



## Study of the Effect of Temperature in the Remotion of NI (II) on African Palm Bagasse (*Elaeisguineensis*)

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**Abstract:** Heavy metals are pollutants released into the environment, and are highly available as a result of the increase in different activities where they are used, so their presence in aqueous media causes worldwide concern, as they pose a serious threat to ecosystems by being non-biodegradable, toxic and carcinogenic to living beings. The present work evaluated the effect of temperature and pH on the capacity of African palm bagasse (*Elaeisguineensis*) to remove nickel present in aqueous solutions, studying the kinetics, equilibrium and thermodynamic parameters that determine the process. For this purpose, it was tested in batch system by varying the temperature and pH of the solution, keeping constant the agitation rate (200 rpm), adsorbent dose (5 g \*100ml<sup>-1</sup>), initial metal concentration (100 ppm) and the size of the adsorbent (0.1 mm). It was found that the best adsorption conditions were 54.9 °C and pH 5.93, obtaining a maximum adsorption capacity of 17.01 mg g<sup>-1</sup> corresponding to a removal of 85.14 %. The kinetic model that best fits the experimental data was Elovich and the isotherm that best describes the process is Freundlich, with R<sup>2</sup> of 0.9967 and 0.999, respectively. The determined thermodynamic parameters ( $\Delta H^0$ ,  $\Delta G^0$ ,  $\Delta S^0$ ) suggest that the process is favorable, spontaneous, endothermic and reversible under certain operating conditions. The results show that palm bagasse is a good precursor of Nickel adsorbent.

**Keywords:** Freundlich isotherm, Elovich model, thermodynamic parameters, adsorption thermodynamics.

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