

SOLVENT EXTRACTION SEPARATION OF URANIUM (VI) WITH P-T-BUTYL CALIX[8]ARENE AND OCTAACETATECALIX[8]ARENE AND β -DIKETONE (HTTA).

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Macrocyclic calixarenes are among the recent extractants introduced to offer a different concept on extraction selectivity based on a correspondence between the cavity size of calixarene and the extracted metal cation. On the other hand the selective extraction of uranium has attracted extensive attention from chemists because of its importance in relation to energy problems and environment. We have studied a new method for the solvent extraction separation of the UO_2^{2+} ion by two calix[8]arenes from acetate solution. Octaacetatecalix[8]arene bearing acetate group on the lower rim have been synthesized and the extractability (%E) and selectivity towards uranyl ion (UO_2^{2+}) was estimated in a two phase (acetate-toluene) solvent extraction system. %E for these calixarenes/HTTA systems increases from pH 4 and saturation is reached at around pH 6-7 where more than 90% of extractability was obtained. The solvent extraction of UO_2^{2+} with these calixarenes and thenoyltrifluoroacetone (HTTA) in toluene has been studied in the presence or absence of alkali ions (Na^+ , K^+). The efficiency of extraction increases drastically in the presence of alkali ions, due to the formation of heteronuclear complexes. Synergistic extraction was observed with calixarenes and thenoyltrifluoroacetone (HTTA). We also found that the selectivity of acetatecalix[8]arene /htta is superior to p-terc butylcalix[8]arene/htta. Absorption spectra show shifts of characteristics bands of calixarene from ultraviolet region to visible region with gap of 100 nm when HTTA is introduced in the solution.

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