

CHAPTER VI

CONCLUSION

From experiment shown that :

1. Degradation rate of dyes by photocatalytic degradation was higher than that of photodegradation. And Complete mineralization of all azo dyes studied was achieved by photocatalysis method.
2. Suitable amount of TiO_2 on photocatalysis in this study was 75 mg.
3. Suitable dye concentration of this study was 1×10^{-4} M.
4. Degradation rate of acid orange 7 was nearly independent to the initial pH of dye solutions in range of 4-6; however, the rate increased when the initial pH was in the range of 4-2.
5. Diazo dyes were less degradable than monoazo dyes. The degradation rate of dyes were rank as follows : acid orange 7 > orange G > acid yellow 17 > new cocchine > tartrazine > acid black 1 > congo red. At concentration of dye solution that did not exceeded 1×10^{-4} M, azo dyes were completely mineralized within 4 hours except congo red which took time more than 7 hours.
6. Intermediate aromatic products identified during the degradation were phenol, hydroquinone and sodium sulfanilate.
7. Degradation starts by the addition of OH group to aromatic ring, and subsequently leads to the opening of aromatic ring. Organic acids are formed as a result of the opening of aromatic ring. Finally they are mineralized to be CO_2 via formic acid, and acetic acid. Final products of azo dyes photocatalytic degradation with TiO_2 are CO_2 , SO_4^{2-} , NO_3^- , NO_2^- , and NH_4^+ .