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External mass transfer model for degradation of simulated textile effluent in packed bed reactor

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Abstract

The present study includes the treatment of Simulated Textile Effluent (STE) with a white rot fungus *Trametes hirsuta* immobilized on Na-alginate mixtures, in a co-current upflow packed bed reactor. The mass transfer coefficients were calculated based on the findings of the present investigation on the degradation of STE. For STE degraded with *Trametes hirsuta* immobilized Na-alginate of different sizes of beads (0.2 cm, 0.5 cm and 0.8 cm), different concentration of STE (775, 1550, 2325 and 3100 mg/l of COD) and different flow rates (0.026, 0.057, 0.102, 0.204 and 0.408 cm³/s) were studied. A mass transfer model of the form $jD = K(Re')^{n-1}$ was produced with values of 'K' as 1.98, 1.35 and 1.22, the value of '(n-1)' was found to be - 0.28. © 2021, Rasayan Journal of Chemistry, c/o Dr. Pratima Sharma. All rights reserved.

Author keywords

COD; CR; Degradation; RR111; RR251; STE; T.hirsuta

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