COMPARISON OF WBA AND HIGH CAPACITY SBA RESINS FOR THE RECOVERY OF URANIUM FROM SALINE LEACH LIQUORS

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ABSTRACT

Chloride has a negative impact on the recovery of uranium from sulfuric acid leach liquors using ion exchange (IX). This is relevant to many proposed and operating uranium mines where good quality fresh water is scarce and chloride is present in the process water. This issue is addressed in practice by strict controls being placed on recirculating liquors to prevent chloride build-up and significant decreases in uranium loading.

ANSTO Minerals has been investigating ion exchange processes for the recovery of uranium from saline liquors for several years. One method that ANSTO examined previously is the use of weak base anion exchange (WBA) resins in place of the conventional strong base (SBA) resins. The WBA resins are more effective at chloride concentrations up to 10 g/L Cl, and can be eluted in a conventional manner using 1 M NaCl. Coupled with nanofiltration for eluate reagent recycle, this process can be quite attractive.

Recently, ANSTO carried out an extensive testing program for Boss Resources to develop a process for the recovery of uranium from In-Situ Recovery (ISR) leach liquors from the Honeymoon mine site in South Australia. The work program included laboratory and column leach tests, laboratory IX test work for resin screening and investigation of elution options. The process developed was tested in a Field Leach Trial (FLT) that incorporated an IX Pilot Plant constructed at ANSTO and transported to the mine site.

Initial laboratory resin screening tests identified the potential for this application of a high capacity SBA resin recently released. This resin exhibits considerably elevated loading compared with both WBA and other SBA resins. Chloride elution was also tested and proved successful, although elution was found to be more difficult compared to WBA or SBA resins.

In this presentation we outline some of the key findings relevant to both resin functionalities and we present results of the IX Pilot Plant which operated successfully for 10 weeks.

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