

SLIMANE KADOUCHE, HASSIBA ZEMMOURI, KACEM BENAOUMEUR, NADIJB DROUCHE, PATRICK SHARROCK, HAKIM LOUNICI

**Metal Ion Binding on Hydroxyapatite (Hap) and Study of the Velocity of Sedimentation**

(2012) Procedia Engineering, Volume 33, 2012, Pages 377-384

<http://dx.doi.org/10.1016/j.proeng.2012.01.1217>

**ABSTRACT:**

The objective of this study is to develop by chemical synthesis of hydroxyapatite, an adsorbent powder to be used for the decontamination of waters by metal ions. Moreover, the effectiveness of chitosan produced from shrimp waste to flocculate turbid suspensions produced from the previous treatment is evaluated. The study of adsorption of Cu and Zn on hydroxyapatite showed a removal efficacy of 88-95% with relatively fast kinetics. Between the two metals, copper presents the higher adsorbing tendency. However, the use of hydroxyapatite, as an adsorbent, generates turbid suspensions which are hardly settleable. For this reason we evaluated the effectiveness of chitosane to flocculate the hydroxyapatite turbid suspensions. The outcome of this study is the great efficacy exhibited by the chitosan to remove the turbidity of various samples of hydroxyapatite of different fractions. The elimination rate after 30 minutes of settling in all cases exceeds 98%. The effect of the dose of chitosane and the effect of pH on the coagulation-flocculation process were studied and the respective results show that the optimal doses range from 0.2 to 2 mg of chitosane/L corresponding at optimal pH between 6 and 7.