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DECOLORIZATION OF ORANGE II BY HETEROGENEOUS FENTON PROCESS USING GOETHITE AS CATALYST

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Abstract

The effect of goethite addition, hydrogen peroxide concentration, initial pH, hydroxyl radical scavenger and initial dye concentration on the decolorization of Orange II by Fenton-like process was investigated. The results showed that the decolorization rate increased with goethite addition and hydrogen peroxide concentration, but decreased with the increase of initial dye concentration. There existed an optimal initial pH to achieve the highest decolorization rate. The presence of carbonate, a well known hydroxyl radical scavenger, would inhibit the decolorization reaction. The specific oxygen uptake rate (SOUR) increased with the oxidation of Orange II, indicating the heterogeneous Fenton treatment enhanced the biodegradability of the dye wastewater.

Key words: decolorization, Fenton oxidation, goethite, heterogeneous iron catalyst, Orange II

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