Solar photocatalytic activity of sol–gel prepared Ag-doped ZnO thin films

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ABSTRACT

Pure and silver doped ZnO thin films over glass substrate were prepared by sol–gel spin-coating method. Prepared films were calcined at different temperatures. X-ray diffraction and UV–Vis spectroscopy were used to characterize the prepared samples. The photocatalytic activity under solar irradiation of the prepared thin films was tested for the degradation of three azo reactive dyes namely Reactive Red 195, Reactive yellow 145 and Reactive orange 122 as an organic pollutant. 6 wt.% Ag doping ratio showed the highest photocatalytic activity. Various operational parameters such as pH of the solution and initial concentration of the dye have been investigated.

Keywords: ZnO; Thin film; Ag; Doping; Photocatalysis; Solar light; RR195; RY145; RO122