

## **Adsorption of copper from aqueous solution by chitosan using molecular imprinting technology**

### **ABSTRACT**

In nature chitosan is a plentiful polymer with high heavy metal ion uptake capacity due to chitosan's functional groups that chelate with the positive surfaces of heavy metal ions. In this study, epichlorohydrin was used as a crosslink to prepare the copper-imprinted chitosan as a pattern to enable the selectivity property and increase adsorption capacity. The effects of the cross-linker, pH, initial concentration and time were examined in this study to identify the optimum amount of each to remove copper metal ions from waste water by imprinted chitosan. This composite was characterized by Fourier-transform infrared spectroscopy (FTIR) test to determine the existence of copper ions in chitosan cross linked with epichlorohydrin. Scanning electron microscopy (SEM) tests were also done to compare the surfaces of cross linked chitosan and the removal of copper by imprinted chitosan. pH adsorption was tested from 3 to 7 and the initial concentration and time investigated were between 10 and 100 mg/l and 0 and 120 minutes respectively. The maximum capacity to adsorb was found to be at pH 7, initial concentration of 100mg/l at 90 minutes with 0.1 gr chitosan. Ultimately, the maximum adsorbent amount achieved for effective Cu(II) removal was 74.37 mg/g

**Keyword:** Adsorption; Cooper; Chitosan; Imprinting