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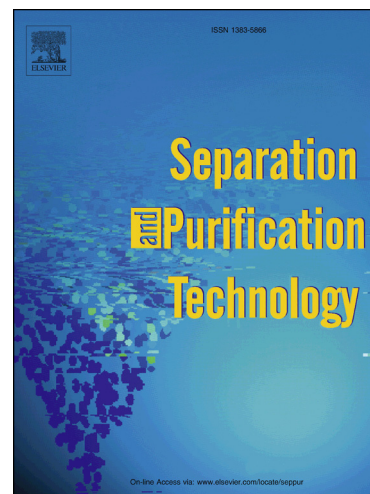
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Sludge disintegration using a hydrocyclone to improve biological nutrient removal and reduce excess sludge

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Abstract

Sludge disintegration can simultaneously improve biological nutrient removal and reduce excess sludge. A novel sludge disintegration method is proposed wherein a hydrocyclone is used for internal release of carbon source. The effect of hydrocyclone disintegration on mixed liquor recirculation was studied in a side-stream device of an anoxic/aerobic (A/O) wastewater treatment plant (WWTP). The mechanisms of hydrocyclone disintegration were comprehensively investigated, and its energy consumption was compared with those of other disintegration methods. The sludge disintegration degree (DD) reached 6.66-12.25% in the hydrocyclone processed mixed liquor recirculation, leading to a significant increase in the concentration of soluble chemical oxygen demand (SCOD), protein and polysaccharide. However, the sludge size distribution and the stable structure for microorganism aggregation and cell attachment changes only slightly. The sludge

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