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Evaluation of *N,N*-dihexyloctanamide as an alternative extractant for spent fuel reprocessing: batch and mixer settler studies

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ABSTRACT

Solvent extraction studies carried out at BARC, India on the evaluation of *N,N*-dialkyl amides as alternative extractants to tri-*n*-butyl phosphate (TBP) for reprocessing of spent fuel have suggested that straight chain *N,N*-dihexyloctanamide (DHOA) is promising alternative to TBP for the reprocessing of irradiated uranium based fuels. This paper presents the batch as well as mixer settler studies for uranium and plutonium extraction/stripping to evaluate DHOA vis-a-vis TBP for the reprocessing of Pu rich fuels. These studies showed that uranium extraction using DHOA as extractant was comparable to that of TBP; however, it displayed better stripping behavior than TBP. Plutonium extraction behavior was better in the case of DHOA as compared to that of TBP. However, Pu stripping data indicated towards the need of reducing agent in the stripping cycle for both the extractants.

Keywords: Reprocessing; Uranium; Plutonium; Dialkyl amide; TBP

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