CHAPTER V

CONCLUSIONS

5.1 Conclusions

The conclusions of the present research are the following:

1. Zinc oxide has higher performance in degrading and mineralization of diuron than titanium dioxide.
2. The treatment is not feasible without catalyst in the case of UV-A.
3. The photodegradation reaction of diuron follows a pseudo first order kinetics and the photodegradation of diuron by using zinc oxide is consistent with the Langmuir-Hinshelwood model while the photodegradation of diuron by titania was inconsistent with Langmuir-Hinshelwood model because KC is approximately 1.
4. Intermediates of large molecular weight are detected, suggesting that conjugation of radicals during photodegradation occurrs. Many intermediates are formed during the degradation of diuron.
5. When comparing the intermediates produced by two photocatalysts, i.e., zinc oxide and titanium dioxide, some products are similar to one another while some are different. This suggests the involvement of catalyst surface with diuron and hydroxyl radicals during photodegradation.
6. The structure of intermediates generated during the photodegradation process is affected by photocatalyst, pH of solution, and UV irradiation.

5.2 Recommendations

Recommendations for the future work, based on the results of this work, are following.

1. Further identification of the adsorption of diuron on the catalyst surface by using NMR analysis (solid).

2. Investigation of the reaction for long period of irradiation time for photocatalytic degradation of diuron, to achieve 100% conversion and 100% mineralization.
3. Monitor the concentration of the radical such as $Cl^{\bullet}$, $OH^{\bullet}$.
4. Identify adsorption isotherm type by sum of error method.
5. Quantity concentration of the intermediates.