



Adsorption of Astrazon Blue FGRL onto sepiolite from aqueous solutions

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Received 21 February 2011; Accepted 7 September 2011

ABSTRACT

In this study, adsorption of Astrazon Blue FGRL on sepiolite (meerschaum) from aqueous solution was investigated using different parameters like initial dye concentration, temperature, contact time and solution pH. The obtained results were then compared for all the parameters. At the end of batch adsorption studies, the equilibrium time, optimum pH and temperature were 90 min, 7 pH and 293 K, respectively. Adsorption isotherm of Astrazon Blue FGRL on sepiolite (meerschaum) was determined and correlated with common isotherm equations such as Langmuir and Freundlich models. The Freundlich model ($r^2 > 0.98$) appeared to fit the isotherm data better than the Langmuir model ($r^2 < 0.92$). The kinetic data for sepiolite (meerschaum) supported the pseudo-second-order model ($r^2 > 0.99$), through the first order kinetic model did not adequately fit the experiment values ($r^2 < 0.99$). SEM, XRD and FT-IR spectrum analyses were carried out. The obtained results showed that Sepiolite (meerschaum) can be an alternative low-cost adsorbent for removing dye from wastewater.

Keywords: Sepiolite; Adsorption; Isotherms; Kinetic models; Astrazon Blue FGRL

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