Abstract Title: Reactive Extraction of Butyric Acid using Trioctylamine in 1–Decanol

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Abstract

Reactive extraction technique of butyric acid was experimentally carried out by applying Response Surface Methodology (RSM) in the optimization of the response function. Three process parameters studied were initial butyric acid concentration, trioctylamine concentration and temperature to examine the interactive effects on extraction efficiency and distribution coefficient. Box-Behnken design comprising of seventeen experimental runs was utilized in the reactive extraction study of butyric acid. A statistical second order polynomial yielded the following optimal conditions: Temperature = 310.758K, initial butyric acid concentration = 0.664 kmol/m3, trioctylamine composition = 21,872%v/v with the following responses: distribution coefficient = 476,555 and extraction efficiency of 99,794%. Experimental validation of the model was carried out with the predicted process variables and the responses obtained (distribution coefficient = 462.26, extraction efficiency = 99.784%) was in close conformity to the predicted responses. The statistical design three dimensional analysis obtained demonstrated that the butyric acid concentration and TOA composition had a more significant and interactive effect than the temperature on the response value.

Keywords—*Butyric acid, Reactive Extraction, Equilibrium Studies, Optimization, Box Behnken design.*

Professional Biography

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