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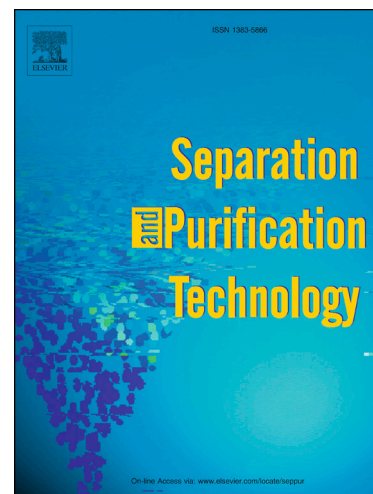
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Lithium Extraction from low-grade salt lake brine with ultrahigh Mg/Li ratio using TBP - kerosene - FeCl₃ system

Dong Shi ^{a, b, c}, Bin Cui ^{a*}, Lijuan Li ^{b, c*}, Xiaowu Peng ^{b, c}, Licheng Zhang ^{b, c}, Yuze Zhang ^{b, c}

a. Key Laboratory of Synthetic and Nature Functional Molecule Chemistry of Education, Shaanxi Key Laboratory of Physico – Inorganic Chemistry, College of Chemistry & Materials Science, Northwest University, Xi'an 710127, Shaanxi, China.

b. Key Laboratory of Comprehensive and Highly Efficient Utilization of Salt Lake Resources, Qinghai Institute of Salt Lakes, Chinese Academy of Sciences, Xining 810008, Qinghai, China.

c. Qinghai Engineering and Technology Research Center of Comprehensive Utilization of Salt Lake Resources, Xining 810008, Qinghai, China.

Abstract: A novel Li⁺ extraction process from low - grade salt lake brine with ultrahigh Mg/Li mass ratio was investigated using TBP - kerosene - FeCl₃ 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 concentration 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 Mg²⁺ 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

* Corresponding author at: College of Chemistry & Materials Science, Northwest University, Xi'an 710127, Shaanxi, China.
E-Mail address: cuibin@nwu.edu.cn

* Corresponding author at: Qinghai Institute of Salt Lakes, Chinese Academy of Sciences, Xining 810008, Qinghai, China.
E-Mail address: lilj@isl.ac.cn

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