CHAPTER V
CONCLUSIONS

In the present study, polydiphenylamine (PDPA) was synthesized via the oxidative polymerization by using ammonium persulfate as the oxidant and doped with hydrochloric acid. The PDPA in its blends with PEO at various ratios were also fabricated into fibers by an electrospinning process. The PDPA pellet, film and fiber were investigated for their interaction with MetOH vapor towards sensor applications. The effects of doping level and the amount of polyethylene oxide on the electrical conductivity and sensitivity of de-doped PDPA pellets, doped-PDPA pellets, PDPA film and PDPA fibers towards MetOH vapor were investigated.

For the effect of doping level, the D-PDPA_100:1 pellet has the highest electrical conductivity sensitivity due to the highest repulsion force with increasing doping mole ratios. At 3% w/w of PEO, the D-PDPA film has a higher electrical conductivity and sensitivity than D-PDPA fiber. Furthermore.the D-PDPA_100:1shows the positive response when exposed to MetOH. The positive electrical conductivity response and sensitivity can be identified by the interaction between MetOH and D-PDPA. From FTIR investigation, the MetOH-D-PDPA interaction is irreversible.