



CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The results indicated that the hydrogen production from alcohol distillery wastewater in an ASBR system under the mesophilic temperature of 37°C and a controlled pH 5.5 was found to greatly depend on the initial feed COD value, COD loading rate, and hydraulic retention time (HRT). For the effect of initial feed COD value, the initial feed COD value of 40,000 mg/l gave the highest hydrogen production rate. At this initial feed COD value, the optimum conditions for a maximum hydrogen production rate (0.55 l/h) and specific hydrogen production rate (270 ml H₂/g MLVSS d (or 3,308 ml H₂/l d)) were a COD loading rate of 60 kg/m³d and a HRT of 16 h. Hydrogen and carbon dioxide were the only produced gases from the ASBR system, under the optimum conditions.

5.2 Recommendations

In order to reduce the toxicity of potassium in the alcohol distillery wastewater, it is interesting to investigate the effect of chemical addition for potassium reduction. Moreover, other kinds of wastewaters, e.g. paper wastewater and potato wastewater, are interesting to be used as carbon sources for the ASBR operation.