Thesis Title	Study of Parameters Affecting Performance of Packed Bed Fixed Film Aeration Biological Wastewater Treatment System
Thesis Credits	12
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Abstract

In this study, a synthetic wastewater containing lactose was used. The main objective of this study was to study the design kinetic parameter of packed bed fixed film aeration biological wastewater treatment system. The experiments were carried out in 49.5 liters packed bed reactor with cross flow plastic media. Concentrations of lactose in the influent were varied from 100 mg BOD / l to 200 mg BOD / l., hydraulic retention time (HRT) from 6 to 8 hours.

The study showed that the removal efficiency of lactose was in the ranges of 80 % to 95 %. Kinetic parameter values of suspended cell were as follow : specific prowth rate (μ_{max}) = 0.491 hr^{-1}, substrate saturation constant (K_s) = 52.67 mgBOD/l, yield ($Y_{x/s}$) = 0.7844 and cell death constant (k_d) = 0.001 hr^{-1}. Mathematical models to predict the effectiveness factor from kinetic parameter values and BOD mass Loading of system were proposed in this study. Using the mass balance of substrate models, the surface area volume of pastic media can be predicted.

Keywords : Fixed Film System / Biofilm / Bioreactor