ternary mixture, current technology requires either adjustment of adsorbent properties to make it the least or most retained component or use of a cascade with multiple simulated moving bed (SMB) systems. Unfortunately, adjustment of the adsorbent may not be possible, and a cascade with two four-zone SMBs requires at least eight columns and is complex and expensive.

In this study, we have designed a semicontinuous, center-cut, two-zone SMB/chromatography system to separate L-Phenylalanine, which is the middle component, from a mixture of Glycine, L-Phenylalanine, and L-Tryptophane. Experiments were conducted at low concentrations so that the isotherms are linear, and a Genetic Algorithm was used to determine operating conditions. Experimental results show that the two-zone hybrid system can be used for center-cut separation from ternary mixture with reasonable purity and  $D_{total}/F$ .