# CHAPTER IV

# CONCLUSIONS

The complex between latex and polymer was studied by dynamic light scattering on the interaction of that two compounds which was observed as the diffusion of the particle. The layer thickness can be determined by the difference in the diameter of bare sphere and that of sphere with adsorbed layer. The Triton X-100 concentration has effects on the diffusion of latex spheres. The saturation point of binding between latex and Triton X-100 occurs at gram ratio of Triton X-100/latex between 20-50 (or $C_x$ = 0.2-0.5 % wt in 0.001 % latex). The amount of Triton X-100 that needs for covering the whole surface of latex, at which the adsorption of HPC is completely inhibited, increases with sphere diameter. In the dilute regime, the scattering from the spheres with absorbed layer is dominant where the scattering from HPC or Triton X-100 is negligible, so the obtained D value corresponds to the latex particle with adsorbed layer.

At a fixed concentration of Triton X-100, D decreases rapidly with the polymer concentration. The scaling exponent ($\delta$) for 0 % of Triton X-100 is about 0.5, where as at 0.1 % of Triton X-100, it is about 0.7-0.8. The scaling exponent is the index for interaction which manifests on the diffusion in the system. Furthermore, the molecular weight has a strong effect on the diffusion coefficient; however the $\delta$ value does not show the significant change, only slightly decreases with the molecular weight of HPC. At a high concentration of polymer or in the semidilute regime, the bridging mechanism, the linkage between two spheres by polymer chain, was observed. It was found in case of small probe size and high molecular weight of polymer even at low concentration. Stoke-Einstein's law is not valid in case of the diffusion of sphere through high molecular weight of HPC because the calculated diameter is lower than bare diameter.