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Solvent Extraction of La^{3+} with Ethylenediamine-N,N'-ditetradecyl-N,N'-diacetic Acid (EDDAT) in Dichloromethane

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Abstract: Ethylenediamine-N,N'-ditetradecyl-N,N'-diacetic acid (EDDAT) was synthesized for the solvent extraction of La^{3+} . EDDAT was prepared from ethylenediamine-N,N'-diacetic acid (EDDA) and tetradecyl bromide in a basic n-amylalcohol-ethanol-water solvent system. The structure of this new extracting reagent was identified according to spectroscopic data, i.e. ^{13}C NMR, ^1H NMR, and elemental analysis results. The solvent extraction of La^{3+} with EDDAT in dichloromethane was studied as a function of parameters of the aqueous and organic phases. The optimal extraction conditions were determined. The extraction yield increased with a decrease in hydrogen ions in the aqueous phase. Stripping of the La^{3+} loaded organic phase was achieved with HCl aqueous solution. The effect of stripping as a function of the HCl concentration was also studied.

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