

Performance improvement of 3-zone SMB by partial recycling of raffinate

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Three-zone open loop SMB is usually adopted on account of the simplicity of process, when low cost of eluent is used or high purity of well retained product is required. However, this system consumes a lot of amount of eluent and cannot prevent the dilution of less retained product because of the no recycling of eluent. In raffinate stream, less retained product is periodically eluted. By the recycling of noneluted fraction of raffinate stream, it is able to improve the performance of three-zone SMB process in terms of the enrichment of less retained product and the eluent consumption. In this work, two adsorption isotherms, linear and competitive Langmuir, are adopted to simulate SMB process. And equivalent four-zone SMB is also simulated to compare the performances.