

## CHAPTER V

### CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Conclusions

The phase diagram of *m*- and *p*-CNB with and without the KY zeolite was constructed to study the effects of feed compositions on the *m*- and *p*-CNB crystallization. The phase diagram of *m*- and *p*-CNB without the zeolite showed that, below the eutectic composition, crystals were rich in *p*-CNB, while above the eutectic composition, the crystals were rich in *m*-CNB. At the eutectic composition, an amorphous solid composition close to the feed composition was obtained. Effects of the KY zeolite on the CNB feed solution compositions were investigated. The feed compositions before and after adding the zeolite were almost the same. It may be concluded that the KY zeolite did not significantly affect the feed composition. The phase diagram of *m*- and *p*-CNB with the zeolite looks like that without the zeolite but the crystallization temperature at the eutectic composition was shifted from 23°C to 20°C. The result after adding the zeolite in the feed with the eutectic composition showed the change from the amorphous solid formation to the crystal formation with the crystal composition rich in *p*-CNB. Furthermore, for the feed at 65.0 wt% *m*-CNB with the zeolite, its crystallization resulted in the crystal rich in *p*-CNB instead of rich in *m*-CNB as in the case without the zeolite.

#### 5.2 Recommendations

Based on what has been discovered in this study, further study on the crystallization behavior of the feed with the eutectic composition with the presence of the zeolite should be carried out. In addition, further investigation on the distribution of the zeolite position in the crystallization is suggested.