



**Adsorption of Fluoride from Aqueous Phase by  
Bombax Malabaricum Carbon (Kaza's Carbon)**

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**ABSTRACT**

*The endeavor of this research work is to intend and develop a novel gainful strategy for fluoride removal, applicable to rural areas of developing countries. This contribution presents results concerning to the adsorptive studies carried out on removal of fluoride by low cost adsorbent Activated Kaza's carbon prepared from Bombax malabaricum (BMC). Batch sorption studies were executed and the results showed that biosorbent demonstrated ability to adsorb the fluoride. The dependence of fluoride adsorption on various factors such as pH of the solution, adsorbent dose and concentration of the fluoride were investigated. Sorption interaction of fluoride onto BMC obeyed the first order rate equation. Experimental results showed good fit with the Langmuir's adsorption isotherm model. The removal of fluoride was found to be dependent on the pH of the aqueous solution and the adsorption of fluoride was observed to be greater at pH 7. Maximum fluoride sorption was observed at operating 30°C operating temperature. Considerable changes in the FT-IR spectra was observed after fluoride sorption which is investigative of the involvement of surface functional groups associated with hydrogen atoms in the carboxylic groups in sorption interaction. From X-ray photoelectron spectroscopy (XPS) analysis a marginal increase in the area for the binding energy peak at 287.4 eV was observed which could be due to the formation of -C-F- bonds.*

**Keywords:** Biosorption; BMC; Biosorbent; Kinetics; Adsorption-desorption; Isotherms; SEM; FT-IR; XPS.

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