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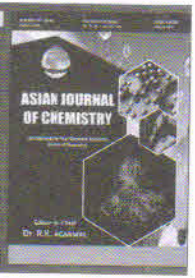

Sunlight/Visible Light Assisted Photocatalytic Degradation of Acid Alizarin Violet N Dye and 4-Chloro Phenol over M^{n+} Doped Nano TiO_2 Catalysts

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Nano TiO_2 and 5 wt.% M^{n+} ($M = Ag^+$, Bi^{3+} and Ni^{2+}) doped nano TiO_2 photo catalysts were synthesised by sol-gel method. The resulting catalysts have been characterised by XRD, UV-Vis DRS, PL, SEM-EDAX, TEM, BET-SA, XPS and Raman spectroscopy. The present research work focused on enhanced photocatalytic degradation of aqueous solutions of acid alizarin violet N (AAVN) dye and 4-chlorophenol (4-CP) were investigated with TiO_2, 5 wt.% Ag/TiO_2, 5 wt.% Bi/TiO_2 and 5 wt.% Ni/TiO_2 nano photocatalysts under visible and solar light. AAVN dye was degraded to an extent of more than 98%, 4-CP degraded 97% on Ag/TiO_2 as compared to Bi/TiO_2, Ni/TiO_2 and Bare TiO_2 nanoparticles. Recyclability of photocatalysts were studied, with the material being found to be stable up to five cycles. Effect of scavengers on the photocatalytic activity of catalysts was studied using both superoxide ion radical and hydroxyl ion radical/hole scavengers namely benzoquinone, isopropanol, ammonium oxalate and formic acid, respectively.

Keywords: Acid Alizarin Violet N, 4-Chlorophenol, Photo degradation, Doped TiO_2.