

عنوان مقاله:

Kinetic Evaluation of Simultaneous CNP Removal in an up-Flow Aerobic/Anoxic Sludge Fixed Film (UAASFF) Bioreactor

محل انتشار:

فصلنامه انرژی و محیط زیست ایران، دوره 5، شماره 3 (سال: 1393)

تعداد صفحات اصل مقاله: 14

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خلاصه مقاله:

The kinetics of simultaneous removal of carbon, nitrogen and phosphorus from a synthetic wastewater in an innovative up-flow aerobic/anoxic sludge fixed film (UAASFF) bioreactor was investigated. The kinetic analysis was performed using the experimental data obtained in an earlier study where the UAASFF bioreactor was examined under different operating conditions by changing three independent variables, HRT, COD:N:P ratio and aeration time. In the analysis, different kinetic models (Monod, first-order, second-order and Stover-Kincannon models) were evaluated. The maximum removal efficiency of COD, total nitrogen (TN) and phosphorus (TP) were obtained to be 95.42, 79 and 79.1 %, respectively. All the models examined, gave high correlation coefficients for carbon, nitrogen and phosphorus removal. Biokinetic coefficients were determined as $Y = 0.417-0.496$ g VSS/g COD, $k_d = 0.027-0.053$ d⁻¹, $\mu_{max} = 1.36$ g VSS /g VSS.d, $K_B = 37.96$ g/l.d, $U_{max} = 38.46$ g/l.d, $1/K_B(N) = 0.271-7.2$ g/l.d, $U_{max}(N) = 0.33-5.4$ g/l.d, $K_B(P) = 0.09-0.89$ g/l.d, $U_{max}(P) = 0.07-0.42$ g/l.d

کلمات کلیدی:

Simultaneous nutrients removal kinetics, UAASFF bioreactor, Monod, Grau second-order model, Stover-Kincannon model

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