



CHAPTER V

CONCLUSIONS AND SUGGESTIONS

5.1 Conclusions

The higher pressure and the more calculated equilibrium time, the higher amount of leaking gas, the higher deviation in the results and the higher wt.%H₂.

The built-up apparatus is not leak-free. Leak background must take into account for reported results.

The deviation of wt.%H₂ at same pressure, but different in calculated equilibrium time of method 1 is less than method 2 and is also less with more amount of adsorbents.

Insufficient amount of CNTs could not compensate the experimental errors, as from pressure transducer, leak background, pressure fluctuation, as in the case of 2 g MWNT method 1.

Method 2 showed higher values adsorbed probably due to the accumulating error of amount of adsorbed in each step. The more accumulated the more round-off error.

Reliable sorption values strongly depends on adequate amount of adsorbent to balance any error from the apparatus and experiment.

All possible errors concerned in experiment for this techniques must be reported with results; global error of sensor, SD of calculated data, leak background, experiment temperature and etc.

Feasibility study of using carbon nanotubes as a hydrogen adsorbent should be investigated further based on more reliable/repeatable technique including correction of any feasible errors in the sensitive experiment.

5.2 Suggestions

The experimental apparatus should be developed to leak-free/less system, if possible, by using higher quality of fittings and connections or adapting the size and length of manifold and sample cylinder to reduce the leaking gas. A reading pressure

value could be expressed in higher resolution by using higher bit of computer processing unit (CPU) in A/D.

Result of method 2 could be more reliable by connecting one more pressure transducer next to the volume of sample cylinder. The pressure in volume of sample cylinder could be monitored real time, then.

Applying adequate amount of adsorbents during experiment compensating all possible errors could make the results more reliable.