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COD REDUCTION OF BAKER'S YEAST WASTEWATER USING BATCH ELECTROCOAGULATION

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Abstract

The aim of the present work was to investigate experimentally the reduction of Chemical Oxygen Demand (*COD*) levels from baker's yeast wastewater (BYW) using batch electrocoagulation (EC) treatment process. An electrocoagulation unit with six iron electrodes was designed to achieve this treatment task. The effect of several operational parameters including pH, direct current (DC) density (I_ρ), mixing speed (MS), and temperature (T) on the performance of EC process was studied. The results indicated that the maximum removal efficiency of the COD was up to 85%. The visual test showed that the electrocoagulation process was able to remove completely the dark brown color of baker's yeast wastewater. The corresponding electrical energy and electrode consumption per kg *COD* removed was around 0.493 kWh and 2.956 kg iron, respectively. In addition, it was demonstrated that the reduction rate of *COD* follows the first-order model whose kinetic parameter, *k*, depends strongly on the DC current density according to a power law relation.

Key words: Baker's yeast wastewater, COD kinetics, electrocoagulation, iron electrodes, wastewater treatment

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