CHAPTER IV

CONCLUSIONS

This study shows that only in some particular blend compositions, block copolymer can work effectively. This is because the block copolymer must be at the interphase, thus, when the blend is aymmetrical with a low interfacial area, the block copolymer shows its ability to compatibilize the blend.

In the dynamic mechanical measurement, the block copolymer influences the PS-rich blends; the blends can dissipate more energy due to the presence of the PI-minor phase. But for the PS-rich blends, the dynamic moduli of the blends with 1 % block copolymer and the blends without block copolymer are nearly the same. This is because when PI is matrix, the molecular chains of PI can move easily as the blends are compressed and the block copolymer cannot work efficiently due to oscillating motion of the PI's molecules.

In the mechanical measurement, the block copolymer reduces strain rates of the PI-rich blends; the rate of deformation is constrained by the presence of the minor phase of PS. Because PS is rigid, when the adhesion between the dispersed PS and the PI matrix increases, the strain rate of the blends will be reduced. But for the PS-rich blends, extensional loading will affect mainly the PS matrix due to the high Young's modulus of PS, the block copolymer does not show any effect on the blends. So, the strain rates of the blends with 1 % block copolymer and the blends without block copolymer are nearly the same.

For the effect of the block copolymer, the interfacial adhesion will increase when the block copolymer contents increase. This is shown by the loss moduli of PI which decrease as the block copolymer contents. For the transition temperatures of PS and PI, they are almost the same when the block copolymer contents increase. The block copolymer cannot increase the miscibility of the blend because the block copolymer contents are too small.