

## CHATER VI

### CONCLUSIONS AND RECOMMENDATIONS

The conclusions emerged from this reseach are as following:

1. Coke formation over alkane dehydrogenation follows parallel and series mechanisms depending on the types of reactants. Considering the controlling step of coke formation, alkane with short chain hydrocarbon (C3) forms coke with series coke formation, while alkane with long chain hydrocarbon (C5-C8) produces coke via parallel coke formation.
2. Coke analyzed by TPO shows that same amount of coke obtained from the series coke formation does not neccessary match completely as one finger print. Unlike coke formed from series coke formation, TPO profiles of coke obtained via parallel coke formation pathway as a main step will nearly match as one finger print.
3. Simplified model of coke formation is found in the function of rate of coke precursor appeared in the gas phase products which is appropriate in practice.

#### Recommendations

The following subjects are recommended for future study of coke formation:

1. To gain more precise in coke formation mode, complicate instrument such as FTIR, and NMR would recommended in order to understand which species of products create during the reaction progress.

2. To confirm both proposed mechanism of coke formation, the energy of adsorption and desorption, and production rate of coke precursor in the gas phase for any involved species over the surface of catalyst should be determine.

3. It was found the TPO patterns obtained from propane and propene dehydrogenation are different as shown in Figure 5.11. This might cause from the effect of hydrogen spillover. To insure the results, the effect of hydrogen to carbon ratio should be studied.



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