Phosphorus removal and recovery from domestic wastewater in a novel process of enhanced biological phosphorus removal coupled with crystallization

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Phosphorus removal and recovery from domestic wastewater in a novel process of enhanced biological phosphorus removal coupled with crystallization

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Abstract: A new process of enhanced biological phosphorus removal coupled with crystallization recovery of phosphorus was developed here, where the feasibility of nutrients removal and potential for phosphorus recovery from domestic wastewater was further assessed. Results showed that an excellent nutrients removal and phosphorus recovery performance was achieved, in which the averaged COD, PO_4^{3-}-P and NO_3^--N removal efficiencies were 82.6%, 87.5% and 91.6%, respectively and a total of 59.3% of phosphorus was recovered as hydroxyapatite. What's more, crystallization recovery of phosphorus greatly enhanced the biological phosphorus removal efficiency. After the incorporation of the phosphorus recovery column via side-stream, the phosphorus concentration of effluent was significantly decreased ranging from 1.24 mg/L to 0.85 mg/L, 0.52 mg/L and 0.41 mg/L at the lateral flow ratios of 0, 0.1, 0.2 and 0.3, respectively. The results obtained here would be