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# A kinetics analysis applied to the recovery of Zn(II) content from mine drainage by using a surfactant liquid membrane

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**ABSTRACT**

A kinetics analysis was conducted for the recovery of zinc (II) ions from a mine drainage sample by a liquid surfactant membrane containing di-(2-ethylhexyl)phosphoric acid as a carrier extractant and Span-80 as the surfactant. The extraction of metal was proportional to the concentration of carrier in the organic phase, inversely proportional to the zinc content in the feed solution, and was enhanced as the pH of the feed phase was increased. A minimum sulfuric acid content of 150 g/L in the stripping solution was necessary to favor the transport of metals from the external aqueous solution to the metal-receiving strip liquor. The experimentally observed results were analyzed by a metal extraction kinetics mechanism based on a facilitated transport model, which considers the interfacial chemical reaction between the metal and the carrier at the external interface of the liquid membrane as kinetic controlling step. The experimental results were fairly well explained by the model that takes into account the interfacial activity of both the surfactant and the carrier compound.

***Keywords:*** Surfactant liquid membrane; Zinc; Mine drainage; Kinetics

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