

عنوان مقاله:

Investigating the synergistic effect of D2EHPA and Cyanex 302 on nickel and cadmium separation

محل انتشار:

هفتمین کنگره ملی مهندسی شیمی (سال: 1390)

تعداد صفحات اصل مقاله: 6

نویسندگان:

Ataollah Babakhani - School of Metallurgy and Materials Engineering, University College of Engineering, University of Tehran, P.O. Box 11155-4563, Tehran, Iran

Fereshteh Rashchi - Corresponding author Address: School of Metallurgy and Materials Engineering, University College of Engineering, University of Tehran, P.O. Box 11155-4563, Tehran, Iran

Alireza Zakeri - : School of Metallurgy and Materials Engineering, University College of Engineering, University of Tehran, P.O. Box 11155-4563, Tehran, Iran

Ehsan Vahidi

خلاصه مقاله:

Synergistic effect of Cyanex 302 on the extraction of nickel and cadmium from sulphate leach liquor of spent Ni–Cd batteries with D2EHPA diluted in kerosene was investigated with the aim of reducing the reagent cost and increasing the separation efficiency. The Cd^{2+} and Ni^{2+} concentration in the leach liquor used in the present study was: Cd, 3.5; Ni, 6.5(g/L), respectively. The synergistic extraction of Ni and Cd with a mixture of D2EHPA and Cyanex 302 was studied and the results were compared with that of the extraction by sole solvent. Experiments were carried out in the pH range of 0.5–5.0, temperature of 23 and 40°C, using sole D2EHPA and D2EHPA/Cyanex 302 mixtures with the ratios of 1:3, 1:1, and 3:1 as extractants. Results showed that the coextraction of nickel and cadmium increased with increasing equilibrium pH and temperature using D2EHPA. It is demonstrated that the mixtures of these two extractants are more efficient and selective than D2EHPA alone. At low pHs, the separation factor is low when pure D2EHPA is used as an extractant; however, using Cyanex 302 as a synergist, the separation factor increases and results in a better separation of cadmium from nickel. Increasing D2EHPA to Cyanex 302 ratios in the organic phase caused a left shifting of the extraction isotherm of cadmium and a right shifting of the extraction isotherm of nickel and thus, superior separation of cadmium over nickel was achieved.

کلمات کلیدی:

solvent extraction, synergism, D2EHPA, cyanex 302, nickel, cadmium

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