



Sorption of mercury (II) from aqueous solution by Okoume sawdust

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ABSTRACT

In the present study, Okoume sawdust is proposed as a novel sorbent for the removal of mercury (II) from aqueous phase. The operating variables studied were contact time, stirring speed, temperature, solution initial pH and sawdust particle size. The sorption of mercury (II) by Okoume sawdust increased with an increase in contact time, stirring speed and initial solution pH and decreased with an increase in temperature and sorbent particle size. Equilibrium isotherm data were analyzed using the Langmuir and the Freundlich isotherms. The Langmuir model yields a much better fit than the Freundlich model. The maximum sorption capacity of Okoume sawdust was 112.36 mg/g at 20°C. Thermodynamic parameters such as free energy, enthalpy and entropy of sorption have also been calculated. The negative values of the change in free energy and enthalpy indicated that the sorption is spontaneous in nature and exothermic. These results demonstrate that Okoume sawdust is very effective for the removal of mercury(II) from aqueous solutions.

Keywords: Sorption; Valorise of waste; Okoume sawdust; Kinetics; Isotherm; Water treatment; Mercury (II)

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