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Donia et al.

**STUDIES ON THE UPTAKE BEHAVIOR OF SiO₂-CONTAINING RESIN FOR
Ni²⁺, Cu²⁺ AND Hg²⁺ FROM THEIR AQUEOUS SOLUTIONS**

A.M. Donia; A.A. Atia and A. El-Said

Faculty of Science, Minufiya University, Shibin Elkom, Minufiya, Egypt.

ABSTRACT

Glycidyl methacrylate/divinyl benzene (GMA/DVB) resin containing SiO₂ was prepared and loaded with ethylenedamine (en). The resin obtained was also investigated with different analytical and spectral methods. The amine group content for resin was evaluated. The resin was used for recovery of Cu²⁺, Ni²⁺ and Hg²⁺ from their aqueous solutions. The uptake behavior was studied under different experimental conditions including contact time, Concentration of metal ions and PH. The new synthesized chelating resin containing metal oxide display higher uptake values towards the investigated metal ions than the metal oxide free resins. The elution of the loaded resins was carried out using different concentrations of HNO₃ and H₂SO₄ for Cu²⁺ and Ni²⁺. However, urea and acidified thiourea with 0.5 N H₂SO₄ were used as elements for Ag⁺ and Hg²⁺. The resins show good durability up to 5 cycles. The mechanism of interaction between metal ions and active sites on the resin were suggested and the adsorption process was found to follow langmuir isotherm. The embedded oxide was found to play an effective role in increasing the active sites concentration and therefore the maximum capacity.

Keywords: *SiO₂; resin and ethylenedamine*