

288g The Role of Dissociation-Reaction in Simulated Moving Bed Purification of Lactic Acid Using Ion Exchange Resin

Ho-joon Lee, Chim Yong Chin, and Linda Wang

A simulated moving bed process has been developed to separate lactic acid from glucose in a synthetic fermentation broth containing glucose, lactic acid, and potassium lactate. Batch experiments with DOWEX99 in water shows that ion exchange, dissociation reaction, and size exclusion mechanisms results in roll-up of potassium ion in the effluent history. Rate model simulations using VERSE simulator validated the intrinsic parameters of the mechanisms. The resin, initially loaded with equilibrated hydrogen and potassium ion mixture, was used in simulated moving bed experiment. Pseudo-linear standing wave analysis was used to determine the simulated moving bed operating parameters that ensures high product yield and purity.