

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The blank alumina support used in this study is proved to be essentially inert and incapable of adsorbing measurable amounts of methyl alcohol, acetone, and ethyl acetate. This lack of adsorption can be attributed to the nonporous nature of the support. Furthermore, the pretreatment in hydrogen may prevent dehydration of the alumina, thus rendering it inactive as dehydration catalyst.

Comparing the catalysts containing only Pt and Pt with Sn, it shows remarkable differences in the TPD profiles of all three adsorbates. The overall desorption profiles show a trend towards a higher temperature with addition of tin. This suggests that addition of tin may result in the creation of different types of adsorption sites, giving rise to shift in the TPD peaks. However, it may be concluded that the addition of Sn modifies the mechanism of decomposition, leading to the formation of different products which, in turn, would desorb at different temperatures.

5.2 Recommendations

This study was carried out using an instrument equipped with only a TCD detector. Thus, it was not possible to analyze the exact compositions of the desorption products as a function of temperature. Future work will be needed, adding a mass spectrometer as an additional tool, to identify the exact nature of the species desorbing from these catalyst samples. A study of VOC oxidation should be conducted by introducing oxygen with a VOC.