Environmental Engineering and Management Journal

January 2010, Vol. 9, No.1, 57-66
http://omicron.ch.tuiasi.ro/EEMJ/

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EQUILIBRIUM AND KINETIC STUDIES OF ACID DYE SORPTION ONTO SOILS FROM IASI AREA

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Abstract

The aim of this study was to investigate the Congo Red (CR) sorption behavior onto six soils from Iaşi area, with different characteristics. The rate of sorption of Congo red dye molecules from aqueous solution by soil was studied in batch conditions. The rate of sorption was very rapid in the first 5-10 minutes and reached a maximum in 20 minutes. Kinetic modeling analysis of the pseudo-first-order, pseudo-second-order, intraparticle diffusion and Elovich equations reveals that the pseudo-second order equation was the most appropriate model used to describe of CR transport onto the six soils.
The equilibrium adsorption data were interpreted using Langmuir, Freundlich, Dubinin–Radushkevich, Temkin and Halsey isotherm models. Analysis of sorption results obtained at 30^0C showed that the sorption pattern on studied soils followed the Freundlich isotherms. It was indicative of the heterogeneity of the sorption sites on the soil particles.

Key words: Congo Red, soil, sorption, kinetic modelling, isotherm

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