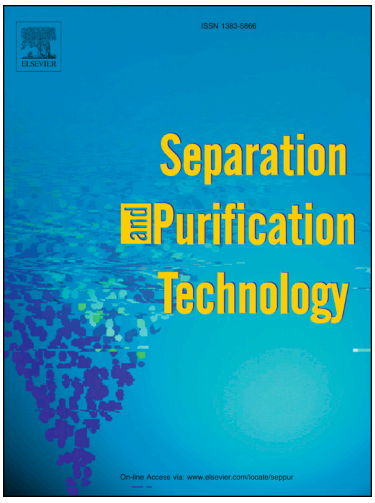

Lithium Extraction from low-grade salt lake brine with ultrahigh Mg/Li ratio using TBP - kerosene - $FeCl_3$ system

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PII: S1383-5866(18)31897-5
DOI: https://doi.org/10.1016/j.seppur.2018.09.087
Reference: SEPPUR 14985

To appear in: *Separation and Purification Technology*

Received Date: 1 June 2018
Revised Date: 27 September 2018
Accepted Date: 30 September 2018

Please cite this article as: D. Shi, B. Cui, L. Li, X. Peng, L. Zhang, Y. Zhang, Lithium Extraction from low-grade salt lake brine with ultrahigh Mg/Li ratio using TBP - kerosene - $FeCl_3$ system, *Separation and Purification Technology* (2018), doi: https://doi.org/10.1016/j.seppur.2018.09.087

Lithium Extraction from low-grade salt lake brine with ultrahigh Mg/Li ratio using TBP - kerosene - $FeCl_3$ system

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Abstract: A novel Li^+ extraction process from low - grade salt lake brine with ultrahigh Mg/Li mass ratio was investigated using TBP - kerosene - $FeCl_3$ system in this work. The effects of various factors (such as TBP concentration, Fe/Li molar ratio and acidity of brine) on Li^+ extraction was first studied, and the optimum conditions of single - stage extraction was identified as follows: TBP concertation was 75%, Fe/Li molar ratio was 1.3, and the acidity of brine was 0.01 mol/L. The extraction efficiency of Li^+ and separation factor of Li/Mg in single - stage reached 67.9% and 435.5 respectively. The extraction, scrubbing, stripping and regeneration processes were studied respectively to optimize the operation conditions of each section, and a novel reflux scrubbing process was put forward. Then an eleven –stage whole extraction process experiment was carried out at the optimum conditions. The capacity of Li in organic phase reached 2.0 g/L. The extraction efficiency of Li^+ reached 87.9%, and stripping liquor containing 28.83 g/L Li^+ and 0.617 g/L Mg^{2+} was obtained. The Mg/Li mass ratio changed from 370 in salt lake brine to 0.02 in the stripping liquor. The aims of separation, purification and enrichment Li^+ were

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