Photocatalytic Degradation of Methylene Blue Dye Using ZnO Thin Films- Effect of Area of Catalyst

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Abstract

Zinc oxide thin films were deposited on glass substrates using sol gel spin coating method. Zinc acetate dihydrate was used as a starting material. Isoproponol and monoethanolamine were used as the solvent and stabilizer respectively. The prepared solution was dropped on the cleaned glass substrates and the substrates were rotated at 2000 rpm for 20 s and the ZnO thin films were prepared by repeated coating. The prepared thin films were annealed at 450 ^{o}C. The annealed films were characterized by x-ray diffraction (XRD), scanning electron microscopy (SEM), ultraviolet – visible spectrophotometer (UV-Vis), photoluminescence spectroscopy (PL). Photocatalytic activities of ZnO thin films annealed at 450 ^{o}C have been examined towards the photo degradation of methylene blue by varying catalyst area. A maximum efficiency of 90.4 % is reported using low watt (8W) UV source.

Keywords: ZnO thin films, photocatalytic activity, catalyst area