



## Aqueous Phase Removal of Phenol using Thermally Activated *Xanthium strumarium* Bioadsorbent

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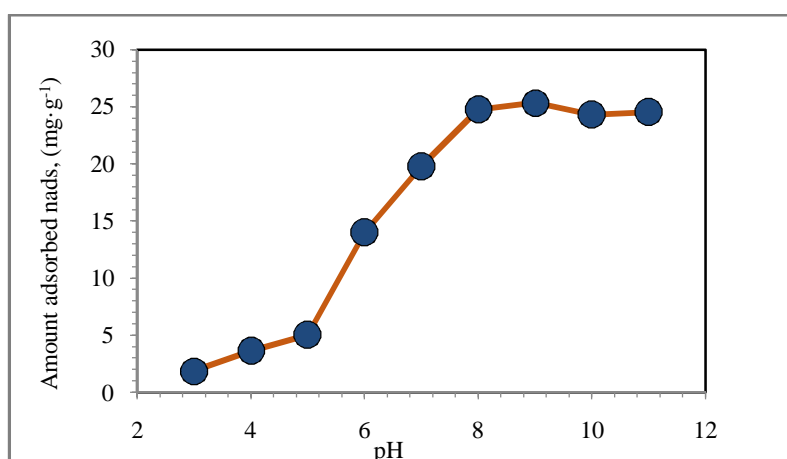
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### ABSTRACT

Phenol and its derivatives are carcinogenic and harmful pollutants due to stability and persistence nature. Besides other methods bio-adsorption is found to be efficient and economical way to removal phenolic pollutants from their aqueous phase. In this study, thermally activated *Xanthium strumarium* based bio-adsorbent is developed and characterized by BET, SEM, FTIR, XRD and  $pH_{ZPC}$  methods. These studies confirm highly microporous nature along with basic surface of the bioadsorbent. The adsorption analysis is done to attain optimum contact time, pH and the dependence of adsorption capacity on initial concentration and temperature. The contact time and optimum pH of the adsorption of phenol is found to be 30 minutes and pH 7, respectively. The adsorption capacity of phenol on XPT1 is found to increase with increases in initial concentration and it decreases with increase in temperature. The adsorption isotherm modelling is found to be well fitted with Langmuir model at all temperatures, suggesting chemical interactions between phenol and XPT1 adsorbent.

### Graphical Abstract



Variation of Adsorption capacity with pH for Phenol on XPT1.

**Keywords:** Phenol, *Xanthium Strumarium*, Aqueous phase, Bioadsorption, Langmuir isotherm.