Adsorption characteristics of used brick for phosphorus removal from phosphate solution

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\begin{abstract}
Phosphorus is one of the main causes for eutrophication in waterbodies. The techniques for phosphorus removal from wastewater and waterbodies have become a hot topic in the world. In this study, used brick was chosen as an experimental adsorbent for removing phosphorus from phosphate solution, and the effects of brick dosage, pH, temperature and vibration time on phosphorus adsorption characteristics were evaluated. Results showed that phosphorus could be effectively removed using brick powders, and the optimum brick dosages were 4, 9 and 35 g/L in the presence of 5, 10 and 50 mg/L of phosphorus concentrations, respectively. A significant linear correlation ($R^2 = 0.9904$) between phosphorus concentration and optimum brick dosage was observed. The optimum condition was determined to be: brick dosage 20 g/L, phosphorus concentration 25 mg/L, pH 5, temperature 25$^\circ$C and vibration time 2 h.

\textbf{Keywords:} Used brick; Phosphorus; Adsorption; Influencing factors
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