

DISCOLORATION OF 3,4 –DIMETHYL-1,2 CYCLOPENTANEDIONE (CAMEL) USING ADVANCE OXIDATION PROCESS (AOP) UTILIZING TITANIUM DIOXIDE DOPE WITH FE FOR VISIBLE LIGHT ABSORPTION EFFECTIVENESS



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Abstract

The effect of rust impregnated to Titanium Dioxide was observed. The energy used to illuminate the photocatalyst is under the visible region (solar-photons). The rust provides the decrease of the band gap between valence band and conduction band allowing the utilization of the photons from the sun for the Advanced Oxidation Process (AOP) to be accomplished. The results of the study show a reduction of the initial caramel color intensity prepared with 3 different solution concentration. The 10,000 ppm was decreased by 90% while 2,000 ppm and 500 ppm were completely decolorized using 6 hours of treatment time or sun exposure from 12 pm to 3 pm. The amount of catalyst used for each sample solution is 3.50 grams. A sample of methylene blue solution with a standard concentration of 500 ppm was also subjected to AOP using the same amount of catalyst. In less than 2 hours, the MB was decolorized completely.

Keywords:

Advanced Oxidation Process, Titanium Dioxide, catalyst, photocatalyst