



Thermodynamic, Kinetic and Isotherm Studies on the Removal of Copper (II) ION using Activated Nano Carbon

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Abstract : In this study activated carbon prepared from *Solanum trilobatum* was used as adsorbent to remove copper (II) ion from industrial waste water. A series of experiments were conducted in batch system to evaluate the effect of the variables. The effect of pH, initial copper concentration dose of adsorbents and contact time were considered. Adsorption data were fitted to Langmuir, Freundlich, Temkin, Hurkins-Jura, Halsay, Radlich-Peterson, Dubinin-Radushkevich, Jovanovic and BET equations. The kinetics of adsorption is found to be second order with intra particle diffusion as the rate determining step. The various thermodynamic parameters like ΔH° , ΔS° , and ΔG° were analyzed to observe the nature of adsorption. Generally, these results indicated that ASTNC can be used as an effective and low cost adsorbent for the removal of copper (II) ions from aqueous solutions.

Keywords : Adsorption, Copper(II)ion, Activated *SolanumTrilobatum* Nano Carbon, Isotherm, Kinetic and Thermodynamic studies.

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