

The Effect of Pre-loading Method with Moving Feed-port on Start-up of Four-zone SMB Process

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SMB (Simulated Moving Bed) is a widely-used continuous chromatographic process for the high purity of products and/or large amount production in industries. Owing to the inherent characteristic of SMB to simulate the counter-current stream of TMB (True Moving Bed), SMB typically has a periodic steady-state which is a producible state for target products. For achieving the steady-state, SMB may not produce the target products of the desired properties because the internal concentration-profile of the products in SMB unit is not fully-developed. In this study, we developed a novel start-up strategy for the quick-achieving of the steady-state of SMB by using a pre-loading method with moving feed-port. From the several results, the time to achieve the steady-state was dramatically decreased in terms of purity, recovery, and concentration of products. If a valuable product, such as biopharmaceuticals, has to be kept its own lot or batch number, SMB may be repeatedly stopped and run. In this case, this novel start-up strategy will be a promising method to save the time between batches and the energy, cost and materials which are consumed to achieve the producible-state of SMB.