FOTOKATALIZOVANO UKLANJANJE ORGANSKIH BOJA PRIMENOM FOTOKATALIZATORA NA BAZI TITANIJUM(IV)-OKSIDA

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Izvod

Oblast prečićavanja otpadnih voda zahteva stalno unapređenje postojećih i primenu novih tehnika tretmana. U ovom predavanju biće prikazani najnoviji rezultati uklanjanja sintetskih boja primenom novosintetisanih fotokatalizatora na bazi titanijum(IV)-oksida pod dejstvom imitirajućeg Sunčevog zračenja. Kao model polutanti, korišćene su dve boje reaktivna crna 5 (RB5) i metil oranž (MO).
Proces fotokatalize je opisan menjanjem osnovnih reakcioni uslova, kao što je kontaktno vreme, količina fotokatalizatora, početna koncentracija boje distanca lampe od rastvora. Kao fotoaktivni materijali korišćeni su sintetisani TiO_2, kao i kompozitni materijal TiO_2/Y_2O_3. Dobijeni rezultati ukazuju na to da ovakvi fotokatalitički sistemi mogu imati značajnu primenu u uklanjanju različitih vrsta industrijskih boja, ali i drugih klasa organskih zagađujućih materija prisutnih u vodenim sredinama.

Ključne reči: tretman otpadnih voda, organske zagađujuće materije, fotokataliza, unapređeni oksidacioni procesi.

PHOTOCATALYTIC REMOVAL OF ORGANIC DYES USING PHOTOCATALYST BASED ON TITANIUM OXIDE

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Abstract

The field of wastewater treatment requires constant improvement of existing and application of new treatment techniques. In this lecture, the latest results of removing synthetic colors using newly synthesized photocatalysts based on titanium(IV)-oxide under the effect of imitating solar radiation will be presented. As model pollutants, two colors reactive black 5 (RB5) and methyl orange (MO) were used.
The process of photocatalysis is described by changing the basic reaction conditions, such as the contact time, the amount of photocatalyst, the initial concentration of the dye, the distance of the lamp from the solution. Synthesized TiO_2 and composite material TiO_2/Y_2O_3 were used as photoactive materials. The obtained results indicate that such photocatalytic systems can have a significant application in the removal of various types of industrial paints, as well as other classes of organic pollutants present in aquatic environments.

Keywords: wastewater treatment, organic pollutants, photocatalysis, advanced oxidation processes.