CHAPTER V
CONCLUSIONS

5.1 Conclusions

Surface modification of precipitated silica by admicellar polymerization using a continuous stirred tank reactor was successfully used to modify silica surface and produce the reinforcing fillers capable of improving the rubber compound physical properties.

In order to reduce the modification cost, the commercial grade surfactants, Arquad® T-50 and Teric® X-10, were used. The Polymerization time and the molar ratio of mixed surfactant, Arquad® T-50 to Teric® X-10, are important variables that can be used to optimize the admicellar polymerization process for industrial applications. Modification of the silica surface increased the mean agglomerate particle size and lowered BET surface areas as compared to that of the unmodified ones. TGA confirmed the polymer formed on the silica surface. The results indicated that the increase in the best rubber compound physical properties was achieved with 3:1 Arquad® T-50 to Teric® X-10 molar ratio and 30 min polymerization time. The commercial grade mixed surfactants can reduced the surfactants cost up to 98 %.