CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Based on its excellent properties which are low acidity and high thermal stability, KL zeolite was found to be a good catalyst support on steam reforming of methane reaction. In this study, steam reforming of methane using Ni supported on KL zeolite catalyst was studied. The effect of Ni loading, the addition of ceria promoter and the effect of steam to methane ratio were studied. In addition, comparison between Ni/KL zeolite catalyst and Ni/α-alumina catalyst was also made. The main conclusions of this work are as follows.

Various Ni contents (3, 5, 7, 10 and 15 wt%) loaded over KL zeolite catalysts were tested for the catalytic activity on steam reforming of methane. Among the catalysts examined, 7 %wt Ni/KL zeolite exhibited the best catalytic activity and stability.

The addition of ceria to 7%Ni/KL zeolite catalyst increased Ni dispersion, reduced coke deposition on catalyst, and improved stability of catalyst. However, it gave no significant effect on catalytic activity.

For the effect of H_2O/CH_4 ratio on catalytic activity of Ni supported on KL zeolite catalyst, it can be concluded that KL zeolite catalyst gave acceptable catalytic activity even operated at low steam condition. Finally, Ni/KL zeolite catalyst was found to be comparable with Ni/α-alumina catalyst in terms of catalytic activity and stability.

5.2 Recommendations

In this work, KL zeolite is a good catalyst support for steam reforming of methane. For further study using Ni/KL zeolite catalyst, the catalytic parameters such as reduction temperature and other catalyst preparation method are recommended for studying.