



UKLANJANJE TEKSTILNE BOJE IZ VODE PRIMENOM UNAPREĐENIH OKSIDACIONIH PROCESA APPLICATION OF ADVANCED OXIDATION PROCESSES, AOPS, FOR REMOVING TEXTILE DYE FROM WATER

REZIME

Predmet i cilj ovog rada bio je ispitivanje efikasnosti različitih unapređenih oksidacionih postupaka (eng. Advanced Oxidation Process - AOP) za degradaciju tekstilne boje Reactive Black 5 u vodenom rastvoru. Procenat dekolorizacije određivan je kao zavisnost smanjenja absorbance od vremena tretmana rastvora boje različitim oksidacionim sredstvima. Takođe su ispitivani optimalni uslovi za date sisteme, kako bi degradacija bilo što efikasnija.

Ključne reči: unapređeni oksidacioni postupci, tekstilne boje, tretmani otpadnih voda, životna sredina

ABSTRACT

In this paper, the experimental results of decolorization of the textile dye, Reactive black 5, using Advanced Oxidation Processes, AOPs, have been shown. The percentage of decolorization of Reactive black 5 dye is given as a function of absorbance vs exposure time of dye solutions to the different oxidation systems. The optimal conditions for the given systems were also examined in order to make the degradation more efficient.

Keywords: advanced oxidation processes (AOPs), textile dyes, wastewater treatment, environmental protection

UVOD

Boje su našle primenu u mnogim industrijskim granama, kao što su tekstilna industrija, industrija kože, proizvodnja plastičnih masa, zbog čega u procesu bojenja nastaju zabrinjavajuće velike količine obojenih otpadnih voda. Obojenost sprečava prodiranje sunčeve svetlosti zbog čega je onemogućen proces fotosinteze u vodenoj sredini, što u velikoj meri utiče na biološku aktivnost vodenih organizama. Sav dostupan kiseonik se troši na proces degradacije oksidacije prisutnih organskih supstanci, pa ovakva sredina vrlo brzo postaje anaerobna. Mnoge od ovih boja su visoko toksične i predstavljaju ozbiljnu opasnost za vodene organizme. Azo boje, u koje spada ispitivana Reactive black 5, (R B5), su najtoksičniji tip tekstilnih boja.

Obrada otpadnih voda predstavlja postupke pomoću kojih se vrši smanjenje prisutnog zagađenja

INTRODUCTION

Dyes have found application in many industrial branches, such as the textile industry, the leather industry, the production of plastics, causing in the process of staining the worryingly large amounts of colored wastewater. Coloration prevents the sunlight penetration, which further disable the process of photosynthesis in the aquatic environment, and therefore has a great impact on the biological activity of aquatic organisms. All available oxygen is used in the process of the oxidative degradation of the present organic substances, and thus environment very quickly becomes anaerobic. Many of these dyes are highly toxic and pose a serious risk to aquatic organisms. Azo dyes, among which is the tested Reactive black 5, (R B5), are the most toxic type of textile dyes.

Wastewater treatment is a process that reduces the present pollution to those quantities or

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