

Removal of Malachite green cationic dye from aqueous solutions by UV/Persulfate process and effect of various water constituents.

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Abstract. Recently, advanced oxidation process based on the sulfate radicals ($\text{SO}_4^{\cdot-}$) has received growing attention as a promising alternative for the degradation and mineralization of organic pollutants in water and sediment owing to its advantages of highly stable reactivity, widely operative range and relatively low cost

In this work, Malachite green is initially treated by UV_{254} and persulfate activated by UV_{254} (UV/PS). The addition of PS facilitated the decomposition of MG due to sulphate radical formation and notably, the presence of 80 mg PS brought about a nearly complete mineralization after 25mn. The influence of several parameters such as initial substrate concentration (7-500) mg.L^{-1} , pH (2-10), temperature (25-65) $^{\circ}\text{C}$ and initial oxidant concentration on the degradation of Malachite green was assessed. Additionally, the impact of natural matrices (seawater and natural waters) on the degradation rate of this dye was clarified. The degradation of the dye was strongly sensitive to the operational conditions. The natural matrices enhanced the degradation of the dye.

Keywords: Persulfate, Malachite green, mineralization.