



CHAPTER V

CONCLUSIONS

The PVA/Pt nanoparticle nanocomposite nanofibers were successfully prepared by electrospinning technique. The amount of platinum precursor loaded was varied, 1%, 3%, and 5%. Prior to electrospinning process, platinum precursor was directly reduced in PVA aqueous viscous solution. A clear yellow solution became dark brown according to the presence of platinum metal. The characterization of such solutions suggested that more precursor was loaded, higher viscosity was obtained. Though UV-Vis analysis, it was found that an absorption band at 260 nm, due to surface plasmon of platinum ions, Pt^{4+} , was completely disappeared corresponding to the absent of Pt^{4+} . The average diameters determined by SEM were 90.7, 274.1, 187.2 and 169.3 nm from 0%, 1%, 3%, and 5% Pt loading, respectively. The consequence was corresponding to more Pt metal content in the solution causing higher conductivity which affects the traveling of the ejected jet. TEM images illustrated and average size of platinum nanoparticles obtained of 1-6 nm. The existence of Pt metal was confirmed by EDX and XRD technique displaying (1 1 1) plane of platinum crystal at about $2\theta = 40^\circ$. From the FTIR spectra, it was believed that the bond between Pt nanoparticles and PVA matrix took over the hydroxyl groups.