

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

This work indicates that deposition of conducting polymer on fabrics can be produced by the method of admicellar polymerization resulting in the surface and volume resistivity as low as 10^5 ohms and ohm-cm. Increase in the monomer concentration resulted in lower resistivity. In polymerization, the type of monomer has a significant influence on the resistivity of the coated fabrics. At the same condition, polypyrrole gave the lowest resistivity to the fabrics with the value of 6×10^5 ohms and 4×10^5 ohm-cm for surface and volume resistivity, respectively, whereas polyaniline and polythiophene coated fabrics show much higher resistivity in the range 10^{11} . In the present work the optimum salt concentration was found at 0.5 M of NaCl resulting in a significant drop in resistivity after which it increased slightly. By using two different types of fabrics, the difference in the surface resistivity between the two types of fabrics has been reduced to less than an order of magnitude. This clearly shows that both types of fabric have been successfully coated and polypyrrole can coat on polyester fabric better than on cotton. The optimum oxidant:monomer ratio of pyrrole and *N*-methylpyrrole was 2:1 whereas for aniline and thiophene, a ratio of 1:1 gave better results. SEM micrographs of the treated surface show film-like coating of the polymer together with a certain amount of small particles.

Recommendations for future work

In this work, DBSA was not used as dopant because the concentration was quite low and doping process was not emphasised but it can be expected that the conductivity of the fabric can be improved much further if dopants are used and this will be the subject of the further investigation. Thus, future study for a variety of surfactant / monomer / substrate / dopant systems is required as well as to determine more completely the properties of the conducting fabrics. In addition, the extraction of conductive polymer by using suitable solvents might be interesting in order to determine the MW of the resulting conductive polymers coated on the fabrics.