CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

The conclusions emerged from this research are the following:

1. The results of XRD and FT-IR analysis can not identify crystalline tungsten oxide and potassium oxide whereas new species can form on the catalysts that add potassium.

2. 5 wt.% WO_3 is the optimum tungsten loading on the based catalyst due to the highest NO conversion. 3 wt.% K_2O is the minimum requirement to see any change difference in NO conversion.

3. Loading sequence of both W and K introduced over V_2O_5/TiO_2 catalysts have some effects on the catalytic activity of the catalyst. Co-loading method is the appropriate preparation method of both W and K introduced over V_2O_5/TiO_2 catalyst.

4. Tungsten enhances the activity in the SCR reaction at lower temperature including accelerate the ammonia oxidation reaction at higher temperature too. In contrast, potassium decreases the activity of catalyst at lower temperature. However, potassium can inhibit the oxidation of ammonia at higher temperature.

5. SO_2 increases the acid property on surface catalyst.

6. Water causes competitive adsorption on active sites.

Recommendation for the future works

In this research, we know that the loading sequence of K introduced over V_2O_5/TiO_2 catalyst has some effect on the catalytic activity. So that 25V3K catalyst is chosen for studying. Co-25V5W is firstly introduced in the way given above onto pure titania surface and then potassium deposited on the calcined V_2O_5-WO_3/TiO_2 samples is the interested catalyst too. Because in the power plants, K is contained in fly ashes deposited on the catalyst after operating.

Moreover, carbondioxide gas composed in flue gases may have influence for SCR activity. This factor should be studied in next research.