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Recovery of Rare Earths and Scandium from in situ Leaching Solutions

Authors : Maxim S. Botalov, Svetlana M. Titova, Denis V. Smyshlyaev, Grigory M. Bunkov, Evgeny V. Kirillov, Sergey V. Kirillov, Maxim A. Mashkovtsev, Vladimir N. Rychkov

Abstract : In uranium production, in-situ leaching (ISL) with its relatively low cost has become an important technology. As the orebody containing uranium most often contains a considerable value of other metals, particularly rare earth metals it has rendered feasible to recover the REM from the barren ISL solutions, from which the major uranium content has been removed. Ural Federal University (UrFU, Ekaterinburg, Russia) have performed joint research on the development of industrial technologies for the extraction of REM and Scandium compounds from Uranium ISL solutions. Leaching experiments at UrFU have been supported with multicomponent solution model. The experimental work combines solvent extraction with advanced ion exchange methodology in a pilot facility capable of treating 500 kg/hr of solids. The pilot allows for the recovery of a 99% concentrate of scandium oxide and collective concentrate with over 50 % REM content, with further recovery of heavy and light REM concentrates (99%).

Keywords : extraction, ion exchange, rare earth elements, scandium
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