



URANIUM EXTRACTION FROM ORES WITH SALICYLIC ACID
I- URANIUM EXTRACTION FROM INPUT PHOSPHATE ORE OF ABU-
ZAABAL PHOSPHATE PLANT, EGYPT
II- URANIUM EXTRACTION FROM EL-ATSHAN PRIMARY ORE,
EASTERN DESERT, EGYPT

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Abstract

I- Salicylic acid has been tested (for environmental importance) to extract U from input phosphate ore of Abu-Zaabal phosphate plant, Egypt prior to its processing for production of phosphatic fertilizers.

Uranyl ion forms with this acid three stable complexes; namely $[\text{UO}_2\text{Sal}]^0$, $[\text{UO}_2\text{Sal}_2]^{2-}$ and $[\text{UO}_2\text{Sal}_3]^{4-}$ depending on the total uranyl and salicylic acid concentrations and their ratios.

Study of relevant extraction factors revealed however that, the extraction process is controlled by the amount of salicylic acid used, alcohol/aqueous ratio, solid/liquid ratio and time of agitation. The obtained results showed that uranium is selectively leached by the application of such a leaching reagent.

In order to recover U from the obtained pregnant leach liquor, the latter is adjusted by ammonia to pH 5-6.5, where the crystalline ppt of $\text{NH}_4[\text{UO}_2\text{Sal}_3] \cdot 4\text{H}_2\text{O}$ has been formed. This precipitation has been carried out after concentrating the obtained pregnant leach liquor by its recycle for U extraction from new ore batches. The precipitated ammonium uranyl trisalicylate is calcined at 500°C for obtaining pure orange yellow trioxide (UO_3) powder.