

## CHAPTER VI

### CONCLUSIONS AND RECOMMENDATIONS

The objective of this investigation is to find the suitable conditions for acid surface treating of monolith and for coating alumina washcoat on monolith surface. The effect of various conditions on the stability of washcoat deposited on monolith can be summarized as follows:

1. Acetic acid [ $\text{CH}_3\text{COOH}$ ] 2.5 % by weight for 2 min. shows an appropriate acid solution for acid surface pretreatment.
2. The 40% alumina content in washcoat slurry is favorable.
3. The weight of monolith had not significantly changed during acid surface pretreatment.
4. The suitable calcination temperature and holding time in calcination for washcoated monolith were  $500^\circ\text{C}$  and 2 hr., respectively.
5. The thermalshock temperature at  $600^\circ\text{C}$  showed the small washcoat grainsize, whereas the thermalshock temperature at  $800^\circ\text{C}$  showed the large washcoat grainsize and some of the washcoat grains released from the monolithic surface.
6. The suitable procedures for preparing the washcoated monolith was dipping the monolith in alumina washcoat slurry for three times and calcined at  $500^\circ\text{C}$  for 2 hr.

The recommendation for further study are as follows:

1. Sol-gel technique for coating alumina support on monolith should be investigated. This technique is interesting choice for support coating method.
2. The application for exhaust gases abatement should be studied.
3. The washcoated monolith have been used in many exhaust abatement applications, thus coating method for other supports such as titania on monolith should be investigated.
4. Washcoating of full size monolith.