Sorption and kinetic properties of 2-(biphenyl-4-yl)-2-oxoacetaldehyde oxime towards Zn(II) ion

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ABSTRACT

This study contains the synthesis of 2-(biphenyl-4-yl)-2-oxoacetaldehyde oxime (keto oxime) and its sorption studies towards Zn(II) ions in aqueous solution. In batch sorption experiments, the experimental results show that keto oxime is an effective sorbent towards Zn(II) ions. Therefore, the effects of solution pH, sorption time, temperature, and initial metal ion concentration on Zn(II) sorption were investigated. Maximum Zn(II) ions removal was obtained at 65°C, for 75 min and at pH 5.0 for keto oxime and the batch sorption capacity was found as 1.00 mmol/g. The characteristics of the sorption process for Zn(II) ions were evaluated by using the Langmuir and Freundlich adsorption isotherms. Also, thermodynamic parameters, i.e. ΔG, ΔS, and ΔH were calculated for the system.

Keywords: Keto oxime; Transition metals; Sorption; Isotherms