

## A study of enlarged size of struvite crystals recovered from synthetic wastewater on pH effect

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**P**hosphorus (P) is essential to human, animals and plants. Nowadays, the amount of remaining phosphate rock reserves continuously decrease. Therefore, phosphate fertilizer in the form of struvite crystals, which obtain from wastewater, is another alternative method to mitigate this problem. The objective of this research aims to study effect of pH on enlarged size of struvite crystals recovered from wastewater. The pH experiments consisted of 3-different pH values which were 7.5, 8.5, and 9.5. Synthetic wastewater from anaerobic digestion system was used in a continuous reactor. There are 2 parts in the reactor used to enlarge the size of struvite crystal. The first part is the "reaction zone". Synthetic wastewater and magnesium chloride were fed at the bottom of the reactor and mixed together by stainless steel paddles at a slow mixing speed (20 rpm). Struvite crystals can be occurred in this part. For the second part of the reactor, it is "settling zone". Struvite crystals with

small sizes are settled down at the bottom of the reactor, which are returned to the first part of the reactor again. The system of this reactor is continuous flow, so struvite crystals in the first part of the reactor will be larger day by day. It was found that the maximum size of struvite crystals (~ 482.60  $\mu\text{m}$ ) and high efficiency of phosphorus recovery (close to 100%) were found at pH 8.5. Moreover, the removal efficiency of ammonia and magnesium were also high.

### Biography

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