

Removal of Cr⁶⁺, Co²⁺ and Ni²⁺ Ions from Aqueous Solutions by Algerian *Enteromorpha compressa* (L.) Biomass

Authors : Asma Aid, Samira Amokrane, Djamel Nibou, Hadj Mekatel

Abstract : The marine *Enteromorpha Compressa* (L.) (ECL) biomass was used as a low-cost biological adsorbent for the removal of Cr⁶⁺, Co²⁺ and Ni²⁺ ions from artificially contaminated aqueous solutions. The operating variables pH, the initial concentration C₀, the solid/liquid ratio R and the temperature T were studied. A full factorial experimental design technique enabled us to obtain a mathematical model describing the adsorption of Cr⁶⁺, Co²⁺ and Ni²⁺ ions and to study the main effects and interactions among operational parameters. The equilibrium isotherm has been analyzed by Langmuir, Freundlich, and Dubinin-Radushkevich models; it has been found that the adsorption process follows the Langmuir model for the used ions. Kinetic studies showed that the pseudo-second-order model correlates our experimental data. Thermodynamic parameters showed the endothermic heat of adsorption and the spontaneity of the adsorption process for Cr⁶⁺ ions and exothermic heat of adsorption for Co²⁺ and Ni²⁺ ions.

Keywords : enteromorpha Compressa, adsorption process, Cr⁶⁺, Co²⁺ and Ni²⁺, equilibrium isotherm

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