



## **Laser Fluorimetric Determination of the Extracted Uranium from Industrial Grade Phosphoric Acid and Phosphate Rocks Using Natural Adsorbent, EWS**

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### **ABSTRACT**

*Laser Fluorimetric determination of the complete reduced U(IV) using Zn metal was applied on industrial grade phosphoric acid and phosphate rocks after separation using a low cost natural cationic adsorbent of Egyptian white silica sand (EWS). The determination process was performed after prior separation of cationic uranyl complex. This method was applied to overcome the interfering problems of P(V), Fe(III) and Ca(II). For maximum loading efficiency, the adsorption parameters such as pH, amount of adsorbent, contact time, temperature and initial U(IV) concentrations were investigated via batch process. On the other hand the effective elution factors such as eluting agents, ratio of NaCO<sub>3</sub> with NaHCO<sub>3</sub>, volume of 30% H<sub>2</sub>O<sub>2</sub>, contact time and temperature were also investigated. A selective elution of oxidized U(VI) was carried out by using 1M mixture of NaCO<sub>3</sub> and NaHCO<sub>3</sub> solution in the presence of (0.8 mL/10 mL) of 30% H<sub>2</sub>O<sub>2</sub> as an oxidizing agent. The maximum U loading capacity (75 mg g<sup>-1</sup>) was attained at the resulted optimum loading and elution conditions.*

**Keywords:** U(IV), U(VI), Egyptian white silica sand (EWS), Industrial grade phosphoric acid, Phosphate rocks, Loading and Elution.

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