

Removal Of Phosphorus From Wastewater Using Various Adsorbents

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Abstract

Phosphates are widely used in many industries such as food, agriculture, beverage and detergent. The excessive use of phosphorus has resulted in a large amount of pollution and environment problems, such as severe eutrophication which contributes to aquatic species death, algal bloom and parasite infections. Therefore, it has become a crucial need to eliminate phosphates with minimal environmental impact. Adsorption technique is the most widely employed method for removal of phosphates due to its environmentally safe process, simple and fast operation, and low cost. Developing new adsorbents with high adsorption capacities is of great significance for the effective adsorption and removal of phosphate from the environment. The present study aims to investigate the performance of different adsorbents (ZnO, TiO₂, zeolite and nCaO₂-AC) used for phosphate removal from water and wastewater. Batch adsorption studies were performed to evaluate the effects of adsorbent type, dosage, initial phosphate concentration, contact time, and pH on removing phosphate from aqueous solution. The obtained results indicated that phosphorus adsorption was strongly dependent on the surface area of adsorbent, adsorbent dosage and contact time. nCaO₂-AC exhibit higher phosphorus adsorption capacity (97%) compared with other materials used in this study.

References

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Figures

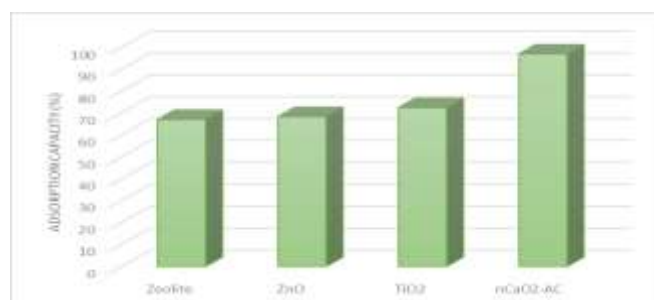


Figure 1: Comparison of different adsorbents used for phosphorus removal