



## CHAPTER V

### CONCLUSIONS

The important factors that affect the characteristic of polymer formed by admicellar polymerization process were surfactant loading, monomer loading, and reaction time. These variables were useful for researcher to predict the best condition for different applications of admicellar polymerization by controlling the characteristic of polymer formed on substrate surface.

The results obtained in this research were drawn from characterization of ultra-thin polystyrene film produced by admicellar polymerization on nonporous silica using CTAB surfactant. All conclusions were shown as follow:

The plateau region of the CTAB adsorption isotherm showed a maximum CTAB adsorption value of approximately 130  $\mu\text{mol/g}$  on the nonporous silica. And the adsolubilization of styrene into the adsorbed CTAB bilayers of both concentrations (20 and 100  $\mu\text{mol/g}$ ) increased with increasing styrene concentration in the aqueous phase.

The investigated process variables (CTAB loading and styrene loading) significantly effect the amount and characteristics of the polymer formed. The results show that the molecular weight and extent of polymer coverage increased with increased CTAB adsorption and adsolubilized styrene.

Styrene loading and reaction time were important factors affecting the molecular weight of polystyrene produced by admicellar polymerization. The molecular weight of the formed polymer increases with increasing styrene feed. Additionally, for the systems investigated, a reaction time of at least two hours should be utilized in order to obtain relatively high molecular weight polystyrene.