

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The conclusions emerged from this research are shown as follows:

1. Tungsten and potassium loading barely affect the fluctuation of 25wt%V₂O₅/TiO₂ surface area.

2. The order of catalytic performance of catalysts are as follows:
5wt%W-25wt%V₂O₅/TiO₂ > 25wt%V₂O₅/TiO₂ > 3wt%K-25wt%V₂O₅/TiO₂.

4. From pyridine adsorption experiment, tungsten loading can increase significantly the number of both Lewis and Brønsted acid site. While potassium loading decreases significantly the Lewis and Brønsted acid site. On pure TiO₂ support, Lewis acid site only is observed.

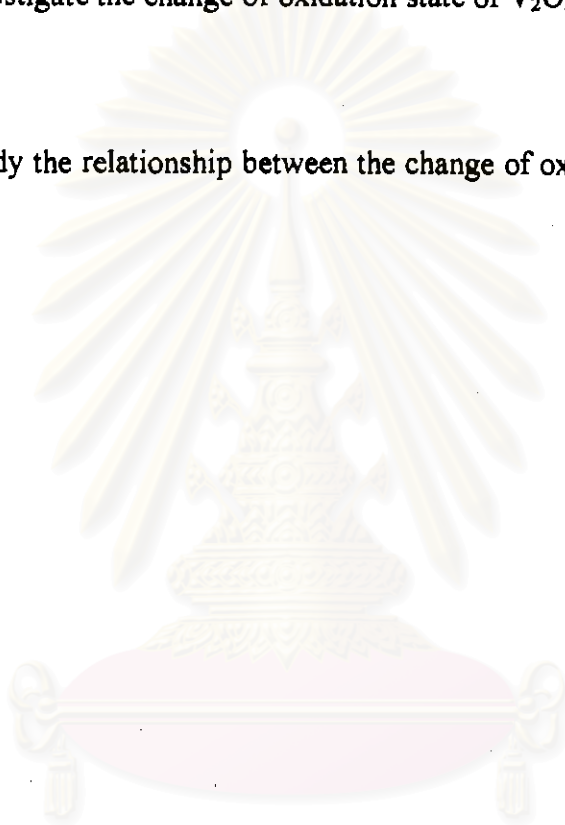
5. SO₂ addition slightly promotes the selective catalytic reduction of NO with NH₃ on both 25wt%V₂O₅/TiO₂ and 3wt%K-25wt%V₂O₅/TiO₂ at the reaction temperature below 300 °C. At higher reaction temperature, SO₂ introduced enhances ammonia oxidation. As for 5wt%W-25wt%V₂O₅/TiO₂, SO₂ suppresses the SCR reaction at low temperature.

6. Pyridine adsorption experiment and catalytic activity test show that Lewis acid sites play more important role for the SCR of NO with NH₃ than Brønsted acid site

6.2 Recommendations for future studies

From the above conclusions, the following recommendations for future studies can be proposed as below.

1. Investigate the change of oxidation state of V_2O_5 -based catalysts during the reaction.
2. Study the relationship between the change of oxidation state and acidity of the catalysts.



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