

Three-port operation in three-zone simulated moving bed for improving separation performance

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Simulated Moving Bed (SMB) Chromatography has been widely used in several industries due to its powerful separation process. For this reason, various operating strategies have been introduced, which show higher product purity than conventional SMB. Three-port operation in Three-zone Simulated Moving Bed (TT-SMB) is one of those strategies introduced by our group. The principle of TT-SMB strategy is that two different modes of conventional three-zone SMB are combined and dynamic collection of products is applied to the SMB operation. The switching time is divided into two steps, namely step A and step B. The step ratio, α , is introduced into the TT-SMB, which refers to the portion of step A during a whole switching time. Simulation study of the TT-SMB is performed with both linear and non-linear isotherm conditions. Since the contaminated part of each product is not collected as the product, high purity of products can be obtained. Only one product is collected at each step and it is the only outlet flow; hence, small number of pumps is required. The TT-SMB can provide cost-efficient way to separate a mixture.