



Enhanced Photocatalytic activity of Copper doped and C, N, S doped TiO₂ Nanoparticles on Methylene Blue dye under Solar light irradiation

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Abstract: TiO₂ nanoparticles (TNPs) doped with copper (Cu) and codoped with carbon (C), nitrogen (N) and sulfur (S) was prepared and characterized using diffuse reflectance UV-Vis spectroscopy, FT-IR, XRD and EDX. Photocatalytic degradation behaviour of these photocatalysts was investigated by studying degradation of Methylene Blue (MB) dye in aquatic medium under solar light irradiation. The effect of various operational parameters for photodegradation such as initial concentration of MB dye, dose of photocatalyst and irradiation time was investigated in order to attain highest photocatalytic degradation efficiency. The photocatalytic degradation reaction kinetics of MB dye using the prepared photocatalysts was also studied. An appropriate mechanism has been proposed and the effect of doping on photocatalytic degradation behaviour of the above photocatalysts also discussed.

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