CHAPTER 4

CONCLUSION

From the above study the niche points are presented here as conclusion

i. The FTIR spectrum confirmed the functional groups present in the homo PCL. Carbonyl stretching (around 1725 cm\(^{-1}\)), tetrahydrofuran ion (~1650 cm\(^{-1}\)) from the THF units and aromatic bending vibration (around 850 cm\(^{-1}\)) from phthalic anhydride segments. Appearance of the above peaks confirmed the formation of diblock copolymer.

ii. The DSC results indicated that the \(T_m\) value of both the amphiphilic diblock copolymer and nano Ag end capped diblock copolymer were reduced due to the increase in hydrophilic nature.

iii. The TGA results indicated that the degradation temperature of the amphiphilic diblock copolymer and nano Ag end capped amphiphilic diblock copolymer was found to be lower than that of the homo PCL.

iv. The \(M_w\) of the amphiphilic diblock copolymer and nano Ag end capped amphiphilic diblock copolymer was greater than that of homo PCL as confirmed by GPC analysis.
v. The FESEM and HRTEM images confirmed the presence of nano micelles in the amphiphilic diblock copolymer and Ag nanoparticle in the nano Ag end capped diblock copolymer.

vi. Both the homo and diblock copolymer exhibited the fluorescence property due to the presence of amino acids.

vii. The NMR spectrum confirmed the presence of carbonyl carbon stretching around 170 ppm in the $^{13}$C-NMR spectrum.

viii. The CD study confirmed the change in the surface charge and conformation particularly in the P3 system.

ix. The tensile strength of the homo PCL coated polyester fabric has higher value than the amphiphilic diblock copolymer and nano Ag end capped diblock copolymer coated polyester fabric whereas the % elongation was the reverse.

x. The homo PCL exhibited poor water absorbance property whereas the diblock copolymer and the nano Ag end capped diblock copolymer exhibited the highest one.

xi. The catalytic reduction study confirmed that the Ag nanoparticle has high surface catalytic effect.

xii. The antimicrobial zone was increased with increase of time due to the presence of Ag nanoparticle.

xiii. In such a way one can increase both the solubility and application of PCL via diblock copolymer formation with water miscible segments.