

Degradation of CI Reactive Blue 19 using combined iron scrap process and coagulation/flocculation by a novel Al(OH)₃-polyacrylamide hybrid polymer

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Abstract

The removal of C.I. Reactive Blue 19 dye at initial concentration of 1000 mg/L was studied using iron scrap process and coagulation/flocculation by a novel synthesized Al(OH)₃-PAM inorganic-organic hybrid polymer. A novel synthesized Al(OH)₃-PAM was prepared using a redox initiation system while (NH₄)₂S₂O₈ and NaHSO₃ were used to initiate the polymerization at 50 °C in aqueous medium. The Al(OH)₃-PAM was characterized using FT-IR spectroscopy, TEM, and XRD. pH of dye solution and Al(OH)₃-PAM dosage have been studied while COD reduction and color removal in different settling times were investigated. The results show that 26% of (COD) content and 45% of color have been removed by iron scrap process. Meanwhile 90% of the color and 82% of COD have been removed by Al(OH)₃-PAM hybrid polymer in an optimum dosage of 700 mg/L and optimum effective pH between pH of 5-6.