

## CHAPTER IV

### CONCLUSION

The PS/NR, 60/40, blend with variation of DCP content showed the higher rate of reaction with increasing DCP content from 0 to 2 phr, the gel in those blends mostly came from NR crosslinking. The blends also showed a lowering in  $T_g$  of PS with increasing content of DCP. Moreover, the PS part dissolving by MEK showed the present of NR by FT-IR spectroscopy. A small amount of NR was expected to link with PS and formed NR-g-PS copolymer.

The [Nylon12/NR]/SEBS-g-MA blends showed the higher dissipated heat from the reaction between amine group in Nylon12 and MA of SEBS-g-MA and the higher viscous heat from a higher viscosity than [Nylon12/NR]/SEBS blends. The [Nylon12/NR]/SEBS blend morphology was difficult to predict by the surface tension data from the literatures. The blends showed the core-shell morphology where SEBS was encapsulated by NR phase in Nylon12 matrix. On the other hand, the presence of MA changed the morphology to the encapsulation of NR in SEBS-g-MA because the amide linkage between Nylon12 and SEBS lowered the interfacial tension between nylon12 and SEBS. At low SEBS content, the Nylon12/NR blend showed improvement of tensile modulus and strength from the strength of SEBS core, and lowering at higher SEBS content due to the coarser morphology and the lower Nylon12 composition. The [Nylon12/NR]/SEBS-g-MA reactive blends showed improved properties compared to [Nylon12/NR]/SEBS non-reactive blends presumably because of higher stress transfer via the amide linkage. When the SEBS-g-MA content was increased in Nylon12/NR blends, the dispersed phase size and distribution of NR and SEBS-g-MA decreased and then leveled off at the higher concentration. This corresponded to the interfacial saturation. The higher concentration of SEBS-g-MA in

Nylon12/NR blend than this saturation point probably generated copolymer micelles, which were responsible for the reduction of the blend properties. The [Nylon12/NR]/ SEBS-g-MA blends also showed the higher decreasing crystallinity as increasing SEBS-g-MA content than in SEBS and PSNR05 Blends. [Nylon12/NR]/SEBS blends with variation of SEBS types showed the higher mechanical properties with increasing the molecular weight of SEBS. The higher tensile strength of [Nylon12/NR]/PSNR05 blends than in [Nylon12/NR]/SEBS blends could be due to the PS hard segment and NR crosslinking in the PSNR05 blend.