

## **Removal of organic contaminant from aqueous solution using magnetic biochar**

### **ABSTRACT**

In this study, raw biochar and magnetic biochar were prepared as adsorbent to remove 4-nitrotoluene from aqueous environment. Magnetic biochar (MB) was successfully synthesized by using raw biochar from palm kernel shell (PKS), ferrous chloride and ferric chloride for removal of 4-nitrotoluene. Ferrous chloride and ferric chloride used as magnetic medium and mix with biochar by chemical co-precipitation method. Characteristics of these adsorbent were analyzed with Fourier Transform Infrared (FTIR), Scanning Electron Microscope (SEM) and BET surface area. Performances of both modified and raw biochar were compared to evaluate the effectiveness of adsorption capacity. It is found that magnetic biochar performed with better result compared to raw biochar in removal of 4-nitrotoluene from aqueous media. Langmuir and Freundlich isotherms were applied to describe the adsorption characteristics and the Langmuir isotherm describes the adsorption phenomena in this study much better than the Freundlich isotherm.

**Keyword:** Magnetic; Biochar; Palm kernel shell; Adsorption; 4-nitrotoluene; Organic pollutant