

PB112- TRANSPORT OF Eu(III) IONS THROUGH A SUPPORTED LIQUID MEMBRANE CONTAINING THENOYLTRIFLUOROACETONE

J. L. dos Santos¹, M. C. F. C. Felinto¹, Y. L. Diniz¹

¹Instituto de Pesquisas Energéticas e Nucleares (IPEN-CNEN), São Paulo, Brasil
e-mail: jlsantos@ipen.br/mfelinto@ipen.br

During the last decade, the research of new processes for treatment of aqueous effluents has created a renewed interest in the extraction of the 4f elements and the supported liquid membrane technique has attracted the attention of researchers mainly due to high selectivity and the recovery of metals with the use of small amounts of the extractor agent.

On the other hand, the β -diketones, more specifically the thenoyltrifluoroacetone (HTTA) are a class of versatile enough chelating agents for trivalent lanthanides. These ions are extracted by the formation of neutral metal compound with high coordination number by intermediate their two atoms oxygen.

In this study was utilized thenoyltrifluoroacetone as carrier molecule in those systems using the supported liquid membranes technique (SLM) for recovery Eu(III) ions from aqueous effluents.

The supported liquid membrane consisted of a thin porous polytetrafluoretilene (PTFE) film with a average porous size of $0,45 \mu\text{m}$ containing HTTA dissolved in CHCl_3 which was soaked and utilized as liquid membrane. During the experiments, small volumes of both the feed and stripping phases were analysed spectrophotometrically by the Arsenazo(III) method for determine the concentration of Eu(III).

The experimental plot of the variation in Eu(III) concentration versus time is showed in figure 1. Transport rate increase with decreasing feed acidity and the maximum extraction was achieved at pH 5 with 99,9% transport rate after 24 hours permeation. The inicial permeability coefficients (cm min^{-1}) obtained were $6,13 \times 10^{-5}$ (pH 1), $2,85 \times 10^{-3}$ (pH 3) e $7,13 \times 10^{-3}$ (pH 5).

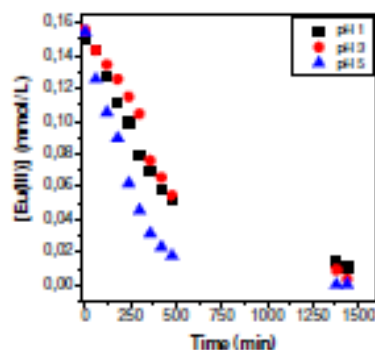


Figure 1: Variation in Eu(III) concentration as a function of time in feed solution. Feed phase: $[\text{Eu(III)}] = 0,15 \text{ mmol L}^{-1}$, membrane phase: 1 mmol L^{-1} HTTA in CHCl_3 ; stripping phase: 1 mmol L^{-1} HNO_3 ; flow rate: 5 mL min^{-1} .