CHAPTER VI
CONCLUSIONS AND RECOMMENDATIONS

In this work thin films of polyaniline and polythiophene were coated on polyester fabric by admicellar polymerization. Sulfonic acid dopants were used to improve the resistivity resulting in a decrease in the resistivity of the doped fabrics by five to six orders of magnitude compared to the undoped fabric for polyaniline-coated fabric and by four to five orders of magnitude for polythiophene-coated fabric. Two types of doping method were employed. Doping during the first step was found to be an effective method for polyaniline and the lowest resistivity was around 10^8 ohm. For polythiophene, doping after the final step of AP was effective for PTSA and 5-SCA, while doping during the first step was suitable for CSA dopant. The lowest resistivity of 10^9 ohm was obtained with 5-SCA followed by PTSA and CSA. The surface and volume resistivities of the treated fabrics were also compared. For polyaniline, the volume resistivity of the doped fabric improved significantly more than the surface resistivity compared with the undoped fabric. In the case of thiophene, both surface and volume resistivities were reduced by about the same amount after doping. SEM micrographs of all treated fabrics show film-like coating of the conductive polymers together with deposition of some small particles.

Recommendations for Future Work

In this work lower resistivity of polyaniline and polythiophene coated fabrics was obtained using various types of organic sulfonic acid dopants. However, the resistivity of doped polyaniline was found to be lowered, more than that of polythiophene. It will be interesting to further investigate how each dopant reacts with different types of conductive polymers in order to understand the mechanism involved in the doping process. In addition, it will be interesting to lower the resistivity using other types of sulfonic acid

dopants that may be more effective than the ones used in the present work.