

**PHOTOELECTROCHEMICAL STUDY OF MODIFIED Ag DOPED ZnO  
PHOTOCATALYST FOR PHOTOCATALYTIC DEGRADATION OF  
REACTIVE RED 4 (RR4) DYE**

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## ABSTRACT

### **PHOTOELECTROCHEMICAL STUDY OF MODIFIED Ag DOPED ZnO PHOTOCATALYST FOR PHOTOCATALYTIC DEGRADATION OF REACTIVE RED 4 (RR4) DYE**

In this study, Ag-ZnO photocatalysts were prepared with 1%, 3%, 5%, 7% and 9% of Ag loading. All Ag-ZnO photocatalysts undergo photodeposition under the irradiation of 250-W metal halide lamp to dope Ag nanoparticles onto the surface of ZnO with AgNO<sub>3</sub> acting as the Ag precursor. The prepared Ag-ZnO samples were characterized using FTIR and PEC analyses. Photocatalytic activity of these modified Ag-ZnO samples was evaluated under photodegradation of Reactive Red (RR4) dye with an initial concentration of 25 mg L<sup>-1</sup>, under the irradiation of 55-W household fluorescent lamp for a duration of 60 minutes. It was found that modified Ag-ZnO prepared slightly higher photodegradation rate of RR4 in comparison to the unmodified ZnO. The optimum photocatalytic activity of the modified Ag-ZnO under photodegradation of RR4 was found at 7% Ag-ZnO with rate constants of 0.0975 and followed by 0.0742 min<sup>-1</sup> for 9% Ag-ZnO respectively. The results of FTIR and PEC analyses showed the presence of Ag inside the ZnO lattice indicating the doping of Ag nanoparticles onto unmodified ZnO under photodeposition method is successful.

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