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Adsorption of Cr (VI) by using low cost agricultural wastes sugarcane bagasse as an adsorbent from waste water

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In the present work, a low cost agricultural waste was used to remove hexavalent chromium- a carcinogenic pollutant from waste water. Batch mode experiments were conducted at different temperature (30 to 50 °C) to study the effects of pH, contact time, adsorbent dose and initial concentration of Cr (VI). The experimental data were analyzed by the Langmuir, Freundlich and Temkin models of adsorption. The Langmuir isotherm data showed better fit for all temperature and the monolayer adsorption capacity was found to be 0.964 mg/g at 40°C. Adsorption kinetics at different concentrations have been analyzed for pseudo-first-order and pseudo-second-order and the rate constant of adsorption for these kinetic models were calculated and it was found that pseudo-second-order kinetic model fitted very well to the experimental data. Different thermodynamic parameters, viz., ΔH° , ΔS° and ΔG° have been evaluated and their value indicates that the adsorption was feasible, spontaneous and endothermic in nature.

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