



Combined treatment of textile wastewater by coagulation–flocculation and advanced oxidation processes

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ABSTRACT

Textile wastewater is one of the main environmental pollutants which exist in our society. Textile effluents cause great concern due to the alteration of properties of water bodies such as differences in temperature, organic load, pH, colour and turbidity. Turbidity is one of the most important parameters that should be removed from industrial wastewater because the penetration of ultraviolet (UV) light into the water body can be affected. As a consequence, the main aim of this research was to study the improvements of the efficiency of advanced oxidation processes (AOPs) with the introduction of a coagulation–flocculation (CF) as a pre-treatment to remove the turbidity of textile wastewater. The experiments were carried out with five industrial coagulants under different concentrations. The turbidity was removed to a level of almost 99% with one of the coagulants (FLOCUSOL-PA/18). The total organic carbon (TOC) and colour removals were studied for each AOP after the CF process in this research. The colour removal was almost 100% for all AOPs. The higher values of TOC and turbidity removals were 94.2 and 6.9%, respectively, with the heterogeneous photocatalysis process. The data show that the use of CF as a pre-treatment of the influent with turbidity improves the efficiency of the AOP.

Keywords: Turbidity; Coagulation–flocculation; H₂O₂/UV; Photo-Fenton; Heterogeneous photocatalysis; Textile wastewater

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