



## CHAPTER V

### CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Conclusions

Adsorption isotherms were measured for CO<sub>2</sub> on modified and unmodified activated carbon samples. The activated carbon was modified with various types of amine, Piperazine and MIPA resulted in the improvement in the CO<sub>2</sub> adsorption at the elevated temperatures even though the activated carbon modified with the two amines have surface area and pore volume lower than the unmodified activated carbon. This result confirms the enhancement in the CO<sub>2</sub> adsorption by the introduction of basicity on the activated carbon. However, NMEA was not able to enhance the adsorption capacity. The activated carbon was also modified with K<sub>2</sub>CO<sub>3</sub>. The modified samples show high adsorption capacities at 30°C but losses its effectiveness at the elevated temperatures. The effect of loading was also observed. The 10% loading seems to be an optimum amount of amine to enhance the CO<sub>2</sub> adsorption. At the 30% loading, the adsorption capacities are low because of the pore blocking effect.

#### 5.2 Recommendations

Based on what has been discovered in this study, there are two recommendations below.

1. New modification methods should be studied.
2. Metal or other amines should be studied in order to find the novel adsorbents.