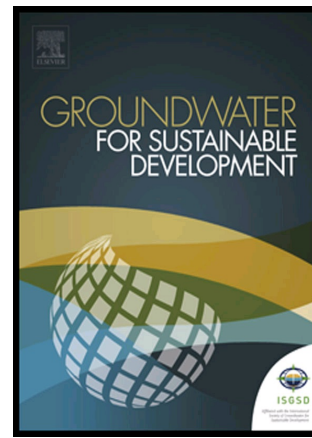


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**Effective removal of fluoride from water by coconut husk activated carbon in fixed bed column: experimental and breakthrough curves analysis**

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**Abstract**

The bio-waste coconut husk was converted into activated carbon through merely treating with KOH and thus obtained activated carbon was characterized by XRD, TGA, SEM and TEM analysis. The prepared activated carbon having very high surface area (1448 m<sup>2</sup>/g) was utilized as an adsorbent for the removal of fluoride (F<sup>-</sup>) from water. Fluoride adsorption experiments were performed on the laboratory-scale column at different bed height, flow rates, and F<sup>-</sup> concentrations to explore the potential of prepared adsorbent and it was found to be very efficient adsorbent as it showed high adsorption capacity 6.5 mg/g at pH 5, F<sup>-</sup> concentration 10 mg/L and adsorbent dose 1.4 g/L. Various breakthrough models i.e. Bed Depth Service Time (BDST), Thomas and Yoon–Nelson were applied on breakthrough data to analyze the breakthrough curves. The high R<sup>2</sup> values obtained for the BDST model revealed its validity for this

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