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## Adsorption behavior of Acid Blue 62 from water on to coconut coir pith

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### Abstract

Colored wastewater disposed to surface water deteriorates the aesthetic values of the water received after mixing and prevents their recreational and economic use. Dyes are compounds that are difficult to degrade biologically and some are toxic.

Acid Blue 62 is an anionic dye. Anionic dyes are extensively used in dyeing process and are highly soluble in water. Hence, their removal from waste water is highly difficult. The adsorption process provides an attractive alternative for the treatment of dye-contaminated water, especially if the adsorbent is inexpensive. Natural materials from agriculture, having the ability to adsorb acidic dyes are potentially more economical. Coir pith is one such bio material.

This research was carried out to find the applicability of coir pith as a low cost adsorbent for removal of acid blue 62 from aqueous solutions. Waste coir pith was collected from local coconut coir industries and soluble and colored components were removed by washing with water. Then it was oven dried for 4 hrs at 1200 °C and it was ground and sieved to get the particle size of 150-250 µm. Adsorption of acid blue 62 on coir pith has been investigated in a series of batch adsorption experiments. Effects of process variables such as contact time, concentration of the dyes, adsorbent dose, temperature and pH have been studied to understand the kinetic and thermodynamic parameters of the process. The optimum solution pH for adsorption was found to be in the pH range of 1.5 - 3. Kinetics of adsorption obeyed second order rate equation. It was found that coir pith yields adsorption capacity of 27.0 mg g<sup>-1</sup>, 27.2 mg g<sup>-1</sup>, 28.1 mg g<sup>-1</sup> at room temperature, at 400 °C and 550 °C respectively.

**Keywords:** Acid Blue 62, adsorption, coconut coir pith