عنوان مقاله:

Application of Electrocoagulation for the Removal of Color from Institutional Wastewater : Analysis with Response Surface Methodology Service Unavailable

محل انتشار:

فصلنامه روشهای تصفیه محیط, دوره 9, شماره 2 (سال: 1400)

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خلاصه مقاله:

The removal percentage of color from institutional wastewater was studied using an electrocoagulation process with different electrode combination at the anode and cathode. This was done by considering operational parameters such as pH at (۳, ۶ and ۹), current at (۰.۰۳A, ۰.۰۶A and ۰.۰۹A) and reaction time at (۲۰, ۴۰ and ۶۰ minutes). When electrode combined in the form of Al-Al (anode-Cathode/Cathode-Anode) and Fe-Fe (anode-Cathode/Cathode-Anode) the percentage removal of color was up to ۹۵.۵۰% and ۹۷.۲۴% respectively. On the other hand around ۹۸.۰۳% and ۹۱.۹۵% of color was removed when Al-Fe (Anode-Cathode) and Fe-Al (Anode-Cathode) combined at pH ۹ and ۶۰ minutes of reaction time respectively. Central composite design from response surface methodology was used up to analysis the statistical and mathematical data based on experimental results such as the model was significant for all electrode combinations. Similarly a quadratic model was used for further study of operational effects on the removal (%) of color from institutional wastewater. The value of coefficient of the determination (R۲) also indicated the model was a good fit as well as optimization was done by Response Surface Methodology.The removal percentage of color from institutional wastewater was studied using an electrocoagulation process with different electrode combination at the anode and cathode. This was done by considering operational parameters such as pH at (۳, ۶ and ۹), current at (۰.۰۳A, ۰.۰۶A and ۰.۰۹A) and reaction time at (۲۰, ۴۰ and ۶۰ minutes). When electrode combined in the form of Al-Al (anode-Cathode/Cathode-Anode) and Fe-Fe (anode-Cathode/Cathode-Anode) the percentage removal of color was up to ۹۵.۵۰% and ۹۷.۲۴% respectively. On the other hand around ۹۸.۰۳% and ۹۱.۹۵% of color was removed when Al-Fe (Anode-Cathode) and Fe-Al (Anode-Cathode) combined at pH ۹ and ۶۰ minutes of reaction time respectively. Central composite design from response surface methodology was used up to analysis the statistical and mathematical data based on experimental results such as the model was significant for all electrode combinations. Similarly a quadratic model was used for further study of operational effects on the removal (%) of color from institutional wastewater. The value of coefficient of the determination (R۲) also indicated the model was a good fit as well as optimization was done by Response Surface Methodology.

کلمات کلیدی:

Color, Electrocoagulation, Electrode, Institutional wastewater, RSM

لینک ثابت مقاله در پایگاه سیویلیکا: