

عنوان مقاله:

Comparison efficiency of Electrocoagulation and Photocatalytic Process for Treatment of Industrial Dyeing Wastewater

محل انتشار:

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خلاصه مقاله:

Several processes have been used for dye and COD removal from industrial wastewater. In recent years, advanced oxidation processes (AOPs) such as photocatalytic process and electrochemical process such as electrocoagulation (EC) are the best solutions for industrial dyeing wastewater treatment. In this study, effect of operational parameters on efficiency of both methods were studied. Effective parameters in EC treatment were initial pH (4-9), current density (5-25 mA/cm²) and distance between electrodes (0.5-1.5 cm). In the photocatalytic process initial pH (2-6), photocatalyst concentration (3-7 g/L) and aeration (2-6 L/min) are effective parameters. Decolorization and COD removal are as responses. Under the optimum conditions, decolorization and COD removal for EC and photocatalytic process were 85.57%, 34.48% and 81.39%, 67%, respectively. So, by considering the same time for both methods, also decolorization was the same, but COD removal was higher in photocatalytic process. Energy consumption of EC process (0.01 kWh/m³.order of pollutant removal) was very lower than photocatalytic process (100 kWh/m³.order of pollutant removal). Since the wastewater treatment process must be economic, EC process was chosen, but another method such as photocatalytic process must be selected due to improve the output.

کلمات کلیدی:

Industrial dyeing wastewater, Pollutant removal, Electrocoagulation, Photocatalytic process, Energy consumption

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