# CHAPTER V. CONCLUSIONS AND RECOMENDATION

## V. 1. Conclusions

TAN removal using aquaphonic-zeolite system has been demonstrated in this study. Fish food addition gave effect towards TAN in the fish pond.NaCl addition gave effect towards TAN removal in the fish pond. The aquaphonic plants in this study were able to remove 4-6 ppm TAN with 10 Green Mustards/0.24$m^2$. Experimental isotherms using pristine and modified zeolite were analyzed using Freundlich and Langmuir model with the fitting results being compared. From the correlation coefficient factor, the Langmuir model gave the best result rather than Freundlich model. The adsorption kinetics study conclude that the pseudo-second order model control the adsorption mechanism with consistent value of $k_S$ over pseudo-first order model. For column studies, it was found that breakthrough time of adsorbate increased with higher concentration of NaCl used during modification and Thomas model gave agreeable interpretation. The variation between independent variables used in this study were found to give significant differences towards the TAN removal.

## V. 2. Recommendation

Plants used can be changed into more suitable aquaphonic plants such as water lettuce which have higher performance to remove TAN from fish pond. Consequently, the temperature pf the aquaphonic plants environment must be controlled in order to maintain the growth of water lettuce (Fitzsimmons et al, 2011). The particle size of zeolite is made equal, so that the surface are for adsoption can more effective.

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