CHAPTER VI

CONCLUSION AND FUTURE WORKS

6.1 Conclusion

Activated carbons were prepared from vulcanized and decrosslinked waste tires by the conventional steam activation method, the conventional method plus acid treatment prior to steam activation, and the second method with the pre-treatment by metal compound and the resulting porous properties were characterized. Furthermore, liquid-phase adsorption characteristics of the activated carbon prepared with HCl treatment prior to steam activation were obtained and compared with the commercial activated carbon. Separate conclusions are given in Sections 5.1-5.7. The major conclusions are as follows.

- The conventional steam activation method yields fairly mesoporous activated carbons from waste tires.
- The pore development mechanism consists of the micropore formation followed by pore widening into mesopore.
- Highly mesoporous and microporous activated carbons are obtained by the method with HCl treatment prior to steam activation.
- The pre-treatment by metal compound is not necessary for improving the porous properties of activated carbon from waste tires.
- Activated carbon obtained in the present study shows comparable phenol adsorption capacity as but obviously greater dyes adsorption capacities than the commercial activated carbon.

- Because of good liquid-phase adsorption-desorption characteristics and ethanol regeneration efficiency, the activated carbon prepared in this work is very suitable for use in difficult wastewater treatment especially for adsorbing the bulky molecules.

6.2 Future Works

- To evaluate the carbon structure and surface more precisely
- To scale-up the furnace for preparing the activated carbon in practical scale
- To study the adsorption kinetics of various adsorbates on activated carbon
- To study the adsorption in the column bed
- To investigate the double- or multi-components adsorption