

## Abstract

The ternary composite of cobalt hexacyanoferrate, manganese oxide, and reduced graphene oxide (CoHCF/MnO<sub>2</sub>/rGO) was synthesized by using the hydrothermal route and further examined for its properties| by using X-Ray diffraction, Scanning electron microscopy, Fourier transformation infrared spectroscopy and UV-Visible Spectroscopy. The improved photocatalytic performance was noticed in the rGO incorporated CoHCF/MnO<sub>2</sub> composite as compared to pure CoHCF/MnO<sub>2</sub>. The photocatalytic experiment confirmed the improved degradation of methyl blue (95% in 55 minutes) with CoHCF/MnO<sub>2</sub>/rGO composite compared to the simple CoHCF/MnO<sub>2</sub> composite (94% in 75 minutes). The enhanced photocatalytic performance of CoHCF/MnO<sub>2</sub>/rGO over the simple CoHCF/MnO<sub>2</sub> is assigned to the reduced recombination rate of electron-hole pairs and provides acceleration in redox reactions. The rGO incorporated composite has a large surface area and present more active sites in the material for dye adsorption. These trade makes it suitable candidate for industrial scale photo-degradation.