

## CHAPTER VI

### CONCLUSIONS AND RECOMMENDATIONS

This thesis has dealt with studies on the synthesis of Y-type zeolite and the catalytic cracking of n-octane using the synthesized Y-type zeolite catalyst. The following conclusions were drawn :

1. The optimum preparation conditions to obtain the pure phase and highest degree of crystallization of Y-type zeolite are

H <sub>2</sub> O/SiO <sub>2</sub> mole ratio	46.25
pH of gel mixture	13.7
gel preheat temperature	60 °C
aging time at room temperature	16 h.
crystallization conditions	95 °C for 48 h.

2. The variation of each preparation parameter significantly affected the acquisition of high degree of crystallization of monophasic Y-type zeolite.

3. HY catalyst was much more active than NH<sub>4</sub>Y and NaY for n-octane cracking. The former catalyst contained more strong acid site than did the latter ones.

4. The self-prepared HY catalyst had catalytic performance comparable with that of the commercial one, H-JRC-Z-Y. The optimum reaction conditions were 450 °C, 2000 h<sup>-1</sup>, 30 min on stream.

5. The prolong operation caused lower catalyst activity due to coke formation. The complete recovery of catalyst activity was not obtained after

catalyst regeneration. The partly structural collapse at high regeneration temperature was believed to be responsible for the slightly less catalyst activity after regeneration.

The following recommendations are suggested :

1. Study the catalytic performance of H-Y catalyst loaded with rare earth metal.
2. Study the coke characteristic formed on H-Y catalyst.
3. Study the NaY-type zeolite synthesis at crystallization temperature of 105 °C for crystallization time 0-24 h.



สถาบันวิทยบริการ  
จุฬาลงกรณ์มหาวิทยาลัย