

## Application of Competitive Adsorption Isotherms to Separation of Amino Acid by Simulated Moving Bed

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The SMB chromatography was used for separation of two amino acids, phenylalanine and tryptophan. Triangle theory was used to obtain operating condition for SMB. The SMB unit consists of four zones and each zone has 2 columns. Mass transfer coefficient was obtained by the best-fit values comparing simulation with experimental pulse data. The competitive adsorption isotherms of two amino acids were obtained by single component and multicomponent frontal chromatography. Competitive Langmuir isotherm from single component frontal chromatography was used in the first run. In the second run the isotherm from multicomponent frontal chromatography was used and the flow rate of zone I was modified to improve purity. Compared to the first and second run, competitive Langmuir isotherm from binary frontal chromatography shows good agreement with the experimental results. Also, adjusting flow rate in zone I increased the purity of products. The purity of phenylalanine at raffinate was 99.18% and that of tryptophan at extract was 99.67%. The yield of phenylalanine at raffinate was 99.83% and that of tryptophan at extract was 98.45%.

### References

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