

Pseudo Model for Phosphate Adsorption from Water onto Different Adsorbents

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Release of Phosphate from wastewater to resources of water constitutes the main risk for reduced water quality. At the same time Phosphate is an essential nutrient for all forms of life and can not be replaced by any other element. Current global reserves of Phosphate are expected to be exhausted in 50 years. Phosphate is mostly obtained from mined rock phosphate and there is a lack of alternatives to substitute it. Therefore, in this study the removal of Phosphate using different adsorbents was studied by conducting batch tests and kinetic adsorption model. The kinetic adsorption model was applied to predict the rate constant of adsorption based on pseudo equations. Thorough the investigation, pseudo first order and second order kinetic absorption model showed that the kinetic adsorption is consistent with the second order model from which it can be inferred that the mechanism of Phosphate adsorption is chemisorption.

Batch tests and kinetic adsorption models results showed that using the marble dust as adsorbent among other materials could be remove more than 93% of Phosphate from aqueous solution.

Keywords: adsorption of Phosphate, adsorption model, kinetic model, pseudo equation, batch Test