

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Ceria support was successfully synthesized by using anionic polyelectrolyte, PSS-co-MA, as a capping agent. The smallest ceria particle of 0.58 ± 0.01 micron was obtained by using 10 mM of 1:1 PSS-co-MA under magnetic stirring. This optimum concentration causes negatively charged spread over the ceria surface to stabilizing the sphere in solution. The Ag/CeO_2 was further synthesized via sodium borohydride reduction of Ag^+ on prepared ceria support prior the addition of HAuCl_3 for preparing Au/CeO_2 catalyst by redox reaction between Ag/CeO_2 and Au^{3+} ion. The Au/CeO_2 catalyst for CO oxidation resulted in maximum CO conversion of 15% at 190 °C with maximum selectivity of 68% at 50 °C. For methanol reforming, the catalytic activity of Au/CeO_2 catalyst resulted in 69% methanol conversion with 50% H_2 selectivity and 34% H_2 yield at 400 °C reaction temperature.

5.2 Recommendations

The catalysts should be synthesized by other types of anionic polyelectrolytes, such as polystyrene sulfonate sodium salt, poly(acrylic acid), and alginic acid sodium salt, for comparison purposes. Moreover, the effect of metal loading on catalytic activities should be investigated in further study.