

CHAPTER V

CONCLUSIONS

5.1 Conclusions

This research investigated the catalytic activity of Ag and Au on reducible metal oxides of Mn and Co for low temperature CO oxidation. The Mn-Co composite oxide was found to be the most active support. Both silver and gold catalyst on Mn-Co support showed high activity and stability over long periods. Low temperature operation did not cause totally irreversible decay. The most likely mechanism of catalyst deactivation is carbonate formation. Carbon dioxide caused significant decrease in the activity owing to its adsorption on the catalyst surface.

Both oxidation and reduction regeneration could restore most of the activity. High temperature oxidation regeneration effectively eliminated all the carbonaceous species but it also caused the loss of catalyst surface area. In contrast, high temperature reduction regeneration was more effective to recover the activity. However, oxidation is the candidate of regeneration due to cost.

5.2 Recommendation

In order to eliminate the catalyst deactivation totally, new preparation method should be studied. There is a belief that moisture could enhance the catalytic activity perhaps by blocking physisorption of CO₂. So the effect of humidity on the activity should also be investigated.