

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

It can be concluded that the proper amount of Mg incorporated into Ce-Zr lattices leads to decrease of number of the strong acid sites. In contrary, Mn-doped into Ce-Zr supports provoked coke formation due to increasing acidity of supports. However, modification of supports exhibited better catalytic activity than unmodified supports. In addition, the incorporation of Mg into ceria-zirconia lattices was more benefited catalyst stability than others due to the strong interactions between Ni and CZM support which can prevent the sintering of metal at high temperatures resulting in suppressing the coke formation on the catalysts. This resulted in the stable of catalytic performance of Mg-containing catalyst over the 10 h of time on stream.

5.2 Recommendation

The methane dry reforming (MDR) has a potential for producing the synthesis gas. The improvement in catalytic stability of the nickel supported catalyst is a key factor to broaden this process in commercial scale. In the presence work, the catalytic performances and stability improvement of Ni/CZO by incorporation of Mg into ceria-zirconia lattices were achieved. However, the improvement in both catalytic performances and stability might be improved if the catalysts were tested more than 10 h.