

Copper removal in solution by sawdust: kinetic and thermodynamic study

T. CHOUCANE, A. Boukari, A. Bendjama, O. Khireddine, S. chibani

Abstract: This study presents the results obtained when okoumé sawdust is used for the removal of copper contained in wastewater. The tests show that one gram of sawdust can fix 29.56 mg of copper, according to the Langmuir model with kinetics of the pseudo first order where the time of the pseudo equilibrium is reached after 40 minutes of agitation. The elimination is envisaged in batch mode, at 20 ° C, a stirring speed of 200 rpm, at pH value of 4.4 and a particle size between 500 μm $\leq \text{Ø} < 700 \mu\text{m}$. Measured results also reveal that external diffusion controls the speed of the overall process of adsorption and diffusion into the pores is not the only mechanism limiting kinetics. The thermodynamic study shows that this sorption is spontaneous, exothermic and that no changes have been made in the structure of the sawdust.

Keywords : Copper, adsorption, sawdust, water, pollution