

流动与传递

La(III) Transport in Dispersion Supported Liquid Membrane Including PC-88A as the Carrier and HCl Solution as the Stripping Solution

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摘要 The transport of La(III) through a dispersion supported liquid membrane with polyvinylidene fluoride membrane as the liquid membrane support and dispersion solution including HCl solution as the stripping solution and 2-ethylhexyl phosphonic acid mono-2-ethylhexyl ester (PC-88A) in kerosene as the membrane solution, was studied. As a result, the optimum transport conditions of La(III) were obtained as that concentration of HCl solution was 4.0 mol/L, concentration of PC-88A 0.16 mol/L, and volume ratio of membrane to stripping solution 30:30 in the dispersion phase, and pH value 4.0 in the feed phase. Ionic strength had no obvious effect on the transport of La(III). Under the optimum conditions, when initial concentration of La(III) was 0.8×10^{-4} mol/L, the transport rate was up to 96.3% during the transport time of 125 min. The kinetic equation was developed based on the law of mass diffusion and theory of interface chemistry. The diffusion coefficient of La(III) in the membrane and the thickness of diffusion layer between feed and membrane phases were obtained as 3.20×10^{-7} m²/s and 3.22×10^{-5} m, respectively. The calculated results were in good agreement with experimental results.

关键词 [liquid separation](#) [dispersion supported liquid membrane](#) [2-ethylhexyl phosphonic acid mono-2-ethylhexyl ester](#) [lanthanum\(III\)](#)

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