



Adsorption behavior of Lanthanum(III) on SQD-85 resin

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ABSTRACT

The adsorption and desorption behaviors of La(III) on SQD-85 resin were investigated using batch and column methods. Batch adsorption studies were carried out with different pH, contact time, and temperature. In the batch system, the SQD-85 resin exhibited the highest La(III) uptake as 478 mg/g at 308 K, at an initial pH value of 6.5. The adsorption of La(III) follows the Langmuir isotherm better than Freundlich isotherm. The thermodynamic parameters such as the positive value of ΔH showed that the adsorption was endothermic in nature and ΔG , which were all negative, indicated that the adsorption of La(III) ions onto SQD-85 resin was spontaneous. Column adsorption experiments indicated the maximum adsorption capacity of 481 mg/g for La(III), and Thomas model was applied to experimental column data to determine the characteristic parameters of column useful for process design. The desorption rate of La(III) was 99.8% when the elution agent is 1.0 mol/L HCl solution. These results suggest that La(III) in aqueous solution can be removed and recovered by SQD-85 resin efficiently.

Keywords: SQD-85 Resin; La(III); Adsorption; Desorption; Kinetics; Thermodynamics

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