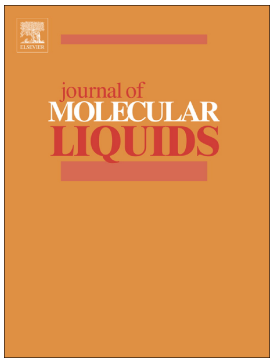

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PII: S0167-7322(17)35217-0
DOI: doi:10.1016/j.molliq.2018.04.062
Reference: MOLLIQ 8965

To appear in: *Journal of Molecular Liquids*

Received date: 1 November 2017
Revised date: 4 March 2018
Accepted date: 10 April 2018

Please cite this article as: Payman Davoodi-Nasab, Ahmad Rahbar-Kelishami, Jaber Safdari, Hossein Abolghasemi , Evaluation of the emulsion liquid membrane performance on the removal of gadolinium from acidic solutions. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Molliq(2017), doi:10.1016/j.molliq.2018.04.062

Evaluation of the Emulsion Liquid Membrane Performance on the removal of Gadolinium from Acidic Solutions

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Abstract

This work evaluates the performance of emulsion liquid membrane (ELM) for the extraction of Gadolinium (III) from acidic solution. The ELM was made up of di-(2-ethylhexyl) phosphoric acid (D2EHPA) as carrier, Span 80 (sorbitol monooleate) as emulsifying agent, commercial Kerosene as organic diluent and Nitric acid as stripping phase. Important physical and chemical variables affecting the ELM performance for the extraction of Gadolinium (III) such as carrier concentration, mixing time, surfactant concentration, agitation speed, initial pH of the feed phase, internal phase concentration, treatment ratio, and feed phase concentration were systematically investigated. Results indicated that the highest Gadolinium(III) extraction can be attained after 10 minutes of mixing by using 0.05M D2EHPA, 1.5% (v/v) Span 80, 1.0M nitric acid as stripping phase at feed phase pH of 2, agitation speed of 180 rpm, and treatment ratio of 1:10. At the optimum condition,