

CHAPTER V CONCLUSIONS



5.1 Conclusions

The comparison of SWNT prepared by catalytic decomposition of methane and disproportionation of carbon monoxide over different catalysts was systemically investigated. Raman spectroscopy, TPO, and TEM techniques were employed to characterize the carbon deposits on the studied catalysts.

The summary of present work is as following:

a) Carbon monoxide is the most appropriate gas for producing SWNT and gives high quality of SWNT, but provides less total carbon yields.

b) Methane gives high quantity of deposited carbon, but provides large amount of disorder carbon.

c) Methane and carbon monoxide react independently when they are fed together.

d) In the case of silica support, CO disproportionation can produce high quality of SWNT. In contrast, CH_4 decomposition is not suitable for SWNT synthesis, but give high amount of deposited carbon.

e) In the case of MgO, most of the results did not show SWNT. Moreover, the undesirable carbon are formed in high quantity.

f) Alumina is the most suitable support that gave high quality of SWNT.

g) The mono-metallic catalysts supported only on MgO support can produced SWNT. However, the amounts of carbon are in low quantity.