PREPARATION OF ZINC OXIDE/SILVER NPS AND THE EFFECT OF SOLUTION PH ON PHOTODEGRADATION OF METHYL ORANGE DYE

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ABSTRACT

PREPARATION OF ZnO/AgNpS AND THE EFFECT OF SOLUTION pH ON PHOTODEGRADATION OF METHYL ORANGE DYE

Silver/ zinc oxide nanostructure were synthesized by the sol-gel method using conventional Hexamethylenetetramine (HMTA) reagent as the reducing agent. The as-prepared photocatalysts were characterized by XRD, EDX and FESEM. The doping of Ag was verified by the shifts in the XRD peak of the zinc oxide and also using EDX analysis. The average crystallite size of ZnO and Ag/ZnO were calculated to be 84.14 nm and 84.20 nm respectively. The photocatalytic activity was also evaluated for the degradation of methyl orange under UV irradiation. The effect of different pH in a range of 4 -11 of methyl orange solution were studied using ZnO and Ag/ZnO as catalyst. The evaluated photocatalytic activity shows a rapid degradation of methyl orange solution was at pH 11 which is in alkaline medium with degradation efficiency of 82 % and 98 % for ZnO and Ag/ZnO, respectively. This study shows that the degradation of methyl orange for Ag/ZnO was greater compare to pure ZnO samples towards alkaline medium.

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