CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

In this work, the adsorption behavior of three surfactants (namely sodium dodecyl benzenesulfonate (SDBS), cetylpyridinium chloride (CPC) and polyoxyethylene octyl phenyl ether ($OP(EO)_{10}$)) on multi-walled carbon nanotube (MWCNTs) and activated carbon, and the dispersing ability of surfactant-modified MWCNTs (SDBS – MWNCTs , CPC – MWCNTs, $OP(EO)_{10}$ – MWCNTs) were investigated by varying the surfactant concentrations. From the results obtained, MWCNTs presented higher sorption capacity than activated carbons for the surfactant adsorptions as a result from the textural characteristics. In addition, the order of surfactant adsorption capacities on MWCNTs and activated carbons were SDBS > $OP(EO)_{10}$ > CPC and CPC > SDBS > $OP(EO)_{10}$, respectively. These trends were attributed to the different charge and chain length. The order of MWCNTs dispersing ability was depended on headgroup size, charge and graphite-surfactant interactions; however, the increasing of surfactant concentration certainly affected the higher MWCNTs dispersability. The dispersability of MWCNTs without surfactant solution was not different from the system with the 0.1 CMC of surfactants and the order of MWCNTs dispersability at CMC and 10 CMC were SDBS > $OP(EO)_{10}$ > CPC and $OP(EO)_{10}$ > SDBS > CPC, respectively.

5.2 Recommendations

1. The range of pH value should be done for covering a point of zero charge (pH_{pzc}) of carbonaceous adsorbent materials to confirm the effect of charge of adsorbent materials.
2. The bubble of surfactant solution is able to cause the inaccurate absorbance which can be solved by spending time to collapse the bubble before measuring.