Contamination of water sources from textile, paper and paint industries contain a large number of toxic dyes, which poses a serious hazard to human health and living organisms. The dyes are considered as hazardous substances with recalcitrant structures against conventional wastewater treatments. Recently, Advanced Oxidation Processes (AOPs) have engendered great scientific interest worldwide. AOPs are based up on the in situ generation of hydroxyl radicals, which are responsible for the oxidation of dyes. The objective of this present work was to study the photodegradation of methyl orange in xAg/TiO$_2$ (x=1, 2 and 3% w/w). The experiments were conducted in a reactor with ultraviolet light to study the effect of Ag concentrations on support at 30 minutes for removal the dye. The experimental data were fitted Langmuir-Hinshelwood model. The results showed that the highest degradation efficiency was observed in the 2Ag/TiO$_2$ catalyst, with a rate constant of 0.0561 min$^{-1}$ which was higher than that of 1Ag/TiO$_2$ and 3Ag/TiO$_2$ with values of 0.0292 min$^{-1}$ and 0.0455 min$^{-1}$, respectively, this is due to the better dispersion of Ag on TiO$_2$ (2Ag/TiO$_2$).

Keywords: TiO$_2$, Photodegradation, Methyl Orange

References:


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