

عنوان مقاله:

The effect of ionic strength on the ammonium adsorption and desorption by Semnan clinoptilolite zeolite

محل انتشار:

دومین کنفرانس بین المللی ژئولیت ایران (سال: 1389)

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خلاصه مقاله:

The high affinity of zeolite for NH_4^+ and the possibility of releasing it over time have enabled them to be used as NH_4^+ and/or NH_3 adsorbents during composting, in poultry facilities and controlled-release NH_4^+ fertilizers. Understanding the adsorption and desorption processes in natural zeolite is necessary for effective utilization of natural zeolites as NH_3 and NH_4^+ adsorbents and consequently as controlled-release NH_4^+ fertilizers. The objectives of this study were to determine the adsorption isotherm and desorption kinetics of NH_4^+ by Semnan clinoptilolite zeolite in different ionic strength (0.03, 0.1 and 0.3 M NaCl) and identify empirical models that best describe the adsorption and desorption processes. The results showed that Initial NH_4^+ concentration and ionic strength significantly affected the amount of NH_4^+ adsorbed. A decrease in ionic strength resulted in greater amounts of NH_4^+ being adsorbed and therefore greater sorption efficiency at any given solution concentration. The experimental data could be well fitted by Freundlich, Langmuir, Temkin, Redlich-Peterson and Langmuir-Freundlich models.

کلمات کلیدی:

Natural Zeolite- ammonium-ionic strength- adsorption isotherm- desorption kinetic

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