Ficus carica as Adsorbent for Removal of Phenol from Aqueous Solutions: Modeling and Optimization

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Abstract : Phenol and its derivatives are organic compounds utilized in the chemical industry. They are introduced into the environment by accidental spills and the illegal release of industrial and municipal wastewater. Phenols are organic intermediaries that are considered potential pollutants. Adsorption is one of the purification and separation techniques used in this area. Algeria annually produces 131000 tons of fig; therefore, a large amount of fig leaves is generated, and the conversion of this waste into adsorbent allows the valorization of agricultural residue. The main purpose of this present work is to describe an application of a statistical method for modeling and to optimize the conditions of the phenol adsorption from agricultural by-products, locally available (fig leaves). The best experimental performance of phenol elimination on the adsorbent was obtained with: Adsorbent concentration (X_2) = 200 mg L^{-1}; Initial concentration (X_3) = 150 mg L^{-1}; Speed agitation (X_1) = 300 rpm.