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Preparation, Characterization of Ag_2O/Cr_2O_3 and Investigation of the Photocatalytic Degradability on Congo Red textile dye

Mohammed Zuheir Hassan*, Nada Y. Fairooz

Babylon university/ college of science/ Hilla/ Iraq

Abstract : A new photo catalyst (Ag_2O/Cr_2O_3) was prepared by using of the co-precipitation method by mixing two different metal nitrate include of chromium(III) nitrate [Cr(NO3)3.9H2O] with silver nitrate AgNO3 in different values and was calcinated in three different temperatures (400°C, 500°C & 700°C), and thenits effectiveness for the photocatalytic activity for the degradation of Congo red as a textile dye was done to optimize the best photocatalyst and was found that (Cat-3C-) was the best for the photodegradation of Congo red, and with removal percentage (69.35%) when the concentration of Congo red was (40 ppm) with weight of catalyst (0.15 g) at room temperature. The characterization of the prepared catalysts had been carried out by the XRD & SEM and has been found that the appointed catalyst (Ag_2O/Cr_2O_3) was successfully prepared. And then some studies had been performed to optimize the reaction effective parameters on the photocatalytic degradation of Congo red such as: catalyst weight, initial concentration of the dye solution. The best catalyst's weight was (0.07g) and the concentration of the dye was (10ppm).

Keywords: Heterogeneous photocatalytic, chromium (III) nitrate, silver nitrate, Ag_2O/Cr_2O_3, Congo red, XRD and SEM.

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