



Industrial wastewater decolorization by activated carbon from *Ziziphus lotus*

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ABSTRACT

This work deals with the adsorptive treatment of textile wastewater by novel activated carbon prepared from *Ziziphus lotus* leaves. The effect of experimental parameters (pH, adsorbent dosage, dye concentration, adsorption time, and temperature) and the optimal adsorption conditions for the degradation of the wastewater were investigated. After 5 h of treatment, the results were 97.41% elimination of color and 73.96% elimination of chemical oxygen demand. The kinetic data for the adsorption process were found to fit pseudo-second-order rate equations. The Langmuir isotherm model turned out to be the most accurate one while the thermodynamic study revealed the adsorption to be endothermic and spontaneous. To explain the effectiveness of the treatment, the activated carbon was characterized by scanning electron microscopy, Brunauer–Emmett–Teller, X-ray diffraction, and Fourier-transform infrared spectroscopy.

Keywords: Textile wastewater; Adsorption; *Ziziphus lotus*; COD; Turbidity

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