

Removal of a cationic dye using deacetylated chitin (chitosan)

Abstract

The removal of a cationic dye which was crystal violet using various degrees of deacetylated chitin (chitosan) has been observed in this study. The degree of deacetylation (DD) studied were 25.54% (w/v), 27.22% (w/v) and 35.02% (w/v). To evaluate the nature of adsorption, Langmuir, Freundlich and D-R isotherm models were used. Good correlation for the three isotherm models with D-R giving the highest correlation was obtained. Chitosan consists of both monolayer and heterogenous adsorption sites. The higher correlation for the Freundlich isotherm as compared to Langmuir concludes that the surface of the 3 types of chitosan contains mostly of small heterogenous adsorption patches. Based on the D-R model, the adsorption of both dyes onto three different types of chitosan was via ion-exchange.