

Simulation Analysis of Focusing Behavior of Xylose in SMB Unit for Separation of Biomass Hydrolysate

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SMB (simulated moving bed) process and its modification process are being reported as a promising technique to separate five- and six-carbon sugars from biomass hydrolysate cost-effectively. Xylose and glucose are good substrates for bio-fuel fermentation and those are decomposed from biomass by treating sulfuric acid. Sulfuric acid and acetic acid, which are byproducts of the biomass treatment, are necessary to be removed those sugars. We had proposed a novel SMB modification process using Activated-carbon as stationary phase. From internal profiles of simulation runs, focusing behavior of xylose in SMB unit was observed. More specifically, xylose was less retained than sulfuric acid in raffinate port (between zone 3 and 4), and xylose was more retained than sulfuric acid in extract port (between zone 1 and 2). The focusing behavior of xylose was analyzed by using simulation with several methods.