

## **Decolorization of Synthetic Textile Wastewater by Adsorption onto Corn Stalk Activated Carbon**

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### ***Abstract***

The adsorption technique is one of the most widely used methods for effectively removing color. In the present investigation, easily available raw material, corn stalk, has been used to produce an activated carbon act as the adsorbent. This paper presents an experimental and numerical study to evaluate the performance of corn stalks for color removal from synthetic textile wastewater. The procedure is conducted by treating the synthetic textile wastewater using corn stalk activated carbon under different operational parameters. In order to produce activated carbon, corn stalks were treated by chemical activation using acidic treatment, 0.1 M hydrochloric acid (HCl). The development of porosity on the corn stalk surface is analyzed by Brunauer – Emmett- Teller (BET) analysis. The influence of two operating variables where adsorbent dosage (1, 2, 3, 4 g) and time taken (30, 60, 90 minutes) were studied. The result shows that the percentage of color removal increased with the increase of adsorbent doses and contact time until it reached a maximum point, and the percentage remained constant. The best condition of a parameter that gives maximum adsorption of color onto corn stalk activated carbon was at 3 g of adsorbent doses. The time taken was 60 minutes, resulting in an 81.67% degradation of color.

***Keywords:*** Corn stalk; Activated carbon; Chemical activation; Braeuer-Emmet-Teller analysis; Adsorption; Textile wastewater.