

## **Divalent Iron Oxidative Process for Degradation of Carbon and Nitrogen Based Pollutants from Dye Intermediate Industrial Wastewater**

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**Abstract :** Water pollution resulting from discharge of partial/not treated textile wastewater containing high carbon and nitrogen pollutants pose a huge threat to the environment, ecosystem, and human health. It is essential to remove carbon- and nitrogen-based organic pollutants more effectively from industrial wastewater before discharging. The present study focuses on removal of carbon-based pollutant in particular COD (chemical oxygen demand) and nitrogen-based pollutants, in particular, ammoniacal nitrogen by Fenton oxidation process using  $\text{Fe}^{2+}$  and  $\text{H}_2\text{O}_2$  as reagents. The study was carried out with high strength wastewater containing initial COD 5632 mg/L and  $\text{NH}_4^+\text{-N}$  1372 mg/L. The major operating condition like pH was varied between 1.0 to 4.0. The maximum degradation was obtained at pH 3.0 taking the molar ratio of  $\text{Fe}^{2+}/\text{H}_2\text{O}_2$  as 1:1. At this pH, the removal efficiencies of COD and ammoniacal nitrogen were found to be 77.27% and 74.9%, respectively. The Fenton process can be the best alternative for the simultaneous removal of COD and  $\text{NH}_4^+\text{-N}$  from industrial wastewater.

**Keywords :** ammoniacal nitrogen, COD, Fenton oxidation, industrial wastewater

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