CHAPTER V
CONCLUSIONS

Polyaniline emeraldine base was synthesized by chemical oxidative polymerization in acid condition by using amonium peroxydisulfate as an oxidant. The undoped and doped polyaniline were prepared in the pellet form by using hydraulic press. The insulating form of polyaniline was protonated to the conducting form of polyaniline by using hydrogen bromide, camphorsulfonic acid, and maleic acid doped polyaniline as acid dopant.

The FT-IR and UV-Visible results could confirm that in this work polyaniline emeraldine base was synthesized. These results are consistent with that of Zeng *et al.* (1998). It showed also that maleic acid doped polyaniline was a reversible process. The XRD and SEM results showed that emeraldine base is amorphous polymer. In case of CSA doped polyaniline, the degree of crystallinity of doped polyaniline increased with doping ratio. In the other hand, the morphological structure of maleic acid doped polyaniline could be changed from globular to fibrillar and to globular structure depending on the doping ratio.

For the electrical conductivity results, the HBr doped polyaniline at doping ratio 80 showed the highest electrical conductivity. The CSA doped polyaniline was unsuitable to use as a CO detector because the change in the electrical conductivity was not observed significantly. While the electrical conductivity of the maleic acid at doping ratio 1000 decreased when exposed to CO gas. Thus, the maleic acid doped polyaniline could be used as a CO detector. The minimum CO concentration that the maleic acid doped polyaniline showed response was about 1 ppm.