

Preliminary data on removal of ammonia from wastewater using metal oxide material derived from the quartz sand enrichment process

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Ammoniacal nitrogen (ammonia and ammonium) in agricultural wastewaters can promote eutrophication of receiving waters and be potentially toxic to fish and other aquatic life. Natural material (NM), metal oxide material derived from the quartz sand enrichment process have been successfully utilized for their ammonia removal efficiency.

The effect of contact time, pH and initial concentrations on the adsorption capacity of the adsorbent has also been investigated. It can be observed that as the size of sorbents particles gets lower, the adsorption capacity, as well as removal efficiency, gets higher. After pretreatment with 1 mol/L NaCl solution, maximum efficiency increments were observed 60.3 %. A comparison of mathematical model applied to the adsorption of ammoniacal nitrogen was evaluated for the Langmuir and Freundlich adsorption models.

The Freundlich adsorption isotherm corresponds well with the equilibrium adsorption data (R^2 varied from 0.98 to 0.99), while the Langmuir model was found to be mismatched.

Keywords: ammonia, natural material, adsorption, efficiency, wastewater.

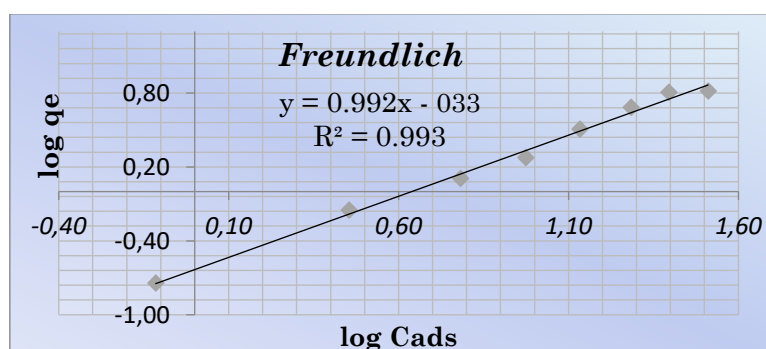


Figure 1. The linear Freundlich adsorption isotherm

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