



Performance of combined anoxic–aerobic fluidized bed bioreactors for the domestic wastewater treatment

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Received 23 February 2017; Accepted 20 August 2017

ABSTRACT

Fluidized-bed bioreactors (FBBRs) have attracted considerable interest as an alternative to the conventional suspended growth and fixed-film wastewater treatment processes because of the high performance efficiency. In this study, a laboratory-scale combined anoxic–aerobic FBBR with porous magnetic ceramics as carrier was developed to treat domestic wastewater. During the 120-d steady period, the hydraulic retention time decreased from 2.8 to 1.6 h; the effluent chemical oxygen demand (COD_{cr}), ammonia nitrogen (NH₄-N) and total nitrogen (TN) were below 25, 3.2 and 11.4 mg/L, respectively. The results demonstrated that the COD_{cr}, NH₄-N and TN removal efficiencies were 15%–20% higher than other biologic processes. Furthermore, near-complete removal of excess sludge was obtained, the system sludge yield coefficient of the system was 0.233 g VSS/g COD_{cr} far less than the case with other biologic processes.

Keywords: Anoxic–aerobic; Domestic wastewater; Fluidized-bed bioreactor; Porous magnetic ceramics

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