

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

The synthesis of admicelled PS-NR by technique of admicellar polymerization of styrene was successful with using polymerization reactor of 1,000 ml in volume. The FTIR and TGA characterization confirm that the polystyrene was comprised in modified natural rubber. The admicelled PS-NR with any styrene concentrations exhibited the different rheological behaviors, which are lower in shear stress and shear viscosity when compared with natural rubber using both dies at any particular shear rate and temperature. The dimension stability was better in 30 phr-silica filled admicelled PS-NR, 50 wt.% NR blended admicelled PS-NR and natural rubber, respectively. In the physical properties, the cured admicelled PS-NR with 300 mM has highest tensile strength and Young's modulus. The presence of polystyrene with any concentration used in admicelled NR resulted in increase the maximum torque and crosslink density and decrease the minimum torque, scorch time, cure time and slightly change in cure rate. The higher styrene concentration used in admicelled PS-NR was higher in strength, modulus, hardness, mixing torque and ozone resistance and lower in elongation.

There is some obstacle involving the less capability of synthesizing modified NR to support the required test. Many factors that can not be done in this rheological study and should be further investigated more, such as the effect of blending composition and type or composition of filler in circular or slit die at different extruded temperature. Some of physical properties should be studied such as impact strength, tear resistance, fatigue/flexing resistance, resilience and abrasion test, etc. However, suitable protection is the most important one when concerned the hazardous monomer.