CHAPTER V

CONCLUSIONS AND RECOMMENTDATIONS

5.1 Conclusions

We have experimentally investigated and shown that a two-step hydrothermal treatment using different solvents (NaOH solution, water with oxygen anion and deionized water, respectively) resulted in distinctive phase and morphology transformation of TiO_2. In fact the rutile TiO_2 powder with very low BET surface area was transformed to rice-shaped anatase TiO_2 with ca. 70 times higher BET surface area.

Also, this research aimed to enhanced the efficiency of DSSC by adding the composites between CNTs and titanium derivatives. Hydrothermal method was introduced to prepare conductive and high specific surface area material. The composite type TrCNT-TNT provide the maximum increasing efficiency of 21.15% when they were added 0.21 %wt in titanium slurry.

5.2 Recommendations

- Investigate the size distribution of TrCNTs after treated in different time
- Investigate the pH of media for the second step hydrothermal preparing rice-shape TiO_2
- Prepare in situ composite which could worked as precursor without commercial anatase TiO2
- Fabrication DSSCs in large scale