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DECOLORIZING OF REACTIVE DYES WASTEWATER VIA DOWN-FLOW HANGING SPONGE (DHS) SYSTEM

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Abstract

This study was carried out to assess the efficiency of down-flow hanging sponge (DHS) system for decolorizing the reactive dyes wastewater. The reactor was operated at different hydraulic retention times (HRTs) of 1.7, 3.5 and 6 h., and organic loading rates (OLRs) of 3.6, 2.2 and 1.3 g COD/l.d., respectively. The results obtained indicated that increasing the HRT from 1.7 to 3.6 h., significantly increased color and CODt removal efficiencies from 81±6.7 to 91.7 ±8.7% and from 24.2 ±6.7 to 72±12.7% respectively. At an HRT of 3.5 h., the DHS system provided a residual CODt value of 217±140 mg/L and BOD5t of 80.3±46 mg/L in the treated effluent. However, CODt and BOD5t removal efficiencies were significantly dropped at increasing the HRT up to 6.0 h., and reducing the OLR to 1.3 g COD/l. d. This was mainly due to a high salinity (20.9±0.4 gCl/l) in the influent wastewater which negatively affected on the decolourization process in the DHS system. Nevertheless, the reactor achieved relatively high removal efficiencies of color (81±6.7%) and turbidity (88±7.9%) as well.

Key words: color, DHS, HRTs, OLRs, reactive dyes wastewater

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