



Degradation of phenol from aqueous solution using waste blast furnace flue dust and hydrogen peroxide

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ABSTRACT

A novel method to degrade phenol from simulated wastewater was studied using waste blast furnace flue dust with hydrogen peroxide (H₂O₂). The factors that affect the degradation efficiency, including the pH of the solution, the initial H₂O₂ concentration, the amount of blast furnace flue dust, the reaction temperature, and the reaction time, were studied. The experimental results show that 1,000 mg/L of phenol in simulated wastewater can be decomposed completely within 12 h by 15 g/L blast furnace flue dust with 30 mmol/L H₂O₂ in a solution whose pH was 3.0 at the temperature of 35 °C. The mechanism of phenol degradation was also investigated by high-performance liquid chromatography, X-ray diffraction, and UV–vis spectrum.

Keywords: Blast furnace flue dust; Phenol; H₂O₂; Fenton's reagent; Solid waste

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