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Removal of methylene blue using acid and heat treatment of clinoptilolite

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ABSTRACT

The adsorption of methylene blue from aqueous solution onto clinoptilolite has been studied under various experimental conditions. Heat treatment and acid treatment have also been applied to modify the clinoptilolite. It is found that heat treatment and acid treatment can significantly change the adsorption capacity. The treatment of clinoplites has the higher adsorption capacity than untreated ones. The adsorption data have been analyzed using Langmuir and Frendlich isotherms. The results indicate that the Langmuir model provides the better correlation of the experimental data. Isotherms have also been used to obtain the thermodynamic parameters such as free energy, enthalpy and entropy of adsorption. For heat treatment of clinoptilolite, adsorption of methylene blue is endothermic reaction with ΔH_{ads} at 50.67 kJ/mol.

Keywords: Clinoptilolite; Methylene blue; Adsorption; Modify

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