Removal of Cr(VI) from aqueous solution using fly ash of different sources

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ABSTRACT

The removal of Cr(VI) ions from aqueous solution using five different fly ash collected from different thermal power plants using batch mode is reported. The effect of different operating parameters on the selectivity and sensitivity is investigated. Kinetics studies are reported to understand the mechanistic steps of the adsorption process, and pseudo-second-order kinetic model is best suited for all the adsorbent used. Freundlich isotherm is better applicable compared to the Langmuir isotherm model. The sorption energy is calculated using Dubinin–Radushkevich isotherm indicated that the processes are chemisorption in nature. The thermodynamic parameters indicated the processes of the adsorption are spontaneous and endothermic.

Keywords: Fly ash; Freundlich isotherm; Rate kinetics; Sorption energy

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