

## CHAPTER VI

### CONCLUSIONS AND RECOMMENDATIONS

This chapter will be focused on conclusions of experimental details about the optimal condition of membrane production and  $\alpha$ -amylase enzyme separation by using these home made membranes. The following conclusions of this study were obtained.

1. The optimal conditions for crack-free membrane production are 0.07 mole of acid per mole of alkoxide in sol solution, 10 seconds of coating, and calcination at 600 °C for 30 minutes.

2. The more layer we coated, the more rejection we obtained. From characterization of bi-layer membrane, it has 48.04 % of porosity, 73.9 A of pore size and 67.22 % of rejection on  $\alpha$ -amylase enzyme.

3. Transmembrane pressure and recirculation velocity of 0.5 bar and 1.66 m/sec at 1.2 g/litre of enzyme concentration are suitable conditions which can increase enzyme concentration to 44.60 %.

The recommendations for further study are as follows :

1. The support should be casted by centrifugal casting method.
2. More layer of membrane should be extended to increase rejection of membrane.
3. The stability of enzyme in each filtration period should be studied