CHAPTER VI
CONCLUSIONS AND RECOMENDATIONS

The present work demonstrated the simple molecular design and development of self-assembly based on hydrogen bond and metal-ligand binding. Diamine-based benzoxazine derivatives successfully self-assemble into various types of morphology. We suggested that the length of methylene bridge unit effect to the hydrogen bond direction, resulting in various self-assembly nanostructures performed. Morphology of nanostructure can be controlled by balancing alkyl chain length and hydrogen bond network (Chapter III). Moreover, Diamine-based benzoxazine dimers are unique as each unit contains four hydroxyl groups belonging to two phenols and two lone pair electrons belonging to two nitrogen atoms to possibly form the continuous framework of supramolecular polymer through hydrogen bond and metal-coordination interaction. This concept was proved and confirmed by using poly(dimethylsiloxane) terminated by benzoxazine dimer (PDS-Bz), the supramolecular polymer via hydrogen bond and metal-ligand binding can be obtained (Chapter IV). Up to present, only a few successes to synthesize PDAs containing conjugated diarylbutadiyne moieties have been reported. However, the synthesis of PDAs monomer deals with complicated synthesis and purification. This present work demonstrates the synthesis of PDAs monomers containing diarylbutadiyne in a simple approach. This study extends to the effect of substituted unit on aromatic ring and hydrogen bond network play the role to the topochemical polymerization. Moreover, the developed 1D nanostructure from self-assembly and alignment of poly-oDA and poly-mDA has been proposed.