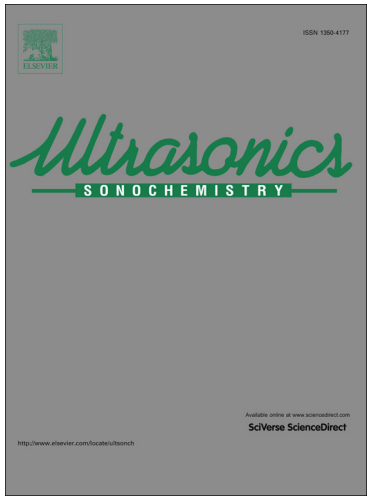

Solvent extraction of cadmium and zinc from sulphate solutions: comparison of mechanical agitation and ultrasonic irradiation

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Solvent extraction of cadmium and zinc from sulphate solutions: comparison of mechanical agitation and ultrasonic irradiation

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Abstract

This research was conducted to evaluate the potential of ultrasonic irradiation during the solvent extraction of metals, and comparing its efficiency with a mechanically stirred system (MSSX). The simultaneous extraction of zinc and cadmium from sulphate solutions was investigated by di-(2-ethylhexyl) phosphoric acid (D2EHPA) as an organic extractant which was diluted (20%) in kerosene at the organic: aqueous phase ratio of 1:1 and the temperature of 25 ºC. The influence of some critical parameters, including contact time, solution pH, ultrasonic power, and zinc/cadmium ratio were investigated on the extraction of the metals. Results show that D2EHPA selectively extract zinc rather than cadmium in both mechanically and ultrasonically mixed systems It was also found that increase of ultrasonic power from 10 to 120 W cause a small decrease in zinc extraction; while, at low and high levels of the induced power, cadmium extraction was significantly decreased. Results also show that maximum extraction amounts of zinc (88.7%) and cadmium (68.2%) by the MSSX

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