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OPTIMIZATION OF PROCESS VARIABLES TO MAXIMIZE THE PERCENT OF IRON REMOVAL FROM 34% CaCl₂ SOLUTION

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Abstract

This work presents the optimization of process variables to maximize the percent of Fe (II) removal, R (%), by chelating resin Purolite S930 from 34% CaCl₂ solutions. To study the combined effect of the initial solution pH, initial Fe (II) concentration and resin dosage was used a 2³ orthogonal central composite design and Response Surface Methodology (RSM) for analysis of experimental data. To optimize the regression equation was used The Gradient method. The study discovered that the optimum values of these variables where: pH = 5.16, C = 24.60 mg Fe (II)/L and a = 1.02 g resin/L, respectively. In this point the percent of iron (II) removal from 34% CaCl₂ solution is the maximum one (96.2% mg Fe (II)/g given by empirical model and 95.32% verified experimentally).

Key words: gradient method, iron (II) removal, optimization, RSM

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