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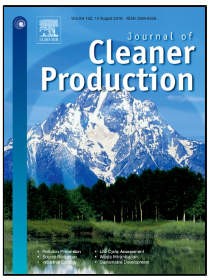

Clean and efficient process for the extraction of rubidium from granitic rubidium ore

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Clean and efficient process for the extraction of rubidium from granitic rubidium ore

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Abstract

The extraction of rubidium from natural resources has attracted much attention due to its growing application in many fields. This paper presents a novel clean process for extracting rubidium from granitic rubidium ore. The process consists of alkaline leaching, desilication, and solvent extraction. The experiment results show that the leaching ratio of Rb can be greater than 95% at a leaching temperature of 230 °C, NaOH concentration of 200 g/L, particle size of 100 mesh, liquid/solid ratio of 10:1, leaching time of 1 h, and stirring rate of 500 rpm. The optimum conditions for the desilication were determined to be the temperature of 95 °C, mass ratio of CaO to SiO_2 of 1.2, and reaction time of 1 h. The SiO_2 precipitation under optimum conditions was up to 96.2%. Approximately 98% of Rb in desilication liquor was extracted using 1 mol/L 4-*tert*-butyl-2-(*α*-methylbenzyl) phenol (in xylene) in three stages at a phase ratio (O/A) of 3:1 for 1.5 min and more than 99% of Rb in loaded organic phase was stripped using 1 mol/L HCl in two stages at a phase ratio of 10:1. The raffinate of Rb can be sent to the leaching step again after the extraction of potassium to close the loop. The results of mineralogy research suggest that the rubidium-bearing micas and feldspar were

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