CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

In this research, the effect of starting Zn/Ga and Zn/Al of $ZnGa_2O_4$ and $ZnAl_2O_4$ spinel type catalysts on oxidative dehydrogenation of propane. The conclusions of these results are summarized as follows:

1. The $ZnGa_2O_4$ and $ZnAl_2O_4$ spinel catalysts are active and selective catalysts in oxidative dehydrogenation of propane to propylene at reaction temperatures 400°C-500°C.

2. $ZnGa_2O_4$ atomic ratio Zn/Ga 0.50 showed highest yield at reaction temperature 525°C-600°C as compared with all atomic ratios of $ZnGa_2O_4$ and $ZnAl_2O_4$.

3. $ZnGa_2O_4$ ratio 0.50 has lower selectivity than $ZnAl_2O_4$ atomic ratio 0.5 at reaction temperatures 400°C -600°C.

4. It suggested that the Ga-O center is active in oxidative dehydrogenation of propane to propylene at reaction temperature 400°C-500°C.

It suggested that the differences in the activity and selectivity observed for the $ZnGa_2O_4$ and $ZnAl_2O_4$ spinel may be due to different coordination of Ga ions and Al ions (confirmed by XRF measurement [20]).

From this work, the recommendations for further study can be as follows:

Study the other spinel material as catalysts to improve the oxidative dehydrogenation of propane to propylene or other reaction.

Study in life time of $ZnGa_2O_4$ and $ZnAl_2O_4$ catalyst on oxidative dehydrogenation of propane to propylene.

The $ZnGa_2O_4$ and $ZnAl_2O_4$ catalyst should be characterized by higher efficiency techniques.

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