CHAPTER IV
CONCLUSIONS AND RECOMMENDATIONS

Molecular architectures of aza-methylene phenol backbone were studied in order to clarify the induced molecular alignment and the assembly structure. A series of hydrophobic enhanced aza-methylene phenol at aza position were prepared by ring opening reaction of benzoxazines using various alkylamines. Thermal responsive structures studied by using high temperature attachment XRD system clarified that the packing structures of hydrophobic enhanced aza-methylene phenol are changed as the temperature increased. The hydrophilicity enhanced on the backbone at hydroxyl group of phenol compounds were accomplished by using tosylated methyl ether polyethylene glycol reactive species. Thermal responsive of the compounds were observed by optical microscope and DSC to find that the mPEG chain induced the packing structure. As a result the compounds gave T_c at below 30°C with a spherulite crystal after molten stage.

The present work is originally proposed a novel strategy to control the molecular alignment for molecular assembly. The clarification of the molecular alignment can be done in the systems of solid state and solution. In the case of solid state, although the present work touched upon the thermal responsive structure observed by XRD, DSC and optical microscope, there are more techniques in details to be involved to clarify the assembly phenomena, such as, low temperature DSC, thin film X-ray diffraction, single crystal x-ray crystallography, 2D-NMR, and electrospray mass spectrometry. In the case of solution, the assembly can be observed by UV-Vis, light scattering, which may provide us the information about the favoritable conditions for molecular assembly. The development of aza methylene phenol derivatives, such as, cyclic, pseudocyclic aza-methylene phenol compounds is also another alternative study.