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Use of Solid Supported Photo-Fenton and Photo-Fenton like Reagents in Degradation of Bismarck Brown-R

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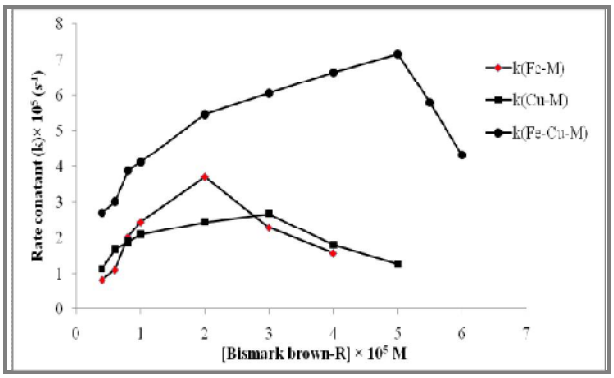
ABSTRACT

Performance of Fe-montmorillonite (Fe-M), Cu-montmorillonite (Cu-M), and (Fe-Cu) montmorillonite (Fe-Cu-M) in degradation of Bismark brown-R in presence of hydrogen peroxide was evaluated. Optimum conditions obtained for photo-Fenton degradation of Bismark brown-R are: {Fe-montmorillonite}: pH=7.5, [Bismark brown-R]=2.0×10^{-5} M, amount of composite=0.10 g and light intensity=50.0 mW cm^{-2}, H_2O_2=0.392 M; {Cu-montmorillonite}: pH=7.5, [Bismark brown-R] =3.0×10^{-5} M, amount of composite = 0.10 g and light intensity=60.0 mW cm^{-2}, H_2O_2=0.235 M; {Fe-Cu montmorillonite}: pH=7.0, [Bismark brown-R]=5.0×10^{-5} M, amount of composite=0.10 g and light intensity =70.0 mW cm^{-2}, H_2O_2=0.196 M. It was concluded that composite showed Fe-Cu-montmorillonite composite is better for wastewater treatment as compared to Fe- montmorillonite composite, and Cu-montmorillonite composite.

Graphical Abstract



Effect of concentration of Bismark brown-R.

Keywords: Photo-Fenton, Photo-Fenton like reagent, Bismark brown R, Copper sulphate, Ferrous sulphate, Montmorillonite.