

عنوان مقاله:

SCREENING OF OPERATING VARIABLES FOR AMMONIA REMOVAL FROM AQUEOUS SOLUTION BY
NATURAL ZEOLITE

محل انتشار:

دومین کنفرانس بین المللی نفت، گاز و پتروشیمی (سال: 1393)

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خلاصه مقاله:

Ammonia in petrochemical wastewater is one of the most hazardous water pollutants. Natural zeolite clinoptilolite has very high selectivity & capacity for ammonium cation sorption. It occurs in high abundances and rich mines of zeolite exist in different parts of Iran and thus are available more cheaply and with different sizing. The objective of this research was to study the efficiency of ammonia removal and the factor affecting to this process. Clinoptilolite was obtained from Sabzevar mines. The samples were grounded and sieved based on the U.S. standard mesh. Natural clinoptilolite was modified through treatment with various acid. Ammonia removal efficiency by HCl-zeolite modified was about 97.78%, compared to less than 29.59% by natural zeolite. Operating variables were: Zeolite size, pH, contact time, the amount of zeolite, inlet ammonia concentration, temperature, agitation and other cation (Ca²⁺). Plackett-Burman statistical method was used to screen the variables. Particles size, the amount of zeolite and contact time were found to be important for ammonia removal efficiency. Removal efficiency of ammonia increased with decrease in contact time and particles size for experimental design. It was found that the Sabzevar modified zeolite removed ammonia to 97.97% from aqueous solution. Then regeneration tests were done by contacting of 1.0 M NaCl solution. Regeneration efficiency of zeolite by NaCl solution was 81.57%.

کلمات کلیدی:

Ammonia adsorption, Natural zeolite, Plackett-Burman design

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