

CHAPTER VI

CONCLUSIONS AND RECOMMENDATION

The conclusions emerged from this research are the following :

1. The results of XRD and FT-IR analysis indicate that the formation of crystalline V_2O_5 starts well before the surface of TiO_2 is completely covered by V_2O_5 surface species.
2. The optimal vanadium oxide loading is around 23 %wt. Too low loading will result in too high NH_3 oxidation in the temperature over $300^\circ C$. On the other hand, too high loading will decrease SCR activity.
3. The presence of SO_2 can lead to reversible deactivation of catalyst, but no complete deactivation was observed. The deactivation is caused by adsorption of SO_2 on two types of vanadium sites : one being irreversible poisoned at low temperature but reversible at high temperature. The other being reversible poisoned.
4. H_2O has no effect on the deactivation of catalyst.

Recommendation for the future work

For low vanadium oxide loading catalyst it is well know that increase surface acidity by adding some oxide species (e.g. WO_3 , MoO_3) can improve catalytic activity. Therefore, this method should be tried on the optimal catalyst found in this research.



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