

CHAPTER 5

CONCLUSIONS AND SUGGESTIONS FOR FUTURE WORKS

5.1 Conclusions

It has been shown that the processing method adopted for producing dental porcelain-based ceramics greatly influences the composition and microstructure of the products. Using commercially available dental porcelain powders as the starting materials, it has been demonstrated that the two-step sintering technique together with 20wt% ZrO_2 additive has considerable potential for the production of leucite/porcelain ceramic-nanocomposites. It is also found that the tempering time is a key factor to controlling dendritic morphology of leucite crystallization behavior and microstructural arrangement in ZrO_2 -modified dental porcelain ceramics. It is clearly in this study that tempering time has no effect on mechanical properties of ZrO_2 -modified dental porcelain ceramics.

5.2 Suggestions for Future Work

For better understanding and verifying the attractiveness of this nanocomposite further, a systematic study on the effect of variety content of zirconia on microstructure and amount of leucite-nanocomposites is required. Moreover, according to Chen and Wang [13], the success of the two-step sintering strongly depends on the choices of both firing temperatures (T_1 and T_2). Thus, further work with attention paid on the influences of the designed two-step sintering schemes on phase formation, microstructure and properties of these nanocomposites should also be very helpful.