Investigation of Electro-coagulation and Advanced Oxidation (UV/Na$_2$S$_2$O$_8$) Processes efficiency in Reactive Blue52 removal from aqueous solutions

Abstract

Background and & Objectives: Colored wastewaters are mainsources of aquatic pollution which will cause considerable impacts to the environment if discharge without treatment. Therefore, the purpose of this study was investigation of Electro-coagulation and Advanced Oxidation (UV/Na$_2$S$_2$O$_8$) Processes efficiency in Reactive Blue52 removal from aqueous solutions

Methods: In this experimentall study a glass beaker equipped with 2 iron electrodes with total effective surface area of 60 cm^2, as a electro-coagulation reactor, and a cylindrical reactor equipped with 2 UVc lamps (6wat), as a Advanced Oxidation reactor, were used to remove Reactive Blue52. The operating parameters of electro- coagulation process such as initial Reactive Blue52 concentration, pH, current density and reaction time were investigated. Then obtained effluent was introduced to UV/Na2S2O8 process and operating parameters such as sodium persolfat dosage and pH were examined

Results: The results showed that Reactive Blue52 removal efficiency of 82/4% was achieved in pH=7, current density=10 mA/cm^2, and reaction time of 30 min. In combination of electro-coagulation and UV/Na$_2$S$_2$O$_8$ (pH=7 and Na$_2$S$_2$O$_8$=15mM/L and reaction time of 90 min) processes the dye and COD removal efficiency of 100% and 76.9% was attained. (respectively)

Conclusion: The results revealed that combination of electro- coagulation and Advanced Oxidation (UV/ Na$_2$S$_2$O$_8$) processes is an efficient method to remove Reactive Blue52 from aqueous solutions

KeyWord: Electro Coagulation, ReactiveBlue52, Advanced Oxidation, aqueous solutions, UV/ Na$_2$S$_2$O$_8$