CHAPTER V

CONCLUSION

From this work, the grafted natural rubber formed the completed closed shell at 1.5 parts by weight of initiator of graft copolymerization. The optimum condition were 100 parts by weight of monomer per 100 parts of natural rubber latex, the initiator concentration of 1.5 parts by weight and the temperature and pressure of 70 °C and 30 psig for 8 hours.

In this research work, the appropriate conditions, the concentration of initiator, reaction temperature and pressure which yielded the grafted natural rubber with high grafting efficiency, graft ratio and acrylonitrile content in graft copolymer were obtained. The work described in this thesis can be summarized below.

5.1 The preparation of grafted natural rubber

The grafted natural rubber was prepared by emulsion polymerization process which $K_2S_2O_8$ was used as an initiator. The rubber macroradical interacted with styrene and acrylonitrile monomers to form graft copolymer. The appropriate concentration of initiator, reaction temperature and pressure of graft copolymerization were found and the grafted products were characteried.

The maximum monomers conversion was 88.9. The grafting efficiency, graft ratio and graft frequency were 45.4, 0.45 and 2,413, respectively. The ratio of acrylonitrile, isoprene and styrene in grafted natural rubber was 28.9 : 55.2 : 15.2 (FT-IR method).

5.2 The production of thermoplastic blends.

The grafted natural rubber could be used as the impact modifier in SAN resin to form thermoplastic by mechanical blending and injection molding. The good mechanical properties of blends was obtained at grafted natural rubber and SAN ratio of 20:80. The tensile strength, and impact strength of the blends were 31.0±0.7 and 16.6±0.2, respectively.

Suggestion

1) The presence of nonrubber contaminants such as proteins could affected the graft copolymerization of styrene and acrylonitrile onto natural rubber. These contaminants, which may act as catalyst inhibitors can affect the course of free-radical reactions. So, the elimination of nonrubber contaminants such as proteins from natural rubber before graft copolymerization should be further studied.

2) The effect of the additives on the mechanical properties of grafted natural rubber/SAN blend should be studied.

3) The grafted natural rubber could be used for the substitution of synthetic rubber e.g. SBR, Nitrile Rubber. The blend of grafted natural rubber with some synthetic rubber should be studied.