Removal of cationic methylene blue dye from aqueous solution by modified montmorillonite

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Abstract. In this work, we proceeded to the preparation of cetyltrimethylammonium bromide pillared montmorillonite from deposits of Maghnia in western Algeria. These materials have been tested in the Methylene Blue adsorption. The effects of the various parameters such as the contact time, solution pH, adsorbent dosage and temperature on the Methylene Blue adsorption were investigated and were found: 4 hours, pH 13, 1 g/L and room temperature, respectively. The results obtained showed that the adsorption kinetics could be well described by the pseudo-second order kinetic model, cetyltrimethylammonium bromide pillared montmorillonite gave a better adsorption capacity compared to the starting montmorillonite and the thermodynamic results indicated an exothermic and a spontaneous process.

Keywords: Adsorption, Methylene Blue, CTAB intercalated clay.