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The Batch Method Approach for Adsorption Mechanism Processes of Some Selected Heavy Metal Ions and Methylene Blue by Using Chemically Modified Luffa Cylindrica

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Abstract : Adsorption is a low cost, efficient and economically viable wastewater treatment process. Utilization of this treatment process has not been fully applied due to the complex and not fully understood nature of the adsorption system. To optimize its process is to choose a sufficient adsorbent and to study further the experimental parameters that influence the adsorption design system. Chemically modified adsorbent, Luffa cylindrica, was used to adsorb heavy metal ions and an organic pollutant, methylene blue, from aqueous environmental solution at varying experimental conditions. Experimental factors, adsorption time, initial metal ion or organic pollutant concentration, ionic strength, and pH of solution were studied. The experimental data were analyzed with kinetic and isotherm models. The antagonistic effect of the methylene and some heavy metal ions were recorded. An understanding of the use of this treated Luffa cylindrica for the removal of these toxic substances will establish and improve the commercial application of the adsorption process in treatment of contaminated waters.

Keywords : adsorption, heavy metal ions, Luffa cylindrica, wastewater treatment
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