

Removal of Cadmium(II) from Aqueous Solutions by using Chemically Modified Pods of Dalbergia Sissoo

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ABSTRACT

The rapid increase in industrialization has resulted in water pollution leading to severe health hazards. The effluents consisting of heavy metals are treated through the conventional methods which have one or another disadvantages like high cost, difficulty in regeneration, long time of action, high energy consumption and sludge formation. The development of alternative low cost technologies for waste water treatment have been in progress. The work is being done on study of adsorption of heavy metals on various low cost biomaterials since last few years which have been found to be of great potential for sequestering heavy metals from aqueous streams with low concentration and high volume. The present study has been made on Cd(II) removal from aqueous solutions by using NaOH treated pods of Dalbergia sissoo as abundantly available biomaterial. The kinetic and equilibrium studies have been made. The effect of various factors (such as pH, stirring speed, initial metal ion conc. contact time, adsorbent dose) have been found in batch experiments in their significant ranges. Adsorption behaviour has been studied by applying Freundlich and Langmuir isotherms. Thermodynamic studies have also been made through the experiments at various temperatures. The pods of Dalbergia sissoo in their chemically modified form show better results for sequestering Cd(II) from aqueous solution as compared with its raw form and can suitably be used as a cost effective alternative of commercially available adsorbents.

Keywords - Biosorption, biomaterial, heavy metals, wastewater.