

Decolorization and mineralization of Batik wastewater through solar photocatalytic process

Abstract

In this study, the photocatalytic degradation of batik wastewater in the presence of zinc oxide (ZnO) as photocatalyst was investigated. The effect of various operating parameters, such as pH of batik wastewater, catalyst dosage and aeration on the photocatalytic degradation process, was examined. The mineralization of batik wastewater was also evaluated through chemical oxygen demand analysis. The decolorization of batik wastewater was enhanced at acidic conditions (pH3) which was 88.2% after 10 h irradiated under solar light, meanwhile its mineralization was 286 mg/L after 12 h irradiation time. The data obtained for photocatalytic degradation of batik wastewater was well fitted with the Langmuir-Hinshelwood kinetic model. It can be concluded that batik wastewater could be decolorized and mineralized under solar light irradiation with presence of ZnO.

Keywords

Batik wastewater; Decolorization; Mineralization; Photocatalytic; Zinc oxide