CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

In this research, the aqueous solutions of MEA and MEA blended with various amine additives were applied for CO_2 removal from flue gas via the absorption process. The effects of absorption time, MEA concentration, flue gas flow rate, and blending MEA with various amine additives on the CO_2 absorption rate and CO_2 loading capacity were examined. In case of the single MEA aqueous solution, the MEA concentration of 30 wt.% was considered to be the most suitable value for the CO_2 removal because it provided the maximum CO_2 removal efficiency of 100%, as well as the comparatively high CO_2 absorption rate and CO_2 loading capacity. When various amine additives (AMP, AMPD, AEPD, and PZ) with their concentration of 5 wt.% were added to the MEA aqueous solution to obtain the total amine concentration of 30 wt.%, the CO_2 absorption rate increased in the following order: AMP < AMPD < AEPD <PZ. In the case of the blended MEA-PZ aqueous solution with the total amine concentration of 30 wt.%, an increase in the PZ concentration up to 5 wt.% increased the CO_2 absorption rate and CO_2 loading capacity.

5.2 Recommendations

The recommendations for future work are as follows:

1. The effect of regeneration temperature should be investigated to evaluate the solvent performance for reuse in CO_2 removal from flue gas.
2. Other types of additives to the MEA aqueous solution, such as ionic liquids and carbonate salts, should be studied to compare the CO_2 removal efficiency.