

**EXTRACTION OF AM(III) AND EU(III) BY
2,6-DI(5,6-DIALKYL-1,2,4-TRIAZIN-3-YL)PYRIDINES**

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Abstract

It had previously been shown that 2,6-di(5,6-dialkyl-1,2,4-triazin-3-yl)pyridines extract Am(III) selectively over Eu(III), giving a separation factor of 100-120. In this work a more detailed study of the distribution equilibria was made. If not given otherwise, 2,6-di(5,6-dipropyl-1,2,4-triazin-3-yl)pyridine (= B) was taken as a representative of the title extractant class and a mixture of branched alkanes (TPH) modified with 2-ethyl-1-hexanol was taken as a diluent. Since Am(III) and Eu(III) (=M) are extracted as complexes of the type $M(NO_3)_3B$, their distribution ratios increase strongly with the activity of nitrate ions in the aqueous phase and the concentration of the extractant in the organic phase. The distribution ratios of the metals are suppressed in the presence of macro amounts of Eu(III), due to lowering the free extractant concentration as the solvent loading is not negligible, but the Am(III)/Eu(III) separation factor remains unchanged. The extraction of Am(III) and Eu(III) is little changed if 1-octanol is taken as a TPH modifier instead of 2-ethyl-1-hexanol, and the highest distribution ratios are attained at 10 - 20 vol% alcohol. The optimum concentration of the alcohol is 20 vol%, giving appropriate solubilization of the extractant in the mixed diluent. Higher distribution ratios are obtained in the presence of 1-butanol which, however, solubilizes the extractant less effectively than the octanols. Both the extraction efficiency and the Am(III)/Eu(III) separation factor decrease in the following order of diluents (each modified by 20 vol% 2-ethyl-1-hexanol): TPH > cyclohexane > 2-methyl-4-pentanone > 2-ethylhexyl acetate > chlorobenzene > benzene > xylene.