



Adsorptive removal of fluoride from aqueous solution by a PES/LDH blend flat-sheet membrane

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ABSTRACT

Adsorption of fluoride by PES/LDH (layered double hydroxide) blend flat-sheet membrane was investigated. The SEM, AFM, and fluoride adsorption capacity of the membrane were evaluated. The addition of LDH led to a significant enhancement in the adsorption capacity of the membrane. The batch adsorption experiments demonstrated that the membrane effectively removed fluoride in a wide pH ranging from 2–10. The adsorption equilibrium could be established in 30 min, and the maximum adsorption capacity was 2.63 mg/g. The pseudo-second-order kinetics was observed for the adsorption process which followed the Langmuir-type adsorption isotherm. The membrane can be regenerated with 0.1 M NaOH. This work provides a new method to the adsorptive removal of hazardous substance in aqueous solutions.

Keywords: PES/LDH blend membrane; Fluoride; Adsorption; Removal; Kinetics

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