

고부가 바이오 물질의 연속적 분리를 위한 고효율의 simulated moving bed 공정 개발  
(Development of a highly efficient simulated moving bed process for continuous separation of a valuable bioproduct from fermentation mixture)

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A simulated moving bed technology was effectively applied to continuous recovery of a valuable bioproduct from its relevant fermentation mixture. First a proper adsorbent with high selectivity was selected such that its purchase price was as low as possible and its particle size could be relatively large both of which were important in the stage of commercialization. Then a proper configuration of the SMB of interest was devised in consideration of industrial requirements that 1)the process should be an open-loop configuration and its column number should be minimized, 2)the use of partial operations such as partial feeding and/or partial collection should be avoided, and 3)the product concentration should be maintained as high as possible. To meet these three requirements we proposed a three-zone SMB process based on the rearrangement of port locations. This process was then optimized for the separation task of interest and validated experimentally in a laboratory-scale. The lab-scale SMB experiments have been done first using model components followed by using a real fermentation broth.