

CHAPTER VI

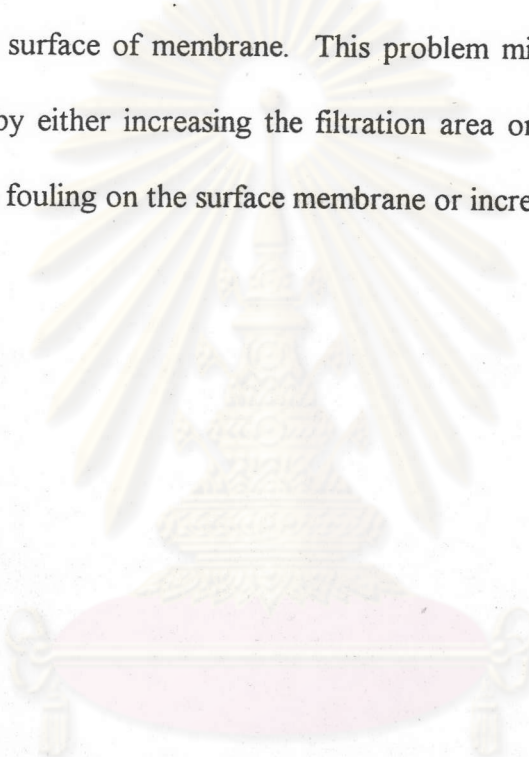
CONCLUSIONS AND RECOMMENDATIONS

The control of biomass concentration in a continuous fermentation with cell recycling were carried out at various dilution rates and biomass concentrations. The following conclusions of this study were obtained.

1. The optimum conditions for this process were the dilution rate of 0.5 hr^{-1} and biomass concentration of 80 g/l . The maximum solvent concentration and solvent productivity achieved were 11.79 g/l and 5.89 g/l-hr , respectively.
2. The solvent productivity was found to increase linearly with both the dilution rate and biomass concentration.
3. Comparison of the results between control (this study) and uncontrol (Muenduen Phisalpong, 1989) of biomass concentration in a continuous fermentation with cell recycling is shown in Table 5.2. It could be seen that solvent and butanol concentration of control of biomass concentration were higher than those of the uncontrolled one. However, the solvent productivity in the first case found to be than the latter less due to the lower dilution rate which was limited by permeation flux.

The dilution rate was found to be an important parameter. From Table 5.2, it would be concluded that the dilution rate was found to be a more influential parameter on solvent productivity than solvent concentration.

However, the dilution rate was limited by permeation flux due to the collecting of colloid on the surface of membrane. This problem might be solved by increasing permeation flux by either increasing the filtration area or using the rotating filter in order to decrease fouling on the surface membrane or increasing the permeation flux.



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Table 6.1 Comparison of the results between control and uncontrol of biomass concentration in a continuous fermentation with cell recycling.

System	Dilution rate (1/hr)	Concentration (g/l)		Productivity (g/l-hr)		Biomass concentration (g/l)
		Solvent	Butanol	Solvent	Butanol	
Uncontrol of biomass concentration in a continuous fermentation with cell recycling.	0.55	11.03	6.26	6.06	3.44	80.00
Control of biomass concentration in a continuous fermentation with cell recycling.	0.5	11.79	6.78	5.89	3.39	78.82