عنوان مقاله:

A kinetic and thermodynamic study of methylene blue removal from aqueous solution by modified montmorillonite

محل انتشار:

دوفصلنامه تحقیقات کاربردی در آب و فاضلاب, دوره 2, شماره 2 (سال: 1394)

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خلاصه مقاله:

In current study, sulfonic acid-functionalized ordered nanoporous Na+-Montmorillonite (SANM) has been utilized as the adsorbent for the removal of a cationic dye, methylene blue (MB), from aqueous solution using the batch adsorption technique under different conditions such as temperature, adsorbent dosage, initial dye concentration, contact time, and pH solution. The optimum sorption conditions were found as following: contact time 10 min, initial dye concentration 800 mg/L, adsorbent dose 0.3 g and temperature 25 °C. The results indicate that the process is pH independent. The sorption capacity was 500 mg/g for this dye. Different thermodynamic parameters i.e., changes in standard free energy, enthalpy, and entropy have also been evaluated. The ΔHads and ΔSads values are thus found to be +38240 (J/mol) and ΔSads138.43 J/K, respectively, while the ΔGads values is -3012.14 J in 298 K and it has been found that the reaction was spontaneous and endothermic in nature. On the other hand, Kinetic parameters have been investigated with pseudo first and second order. The result of experimental data indicates that pseudo .second order equation fit better than the other

کلمات کلیدی:

Na+-Montmorillonite Methylene blue Removal Kinetic Thermodynamic

لینک ثابت مقاله در پایگاه سیویلیکا: