

A Simulation Study for Separation of Lactic Acid and Acetic Acid Using 3-Zone Thermally-Assisted SMB

김진일¹, 김정근², 구윤모^{1,2,*}

¹인하대학교 생물공학과;

²인하대학교 초정밀생물분리기술연구센터

(ymkoo@inha.ac.kr*)

SMB technology was first introduced by Universal Oil Products, UOP. This now conventional SMB process is an efficient method for large-scale chromatographic separation attracting considerable attention in the fine chemical, pharmaceutical, and food industries for production of high value added products. The isothermal four-zone SMB for binary separations has been extensively studied by many groups and is now well understood.

By changing operating conditions such as temperature or solvent composition, the performance of SMBs can be optimized by adjusting the adsorption behavior of each zone. Wankat proposed a traveling wave mode thermal SMB in which the fluid is heated or cooled with heat exchangers. But the use of a traveling wave mode thermal SMB has not been extensively studied.

The purpose of this study is to develop a new thermally assisted SMB with three zones. Thermally assisted SMBs operated in the traveling wave mode can significantly reduce the amount of desorbent required while improving the purity if the isotherms are temperature dependent.