CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

The present work utilized the entrapment ability of the biosurfactant vesicles suggested potential use as the template for aniline monomer accumulation and subsequent polymerization for the synthesis of PANI nanoparticles. After the polymerization and the subsequent removal of the biosurfactant template were completed, the PANI nanofibers as well as PANI nanotubes, with the average diameter of several hundred nanometers, were obtained. Surface tension measurement indicated that the prepared biosurfactant could reduce the surface tension of pure water from 72 to 30 mN/m with the CMC approximately 250 mg/L. TEM and DLS technique was utilized to trade the nature and shape the biosurfactant template for describing the formation mechanism of the obtained PANI nanofibers and nanotubes. It was observed that the sizes and morphologies of the obtained products were dependent on the weight ratio of ANI:Biosurfactant, the polymerization time, and the concentration of the added biosurfactant. The results of FTIR, UV-vis, and TGA, suggested that the addition of biosurfactant template did not significantly influence the chemical structure, electronic state, as well as the thermal property of the resulting PANI. However, the crystallinity and electrical conductivity of HCl-doped PANI was affected by the addition of biosurfactant template and the polymerization time. The highest electrical conductivity of the HCl-dope PANI was obtained when the PANI was synthesized with the ANI:Biosurfactant weight ratio of 22.7:1 at 6 hr polymerization time.