

## CHAPTER V

### CONCLUSIONS

This work reveals the evidence for the existence of neutral polymer and nonionic surfactant complexes.

Polyacrylamide (PAM) is a hydrophilic polymer and therefore PAM - Triton X - 100 interaction would tend to force the polymer to reside at the surface of the micelle.

The surfactant has the same critical micelle concentration (cmc) in the presence of PAM as it does in water. This is in contrast to the situation encountered with all ionic surfactants for which association with neutral polymers is always accompanied by a decrease in cmc. This means that neutral polymer-nonionic surfactant interactions do not all involve the same type of specificity in the binding of surfactant micelles to the polymer chains.

Addition of Triton X - 100 has a slight effect on the size of the polymer until its concentration exceeds 0.1 mM. Then it causes a significant increase in the size of the polymer chains. This chain expansion occurs over the narrow Triton X - 100 concentration range of 0.1 mM to 1 mM. In this concentration range viscometric measurement shows a decrease in viscosity. Therefore, the hydrodynamic volume of the polymer chain would be expected to decrease. However, dynamic light scattering measurement have indicated the contrary. We conclude that the increase in the molecular weight of the complex outweighs the decrease in hydrodynamic volume of the polymer - surfactant complex.

Polymer-surfactant interaction has no effect on the change of polymer concentration within the considerable range of polymer concentrations. Different molecular weights of polymer interact with the surfactant quite similarly. Therefore, different molecular weight of polymers have no influence on the interaction but it can also form the polymer - surfactant complexation.