

## Chapter IV

### Conclusion

In this research, It was found that 2-phenyl ethanol could be synthesized from styrene waste *via* styrene oxide in two steps. The first reaction was the Alkali-Catalyzed Epoxidation using acetonitrile as co-reactant. The yield in this step was 66.07 %. The optimum condition for the epoxidation reaction was 0.437 mole of styrene, 4.597 mole of methanol, 1.219 mole of acetonitrile and 1.246 mole of 50% hydrogen peroxide at pH 7.5 and 6 hours. The second step was the hydrogenolysis reaction of styrene oxide. Two products was obtained from this reaction. The main product was 2-phenyl ethanol (57.39 % yield) and the by-product was ethylbenzene which could be separated by distillation. The optimum condition for the catalytic hydrogenation was pressure 400 psi, 0.0754 mole of styrene oxide, 1.279 mole of ethanol using 0.1 g (11% W/V) Raney Nickle as catalyst. This study indicated that styrene waste could be used as a feed stock to make 2-phenyl ethanol which was more expensive.

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