Analysis of Dynamic Control Performance of a Dividing Wall Column for Various Affinities of Feed Materials

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In this study, we focused on the separation properties of the DWC for the various feed compositions and feed materials. We chose the feed materials which have different distribution coefficients so that affinities among them can affect separation properties of the DWC. In addition, the feed compositions are differentiated by alternating the composition of the intermediate component in the feed. In dynamic simulation, the separation efficiency and the role of the prefractionator are analyzed for all different feed cases. Based on the dynamic control behaviors, we proposed proper control structures for various feed conditions. Through this research result, the design of the control structure for the DWC can be easier than before depending on the composition and the affinities of feed materials.