CHAPTER V

CONCLUSIONS AND FUTURE SUGGESTION

5.1 Conclusions

The main conclusions of the present work are as follows:

1) Regarding the primary components effect, alkali metal gave a higher methane conversion and C_2 selectivity than transition metal.

2) As for the results of supports effect on C_2 selectivity, ZnO which is a semiconducting oxide was the best support. Al_2O_3 and SiO_2 which are insulator oxide and zeolite which is acid catalyst had less ability.

3) Li/ZnO was the most active catalyst in this study. This conforms to arc-fusion and the generation of active site hypothesis.

4) The higher the reaction temperature, the higher the methane conversion and C_2 selectivity. As for Li/ZnO catalyst at reaction temperature of 650°C, CH_4:O_2=10:1, the achieved results of catalytic performance were methane conversion = 7% and C_2 selectivity (carbon compounds)=65%, respectively.

5) The lower the CH_4:O_2 mole ratio, the higher the C_2

selectivity and the lower the CH_4 conversion. As for Li/ZnO at reaction temperature 600°C, the achieved results of catalytic performance were the follows:

$CH_4:O_2$	CH_4 conversion	C_2 selectivity
5:1	5.5%	30%
50:1	2.5%	70%

Furthermore, the maximum Space Time Yield of C_2 formation obtained at $CH_4:O_2$ mole ratio=30:1.

6) The lower the reaction pressure, the higher the methane conversion.

5.2 Future Suggestion

It would be interesting to extend the study as the following topics:

1) Another combination of doped metal and support.

2) The effect of doped metal ions concentration to the catalyst activities and specific surface area.

3) The effect of treatment temperature on the catalyst activities. The rate of active sites formation and the stability of these active sites depend on the arc-fusion temperature in the catalyst preparation.