

## Design of SMB Process with Solvent-Gradient Operation to Separate ortho-Xylene and para-Xylene

룡벤익, 레타이황<sup>1</sup>, 김진일<sup>1</sup>, 이주원<sup>2</sup>, 김정근<sup>2</sup>, 구윤모<sup>1,\*</sup>  
인하대학교 생물공학과; <sup>1</sup>인하대학교;  
<sup>2</sup>인하대학교 초정밀분리기술 연구센터  
(ymkoo@inha.ac.kr\*)

The solvent-gradient operations in SMB unit give significant improvements in term of the enrichment of products, the separation time and the solvent consumption as compared with the isocratic operations in that. This work studied about solvent-gradient operation in the reversed-phase simulated moving bed unit to separate ortho-xylene and para-xylene. A modified design method for solvent-gradient simulated moving bed chromatography was proposed. The robust operating conditions were obtained with the separation region on the ( $\phi_R, \phi_E$ ) plane. This design method for the solvent-gradient SMB is able to determine the gradient level and easy to obtain robust operation condition. The comparison of performance results of isocratic and solvent-gradient SMB was mentioned. Changing the column configuration, partial-discard strategy and increasing the solvent gradient level were applied to improve the performance of solvent-gradient SMB.