Removal of methyl blue and bromophenol blue by Fenton process from aqueous solution

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Abstract

Chemical pollution is present nowadays commonly in surface waters and in other environmental areas as well [1–3]. Of particular importance are organic compounds, which are synthetized in large variety, whereby their harmful potential and unpredictability of their toxic properties towards various organisms. Dyes are considered among the main organic pollutants of waters. The removal of Methyl Blue (MB) and Bromophenol blue (BPHB) from aqueous solution by Fenton process [4] was considered in this work. Removal efficiency was studied as well as the rate constants of the reactions were determined. The degradation was performed in a 150 mL beaker under stirring conditions at pH 3. The kinetics of the compounds degradation was followed by UV-Vis spectrophotometry. It was found that both compounds can be effectively degraded, whereas MB is degraded more rapidly than BPHB. The pH reduced the efficiency of the degradation process, but even at pH 5.2 significant amounts of the both compounds could still be oxidized, due to the pH decrease during the process, probably effected by the carboxylic acids formed during the degradation process.

Keywords: Pollution, Fenton, dyes, removal, environment.

References

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Figures

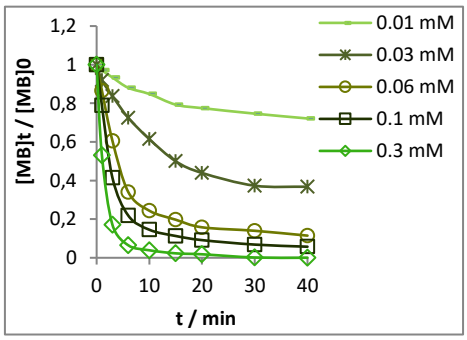

Figure 1: Degradation trails of MB at different concentrations of $[H_2O_2] = [Fe^{2+}]$, $[MB]_0$ = 0.01 mM, V = 150 mL, pH = 3.