# CHAPTER 5
# CONCLUSIONS AND SUGGESTIONS FOR FURTURE WORKS

## 5.1 Conclusions

The influences of $ZrO_2$ contents on the leucite crystallization and microstructural evolution of the $ZrO_2$-modified dental porcelain ceramic-nanocomposites have been investigated. It was found that the amount of $ZrO_2$ additive is a key factor to controlling leucite crystallization and microstructural arrangement in dental porcelain ceramics. Significant reduction of both amount and size of the leucite crystals is observed for $ZrO_2$ content above 10 wt%. A small amount of $ZrO_2$ (< 35 wt%) was added to dental porcelains could improve the sintered density; more content of $ZrO_2$ would decrease the density.

## 5.2 Suggestions for Future Work

For better understanding and verifying the attractiveness of this nanocomposite further, the effect of $ZrO_2$ content on the change of the suitable heat treatment schedules is required. Moreover, the success of the $ZrO_2$-modified dental porcelain ceramic nanocomposites depend on clinical applications. Thus, further work with attention paid on the mechanical properties of these nanocomposites should also be very helpful.