

The Simulation Study of Three-zone Thermally-Assisted Simulated Moving Bed with varying the Split Ratio of Raffinate/Recycle Flow Rate

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The Simulated Moving Bed process is widely used in pharmaceutical, fine chemical, petroleum, and sugar industries, with the extensive studies of the SMB process. As the structural modification of the SMB process, it can be more efficient. Three-zones SMB is the one method removed a zone of 4-zones. With the mentioned structural modification of SMB process, the research to modify chemical or thermodynamical properties of packing material in the column has been performed for high purity, such as temperature-gradient (or thermally-assisted), pH-gradient, salt-gradient, and so on. These modification methods have been reported relatively little studies, because it has difficulties to design operation condition of the SMB process and to operate itself. In this study, three-zone thermally-assisted SMB was constructed by combining aforementioned two modifications. In addition, a ratio of raffinate flow rate was recycled to zone 1 for decrease of the eluent consumption. The optimal recycle ratio was suggested by the simulation results with varying the ratio. From these results, high purification index value could be obtained under constant D/F using temperature-gradient.