Title: **Application of Commercial Adsorbent for Rare earth elements - Uranium Mutual Separation and Purification**

Article Type: Research Paper

Keywords: uranium separation, lewatit mono plus M500, purification of REEs concentrate, monazite mineral

Corresponding Author: Dr Ahmed Orabi

Corresponding Author's Institution: Nuclear materials authority

**E-mail of corresponding Author: A\_orabi\_chem@yahoo.com**

**Telephone of corresponding Author:002-01006306831**

**This paper is not submitted or published before**

**Application of Commercial Adsorbent for Rare earth elements - Uranium Mutual Separation and Purification**

 The rare earth concentrate produced after sulfuric digestion of Egyptian crude monazite mineral (grade 50%) contains normally trace amount of uranium. The big concern in rare earth industry was the separation of uranium from rare earths. Beside removal of uranium as radioactive contaminates from REEs products, its recovery would increase to its importance in the field of nuclear energy. The present work was oriented for a technological separation of uranium from rare earths sulfate liquor utilizing lewatit mono plus M500 ion exchange resin as anion exchanger. The parameters studied in batch sorption mode were pH, contact time, initial uranium concentration and adsorbent dosage. The obtained equilibrium data were found to be satisfactory fitted with Langmuir isotherm. The maximum adsorption capacity of lewatit mono plus M500 for uranium (VI) from rare earths sulfate liquor was evaluated to be 40.65 mg/g at 25°C. Also, elution process of uranium has been achieved at 2M NaCl / 1M HCl solution/g of lewatit mono plus M500 after 30 min contact time. From the latter, a marketable pure product of rare earth oxide was prepared in addition to pure sodium di-uranate containing total uranium content of the starting REEs cake. The rare earths were precipitated from the effluent by oxalic acid to produce REEs oxalate for ignition to RE2O3.