

Removal of Cod and Turbidity to Improve Wastewater Quality Using Electrocoagulation Technique

Abstract:

Electrocoagulation (EC) is becoming a popular process to be used for wastewater treatment. The removal of COD and turbidity from wastewater by EC using iron (Fe) electrode material was investigated in this paper. Several working parameters, such as pH, current density, and operating time were studied in an attempt to achieve a higher removal capacity. Wastewater sample was made from milk powder with initial COD of 1140 mgL⁻¹ and turbidity of 491 NTU. Current density was varied from 3.51 to 5.62 mA cm⁻², and operating time of between 30 and 50 minutes. The results show that the effluent wastewater was very clear and its quality exceeded the direct discharge standard. The removal efficiencies of COD and turbidity were high, being more than 65% and 95%. In addition, the experimental results also show that the electrocoagulation can neutralize pH of wastewater.

Combined Magnetic Field and Electrocoagulation Process for Suspended Solid Removal from Wastewater

Abstract:

Innovative, cheap and effective methods of purifying and cleaning wastewater before discharging into any other water systems are needed. This paper study combined magnetic field and EC technology for removal suspended solid in wastewater treatment. The synthetic wastewater was treated in a batch mode by magnetic field combined with electrocoagulation. Wastewater sample was prepared from milk powder with a concentration of 700 mg/L. In the

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laboratory batch electrochemical cell, two monopolar iron (Fe) plate anodes and cathodes were employed as electrodes. DC current was varied from 0.5–1 A, and operating time between 30–480 minutes. Three permanent magnets with different strengths were used in this experiment, namely NdFeB of 0.55 T, SmCo of 0.16 T and AlNiCo of 0.08 T. The results showed that combined magnetic field and EC process has improved suspended solid removal from wastewater compared to EC process alone. The suspended solid and turbidity removals were as high as 92.3% and 81.25% with the combined process, while for EC process was as high as 89.3% and 75.16%.