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# ADSORPTION CHARACTERISTICS OF Cr(VI) ON CARBONIZED *Eupatorium adenophorum* SPRENG

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## Abstract

The potential use of a novel low-cost adsorbent, *Eupatorium adenophorum* Spreng, as a solution to remove Cr(VI) ions from aqueous was reported. Effects of various regulating parameters, such as pH value of reaction, adsorbent dosage and temperature, were investigated. To fit the adsorption equilibrium data, Langmuir isotherm and Freundlich isotherm were invoked. Additionally, thermodynamic parameters of the adsorption process, such as $\Delta G$, $\Delta S$ and $\Delta H$, were also calculated. The results indicated that carbon temperature 823 K and carbon time 45 min were the optimum conditions to prepare the adsorbent for the removal of Cr(VI), and the condition of pH=1 maximized the adsorption capacity. Cr(VI) was reduced to Cr(III) in the adsorption process. Kinetics studies showed that the adsorption system may be described by the pseudo-second-order equation kinetic model. The Freundlich isotherm adsorption model showed the best fit with experimental data ($R^2$=0.9465) and the overall adsorption process was exothermic and spontaneous.

*Keywords:* adsorption, Cr(VI), *Eupatorium adenophorum* Spreng, kinetic, thermodynamics

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