CHAPTER V

CONCLUSIONS AND RECOMMENDATION

This chapter is focused upon the conclusions of the experimental results of the selective hydrogenation of acetylene over fresh and regenerated Pd-Ag catalysts, in which effect of pretreatment with N_2O was studied. Recommendations for further study are given afterwards

The effects of regeneration and pretreatment with N_2O can be summarized as follows:

1. Regenerated catalyst shown more stability both acetylene conversion and ethylene gain than the fresh one.

3. Activity and selectivity of regenerated commercial catalyst can not be enhanced by means of N_2O pretreatment.

4. A XRD analysis indicates a reduction in crystal size of silver after regeneration, but palladium crystal size remained the same. It is suggested that regeneration step made silver particles mobilized and segregated on palladium in a new arrangement form.

5. From study in ethylene adsorption, a decrease in the amount of ethylene adsorbed on catalyst surface is suggested to be the origin of increasing in ethylene gain of regenerated catalyst compared to fresh catalyst.

Recommendations for further study:

1. Reaction with longer time on stream where carbonaceous deposits are formed on the catalyst particles should be performed in order to get more information about the stability of catalysts.

2. Study of change in silver particle after regeneration should be performed by solid UV-VIS.

3. An analysis by *in situ* FT-IR should be performed in order to study of surface species after N_2O pretreatment.