



A spiral flowing supported liquid membrane based on DEHPA carrier for the separation of lead from seawater

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ABSTRACT

This work aims to study the use of a spiral supported liquid membrane (SLM) to extract lead (Pb) from seawater matrix using the di-(2-ethylhexyl) phosphoric acid (DEHPA) dissolved in kerosene as carrier. In this regard, several physical and chemical parameters which could affect Pb extraction (sample pH, sodium acetate buffer, HNO₃ concentration in stripping solution, masking agent effect, flow rate, filter porosity, and configuration of the SLM cell) were studied. In this sense, the permeability parameter was selected to probe the system efficiency. The optimal preconcentration factor was found to be of 14.2, after 2 h under the following conditions: sample pH equal to 4.7 buffered until a 0.08 M of sodium acetate, DEHPA concentration fixed at 0.21 M and HNO₃ concentration of 0.23 M in stripping solution. Besides, SLM filters were analyzed by electron microscopy after each period of 2 h and several microparticles and other deposits in form of a thin layer were observed in the polymeric support.

Keywords: Spiral supported liquid membrane; Lead; Seawater; Pre-concentration; Extraction

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