CHAPTER VII
CONCLUSIONS

The present work demonstrated the simple approach to induce polymeric morphology based on molecular assembly through a model case study of SEBS and BZ monomer. The electrospinning system equipped with rotational disk fiber collector allowed us preparing samples with information of microdomain. The depth analysis based on advanced instruments, especially 2D-SAXS, TEM, ^{1}H NMR lead us to an original work of showing not only an existence of microdomain but also the mechanism to explain how microdomain orientation related to the polymer chain alignment (Chapter III). The work also proved that microdomain orientation of block copolymer, in fact, can be controlled in a specific direction when any of copolymer segments were under molecular interaction as seen in the case of the microdomain orientation of SEBS was almost in parallel to the stretching direction (SD) or the fiber axis as a result of π-π interaction between benzoxazine monomer (BZ) and PS segments in SEBS chains (Chapter IV)

Based on the π-π interaction between BZ monomer and PS segments in SEBS, the present work demonstrated a simple approach to prepare thermoset nano-sphere (Chapter V). By allowing BZ monomer polymerized in SEBS matrices, polyBZ obtained were in well-defined nano-spheres. Here, we propose the mechanism related to the formation of nano-pocket of the PS segments in SEBS chains under π-π interaction to allow the preform of BZ as nano-cluster for further polymerization. The fact that BZ monomers give supramolecular structured *N,N*-bis(5-methyl-2-hydroxybenzyl) methylamine derivatives (BZ dimers), the present work also showed an original molecular design and synthesis of diacetylene monomer (DA) containing aza-crown ether based on BZ dimers (Chapter VI) This approach is useful since we can obtain polydiacetylene with a well-defined structure by simply further the polymerization of the DA derivatives.